

LEXICAL ROOTS FOR THE ITHKUIL REVISION — v.0.5.1 (April 8, 2021) by John Q.

This document updates the previous version 0.4.2. There are now approximately **5900** roots. **New or revised/amended material is marked in blue.** In Sec. 4.5.6, I have changed the meaning of the OBJ Specification for roots involving affective sensory states.

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1.0 ROOTS ASSOCIATED WITH GRAMMATICAL FUNCTIONS

1.1 The Carrier Root: -S-

-S- [the “carrier” root]			
	STEM 1	STEM 2	STEM 3
BSC	[carrier stem representing an animate being named by the succeeding foreign or proper name/phrase]	[stem representing inanimate object or abstract entity named by the succeeding foreign or proper name/phrase]	[stem representing geographical or geo-demographic place/location named by the succeeding foreign or proper name/phrase]
CTE	[carrier stem representing the identity of the animate being named by the succeeding foreign or proper name/phrase]	[stem representing the identity of the inanimate object or abstract entity named by the succeeding foreign or proper name/phrase]	[stem representing the identity of the geographical or geo-demographic place/location named by the succeeding foreign or proper name/phrase]
CSV	[carrier stem representing the physical presence/body of the animate being named by the succeeding foreign or proper name/phrase]	[stem representing the physical presence or body of the inanimate entity or tangible manifestation/effect of the abstract entity named by the succeeding foreign or proper name/phrase]	[stem representing the physical/tangible praxes and/or tangible infrastructure of the geographical or geo-demographic place/location named by the succeeding foreign or proper name/phrase]
OBJ	that which is impacted/targeted or a patient of the animate being named by the succeeding foreign or proper name/phrase	that which is impacted/targeted or a patient of the inanimate or abstract entity named by the succeeding foreign or proper name/phrase	that which is impacted/targeted or a patient of the geographical or geo-demographic place/location named by the succeeding foreign or proper name/phrase

1.2 General Demonstrative Root: -T-

-T- [General Demonstrative Root]		Associated Affix: DCD
BSC	(to be) ‘this / the one at-hand / the one in question’ referring to entities, situations, abstract notions, etc. (depending on the C_A complex); [STA:] to be this/what is under discussion / [DYN:] to do this/what is under discussion	STEM 1: this (one) near, at, by, or associated w/ speaker STEM 2: that (one), near, at, by or associated w/ addressee STEM 3: that (one yonder), not near, at, by or associated with either speaker or addressee
CTE	(to be) that which is the essence or essential point or meaning of this/what is at-hand	
CSV	(to be) that which is the form/structure or physical manifestation of this/what is at-hand	
OBJ	(to be) the object/entity/situation/idea, etc. being referred to by this/what is under discussion or at-hand	

Using cases, the above root provides translations for phrases such as “thus”/“in this/that manner”, “there”/“in that place/location”, “Yes”/“It is that”, “No”/“It is not that”, “some / some of that”, etc.

1.3 The Copular Root: -Č-

The scope of this root's usage is narrow. It is used only in contexts requiring ontological or epistemic equivalence/identity. e.g., "I am your father." It is **not to be used** in the following circumstances:

- when "be" means "be named/called", e.g., "*My dog is [named/called] Toto.*" (Use stem meaning "be named; be called; have an appellation")
- when "be" initiates an adjectival phrase, e.g., "*Rain is beneficial.*" (Use adjectival case or an appropriate verbal stem, e.g., "to (be of) benefit")
- when "be" indicates a spatio-temporal relation, e.g., "*The box is on the table*" (Use stem signifying the specific relation, e.g., "be on the top surface of")
- when "be" means "occur / happen / take place", e.g., "*Wednesday is the best day for shopping.*" (Use stem meaning "occur, take place, happen")
- when "be" means "exist (ontologically)", e.g., "*Such is life*", "*I think, therefore I am.*" (Use stem meaning "existent entity; to ontologically exist")
- when "be" indicates exemplary membership in a set, e.g., "*A hammer is a tool.*" (Use stem meaning "exemplify; be an example of" or "be a type of")
- when "be" indicates composition, e.g., "*Rain is water.*" (Use stem meaning "to consist of")

-Č- 'BE (i.e., copular identification only) / EQUIVALENCE / IDENTIFICATION'			
	STEM 1	STEM 2	STEM 3
BSC	(to be ontologically the) self-same entity (as) (i.e., [to be] simply another name for the self-same entity)	to be epistemologically equivalent to or (functionally) identified/identifiable as; be (functionally) the same as; be equal to	to be epistemologically synonymous/tantamount/convertible to
CTE	(to be ontologically the) self-same entity (as) in terms of essence, sense of identity, behavior, personality, mind, etc.	to be epistemologically equivalent to or (functionally) identif(ied/-iable) as in terms of essence, sense of identity, behavior, personality, mind, etc.	to be epistemologically synonymous/tantamount/convertible in terms of essence, sense of identity, behavior, personality, mind, etc.
CSV	(to be ontologically) the self-same entity (as) in terms of appearance, physical manifestation or construction	to be epistemologically equivalent to or (functionally) identif(ied/-iable) as in terms of appearance, physical manifestation or construction	to be epistemologically synonymous/tantamount/convertible to in terms of appearance or outward physical manifestation
OBJ	what X ontologically is (as opposed to being something else), X's natural identity, X's existence as X; to be X as itself (as opposed to something else)	what X is epistemologically equivalent to (as opposed to something else), X's natural identity, X's existence as X; to be X as itself (as opposed to something else)	(to be)what X is epistemologically synonymous, tantamount, or convertible to (as opposed to something else), X's convertibility to

1.4 Grammatical Terminology

-MPW- ‘PHONOLOGICAL COMPONENT OF A SPOKEN LANGUAGE’		
BSC	STEM 1: (to be) a phoneme [i.e., the smallest meaningful/salient sonic unit, whether consonantal or vocalic, pronounceable/articulateable by the human vocal apparatus, that is cognitively distinct from other such sonic units in a particular human language as heard/distinguished by its native speakers]	STEM 2: (to be) a phone [i.e., a sound pronounceable/articulateable by the human vocal apparatus, regardless of whether it functions meaningfully as part of a phonology in a human language] STEM 3: (to be) an allophone [i.e., a particular sonic variation on a archetypal phone identified by native speakers of a language as being a phoneme in that language, the variation being predictable based on the structure of the phonetic environment in which the sound occurs]
CTE	(to be) a state/process of hearing/understanding/identifying a spoken phoneme (or graphic/written representation thereof)	
CSV	(to be) an act of pronouncing/articulating a phoneme; to pronounce/articulate a phoneme (or producing a written representation thereof)	
OBJ	(to be) the particular place and manner of oral/vocal articulation of a particular phoneme	

The “-emic”, “-etic”, “allo-” disinction of the three stems of the above root, along with its Specification pattern, apply to the following roots as well:

-MPY- ‘MORPHEME’ **-MPŘ-** ‘LEXEME / WORD’

-MPH- ‘GRAMMATICAL/MORPHOLOGICAL CATEGORY/FORM OF A LANGUAGE’		
BSC	STEM 1: (to be) a grammatical/morphological category in a spoken/written language	STEM 2: (to be) the function/purpose/meaning/signification of a particular grammatical/morphological category in a spoken/written language STEM 3: (to be) an allomorphic/alternative way of expressing a grammatical/morphological category in a spoken/written language
CTE	(to be) a state/process of hearing/understanding/identifying a grammatical/morphological category in a spoken/written language	
CSV	(to be) an act of using/speaking/writing a grammatical/morphological category in a spoken/written language	
OBJ	(to be) the particular phonological form of a grammatical/morphological category in a spoken/written language	

The following stems for Ithkuil grammatical categories follow the same Specification pattern of the root above:

-MPÇ-	lexical root	-RMP-	noun case or verbal format	-MṬP-	level category
-MPL-	lexical stem	-RMPW-	case-accessor affix	-MṬPW-	phase category
-MPM-	concatenated root	-RMPY-	bias category	-MṬPY-	valence category
-MPN-	concatenated stem	-RMPL-	expectation category	-MṬPL-	essence category

-LMP-	V _x C _s affix	-RMPŘ-	illocution category	-MṭPR-	perspective category
-LMPW-	V _x C _s affix-type	-RMPÇ-	validation category	-MṭPŘ-	extension category
-LMPY-	V _x C _s affix-degree	-RMPL-	mood category	-MṭPF-	plexity category
-LMPL-	formative (part of speech)	-RMPM-	context category	-MṭPT-	similarity category
-LMPR-	adjunct (part of speech)	-RMPN-	aspect category	-MṭPÇ-	separability category
-LMPŘ-	referential (part of speech)	-RMPH-	effect category	-MṭPS-	version category
				-MṭPŠ-	function category
				-MṭPH-	specification category

To name a particular grammatical sub-category (e.g., comitative case), use the appropriate root/stem above in conjunction with one of the following rules:

- To name a noun case or verbal format, use the stem -- above in conjunction with the specialized C_s-root (see Sec. 4.2 of the Design Document) of the Type-2 case-accessor affix for the case in question. For example, the COMITATIVE case would be named *warmpa ěizyi've* 'grammatical case/format associated with that which accompanies'.
- For categories other than noun cases or verbal formats, use the appropriate root/stem from the list above in conjunction with one of the following stems as appropriate, where that stem in turn manifests (i.e., is declined into) the particular morphological category: **-PS-** Stem 1: 'to happen/occur'; **-PS-** Stem 2: 'to be/manifest'. For example, the Ithkuil term for the subjunctive mood would be *warmpla hre psi've* 'grammatical mood associated with what may happen'.

2.0 COMMON STATES AND ACTS

-PS- 'HAPPEN / OCCUR(ENCE) / MANIFEST / EVENT'		
BSC	STEM 1: (to be) an occurrence of something; to happen / occur / take place / transpire / to "pass" [both the content/nature of the event and its transpiring	STEM 2: a state/act of manifesting; be or make real / reify STEM 3: event (spatio-temporal context)
CTE	(to be) a state of something occurring/transpiring of an act/event/state	
CSV	(to be) an act of (causing) something to happen/occur	
OBJ	(to be) that which happens/occurs/transpires	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-PSM- ‘STEP / ACT / ACTION / PHENOMENON / INCIDENT’		
BSC	STEM 1: (to be) a step/act/action (to be) taken; to take a step (to do/accomplish something), to act (in order to do/accomplish something), to take an action (to do something)	STEM 2: (to be) a phenomenon; for a phenomenon to happen [i.e., an event/occurrence/state so unusual, surprising, unlikely, or consequential as to be significant]
CTE	(to be) a state of a step/act/action occurring/transpiring/being taken	
CSV	(to be) an act of taking a step or action to cause something to happen/occur	STEM 3: (to be) an incident [i.e., an event/occurrence with significant and (potentially) adverse/undesirable consequences]
OBJ	(to be) the step/act/action one takes to do something	

-ṬṬ- ‘FACT / KNOW’		
BSC	STEM 1: (to be) an act of knowing an ontological fact; to know an ontological fact [= have awareness/understanding of and ability to recall an ontological fact]	STEM 2: (to be) epistemological/conventionalized fact; know [= have awareness/understanding and ability to recall] an epistemological/conventionalized fact
CTE	(to be) the ability/capacity to know an ontological fact	
CSV	(to be) the physical/mental process of (an act of) knowing an ontological fact	STEM 3: (to be) something known via experience/proficiency; know via familiarity or experience]
OBJ	(to be) an ontological fact; (to be) the ontological fact one knows	

Derivations: find out, discover, determine, wisdom, insight, enlightenment, scholar

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RṬṬ- ‘STUDY / LEARN / KNOWLEDGE SOURCE’		
BSC	STEM 1: (to be) an act of studying/learning knowledge; to study [CPT version = learn] *	STEM 2: (to be) an act of practicing; to practice CPT = be proficient at; have proficiency in
CTE	(to be) the ability/capacity to study [CPT version = learn]	
CSV	(to be) a physical act/process of studying [CPT version = learning]	STEM 3: (to be) a source of knowledge, a resource from which facts can be learned, a knowledge base
OBJ	(to be) what one studies or learns about	

* This stem signifies learning from static knowledge sources (e.g., books/documents and/or personal research; for learning from a teacher, see **-DDY-** ‘TEACHING ↔ BEING A STUDENT’

-LṬṬ- ‘VOCATION / CAREER / AREA OF EXPERTISE OR PROFICIENCY’		
BSC	STEM 1: (to be) a state/process of pursuing a vocation; to pursue a vocation [i.e., a skill or subject matter one is dedicated to learning and practicing] CPT Version = (to be) a state/process of having/practicing a vocation; to have/practice a vocation	STEM 2: (to be) a state/process of pursuing a career; pursue a career [i.e., one’s chosen set of skills/knowledge/expertise for making one’s living] STEM 3: (to be) a state/process of learning/studying an area of expertise; to pursue becoming proficient/expert at something CPT = (to be/have) proficiency/expertise in something
CTE	(to be) the ability/capacity to pursue/study [CPT version = practice/engage in] one’s vocation	
CSV	(to be) a state/process of learning/studying/practicing for one’s vocation; to study/learn/practice in furtherance of one’s vocation CPT = to perform or carry out an act as part of one’s vocation	
OBJ	(to be) (the particular set of skills or subject matter which is) one’s vocation	

-ṚṬṬ- ‘COMPETENCE / QUALIFICATION’		
BSC	Stem 1: (to be) a state/instance of being competent; to be competent (i.e., able to meet expected standards of performance in one’s work/duties)	Stem 2: (to be) a state/instance of being qualified for something, meeting qualifications for something; to be qualified at/for something, to meet the qualifications for something [i.e., where the qualifying criteria are skill-, knowledge-, or experience-based] Stem 3: (to be) a state of/instance of being qualified for something, meeting qualifications for something; to be qualified at/for something, to meet the qualifications for something [i.e., where the qualifying criteria are NOT skill-, knowledge-, or experience-based, but rather are based on an external parameter such as age, height, weight, nationality, one’s religion, one’s location, being in a certain profession, etc.]
CTE	(to be) the feeling/subjective experience of being competent; to experience the feeling of knowing one is competent	
CSV	(to be) a physical manifestation of competency; to do something competently or that demonstrates competence	
OBJ	(to be) what one is competent at	

-ṆṬṬ- ‘TEST / EVALUATION / VETTING / EXPERIMENT’		
BSC	STEM 1: (to be) a state/act of testing a party/entity (i.e., subjecting a party/entity to a process by which it/they must prove/demonstrate that it /they meet some standard or expected level of performance/knowledge/skill/talent, etc.)	STEM 2: (to be) a vetting/evaluation process (i.e., a process of investigating/evaluating a party/entity to determine that they meet some standard or expected level of performance/skill/background, etc.); to vet, to evaluate STEM 3: (to be) an experiment/test (i.e., a clinical procedure to determine the validity of a specific hypothesis, to determine the presence/absence of (a) particular substance(s), etc.; to conduct an experiment or clinical test
CTE	(to be) a state of being subject to testing	
CSV	(to be) the physical act/process of testing a party/entity; to test, to give a test/exam	
OBJ	(to be) the test/exam itself which the party/entity takes or is subjected to	

-M/T- ‘DEMONSTRATION / PROOF’		
BSC	STEM 1: (to be) a state/act of demonstrating the factuality of something; to demonstrate that something is so	STEM 2: (to be) a state/act of proving, presenting evidence that attempts to prove something; to attempt to prove, to present evidence that attempts to prove something CPT Version = proof; to prove STEM 3: (to be) a state of establishing/meeting a standard of proof; to establish or meet a standard of proof
CTE	(to be) a state of being subject to demonstration, being demonstrated	
CSV	(to be) the physical act/process of demonstrating something; to do something that demonstrates something is so	
OBJ	(to be) that which is (to be) demonstrated	

-N/T- ‘SUBJECT / TOPIC / MATTER / THEME / POINT / THESIS’		
BSC	STEM 1: (to be) the topic / subject / subject matter / matter at hand; to address/discuss/ deal with a particular topic / subject (i.e., what is at hand, in mind, under consideration, under advisement, at issue, in question, etc.)	STEM 2: (to be) the point one wishes/tries to make (e.g., in a discussion, an essay, an article, a speech, a briefing, etc.); to try to make one’s point [i.e., try to get one’s audience to understand or accept one’s opinion or conclusions]. CPT Version = succeed in making one’s point STEM 3: (to be) a thesis; to present a thesis (i.e., a conclusion about something based on a formal analysis and presentation of evidence)
CTE	(to be) a state of there being a topic/subject/subject matter/theme	
CSV	(to be) an act/process of addressing or dealing with a particular topic/subject/theme	
OBJ	(to be) one’s opinion/take/perspective/point of view/contribution on a topic/subject/theme	

-VL- ‘REALIZATION / UNDERSTANDING / COMPREHENSION’		
BSC	STEM 1: (to be) an act of realizing something; to realize [= understand via act of insight/intuition]	STEM 2: (to be) an act of understanding/comprehending something; to understand or comprehend something [= know via a process of personal and/or shared analysis/contemplation/introspection/discussion] STEM 3: (to be) an act of understanding/comprehending something: understand or comprehend something [= due to intelligibility/distinctness/clarity/coherence/legibility/lucidity of input/medium/message/material]
CTE	(to be) the ability/capacity to realize something	
CSV	(to be) the physical/mental process of (an act of) realizing something	
OBJ	(to be) what one realizes	

-ṬK- ‘MAKE / CONSTRUCT / INTEGRATE / FORM’ Associated affix: MAK (NOTE: This root does not refer to ‘make/create’ meaning ‘emit/secrete/produce’ as in ‘make noise’ or ‘make milk’, etc.)		
BSC	STEM 1: (to be) an instance/act of making/constructing/creating something via integration of material resources according to an implicit or explicit plan/instinct/motive/design	STEM 2: (to be) an instance/act of forming or fashioning something via a combination of ingredients, e.g., cooking, mixing together, combining melodies from instruments to make music, tinkering with a variety of parts, etc.
CTE	(to be) the existential state of creating/making/constructing	
CSV	(to be) the method/steps employed/manifested in making/creating/constructing something	STEM 3: (to be) an instance/act of bringing something into being via organizing disparate parts into a coherent whole
OBJ	(to be) that which is made/created/constructed; the product of an act of making/creating/constructing	

-ṚṬK- ‘COMMERCIAL MANUFACTURING / FABRICATION / BUILDING / PRODUCTION / ESTABLISHING’		
BSC	STEM 1: (to be) an instance/act of commercial manufacturing; to manufacture	STEM 2: (to be) an instance/act of commercial fabrication/building; to fabricate or build something
CTE	(to be) the existential state of manufacturing	
CSV	(to be) the method/steps employed/manifested in manufacturing something	STEM 3: (to be) an instance/act of formally producing/establishing/founding something (e.g., publishing a book or piece of music, establishing a church, founding a charity, etc.)
OBJ	(to be) that which is; the product of an act of manufacturing; a manufactured good/product	

-KSF- ‘USE / UTILIZATION / CONSUMPTION / EXPENDITURE’		
BSC	STEM 1: (to be) an instance/act of using/utilizing/making use of something/availing oneself of; to use/utilize, to make use of something, to avail oneself of something	STEM 2: (to be) an instance/act of serving as, being put into use as, being made to function as; to serve as, to (be) put into use as, to function as
CTE	(to be) a state of use/utilization/being used/being made use of	
CSV	(to be) a physical act of using/utilizing/making use of; to physically perform an act of using/utilizing/making use of/availing oneself of	STEM 3: (to be) a state/act/instance of consumption/expenditure, being consumed/expended/used up; to consume, to spend a resource, to use (up) a resource
OBJ	(to be) that which is used/utilize/made use of	

-KŠF- ‘ENGAGEMENT / BE IN PLAY / RECOURSE / AGENCY’		
BSC	STEM 1: (to be) an instance/act of engagement, putting into action, bringing into play, being brought/put into play; to engage in something, to bring something into action, to put something into play, to have something be part of the action	STEM 2: (to be) an instance/act of resorting to something, having recourse to do something, to act on the belief one has to pursue a particular course of action; to resort to something, have recourse to do something, to act on the belief one has to pursue a particular course of action STEM 3: (to be) an instance/act of agency/exertion/force/control; to make happen, to cause to happen, to be the agential force behind something, to exert or exercise control over the course of something [i.e., an act of agency which causes/makes/initiates a tangible act/result/change of state affecting another party]
CTE	(to be) a state of engagement/being in play/being in action	
CSV	(to be) a physical act of bringing/putting into play/action; to engage	
OBJ	(to be) the action/situation/context in(to) which something is made part of	

-MPR- ‘TERMINATION / FINISH / END / FINALITY / COMPLETION’		
BSC	Stem 1: (to be) a state/act of ending/finishing/ being over/concluded; to be ending, be at an end, to be about over, to be about finished/concluded (i.e., no longer taking place, no longer extant/present/active, etc.) [CPT version = ended, finished, concluded, over]	Stem 2: (to be) a state/act of bringing to a final/ultimate state; to bring to a final/ultimate state, to finalize, to be final, to be reaching a final/ultimate (i.e., quasi-permanent) state [CPT version = be in a final/ultimate state] Stem 3: (to be) a state/act of completing; to be reaching a state of completion (i.e., of a goal-oriented process) [CPT version = a completed state; to complete, to reach/achieve completion]
CTE	(to be) the state of being at an end, being finished/concluded	
CSV	(to be) a physical act of finishing, bringing to an end, concluding; to finish, to end, to conclude, to be done (with), to be over	
OBJ	(to be) that which is ended/finished/over	

-NY- ‘CHOICE / PREFERENCE’		
BSC	STEM 1: (to be) a choice (to be) made; to choose [= both the state of having a choice to make and the choices available to choose from]	STEM 2: (to be) an act/process of “weighing”/pondering of a choice; conduct a pro-vs.-con analysis STEM 3: (to be) an state/act of settling for something (i.e., reluctant choice to avoid the alternative)
CTE	(to be in) a state of having to choose; to face a choice; to have a choice to make	
CSV	(to be) the act/process of choosing from one’s available options/alternatives	
OBJ	(to be) the choice made; to be the entity/alternative/option chosen or selected	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RNY- ‘SELECTION / ALTERNATIVE / OPTION / VOTING’		
BSC	STEM 1: (to be) a selection (to be) made (from limited choices); to select/pick (from limited choices) [= both the state of having a selection to make and the choices available to select from] *	STEM 2: (to be) a state of having an alternative or available option; to have an alternative or available option STEM 3: (to be) an act of voting; to vote
CTE	(to be in) a state of having to choose; to face a choice; to have a choice to make	
CSV	(to be) the act/process of choosing from one’s available options/alternatives	
OBJ	(to be) the choice made; to be the entity/alternative/option chosen or selected	

* This stem is distinguished from Stem 1 of the the root **-NY-** above in that it implies a limited number of choices available

-SN- ‘CHANGE / VARIATION / VERSION / DEVIATION’		
BSC	STEM 1: (to be) a change (from one state to another); to change (from one state to another)	STEM 2: (to be) an act of variance or being a differing version of something; to vary, to be a differing version STEM 3: (to be) an act of deviation; to deviate
CTE	(to be) the state of transformation which occurs during a change	
CSV	(to be) the physical/tangible process of an act of change (i.e., what an entity physically undergoes while changing); to transform	
OBJ	(to be) that aspect of an entity which changes; what gets changed about an entity	

Derivations: mutate, convert, shift, tamper with, transform, transition

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RSN- ‘ALTERATION / MODIFICATION / DIVERSIFICATION / MODULATION’		
BSC	STEM 1: (to be) an act/process of alteration, modification; to alter, to modify (i.e., a small change that does not significantly alter the identity or basic nature/essence/form, etc. of an entity)	STEM 2: (to be) a state/act of diversification/permutation; to diversify, permutate STEM 3: (to be) a state/act of modulation; to modulate (i.e., control the variance in the state of an entity)
CTE	(to be) the state of transformation which occurs during an alteration/modification,	
CSV	(to be) the physical/tangible process of an act of alteration/modification (i.e., what an entity physically undergoes while changing)	
OBJ	(to be) what changes during an alteration/modification, what gets altered/modified, the alteration/modification itself	

-PṬ- ‘SEEK / SEARCH’

BSC	STEM 1: (to be) an act of searching/seeking/looking for something specific whose location is unknown; a search for something specific whose location is; to search/seek/look for something unknown (i.e., its location/existence is uncertain)	STEM 2: (to be a) search, seek, look for something lost [i.e., something known to exist which is missing]
CTE	(to be in) the psychological state of searching/seeking; to be driven by the need/desire to search/seek	STEM 3: quest / seek to accomplish/achieve something
CSV	(to be) the process or physical act itself of searching/seeking	
OBJ	(to be) what one is seeking or searching/looking for	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-PṬR- ‘EXPLORATION / PURSUIT / HUNTING’

BSC	STEM 1: (to be) a state/act of exploration; to explore [i.e., to sensorily observe and/or examine something unknown or previously unencountered to learn/discover its nature/structure/attributes, etc.]	STEM 2: (to be) a state/act of pursuit; to pursue, to track down (i.e., the existence of which is certain but whose location is uncertain)
CTE	(to be) the psychological state of exploration; to be driven by the need/desire to explore	STEM 3: (to be) a state/act of hunting; to hunt for (i.e., with the goal of capturing/killing/detaining, etc. that which is hunted)
CSV	(to be) a physical act/process of exploring; to perform the physical act(s) of exploring	
OBJ	(to be) what one explores (i.e., the place/area/realm/surface/volume, etc. one explores through or in)	

-GŠ- ‘LOSE / MISPLACE / SQUANDER / DEPRIVATION / FORFEITURE’

BSC	STEM 1: (to be) a state/act of something being lost/mislaid/missing (i.e., misplaced); to lose something (i.e., to misplace), to misplace	STEM 2: (to be) a state/act of losing something/someone; to lose (i.e., to have an entity taken away or for an entity to go away and not be accessible or potentially recoverable)
CTE	(to be) a state of being lost/misplaced/missing/mislaid	STEM 3: a state/act of squandering or wasting something; to squander, to waste (i.e., to allow something to become lost via neglect or irresponsibility)
CSV	(to be) an act of misplacing/losing/mislaid something; to do something which causes an entity to be(come) lost/misplaced/missing	
OBJ	(to be) that which is/has been misplaced/lost/mislaid	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-GŠT- ‘DEPRIVATION / BEREAVEMENT / FORFEITURE’		
BSC	STEM 1: (to be) a state of deprivation; to be deprived of, to (have to) do without something	STEM 2: (to be) a state/act of bereavement; to be bereft/bereaved STEM 3: (to be) a state/act of forfeiture; to forfeit
CTE	(to be) a state of there being something that is not available	
CSV	(to be) an act of depriving, to do something which causes one to experience deprivation	
OBJ	(to be) that which one is deprived of, that which one must do without	

-ZD- ‘COMPARISON / CONTRAST / DISTINGUISH / MATCHING’		
BSC	STEM 1: (to be) a[n act of] comparison/contrasting; to compare/contrast	STEM 2: (to be) an act of distinguishing; to distinguish (= process of careful selection from among various alternatives) STEM 3: (to be) an act/process of matching one entity to another; to match something to something else
CTE	(to be) the state of being compared/contrasted	
CSV	(to be) the physical act/process of comparison/contrasting (i.e., step(s) taken to conduct the comparison)	
OBJ	(to be) the object/entity compared or contrasted with something else, that which is (being) compared	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-ZDR- ‘MEASUREMENT / DISCERNMENT / COLLATION’		
BSC	STEM 1: (to be) an act/process of measuring; to measure [i.e., to quantify an amount or degree of some attribute of an entity]	STEM 2: (to be) an act/process of discerning; to discern [i.e., to carefully observe a pattern or patterns or sub-phenomenon within an entity or phenomenon] STEM 3: (to be) an act/process of collation; to collate [i.e., determine the relationships between entities]
CTE	(to be) the state of being measured	
CSV	(to be) the physical act/process of measuring	
OBJ	(to be) that which is measured	

-ŠT- ‘EXPECTATION / SUSPENSE / ANTICIPATION / VIGIL’		
BSC	STEM 1: (to be) a state of expectation; to have an expectation of/concerning; to expect something (i.e., to have a degree of certainty that a future occurrence/situation/event will manifest in a particular way)	STEM 2: (to be) a state of anticipation/suspense; to experience a sense/feeling of anticipation/suspense; for something to be impending, the wait/expectation of which generates suspense and anticipation
CTE	(to be) the mental/psychological state of a expectation; be in a state of expectation	
CSV	(to be) the physical manifestation of a process of expecting; to endure a period of expectation	STEM 3: (to be) a state of vigilance, a vigil, a watch; to be vigilant/watchful, to conduct a vigil
OBJ	(to be) that which one expects, what/whom one is expecting	

-RŠT- ‘PREDICTION / FORESEE / FORECAST’		
BSC	STEM 1: (to be) state/act of prediction; to predict	STEM 2: (to be) a state/act of foresight; to be something prospective, to be something foreseeable; to foresee
CTE	(to be) a psychological state of a process of prediction; undergo a state of predicting	
CSV	(to be) the physical act of predicting; to make a prediction	STEM 3: (to be) a state/act of prognostication/forecasting; to forecast
OBJ	(to be) what one predicts	

-G- ‘AMBULATION’		STEM 2: (to be) an instance of rapid ambulation; to run, gallop, scamper, scurry, etc.
BSC	STEM 1: (to be) an instance of bodily ambulation; to ambulate (= to use one's body's natural method of translative motion along a surface, e.g., walk, hop, crawl, swim, slither, etc.)	STEM 3: (to be) an instance of unnatural/affected ambulation, e.g., limp, stagger
CTE	(to be) the translative/directed movement through spacetime from one point to another as accomplished via ambulation	
CSV	(to be) a single iteration/cycle of the particular pattern of bodily movement(s) used in ambulation; to make/undergo a single iteration of the body's natural ambulatory cycle	
OBJ	(to be) the surface upon which one ambulates (e.g., the ground, the floor, the firmament, the ramp, the stairs, etc.)	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-GTH- ‘MARCHING / PRANCING / RACING / SWAGGERING / SAUNTERING’		STEM 2: (to be) an instance of racing [i.e., competitive speed running] STEM 3: (to be) an instance of swaggering or sauntering [i.e., affected ambulation in a deliberately exaggerated manner]
BSC	STEM 1: (to be) an instance of marching or prancing; to march or prance (= to ambulate in a deliberately formal and structured way)	
CTE	(to be) the translative/directed movement through spacetime from one point to another as accomplished via marching or prancing	
CSV	(to be) a single iteration/cycle of the particular pattern of bodily movement(s) used in marching or prancing; to make/undergo a single iteration of the body's ambulatory cycle while marching or prancing	
OBJ	(to be) the surface upon which one marches or prances (e.g., the ground, the floor, the firmament, the ramp, the stairs, etc.)	

-MZ- ‘REMEMBER / RECALL / MEMORY / MEMORIZATION’		
BSC	STEM 1: (to be) a memory; to remember something (= recall something) [whether unwilled/affective or self-willed/voluntary]	STEM 2: (to be) the retention of something past into present; to retain something from the past into the present STEM 3: (to be) an act of memorization; to memorize, to remember [i.e., commit to memory]
CTE	(to be) the content of a memory or recollection, what is remembered or recalled	
CSV	(to be) the act/process of recalling something; to recall	
OBJ	(to be) the entity/circumstance/event/state which a memory is about	

MORPHOLOGICAL DERIVATIONS: recollect(ion), remind, memorize, memento, monument, archive, commemorate, commemoration, souvenir/keepsake, relic, to bear in mind, ponder/relish a memory, sear into one's memory, visual record / recorded image
, camera, movie

NOTE: for the meaning of the old FORMAL stems previously associated with the above root, use the following new root:

-MZM- ‘TRACE / VESTIGE / MEMORIAL / ARCHIVAL RECORD’		
BSC	STEM 1: (to be) a state of there being a trace/vestige of something occurring [i.e., a physical indication left behind of a previous state or that something has previously occurred]	STEM 1: (to be) a memorial (i.e., an (object/action formally recognizing or acknowledging something/someone past) STEM 3: (to be) a state/act of having/making a record of something; to have/make a record of something, to archive
CTE	(to be) the trace/vestige itself	
CSV	(to be) the act of leaving a trace/vestige behind	
OBJ	(to be) that which the trace/vestige indicates has occurred	

-NL- ‘SOLVE / FIGURE OUT’		
BSC	STEM 1: (to be) an act/process of trying to solve a mystery or puzzle, trying to figure out a riddlesome problem; to attempt to solve a mystery/puzzle/dilemma/ riddlesome problem [CPT Version = to solve it, to figure it out]	STEM 2: (to be) an act of analytical reasoning/logic as applied to attempting to solve a mystery/puzzle/riddlesome problem/dilemma STEM 3: (to be) an act/state of insight/inspiration as part of one’s attempt to solve a puzzle/mystery/riddlesome problem, dilemma
CTE	(to be) a state of mystery, being faced with an unsolved puzzle/mystery/problem/dilemma	
CSV	(to be) the act/process of trying to figure out an explanation/solution; to try to figure something out	
OBJ	(to be) the puzzle/mystery/unsolved issue/dilemma/riddlesome problem itself	

-LLT- ‘WONDERING’		
BSC	STEM 1: (to be) a state/act of wondering about something that is potentially knowable; to wonder about something [i.e., desire to know something that can (presumably/theoretically) be known, e.g., “ <i>I wonder what papaya tastes like</i> ”, “ <i>I wonder if she is religious.</i> ”]	STEM 2: (to be) a state act of wondering about something no longer knowable; to wonder about something [i.e., desire to know something that (presumably/theoretically) can no longer be known, e.g., “ <i>I wonder what cooked dinosaur tasted like</i> ”, “ <i>I wonder what Newton would think of quantum theory.</i> ”] STEM 3: (to be) a state/act of wondering about something not yet knowable [i.e., desire to know something unknowable until some future time, e.g., “ <i>I wonder if I’ll ever be able to walk again</i> ”, “ <i>I wonder if humankind will ever colonize another planet.</i> ”]
CTE	(to be in) a state of wondering, i.e., the desire to know something that can (presumably/theoretically) be known	
CSV	(to be) the act/process of asking oneself (either verbally or in one’s thoughts) something which one desires to know that can (presumably/theoretically) be known; to ask oneself such a question	
OBJ	(to be) what one wonders about	

-CC- ‘MISTAKE / ERROR / MISCONCEPTION / MISCALCULATION’		
BSC	Stem 1: (to be) a state/act of being mistaken or in error regarding something; to be wrong about something, to be mistaken or in error about something	Stem 2: (to be) a state/act of misconception; to be under a misconception, to act/do something based upon a misconception Stem 3: (to be) a state/act of miscalculation or misjudgement; to misjudge or miscalculate something
CTE	(to be) a state of erroneousness, a state of being wrong about something	
CSV	(to be) an act of being mistaken or in error; to make a mistake, to be in error	
OBJ	(to be) that which one is mistaken about; that which one makes/has made an error concerning	

-CT- ‘LOOK OVER / EXAMINE / INSPECT’		
BSC	Stem 1: (to be) an act of looking something over; to give something a lookover (i.e., perform a casual or brief visual/tactile observation of an entity in order to form an initial reaction/appraisal)	Stem 2: (to be) an act of examination; to examine (i.e., to observe/inspect something in order to determine its physical condition and/or character(istics).)
CTE	(to be) the state of being looked over	
CSV	(to be) the physical process of looking over (i.e., the physical act performed which constitutes looking something over)	Stem 3: (to be) an act of inspection; to inspect (i.e., examine something to determine the degree to which it complies with, adheres to, or deviates from some expectation or standard)
OBJ	(to be) that which is looked over	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RCT- ‘OBSERVE / SCRUTINIZE / RECONNAISSANCE’		
BSC	STEM 1: (to be) an act of observation; to observe (to watch something closely for the purpose of determining what it does/how it behaves/what happens to it, etc.	STEM 2: (to be) an act of scrutiny; to scrutinize STEM 3: (to be) an act of reconnaissance; to reconnoiter
CTE	(to be) a state of being under observation	
CSV	(to be) the physical act/process of observing; to make/conduct an act/process of observation	
OBJ	(to be) the object/entity being observed	

-XP- ‘SUBSTITUTION / TRANSPOSITION / REPLACEMENT’		
BSC	STEM 1: (to be) an act of substitution (= having one entity take the place of another)	STEM 2: (to be) an act of transposition/ interchange (= switching places)
CTE	(to be) the entity which is replaced/discarded/removed by an act of substitution	
CSV	(to be) the physical (trans-)action of substitution; to physically act to substitute one entity for another	STEM 3: (to be) an act of supplanting/replacement/change-out (= refresh/renew)
OBJ	(to be) the entity which is substituted for or takes the place/role of another	

-ČTL- ‘TRANSPORT STOP / STATION / HARBOR’		
BSC	STEM 1: (to be) a stop on a transport route; to make a stop at (i.e., where one embarks/disembarks from a means of local transport)	STEM 2: (to be) transport station (i.e., centralized one goes to purchase tickets and embark/disembark from a form of local transport) STEM 3: (to be) harbor, place of anchorage
CTE	(to be) state of embarkation/disembarkation on local transport line	
CSV	(to be) a physical act of embarking/boarding or disembarking/getting out or off of a form of local transport	
OBJ	(to be) a particular stop on a transport route/line	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RČTL- ‘AIRPORT / SEAPORT / TRANSPORTATION TERMINAL OR HUB’	
Stem1. (to be) a location served by a commercial sea line or airline	
Stem 2. (to be) a transport terminal	
Stem 3. (to be) a port (e.g., airport, seaport, heliport, etc.) or transportation hub	

-ČL- ‘PREPARATION / PRELIMINARY MEASURE / READINESS’		
BSC	STEM 1: (to be) a state/act of preparation (for something); to prepare (for something) [i.e., to take steps or measures that make one (more) ready to deal with something] (CPT version = ‘state of readiness; be ready’)	STEM 2: (to be) a state/act of establishing preliminary measures necessary for something else to occur; to perform a preliminary step/task/measure, “lay the groundwork for”, “lay a foundation for” STEM 3: (to be) a state/act of preparing/readying something, putting something together, assembling, making something ready for use or consumption; to prepare/ready something for use (e.g., food, a tent, wood in a fireplace, a painter’s palette, a surgeon’s operating room, etc.)
CTE	(to be) state of desire to prepare [CPT version = preparedness/readiness]	
CSV	(to be) a physical act of preparation; to do something that prepares an entity for something	
OBJ	(to be) what one is preparing for	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RČL- ‘PRECAUTIONARY MEASURE / PRECAUTIONARY TRAINING / CONTINGENCY / BACK-UP’	
Stem 1: (to be) a state/act of having precaution; take precautionary measure	
Stem 2: (to be) a state/act of instruction/training in order to be prepared/ready for something; to instruct/train (a party to be able to perform some function or duty or skill in order to be prepared/ready for something)	
Stem 3: (to be) a state/act of having/creating a contingency or back-up measure; to have/create/use a contingency or back-up measure	

-ŇČL- ‘PROVISION / SUPPLYING / FURNISHING / EQUIPPING’		
BSC	STEM 1: (to be) a state/act of providing; to provide, offer provision [i.e., give something which one can make use of or consume] CPT version = provide	STEM 2: (to be) a state/act of supplying/replenishing/furnishing; to supply, to furnish with, to replenish STEM 3: (to be) a state/act of equipping, providing resources for the establishment or carrying out of something; to equip, provide resources/equipment for
CTE	(to be) state of lacking something that needs to be provided; to lack, to need	
CSV	(to be) a physical act of offering to provide; to make an offer to provide	
OBJ	(to be) what is being provided, what is being offered as a provision	

-CPH- ‘PRESERVATION / CONSERVATION’		
BSC	Stem 1: (to be) a state/act of saving/preserving something (from decaying or being damaged through neglect/misuse/mistreatment)	Stem 2: (to be) a state/act of saving/preserving something (from being lost or discarded); to save/preserve something (from being lost or discarded) Stem 3: (to be) a state/act of preserving/conserving something via a chemical or biological transformation (e.g., freezing, dehydration, pickling, embalming, curing, salting, etc.)
CTE	(to be) a state of being/having been saved/preserved (from decay or damage)	
CSV	(to be) a physical act of preserving/saving something (from decaying or being damaged)	
OBJ	(to be) what is being saved/preserved	

-CPR- ‘RESCUE / EXTRICATION / DELIVERANCE / SALVATION / LIBERATION / EMANCIPATION’		
BSC	Stem 1: (to be) a state/act of saving/rescuing a party/entity; to save/rescue a party/entity, to come to the rescue of a party/entity, to extricate a party/entity from an undesirable situation	Stem 2: (to be) a state/act of deliverance/salvation/redemption (i.e., finding a way to end the conditions which keep a party in a state an undesirable social, psychological, spiritual, or personally harmful state); to save/deliver/redeem Stem 3: (to be) a state/act of liberation/emancipation (i.e. putting an end to socio-political/economic conditions which have kept a party/entity in a state of being oppressed); to liberate, to emancipate
CTE	(to be) a state of being/having been saved/rescued (from a harmful or undesirable situation)	
CSV	(to be) a physical act of saving/rescuing; to physically save/rescue a party/entity; to save/rescue someone/something from danger/harm	
OBJ	(to be) the party/entity being saved/rescued	

-CX- ‘MANNER / WAY / GUISE / FORM / BEHAVIOR / COMPORT’		
BSC	STEM 1: (to be) the manner/way in which something/someone acts/operates/manifests itself	STEM 2: (to be) the guise/form taken by a party/entity STEM 3: (to be) one’s behavior/conduct/comport
CTE	(to be) the inner/intrinsic/inherent motivation/drive/instructions, etc. which control one’s manner/way	
CSV	(to be) the outward physical manifestation or discernible praxes of one’s manner/way	
OBJ	(to be) that which has or manifests a particular manner/way	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RCX- ‘METHOD / PROCEDURE / POLICY / PLAN / STRATEGY’		
BSC	STEM 1: (to be) the method (i.e., proscribed/conventionalized procedure) by which a party/entity performs/accomplishes something	STEM 2: (to be) the practice/policy used by a party/entity in operating/manifesting itself STEM 3: (to be) a plan (i.e., a series of inter-dependent procedural steps toward accomplishing something)
CTE	(to be) the state of there being a methodical process	
CSV	(to be) a physical step/act in a method(ical procedure); to implement/engage in a step/act that is part of a method(ical procedure)	
OBJ	(to be) that which a method(ical procedure) is intended to accomplish	

Morphological Derivations: technique, process, procedure, regimen, strategy

-ŘK- ‘ALIENABLE POSSESSION / OWNERSHIP’		
BSC	STEM 1: (to be) an act of physical possession; to have/possess (temporary/circumstantial and alienable – e.g., a book in one’s hand)	STEM 2: (to be) an act of possession; have/possess/own; possession, piece of property (alienable but quasi-permanent by law/right/permission and in one’s immediate possession-, e.g., a library book which I’ve checked out) STEM 3: (to be) an act of possession; have/possess/own; possession, piece of property (alienable but quasi-permanent by law/right, not in one’s immediate possession -e.g., a book I bought/own but am not currently holding/reading)
CTE	(to be) the state of alienable possession; possessing something potentially alienable	
CSV	(to be) the physical means by which a state of alienable possession is manifested, e.g., by holding or carrying, by a verbal or written statement, via containment within one’s pocket, etc.)	
OBJ	(to be) the object/entity possessed (temporary/circumstantial and alienable)	

NOTE: the old INFORMAL and FORMAL stems previously associated with this root have been newly distributed between the above root and the following root:

-ŘKW- ‘INALIENABLE POSSESSION / OWNERSHIP’		
BSC	STEM 1: (to be) an act of physical possession; to have/possess (circumstantial and affective + (quasi-) inalienable, either permanent or temporary – e.g., a medical condition, an office at work I occupy, a seat at a cinema showing)	STEM 2: (to be) an act of possession/ownership; have/possess/own; possession, piece of property (quasi-permanent and legally inalienable except through formal/legal separation process – e.g., a house I own, a pet dog I registered)
CTE	(to be) the state of inalienable possession; possessing something that is potentially inalienable	
CSV	(to be) the physical means by which a state of inalienable possession is manifested, e.g., by biological/genetic association, by physical connection, by law, etc.)	STEM 3: (to be) an act of physical possession; to have/possess (genetic, intrinsic and inalienable, but not considered property – e.g., a sibling, a child, a limb, a memory)
OBJ	(to be) the object/entity inalienably possessed	

-ŽV- ‘GOOD / BENEFICIAL / ADVANTAGEOUS’		
BSC	STEM 1: (to be) something good (= materially beneficial to the context at hand) [both the act/event/situation and its beneficent quality]	STEM 2: (to be) something good [= morally right; beneficial in a metaphysical sense]
CTE	(to be) the essential state/quality of material goodness/beneficence manifested in a particular act/state/event/situation/entity, etc.	
CSV	(to be) a particular act/state/event/situation/entity, etc. identified as being good; to do something materially/tangibly good/beneficial	STEM 3: (to be) something good [= advantageous or effective]
OBJ	(to be) the particular element(s) (e.g., word(s), action(s), emanation(s), appearance, product, presence of something, lack of something, etc.) which makes something describable/identifiable as being materially/tangibly “good/beneficial”	

-LŽV- ‘FAIRNESS / EQUITABILITY / IMPARTIALITY / REASONABLENESS’		
BSC	STEM 1: (to be) something fair/equitable/impartial/reasonable	STEM 2: (to be) something just [= legally right; morally proper in a metaphysical sense]
CTE	(to be) the essential state/quality of fairness/equity/impartiality/reasonableness manifested in a particular act/state/event/situation/entity, etc.	
CSV	(to be) a particular act/state/event/situation/entity, etc. identified as being fair/equitable/impartial/reasonable; to do something fairly/equitably/impartially/reasonably	STEM 3: (to be) something unbiased, without prejudice
OBJ	(to be) the particular element(s) (e.g., word(s), action(s), emanation(s), appearance, product, presence of something, lack of something, etc.) which makes something describable/identifiable as being fair/equitable	

-TM- ‘POWER / EFFORT / OPERATION / FUNCTIONING’		
BSC	STEM 1: (to be) an instance/act of energy expenditure in a particular form; to manifest a display/use of energy in a particular form/manner; exert energy in a particular form/manner	STEM 2: (to be) an instance/manifestation of action or effort; to act, to perform, to do, make an effort (i.e., energy expenditure focused on a specific task)
CTE	(to be) the process of energy being expended (i.e., conversion of source fuel into power)	
CSV	(to be) a physical manifestation of energy expenditure (i.e., what action(s) an entity actually does that requires energy to do)	STEM 3: (to be) an act/state of an entity operating or functioning or “working” (i.e., the proper or expected functioning of a device or machine or process as in “ <i>Does the washing machine work?</i> ”); to operate, to function
OBJ	(to be) that to/for which energy is being used/exerted	

NOTE: the old INFORMAL and FORMAL stems associated with this root have been newly distributed between the above root and the following new root:

-RTM- ‘WORK / LABOR / JOB’		
BSC	STEM 1: (to be) an instance of work/labor; to work, to labor (i.e., organized/planned effort over time associated with a commercial or community endeavor)	STEM 2: (to be) an act of producing a tangible product via labor/effort
CTE	(to be) the process of energy/effort expended via labor	
CSV	(to be) a physical manifestation of labor/working; to physically do work/labor; to labor	STEM 3: (to be) a job task; employment-related task; do one’s job
OBJ	(to be) that which one works on or attempts to accomplish/build/make/change via one’s labor	

-TV- ‘APPEAR / MANIFEST / SHOW / EXHIBIT / DISPLAY’		
BSC	STEM 1: (to be) an appearance/manifestation/showing of something; to appear, manifest, show something (= be/make something observable to the senses of others; manifestation, appearance)	STEM 2: (to be) an act/state of exhibiting or displaying something; to exhibit something, to display something
CTE	(to be) the state of appearing/manifesting/showing; being observable	
CSV	(to be) the method/manner of making something appear/manifest/show	STEM 3: (to be) an act/state of showing off or flaunting/featuring something; to show off something, to flaunt or feature something
OBJ	(to be) that which appears/manifests or is shown	

Derivations: demonstrate, flourish, spectacle, parade, promenade, procession

NOTE: the old INFORMAL and FORMAL stems previously associated with this root have been newly distributed between the above root and the following new root:

-RTV- ‘SUMMONING OF ATTENTION / EXPOSURE / SHOWING / ANNOUNCING / ADVERTISING’		
BSC	STEM 1: (to be) an instance of bringing/calling/drawing attention to something; to bring/call/draw attention to something (= make others aware of the presence/appearance of something)	STEM 2: (to be) an instance/act of exposing something; to expose something STEM 3: (to be) an act/instance of announcing/advertising something; to announce or advertise something
CTE	(to be) a state of attention on something	
CSV	(to be) the physical act/process of summoning other’s attention to something; to summon the attention of	
OBJ	(to be) what one’s attention is drawn to	

-TP- ‘FACULTY / ATTRIBUTE / QUALITY / TRAIT / PROPERTY / CHARACTERISTIC / FEATURE / ATTRIBUTE’		
BSC	Stem 1: (to be) a state/act of having a particular faculty/capacity/ability; to have a particular faculty/capacity for something or ability to do something	Stem 2: (to be) a state/act of having a particular quality, trait, or property (i.e., an inherent and necessary characteristic that is intrinsic to one’s identity), e.g., mass, spherical shape, being alive, being toxic to certain life-forms, being gelatinous, being a vertebrate, etc.) Stem 3: (to be) a state/act of having a particular superficial feature, attribute, or characteristic (out of multiple possibilities, e.g., blue-eyed, having freckles, being fat, having stripes, etc.)
CTE	(to be) a faculty as an existential state	
CSV	(to be) a physical act that demonstrates/manifests a particular faculty	
OBJ	(to be) the particular faculty/ability itself	

-ÇD- ‘IMPRESSION / APPEARANCE / “LOOK” / SEMBLANCE / ASPECT / GUISE’		
BSC	STEM 1: (to be) an impression; to give off an impression (i.e., to incite a reaction or belief in another based upon one’s appearance/behavior/words/actions, etc., whether intentionally or not)	STEM 2: (to be) the appearance or “look” or semblance or aspect of an entity [i.e., the outward subjective impression upon on observer given off by one’s visual dress, physique, manner]; to appear, to look [= have the appearance/look/semblance/aspect of] STEM 3: (to be) the guise of an entity; to be in the guise of, have the guise of
CTE	(to be) an impression experienced/received by observing/noticing something; to receive/experience and impression given off by some entity/party	
CSV	(to be) an act/state of giving off/creating an impression to another	
OBJ	(to be) the entity/person/party who gives off an impression or whom one has an impression about	

-GT- OVERSIGHT / RESPONSIBILITY'		
BSC	Stem 1: (to be) a state/act/process of oversight of something/someone; to oversee something/someone (i.e., be aware and mindful of how something or someone functions/behaves/transpires)	Stem 2: (to be) a state/act of being responsible for something/someone; to look after, to be responsible for (i.e., oversight which carries negative consequences if not performed adequately) Stem 3: (to be) an act of oversight/governance taken in order to maintain one's responsibility for
CTE	(to be) a state of there being oversight	
CSV	(to be) a rule/procedure/custom/praxis associated with the process of overseeing; to carry out a rule/procedure/custom/praxis associated with oversight	
OBJ	(to be) a party who is subject to oversight	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-GTR- 'SUPERVISION / REGULATION'		
BSC	STEM 1: (to be) a state/act/process of being in charge of something; to be in charge, to take charge of something/someone	STEM 2: (to be) a state/act/process of supervision; to supervise, have supervisory responsibility for something/someone STEM 3: (to be) a state/act/process of regulation; to regulate something (i.e., exercise the authority to make rules for the oversight/functioning of something)
CTE	(to be) a state of there being someone in charge	
CSV	(to be) a rule/procedure/custom/praxis associated with being in charge; to do/perform an act which demonstrates one being in charge	
OBJ	(to be) what one is in charge of	

-TLP- 'PERSONAL RESPONSIBILITY / BLAME / LIABILITY'		
BSC	STEM 1: (to be) a state/act/process of having personal responsibility for or regarding something or someone	STEM 2: (to be) a state/act/process of blame; to be [held] to blame for something, to (be) blame(d) for something STEM 3: (to be) a state/act/process of liability; to be [held] liable for something
CTE	(to be) a state of being [held] personally responsible	
CSV	(to be) an act/behavior/practice associated with being personally responsible; to do/perform an act which demonstrates one is (being) personally responsible	
OBJ	(to be) what one is [held] personally responsible for	

-TPH- ‘OPENNESS / TRANSPARENCY / STRAIGHTFORWARDNESS / ACCOUNTABILITY’		
BSC	STEM 1: (to be) a state/act/process of being open/transparent to/with others	STEM 2: (to be) a state/act of straightforwardness, being straight and to-the-point with others; to be/speak straightforward(ly); to be straight with others, to be direct and to-the-point
CTE	(to be) a state of openness/transparency	
CSV	(to be) an act/behavior/practice associated with being open/transparent; to do/perform an act which demonstrates one is (being) open/transparent	STEM 3: (to be) a state/act/process of accountability; to be (potentially) accountable for something [i.e., responsibility for addressing/fixing/dealing with/explaining/making good on something if something goes wrong]
OBJ	(to be) what one is open/transparent about	

-TKH- ‘RULE / PRECEPT / MAXIM / AXIOM / EDICT’		
BSC	STEM 1: (to be) an act/instance/process of using/applying/establishing/enforcing/`being subject to a rule or precept	STEM 2: (to be) a state/act/process of applying/establishing/being subject to a maxim or axiom (i.e., a foundational/underlying presupposition/assumption as to a state of affairs that constitutes an unquestioned rule or fundamental principle for further decisions)
CTE	(to be) a state of there being a rule/precept in place that governs a situation or one’s behavior	
CSV	(to be) an act/instance of applying/enforcing/establishing/dictating a rule or precept	STEM 3: (to be) a state/act/instance of dictating/establishing/ announcing an edict or ruling [i.e., a declaration by a recognized authority that establishes/enforces a legally-binding rule/law/decision/state of affairs]
OBJ	(to be) a particular rule/precept	

-MČ- ‘POWER / EFFICACY / POTENCY’		
BSC	Stem 1: (to be) a state/act of power (i.e., puissant force derived from energy utilization/expenditure); to (em)power, to energize, galvanize	Stem 2: (to be) a state/act of efficacy; be efficacious, be effectual (i.e., ability/capacity to get things done effectively) Stem 3: (to be) state/act of potency; be/make potent/powerful
CTE	(to be) a state of having physical power/puissance/might/strength; be powerful/puissant/mighty (in terms of strength/degree of forceful utilization of energy)	
CSV	(to be) an act of physical power; to act in a manner demonstrating/manifesting physical power	
OBJ	(to be) that which is (em)powered	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RMC- ‘FORCE / EFFECTIVENESS / PRODUCTIVITY’		
BSC	STEM 1: (to be) a state/act of force; use force, act forcefully/with force (i.e., delineated/directed application/utilization of energy)	STEM 2: (to be) a state of effectiveness; be/make effective STEM 3: (to be) a state/act of productivity; be/make productive
CTE	(to be) a state of being under force, subjected to force	
CSV	(to be) an act of using/applying force; to use/apply force	
OBJ	(to be) the force one uses/applies	

-KSM- GEOPOLITICAL COUNTRY/LAND/ TERRITORY/REGION		
BSC	Stem 1: (to be) a geopolitical country/land/territory, i.e., the tangible area of land, bodies of water, and airspace subject to control/rule by a governmental entity, often associated or (quasi-)contiguous with a specific ethno-cultural society of people.	Stem 2: (to be) a state or province or subdivision of Stem 1, subject to some degree of regional autonomous governmental administration Stem 3: (to be) a geopolitical or cultural region delineated by a distinct culture, ethnicity, language, history, etc. which does not necessarily align with or have its own separate sovereignty or quasi-autonomous governmental administration.
CTE	(to be) the state of being a geopolitical country/land/territory	
CSV	(to be) the particular location and/or geographic/terrestrial features/terrain associated with a geopolitical country/land/territory	
OBJ	(to be) a particular (i.e., named) geopolitical country/land/territory	

-RC- COINCIDENCE / SIMULTANEITY		
(NOTE: The stems of this root, given that they imply a second, associated, or corollary event/act/state, are generally used with an accompanying clause marked by the COMPARATIVE case-frame)		
BSC	Stem 1: (to be) a state/instance of coinciding, a coincidence; to coincide [not necessarily simultaneous but auspiciously timed in relation to another event]	Stem 2: (to be) a state/instance of simultaneity; to occur simultaneously without knowledge/awareness of the other state/event occurring at the same time Stem 3: (to be) a state/instance of synchronicity (i.e., a coincidence so unlikely but nevertheless having significant personal impact on a situation, that one can only marvel and/or be suspicious of its occurrence)
CTE	(to be) a state of coincidence	
CSV	(to be) an act which constitutes a coincidence; to do something that creates/constitutes a coincidence (with something else)	
OBJ	(to be) the other “half” of a coincidence, the other coinciding event/entity or circumstance	

-ZK- ‘STRANGENESS / ODDITY / WEIRDNESS’		
BSC	Stem 1: (to be) something strange/odd/weird [i.e., having the effect of being unfamiliar, unknown, not previously expected or encountered, and which defies immediate explanation and inspires curiosity]	Stem 2: (to be) something strange/odd/weird/disconcerting [i.e., unfamiliar and inexplicable with the effect of inspiring caution, trepidation, apprehension due to being seen as a potential threat] Stem 3: (to be) something scary/creepy/frightening [i.e., unfamiliar and inexplicable with the effect of inspiring fear at a perceived threat]
CTE	(to be) strange/odd/weird as a characteristic	
CSV	(to be) a particular behavior or physical aspect which characterizes something or someone as strange/odd/weird	
OBJ	(to be) the sense/feeling that something is strange/odd/weird	

-SX- ‘COMPLAINT / GRIEVANCE’		
BSC	Stem 1: (be) a act/instance of complaining, (be) a complaint; to complain, to make a complaint	Stem 2: (be) a grievance (requiring compensation/accommodation/recompense), i.e., a formal or legalistic complaint Stem 3: (be) a criminal complaint (i.e., a charge/allegation of a criminal offense perpetrated against a party, requiring justice)
CTE	(be) the content of a complaint, i.e., what one is complaining about	
CSV	(be) the physical act (verbal, written, processual, etc.) of making a complaint (irrespective of the content of the complaint)	
OBJ	(be) the party to whom one complains; the party from whom relief/resolution of the complaint is requested	

-ÇPL- ‘SECRETION / RESIN / SAP’		
BSC	Stem 1: (be) a act/instance of a bodily secretion	Stem 2: (be) an act/instance of sap secretion from a tree or sap-producing plant Stem 3: (be) an act/instance of secretion of a resin
CTE	(be (in)) the state of having secreted	
CSV	(be) the physical process of secreting	
OBJ	(be) an amount of a secreted substance	

-PP- ‘PICK UP / TAKE (IN) / AMASSING / ACQUISITION / PROCUREMENT’		
BSC	Stem 1: (to be) an act/instance of taking or picking something up for the purpose of (temporarily/circumstantially) keeping/guarding/using it or conveying it elsewhere; to pick something up, take something (in), to obtain something	Stem 2: (to be) an act/process of amassing/piling up, adding to, growing in number/amount; to amass, to pile up, to add to, to grow in number/amount Stem 3: (to be) an act/instance of procurement or acquiring; to procure/acquire something
CTE	(to be) a state of (temporary/circumstantial) possession as a result of being picked up or taken in	
CSV	(to be) a physical act of picking up or taking in; to pick up, to take in	
OBJ	(to be) that which is picked up or taken (in) or obtained	

NOTE: the old INFORMAL and FORMAL stems previously associated with this root have been newly distributed between the above root and the following new root:

-RPP- ‘GATHERING / COLLECTION / ACCUMULATION’		
BSC	STEM 1: (to be) an instance of gathering something (up/in) [i.e., bringing separate entities together to form a grouping thereof]	STEM 2: (to be) an act/process of collection; to collect STEM 3: (to be) an act/process of accumulation/accretion
CTE	(to be) an act/instance of taking (temporary) possession, oversight or guardianship of something/someone	
CSV	(to be) a physical act of gathering (up/in); to gather (up/in)	
OBJ	(to be) that which is gathered (up/in)	

-LPP- ‘ACCRUAL / SAVING UP / HOARDING’		
BSC	Stem 1: (to be) a state/act/process of accrual of something; to accrue something [i.e., a periodic or constant obtaining and holding onto (a supply of) something so that its amount/number continues to increase]	Stem 2: (to be) a state/act/process of saving money or other financial/monetary resources; to accrue (monetary) savings, to save up Stem 3: (to be) a state/act/process of hoarding; to hoard [i.e., obsessive and excessive accrual without a rational basis]
CTE	(to be) a state of there being something that has (been) accrued	
CSV	(to be) a physical act of accruing; to take action to accrue something	
OBJ	(to be) what one accrues	

-LÇM- ‘SIGNATURE / PERSONAL AUTHORIZATION / PERSONAL AUTHENTICATION’		
BSC	Stem 1: (to be) a state/act of personally authorization or authentication via signature; to personally authorize something by signing one’s written signature	Stem 2: (to be) a state/act personal authorization by means other than signature, e.g., sworn oath, voice command, thumbprint, retinal scan, etc. Stem 3: (to be) a state/act of personal authentication (i.e., a process to ensure one’s identity), e.g., signature, fingerprints, voiceprint, DNA test, retinal scan, visual identification by others, etc.
CTE	(to be) a state of personal authorization or authentication via signature	
CSV	(to be) a physical act of signing one’s written signature; to sign one’s written signature	
OBJ	(to be) what one signs (e.g., a contract, a personal check, a document, etc.)	

-ŇF- ‘PROBLEM / MYSTERY’		
BSC	Stem 1: (to be) a problem/issue causing inconvenience/impediment; have an issue/problem with	Stem 2: (to be) a mystery or puzzling situation with no readily apparent explanation/solution
CTE	(to be) the issue/problem requiring resolution caused/created by an entity/party or situation	
CSV	(to be) the entity/party or situation itself which has caused/created an issue/problem	
OBJ	(to be) the entity/party affected by or experiencing /perceiving the issue/problem caused/created by another entity/party/situation	Stem 3: (to be) something irksome, i.e., an entity or situation that causes annoyance and gives rise to the need/desire to resolve/eliminate the annoyance

The following root has the same Specification pattern as the root **-ŇF-** above:

-RŇF- ‘TROUBLE / MISFORTUNE / DISASTER / CALAMITY’	
Stem 1: (to be) a state of being in trouble (i.e., a situation which places/has placed a party in adverse circumstances, e.g., physical danger, legal difficulties, under threat of losing one’s livelihood/possessions/reputation/loved ones, etc.); to be in trouble, to be threatened by adverse circumstances, to be facing an adverse situation	
Stem 2: (to be) a state of suffering misfortune; to suffer from misfortune, to be in unfortunate circumstances	
Stem 3: (to be) a state of suffering disastrous/calamitous circumstances; to be facing a disaster/calamity, to suffer a disaster/calamity	

-ŠY- ‘RAISE / FOSTER / NURTURE / CULTIVATE’		
BSC	Stem 1: (to be) an act of raising/fostering/being guardian to someone; to raise, foster, function as guardian over	Stem 2: (to be) an act of nurturing; to nurture (i.e., provide an environment and resources for an entity’s growth and well-being) Stem 3: (to be) an act of cultivation; to cultivate, to garden
CTE	(to be) the state of being fostered/raised by someone	
CSV	(to be) a physical act of raising/fostering	
OBJ	(to be) the person/entity raised/fostered	

-ÇTR- ‘PUZZLE / RIDDLE’		
BSC	Stem 1: (to be) a puzzle (i.e., a recreational game/activity requiring one to resolve/figure out/piece together a solution)	Stem 2: (to be) a riddle (i.e., a word-based recreational puzzle usually designed to be witty on its initial face) Stem 3: (to be) charade (i.e., a recreational puzzle acted out in real-time)
CTE	(to be) the specific content/nature of a puzzle	
CSV	(to be) the form/type/structure of a puzzle	
OBJ	(to be) the party who undertakes to solve a puzzle	

Derivation: ‘maze’ = Stem 1 above plus the Type-2 incorporated stem for ‘pathway/trail’

-ZJ- ‘CONCEALMENT / SECRECY’		
BSC	Stem 1: (to be) a state/act of concealing/hiding something, act of concealment; to conceal, to hide something [i.e., by being placed somewhere so as not to be found/discovered/encountered/accessible]	Stem 2: (to be) a state/act of concealing/hiding/masking something; act of concealment; to conceal/hide/mask [i.e., by masking, covering up, disguising, enclosing so as not to be directly observed, etc.] Stem 3: (to be) a state/act of secrecy; to keep something secret [OBJ Specification = ‘a secret’]
CTE	(to be) a state of concealment/being hidden	
CSV	(to be) a physical act of concealing/hiding; to do something to conceal/hide an entity	
OBJ	(to be) what is (to be) concealed	

-FH- ‘FIND / DISCOVER / ENCOUNTER / MEET’		
BSC	Stem 1: (to be) a state/act of finding/discovering something (by chance)	Stem 2: (to be) a state/act of encountering, coming upon/across something; to encounter or come across/upon something/someone (by chance) Stem 3: (to be) a state/act of meeting someone (i.e., mutual encounter by chance)
CTE	(to be) a state of discovery (i.e., the state one is in upon having discovered something.	
CSV	(to be) a physical act of finding/discovering something by chance	
OBJ	(to be) that which is found/discovered by chance	

NOTE: For a find/discovery made through a directed process of inquiry/investigation, see the root **-ND-**.

-ML- ‘OBSCURITY / AMBIGUITY / STEALTH / SURREPTITIOUSNESS’		
BSC	Stem 1: (to be) a state/act of obscuring; render something obscure or unclear [i.e., so that it is not clear or easily discernible as to what it is exactly]	Stem 2: (to be) a state/act of ambiguity; to render something ambiguous, to obfuscate Stem 3: (to be) a state/act of stealth/surreptitiousness; to act stealthily/surreptitiously, be stealthful/surreptitious (i.e., so as to render something difficult to observe or notice)
CTE	(to be) a state of obscurity/being obscure	
CSV	(to be) a physical act of obscuring; to do something that makes an entity obscure or unclear	
OBJ	(to be) what is (made) obscure/unclear	

-ZŘ- ‘SLOT / GROOVE / FURROW’		
BSC	Stem 1: (to be) a linear indentation/groove/channel; to make a linear indentation/groove/channel	Stem 2: (to be) a slot; to make a slot (i.e., a linear opening into which something can be placed/fitted; does NOT mean ‘slot’ in a classificatory/schematic sense as in “ <i>Can we be slotted in between those appointments?</i> ” or “ <i>The morpho-phonology of the Ithkuil formative has a slot structure.</i> ”) Stem 3: (to be) a furrow
CTE	(to be) the state of being grooved, having a linear indentation/channel/groove	
CSV	(to be) a physical act of making/fashioning a linear indentation/groove/channel	
OBJ	(to be) an implement for use with or placement into a linear indentation/groove/channel	

-NTR- ‘USEFULNESS / SERVICE / ASSISTIVENESS’		
BSC	Stem 1: (to be) a state of being potentially useful or an act of usefulness to one; to be useful to one, to be of use to one, be utilitative [i.e., utilizing an entity that helps one to do something]	Stem 2: (to be) a state of potentially serving a function/purpose to one; to be of potential service, to potentially serve a function, be serviceable [i.e., available to perform a function/operation/act which is helpful/assistive/useful to another] Stem 3: (to be) a state/act of being of potential assistance/assistiveness to one or in a situation (e.g., an assistive device, an assistive hand-railing, an assistive feature in an automobile, etc.)
CTE	(to be) a state of usefulness	
CSV	(to be) a physical act of using something that is useful	
OBJ	(to be) that which is useful	

-RÇ- ‘AESTHETIC APPEAL / PRETTINESS / LOVELINESS / BEAUTY’		
BSC	Stem 1: (to be) a state/act of perceiving/experiencing something aesthetically appealing; to perceive/experience something aesthetically appealing; to like something aesthetically-speaking	Stem 2: (to be) a state/act of perceiving/experiencing something pretty/fair/lovely; to perceive/experience something pretty/fair/lovely Stem 3: (to be) a state/act of perceiving/experiencing something beautiful; to perceive/experience something beautiful
CTE	(to be) a state of aesthetic appeal, a state of something being aesthetically appealing	
CSV	(to be) an act of perceiving/contemplating/experiencing something aesthetically appealing; to like something aesthetically-speaking	
OBJ	(to be) something aesthetically appealing	

-İN- ‘VALUE / EXPEDIENCE / SUITABILITY’		
BSC	Stem 1: (to be) a state of something being potentially worthwhile or of worth/value, something worth pursuing / to be something potentially worthwhile; to pursue something potentially worthwhile or of worth/value	Stem 2: (to be) a state of something being expedient or opportune; to be/do something expedient or opportune Stem 3: (to be) a state of something being fitting, apropos or suitable; to be/do something fitting, apropos or suitable
CTE	(to be) a state of having value/being worthwhile/being valuable	
CSV	(to be) a physical act of doing/pursuing something worthwhile/of value	
OBJ	(to be) something worthwhile; (be) something of value; (be) something valuable	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RİN- ‘ADVANTAGE / OPPORTUNITY / CONVENIENCE’		
BSC	STEM 1: (to be) a state of something being advantageous/favorable; to be advantageous, be to one’s advantage, to be in favorable or advantageous circumstances	STEM 2: (to be) a state of something being an opportunity / a chance to experience or do something normally unavailable; to pursue an opportunity, take advantage of an opportunity STEM 3: (to be) a state of something being a convenience / something convenient; to be convenient / do something convenient
CTE	(to be) a state of being advantageous/favorable	
CSV	(to be) a physical act of pursuing an advantage; to pursue an advantage	
OBJ	(to be) something advantageous/favorable	

-MÇ- ‘WELL-FORMEDNESS / AESTHETIC APPEAL / STYLISHNESS / PERFECTION / SPLENDOR’		
BSC	Stem 1: (to be) a state of being well-formed/shapely/well-proportioned; to be/make well-formed/shapely/well-proportioned	Stem 2: (to be) a state of something being aesthetically/sensually pleasing or satisfying (e.g., a fine meal, a glass of wine, a thrill ride, a sexual experience, etc.); to experience a sense of aesthetic/sensual satisfaction/pleasure from something
CTE	(to be) a state of shapeliness/well-formedness	
CSV	(to be) an act of making something well-formed/shapely/well-proportioned	
OBJ	(to be) that which is shapely/well-formed/well-proportioned	Stem 3: (to be) a state of something being stylish/fine (as in a “finely”-made, “finely”-crafted); to be/make something stylish/fine, etc.

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-MÇK- ‘PERFECTION / OPTIMALITY / EXQUISITENESS / SUBLIMITY / SPLENDIDNESS’		
BSC	STEM 1: (to be) a state of something being perfect/optimal; be/make perfect/optimal (i.e., cannot possibly be better)	STEM 2: (to be) a state of something being exquisite/superb/sublime; to be/make something exquisite/superb/sublime STEM 3: (to be) a state of something being magnificent/splendid; be/make something magnificent/splendid
CTE	(to be) a state of perfection/optimality	
CSV	(to be) an act of making something perfect/optimal; to perfect, to optimize	
OBJ	(to be) that which is perfect/optimal	

-KÇT- ‘DECORATION / FANCINESS / ORNATENESS / ORNAMENTATION’		
BSC	STEM 1: (to be) a state of something being decorative; be/make decorative, to decorate	STEM 2: (to be) a state of something being fancy/showy; to be/make something fancy/showy STEM 3: (to be) a state of something being ornate/ornamental; be/make something ornate/ornamental
CTE	(to be) a state of decorativeness/decoration; to have a decorative look	
CSV	(to be) an act of making something look decorative; to do something that decorates	
OBJ	(to be) that which is decorative-looking	

-ŘŘ- ‘INTENSIFICATION / AMELIORATION / IMPROVEMENT / AGGRAVATION / WORSENING’		
BSC	Stem 1: (to be) a state/act of intensifying“heightening”; to intensify/“heighten” (i.e., make the effect of something stronger or more effective/impactful)	Stem 2: (to be) a state/act ameliorating/bettering/enhancing/improving; to ameliorate/better/improve (i.e., cause a situation or the condition/state of something to improve or become more desirable/optimal) Stem 3: (to be) a state/act of aggravation/worsening; to aggravate/worsen
CTE	(to be) a state of intensification	
CSV	(to be) an act of intensifying; to do something that causes intensification	
OBJ	(to be) that which is intensified	

-TĽT- ‘ADJUSTMENT / REPAIR / MENDING / RESTORATION / CORRECTION’		
BSC	STEM 1: (to be) an act/instance/process of adjustment; to adjust [i.e., make a minor change to the state/condition/shape/appearance/workings of something in order to change its function/efficiency/appearance/usability]	STEM 2: (to be) an act/instance/process of repairing/fixing/mending/restoring; to repair/fix/mend/restore [i.e., bring something in a broken/damaged/worn state back to a functioning operative/usable/presentable state] STEM 3: (to be) an act/instance/process of correction, rendering something that is in an incorrect/improper/inaccurate state into a correct/proper/accurate state
CTE	(to be) a state of adjustment/being adjusted/having been adjusted	
CSV	(to be) a physical act of adjustment/adjusting; to perform a physical act of adjustment	
OBJ	(to be) the adjustment one makes; the specific change to an entity made during an adjustment	

-TĴ- ‘EMPHASIS / HIGHLIGHT / UNDERSCORE / IMPRESS UPON / RAVE ABOUT’		
BSC	Stem 1: (to be) a state/act of highlighting/bringing attention to; to highlight, to bring attention to, to focus upon	Stem 2: (to be) a state/act of emphasizing/underscoring/impressing upon others about; to emphasize, underscore, to impress upon others about (i.e., to make another particularly aware or focused on something/someone) Stem 3: (to be) a state/act of going on about/raving about, not being able to say enough about; to go on about, rave about, can’t say enough about, sing the praises of
CTE	(to be) a state of being highlighted, having attention upon oneself	
CSV	(to be) an act of highlighting/bringing attention to; to do something that highlights or brings attention to an entity/party	
OBJ	(to be) the party/entity/object highlighted	

-VŠ- ‘SUBTLETY / SLYNESS / SHREWDNESS / GUILLE / CRAFTINESS’		
BSC	Stem 1: (to be) a state/act of subtlety; be/act subtle(ly)	Stem 2: (to be) a state/act of slyness/shrewdness/cunning/artfulness; be/act sly(ly); shrewd(ly)/cunning(ly)/artful(ly) (i.e., accomplish one’s aims in a subtle/covert manner with the intention that others not realize/see/know exactly what one has done or how one has done it)
CTE	(to be) a state of subtlety	
CSV	(to be) an act of subtlety; to do something subtle(ly)	
OBJ	(to be) that which is subtle	Stem 3: (to be) state/act of guile/craftiness/scheming/underhandedness/sneakiness; to act with guile, be crafty/scheming/underhanded, act in a crafty/scheming/underhanded manner (i.e., same as Stem 2 above but with the additional connotation that one’s aims/goals are nefarious)

-VSK- ‘SURVEILLANCE / RECONNAISSANCE / UNDERCOVER OPERATION / ESPIONAGE’		
BSC	Stem 1: (to be) state/act/process of surveillance; to conduct surveillance [i.e., surreptitious monitoring/observation of something or someone]	Stem 2: (to be) an act/process of reconnaissance; to reconnoiter, conduct reconnaissance Stem 3: (to be) an act of undercover espionage; conduct undercover operation to learn secrets from a party, to spy, conduct espionage
CTE	(to be) a state of being secretly observed/monitored	
CSV	(to be) a physical act of secretly observing/monitoring; to physically observe or monitor as an act of surveillance	
OBJ	(to be) an observation made during surveillance; what is seen via surveillance	

-LČ- ‘GUESS / SPECULATION / SUPPOSITION / ASSUMPTION’		
BSC	Stem 1: (to be) a state/act of guessing, state/act of speculation; to guess, to speculate, to venture to say (i.e., conclusion reached in the absence of sufficient evidence)	Stem 2: (to be) a state/act of supposition; to suppose (i.e., to consider as a possibility or possible interpretation) Stem 3: (to be) a state/act of assuming/presuming (i.e., believing one’s interpretation or supposition to be correct in the absence of confirmatory evidence)
CTE	(to be) a state of speculation; ponder a situation as to how it might/should be interpreted or what conclusion one should come to about it	
CSV	(to be) an act of speculating, guessing; to make a guess	
OBJ	(to be) what on is guessing/speculating about	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-LČW- ‘CONJECTURE / POSTULATING / THEORY / HYPOTHESIS’		
BSC	STEM 1: (to be) a state/act of postulating/making a conjecture; to postulate, make a conjecture	STEM 2: (to be) a state/act of theorizing; to theorize, create a theorem STEM 3: (to be) a state/act of hypothesizing; to hypothesize
CTE	(to be) a state of postulating or formulating a conjecture	
CSV	(to be) an act of postulating/conjecturing; to make a conjecture; to make a postulate	
OBJ	(to be) a conjecture, a postulate, what one postulates/conjectures	

-ŠH- ‘IMPORTANCE / SIGNIFICANCE / PREVALENCE / CONSPICUOUSNESS / PROMINENCE’		
BSC	Stem 1: (to be) a state/act of importance/significance; to be/make important or significant	Stem 2: (to be) a state/act of prevailing/prevalence; to prevail upon, to make prevalent Stem 3: (to be) salience; to be/make salient/prominent/conspicuous/(pre-)eminent
CTE	(to be) a state of importance/significance	
CSV	(to be) an act of importance/significance; to do something important/significant	
OBJ	(to be) that which is important/significant	

-ŇČ- ‘INFLUENCE / PERSUASION / PREDOMINANCE’		
BSC	Stem 1: (to be) a state/act of influencing/influence; to be influential, to influence	Stem 2: (to be) a state/act of persuasion; to persuade, sway, cajole, talk someone into, convince Stem 3: (to be) a state of being preponderant/predominant, being a preponderance; to have/carry weight/predominance, to hold sway, to be/constitute a preponderance of evidence in favor of
CTE	(to be) a state of influence/being influential	
CSV	(to be) an act of influence; to do/say something that influences, do something influential	
OBJ	(to be) an influence	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RŇČ- ‘INCITING / INSTIGATION / ENCOURAGEMENT / ADVOCACY’		
BSC	STEM 1: (to be) a state/act of stimulation/rousing/inciting/instigating; to stimulate/rouse/incite/instigate	STEM 2: (to be) a state/act of encouragement; to encourage STEM 3: (to be) a state/act of advocacy; to advocate for
CTE	(to be) a state of being stimulated/roused/incited	
CSV	(to be) an act of stimulating/instigating/inciting; to do something that incites/stimulates/instigates	
OBJ	(to be) that which a party/entity is stimulated/incited to be/do	

-ČPL- ‘USE OF FORCE / COERCION / COMPULSION’		
BSC	STEM 1: (to be) a state/act of using the force of one’s will/personality/demeanor/power or social standing to make something happen; to force something to happen by means of one’s will/personality/demeanor/power or social standing, to make something happen by force of will, to make somebody do something by force of will	STEM 2: (to be) a state/act coercing/compulsion; to coerce/compel [i.e., making someone do something against their will by means of an implied threat] STEM 3: (to be) a state/act of using physical/brute force or physical manipulation/handling/attack against resistance to make something happen; to physically force/make something happen, to physically make/force somebody to do something against their will
CTE	(to be) one’s force of will/power/personality/demeanor/power or social standing as a (potential) means for making things happen	
CSV	(to be) an act of wielding/exercising one’s force of will/power/personality/demeanor/power or social standing to make something happen	
OBJ	(to be) what is made to happen by force of will/power/personality/demeanor/power or social standing	

-JR- ‘RIDE / DRIVE / TRANSPORT / PASSENGER’		
[NOTE: This root focuses on operation/conveyance/carrying of an entity on a mode of transportation, NOT on the physical passage/trajectory through spacetime; for this latter notion, use an appropriate root/stem from Sec. 9.1.		
BSC	Stem 1: (to be) a state/act of riding/drive; to ride/drive (i.e., to operate/control a mechanical device, machine, or animal as a means of conveyance/transportation, e.g., a bike, a horse, an automobile) [NOTE: this stem does not mean ‘ride’ where one is simply being conveyed without being the controller/operator, e.g., ride a bus]	Stem 2: (to be) a state/act of being a passenger conveyed/transported somewhere, riding; to ride (on) something (i.e., conveyance or transportation where one is NOT the one controlling/operating the device/machine/animal, e.g., ride a bus/train/escalator, etc.) Stem 3: (to be) a state/act of transportation via a means of transportation/conveyance; to transport (i.e., the conveying/carrying of an entity via a device or animal)
CTE	(to be) a state of riding/driving something (i.e., operating the means of conveyance/transportation)	
CSV	(to be) an act of driving/riding (i.e., operating/controlling) a means of personal conveyance/transportation; to perform the physical act(s) of riding/driving something (e.g., a horse, bike, automobile, skateboard, etc.)	
OBJ	(to be) the person being conveyed/transported, the transportee	

-PŠW- ‘STATION-KEEPING / PARKING / HOLDING AREA / WAITING AREA’		
BSC	STEM 1: (to be) a state/act of station-keeping, holding in place	STEM 2: (to be) a state/act of place-keeping something when not in use, storage-keeping something when not in use; to store something when not in use, to park (a vehicle) STEM 3: (to be) a state/act of temporarily holding or waiting in a holding area or waiting area; to temporarily hold/wait in a holding area/room/space or waiting area/room
CTE	(to be) a state of being held in place for station-keeping	
CSV	(to be) an act of holding something in place for station-keeping; to hold in place for station-keeping	
OBJ	(to be) where something is held in place for station-keeping	

-SC- ‘WASH / LAVE / BATHE / RINSE’		
BSC	Stem 1: (to be) a state/act of washing with water or liquid cleansing solution (i.e., to clean the surface of an entity by means of water or liquid cleansing solution)	Stem 2: (to be) a state/act of bathing; to bathe Stem 3: (to be) a state/act of rinsing/flushing/showering; to rinse/flush/shower (NOTE: by ‘shower’ is meant use of a controlled spray of water/cleansing fluid, not a rainshower or naturally occurring spray/pouring of water/liquid)
CTE	(to be) a state of being washed	
CSV	(to be) a physical act of washing (i.e., the physical motions/actions performed); to perform the physical motions/actions of washing	
OBJ	(to be) what is (being / to be) washed	

-MČT- ‘EXAMPLE / EXEMPLAR / PRECEDENT / ARCHETYPE’		
BSC	STEM 1: (be) a state/instance of being an example of something; to exemplify something	STEM 2: (be) a precedent; i.e., an entity or situation which establishes a to-be-expected pattern for other/subsequent occurrences or instances of the entity or situation STEM 3: (be) an archetype; the most prototypical/definitive/desirable example/pattern/design of an entity or idea
CTE	(be) a state of being seen/used as, or performing the function of being, an example; to be an example	
CSV	(be) a state/act/process of exemplification; the perform an act/process of exemplification; to make an example out of	
OBJ	(be) that which is considered an example or made to be an example; an exemplar	

This root is also used as the **ARCHETYPAL (ACH) Bias Affix**: *what (a) ...!; how . . .! ; Boy! Did (does) X ever ...*

-VLL- ‘IMPLICATION / INFERENCE / HINT / CONNOTATION / ALLUSION’		
BSC	STEM 1: (be) a (process of) implication and inference, i.e., a meaning(ful thought/idea) which logically or deductively follows or can be readily inferred from a preceding idea/situation/thought or evidence; to imply and thereby infer	Stem 2: (process of) connotation; to connote Stem 3: (process of) allusion; to allude (to)
CTE	(be) an inference; that which is inferred/deduced from an implication	
CSV	(be) a process of implying; offer/manifest evidence from which an inference can be made	
OBJ	(be) that which gives rise to, or is the basis for, an implication (and subsequent inference); a hint, a “tip”	

This root is also used as the **IMPLICATIVE (IPL) Bias affix:** = ‘*of course,*’ ‘*after all,*’ or ‘*needless to say*’

-ÇÇK- ‘MAXIMIZATION / OPTIMALITY / SUPREMACY’		
BSC	Stem 1: (be at) the maximum point/stage/degree/state; to maximize	Stem 2: (be at) the optimal point/stage/degree/condition/state Stem 3: (be at) the supreme/utmost/”highest”/foremost point/stage/degree/state
CTE	(be) a state of maximality	
CSV	(be) a process/act of maximizing	
OBJ	(be) the entity which in a maximal state	

This root is also used as the **OPTIMAL (OPT) Bias affix:** = prolonged ‘so’ or ‘totally’ as in ‘*I so don’t care!*’ or ‘*That is totally what I wanted.*’

-LXL- ‘SCIENCE’		
BSC	Stem 1: (to be) an act/state of utilizing science; to do something scientifically (i.e., employ the analytical/rational/dispassionate methods/tools/resources of clinical science when analyzing, considering, planning, working on something)	Stem 2: (to be) an act/state that is based upon and/or consistent with the scientific method Stem 3: (to be) an act/state of relying upon science and/or scientific findings/conclusions when analyzing/judging a situation
CTE	(to be) a state of scientific rationality; for a state/act/situation to have science as its basis for existing/happening	
CSV	(to be) an act/state of doing something scientifically; to do something scientifically	
OBJ	(to be) what one does scientifically or the state/act that exists/takes place based upon science	

-LDR- ‘APPEAR / SHOW / DISPLAY / EXHIBIT’		
BSC	Stem 1: (to be) a showing, an appearance, i.e., be/make observable/discernible to others; to show, to manifest, to appear	Stem 2: (to be) an act/process of showing off, flaunting; to show off, to flaunt Stem 3: (to be) an act/process of displaying or exhibiting something; display, exhibition; to display, to exhibit
CTE	(to be) the state of appearing, being shown, being apparent	
CSV	(to be) the physical act/process of making something appear, or be shown, or be apparent	
OBJ	(to be) the object/entity/party being shown or appearing to others	

NOTE: the meanings of the old FORMAL and FORMAL stems previously associated with this root are now distributed between this and the following root:

-DRR- ‘CALLING ATTENTION TO / EXPOSURE / ADVERTISING’		
BSC	STEM 1: (to be) an act of bringing/calling attention to something, i.e., make others aware of the appearance/showing of something	STEM 2: (to be) an act/process of exposure, i.e., letting others observe/discern something they otherwise would not observe/discern STEM 3: (to be) an advertisement; to advertise
CTE	(to be) the state of being a focus of attention	
CSV	(to be) the physical act/process of calling attention to; to do/say something that calls attention to something	
OBJ	(to be) the object/entity/party/fact/situation that one calls attention to	

This root is also used as the **ANNUNCIATIVE (ANN) Bias Affix:** = ‘*Guess what!*’ or ‘*Wait till you hear this!*’

-TRR- ‘ANNOUNCEMENT / DECLARATION / PRONOUNCEMENT / PROCLAMATION’		
BSC	STEM 1: (to be) an act/instance of announcing something (verbally or in writing); to announce, to make an announcement	STEM 2: (to be) an act/instance of reporting something; to report [i.e., verbally letting others be aware of something that has heretofore not been so or has not been publicly known] STEM 3: (to be) an act/instance of declaring/pronouncing/proclaiming something to be so; to declare/pronounce/proclaim (i.e., where the act of doing so has the performative effect of making it so/true or causing it to be in effect)
CTE	(to be) the state of being/having been announced	
CSV	(to be) the physical act/process of announcing; to do/say/write/publish something that announces something	
OBJ	(to be) that which is announcement; an announcement	

-ŽW- ‘KIND / SORT / TYPE / GENRE / CLASS / CATEGORIZATION / MODE / MANNER / WAY’		
BSC	Stem 1: (to be) a state/act of categorization or being/placing in a category; to categorize, to place/label/identify something into or as being in a category/kind/sort /class/variety	Stem 2: (to be) a state/act of being/placing in a genre/style; to place/label/identify something into or as being in a particular genre/style Stem 3: (to be) a state/act of doing something in a certain way/manner/mode; to do something in a particular way/manner/mode
CTE	(to be) a kind/sort/class/variety/category	
CSV	(to be) an act of establishing/determining/identifying/creating a kind/sort/genre/category	
OBJ	(to be) a member of a kind/sort/class/variety/category	

-MTF- ‘LIST / SERIES / FILE’		
BSC	Stem 1: (to be) a state/act/instance of arranging or being arranged in a list; to list, arrange in a list, create/make a list	Stem 2: (to be) a an act/instance of making/placing in a series; to arrange/order in a sequential series Stem 3: (to be) an act/instance of arranging in a file; to file, create/make a file
CTE	(to be) the order of items on a list	
CSV	(to be) an act/process of physically listing or making a list	
OBJ	(to be) an entity named on a list, be a member of a list	

-ŃŤ- ‘DEGREE OF CORRECTNESS/ACCURACY/ERROR/SUITABILITY/FITNESS’ Affix: ERR (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of correctness/accuracy (= non-erroneous information) — [both the quality and the manifestation thereof]	STEM 2: (to be/manifest a) degree of suitability / fitness / propriety / effectiveness (= best choice for the context at hand) STEM 3: (to be/manifest a) degree of legitimacy/orthodoxy (= adherence to legal / ritualistic / societal conventions)
CTE	(to be) a state of being correct/accurate to a certain degree	
CSV	(to be) a degree of correctness/accuracy; to manifest a certain degree of correctness/accuracy	
OBJ	(to be) something that has/manifests a degree of correctness/accuracy	

This root is also used as the **CORRECTIVE (CRR) Bias Affix:** *‘that is to say...,’ ‘What I mean(t) to say is...’ ‘I mean....’*

-ŘÐ- ‘DEGREE OF EXACTITUDE’		Associated Affix: EXT
BSC	STEM 1: (to be) something having a degree of exactitude [i.e., expected identity/equivalence to some expectation)	STEM 2: (to be) something of a particular degree of exactitude (i.e., accuracy or identical functionality/performance in comparison to some standard) STEM 3: (to be) something that serves/functions/substitutes [comparably] (in comparison to some standard)
CTE	(to be) the degree to which an entity meets an expectation of exactitude; to perform an appraisal/comparison of such	
CSV	(to be) the expectation of exactitude to which an entity is compared; to apply/establish such an expectation/standard	
OBJ	(to be) the entity so appraised/compared	

This root is usually used with affixes such as **EXN**, **SUF**, **EXD**, or similar to indicate the particular degree of the named quality.

-RX- ‘DEGREE OF SIMILARITY / RESEMBLANCE’		Associated Affix: SIM (use with the EXN, SUF, EXD, etc. affixes if necessary)
BSC	(to be/manifest) something with a particular degree of similarity/resemblance	STEM 1: similarity/resemblance to another/different concrete/tangible entity/instance STEM 2: similarity/resemblance to oneself on another/different occasion STEM 3: similarity/resemblance to another/different abstract situation or set of circumstances
CTE	(to be/manifest) the degree to which an entity meets an expectation of similarity/resemblance	
CSV	(to be/manifest) the expectation of similarity/resemblance to which an entity is compared	
OBJ	(to be) the entity being appraised/compared to the expectation of similarity/resemblance	

-RK- ‘DEGREE/RANGE/EXTENT/INTENSITY’		Associated Affix: EXN
BSC	STEM 1: (to be) the degree/extent of something (= scalar amount of the effect/impact/capacity of something) [both the degree/extent and the entity manifesting that degree/extent]	STEM 2: (to be) the range of something (= measure of the “upper” or “outer” limit of the effect/impact of something) STEM 3: (to be) the intensity of something (= measure of the strength of the effect/impact of something)
CTE	(to be) something with a degree/extent/amount of effect/impact/capacity [focus on the entity itself]	
CSV	(to be) a degree/extent (= the amount of effect/impact/capacity)	
OBJ	(to be) the entity/party affected/impacted by the degree/extent of something	

-RT- SUFFICIENCY/ADEQUACY Associated Affix: SUF (Specifications modeled after the DEGREE/EXTENT root -RK- above)	
Stem 1: (to be) a sufficient amount/extent/degree of something; to suffice, to be enough, to be sufficient Stem 2: (to be) an adequate amount/extent/degree of something; to be adequate, to be good enough, to do (= to suffice adequately) Stem 3: (to be) something to a satisfactory degree/extent; to be satisfactory, to meet the requirements	

-MH- ‘DEGREE OF CHANGE/STABILITY/VICISSITUDE/FLUCTUATION’ Associated Affix: FLS (use SUF/EXN/EXD, etc.)	
BSC	STEM 1: (to be/manifest a) degree of change(-ableness)/mutability/constancy/alteration (= degree to which something becomes altered in form/behavior) [both the degree and the potential for, or nature of, the change]
CTE	(to be) something with a degree/extent/amount of change(-ableness/mutability [focus on the entity itself])
CSV	(to be) the degree/extent of change(-ableness)/mutability (= the amount/extent of actual or potential change)
OBJ	(to be) the entity/party affected/impacted by the degree/extent of (potential) change
STEM 2: (to be/manifest a) degree of stability/instability/vicissitude (= degree of predictability of future pattern/behavior based on past pattern/behavior) STEM 3: (to be/manifest a) degree of fluctuation / wavering / variance / deviation (= degree to which normally stable/predictable pattern/behavior suddenly fluctuates/varies/wavers/deviates unpredictably)	

-RG- ‘DEGREE OF STEADFASTNESS/MOBILITY/MOTILITY/ACTIVITY/MOVEMENT’ Affix: MVT (use SUF/EXN/EXD, etc.)	
(Specifications modeled after the ‘DEGREE OF CHANGE’ root -MH- above)	STEM 1: (to be/manifest) a degree of steadfastness/durability (= [in]ability to be altered in form/behavior) STEM 2: (to be/manifest) a degree of mobility/motility/activity (= [in]ability to move or to be made to move) STEM 3: (to be/manifest) a degree of indelibility/fixedness (= [in]ability to be removed/erased/eliminated)

-ČH- ‘DEGREE OF AFFECT (CUTENESS/GRANDEUR)’ Associated Affix: AFT (use SUF/EXN/EXD, etc. to specify degree)	
BSC	STEM 1: (to be/manifest a) degree of grandeur, grandiosity, greatness [both the quality and the entity manifesting such]
CTE	(to be) something with a degree of grandeur, grandiosity, greatness
CSV	(to be) a degree of grandeur, grandiosity, greatness
OBJ	(to be) an entity/party impacted/affected by one’s degree of grandeur, grandiosity, greatness
STEM 2: (to be/manifest a) degree of elegance, loveliness, grace STEM 3: (to be/manifest a) degree of endearment, cuteness	

-TH- ‘DEGREE OF RELIABILITY/INFALLIBILITY/QUALITY’ Affix: QUA (use SUF/EXN/EXD, etc. to specify degree)		
BSC	STEM 1: (to be/manifest a) degree of reliability/infallibility/quality (in terms of ruggedness/durability of workmanship or mechanical craftsmanship) [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of quality, fineness, quality of effort (in terms of artisanality, artistry, artistic craftsmanship)
CTE	(to be) something with a degree of reliability/infallibility/quality	
CSV	(to be) a degree of reliability/infallibility/quality	STEM 3: (to be/manifest a) degree of durability / lastingness / permanence / persistence
OBJ	(to be) an entity/party impacted/affected by one’s degree of reliability/infallibility/quality	

-ŘP- ‘DEGREE OF SPECIALNESS/UNIQUENESS/MARVELOUSNESS’ Associated Affix: UNQ (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of specialness, extraordinariness (in terms of variance with the usual/expected) [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of uniqueness (= the degree to which something is unlike anything else, one-of-a-kind)
CTE	(to be) something with a degree of specialness, extraordinariness	
CSV	(to be) a degree of specialness, extraordinariness	STEM 3: (to be/manifest a) degree of marvelousness/wonder/awesomeness
OBJ	(to be) an entity/party impacted/affected by one’s degree of specialness, extraordinariness	

-ŘV- ‘CONSEQUENCE/OUTCOME/RESULT’ Affix: CNQ (use SUF/EXN/EXD, etc. to specify degree)		
BSC	STEM 1: (to be/manifest) a consequence of something (= a change in pre-existing circumstances resulting from a state/act/event/occurrence) [both the consequence itself and the state of consequentiality]	STEM 2: (to be/manifest a) result of something (= a concrete/tangible “product” or specific/nameable abstract entity resulting from a state/act/event/occurrence)
CTE	(to be) a specific consequence	
CSV	(to be) a state of consequentiality; a state of there being a consequence; to manifest consequentiality	STEM 3: (to be/manifest a) abstract result/outcome (= an abstract set of non-preexisting circumstances arising out of an occurrence/event/act/state)
OBJ	(to be) an entity/party from which arises a consequence	

-ŘG- ‘DEGREE OF CONFORMITY/TYPICALNESS’		Affix: TYP (use SUF/EXN/EXD, etc. to specify degree)
BSC	STEM 1: (to be/manifest a) degree of conformity to a norm, stereotype or standard [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of being commonplace / typical / run-of-the-mill; to typify to a particular degree, to be typical of to a particular degree STEM 3: (to be/manifest a) degree of being original / innovative / “out-of-the-box”
CTE	(to be) something with a degree of conformity/typicalness	
CSV	(to be) a degree of conformity/typicalness	
OBJ	(to be) an entity/party impacted/affected by one’s degree of conformity/typicalness	

-RD- ‘DEGREE OF TRUTH/GENUINENESS/VERACITY/VALIDITY/FACTUALITY’		Affix: REA (use SUF/EXN/EXD, etc.)
BSC	STEM 1: (to be/manifest a) degree of truth/veracity/reality (in terms of something actually being ontologically valid as true or real) [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of authenticity/genuineness (in terms of an entity’s identity/nature/behavior/essence actually being what it is purported/assumed/believed to be) STEM 3: (to be/manifest a) degree of validity/factuality/actuality (in terms of being an accurate assessment, description, representation, or identification)
CTE	(to be) something with a degree of truth/veracity/reality	
CSV	(to be) a degree of truth/veracity/reality	
OBJ	(to be) an entity/party impacted/affected by one’s degree of truth/veracity/reality	

-TM- ‘DEGREE OF INTENSITY’		Affix: ITY (use SUF/EXN/EXD, etc.)
BSC	STEM 1: (to be/manifest a) degree of intensity/power (= ratio of physical manifestation/change/activity/energy to period of time) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of activity/acuteness STEM 3: (to be/manifest a) degree of agitation/ebullience/bustle
CTE	(to be) something with a degree of intensity/power	
CSV	(to be) a degree of intensity/power	
OBJ	(to be) an entity/party impacted/affected by one’s degree of intensity/power	

-FT- ‘DEGREE OF EFFICIENCY/ADEQUACY’		Affix: EFI (use SUF/EXN/EXD, etc.)
BSC	STEM 1: (to be/manifest a) degree of efficiency (= ratio of amount of effort/energy/resources to results)— [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of adequacy (= extent to which something serves sufficiently) STEM 3: (to be/manifest a) degree of reward/value/ “pay-off”/ “bang-for-the-buck” (= extent/value of return on investment of resources/effort/energy)
CTE	(to be) something with a degree of efficiency	
CSV	(to be) a degree of efficiency	
OBJ	(to be) an entity/party impacted/affected by one’s degree of efficiency	

-KT- ‘DEVELOPMENT / GROWTH / MATURATION / DECLINE’ Affix: MAT		
BSC	STEM 1: (to be/manifest a) developmental stage, stage of developmental or maturational cycle; stage of a life-cycle— [both the stage and the entity manifesting such]	STEM 2: (to be/manifest) goal-oriented development/maturation, growth; develop, grow, mature (growth not necessarily in size, but rather in maturational development as part of a life-cycle); CPT Version = ripe(n), ripening
CTE	(to be) something manifesting a developmental stage, stage of developmental or maturational cycle; stage of a life-cycle	
CSV	(to be/manifest) a developmental stage, stage of developmental or maturational cycle; stage of a life-cycle	
OBJ	(to be) an entity/party impacted/affected by one’s developmental stage, stage of developmental or maturational cycle; stage of a life-cycle	STEM 3: (to be/manifest) the declining stage(s) of a life-cycle; decline, fade, age; CPT Version = die

-PH- ‘DEGREE OF PRECISION / DEFINITION / SCRUTINY’ Affix: PCN (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of precision (= exactness of fine-tuning, fineness of or attention to detail, carefulness in workmanship/craftsmanship) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of definition, being well-defined (= exactness of distinction, contrast with background, separability from background milieu)
CTE	(to be) something with a degree of precision	
CSV	(to be) a degree of precision	
OBJ	(to be) an entity/party impacted/affected by one’s degree of precision	STEM 3: (to be/manifest a) degree of scrutiny / attention / scrupulousness (= thoroughness/exactitude in procedure / task / activity)

-TX- ‘DEGREE OF SOPHISTICATION/CRUDENESS/REFINEMENT/PRIMITIVENESS’ Affix: SPH (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of physical/technical refinement/sophistication (vs. crudeness, i.e., level to which an entity manifests a high level of technical workmanship/craftsmanship/artisanality) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of evolvement (vs. primitiveness, i.e., temporal, evolutionary perspective over time)
CTE	(to be) something with a degree of physical/technical refinement/sophistication	
CSV	(to be) a degree of physical/technical refinement/sophistication	
OBJ	(to be) an entity/party impacted/affected by one’s degree of physical/technical refinement/sophistication	STEM 3: (to be/manifest a) degree of cultural refinement/sophistication/finesse (vs. cultural primitiveness/savagery/simplicity)

-ŇŘ- ‘IMPEDIMENT / BLOCKAGE / RESTRICTION / CONSTRAINT / LIMITING / PREVENTION’ Affix: PRV		
BSC	STEM 1. (to be) a state/process of something under restriction; something impeded or blocked from occurring or manifesting — [both the act/process/state of restriction and the method/means used to restrict]	STEM 2. (to be) a state/process of something being constrained or limited in its path/direction/area; to constrain, to limit, to narrow STEM 3. (to be) a state/process of preventing something from happening; the prevention of something; to prevent
CTE	(to be) a process/state of restricting/impeding/blocking from manifesting or occurring	
CSV	(to be) a the means/method of restricting/impeding/blocking from manifesting or occurring	
OBJ	(to be) an entity/party/state being restricted/blocked/impeded	

-ČM- ‘DEGREE OF EASE vs. DIFFICULTY’ Affix: DIF (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of ease vs. difficulty (= effort in terms of physical hardship/toil and/or perplexity/complexity/mental challenge involved) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of ease vs. difficulty (= effort in terms of practicality, return/value-for-energy expended, likelihood of desired outcome) STEM 3: (to be/manifest a) degree of ease vs. difficulty (= effort in terms of being faced with a quandary / dilemma / predicament)
CTE	(to be) something with a degree of ease vs. difficulty	
CSV	(to be) a degree of ease vs. difficulty	
OBJ	(to be) an entity/party impacted/affected by one’s degree of ease vs. difficulty	

-KP- ‘DEGREE OF EFFORT’ Affix: EFT (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of effort (= in terms of physical harship/toil and/or perplexity/complexity/mental challenge involved) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of effort (= in terms of mental challenge involved) STEM 3: (to be/manifest a) degree of effort (= in terms of organizational complexity)
CTE	(to be) something with a degree of effort	
CSV	(to be) a degree of effort	
OBJ	(to be) an entity/party impacted/affected by one’s degree of effort	

-VH- ‘DEGREE OF DESIGN / ORDER / ORGANIZATION / SYSTEMATIZATION’ Affix: DSG (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of design/planning — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of order(liness) / organization / arrangement / structure STEM 3: (to be/manifest a) degree of systematization (= extent to which components/parts are arranged for optimal interrelationships/functionality)
CTE	(to be) something with a degree of design/planning	
CSV	(to be) a degree of design/planning	
OBJ	(to be) an entity/party impacted/affected by one’s degree of design/planning	

-JH- ‘DEGREE OF PHYSICAL CONTROL’ Affix: CRL (use SUF/EXN/EXD, etc.) NOTE: This root does not mean control in terms of hierarchical authority, oversight or influence.		
BSC	STEM 1: (to be/manifest a) degree of physical control (= degree of brute strength / agility / prowess / forbearance, etc. needed to physically handle/manipulate something, e.g., a tool, a machine, etc.) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of physical fine motor control / dexterity / finesse (= degree of ability to manipulate/handle delicate or fragile entity) STEM 3: (to be/manifest a) degree of control via potential force (= having the ability/means/resources to physically hold/contain/restrain/restrict something from breaking free, running wild, causing damage, attacking, etc.)
CTE	(to be) something with a degree of physical control	
CSV	(to be) a degree of physical control	
OBJ	(to be) an entity/party impacted/affected by one’s degree of physical control	

-PT- ‘DEGREE OF RISK / DANGER’ Affix: DNG (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of physical risk or danger (= threat or potential for physical harm) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of emotional risk or danger STEM 3: (to be/manifest a) degree of socially-oriented risk or danger (= threat to one’s status, plans, life circumstances, assumptions, finances, property, etc.)
CTE	(to be) something with a degree of physical risk or danger	
CSV	(to be) a degree of physical risk or danger	
OBJ	(to be) an entity/party impacted/affected by one’s degree of physical risk or danger	

-ŘČ- ‘DEGREE OF OPERATIONAL FUNCTIONALITY / ACTIVITY / EFFICACY’ Affix: OPF (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of operational functionality; degree of being in working order (= extent to which something is functioning/operating/working normally or as per expectation or design) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of activity (= amount / extent to which entities are acting/functioning/moving) STEM 3: (to be/manifest a) degree of efficacy (= extent to which an activity / operation achieves/accomplishes/delivers what it is supposed/expected to)
CTE	(to be) something with a degree of operational functionality; degree of being in working order	
CSV	(to be) a degree of operational functionality; degree of being in working order	
OBJ	(to be) an entity/party impacted/affected by one’s degree of operational functionality; degree of being in working order	

-BŇ- ‘DEGREE OF NATURAL CAPACITY / TALENT / SKILL’ Affix: TAL (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of natural capacity/ability to — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of natural talent / aptitude / “gift” for; be adept at STEM 3: (to be/manifest a) degree of natural virtue (= desired behavioral quality/characteristic/attribute)
CTE	(to be) something with a degree of natural capacity/ability to	
CSV	(to be) a degree of natural capacity/ability to	
OBJ	(to be) an entity/party impacted/affected by one’s degree of natural capacity/ability to	

-SP- ‘DEGREE OF NEWNESS’ Affix: NEW (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of newness (= freshly made/born/developed, newly created, not previously existing, e.g., <i>a new book just published; a new baby; a brand new shirt</i>) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of newness (= not previously seen/functioning/experienced in current context, e.g., <i>the new student; a new book, i.e., that I’ve not owned/read before</i>) STEM 3: (to be/manifest a) degree of newness (= another / different / replacement / substitute / revision, e.g., <i>Please turn to a new page in your sketchpad; Hand me a new fork, this one is dirty.</i>)
CTE	(to be) something with a degree of newness	
CSV	(to be) a degree of newness	
OBJ	(to be) an entity/party impacted/affected by one’s degree of newness	

-Ž- ‘CAPACITY / ABILITY / CAPABILITY’ Affix: -CPC-		
BSC	STEM 1: (to be/manifest) the physical capability/ability to do something particular; to be able (i.e., or have the physical capability/ability) to do something particular	STEM 2: (to have) the physical stamina, fortitude or strength (needed) to do something STEM 3: (to have) the physical prowess or finesse or specialized physical skill (needed) to do something
CTE	(to be) the physical capability/ability; to be able (= have the or physical capability/ability)	
CSV	(to be) the particular (nature of the) physical capacity/ability needed	
OBJ	(to be) the task/endeavor requiring a certain physical capacity/ability to perform/accomplish	

-ÇN- ‘SOURCE / ORIGIN’		Affix: OAU
(NOTE: This root refers to origination, first-time occurrence, first-time causation; for ‘beginning/initiation’ meaning ‘activate, start/initiate from a stopped/dormant state, or the commencement of a common/recurring/pre-arranged activity, see the root -TL- .		
BSC	Stem 1: (to be) a state/act of origination; to come into being, to get one’s start, to originate	Stem 2: (to be) a state/act of beginning, initiating, starting; to begin, to start, to initiate Stem 3: (to be) a state/act of causation; to cause (i.e., primary/direct, not secondary or enabling cause)
CTE	(to be) the origin / source of something — [both the point in spacetime and the fact of being the initial manifestation of something] (to be) an act/process of origin(ating) or functioning as a/the source	
CSV	(to be) a physical act of originating; to originate [i.e., come into existence or be formed at a particular place and time]	
OBJ	(to be) that whose source/origin is being identified	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RÇN- ‘ELEMENT / FUNDAMENTAL BASIS / FOUNDATIONAL PRINCIPLE’
STEM 1: (to be/manifest a) basic element / fundamental starting point or principle
STEM 2: (to be/manifest a) fundamental reason for something; fundamental reason why; a basis for something
STEM 3: (to be a) first principle / foundational principle / axiom

-R- ‘NEGATION / DENIAL / ABSENCE’		Affix: NEG
BSC	Stem 1: (to be/manifest) an instance/act of negation; make something negative; to negate, i.e., to make/render the status of an entity so that it is as if it does not exist / manifest / apply / matter / act / take effect or have relevance [both the act/process of negation and the status of being (rendered) negative]	Stem 2: (to be) an instance/act of denial; to deny -- to act as if something is not true or non-existent or inapplicable Stem 3: (to be) an instance of being absent; an absence; to be absent
CTE	(to be) an instance/act of denial; to deny -- to act as if something is not true or non-existent or inapplicable	
CSV	(to be) the physical/tangible process of negation, whether verbal, physical, by written proclamation, by memory loss, etc.	
OBJ	(to be) that which is negated	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RXW- ‘NULLIFICATION / ABROGATION / CONTRADICTION / CONTRAVENTION’	
Stem 1: (to be) an instance/act of nullification or abrogation; to nullify, render null, abrogate, render as having no effect	
Stem 2: (to be) an instance/act of contradiction; to contradict	
Stem 3: (to be) an instance/act of contravention; to contravene	

-PŘ- ‘ACCESS / PASSAGE(WAY) / DOORWAY / GATEWAY / PORTAL / ENTRY(WAY) / EXIT’		Affix: ACS
BSC	STEM 1: (to be/manifest) a 2-way access point or passage way/gateway/portal; to pass through to a different area or physical space — [both the passage way itself and the act of passage]	STEM 2: (to be/manifest a) an entry point, a point of ingress, an entry portal, entry gateway, a passageway by which to enter STEM 3: (to be/manifest a) an exit point, a point of egress, an exit portal, a passageway by which to exit
CTE	(to be) an act of passage through, an act of accessing another physical space; to pass through, to enter or exit	
CSV	(to be) a passage way or access point or doorway/gateway/portal*	
OBJ	(to be) the party passing through an access point or doorway/gateway/portal *	

* NOTE: The word for a “door” itself would be the BSC stem for ‘access/passageway’ plus the MDF₂/3 affix ‘that which impedes/prevents X’, so that a ‘door’ is literally a “passage-impeding implement”. Consequently, one does not say “open door” in the language — one says “unrestricted passageway” or “unrestricted doorway.”

-ṬD- ‘PHYSICAL CONTACT’		Affix: CTC
BSC	STEM 1: (to be) a state/act of physical contact between entities; to make contact; touch — [both the state/act of contact and its effect/consequence]	STEM 2: (to be) an application of physical pressure/force + effect/consequence STEM 3: (to be) a move or setting in motion via physical contact + resulting motion; to set in motion + resulting motion
CTE	(to be) the effect/consequence of a state/act of physical contact between entities	
CSV	(to be) a state/act of physical contact between entities; make contact; touch	
OBJ	(to be) a party/entity in physical contact with another	

-SK- ‘CONTAIN / HOLD / CONTENTS / ENCLOSURE / SURROUNDING / ENVELOPMENT’		Associated affix: CNM
BSC	STEM 1: (to be) an instance/act/state of containment via gravity (e.g., basin); to contain (via gravity) [both the container and the state of containment]	STEM 2: (to be) an instance/act/state of containment via an enclosing/surrounding/enveloping/encircling medium/conveyance; to enclose, to surround, to envelop, to encircle, to circumscribe STEM 3: (to be) an instance of containment via imbuement/mixing/blending in (i.e., as an ingredient/component); to mix into, to blend into
CTE	(to be) the state of containment (via gravity)	
CSV	(to be) the container (via gravity)	
OBJ	(to be) that which is contained (via gravity); the content(s)	

-THW- ‘COMPONENT / PART / INGREDIENT’		
BSC	STEM 1: (to be) the state/process of being/constituting a component/part/piece of an entity [i.e., a quasi- or semi-autonomous object/entity that can be (at least theoretically) separated from the whole or was such prior to being joined/connected/fused/built in to the larger whole]	STEM 2: (to be) the state/process of being/constituting an ingredient within a larger whole [i.e., an entity which (theoretically) has/had an autonomous existence prior to being merged with the whole but is now imbued within /inseparable from the whole STEM 3: (to be) a state/act/process of being/utilizing an instruction
CTE	(to be) the state of constituting/being composed of/being made from a collection of parts	
CSV	(to be) an act of separating out a component/part from a whole; to isolate/have/hold/remove/separate a component/part	
OBJ	(to be) a particular component/part/piece of a whole	

NOTE: For positionally-defined component parts of an entity or system (e.g., the “front”, “back”, “side”, “bottom” of an object), see Sec. 3.5.

2.1 TOOL USE

NOTE: Previous versions of this document indicated that the naming of most tools would be accomplished using various affixes attached to verbal stems indicating the desired action or result. The author has now determined that this approach is unrealistic and not viable. New roots/stems for various tools are now given toward the end of this section.

2.1.1 Acts/Processes Accomplished by Means of Tools/Implements

This section lists roots associated with actions/states which readily lend themselves to the various instrumentative/tool-using affixes:

-CRĚ- ‘GRIND / PULVERIZE / GRAVEL / GRANULE / POWDER’			
	Stem 1	Stem 2	Stem 3
BSC	(be) an act of grinding to a gravel-like consistency; grind to a gravel-like consistency	(be) an act of grinding to a granular, sand-like consistency; grind to a granular consistency	(be) an act of grinding to a powder; pulverize
CTE	(be) the entity/object/substance that is (to be) ground to a gravel-like consistency	(be) the entity/object/substance that is (to be) ground to granular, sand-like consistency	(be) the entity/object/substance that is (to be) pulverized
CSV	(be) the mechanical process of an act of grinding to a gravel-like consistency	(be) the mechanical process of an act of grinding to a granular, sand-like consistency	(be) the mechanical process of an act of pulverizing
OBJ	(be) a piece of a gravel-like substance; (be) a piece of the product of an act of grinding to a gravel-like consistency	(be) a piece of a granular, sand-like substance; (be) a piece of the product of an act of grinding to a granular, sand-like consistency	(be) a grain of a powder(y substance)

-KÇ- ‘CUT / STAB / CRACK / FISSURE’ (i.e., quasi-linear puncturing or quasi-planar breaking of surface integument)		
BSC	Stem 1: (be) an act of cutting something with a (quasi-) bladed instrument or force (“cut” = to make a quasi-linear, parallel-to-the-surface break in the structural/cohesive integrity of the surface integument of an entity/object by means of a bladed (or blade-like) instrument)	Stem 2: (be) an act of stabbing (i.e., puncturing in a quasi-linear manner perpendicular to the surface integument of an object/entity using a sharp-pointed quasi-linear object). Stem 3: (be) an act of making a quasi-linear rent or crack or fissure in the surface integument of an object/entity; to (make a) rent, to (make a) crack
CTE	(be) the physical cut itself; a quasi-linear break in the structural/cohesive integrity of the surface integument of an entity/object	
CSV	(be) the physical act/process of cutting; to cut	
OBJ	(be) a blade (the portion of a knife/sword/axe/scissors, etc. that effectuates a cut)	

-ÇR- ‘SEPARATION / SEVERANCE / DETACHMENT’		
BSC	Stem 1: (be) an act of separation; to separate something from something else; make something be physically situated apart from something else	Stem 2: (be) an act of detachment or physical disjoining/disconnection; to detach/disjoin/disconnect Stem 3: (be) an act of severance; to sever
CTE	(be) a state of being separated; be apart from something due to being/having been separated	
CSV	(be) an act of separation; the physical act of separating entities	
OBJ	(be) an implement, procedure, process, command, situation, etc. which effectuates an act of separation	

-ZKR- ‘SLICE / PLANE / SHAVE / SHRED’		
BSC	Stem 1: (be) an act of slicing/sectioning something with a bladed (or blade-like) instrument (i.e., cut quasi-perpendicularly relative to the surface plane of an entity into quasi-planar piece/section)	Stem 2: (be) an act of making a planed/shaved slice; to plane; to shave off a piece (i.e., cut parallel to the surface plane of an entity into a quasi-planar piece/strip) Stem 3: (be) an act of shredding (i.e., using a specialized instrument to render a three-dimensional volume/portion of an object entity into quasi-linear ribbon-like or thread-like pieces)
CTE	(be) the physical gash/divide caused by an act of slicing; a quasi-planar break in the structural/cohesive integrity of the surface integument of an entity/object and the three-dimensional volume beneath	
CSV	(be) the physical act/process of slicing; to slice	
OBJ	(be) a blade (the portion of a knife that effectuates slice/section)	

-PPŠ- ‘SCRATCH / SCRAPE / PEEL’		
BSC	Stem 1: (be) an act of scratching, i.e., using a pointed or (quasi-)chisel-headed instrument or body part (e.g. fingernails) to imbue a surface with shallow quasi-linear rents; to scratch something [= to make a scratch/scratches in a surface, NOT to relieve an itch]	Stem 2: (be) an act of scraping, i.e., using an implement to remove a shallow layer of material from a surface; to scrape Stem 3: (be) an act of peeling; to peel
CTE	(be) a scratch	
CSV	(be) the physical act/process of scratching; to scratch	
OBJ	(be) the means (i.e., implement or body part) utilized to effectuate an act of scratching	

-ZC- ‘CHOP / DICE / MINCE’		
BSC	Stem 1: (be) an act of chopping, i.e., using a (quasi-)bladed instrument to make a quasi-planar gash/divide in the three-dimensional volume of an object/entity, perpendicularly to its surface integument)	Stem 2: (be) an act of dicing (i.e., slicing into quasi-cubic pieces) Stem 3: (be) an act of mincing (i.e., slicing in cross-hatched fashion to the point of making an entity's texture a slurry or paste-like)
CTE	(be) the physical gash/divide/separation caused by an act of chopping; a quasi-planar gash/divide in the structural/cohesive integrity of the 3-dimensional volume of an entity/object and the three-dimensional volume beneath	
CSV	(be) the physical act/process of chopping; to chop	
OBJ	(be) a blade (the portion of a knife/cleaver/axe, etc. that effectuates an act of chopping)	

-ZČ- ‘CARVE / GUT / EVISCERATE’		
BSC	Stem 1: (be) an act of (surface-)carving, i.e., using a (quasi-)bladed instrument to remove (specific) surface material from an object/entity)	Stem 2: (be) an act of interior carving, carving out, i.e., careful/precise removal of specific interior tissue/volume of an entity using a (quasi-)bladed instrument; to carve out Stem 3: (be) an act of gutting or evisceration; to gut/eviscerate (i.e., remove most or all of the interior volume of an entity)
CTE	(be) the surface area/volume removed due to an act of (surface-)carving	
CSV	(be) the physical act/process of surface-carving; to carve the surface of	
OBJ	(be) a blade (the portion of carving implement that effectuates an act of carving)	

-ZF- ‘PIERCE / PUNCTURE / BREACH / HOLE / TUNNEL’			
BSC	Stem 1: (be) an act of piercing through, puncturing through, punching through, breaching, breaking through, tunneling (i.e., create an access point/passageway in a 2- or 3-dimensional medium to the other side or to another separate space)	Stem 2: (be) an act of removing material by burrowing or tunneling* [Specification pattern is like Stem 2 of the root ‘DIG’] Stem 3: (be) an act of leaving behind a hole, puncture, tunnel, i.e., an access point or passageway through a medium to another side or separate space [Specification pattern is like Stem 3 of the root ‘DIG’]	
CTE	(be) the material removed via an act of piercing, puncturing		
CSV	(be) an act of piercing, puncturing		
OBJ	(be) the appendage/implement/tool used for piercing, puncturing		

-JJ- ‘DIG / HOLE’ *			
	Stem 1	Stem 2	Stem 3
BSC	(be) an act of digging; to dig, i.e., to use an implement or one’s appendage to break the surface of the 3-dimensional volume of a substance or entity, for the purpose of remove an amount of material from the volume, leaving behind a concave depression/pit/hole*)	(be) the act of removing material via digging	(be) an act of creating/leaving behind a depression or concavity by means of an act of digging; to make/create/leave a depression/concavity/pit/hole* by means of digging
CTE	(be) the state/process undergone by an entity when material is dug from it and a depression or concavity left behind	(be) the state/process undergone by an entity when material is removed from it by digging	(be/have) a depression or concavity created by an act of digging
CSV	(be) a physical act of digging; remove material by digging leaving a depression or concavity behind	(be) a physical act of digging; remove material by digging	(be) an act of making a depression/concavity/hole* by digging; make a depression or concavity by digging
OBJ	(be) the appendage/implement used for digging	(be) the material removed by an act of digging	[same as CTE above]

* Use of the word “hole” in translating the stems of this root is within the narrow context of being a synonym for “scooped-out depression/concavity within a 3-dimensional medium; it does not mean “hole” as an access point between two spaces or through some two- or 3-dimensional medium as in “a hole in my jeans” or “a hole through the wall” (use the root **-ZF-** below instead).

NOTE: Use the above root with the new **SVS** affix to derive words for scoop, excavate.

NOTE: Use this root with the new **SVS** affix to derive words for ‘drill’, ‘bore’, ‘cavern’. Combine it with other appropriate morphology to render the word for ‘delve’ and ‘worm one’s way into’.

-RZČ- ‘EXCAVATION / DREDGING / MINING’		
BSC	STEM 1: (to be) an act/process of excavation; to excavate/exhumation [i.e., remove a relatively large amount material from a solid substrate for the purpose of reshaping that substrate or to find something within the removed material]	STEM 2: (to be) an act/process of dredging; to dredge (i.e., remove material from an underwater surface to improve the use of that substrate as a conduit/passageway or to find something within the material removed) STEM 3: (to be) an act/process of mining; to mine [i.e., to use an implement or machinery to remove desired ore or other desired material from a surrounding subterranean or underwater substrate]
CTE	(to be) the material removed/carved out from an act/process of excavation/exhumation	
CSV	(to be) a physical act of; to physically perform an act of excavation/exhumation	
OBJ	(to be) an implement/tool/process/device used in the act/process of excavation/exhumation	

-ZDW- ‘BURROW / HOLLOW OUT’		
BSC	Stem 1: (be) an act of hollowing out, burrowing/tunneling*; to burrow/tunnel (i.e., create a tube-like space within a 3-dimensional medium)	Stem 2: (be) an act of removing material by hollowing out, burrowing or tunneling* [Specification pattern is like Stem 2 of the root ‘DIG’] Stem 3: (be) an act of leaving behind a hollow, burrow or tunnel* [Specification pattern is like Stem 3 of the root ‘DIG’]
CTE	(be) the material removed via an act of hollowing out or burrowing	
CSV	(be) an act of hollowing out or burrowing	
OBJ	(be) the appendage/implement/device/machine used for hollowing/burrowing/tunneling	

* This root refers to the creation of a tube-like space within a 3-dimensional medium; it does not necessarily imply that the tube-like space functions as a conduit or passageway to another separate space or medium -- thus, use of the translation “tunnel” here is in a limited context. If one wishes to signify a tunnel-like conduit connecting two separate spaces, use the root **-ZF-** above instead.

-GT- ‘TIGHTNESS / FITTEDNESS / COMPATIBILITY’		
BSC	Stem 1: (be) a state of being tight; tightness; be/make tight, i.e., difficult to disjoin or open or separate	Stem 2: (be) a state of one entity physically fitting into/with another Stem 3: (be) a state of one entity being physically compatible with another so that they operate/function/exist better as, or ideally as, a unit
CTE	(be) the state undergone by an entity or entities having a physical bond/connection/juncture/fitting which is tight	
CSV	(be) the physical act of tightening	
OBJ	(be) the juncture itself which is (to be) tight(ened)	

-FŠ- ‘FITTING / ACCOMMODATION / NICHE’		
BSC	Stem 1: (be) an act/instance of one entity physically fitting into/with another so that one is “carried” along as the other moves/operates	Stem 2: (be) an act/instance of accommodating something (i.e., finding a place for something within a surrounding context so that it can become a functioning/contributing/associated part of that context) Stem 3: (be) a act/instance of finding/establishing a niche for something (i.e., establishing an existence/lifestyle/role which becomes part of and contributes to the encompassing contextual environment)
CTE	(be) the state of fitting into another	
CSV	(be) the physical act of fitting	
OBJ	(be) the juncture itself which one establishes or seeks to establish by an act of fitting something into something else	

-JP- ‘STRAIGHTENING / ALIGNMENT’		
BSC	Stem 1: (be) an act/instance of making something straight/rectilinear [by design]; make something straight by design (i.e., make rectilinear as opposed to making it bent, curved, crooked)	Stem 2: (be) an act/instance of straightening something out; to straighten out (i.e., fix something that was crooked/bent/curved/warped by making it rectilinear/straight as it should be) Stem 3: (be) a act/instance of aligning/alignment; to align (i.e., make an entity or collection of entities line up in a rectilinear shape/pattern for aesthetic reasons or for proper/optimal functioning)
CTE	(be) the state of being straight/rectilinear	
CSV	(be) the physical act of straightening; make something straight/rectilinear	
OBJ	(be) that which is straight(ened)	

-CGV- ‘JUNCTURE OF KINEMATIC PAIR’		
BSC	Stem 1: (be) an act/instance of one entity physically being connected to another via a structural juncture or pivot point	Stem 2: (be) an act/instance of being able to pivot due to the placement of a structural juncture Stem 3: (be) a act/instance of structural/physical tension caused by pivoting within the constraints allowed by a structural juncture
CTE	(be) the state of being connected to another via a structural juncture or pivot point	
CSV	(be) the physical act of connecting via a structural juncture/pivot point	
OBJ	(be) the implement itself which establishes such a juncture or pivot point (e.g., a hinge, a universal joint, a ball joint, prismatic joint, cylindrical joint, snake-like flexible joint, etc.)	

-TKF- ‘MECHANICAL JOINT/PIVOT POINT FOR KINEMATIC PAIR’ (allowing limited movement in one or two dimensions)		
BSC	Stem 1: (be) a connection utilizing a prismatic joint [allowing linear back-and-forth (or up-and-down) movement only]	Stem 2: (be) a hinge-like joint allowing relative rotation about a single axis, a.k.a. pin joint, revolute joint Stem 3: (be) a cylindrical joint allowing circular rotation upon an axis
CTE	(be) the state of being connected via a prismatic joint	
CSV	(be) the physical act of connecting via a prismatic joint	
OBJ	(be) the prismatic joint implement itself	

-LTKF- ‘MECHANICAL JOINT/PIVOT POINT FOR KINEMATIC PAIR’ (allowing 3-dimensional movement)		
BSC	Stem 1: (be) a ball-and-socket type of bending/swivel point or joint of an entity	Stem 2: (be) a universal joint Stem 3: (be) a snake-like flexible entity
CTE	(be) the state of being connected via a ball-and-socket type of joint	
CSV	(be) the physical act of connecting via a ball-and-socket type of joint	
OBJ	(be) the ball-and-socket type of joint implement itself	

-MSY- ‘ENERGY OUTPUT DIFFERENTIAL OR REDIRECTION VIA GEAR MECHANISM’ (allowing 3-dimensional movement)		
BSC	Stem 1: (be) a change in ratio of speed or energy output caused by a geared differential mechanism	Stem 2: [same as Stem 1 except that the gear mechanism is designed to redirect energy into a different direction as opposed to a change in energy output ratio or speed] Stem 3: [combination of Stems 1 and 2; both change in energy output ratio or speed plus change in direction of energy output/utilization]
CTE	(be) the state of a having one’s energy output or speed changed via a gear mechanism	
CSV	(be) the physical act of changing the kinematic ratio or speed of energy output via a gear mechanism	
OBJ	(be) the gear mechanism which creates a change in kinematic ratio of energy output or speed	

-ŘN- ‘SUSPEND / HANG (UP) / DANGLE / PENDENCY’		
BSC	Stem 1: (be) an act/instance of hanging something (up); to hang, suspend (i.e., supporting something continuously against gravity)	Stem 2: (be) an act/instance of dangling something; to dangle Stem 3: (be) an act/instance of overhanging, jutting (out)
CTE	(be) a state of hanging/suspension; be hanging (up/on) something	
CSV	(be) the physical act of hanging something up or onto	
OBJ	(be) the implement/connecting medium used to keep something hanging (e.g., hook, knotted string/cord/rope, strap, harness, etc.)	

Morphological derivatives: swing

-LX- ‘FLOTATION / HOVERING / DRIFTING / ALOFT’		
BSC	Stem 1: (to be) an act/state/instance of flotation/drifting upon the surface of a liquid or semi-liquid medium; to float upon something, to drift upon or along something [i.e., subject to uncontrolled, unpowered, random drifting]	Stem 2: (to be) an act/instance of being/floating/drifting aloft; be aloft, soar, swim within or through, i.e., to have free movement or move freely within a 3-dimensional medium (e.g., air, water, space, etc.); Stem 3: (to be) an act/instance of hovering in place within a medium (e.g., air, water, space, etc.); to hover [i.e., controlled station-keeping in one place within a 3-dimensional medium against the force of gravity]
CTE	(to be) that which floats or drifts	
CSV	(to be) an act/state of flotation/drifting upon a (semi-)liquid surface; to (make) float/drift, to be afloat, to be adrift	
OBJ	(to be) the liquid or semi-liquid surface upon which one floats/drifts	

-LŘ- ‘FLATTEN / SMOOTH / LEVEL’		
BSC	Stem 1: (be) an act/instance of flattening; make flat(ter), render flat(ter) (i.e., make have a more planar surface without significant perturbations)	Stem 2: (be) an act/instance of making smooth (i.e., not having surface roughness, projections, or perturbations) Stem 3: (be) an act/instance of make (more) level or even or parallel (i.e., make a quasi-linear or quasi-planar surface be as parallel to another surface or measuring line/plane as possible)
CTE	(be) a state of being flat	
CSV	(be) the physical act of flattening	
OBJ	(be) the implement/tool used to flatten something	

Morphological derivatives: polish

-GF- ‘HOLD TOGETHER / HOLD STILL / BIND / RESTRAIN’		
BSC	Stem 1: (be) an act/instance of holding something together on a long-term or (quasi-) permanent basis (i.e., so that it doesn’t separate, come apart, or disassemble)	Stem 2: (be) an act/instance of binding something (i.e., keeping it from coming apart, coming loose, or escaping by internal motion in-situ) Stem 3: (be) an act/instance of holding something still; restrain (i.e., keeping it from moving from one place to another; keeping it in one place)
CTE	(be) a state of being held together	
CSV	(be) the physical act of holding together	
OBJ	(be) the implement/tool/medium used to keep something held together (e.g., clip, clasp, clamp, vice, clothespin, string/cord, rubber band, bookend(s), etc.)	

This root refers to long-term, (quasi-)permanent states of holding things together. For incidental, temporary contexts, see the next root below.

-ÇJ- ‘HOLD UP / SUPPORT / BEAR UP / KEEP ALOFT’		
BSC	Stem 1: (be) an act/instance of supporting something up or holding something up so that it does not collapse; to support/hold up/bolster something against collapse	Stem 2: (be) an act/instance of bearing something so that it remains raised high, to hold high, to bear up (i.e., keeping it from falling or returning to a lowered height) Stem 3: (be) an act/instance of holding something aloft; to hold aloft, keep aloft (i.e., keeping it from returning/falling to the ground)
CTE	(be) a state of being held up or supported against collapse	
CSV	(be) the physical act of holding up or supporting against collapse	
OBJ	(be) the implement/tool/medium used to keep something held up (e.g., crutch, strut, hanging wire/rope/string, negative pressure, etc.)	

-DJ- ‘ERECT / BRING TO A VERTICAL POSITION / RAISE UP’ (i.e., perpendicular to the ground)		
BSC	Stem 1: (be) an act/instance of erecting something to a vertical position perpendicular to the ground (or parallel to the direction of gravity)	Stem 2: (be) an act/instance of letting rise up to an erect position Stem 3: (be) an act/instance of raising something up to a high(er) level, involving a use of energy and manipulation (as opposed to letting it rise freely on its own); to physically raise something to a high(er) level
CTE	(be) a state of erecting	
CSV	(be) the physical act of erecting	
OBJ	(be) the means/implement/procedure/command used to erect something (e.g., pulley)	

-MJ- ‘FELL / BRING DOWN / LOWER’		
BSC	Stem 1: (be) an act/instance of making something fall via gravity from its (quasi-) perpendicular stance; to fell	Stem 2: (be) an act/instance of letting something fall; to drop Stem 3: (be) an act/instance of lowering something down to (quasi-) ground level from on high, involving a use of energy and manipulation (as opposed to letting it fall freely via gravity); to physically lower something to one's level
CTE	(be) a state of falling	
CSV	(be) the physical act of felling	
OBJ	(be) the means/implement/procedure/command used to make something fall	

-PD- ‘GRAB / GRASP / PICK UP / PICK OUT / HANDLE / MANIPULATE’		
BSC	Stem 1: (be) an act/instance of grabbing/grasping something with one's hand or manipulative appendage(s)	Stem 2: (be) an act/instance of picking something up or picking something out of something else (i.e., physically isolating and removing something from its surface/medium/substrate) Stem 3: (be) an act/instance of handling/manipulating something with one's hands or manipulative appendage(s)
CTE	(be) a state of being in another's grasp	
CSV	(be) the physical act of grabbing/grasping	
OBJ	(be) the hand or appendage with which one grabs/grasps	

-SČ- ‘BREAK APART / BREAK INTO PIECES / CRUMBLE’		
BSC	Stem 1: (be) an act/instance of breaking something apart or breaking something open	Stem 2: (be) an act/instance of breaking something into multiple pieces Stem 3: (be) an act/instance of crumbling something into non-discrete pieces (i.e., powder, dust, gravel, crumbs, etc.)
CTE	(be) a state of being broken apart or broken open	
CSV	(be) the physical act of breaking apart or broken open	
OBJ	(be) the implement/tool/medium used to break something apart (e.g., pickaxe, crowbar, sledgehammer, mallet, chisel, etc.	

-RKS- ‘SPLIT IN HALF / DIVIDE INTO PARTS / SPLIT OFF A PIECE’		
BSC	Stem 1: (be) an act/instance of splitting/dividing something in two/half; to split into two, to split in half	Stem 2: (be) an act/instance of splitting/dividing something into three or more parts/portions Stem 3: (be) an act/instance of splitting/dividing off a smaller piece of something from the larger whole
CTE	(be) a state of being split/dividing in half	
CSV	(be) the physical act of splitting/dividing in half	
OBJ	(be) the implement/tool/medium used to split/dividing something in half	

-ZN- ‘MANUAL MANIPULATION’		
BSC	Stem 1: (be) an act/instance of incidentally or temporarily holding something together (i.e., so that it doesn’t separate, come apart, or disassemble)	Stem 2: (be) an act/instance of incidentally or temporarily touching, holding or handling something for the purpose of carrying, conveying, protecting, inspecting, displaying, admiring it, etc. Stem 3: (be) an act/instance of manipulating something for the purpose of changing/activating/reshaping/stimulating/operating it (e.g., by squeezing, twisting, pressing, pushing, pulling, rubbing, etc.)
CTE	(be) a state of being incidentally or temporarily held together	
CSV	(be) the physical act of incidentally or temporarily holding together	
OBJ	(be) the implement/tool/medium used to keep something incidentally or temporarily held together (e.g., pliers, tweezers, forceps, etc.)	

-ČN- ‘MOVE APART / DRAW APART / OPEN’		
BSC	Stem 1: (be) an act/instance of moving two or more entities apart (to create a gap or opening or passageway)	Stem 2: (be) an act/instance of pushing (i.e., applying force/pressure toward) an entity in order to move it apart so as to create a gap, opening, or passageway Stem 3: (be) an act/instance of pulling (i.e., drawing force/pressure away from) an entity in order to move it apart so as to create a gap, opening, or passageway
CTE	(be) a state of being/having been moved apart	
CSV	(be) the physical act of moving two or more entities apart (e.g., via pulling, pushing, or other force or means)	
OBJ	(be) the means/implement/procedure used to effectuate an act of moving apart	

-MC- ‘JUNCTION / CONNECTION / FASTENING / BONDING’		
BSC	Stem 1: (be) an act/instance of joining two or more entities together so that they become a set (i.e., bringing two or more entities spatially close or in contact so that they move/function or can be considered as a set)	Stem 2: (be) an act/instance of connecting or attaching; a connection; to connect or attach (i.e., utilize a tangible part of an object, or a dedicated implement, e.g., wire, rope, glue, staple, etc., to form a physical link between two or more entities Stem 3: (be) an act/instance of fastening/bonding; a bond; to fasten or bond (i.e., utilize a dedicated implement or means, e.g., wire, rope, glue, staple, etc., to physically attach two or more entities together in a (quasi-)permanent or long-term bond so that one entity is now considered part of another or that the entities are considered a unit)
CTE	(be) a state of being a member of a set	
CSV	(be) the physical act of joining together into a set	
OBJ	(be) the juncture itself which one establishes or seeks to establish by an act of joining	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RMC- ‘LINKAGE / UNIFICATION / FUSION / MERGING / COALESCING / MELDING’	
Stem 1:	(be) an act/instance of linking; a link, linkage; to link (i.e., a joining together of entities with a focus on the individual members of the resulting set maintaining their individual autonomy/identity)
Stem 2:	(be) an act/instance of unifying, uniting (i.e., joining entities together so that they are objectively or subjectively a unit, a single gestalt entity)
Stem 3:	(be) an act/instance of fusion/merging/coalescing/melding (i.e., joining entities together so that each loses its individual boundaries or compositional integrity and becomes part of or mixed with others into a (quasi-)indivisible physical whole.

-JT- ‘PENETRATION / DRIVING INTO / INJECTION’		
BSC	Stem 1: (be) an act/instance of penetration through a (quasi-)two-dimensional surface (i.e., the passing of an external entity into or through a quasi-planar surface in which the structural integrity of the surface is broken/interrupted)	Stem 2: (be) an act/instance of driving into (i.e., forceful insertion or penetration through a resistant/hard surface by breaking/interrupting its surface integrity and passing into the resistant/hard three-dimensional volume beyond via pure force and quasi-violent breaking/distortion/displacement of the structural integrity of that volume)
CTE	(be) a state of being/having been penetrated	
CSV	(be) the physical act of penetration	
OBJ	(be) the entity/object employed to penetrate (e.g., a nail, screw, blade, pointed object, etc.)	Stem 3: (be) an act/instance of injection

NOTE: This root refers only to the act/process of penetration of an external entity through a two-dimensional medium or into a three-dimensional medium; it is not focused on the resulting state of interiority itself. Thus, for translations of English words focused on the resulting state of interiority rather than the interruption of the surface integrity, e.g., *‘insert, infuse, immerse, instill, imbue, implant’*, use an appropriate SPATIO-TEMPORAL Root instead, e.g., **-XW-**, **-XL-**, **-CW-**, **-TP-**, **-DB-** and/or appropriate Spatio-Temporal affixes associated with these roots.

-ŃÇ- ‘EXTRACTION’		
BSC	Stem 1: (be) an act/instance of extraction; to extract, draw out, draw forth (i.e., to remove or separate out something from something else by using physical force, causing it to exit from some surrounding or encasing medium or substrate, e.g., pulling, sucking, reversal of pressure, etc.)	Stem 2: (be) an act/instance of removing something from some surrounding medium/substrate by physically invading/cutting into that medium and forcibly extracting (e.g., surgery, digging for something, immersing one’s hands or appendage(s) into and grabbing, etc.)
CTE	(be) a state of being/having been extracted, drawn out, withdrawn out of something	
CSV	(be) the physical act of extraction; to do something that physically extracts, draws something forth/out	
OBJ	(be) the entity/object employed to extract	Stem 3: (be) an act/instance of obtaining or drawing out something from a surrounding medium/substrate by chemical or other non-manual means (e.g., osmosis, titration, burning, chemical reaction, etc.).

-FFR- BENDING / DISTORTION / TWISTING / WARPING		
BSC	Stem 1: (to be) an act/instance/process of bending; to undergo bending	Stem 2: (to be) an act/instance/process of distortion; to undergo distortion [i.e., physical bending/twisting of an object/entity into a different, less functional shape]
CTE	(to be) a state of being bent	
CSV	(to be) the physical act of bending; to bend	Stem 3: (to be) an act/instance/process of twisting or warping; to undergo twisting or warpage
OBJ	(to be) the part/area of an entity/object that is bent	

-DKH- BULGING / PROLAPSE / ERUPTION / EXPLOSION		
BSC	Stem 1: (to be) an act/instance/process of bulging outward	Stem 2: (to be) an act/instance/process of prolapsing
CTE	(to be) a state of bulging outward	
CSV	(to be) the physical act of bulging; to make something bulge outward	Stem 3: (to be) an act/instance/process of eruption or explosion
OBJ	(to be) the part/area of an entity/object that bulges outward	

-DBW- COLLAPSING / SINKING / IMPLOSION		
BSC	Stem 1: (to be) an act/instance/process of collapsing inward	Stem 2: (to be) an act/instance/process of sinking inward or downward
CTE	(to be) a state of collapsing inward	
CSV	(to be) the physical act of bulging; to make something collapse inward	Stem 3: (to be) an act/instance/process of implosion/imploding
OBJ	(to be) the part/area of an entity/object that collapse inward	

-ḐŘ- **‘STRETCH / ELONGATE / SPREAD’**

NOTE: This root refers to expansion in size **without** an entity’s individual component members/contents/nodes themselves expanding, but rather only the space [or underlying substrate or connective medium] between them

BSC	Stem 1: (be) an act/instance of linear (i.e. unidimensional) stretching or elongation; to stretch, to elongate [i.e., to expand in size along a single dimensional axis without the individual component molecules/members/contents themselves expanding, but rather only the space between them]	Stem 2: (be) an act/instance of planar (two-dimensional) stretching, expansion or spreading; to spread (two-dimensionally), to expand in terms of surface area Stem 3: (be) an act/instance of quasi-spheroidal (3-dimensional) stretching or expansion; to expand (3-dimensionally)
CTE	(be) a state of being/having been [unidimensionally] stretched or elongated	
CSV	(be) the physical act of [unidimensionally] stretching or elongation	
OBJ	(be) the means/implement/procedure used to [unidimensionally] stretch	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-ŘḐŘ- **‘STRETCH / ELONGATE / SPREAD [under tension]’**

The three stems of this root are identical to the stems of the above root -ḐŘ- except that they connote a concurrent physical strain/tension with the act of stretching/spreading/expansion, so that the elongated/expanded entity is subject to potential recoil or collapse back to its original state if the stretching/expansion force being applied is terminated.

-CY- **‘CLUSTERING / CLUMPING / FLOCK / SWARM / MOB’**

BSC	Stem 1: (to be) an act/process of entities (e.g., molecules, bacteria, rodents, leaves, etc.) clustering/clumping together into a cluster/clump; to cluster/glump together	Stem 2: (to be) an act/process of entities gathering/flocking together into a large group/flock Stem 3: (to be) an act/process of entities swarming together into a crowe/mob or swarm
CTE	(to be) a cluster/clump	
CSV	(to be) an act/process of clumping/clustering together, to participate in a process of clumping/clustering, to cluster, to clump	
OBJ	(to be) the entity/means/procedure utilized to achieve clustering/clumping	

-D- ‘GROUP / GATHERING / ASSEMBLY / MEETING / CONGREGATION / CONFERENCE / CONGRESS’		
BSC	Stem 1: (to be) an act/process of entities (e.g., people, animals, molecules, etc.) assembling or gathering together into a group; to assemble/gather together/group	Stem 2: (to be) an act/process of entities congregating/meeting together for a purpose or shared activity; to meet (up), to meet together, to congregate Stem 3: (to be) an act/process of entities convening for an official/formal conference or congress
CTE	(to be) a state of entities assembled/gathered together in a group	
CSV	(to be) an act/process of gathering/bringing entities together, to perform an act which gathers/helps to gather entities together, to muster, to round up	
OBJ	(to be) the entity/means/procedure utilized to achieve gathering/grouping	

-CD- ‘ADHESION / STICKINESS / AGGREGATION / AGGLOMERATION’		
BSC	Stem 1: (be) an act/instance of adhesion; to adhere (i.e., something sticking to something else via some adhesive medium)	Stem 2: (be) an act/instance of stickiness; be sticky; to stick (i.e., to physically adhere to something via a sticky medium where the focus is on the textural stickiness of the adhesion, not necessarily the fact of adhering) Stem 3: (be) an act/instance of aggregation/agglomeration/conglomeration (i.e., bringing separate entities physically together for a unified purpose, where the focus is on their functioning together as opposed to the nature of the physical connection itself)
CTE	(be) a state of adhesion	
CSV	(be) the physical act of adhering	
OBJ	(be) an entity/substance used for adhering; an adhesive	

-TL- ‘COMMENCEMENT / ACTIVATION / INITIATION / INSTIGATION’		
(NOTE: This root refers to ‘beginning/initiation’ meaning ‘activate, start/initiate from a stopped/dormant state, or the commencement of a common/recurring/pre-arranged activity; for the ‘beginning/initiation’ meaning “origination, first-time occurrence, first-time causation”, see the root -GN- .		
BSC	Stem 1: (be) an act/instance of commencing/starting an act/event/state (i.e., the transition moment/period between a non-active vs. active state)	Stem 2: (be) an act/instance of initiating/activating something; to activate, to initiate, to start up (i.e., the act/process/procedure necessary to bring energy to a non-active state/entity so that it becomes active, e.g., starting a motor, activating a device, initiating a complex procedure, etc.) Stem 3: (be) an act/instance of instigation; to instigate (i.e., set in motion a series of events or arranging a precursor state/act/event that will lead to a specific outcome)
CTE	(be) a state of commencement/starting	
CSV	(be) the physical act of commencing/starting	
OBJ	(be) an entity/object used to commence/start something	

-PL- ‘TURN / VEER / PITCH’		
BSC	Stem 1: (be) an act/instance of turning something; to turn something (i.e., cause an object to move in an arc-like motion so that its direction/orientation relative to the surrounding space//surface/medium/substrate changes	Stem 2: (be) an act of veering; to veer (i.e., a sudden, unexpected turn) Stem 3: (be) an act of changing one’s pitch; to pitch upward or downward (i.e., to turn one’s orientation on a vertical axis upward or downward relative to one’s (quasi-)static horizontal frame of reference)
CTE	(be) a state of being turned	
CSV	(be) the physical act of turning	
OBJ	(be) an entity/object used to make something turn	

NOTE: Use this root with various spatial affixes to add specific detail, e.g., SPR, CRC, SPM, SWM, SPN, IPE, IPF, PFL, etc.

NOTE: the meaning of the old FORMAL and INFORMAL stems previously associated with this root have been distributed between this and the following new root with the same Specification pattern:

-RPL- ‘SPINNING / REVOLVING / ORBIT / ROTATION’	
Stem 1: (be) an act/instance of spinning/revolving (i.e., revolving in place on one’s own rotational axis)	
Stem 2: (be) an act/instance of revolving/orbiting; to revolve/orbit (i.e., to follow a (quasi-)circular motion around another entity/object)	
Stem 3: (be) an act of rotation; to rotate	

-LXR- ‘ROLL / WHEELED TRANSLATIVE MOTION / WIND UP OR AROUND’		
BSC	Stem 1: (be) an act/instance of rolling an entity [i.e., vertical spinning motion relative to a quasi-stationary substrate resulting in vectored movement]	Stem 2: (be) an act/instance of moving an object/entity translatively by means of wheel(s) Stem 3: (be) an act/instance of winding something into a coil (e.g., string, wire, rope, etc.) by continuous circular turning; to wind (up) into a coil
CTE	(be) a state of rolling	
CSV	(be) the physical act of rolling; to roll something or to make something revolve	
OBJ	(be) an entity/object used for rolling (e.g., log, wheel, bobbin, reel, spool, etc.)	

-ČPH- ‘STRIKE / HIT / BLOW / KNOCK / TOPPLE’		
BSC	Stem 1: (be) an act/instance of striking/hitting something using one’s body/appendages or an implement/device used as an extension of one’s body/appendages, with the intention of changing its location, placement, movement, state, arrangement, etc. (e.g., as in hitting a ball in sport, or striking a nail with a hammer)	Stem 2: (be) an act/instance of striking/hitting something, using one’s body/appendages or an implement/device used as an extension of one’s body/appendages, either as an offensive attack or in self-defense, with the intention of causing physical harm or physically thwarting a perceived attack Stem 3: (be) an act/instance of knocking something down or over by means of striking, hitting or delivering a blow, whether by using one’s body/appendages or an implement/device used as an extension of one’s body/appendages; to knock over, to knock down, to push/shove to the ground, to physically topple something
CTE	(be) a state of being struck/hit	
CSV	(be) the physical act of striking/hitting	
OBJ	(be) the implement/tool used to strike/hit something	

Derivations: tap, punch, beat, kick, pat, tamp, cudgel, nudge

-ŽN- ‘IMPULSE / PUSHING / PROPULSION’		
BSC	Stem 1: (be) an act/instance of pushing something; to push (i.e., make something move by exerting an impulsive force upon it via one’s hands or appendages or via a manually-controlled object/device)	Stem 2: (be) an act/instance of shoving, bumping, butting, prodding (i.e., using one’s hands or body, or a manually-controlled extension thereof, to deliver a sudden push to another entity for the ostensible purpose of making it move out of one’s path or to gain the entity’s attention) Stem 3: (be) an act/instance of thrusting or propulsion; to make something (or oneself) move quickly via a sudden, violent use of impulsive force
CTE	(be) a state of being pushed	
CSV	(be) the physical act of pushing	
OBJ	(be) an entity/object used to push	

-ŽR- ‘THROWING / LAUNCHING / SHOOTING’		
BSC	Stem 1: (be) an act/instance of throwing something (i.e., using one’s arms or other appendage to suddenly and forcefully impel/project an object into the surrounding air/space where its path of motion then becomes subject to gravitational/environmental forces)	Stem 2: (be) an act/instance of discharging, firing off, shooting a projectile from a firearm or other device using violently explosive/propulsive force; to shoot, fire off, discharge Stem 3: (be) an act/instance of launching an airborne or spaceborne projectile, rocket or craft using a large amount of force (e.g., chemical rockets, nuclear reaction, anti-gravity, magic, etc.); to launch a weapon/missile/aircraft/spacecraft
CTE	(be) a state of being thrown	
CSV	(be) the physical act of throwing	
OBJ	(be) an entity/object used to throw	

-ÇV- ‘TRACTION / DRAWING / PULLING’		
BSC	Stem 1: (be) an act/instance of pulling or drawing (i.e., make something move by exerting a tractive force upon it via one’s hands or appendages or via a manually-controlled object/device)	Stem 2: (be) an act/instance of dragging, tugging, towing, lugging (i.e., to pull/draw with resistance from the entity being towed either due to gravity, friction, or the pulled entity’s own resistive efforts) Stem 3: (be) an act/instance of hauling, trawling, raking (i.e., using pulling/drawing force to carry/convey/transport a load/object/entity)
CTE	(be) a state of being pulled or drawn	
CSV	(be) the physical act of pulling or drawing	
OBJ	(be) an entity/object used to pull or draw, e.g., rope, reins, chain, etc.	

Morphological derivative: hoist

-FJ- ‘IMPEDE / HINDER / BLOCK / STOP / INTERFERE / INTERRUPTION’		
BSC	Stem 1: (be) an act/instance of impeding/hindering the path or flow or course of an entity or impede/hinder some activity or active state [CPT version = to block, to stop, make cease]	Stem 2: (be) an instance of a channel or conduit through which something flows becoming clogged/obstructed/blocked; to clog, to block Stem 3: (be) an act/instance of interfering, interrupting or obstructing some entity or activity or state, with the effect of (potentially) disrupting it or rendering it ineffectual; to hinder, to interfere, to interrupt, to obstruct [CPT version = to disrupt]
CTE	(be) a state of being impeded/hindered	
CSV	(be) the physical act of impeding/hindering	
OBJ	(be) an entity/object used to impede/hinder	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RFJ- ‘CONSTRICTION / SEALING / PLUGGING / PREVENTION’	
Stem 1: (be) an act of constricting or choking something; a constriction; to constrict, to choke [CPT = to cut off the flow of something]	
Stem 2: (be) an act/instance of sealing or plugging ; to seal, to plug	
Stem 3: (be) an act/instance of prevention; to prevent something from happening [CPT version = to thwart]	

-ṬS- ‘COVERING / SUPERIMPOSITION / ENCASEMENT / SHEATH’		
BSC	Stem 1: (be) an act/instance of covering something; to cover (i.e., superimposing an entity over/onto another for the purpose of protection, concealment, etc.)	Stem 2: (be) an act/instance of placing an encasing medium/material around something; to encase, to wrap Stem 3: (be) an act/instance of sheathing; to sheathe (i.e., to place something into its associated/customized encasing cover/holder/container)
CTE	(be) a state of being covered	
CSV	(be) the physical act of covering	
OBJ	(be) an entity/object used to cover (e.g., lid, blanket, tarp, screen, etc.)	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RṬS- ‘TOP / ROOF / VENEER / COATING / MASK’	
Stem 1:	(be) an act/instance of placing a top or roof(-like covering); to roof, to tent, to put a top upon something
Stem 2:	(be) an act/instance of placing a veneer, facing, coating, crust, or protective layer (of a substance/material) onto something
Stem 3:	(be) an act/instance of masking something; put a mask on something; to mask (i.e., a false face or false exterior covering designed to hide the appearance of something)

-ṢM- ‘SURFACE APPLICATION / OVERLAY / SPRAY’		
BSC	Stem 1: (be) an act/instance of applying/spreading/overlaying a (quasi-)liquid or viscous substance or material to the surface of something; to apply, spread on(to), to overlay, to coat, to smear a substance/material to something (e.g., frosting, plaster, stucco, peanut butter, etc.)	Stem 2: (be) an act/instance of using a brush or wand-like implement with an absorptive sponge-like end to apply a substance or medium onto another so that it is flush with, in complete contact with, or adheres to the underlying entity; to apply with a brush or wand-like implement with an absorptive sponge-like end Stem 3: (be) an act/instance of spraying a substance or medium onto another so that it is flush with, in complete contact with, or adheres to the underlying entity; to spray on, to apply via a spray(er) OBJ Specification = ‘aerosol’
CTE	(be) a state of having (had) a substance/material applied	
CSV	(be) the physical act of applying a (quasi-)liquid or viscous substance or material	
OBJ	(be) the material or substance (to be) applied	

The following stems have the same Specification pattern as the root **-ṢM-** above:

-ṢVW-	1. housepaint/industrial paint	2. artist’s paint	3. watercolor paint
-ṢVY-	1. varnish	2. polymer-based sealant	3. shellac
-ṢVR-	1. facial make-up	2. body paint/body make-up	3. spray-on tan solution
-ṢFW-	1. cream	2. lotion	3. ointment
-ṢFY-	1. salve	2. balm	3. butter (indicating a type of topical application, e.g., tanning butter, not the edible milk-based substance)
-ṢFL-	1. insect repellent cream/lotion	2. insect repellent spray	3. insecticide spray
-ṢFR-	1. disinfectant ointment or cream	2. disinfectant spray	3. disinfectant solution

-ÇDR- ‘LEVERAGE’		
BSC	Stem 1: (be) an act/instance of leveraging; to leverage (i.e., to move/hoist something by means of the principle of the lever)*	Stem 2: (be) an act/instance of being the balancing point for an act of leverage; function as/like a fulcrum Stem 3: (be) an instance of being the force/pressure/power applied to move/hoist something by means of leverage
CTE	(be) a state of being leveraged	
CSV	(be) the physical act of leveraging	
OBJ	(be) a lever	

*If using this stem figuratively (as is common in contemporary business English), it must be morphologically marked as being metaphorical.

-TŇ- ‘FILL / INUNDATE / FILL-IN / STUFF’		
BSC	Stem 1: (be) an act/instance of filling something (up) (i.e., use an empty volume of space as a container/holder for some something)	Stem 2: (be) an act/instance of filling something in, stuffing (i.e., to fit/move/insert something into a contained space to the point where the contained space is completely filled) Stem 3: (be) an instance of inundating a space with some entity/substance; to inundate, to flood, cover over/up (e.g., with a liquid, gas, or malleable substance which completely supplants, covers, or renders inaccessible a surface, an object, or a contained volume of space)
CTE	(be) a state of being filled	
CSV	(be) the physical act of filling	
OBJ	(be) the substance/entity with which a contained space is filled	

-ŠŇ- ‘INFLATION / PRESSURIZATION / VENTILATION’		
BSC	Stem 1: (be) an act/instance of inflating or puffing up with air or other gaseous substance; to inflate, to puff up with air/gas [both the act/process of inflation and the state of being inflated with air/gas]	Stem 2: (be) an act/instance of pressurization Stem 3: (be) an instance of ventilation [i.e., maintain a state of pressurization/inflation via continuous flow /replacement of air or gas]
CTE	(be) a state of being inflated/puffed up	
CSV	(be) the physical act of inflation/puffing up; to inflate, puff up	
OBJ	(be) the substance/gas with which a contained space is inflated or puffed up	

-ŠĐ- ‘REMOVAL / ELIMINATION / EMPTYING / CLEARING / VACUUM’		
BSC	Stem 1: (be) an act/instance of removal/elimination of something from somewhere; to remove, to eliminate something from somewhere	Stem 2: (be) an act/instance of emptying or clearing an area, container, or volume of space Stem 3: (be) an instance/state of vacuum; to render a volume of space into a state of vacuum
CTE	(be) a state of having been removed/eliminated	
CSV	(be) the physical act of removal/elimination; to perform an act which removes or eliminates something	
OBJ	(be) the means/implement/procedure by which something is removed or eliminated	

-XV- ‘COMPRESSION / COMPACTING / CONCENTRATION / POTENTIAL ENERGY STORAGE’			Associated Affix: DCP
BSC	Stem 1: (to be) a state/act of compression/compaction; to compress, to compact, to squeeze [i.e., decrease the dimensional volume of something via externally applied pressure]	Stem 2: (to be) a state/act of compression/compaction/concentration/ condensing; to compress, to compact, to concentrate, to condense [i.e., to fit a greater amount of a material, substance, content, into a fixed space via increasing its density per volume] Stem 3: (to be) a state/act of energy storage; to store potential energy [OBJ = ‘battery’]	
CTE	(to be) a state of being compressed/compacted/squeezed		
CSV	(to be) the physical act of compressing/compacting/squeezing		
OBJ	(to be) the means/implement/procedure by which something is compressed/compacted/squeezed		

-TÇV- ‘DISSIPATION / DISPERSION / SCATTERING / THINNING / CULLING’		
BSC	Stem 1: (to be) a state/act of dissipating/dispersing; to dissipate/disperse something (i.e., render a conglomerate entity less viable or concentrated by increasing the distance between its members or component entities)	Stem 2: (to be) a state/act of scattering; to scatter [i.e., dissemble or destroy the symmetry/order/arrangement/viability of a multi-member or conglomerate entity by physically separating its members/components in (quasi-)random fashion] Stem 3: (to be) a state/act of thinning/culling [i.e., rendering a conglomerate entity less viable or less concentrated by removing/eliminating some of its members or component entities]
CTE	(to be) a state of being / having been dissipated/dispersed	
CSV	(to be) the physical act of dispersion/dissipation; to dissipate/disperse	
OBJ	(to be) the means/implement/procedure by which something is dissipated/dispersed	

-LṬR- ‘DRAINAGE’

BSC	Stem 1: (to be) a state/act of draining a liquid via gravity; to drain a liquid via gravity [i.e., remove/relocate a volume of liquid by means of pouring it or channeling it via gravity through a hole/conduit/pipe/channel, etc.	Stem 2: (to be) an act of drainage via osmosis/soaking/absorption into a surrounding media (e.g., the ground, a bandage, absorptive cotton, etc.)
CTE	(to be) a state of being / having been drained	Stem 3: (to be) an act/state of drainage via pressure/suction/pumping; to drain via pressure/suction/pumping
CSV	(to be) the physical act of draining; to drain	
OBJ	(to be) the liquid which is removed/relocated by being drained	

NOTE: the following root uses the same Specification pattern as the above root:

-FṬR- ‘RINSING / DRYING / EVAPORATION’

Stem 1: (to be) a state/act of rinsing; to rinse [i.e., pour/spray water or other liquid upon/over an object/entity for the purpose of removing superficial material]
Stem 2: (to be) a state/act of drying; to dry [i.e., remove all presence of wetness or moisture]
Stem 3: (to be) an act/state of evaporation; to evaporate

-SMY- ‘SORTING / STRAINING / SIFTING / AGGREGATION’

BSC	Stem 1: (to be) a state/act of sorting through something in order to find/separate out a particular kind of entity from it; to sort through something in order to find/separate out a particular kind of entity from it [i.e., separate one or more of a particular kind of entity from a group of multiple kinds of entities]	Stem 2: (to be) a state/act of straining/sifting something in order to separate out certain ingredients/elements/components/contaminants, etc.; to strain/sift something out of something else
CTE	(to be) a state of being / having been sorted through	Stem 3: (to be) a state/act of locating and setting aside, bringing together, or aggregating members of a particular kind of entity from various/separate locations; to aggregate members of a particular kind of entity from various/separate locations
CSV	(to be) the physical act of sorting; to sort	
OBJ	(to be) the entity/object or collection of entities through which one sorts in order to separate out a particular kind of entity	

-SXL- ‘FILTRATION / DISCRIMINATION / SEGREGATION’

BSC	STEM 1: (to be) an act/state of filtering or filtration; to filter something out of something else	STEM 2: (to be) an act of discrimination; to discriminate
CTE	(to be) a state of being / having been filtered	STEM 3: (to be) an act/state of segregation; to segregate
CSV	(to be) the physical act of filtering; to filter	
OBJ	(to be) the entity/object or collection of entities being filtered	

-SXR- ‘COMBING / BRUSHING / RAKING / CARDING’		
BSC	STEM 1: (to be) an act/state of combing (through) hair/fur; to comb (through) hair/fur	STEM 2: (to be) an act/state of brushing hair/fur; to brush hair/fur STEM 3: (to be) an act/state of raking or carding (to remove unwanted elements from a substrate (e.g., fallen leaves from grass, knots from wool, etc.); to rake or card
CTE	(to be) a state of being combed	
CSV	(to be) the physical act of combing hair/fur; to run a comb through hair/fur	
OBJ	(to be) the hair/fur being combed	

-ZṬ- ‘ABSORPTION / IMBUEMENT / INFILTRATION’		
BSC	Stem 1: (be) an act/instance of absorption; to absorb (i.e., for a [quasi-]liquid substance to be soaked up into a porous material)	Stem 2: (be) an act/instance of imbuement/infusion; to imbue, to infuse (i.e., to introduce a quality or characteristic into an entity so that it spreads throughout and becomes part of that entity’s character/essence/identity, etc.) Stem 3: (be) an instance of infiltration
CTE	(be) a state of being (or having been) absorbed	
CSV	(be) the physical act of absorbing	
OBJ	(be) a porous material/object/entity which absorbs	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RZṬ- ‘SOAK / DIFFUSION / PERMEATION / OSMOSIS’	
Stem 1: (be) an act/instance of soaking/sousing	
Stem 2: (be) an act/instance of diffusion/suffusion; to diffuse, to suffuse [CPT version = to permeate]	
Stem 3: (be) an act/instance of osmosis	

-SJ- ‘COMBINE / (INTER-)MINGLE / MIX / BLEND / SYNTHESIS’		
BSC	Stem 1: (be) an act/instance of combining two or more entities (i.e., bring separate entities together to function as one, for to achieve a more effective/desirable result/outcome than would/could be achieved by having the entities remain separate); to combine	Stem 2: (be) an act/instance of mixing or (inter-)mingling two or more parties/entities (i.e., for the purpose of having the entities interact/associate with each other in some way); to mix Stem 3: (be) an instance of synthesizing; to synthesize (i.e., to combine elements to form a new gestalt)
CTE	(be) a state of being (or having been) combined	
CSV	(be) the physical act of combining	
OBJ	((to be) the rule(s)/pattern(s)/procedure(s) one follows in order to achieve a meaningful or coherent combination of elements	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RSJ- ‘BLENDING / FUSION / AMALGAMATION / SYNERGY’	
Stem 1: (be) an act/instance of mixing/blending two or more entities together (i.e., same as Stem 1 of the above root except that the two entities coalesce/merge/dissolve into a new gestalt entity); to blend, to fuse, to amalgamate	
Stem 2: (be) an act/instance of synergy	
Stem 3: (be) an act/instance of synergy with emergent properties	

-RČ- ‘DAMAGE / CORRUPTION / SUBVERSION / RUIN / DESTRUCTION / DEMOLISH / ELIMINATION / ERADICATION’		
BSC	Stem 1: (be) an act/instance of physically damaging [CPT version = wreck, destroy physically, i.e., damage to the point of physical irreparability]	Stem 2: (be) an act/instance of rendering less-than-fully operable/functional; corrupt, subvert, undermine [CPT Version = ruin, devastate, break up, destroy operationally, i.e., damage, corrupt, or subvert to the point of being unable to function/operate] Stem 3: (be) an act/instance of reducing the presence/existence of; to reduce, lessen [CPT version = eradicate, eliminate, annihilate, “disappear”, i.e., to render something non-existent]
CTE	(be) a state of being (or having been) physically damaged	
CSV	(be) the physical act of damaging	
OBJ	(be) that which is used to physically damage	

-BN- ‘CHANNEL / STEER / AIM’		
BSC	Stem 1: (be) an act/instance of channeling; to channel (i.e., direct one’s translative course or that of another through a channel or conduit)	Stem 2: (be) an act/instance of steering; to steer (i.e., direct one’s course via manually-manipulated means) Stem 3: (be) an act/instance of aiming; aim for, take aim at
CTE	(be) a state of being (or having been)	
CSV	(be) the physical act of	
OBJ	(be) that which is used to channel the course of something (e.g., a funnel, chute, conduit, pipe, tube, trough, shaft, etc.)	

-DC- ‘SAFETY / SECURITY / LOCK’		
BSC	Stem 1: (be) an act/instance of making something safe (i.e., removing the threat of other entities from harming something or someone)	Stem 2: (be) an act/instance of securing something, safekeeping, i.e., establishing preventative practices/protocols/procedures with the goal of keeping something safe from external harm/damage; to secure, keep safe Stem 3: (be) a act/instance of locking something, i.e., establishing a physical means by which other entities cannot reach or have contact with something, or by which an entity is prevented from reaching or having contact with external parties
CTE	(be) the state of being safe	
CSV	(be) the physical act of making something/someone safe	
OBJ	(be) the object/entity/procedure/rule/law, etc. by which one effectuates a state of safety	

-CMY- ‘BUFFER / FAIL-SAFE / LIAISON’		
BSC	Stem 1: (be) an act/instance of buffering; to buffer (i.e., place an intervening medium between two entities as a protective measure)	Stem 2: (be) an act/instance of functioning as a fail-safe; to function/act as a fail-safe measure Stem 3: (be) a act/instance of being/functioning as a go-between or liaison; to function as a go-between or liaison (i.e., a neutral entity or party for purposes of diplomacy)
CTE	(be) the state of being buffered	
CSV	(be) the physical act of buffering; to do something that acts as or creates a buffer	
OBJ	(be) the object/entity/procedure/rule/law, etc. used to buffer	

-ZW- ‘CLEANLINESS / PURITY / DECONTAMINATION / DISINFECTION / SANITATION / HYGIENE’		
BSC	Stem 1: (be) a state of cleanliness; be clean, to (make) clean (i.e., a state of being relatively free from dirt/grime/germs/mold, etc.) *	Stem 2: (be) a state of purity, being pure; be/make pure, purify, decontaminate, disinfect (i.e., to be/make free from foreign/invasive/polluting substances) Stem 3: (be) a state/act of proper sanitation/hygiene; be sanitary/hygienic, exercise proper sanitation/hygiene (i.e., practices which help to ensure an entity/party/environment remains clean or pure)
CTE	(be) a state of cleanliness	
CSV	(be) a physical act of cleaning	
OBJ	(be) the entity/party/object (to be/being) cleaned	

* This stem does not mean ‘organize’ or ‘de-clutter’ as in “to clean a room”; see the next root below.

-TB- ‘TIDINESS / ORDERLINESS / GROOMING’		
BSC	Stem 1: (be) a state of tidiness/orderliness/neatness, being tidy/orderly;neat; to tidy (up), put in order, to neaten (i.e., to organize/arrange the location/placement of entities in an environment so that they are logically and neatly arranged for ease of use and so the environment has a positive aesthetic appearance)	Stem 2: (be) a state of pristineness, pristine condition; to be/keep/maintain (in) pristine (condition) (i.e. in original condition) Stem 3: (be) a state of being well-groomed; to groom (i.e. be/make free from slovenliness)
CTE	(be) a state of orderliness/tidiness/neatness	
CSV	(be) an act of tidying/neatening; to make tidy or neat, to tidy up	
OBJ	(be) that which is (to be) tidy/neat/orderly	

-MBW- ‘SUCTION / PUMPING’		
BSC	Stem 1: (be) a state/act of orally sucking; to orally suck (i.e., create a velaric ingressive airstream in one’s oral cavity in order to suck in liquid, food, air, etc.)	Stem 2: (be) a state/act of suction; to suction, create suction Stem 3: (be) a state/act/process of storing/transferring/draining liquid or gas by means of pumping; to pump a liquid or gas for purpose of storage/transfer/drainage [i.e., via artificially created pressure differential]
CTE	(be) a state of being sucked	
CSV	(be) an act of sucking; to physically suck something	
OBJ	(be) that into which something is suck	

-VTI- ‘HANDLE / MANIPULATIVE ASSISTIVE COMPONENT’		
BSC	Stem 1: (to be) a state/act/process of supporting oneself by holding onto a handle (i.e., a protruding extension, ring, bar, etc. of an entity designed for one to hold onto)	stem 2: (to be) a state/act of physically controlling another entity by holding onto its handle (e.g., a pot handle, the handle of a hammer or shovel, the handle of a gun, etc.) stem 3: (to be) a remote control device (e.g., a joystick controller, a detonation plunger, etc.)
CTE	(to be) a handle (e.g., of a cane)	
CSV	(to be) an act/process of making use of a handle; to grab/hold (onto) a handle	
OBJ	(to be) the entity being supported by holding onto a handle	

-TVY- ‘POLARITY / NEUTRALITY’		
BSC	STEM 1: (to be) a state of positive polarity, be positive in terms of polarity	STEM 2: (to be) a state of negative polarity, be negative in terms of polarity
CTE	(to be) a state of being positive in terms of polarity	
CSV	(to be) an act of making something positive in terms of polarity	
OBJ	(to be) that which is of positive polarity	STEM 3: (to be) a state of neutral polarity, be neutral in terms of polarity

-VPW- ‘REFLECTION / REFRACTION / DIFFRACTION’		
BSC	STEM 1: (to be) a state of reflecting (of electromagnetic radiation); to reflect [i.e., change in the direction of EM waves/particles via contact with a barrier]	STEM 2: (to be) a state of refraction; to refract [i.e., the bending of, and change in speed and/or wavelength of electromagnetic energy due to passage from one medium to another]
CTE	(to be) a state of reflection; for there to be reflecting going on	
CSV	(to be) a physical act/process of reflecting; to have/use a reflective surface that causes electromagnetic energy to change direction	STEM 3: (to be) a state of diffraction; to diffract [i.e., the bending of, and change in direction of electronic energy to due to passage through an opening or around a barrier]
OBJ	(to be) a reflection, i.e., what gets reflected (i.e., a beam of light, a visual image)	

The following root has the same Stem and Specification structure as the root **-VPW-** above:

-VPY- [The three stems of this root are identical to the stems of the root **-VPW-** above except that they deal with the reflection/deflection/bending of macro-level phenomena, e.g., water waves, a tennis ball against a racket, a billiard ball against a snooker cushion, a person diving into a swimming pool, a metal object deflected from its trajectory by a magnet, etc.]

2.1.2 Tools and Implements/Materials/Substances Used To Maintain Completed States Created via Tools/Devices/Machines/Manual Processes

-CŇ- PIN / TACK / STAPLE		
BSC	Stem 1: (be) a state/act of maintaining a state between entities by means of a pin, (be) a pin in use, a pin being used; to utilize/make use of a pin	Stem 2: (be) a state/act of maintaining a state between entities by means of a tack, (be) a tack in use, a tack being used; to utilize/make use of a tack
CTE	(be) a pin	
CSV	(be) an act of utilizing/making use of a pin; use/make use of a pin	Stem 3: (be) a state/act of maintaining a state between entities by means of a staple, (be) a staple in use, a staple being used; to utilize/make use of a staple
OBJ	(be) what a pin is holding together	

The following roots/stems follow the same Specification pattern as the root PIN/TACK/STAPLE above:

- CPY- 1. nail 2. spike 3. pile (i.e., a foundational support structure)
- DBL- 1. stopper 2. plug/cap 3. seal/suture
- GDW- 1. putty 2. caulk 3. grout
- GDR- 1. adhesive 2. paste 3. glue
- KṬW- 1. string/twine/cord 2. wire 3. strap
- FSM- 1. brace 2. girder 3. crossbeam
- JDY- 1. stent 2. tubing 3. valve
- ṢMW- 1. nut, lug nut 2. washer 3. drywall anchor
- DDŘ- 1. needle [as perforator] 2. needle [as thread-drawer/puller] 3. needle [as probe or delivery mechanism]; syringe
- CPW- 1. screw 2. bolt 3. rivet
- GDY- 1. cement 2. mortar 3. plaster
- GDL- 1. resin 2. polymer 3. solder
- KṬT- 1. clip 2. clamp 3. staple
- KṬY- 1. button 2. zipper 3. velcro fastener
- FSN- 1. hook 2. frame 3. rigging/scaffolding
- ṬTH- 1. net 2. mesh 3. web
- RBB- ‘LIQUID MEDIA USED AS TOOL’ 1. soaking agent/medium 2. hydration agent/medium 3. lubricant/lubricating agent/medium
- ŽDV- ‘GUIDING ALONG/THROUGH A CHANNEL’ 1. funnel 2. trough 3. chute
- XBL- ‘LIQUID AS RESOURCE CONSUMED IN A PROCESS 1’ 1. fuel 2. machine oil 3. cooking oil
- XBR- ‘LIQUID AS RESOURCE CONSUMED IN A PROCESS 2’ 1. cleansing agent 2. hydraulic fluid 3. solvent

-ṢV- ‘TOOL / INSTRUMENT / PIECE OF EQUIPMENT’		Affix: TDM
BSC	Stem 1: (to be) a tool, instrument, implement, piece of equipment as extension of bodily appendage(s) or sensory organs; use a tool (e.g., as per force, strength, precision, reach, pressure, instrument as labor-saving or efficiency-increasing means etc.) — [both implement and the manner/process of its function]	Stem 2: (to be) a tool, instrument, implement, piece of equipment as a means of “defying” the forces of Nature (e.g., as with a wheel, fulcrum, wedge, clamp, etc.); use such a tool — [both implement and the manner/process of its function] Stem 3: (to be) a supply-like resource/implement/piece of equipment used by itself or in association with specific tool to maintain/sustain a constructed state (e.g., a nail, tack, hook, rivet, staple, screw, clothespin, etc.)
CTE	(to be) a tool, instrument or implement; use a tool	
CSV	(to be) the manner/process (i.e., how it works) of using a tool or implement; to engage in the manner/process of using a tool	
OBJ	(to be) the party/entity using a tool or implement	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RČV- ‘UTENSIL / IMPLEMENT / FUEL’

Stem 1: (to be a) utensil, specialized implement for assisting in refined task

Stem 2: (to be a) mechanical / motorized / electric / electronic implement/utensil

Stem 3: (to be a) supply-like resource/implement used as fuel or input for a mechanical / electrical / electronic implement/utensil

The following stems for tools have the same Specification pattern as the root **-ČV-** above:

- GPW-** 1. hammer 2. mallet 3. sledgehammer
- GPR-** 1. ball-peen hammer 2. half-hatchet hammer 3. specialized hammer (e.g., body mechanic's hammer, drywall hammer, tack hammer, etc.))
- GPY-** 1. hatchet 2. axe 3. specialized axe (e.g., fireman's axe, executioner's axe, double bit axe, etc.)
- TGW-** 1. (round-point) awl 2. bradawl 3. birdcage awl
- TGY-** 1. sewing awl 2. stitching awl 3. other specialty awl (e.g., saddler's, sailmaker's, scratching, closing, etc.)
- ZXW-** 1. chisel 2. dovetail chisel 3. other specialized hand-driven chisel (e.g., skew chisel, framing chisel, bolster chisel, socket chisel, cranked-handled chisel)
- ZXL-** 1. concrete chisel 2. cold chisel 3. other specialized hammer- or power-driven chisel (i.e., not hand-driven)
- TST-** 1. adjustable/slip-joint pliers 2. non-adjustable/needle-nose pliers 3. locking pliers
- KŠVW-** 1. fixed-size open-ended wrench 2. box-end wrench 3. combination wrench
- KŠVY-** 1. Allen wrench / hex wrench 2. lug wrench 3. other non-adjustable wrench
- KŠVL-** 1. adjustable wrench 2. monkey wrench / pipe wrench 3. ratcheting wrench
- KŠVR-** 1. socket wrench 2. other adjustable wrench 3. specialized wrench (e.g., basin/sink wrench, strap wrench, star-head key)
- ŽTR-** 1. (flathead) screwdriver 2. Phillips screwdriver 3. specialty-head screwdriver (e.g., torx, hex, pozidrive, tri-wing, etc.)
- ŠŠX-** 1. rasp / file 2. plane (jack, block, surform) 3. sanding block
- KSFW-** 1. crosscut saw 2. backsaw 3. hacksaw, coping saw, bow saw
- KSFY-** 1. jigsaw 2. circular saw 3. chainsaw
- GŽK-** 1. crowbar / ripping bar 2. cat's paw 3. flat bar
- ŽBV-** 1. hand drill 2. carpenter's brace 3. power drill / motorized drill
- ŽBL-** 1. twist drill bit 2. brad-point drill bit 3. auger drill bit
- ŽBR-** 1. self-feed drill bit 2. spade drill bit / paddle drill bit 3. Forstner drill bit

-ŽBW-	1. hole saw 2. countersink drill bit 3. plug cutter
-ŽBY-	1. step drill bit 2. tile drill bit 3. other specialty drill bit (e.g., masonry drill bit, installer drill bit)
-FSV-	1. C-clamp / G-clamp 2. hand-screw clamp 3. bench vise
-FSVW-	1. spring clamp 2. bench clamp 3. other specialty clamp (e.g., mitre clamp, trigger clamp, drill press clamp, bar clamp, vise-grip, etc.)
-DFW-	1. trowel 2. shovel / spade 3. pick
-DFY-	1. pitchfork / garden fork / potato fork / compost fork 2. hoe 3. rake
-DFL-	1. auger 2. planting dibble / hand seeder 3. post-hole pincer
-DFR-	1. aerator 2. tiller 3. plow
-FÇT-	1. hand-held brush (e.g., paint brush) 2. cleaning brush, whisk broom 3. broom``
-ÇNW-	1. scissors 2. pruning shears / snips / topiary shears 3. gardening shears / hedge shears
-ÇNY-	1. bolt cutters 2. lopper 3. pole pruner / tree pruner
-ŇHW-	1. fireplace poker / stoker 2. bellows 3. anvil
-LZDR-	1. measuring ruler 2. measuring tape 3. tailor's measuing tape
-NZDR-	1. measuring square 2. measuring compass 3. protractor
-ZZDR-	1. calipers 2. micrometer 3. angle gauge
-ŘZDR-	1. level 2. bubble inclinometer 3. angle locator
-DGR-	1. scale 2. thermometer 3. pressure gauge
-FŠŘ-	1. clock / watch / timepiece 2. speedometer 3. odometer
-LÇF-	1. wheel 2. roller, rolling shaft 3. ball bearing
-NZH-	1. ramp 2. gangway, portable bridge 3. bracing, crossbeam
-KŠB-	1. key 2. lockpick 3. other lock-opening device/instrument/means (e.g., fingerprint scanner)
-VPC-	1. mirror 2. lens 3. prism

-TT- ‘TRY OUT’

BSC	Stem 1: (to be) an act/process of trying something out (e.g., a tool, a device, a vehicle, a machine, etc.) to see if it works/functions	Stem 2: (to be) an act/process of trying something out (e.g., a tool, a device, a vehicle, a machine, etc.) to observe/learn/understand what it does or how it works/functions or whether it improves efficiency/productivity
CTE	(to be) a state of wearing something as a trial to see if it works/functions	
CSV	(to be) an act of trying something out to see if it works/functions	
OBJ	(to be) that which is being tried out to see if it works/functions	Stem 3: (to be) an act/process of trying something out (e.g., a tool, a device, a vehicle, a machine, etc.) to see if one can successfully operate it, work with it, or learn to use it skillfully

NOTE: For trying on an article of clothing or other wearable implement (e.g., a spacesuit), see the new root **-FF-** instead.

-SST- ‘DEVICE / APPARATUS / MACHINE / ENGINE / MOTOR’

BSC	Stem 1: (to be) a state/act/process of a mechanical device/apparatus/contraption functioning/operating; for a mechanical device, apparatus, or contraption to operate/function	stem 2: (to be) a state/act/process of an engine/motor (whether electrical, chemically-fueled, steam-driven, wind-driven, solar-powered, nuclear-powered, etc.) to be operating/functioning stem 3: (to be) a state/act/process of a powered machine (whether electrical, chemically-fueled, steam-driven, wind-driven, solar-powered, nuclear-powered, etc.) to be operating/functioning
CTE	(to be) a state/act/process of a mechanical device/apparatus/contraption designed or used to do/perform/accomplish something to be in operation/functioning; for there to be such a device/apparatus/contraption functioning /operation	
CSV	(to be) a state/act of operating/utilizing/using a device/apparatus/contraption; to operate/use/make use of a device/apparatus/contraption	
OBJ	(to be) a mechanical device/apparatus/contraption itself (seen as a gestalt entity)	

-SSV- ‘DEVISE / CONTRIVANCE / INVENTION’

BSC	Stem 1: (to be) an act/process/instance of devising something; to devise something [i.e., to bring an idea for a device or mechanical process into reality]	stem 2: (to be) an act/process/instance of contriving/jury-rigging; to contrive/jury-rig [i.e., to bring a simple or quickly-formed idea for a device or mechanical process into reality as a temporary or stop-gap solution]
CTE	(to be) a state/act/process of a	
CSV	(to be) a physical state/act of devising something	
OBJ	(to be) that which one devises	stem 3: (to be) a state/act/process of inventing; to invent something

-LPL- ‘TECHNOLOGY’		
BSC	Stem 1: (to be) a state/act/process of using a technological invention or inventions to do/perform something (i.e., accomplishing something by means of, or with the assistance of an invented machine/device or a discovered process/procedure)	stem 2: (to be) a process/procedure based upon a biological/medical/scientific discovery or scientific research/experiments. stem 3: (to be) a state/act of doing/performing something using digital/electronic/cyber- technology (e.g., running of algorithmic programs, digitized data, interconnected/networked computers, etc.)
CTE	(to be) a state of there being a technological invention (potentially) available in order to do/perform something	
CSV	(to be) an act/process of using a technological invention; to use a technological invention	
OBJ	(to be) the specific/particular technological invention (to be) used	

The stems of the following three roots have the same Specification pattern as the root - **LPL**- above:

-KṬG- ‘ELECTRONIC COMPUTER / COMPUTER ACCESSORY’
<ol style="list-style-type: none"> 1. personal electronic computing device (e.g., PC, laptop, tablet, touchpad, etc.) 2. keyboard, keypad or other finger-manipulated alphanumeric interface to a computing device 3. mouse, pen, or other non-alphanumeric interface to a computing device

-KṬGW- ‘COMPUTERIZED DEVICE’
<ol style="list-style-type: none"> 1. computerized, algorithmically controlled device 2. central processor (e.g., microchip, central gearing mechanism of a Babbage difference engine, etc.) of an algorithmic computing device 3. input-output interface for an algorithmic computing device

-KṬGY- ‘COMPUTER PROGRAM / APPLICATION’
<ol style="list-style-type: none"> 1. basic input-output instruction program for a computer, computer operating system 2. computer program, computer application 3. commercially-oriented computer program, “app”

-KṬGL- ‘AUTOMATON (ABSTRACT SELF-PROPELLED COMPUTING DEVICE)’		
BSC	Stem 1: (to be) an automatic computing device (i.e., an automaton per automata theory – not necessarily electronic or numerically/digitally-based); to run an automatic computational device	Stem 2: (to be) a Turing machine or the lambda calculus simulation thereof Stem 3: (to be) a finite-state machine / finite-state automaton
CTE	(to be) the internal configurational state of an automaton/self-propelled computing device	
CSV	(to be) the process of transitioning between states/forms in an automaton; to transition between states/forms in an automaton	
OBJ	(to be) the input or saved memory used by an automaton to transition between states/forms	

-KṬGR- ‘ALGORITHMIC COMPUTATION / PROGRAMMING / RUN A COMPUTER PROGRAM’		
BSC	Stem 1: (to be) an act/process of producing a computer-implementable instruction, a “line of computer code”; to write a line of programming code	Stem 2: (to be) the act/process of using a particular formal computer programming language to write programming code; to write a line of programming code in a particular programming language Stem 3: (to be) a state/process of computation; to implement/run a computer program
CTE	(to be) a computer-implementable instruction, to be a line of programming code	
CSV	(to be) an act of creating/composing a line of programming code	
OBJ	(to be) that which a line of programming code accomplishes; what a line of computer code does/performs when implemented or run	

2.1.3 Objects/Implements Used to Hold/Contain Foodstuffs During Preparation, Cooking, and Serving

-ŠXR- ‘MANIPULATION & HANDLING OF FOODSTUFF WHILE PREPARING OR COOKING IT’		
BSC	STEM 1: (to be) an act/state of handling/manipulating food while preparing it for cooking	STEM 2: (to be) an act/state of handling/manipulating food while cooking it or processing it for ingestion
CTE	(to be) in a state of being handled/manipulated while under preparation for cooking	
CSV	(to be) the physical act of handling/manipulating food while cooking it	STEM 3: (to be) an act/state of handling manipulating food while serving it or ingesting it
OBJ	(to be) the tool/utensil used to handle/manipulate food while cooking/preparing it	

The following roots utilize the same Specification pattern as the root **-ŠXR-** above:

- ČKR-** 1. knife 2. serrated knife 3. chef's knife (use Type-2 SIX affix to distinguish knives by function, e.g., paring knife, bread knife)
- ČXR-** 1. vegetable peeler 2. potato masher 3. whisk
- JXR-** 1. colander / strainer 2. grater 3. salad spinner
- ZXR-** 1. fork 2. "spork" 3. ladle
- MXR-** 1. spoon 2. slotted spoon 3. measuring spoon (use Type-2 SIZ affix to distinguish spoons by function, e.g., serving-, stirring spoon, teaspoon, etc.)
- NSXR-** 1. spatula 2. chopstick 3. tongs
- ŘXR-** 1. can opener 2. bottle opener 3. citrus juicer
- LSXR-** 1. garlic press 2. mushroom slicing press / strawberry slicing press 3. knife sharpening rod / stone

-ŠGV- 'HOLDING & CONTAINING OF FOODSTUFF FOR PREPARING OR COOKING OR SERVING IT'		
BSC	STEM 1: (to be) an act/state of holding/containing food while preparing it for cooking	STEM 2: (to be) an act/state of holding/containing food while cooking it or preparing it for ingestion
CTE	(to be) in a state of being held/contained while under preparation for cooking	
CSV	(to be) the physical act of holding/containing food while cooking it	STEM 3: (to be) an act/state of holding/containing food for the purpose of serving it or as a result of serving it
OBJ	(to be) the object/implement used to hold/contain food while cooking/preparing it	

The following roots utilize the same Specification pattern as the root **-ŠGV-** above:

- SBW-** 1. skillet / frying pan 2. sauté pan 3. grilling pan
- SBY-** 1. saucepan 2. pot / stockpot 3. casserole dish
- SBR-** 1. baking sheet 2. muffin pan 3. broiler pan
- SBŘ-** 1. pie tin 2. baking dish or mold 3. other metallic or ceramic baking dish/container/platform
- SBV-** 1. barbecue grille 2. griddle 3. rotisserie
- ŠGW-** 1. cup 2. bowl 3. measuring cup (use Type-2 SIZ affix to distinguish bowls by function, e.g., serving-, soup-, salad bowl, etc.)
- ŠGY-** 1. plate / dish 2. ceramic drinking vessel (e.g., cup, mug) 3. glass or crystal drinking vessel
- ŠGL-** 1. serving pitcher 2. decanter 3. flagon
- ŠGR-** 1. cutting board 2. serving board 3. trivet

2.1.4 Fixtures Used To Facilitate/Maintain States Created via Tools/Devices/Machines/Manual Processes/Powered Processes

-LCW- 'BUILDING FIXTURE / ARCHITECTURAL FIXTURE'			
	STEM 1	STEM 2	STEM 3
BSC	(to be) a state/act/of serving/functioning as a built-in/permanent fixture in a building/domicile for the purposes of maintaining/providing a continuous mechanical, electrical, plumbing, or living state or process; to serve/function as such a fixture (e.g., wall-mounted or built-in feature, fireplace, chimney, window shutter, ceiling fan, tapware, sink/basin, tub, toilet, water or gas pipe, electrical conduit, wiring, etc.)	(to be) a state/act of utilizing/making use of a built-in/permanent fixture in a building/domicile in order to obtain some needed/desired function/service	(to be) a state/act of doing without, being deprived of, or being unable to utilize a needed/desired fixture in a building/domicile
CTE	(to be) the state/service maintained/delivered by a fixture	(to be) the state of a fixture being in use	(to be) the state of a needed/desired fixture being absent/unavailable
CSV	(to be) an act/process of a building fixture functioning or in operation; for a fixture to function/operate	(to be) an act of a person utilizing/making use of a fixture	(to be) a physical act/state of a person having to do/go without a needed/desired fixture
OBJ	(to be) the fixture itself	(to be) the fixture used	(to be) the consequence(s) of a needed/desired fixture being absent/unavailable

The following roots for both built-in/permanent fixtures and temporary/portable fixtures have the same Stem & Specification pattern as the root above:

-MBL- water tap / water faucet / tap valve
-VBL- pipe (for water, gas, sewage, etc.)
-BBL- sink
-BBR- washbasin
-BBW- bathtub
-BBY- shower stall
-BBŘ- bidet
-LČŘ- toilet / loo
-ŘČŘ- urinal
-GTR- cistern
-JTR- artificial fountain

-VBR- electrical conduit
-VBŘ- electrical wire/wiring
-VBŽ- electrical outlet / wall outlet
-RVB- power system protection unit (e.g., fusebox / circuit breaker box)
-ŇSL- built-in lighting fixture/light-bulb socket
-LČL- lamp (i.e., powered local light source)
-NKV- air-conditioning unit
-TGV- ceiling fan
-NŽX- built-in heater, heating unit
-RŽX- HVAC unit
-ŽXL- fireplace

-BTR-	outdoor swimming pool	-ŽXR-	chimney
-GZŇ-	sewer	-ŠFL-	built-in storage shelf
-GZV-	cesspool	-ŠFR-	built-in storage drawer
-GZX-	septic tank	-MFW-	railing / handrail / banister / balustrade
-PČT-	bucket / pail / portable basin	-LMTR-	hat rack / hat stand / hat tree
-VPŘ-	wall-mount for a wall-hanging or for a wall-mounted device	-LSTL-	coat rack

The following new affix is useful in conjunction with the above roots for fixtures:

-řst	LCM Life-Cycle of a Mechanism/Device/Fixture/Machine
1	designing X, drafting a blueprint of X; to design X, to draft a blueprint/design of X
2	constructing/forming/crafting/making X; to make/build/construct/craft X
3	determining placement/location of X within/among/in association with its surrounding infrastructure
4	installation/connection/set-up of X; to install/connect/set up X
5	operational test of X; to test whether X is functioning/operating correctly
6	servicing/maintenance/adjustment of X; to perform maintenance service or adjustment on X
7	repair of X; to repair X
8	removal/retirement/discarding of X; remove/retire/discard X
9	replacement of X; replace X

2.1.5 Furniture

-PŤT- ‘FURNITURE / FURNISHING / APPLIANCE’		
BSC	Stem 1: (to be) a piece of functional furniture; to furnish an environment with a piece of functional furniture (i.e., piece of furniture whose primary purpose is functional rather than decorative, e.g., chair, table, lamp, armoire, cabinet, chest of drawers, desk, bed, bookcase, etc.); utilize or make use of a piece of functional furniture	Stem 2: (to be) a piece of decorative furniture; to furnish an environment with a piece of decorative furniture (e.g., antique curio cabinet, fancy rug, designer furnishing, decorative mirror, chandelier, wallpaper, etc.) Stem 3: (to be) a major household or office appliance; to furnish an environment with a major functional appliance (e.g., stove, oven, refrigerator, generator, sewing machine, washing machine, freezer, heating unit, air conditioner, television set, etc.)
CTE	(to be) the function(al purpose) of a piece of furniture; to utilize/make use of a piece of furniture	
CSV	(to be) the physical structure/design of a piece of furniture; to design a piece of functional furniture (CPT = construct a piece of functional furniture)	
OBJ	(to be) the space in a room or environment taken up by a piece of functional furniture	

The following seven roots have a Specification pattern modeled after the root **-PṬṬ-** ‘FURNITURE/FURNISHING/APPLIANCE’ above:

-SKF- ‘TABLE / SHELF / PLATFORM’	
STEM 1	(to be) a table; utilize a table (i.e., a personal-sized (quasi-) rectangular or symmetrically shaped flat surface perpendicular to the direction of gravity positioned to allow one to either stand or sit and use it as a surface for working, storage, or performing some function)
STEM 2	(to be) a shelf
STEM 3	(to be) a platform or large flat artificially-surfaced area to provide a large planar surface for goods or people engaged in some specialized function (e.g., a stage)

-KŠṬ- ‘CHAIR / STOOL / THRONE’	
STEM 1	(to be) a chair; sit in a chair
STEM 2	(to be) a stool; sit on a stool
STEM 3	(to be) an ottoman, a footstool; rest oneself or one’s feet on an ottoman

-KŠṬL- ‘BENCH / COUCH / FUTON’	
STEM 1	(to be) a bench for sitting multiple persons; sit on a bench
STEM 2	(to be) a couch/sofa/divan; sit on a couch/sofa/divan
STEM 3	(to be) a futon; sit or lie on a futon

-NKL- ‘BED / SOFA BED / CHAISE LONGUE’	
STEM 1	(to be) a bed; to sit/lie in a bed
STEM 2	(to be) a sofa bed; to sit/lie on a sofa bed
STEM 3	(to be) a chaise longue; sit/lie on a chaise longue

-JKṬ- ‘WORKBENCH / COUNTERTOP / DRAWING BOARD’	
STEM 1	(to be) a workbench
STEM 2	(to be) a countertop
STEM 3	(to be) a drawing board

-MTY- ‘CABINET’	
STEM 1	(to be) a cabinet with doors for storage; to store in a cabinet
STEM 2	(to be) a display case; to display in a display case
STEM 3	(to be) a hutch or specialty cabinet for storage of specific items

-VṬṚ- ‘DRAWER / FILING SLOT / RACK’	
STEM 1	(to be) a drawer [container within a supporting/enclosing structure that slides or rolls out to allow access]
STEM 2	(to be) a filing slot (i.e., as within the drawer of a filing cabinet)
STEM 3	(to be) a rack (i.e., a framework, lattice, or partition for holding or displaying objects, keeping them spatially separated from each other)

2.1.6 Building

-RDW- 'BUILDING CONSTRUCTION'		
BSC	Stem 1: (to be) a state/act of constructing/erecting a building (i.e., a constructed space with enclosed rooms for residential and/or commercial occupancy or storage); to construct/erect a building	Stem 2: (to be) a state/act of constructing a commercial building Stem 3: (to be) a state/act of constructing a non-residential, non-commercial building used for storage or other activities (e.g., a workshop, a studio, etc.)
CTE	(to be) a state of a building under construction	
CSV	(to be) a physical act of building/constructing/erecting a building; to perform the work of building/constructing/erecting a building	
OBJ	(to be) the building under construction [CPT version = finished building]	

-SŘ- 'ROOM / CHAMBER / COMPARTMENT'		
BSC	Stem 1: (to be) a room/chamber	Stem 2: (to be) a compartment Stem 3: (to be) a cubicle, partially partitioned-off section of a larger room
CTE	(to be) the state of a room/chamber being a partitioned off quasi-autonomous (sub-)section of a larger building interior space	
CSV	(to be) the boundary planar partitions/surfaces/elements that constitute the form of a room/chamber (i.e., the walls, ceiling, floor, doorway, etc.); to make/construct a room (by putting up dividing walls, an entryway, etc.)	
OBJ	(to be) what a particular room/chamber is (used) for, what function it serves	

-DBR- 'TOWER / SPIRE'		
BSC	Stem 1: (to be) a tower room of a building where the enclosed room is intended as a normal dwelling space	Stem 2: (to be) a tower room of a building where the enclosed room is a specialized ancillary space (e.g., bell tower, clock tower, a room containing air conditioning or heating or electrical infrastructure, etc.) Stem 3: (to be) a spire on a building (decorative/aesthetic only with no enclosed or functional interior room)
CTE	(to be) the state of a building having a tower room	
CSV	(to be) the boundary planar partitions/surfaces/elements that constitute the form of a tower room	
OBJ	(to be) what a tower room is used for, what function it serves	

-KÇM- ‘BALCONY / LANDING / MEZZANINE / LOFT’		
BSC	Stem 1: (to be) a(n outdoor) balcony	Stem 2: (to be) a landing (at the end of a stretch of stairs) Stem 3: (to be) a mezzanine or loft (a partial floor or partial storey of a building between or above a full floor or storey)
CTE	(to be) the state of there being an elevated outdoor space as part of a building	
CSV	(to be) the platform-like area with guard wall/railing that constitutes a balcony; to make/construct a balcony	
OBJ	(to be) what a balcony is used for, what function it serves	

-TTL- ‘WALL / PARTITION / BARRIER’		
BSC	Stem 1: (to be) a planar wall/partition/barrier as the boundary of an enclosure/container, the surface partition constituting the boundary of an inclosed/contained space	Stem 2: (to be) a planar wall/partition/barrier as a defense against visibility by or intrusion of elements/entities from/on the other side Stem 3: (to be) a planar wall/partition as a component of a building or architectural structure
CTE	(to be) the state of enclosure/containment due to the presence of a wall/partition	
CSV	(to be) the tangible material component of a planar wall/partition/barrier; to build/erect a wall/partition/barrier	
OBJ	(to be) what is contained/inside the boundaries established by a wall/partition/barrier	

-TLW- ‘SCREEN’		
BSC	Stem 1: (to be) a state/act of placing or there being a screen (as partition) between two areas of space; to partition using a screen, to place a screen between, to put up a screen	Stem 2: (to be) a state/act of screening as a means of filtering (e.g., light, air, water, etc.) ; to filter something (e.g., light, air, water) using a screen Stem 3: (to be) a state/act of using a screen to display or project an image; to display/project an image on(to) a screen
CTE	(to be) the state of partitioning due to the presence of a screen	
CSV	(to be) the screen itself; to put up/erect a screen as a partition	
OBJ	(to be) what is partitioned by there being a screen in place	

-KTH- ‘FIRMAMENT / GROUND / FLOOR’		
BSC	Stem 1: (to be) the (quasi-) planar surface on which an entity naturally rests due to gravity, i.e., firmament, “ground”, “surface of the earth”, “floor”	Stem 2: (to be) the Earth’s natural land surface, i.e., the ground [in a literal sense] (whether dirt, sand, grass, rock, forest floor, mud, swamp, etc.) Stem 3: (to be) a (manually constructed) floor (of a building, room)
CTE	(to be) the tangible material substance of the firmament/surface/ground/floor upon which an entity is situated due to gravity	
CSV	(to be) the state/act of being bound to, being (up)on, or falling toward a (quasi-)planar surface/firmament due to gravity; to be bound to or headed for the ground due to gravity, to fall	
OBJ	(to be) that which is bound to, situated (up)on, or falling toward the ground due to gravity	

-TKY- ‘WINDOW / VIEWING APERTURE’		
BSC	Stem 1: (to be) an aperture / “window” in a surface for the purpose of being able to visually view what is on the other side	Stem 2: (to be) an aperture/window in a surface for the purpose of letting in sunlight (or artificial light) from outside or another room Stem 3: (to be) an aperture/window in a surface for the purpose of limited physical access between one side of a partition and another (e.g., as in a ticket window, a pass-through slot, etc.)
CTE	(to be) the state of there being (potential) visibility to the other side of a partition/wall or planar surface due to there being a window	
CSV	(to be) the physical aperture within a (quasi-) planar surface which constitutes a window	
OBJ	(to be) the (quasi-) transparent/translucent planar entity situated within the bounds of a window/aperture to function as a protective partition between one side of the window and the other, e.g., plane of glass, screen, plane of plastic/acrylic, etc.	

-ŽTL- ‘STAIRCASE / LADDER / PEDESTAL’		
BSC	Stem 1: (to be) a staircase	Stem 2: (to be) a ladder Stem 3: (to be) a pedestal, plinth, or dais (i.e., a shelf-like planar surface for the purpose of positioning an entity at a higher level than the surrounding firmament)
CTE	(to be) the state of ascent/descent permitted by use of stairs	
CSV	(to be) the act/process of ambulating upon stairs; to ambulate upon stairs, go up or down stairs	
OBJ	(to be) the physical collection of individual stairs themselves which constitute a staircase	

NOTE: Stems 1 and 2 of this root represent the atypical lexification of a collective entity (i.e., a collection of individual stairs/steps) due to the fact that staircases and ladders as wholes are more semantically salient than individual stairsteps or ladder-steps. Therefore, use the **SBS** affix with these stems to signify an individual stair of a staircase or step of a ladder.

-NŽH- ‘BRIDGE / WINCH / BOOM		
BSC	Stem 1: (to be) a bridge [both the physical object itself and the accessibility between two point it allows]	Stem 2: (to be) a winch or windlass and the ability to move a superheavy object Stem 3: (to be) an extended/extendable boom and the ability to lift/move a superheavy object
CTE	(to be) in a state of two points being accessible to each other via a bridge; to cross a bridge	
CSV	(to be) an act/process of bridging/spanning; to bridge, to span	
OBJ	(to be) the physical bridge itself	

-RM- ‘ABODE / DWELLING / DOMICILE / HOUSE’		
BSC	Stem 1: (to be) an abode/dwelling, i.e., where an entity dwells/lives, e.g., burrow, hole, nest, cave, den, lair, warren, house, apartment, trailer, etc.; to dwell, to live in [a place]	Stem 2: (to be) a domicile (i.e., an artificially constructed quasi-permanent residential dwelling which provides protection from outside environmental elements) Stem 3: (to be) a house (i.e., a quasi-permanent constructed residence with conveniences for quasi-permanent residence)
CTE	(to be) a in a state of dwelling somewhere; to have a place to live	
CSV	(to be) an act of dwelling; to go about the day-to-day activities that constitute living in a particular place	
OBJ	(to be) the party/entity that dwells within a dwelling	

-RHW- ‘OCCUPANCY / TENANCY / RESIDENCY’		
BSC	Stem 1: (to be) a state/act of occupancy within a delineated/demarcated place and time; to occupy	Stem 2: (to be) an act/state of tenancy (i.e., long-term occupancy with no assumptions regarding property rights or ownership claims) Stem 3: (to be) an act/state of residency (i.e., long-term occupancy with assumptions of certain property rights/ownership claims)
CTE	(to be) the location one occupies, the place/locaton one occupies	
CSV	(to be) an act of occupancy; to take up space for a certain amount of time in a particular place	
OBJ	(to be) the party that occupies a place/domicile/residence/burrow/nest, etc.	

Morphological derivatives: vacancy, be vacant, to vacate

-PHW- ‘URBAN RESIDENCY / SUBURBAN RESIDENCY / RURAL RESIDENCY’		
BSC	Stem 1: (to be) a state/act of residency or being situated or taking place in an urban(ized)/city environment or locale	Stem 2: (to be) an act/state of residency or being situated or taking place in a suburban environment or the suburbs of a city Stem 3: (to be) an act/state of residency or being situated or taking place in a non-urban/rural environment/the countryside
CTE	(to be) a place of urban residency (use appropriate Configuration and SIZ affix to specify village, town, city, etc.)	
CSV	(to be) an act of making happen/take place/be situated in an urban environment/city	
OBJ	(to be) the party/entity/situation that takes place/occurs/resides in an urban environment/city	

-ČHW- ‘RELOCATION / RESETTLEMENT / MIGRATION / REFUGE’		
BSC	Stem 1: (to be) a state/act of relocation, resettlement of an entity in a new quasi-permanent residence/domicile/home away from that entity’s previous residence/domicile/home	Stem 2: (to be) an act/state of migration/immigration Stem 3: (to be) an act/state of taking refuge
CTE	(to be) where one is or has been relocated/resettled	
CSV	(to be) an act of relocating/resettling; to physically move from one location to another as part of an act/process of relocation/resettlement	
OBJ	(to be) the party/entity/situation that undergoes relocation/resettlement	

3.0 SPACETIME and MOTION

-ŠŘ- ‘SPACETIME / SPACE / PASSAGE OF TIME’		Associated Affix: STS
	STEM 1	STEM 2: [the spatial component of Stem 1, i.e.,] (to be/occupy) a location in space, the site of something; to be spatially located/situated at, to be the site of something STEM 3: [the temporal component of Stem 1, i.e.,] (to occur) at a particular point/duration/period in time; to temporally take place at
BSC	(to exist/occur at) a “location/period/instance” of spacetime; to exist/occur at a place and time [both the spatio-temporal location and the entity occupying it]	
CTE	one’s physical and temporal existence; to spatio-temporally exist [i.e., exist at a particular place at a particular time]	
CSV	(to be) a particular volume/duration of spacetime; (to be) a particular location/volume of space at a particular moment/period in time	
OBJ	(to be) an entity located at a particular place and time; (to be) a spatio-temporally existent entity	

-LC- ‘PATHWAY / COURSE / ROUTE / ROADWAY / CHANNEL’		
BSC	Stem 1: (to be) a marked/indicated pathway/trail/course	Stem 2: (to be) a marked route / roadway / street Stem 3: (to be) a marked/indicated channel [i.e., planned conduit-like courseway along/through which an entity/substance travels]
CTE	(to be) the direction/destination to which a pathway/trail leads (i.e., what it’s there for)	
CSV	(to be) the physical manifestation of a pathway/trail (i.e., how it is physically marked/distinguished from the surrounding surface or underlying substrate)	
OBJ	(to be) a party/entity which travels a pathway/trail/course	

-KÇN- ‘MAP / DIAGRAM / BLUEPRINT’		
BSC	Stem 1: (to be) an act/instance of reading/using a map or map-like chart; to read/use a map or map-like chart [i.e., a miniaturized graphic representation of a localized geographic area or landscape or spatial volume or ocean volume, etc.]	Stem 2: (to be) an act/instance of reading/using a diagram, flow-chart, or other graphic representation of the steps/relationships/interdependencies of a sequential process or process flow; to read/use a diagram Stem 3: (to be) an act/instance of using/reading/interpreting a blueprint; to use/read/interpret a blue print [i.e., a formalized/idealized, abstract visual 2-dimensional or 3-dimensional model of an object/entity for purposes of understanding its structure/construction/architecture]
CTE	(to be) the physical map itself	
CSV	(to be) a physical act of reading/using/interpreting a map; to read/use/interpret a map	
OBJ	(to be) what a map represents, the geographic/spatial area represented on/by a map	

3.1 SPATIO-TEMPORAL DIMENSIONS

-JG- ‘DIMENSIONAL ATTRIBUTE’ (use with the SUF, EXD, FLC, PTW, ITY, etc. affixes)		
	STEM 1	STEM2: (to be) a decrease in the degree of a particular dimensional attribute STEM 3: (to be) an increase in the degree of a particular dimensional attribute
BSC	(to be) a degree of a (static) dimensional attribute (e.g., length, width, volume, etc.)	
CTE	(to be) the intrinsic nature/essence of a particular attribute (i.e., the existence of the attribute within or as part of an entity regardless of its physical manifestation)	
CSV	(to be) the physical manifestation of a particular dimensional attribute	
OBJ	(to be) the object/entity having the particular dimensional attribute	

The Stems and Specifications of the following roots are modeled on the ‘DIMENSIONAL ATTRIBUTE’ root above:

- ZB-** ‘PLANARITY/FLATNESS RELATIVE TO THE FORM OF AN OBJECT ITSELF’ [i.e., the extent to which all the points of a surface are parallel to each other in the dimensional context of the surface itself, such as the surface of a blanket (regardless of whether it is folded or laid flat) or the surface of a sphere (where the sphere’s surface can be considered flat/planar from the perspective of the surface itself, regardless of the fact the sphere as a whole is not)]
- ČF-** ‘WIDTH/SLENDERNESSE’ [i.e., the linear distance between the two points furthest from each other on a cross-sectional plane through an object]
- ZD-** ‘GIRTH/CIRCUMFERENCE’
- JN-** ‘LENGTH’ (i.e., the longest spatial dimension of an object/entity)
- CH-** ‘HEIGHT (= TALLNESS PARALLEL TO THE DIRECTION OF GRAVITY)’
- VJ-** ‘AMPLITUDE’
- ZZ-** ‘BINARY POLARITY’ (i.e., the degree to which something reverses direction of a binary attribute, e.g., rotation, spin, charge, etc.)
- KČ-** ‘REACH’ (i.e., the degree to which something extends outward in a quasi-linear manner)
- ZX-** ‘SPREAD’ (i.e., the degree to which something extends outward in 2-dimensional quasi-planar coverage)
- VČ-** ‘EXTENT’ (i.e., the degree to which something extends outward as a three-dimensional volume)
- BZ-** ‘DEPTH’ (i.e., the shortest spatial dimension of an object/entity)
- ŠL-** ‘THINNESS/THICKNESS (i.e., ratio of shortest dimensional end-to-end axis-length to next longest dimensional end-to-end axis-length)’
- JL-** ‘SPATIAL GAP’
- GZ-** ‘TEMPORAL INTERVAL’ [i.e., the elapsed time/duration between two events/occurrences/states]
- FC-** ‘3-DIMENSIONAL VOLUME’
- TC-** ‘RECTILINEAR/POLYHEDRAL/STRAIGHT-ANGLED’
- GJ-** ‘ROUNDEDNESS’ [i.e., the extent to which a surface is spheroidally curved from an external perspective]
- CF-** ‘FLATNESS/LEVELNESS OF A SURFACE’ [i.e., the extent to which the points of a surface constitute a flat plane from an external perspective]
- CT-** ‘2-DIMENSIONAL AMORPHOUS/SHAPELESS’
- ZT-** ‘3-DIMENSIONAL AMORPHOUS/SHAPELESS’
- ZD-** ‘LINEAR (i.e., ONE-DIMENSIONAL) CURVATURE’

-FKL- ‘PHYSICAL SPATIO-TEMPORAL EXTENSION’		
BSC	Stem 1: (to be) a state/act of spatio-temporal extension linearly/uni-dimensionally (up/out/along/back, etc.) to a certain point/level/height, etc.; to extend in such a manner, to “reach” (to) a certain point/level/height, etc.	Stem 2: (to be) a state of extension two-dimensionally (out/among/away, etc.) to a certain distance/edge/linear landmark/linear boundary, etc., “reach” (to) a certain extent/distance/edge/linear landmark/boundary, etc.; to extend in such a manner Stem 3: (to be) a state of spatio-temporal extension three-dimensionally (out/among/away, etc.) to a certain distance/planar edge/planar landmark/planar boundary, etc., “reach” (to) a certain distance/planar edge/planar landmark/planar boundary, etc.; to extend/ “reach” three-dimensionally in such a manner
CTE	(to be) a state of extension / being extended unidimensionally	
CSV	(to be) an act of spatio-temporal extension unidimensionally	
OBJ	(to be) that which spatio-temporally extends or “reaches” unidimensionally to a particular point/level/height, etc.	

-TŇ- ‘LEVEL / FLOOR / TIER’		
BSC	Stem 1: (to be in) a position at/on a particular planar level of a vertically sequential series of levels; to be positioned on a particular level (of a vertically sequential series of levels)	Stem 2: (to be in) a position on a particular floor/story of a building (e.g., be on the fifth floor/story of a hotel); be on a particular floor/story of a building Stem 3: (to be in) a position on a particular abstract level/tier of a series of metaphorical/abstract tiers/levels of something (e.g., ‘He plays at grandmaster level/tier when it comes to chess.’)
CTE	(to be) in a state of being on a particular physical level of a vertically sequential series of levels	
CSV	(to be) an act of physically positioning oneself or being positioned on a particular level	
OBJ	(to be) the particular physical level something or someone is positioned on	

-TŇW- ‘ROW / FILE / QUEUE’		
BSC	Stem 1: (to be in) a position in a particular linear/planar row of a horizontally sequential series of rows; to be positioned in a particular row (of a horizontally sequential series of rows) [as viewed externally from the row]	Stem 2: (to be in) a position in a particular linear/planar rank/file/line of a sequential series of front-to-back ranks/files/line; to be positioned in a particular rank/file (of a sequential series of front-to-back ranks/files) [as viewed externally] Stem 3: (to be in) a position in a queue; to be (lined up) in a queue
CTE	(to be) in a state of being in a particular physical row of a horizontally sequential series of row	
CSV	(to be) an act of physically positioning oneself or being positioned on a particular row	
OBJ	(to be) the particular physical row something or someone is placed/positioned in	

-ŘTŇ- ‘COLUMNAR POSITION’		
BSC	Stem 1: (to be in) a position in a particular linear vertical column of a sequential series of horizontally-aligned columns; to be positioned oin a particular vertical column (of a sequential series of horizontally-aligned columns)	Stem 2: (to be in) a position in a particular linear vertical column of a sequential series of front-to-back-aligned columns; to be positioned oin a particular vertical column (of a sequential series of front-to-back-aligned columns) Stem 3: (to be in) a position in a vertical column (i.e., a vertical/columnar queue)
CTE	(to be) in a state of being in a particular physical vertical column of a sequential series of horizontally-aligned columns	
CSV	(to be) an act of physically positioning oneself or being positioned in a particular physical vertical column of a sequential series of horizontally-aligned columns	
OBJ	(to be) the particular physical column something or someone is positioned in	

-ŇŽ- ‘ARRANGEMENT / ORDER / SYMMETRY’ Affix: CLS		
BSC	Stem 1: (to be) a state/act/instance of arranging or being arranged (i.e., place(d) in some sort of order or discernible pattern); to arrange, to order	Stem 2: (to be) a an act/state/instance of arranging/ordering or being arranged/ordered based on a specific criterion or criteria Stem 3: (to be) an act/instance of symmetrical arrangement; to arrange symmetrically
CTE	(to be) a particular arrangement or pattern	
CSV	(to be) an act/process of physically placing entities into an arrangement or pattern	
OBJ	(to be) an entity in or part of a particular arrangement or pattern	

MORPHOLOGICAL DERIVATIVES: array, setting, hierarchy, symmetry, disarray, scatter, mess, chaos

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-ŇŽW- ‘REGULARITY / CLASSIFICATION / ASSORTMENT’		
BSC	STEM 1: (to be) a state/act/instance of being/making regular or displaying regularity (i.e., having an expected/conventionalized/predictable pattern); be/make regular, regularize	STEM 2: (to be) a state/act/instance of being in or making a classification (i.e., an arranged scheme for storage-and-retrieval); to classify STEM 3: (to be) a state/act/instance of being in or making an assortment (i.e., an arranged selection of members/components); to sort
CTE	(to be) a state of being regular	
CSV	(to be) an act/process of making something regular; to regularize	
OBJ	(to be) something that is in a state of being regular or having been regularized	

MORPHOLOGICAL DERIVATIVES: regularity, regulate

3.2 MOTION AND SPATIAL POSITION

English can create succinct “moving images” of complex trajectories, paths, treks, and in-situ movements by simple juxtaposition of locative/directional particles (i.e., prepositions acting mostly as adverbial particles). For example, imagine the manager of a basement nightclub talking to a friend on the sidewalk outside his club. He invites the friend to the small patio outside the back of the club, which one finds by descending into the club, going past the dance floor, up a flight of stairs, and down a long hallway to the back door. He does so by saying, ‘*Come on down inside up along through out back to the patio.*’

This new language will allow a speaker to create similar succinct “moving images”. Each motion root (whether referring to in-situ or translative motion) will have a corresponding $-V_xC_S$ affix of the same form (e.g., if the root for ‘OBLIQUE LINEAR MOTION’ is **-KR-**, it will have a corresponding suffix **-kr.**) Each of these suffixes will then have the following nine degrees:

1	Interior perlative motion/movement in a manner described by the suffix’s corresponding root among/within an external/surrounding/underlying (quasi-)static medium. For translative motion suffixes, implies motion along a course described by the suffix’s corresponding root where the course is set, determined, or prescribed by an externally surrounding/underlying medium/channel, etc.
2	Interior motion/movement: static or translative movement/motion in a manner described by the suffix’s corresponding root while inside another object/entity (where, unlike the perlative degree, the exterior object/entity does not define/prescribe/determine the course of the moving object/entity)
3	Implies entry from an exterior space/medium/context into an interior space/medium/context
4	Implies continued/continuous movement in a manner described by the suffix’s corresponding root; for translative motion suffixes, implies continued/continuous motion along a course/direction described by the suffix’s corresponding root
5	Implies a single motion in a manner described by the suffix’s corresponding root across from one point/side of the contextual space to another; for translative motion suffixes, implies a single motion along a course/direction described by the suffix’s corresponding root across a gap/gulf/space from one place to another
6	For translative motion affixes, signifies motivational “on” as in “come on”, “go on”, “move on” - implies/reinforces need/impetus to begin/keep moving in the manner or direction described by the suffix’s corresponding root without stopping. For static positional affixes, operates merely as a locative to specify an entity’s X/Y/Z position.
7	Implies exit from an interior space/medium/context out to an exterior space/medium/context
8	exterior motion/movement: static or translative movement/motion in a manner described by the suffix’s corresponding root while outside another object/entity (where, unlike the perlative degree, the other object/entity does not define/prescribe/determine the course of the moving object/entity)
9	exterior perlative motion/movement outside of, over, next to, alongside, “above”/“under” an adjacent (quasi-)static surface/medium; for translative motion suffixes, implies motion on a course described by the suffix’s corresponding root along, over, parallel to, around, “above”/“under”, or tracking/following an adjacent (quasi-)static surface/medium

For Degree 6, the various Modulative suffixes as well as Phase can be used to describe repeated, ongoing movement/motion, e.g., back-and-forth, to-and-fro, side-to-side, up-and-down, in-and-out, out-and-back, etc.

Besides movement/motion roots, roots denoting any spatial referent/area would also have corresponding suffix-forms utilizing this pattern (e.g., front side, rear area, top area/space, area below/underneath, etc.).

3.3 TRANSLATIVE MOTION ROOTS

-TR- ‘PATH-ORIENTED, QUASI-LINEAR TRANSLATIVE MOTION’		Affix: M01
	Stem 1	Stem 2: As per Stem 1 w/ perspective is on motion to(ward) the topical referent of the sentence or clause, i.e., “come; approach”; CPT = “arrive” Stem 3: As per Stem 1 w/ perspective is on motion away from the topical referent of the sentence or clause, i.e., “go; go away; move away”; CPT = “leave; depart”
BSC	act of translatable motion from one spacetime location to another; to move from one place to another [both the motion and the entity moving]	
CTE	The process of movement itself from one place to another; to be moving from one place to another [focus on the movement, not the entity moving]	
CSV	The path/trajectory/course/route followed between two places; to move along/through the path/trajectory/course/route from one place to another	
OBJ	The entity moving from one place to another; to be the entity moving from one place to another	

Roots (and suffixes) following the same model as **-TR-** above include the following:

- PR-** ‘VERTICAL QUASI-LINEAR TRANSLATIVE MOTION’, i.e., movement up/down; Stem 2 = ‘ascent/ascend; going (straight) up; rise/raise/elevate’; Stem 3 = ‘descent/descend; going (straight) down; “drop”; lower(ing)’
- KR-** ‘OBLIQUE VERTICAL QUASI-LINEAR MOTION’, i.e., ascending/descending at an angle/slant’; Stem 2 = oblique ascent, [upward incline](#), [uphill](#); Stem 3 = oblique descent, [downward incline](#), [downhill](#)
- DR-** ‘HORIZONTAL PLANAR TRANSLATIVE MOTION’, i.e., movement along a line/path on a horizontal plane between the topical referent and a second location; Stem 2 = ‘approach, getting nearer’; Stem 3 = ‘recede/receding, getting farther away’
- FR-** ‘PARALLEL TRANSLATIVE MOTION’, i.e., movement along same path/trajectory as the topical referent; Stem 1 = parallel movement in same direction alongside topical referent; Stem 2 = parallel movement alongside but in opposite direction to topical referent
- BR-** ‘PERPENDICULAR-PLANAR TRANSLATIVE MOTION’, i.e., movement along a line/path “across” one’s forward path or field of vision, moving laterally (i.e., horizontally perpendicular) to the positional/orientational position or path of the topical referent (i.e., analogous to watching something moving in a line across a screen held in front of one’s eyes); Stem 2 = movement from left-to-right relative to the topical referent; Stem 3 = movement from right-to-left relative to the topical referent.
- GR-** ‘OBLIQUE LATERAL TRANSLATIVE MOTION’, i.e., moving laterally at an oblique angle on same horizontal plane as the topical referent; Stem 2 = lateral movement at an oblique angle approaching (i.e., getting nearer to) the topical referent; Stem 3 = lateral movement at an oblique angle moving away from (getting farther away from) the topical referent.
- GL-** ‘HORIZONTAL-PLANAR RANGE OF MOTION’, i.e., random directed movement within/throughout a 2-dimensional horizontal plane.
- DL-** ‘VERTICAL-PLANAR RANGE OF MOTION’, i.e., random directed movement within/throughout a 2-dimensional vertical plane.
- KL-** ‘PERPENDICULAR-PLANAR RANGE OF MOTION’, i.e., random directed movement within/throughout a 2-dimensional vertical plane perpendicular to the perspective of the topical referent (i.e., lying “across” one’s visual field or directional path, analogous to a painting or flat screen held up in front of a person).
- PL-** ‘TRANSLATIVE MOTION ALONG PARABOLIC/ARC-LIKE TRAJECTORY RELATIVE TO GRAVITY’

- BL-** ‘MOTION IN A CURVE’
- FL-** ‘MOTION IN A PLANAR CIRCULAR PATH’ [Stem 2 refers to counter-clockwise motion and Stem 3 to clockwise motion, relative to the speaker/observer]
- TL-** ‘GENERIC/OBLIQUE 3-DIMENSIONAL RANGE OF MOTION’, i.e., 3-D pervasive movement throughout or within a volume of space

NOTE: When using the affix the above fourteen roots, to specify the Stem 2 meaning of the respective root, add **-w** to the affix form, e.g., **-tr** becomes **-trw**, **-kl** becomes **-klw**. To specify the Stem 3 meaning of the respective root, add **-y** to the affix form, e.g., **-tr** becomes **-try**, **-kl** becomes **-kly**.

3.4 SPATIAL POSITION/LOCATION ROOTS

-Ṭ- ‘SPATIAL POSITION, LOCATION, ORIENTATION, DIRECTION’ Suffix: P01		STEM 2: Direction relative to the observer (i.e., linear directional path between an object and the observer)
BSC	STEM 1: spatial position of an entity; to be situated/located at	STEM 3: Area, general vicinity of a particular position/location relative to the observer, whether 2-dimensional or 3-dimensional according to the situational context
CTE	The act of physically occupying a/the position/location in space; to physically occupy a/the position in space	
CSV	A/the position/location in space occupied by an entity; to be a/the position/location in space	
OBJ	The entity situated/located at; to be that which is situated/located at	

Roots following the same model as **-Ṭ-** above include the following based on a 3-dimensional X/Y/Z axial grid:

- Ḍ-** ‘POSITION/LOCATION AT 0 / 0 / 0’, i.e., “right here”; at the center point of the observer’s 3-dimensional spatial frame of reference.
- ṬY-** ‘POSITION/LOCATION AT 0 / 0 / +Z’, ‘above the observer’
- ṬW-** ‘POSITION/LOCATION AT 0 / 0 / -Z’, ‘below the observer’
- P-** ‘POSITION/LOCATION AT 0 / +Y / 0’, ‘in front of the observer’
- K-** ‘POSITION/LOCATION AT 0 / -Y / 0’, ‘behind the observer’
- F-** ‘POSITION/LOCATION AT +X / 0 / 0’, ‘to the right of the observer’
- V-** ‘POSITION/LOCATION AT -X / 0 / 0’, ‘to the left of the observer’

For mnemonic convenience, combinations of the above positional concepts are designated by corresponding combinations of the phonemes of the above X/Y/Z roots (**-ṬY-** and **-ṬW-** are shortened to **-Y** and **-W**):

- PY-** ‘POSITION/LOCATION AT 0 / +Y / +Z’, ‘in front of and above the observer’
- PW-** ‘POSITION/LOCATION AT 0 / +Y / -Z’, ‘in front of and below the observer’
- KY-** ‘POSITION/LOCATION AT 0 / -Y / +Z’, ‘behind and above the observer’
- KW-** ‘POSITION/LOCATION AT 0 / -Y / -Z’, ‘behind and below the observer’

- FP**- 'POSITION/LOCATION AT $+X / +Y / 0$ ', 'to the right and in front of the observer'
- FK**- 'POSITION/LOCATION AT $+X / -Y / 0$ ', 'to the right and behind the observer'
- FY**- 'POSITION/LOCATION AT $+X / 0 / +Z$ ', 'to the right and above the observer'
- FW**- 'POSITION/LOCATION AT $+X / 0 / -Z$ ', 'to the right and below the observer'
- VB**- 'POSITION/LOCATION AT $-X / +Y / 0$ ', 'to the left and in front of the observer'
- VG**- 'POSITION/LOCATION AT $-X / -Y / 0$ ', 'to the left and behind the observer'
- VY**- 'POSITION/LOCATION AT $-X / 0 / +Z$ ', 'to the left and above the observer'
- VW**- 'POSITION/LOCATION AT $-X / 0 / -Z$ ', 'to the left and below the observer'

- FPY**- 'POSITION/LOCATION AT $+X / +Y / +Z$ ', 'to the right, in front, and above the observer'
- FPW**- 'POSITION/LOCATION AT $+X / +Y / -Z$ ', 'to the right, in front, and below the observer'
- FKY**- 'POSITION/LOCATION AT $+X / -Y / +Z$ ', 'to the right, behind, and above the observer'
- FKW**- 'POSITION/LOCATION AT $+X / -Y / -Z$ ', 'to the right, behind, and below the observer'
- VBY**- 'POSITION/LOCATION AT $-X / +Y / +Z$ ', 'to the left, in front, and above the observer'
- VBW**- 'POSITION/LOCATION AT $-X / +Y / -Z$ ', 'to the left, in front, and below the observer'
- VGY**- 'POSITION/LOCATION AT $-X / -Y / +Z$ ', 'to the left, behind, and above the observer'
- VGW**- 'POSITION/LOCATION AT $-X / -Y / -Z$ ', 'to the left, behind, and below the observer'

- PK**- 'POSITION BETWEEN/AMIDST/AMONG [IN A QUASI-PLANAR CONTEXT]', e.g., among others in a crowded room
- DK**- 'POSITION BETWEEN/AMONG [IN A LINEAR UNIDIMENSIONAL CONTEXT]', e.g., between two others in a queue
- TK**- 'INDEFINITE POSITION AMIDST/AMONG [IN A 3-DIMENSIONAL VOLUME]', e.g., among a sky full of balloonists
- DD**- 'POSITION/STATE INTERTWINED/INTERMINGLED/INTERMIXED IN 2-DIMENSIONAL PLANAR CONTEXT [INDIVIDUAL COMPONENTS SEPARABLE/EXTRACTABLE]', e.g., the red marbles amidst a tabletop covered with different colored marbles
- DB**- 'POSITION/STATE INTERTWINED/INTERMINGLED/INTERMIXED IN 3-DIMENSIONAL VOLUME [INDIVIDUAL COMPONENTS SEPARABLE/EXTRACTABLE]', e.g., the red marbles within a jar full of different colored marbles
- DV**- 'POSITION/STATE INTERTWINED/INTERMINGLED/INTERMIXED IN 2-DIMENSIONAL PLANAR CONTEXT [INDIVIDUAL COMPONENTS INSEPARABLE/PERMANENTLY COMBINED]', e.g., yellow paint spread onto a blue canvas to make a green area
- DG**- 'POSITION/STATE INTERTWINED/INTERMINGLED/INTERMIXED IN 3-DIMENSIONAL VOLUME [INDIVIDUAL COMPONENTS INSEPARABLE/PERMANENTLY COMBINED]', e.g., sugar granules poured into a cup of coffee

-NH- ‘DEGREE OF PROXIMITY/DISTANCE’		Affix: PXM
BSC	STEM 1: (to be/manifest) a degree of linear proximity/distance in space and/or time between entities — [both the spatio-temporal expanse and the effect/consequences thereof]	STEM 2: (to be/manifest a) a degree of linear spatial proximity/distance/spatial interval between entities STEM 3: (to be/manifest a) a degree of temporal proximity/distance (i.e., elapsed time between entities)
CTE	(to be/manifest) the effect/consequences of the spatio-temporal distance/proximity between entities	
CSV	(to be/manifest) a degree of linear proximity/distance in space and/or time between entities)	
OBJ	(to be) an entity/party at a certain distance/proximity to another	

3.5 POSITIONALLY-DEFINED COMPONENTIAL PARTS OF A WHOLE

As seen above, Stem 3 of **-F-** type spatial position roots convey the meaning of “the area/vicinity around X”, so that the Stem 3 root of **-K-** above would mean “the area behind or in back (of)”. Nevertheless, as in Ithkuil, separate roots will exist to describe positionally-defined componential parts of an entity, to distinguish “the area behind or in back of” from “the rear/back part/side of” where the latter refers to a part of the entity itself. This allows one to distinguish phrases such as “behind the box” from “the back/rear side of the box.”

-TF- ‘POSITIONALLY-DEFINED COMPONENTIAL PART’		Associated affix: -S08-
BSC	STEM 1: positionally-defined part/section of an entity (e.g., side, front, top, bottom, rear, etc.); to be a positionally-defined part/section of an entity	STEM 2: Inalienable, inherent, inseparable, “built-in” component part/section in relation to the whole STEM 3: Alienable, separable, detachable component part/section in relation to the whole
CTE	The state/act of physically being/doing what a positionally-defined part/section of an entity is/does; to physically be/do what a positionally-defined part/section of an entity is/does	
CSV	A/the (relative) spatial position/location which defines/delineates a part/section of an entity; to be a/the spatial position/location which defines/delineates a part/section of an entity	
OBJ	The entity of which the componential part/section is a part; to be the entity of which the componential part/section is a part	

Roots (and suffixes) following the same model as -**TF**- above are as follows:

- KF**- 'REAR/BACK PART OF AN ENTITY [RELATIVE TO ITS DIRECTIONAL ORIENTATION OR PRIMARY EXTERNAL INTERFACE]'
- DY**- 'TOP/PEAK/SUMMIT OF AN ENTITY [RELATIVE TO ITS TYPICAL ORIENTATION UNDER GRAVITY]'
- DW**- 'BOTTOM/FOUNDATION OF AN ENTITY [RELATIVE TO ITS TYPICAL ORIENTATION UNDER GRAVITY]'
- ḐY**- 'UPPER PART/"HALF" OF AN ENTITY [RELATIVE TO ITS TYPICAL ORIENTATION UNDER GRAVITY]'
- ḐW**- 'LOWER PART/"HALF" OF AN ENTITY [RELATIVE TO ITS TYPICAL ORIENTATION UNDER GRAVITY]'
- XW**- 'INTERIOR/INTERNAL VOLUME/"INSIDE(S)"/"INNARDS" OF AN ENTITY'
- CL**- 'LINEAR UNI-DIMENSIONAL MIDDLE, CENTER [AS SEEN PARALLEL TO LONG AXIS OF ENTITY (OR HEIGHT-AXIS OF A "TALL" ENTITY)]'
- CR**- 'LINEAR UNI-DIMENSIONAL MIDDLE, CENTER [AS SEEN PERPENDICULAR TO LONG AXIS OF ENTITY (OR HEIGHT-AXIS OF A "TALL" ENTITY)]'
- ZL**- 'PLANAR 2-DIMENSIONAL MIDDLE, CENTER [RUNNING VERTICALLY AND Laterally PARALLEL TO LONG (OR TALL) SIDE OF ENTITY]'
- ZR**- 'PLANAR 2-DIMENSIONAL MIDDLE, CENTER [RUNNING VERTICALLY PARALLEL BUT Laterally PERPENDICULAR TO LONG (OR TALL) SIDE OF ENTITY]'
- ZW**- 'PLANAR 2-DIMENSIONAL MIDDLE, CENTER [RUNNING VERTICALLY AND Laterally PERPENDICULAR TO LONG (OR TALL) SIDE OF ENTITY]'
- CW**- 'CENTER POINT OF AN ENTITY, i.e., the zero-dimensional point most equidistant from all points on the periphery or surface of an entity'
- FD**- 'SIDE/FLANK OF AN ENTITY'
- PF**- 'FRONT PART OF AN ENTITY [RELATIVE TO ITS DIRECTIONAL ORIENTATION OR PRIMARY EXTERNAL INTERFACE]'
- XL**- 'INTERIOR SURFACE OR "WALL" / INTERNAL SURFACE OR "WALL" / THE INSIDE SURFACE OR "WALL" OF AN ENTITY'
- XR**- 'EXTERIOR/EXTERNAL SURFACE/"OUTSIDE"/"SKIN" OF AN ENTITY'

The following roots are also modeled on the same root -**TF**-, even though they do not specify a particular spatial position relative to the whole:

- XD**- 'EXTERNAL POINT-LIKE OUTWARD-FACING VERTEX/"CORNER" OF AN ENTITY'
- XT**- 'EXTERNAL QUASI-LINEAR EDGE OF AN ENTITY'
- XK**- 'EXTERNAL QUASI-LINEAR JOINING OF SURFACES/"SEAM" OF AN ENTITY'
- XF**- 'EXTERNAL ATTACHMENT POINT OR FASTENING MECHANISM OF AN ENTITY', i.e., handle, hook, latch, velcro patch, knob, peg, etc.
- ČD**- 'INTERNAL POINT-LIKE INTERIOR VERTEX/"CORNER" OF AN ENTITY'
- XḐR**- 'EXTERNAL LINEAR OUTWARD-FACING "CORNER" EDGE OR "CORNER" SPACE OF AN ENTITY'
- ČḐR**- 'INTERNAL LINEAR INTERIOR "CORNER" EDGE OR "CORNER" SPACE OF AN ENTITY'

3.6 ADDITIONAL ROOTS RELATED TO SPATIO-TEMPORAL MOTION

-ÇP- ‘ACTION IN SITU / MOVEMENT IN SITU’ Associated Affix: BDM		
BSC	STEM 1: (to be/manifest) an action/movement/motion in-situ (i.e., non-translative) — [both the movement itself and the entity manifesting such]	STEM 2: (to be/manifest) a movement of a part of a larger whole; move (in-situ) a part of an entity STEM 3: (to be an) cyclic/oscillating/back-and-forth/up-and-down in-situ movement
CTE	(to be) a process of in-situ motion/movement; to move in-situ	
CSV	(to be) an in-situ motion/movement itself, i.e., how the movement manifests itself; what the movement(s) consists of	
OBJ	(to be) something moving in-situ	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RÇP- ‘BODILY POSE / IN-SITU BODILY MOVEMENT / DANCING’		
BSC	STEM 1: (to be/manifest) a bodily pose; to pose one’s body and/or limbs	STEM 2: (to be) a state/act of in-situ (i.e., non-translative) movement of one’s body and/or limbs STEM 3: (to be) an act of dancing
CTE	(to be) a state of being in/maintaining a bodily pose	
CSV	(to be) an act of assuming a bodily pose; to assume a bodily pose	
OBJ	(to be) the pose one assumes	

-ÇC- ‘TRACK/TRAIL/WAKE’ Associated Affix: WAK		
BSC	STEM 1: (to be) track/trail of passage left behind by passage of entity [both track/trail + the firmament it is in]	STEM 2: (to be) 1-D, 2-D or 3-D wake or front left behind by passage of entity
CTE	(to be) the track/trail of passage left behind by passage of an entity [focus on track/trail itself]	
CSV	(to be) the firmament/ground/substrate in which a track/trail has been left (and of which it is likely formed)	STEM 3: (to be) trail, wake, or spread left behind as area of demarcation, boundary, zone, etc.
OBJ	(to be) the entity which leaves a track/trace/trace/trail of its passage	

-DÇ- ‘OTHER BODILY MOVEMENT’		
BSC	STEM 1: (to be) an act of jumping/leaping/springing forth; to jump/leap/spring	STEM 2: (to be) a state/act of stretching one’s muscles/limbs STEM 3: (to be) an act of shaking (a part of) one’s body (e.g., as when shaking one’s wet hair dry or an animal shaking water from its fur)
CTE	(to be) a state of being mid-leap or mid-jump or having jumped/leaped	
CSV	(to be) a physical act of jumping/leaping; to spring off one’s feet/paws/legs into mid-air	
OBJ	(to be) where one jumps/leaps to, where one lands after jumping/leaping	

-ÑBY- ‘FIXED PLACEMENT OR POSITIONING / PARKING / STATION-KEEPING’		
BSC	STEM 1: (to be) an act/instance/process of fixing in place; to fix (in place) [i.e., position something into a (quasi-)permanent orientation or placement relative to some surrounding substrate or medium]	STEM 2: (to be) a state/act/ process of acitvation or change of state by placing something in a certain position; to activate a change of state by placing something in a particular position (e.g., via insertion, affixing, attaching, turning, shifting, sliding, etc.) STEM 3: (to be) a state/act of parking or station-keeping; to park [i.e., to place in a station-keeping or temporary storage position]
CTE	(to be) a state of being fixed in a certain position/orientation/place	
CSV	(to be) a physical act of fixing in place; to fix/position in place, to place into a fixed position	
OBJ	(to be) the position/orientation into which something is fixed	

3.7 TEMPORAL CONCEPTS

-LN- ‘TIME OF DAY’			
	STEM 1	STEM 2	STEM 3*
BSC	(to be) daytime (= portion of the 24-day when the sun is above the horizon)	(to be) evening or nighttime (= portion of the 24-hour day when the sun is below the horizon)	(to be) a particular “o’clock”-time of the day as named by the hour [use numerical roots or affixes to specify the number of hours since midnight] (includes both the time and the event occurring then)
CTE	(to be) the elapsing/passing of time during the daytime; to spend/pass the daylight hours	(to be) the elapsing/passing of time during the evening/nighttime; to spend/pass the evening/nighttime hours	(to be) the measuring/delineation of time as specified by a particular “o’clock”-time of day
CSV	(to be) the state of being in daylight; to occur/manifest during daylight hours	(to be) the state of being nighttime; to occur/manifest during evening/nighttime hours, to be/occur at night	(to be) the state of being/occurring at a particular “o’clock”-time of day
OBJ	(to be) that which occurs/passes during daylight hours	(to be) that which occurs/passes during evening/nighttime hours	(to be) the event which occurs at or is specified by a particular “o’clock”-time of day

*for specific times, e.g., 10:15 a.m. and 34.3 seconds, use Stem 3 with an appropriate numerical affix, followed by numerical stems with COO affix plus the appropriate stems of the **-RW-** root below declined in the PARTITIVE case. Alternately, one may use numerical stems with the various degrees of the ELA affix.

-RV- TEMPORARY DURATION		Associated Affix: TD1
BSC	(to be) a particular amount of elapsed time during which something occurs/exists; for something to occur/exist lasting/enduring a particular amount of time	STEM 1: a moment/instant STEM 2: a “while” STEM 3: a portion of a day
CTE	(be) the event(s) occurring during a particular amount of elapsed time	
CSV	(be) the duration of elapsed time [regardless of what may occur/exist during that period]	
OBJ	(be) the “volume” of spacetime during/in which something occurs/exists	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the new root **-RW-** shown below:

Specifications for the following six roots are modeled after the root **-RV-** ‘TEMPORARY DURATION’ above

-RW- SHORT-TERM CONVENTIONALIZED TIME PERIOD
STEM 1: (to be) a second
STEM 2: (to be) a minute
STEM 3: (to be) an hour

-Ř- CONVENTIONALIZED TIME PERIOD
STEM 1: (to be) a day (= 24-hour period)
STEM 2: (to be) a week
STEM 3: (to be) a lunar period / month

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RD- CALENDRIAL TIME PERIOD	Associated Affix: TD2
STEM 1: (to be) a calendrical day, designated day (for planning/scheduling purposes)	
STEM 2: (to be) a calendrical week, designated week (for planning/scheduling purposes)	
STEM 3: (to be) a calendrical month, designated month (for planning/scheduling purposes)	

-RN- LONGER TIME PERIOD	Associated Affix: LTD
STEM 1: (to be a) calendrical year, designated year (for planning/scheduling purposes)	
STEM 2: (to be a) calendrical decade, designated decade (for planning/scheduling purposes)	
STEM 3: (to be a) designated lifetime of an individual (for planning/scheduling purposes)	

NOTE: for the meaning of the old INFORMAL stems previously associated with this root, use the above stems with the DGR/8 affix.

-ŘṬ- LONG-TERM TIME PERIOD	Associated Affix: LGD
STEM 1: (to be) calendrical century	
STEM 2: (to be) calendrical millennium	
STEM 3: (to be) calendrical ten-thousand year period	

NOTE: for the meaning of the old INFORMAL stems previously associated with this root, use the above stems with the DGR/8 affix.

-ŘŇ- EPOCH-LENGTH TIME PERIOD	Associated Affix: EPC
STEM 1: (to be) a geologic age	
STEM 2: (to be) a geologic epoch	
STEM 3: (to be) a geologic era	

NOTE: for the meaning of the old INFORMAL stems previously associated with this root, use the above stems with the DGR/8 affix.

-RP- ‘CYCLE / REGULARITY / FREQUENCY / PERIODICITY / ITERATION’		Associated Affix: FRQ	
	STEM 1	STEM 2	STEM 3
BSC	(to be) something having a cycle or pattern of regularity; to be something cyclic, regular or periodic [both the entity and the cyclic pattern]	(to be) something with a particular cycle or pattern of regularity; to be something with a particular cycle or regular period [both the entity and the cyclic/periodic pattern]	(to be) something manifesting iteration/recurrence, i.e., happening more than once; to be something iterative/recurrent [both the entity and the recurrence]
CTE	(to be) a pattern of cyclic/regular/periodic activity [focus on pattern as distinct from other/different potential patterns]	(to be) the particular frequency/periodicity of a phenomenon (= the rate of its recurrences/manifestations); to recur; to repeat (in terms of temporal periodicity)	(to be) a pattern of iteration/recurrence [focus on the fact that iteration/recurrence demonstrates a potential pattern or precedent for further recurrence]
CSV	(to be) a process of cycling/periodicity [focus on significance that a pattern exists/occurs]	(to be) a process of cycling/recurring with a particular period [focus on the significance that such a pattern exists/occurs]	(to be) a process of iteration/recurrence [focus on the fact that there's been a recurrence]
OBJ	(to be) the object/entity which displays cyclic/regular/periodic activity	(to be) the object/entity which displays the particular cycle/recurring/periodic pattern	(to be) the event/entity which has recurred

-KT- PAST / PRESENT / FUTURE (based on Metaphor of a Progressive Linear Spacetime-line)		Associated Affix: TPP
BSC	STEM 1: (to be) a past event/occurrence/entity (relative to the contextual present); to be/occur in the past [both the event/entity and its place on a linear timeline relative to the contextual present]	STEM 2: present event, entity, occurrence STEM 3: future event, entity, occurrence
CTE	(to be) a past event [focus on what occurred, not when]	
CSV	(to be) when a past event occurred [focus on when it occurred, not what occurred]	
OBJ	(to be) the entity/object/circumstance impacted/affected by a past event/occurrence/entity	

NOTE: The above stems may be used in spatial contexts as well, in which case English translations might differ depending on context, e.g., ‘previous’, ‘former’, ‘once-’, ‘one-time’, ‘here’, ‘...at hand’, ‘there’, ‘-to-come’, ‘expected/awaited’, etc.

-KM- ‘TIMELINESS / PUNCTUALITY / EARLINESS / LATENESS’		Associated Affix: TME (formerly LAT)
	STEM 1	STEM 2
BSC	(to manifest) a degree of timeliness/punctuality; the extent to which something is timely/on-time [use a quantitative affix such as EXN, EXD, SUF, etc., to specify]	(to be) something that is early, sooner-than-expected, sooner-than-required
CTE	(to be) that which manifests a degree of timeliness/punctuality	(to be) that which is early
CSV	(to be) a state of timeliness/punctuality, being on time	(to be) a state of earliness, being sooner-than-required; to be early
OBJ	(to be) that to/with which one is (intended to be) punctual	[same as CTE]
STEM 3: (to be something that is) late, untimely, tardy — Specification pattern is modeled after Stem 2		

-RŠ- ‘STAGE / STEP / PHASE OF A PROCESS’		Associated Affix: STG	
BSC	STEM 1: (to be a) step/stage/phase in a process [both the entity/entities/events/acts constituting the portion of the larger process and the process/state of being subdivided from the larger process]		STEM 2: (to be) a degree/grade or point on a progressive/scalar gradient STEM 3: (to be a) section, sub-unit, discernible/identifiable/differentiated “stretch” or portion of a progressively/successively structured entity/phenomenon
CTE	(to be the) entity/entities/activity/activities/act(s) within (or which constitute) a step/stage/phase of a process; to constitute the particulars of a stage in a process		
CSV	(to be) the act/state/process of being/functioning as a step /stage/phase of a process; to perform a step in a process		
OBJ	(to be the) process which is divided up into steps/stages/phases		

-TPH- ‘SCHEDULE / TIMETABLE / ITINERARY /CALENDAR’		
BSC	STEM 1: (to be) an act/process/instance of using/making/relying upon a schedule/timetable; to use/rely on a schedule/timetable [i.e., a written/graphic listing of sequential events delineated by a time index]	STEM 2: (to be) an act/process/instance of using/making/relying upon an itinerary; to use/rely on an itinerary
CTE	(to be) a state of being on a schedule, of being scheduled	
CSV	(to be) a physical act of scheduling; to put/place/input on/in a schedule, to schedule	STEM 3: (to be a) an act/process/instance of using/making/relying upon a calendar
OBJ	(to be) a schedule	

-LPŠ- ‘REFRESH / RENEWAL / UPDATE’		
BSC	STEM 1: (to be) an act/process/state of needing to be refreshed/replenished; to be in need of refreshment/replenishment/resupply [i.e., to make something return to having its initial appearance/condition/supply] CPT version = refresh/replenish/resupply	STEM 2: (to be) an act/process/instance of renewing/reviving/renewal/revival;; to renew/revive [i.e., to make something return to the state it had when new] STEM 3: (to be a) an act/process/instance of updating, bringing something up-to-date; to update [i.e., to correct aspects of an entity that have become obsolete/inaccurate]
CTE	(to be) a state of needing to be refreshed/replenished/resupplied CPT version = state of being refreshed	
CSV	(to be) a physical act of refreshing/replenishing/resupplying; to refresh/replenish/resupply	
OBJ	(to be) what is in need of refreshment/replenishment CPT version = what is/has been refreshed/replenished	

4.0 PSYCHOLOGICAL AND SOCIOLOGICAL PHENOMENA

-SL- ‘THOUGHT / CONTEMPLATION / REASON / INTELLECT’		
BSC	STEM 1: (to be) an act of thinking/cogitating; to think/cogitate	STEM 2: (to be) something one is considering/mulling/contemplating; to consider, mull, contemplate, take into account STEM 3: (to be) an act of reasoning; to reason, use one’s intellect [= employ a strict process of integrating logic and experience when thinking/analyzing]
CTE	(to be) the state/process of thinking/cogitating	
CSV	(to be) the thought one is thinking	
OBJ	(to be) the basis/trigger for a thought; that which makes one think of something	

DERIVATIONS: ponder, deliberate/deliberation, contemplate, mull, theory, hypothesis, deduce/deduction, infer(ence), judge, conclude/conclusion

This root is also used as the **PROPOSITIVE (PPV) Bias Affix**: ‘*what if...*’ ‘*It could be that....*’ ‘*Consider this: ...*’ ‘*Posit the following: ...*’ ‘*Assume for the sake of argument that....*’

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-KSL- ‘IDEA / ANALYSIS / ABSTRACTION / CONCEPT’	
Stem 1:	(to be) an act of thinking up/of an idea; to brainstorm; to come up with an idea CSV = an idea
Stem 2:	(to be) an act of analysis; to analyze
Stem 3:	(to be) an act of abstraction; to abstract CPT = conceptualization/conceptualize CSV = a concept

-ŘSL- ‘MODE OF THINKING / MODE OF ANALYSIS’		
BSC	Stem 1: (to be) a state/act/process of convergent/critical thinking/analysis using logic; to think/analyze logically [i.e., using the rules of logic]	Stem 2: (to be) a state/act/process of divergent/creative thinking relying on imagination, inspiration, and creative instinct Stem 3: (to be) a state/act/process of lateral thinking “outside the box” employing a synthesis of divergent thinking and convergent thinking
CTE	(to be) the state/process of convergent/critical thinking/analysis using logic	
CSV	(to be) the thought/deduction one is thinking/contemplating as part of or as a result of convergent/critical thinking/analysis using logic	
OBJ	(to be) a rule of logic by which one conducts convergent/critical thinking/analysis	

-LTÇ- ‘SUGGESTION / ADVICE / PROFFER / RECOMMENDATION’		
BSC	STEM 1: (be) an act of suggesting something, i.e., proffering an idea as to a potential course of action or way of thinking	STEM 2: (be) a piece of advice; to advise STEM 3: (be) recommendation; to recommend
CTE	(be) a state of having a suggestion made to one; listening to/hearing/reading a suggestion being made	
CSV	(be) the words/means/method of making a suggestion	
OBJ	(be) a suggestion; the idea offered as a potential course of action or way of thinking	

This root is also used as the **SUGGESTIVE (SGS) Bias Affix**: ‘*How about...*’ ‘*We could...*’ ‘*Might I suggest...*’

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-ŃTÇ- ‘PROPOSITION / COUNSELING / ADVOCACY’		
Stem 1: (be) a proposal; to propose	Stem 2: (be) an instance of counseling; to counsel	Stem 3: (be) an act of advocating; to advocate

4.1 COMMUNICATION AND SOCIAL INTERACTION

-ḐX- ‘VOICE / VOCAL UTTERANCE’		
BSC	Stem 1: (to be) an act/instance of making of a vocal utterance; to make sound by means of one’s vocal apparatus (e.g., bark, meow, hoot, call, shout, cry, scream, shriek, moo, whinny, roar, purr, yowl); to vocalize, to utter a sound [both the sound and the process of uttering it]	Stem 2: (to be) an act/instance of making the usual, common, representative vocalization made by an entity (e.g., a meow, bark, whinny, chirp, roar, speaking, etc.) Stem 3: (to be) an act/instance of making an alternate, less-common vocalization made by an entity (e.g., cry, yowl, murmur, hum, purr, mumble)
CTE	(to be) the sound made by/consisting of a vocal utterance, a vocalization; to vocalize (= the aurally discernible sound, not the originating process)	
CSV	(to be) the process of making a vocal utterance; to utter, to vocalize (= the vocal process itself irrespective of the resulting sound or communicative content)	
OBJ	(to be) the communicative content of a vocal utterance, what a vocal utterance is intended to convey	

-FÇW- ‘DELIBERATELY AFFECTED VOCAL SOUND’		
BSC	Stem 1: (to be) an act/instance of vocal whistling; to vocally whistle	Stem 2: (to be) an act/instance of whisper; to whisper
CTE	(to be) the vocalized sound of a whistle, the sound of vocalized whistling; for there to be a vocalized whistling sound	
CSV	(to be) the physical act of making a whistling sound; to physically make a whistling sound	Stem 3: (to be) an act/instance of vocal mimicking; to vocally mimic
OBJ	(to be) the communicative content of a whistle, what is intended to be conveyed by a whistle	

-MMW- ‘VOCALIZATION OF DISTRESS OR PAIN / CRY / WEEP / SCREAM’		
BSC	Stem 1: (to be) an act/instance of uttering a vocal sound of physical/mental distress or pain; to utter a vocal sound of physical/mental distress or pain (e.g., moaning, howling, etc.)	Stem 2: (to be) an act/instance of crying, weeping; to cry/weep
CTE	(to be) the vocalized sound of vocalized physical or mental distress/pain, a vocalized sound of distress/pain; for there to be a vocalized sound of physical/mental distress/pain	
CSV	(to be) the physical act of uttering a vocal sound of distress/pain; to moan, to howl	Stem 3: (to be) an act/instance of screaming, to scream [i.e., due to intense physical/mental distress/pain]
OBJ	(to be) the physical or mental distress/pain which causes one to moan or howl	

-M- ‘LINGUISTIC COMMUNICATION / SPEAK / SAY / TELL’		
BSC	Stem 1: (to be) a spoken/written/signed/signaled utterance for communicating linguistically	Stem 2: (to be) an instance/utterance of linguistic communication for rhetorical, inspirational, socially effective, or psychologically manipulative purposes
CTE	(to be) the (intended) message/content/meaning of an instance of linguistic communication; to say/tell/communicate something using language	
CSV	(to be) an instance of producing/uttering/writing/signing/signaling using language (i.e., the process thereof, irrespective of the content/message); to speak/write/sign/signal in a language	Stem 3: (to be) a phoneme or morpho-phonemic element/component of linguistic communication; to be a meaningful “sound” in one’s spoken language (e.g., a vowel or consonant or syllable)
OBJ	(to be) the entity/party to which/whom one (intends to) communicate linguistically; the (intended) audience/listener/hearer/reader/recipient of a linguistic communication	

-Ń- ‘ WRITE / INSCRIPTION / COMPOSE IN WRITING / WRITTEN SYMBOL OF COMMUNICATION ’		
BSC	STEM 1: (to be) something written (down), something (recorded/transcribed) in writing; to write down something, record in writing [both the physical symbol(s) and the communicative content/message thereof]	STEM 2: (to be) something authored in writing, written composition; to “write” = to author, to compose in writing STEM 3: (to be) a written/visual character/symbol/glyph/letter/emoji/ideogram, etc. used for written/visual communication
CTE	(to be) the communicative/linguistic content/message contained within something written	
CSV	(to be) to be the visual inscription or physical presence of something written (regardless of its communicative content)	
OBJ	(to be) the object/surface on which something is written/inscribed	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-ŃTY- ‘ DOCUMENT / WRITTEN PAGE/ LINGUISTIC GRAPHEME ’		
BSC	STEM 1: (to be) something documented in writing; to document, record/transcribe for official/archival purposes [both the physical writing and the communicative content/message thereof]	STEM 2: (to be) a “page” of writing, a “page” of a written work [“page” = visible formal interface for static written communication] STEM 3: (to be) a written grapheme/character/letter, etc. used in a language’s [official] writing system; to write (down) letters/characters/graphemes from/in a language’s writing system
CTE	(to be) the communicative/linguistic content/message contained within something officially documented	
CSV	(to be) to be the visual inscription or physical presence of something documented (regardless of its communicative content)	
OBJ	(to be) the object/surface on which something is documented	

-PÇ- ‘ READ / RECITE / ERUDITION ’		
BSC	Stem 1: (to be) an act of reading; to read (i.e., acquire/attain information from a written-language source via one’s knowledge of the written language)	Stem 2: (to be) an act of reading aloud, reciting; to read (aloud), to recite (i.e., speak words aloud from a written source) Stem 3: (to be) a state/act of erudition/scholarship; to acquire knowledge/expertise via reading
CTE	(to be) the state/act of mental interpretation/comprehension of what one reads; to comprehend/take in what one reads	
CSV	(to be) the physical act of reading written content; to perform the physical act of reading (i.e., the visual scanning of written characters with one’s eyes plus the mental interpretation thereof)	
OBJ	(to be) the contents of what one reads (i.e., the communicative message in writing)	

- ṬČ- ‘SIGN/MARK/SYMBOL/VISUAL OR TACTILE MEANS OF COMMUNICATION / DATUM / INFORMATION’		
BSC	Stem 1: (to be) a state/act of being a sign/signal/gesture/indication; to be/make a sign/signal/gesture/indication, to indicate, to gesture, to (transmit a) signal (i.e., general indication of something)	Stem 2: (to be) a state/act of being a (visual/tactile/olfactory) mark, token track, print, trail, clue, trace Stem 3: (to be) a state/act of being a non-linguistic communicative/informational gesture (i.e., a visual/tactile indication designed to communicate non-linguistic information, e.g., a nod, a certain facial expression, a wink, a hand-wave of greeting, a hand-wave of dismissal, a shrug, a pat on the head, a pat on the back, etc.)
CTE	(to be) a datum, a piece of information conveyed by a sign/signal/indication/indicator	
CSV	(to be) an act of indicating; do something that indicates	
OBJ	(to be) a sign/signal/indication/indicator itself	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RṬČ- ‘OFFICIAL SIGN OR SIGNAL / EMBLEM / INSIGNIA / LOGO / SYMBOL’		
BSC	STEM 1: (to be) a state/act of being a formal/authorized/official sign/signal (e.g., road sign, traffic signal, marquee, written name/information on a dedicated placard-like surface, etc.)	STEM 2: (to be) a state/act of being a symbol, emblem, device, insignia, logo STEM 3: (to be) a state/act of being a linguistically representational mark/symbol other than a character/letter/grapheme from a language; to be/write a linguistically representational mark/symbol other than a character/letter/grapheme from a language (e.g., an emoji, an arrow, the power-on/off symbol on a device, the outline of a raised hand indicating “stop”, a red circle with diagonal bar indicating something prohibited, etc.)
CTE	(to be) the information indicated/expressed by a formal/authorized/official sign/signal	
CSV	(to be) an act of expression via a formal/authorized/official sign/signal; to express/convey via a formal/authorized/official sign/signal	
OBJ	(to be) a formal/authorized/official sign/signal	

-FČ- ‘DESCRIPTION / DELINEATION / SPECIFICATION / REPORT’		
BSC	Stem 1: (to be) an act/process of describing something; to describe [including the act/process of description plus what is described]	Stem 2: (to be) an act/process of of delineating/specification, giving specific/organized details; to delineate, to specify, describe in clinical detail Stem 3: (to be) an act of reporting something; to report
CTE	(to be) the content of a description	
CSV	(to be) an act/process of describing; an act of description	
OBJ	(to be) that which a description pertains to or is about	

NOTE: The old FORMAL and INFORMAL stems previously associated with this root have now been distributed between this root and the following new root:

-FÇM- ‘ACCOUNT / NARRATIVE / STORY / TALE’		
BSC	STEM 1: (to be) an act/process of giving an account of/relating/recounting an event/occurrence to another	STEM 2: (to be) an act of telling a story or narrative about a real-life experience; to narrate, tell a narrative, tell a (real-life) story STEM 3: (to be) a process of setting forth/communicating one’s thoughts, observations, analysis, etc. verbally or in writing
CTE	(to be) the content of an account	
CSV	(to be) an act/process of giving an account; to give an account (i.e., verbally, in writing, on screen, etc.)	
OBJ	(to be) the event/occurrence/situation about which an account pertains	

-FÇN- ‘FICTIONAL STORY / TALE / PLOT / STORY ARC’		
BSC	STEM 1: (to be) an act/process of telling/relating/recounting a fictional story or tale	STEM 2: (to be) the plot or story arc of a fictional story/tale STEM 3: (to be) the theme/moral/purpose/point of a fictional story/tale
CTE	(to be) the content of a fictional story/tale	
CSV	(to be) an act/process of conveying the content of a fictional story/tale verbally or in writing	
OBJ	(to be) an event/occurrence/situation from/told in a fictional story/tale	

-TT- ‘SALUTATION / GREETING / INTRODUCTION’		
BSC	Stem 1: a state/act of greeting, salutation; to greet, extend salutations toward, say hello to	Stem 2: (to be) an act of hailing, getting attention of someone/something; to hail / get attention of Stem 3: (to be) a social introduction; to socially introduce, present a party to another party
CTE	(to be) a state of salutation	
CSV	(to be) an act of greeting someone; the actual words/actions employed to greet someone; to say words of greeting, to demonstrate one’s greetings	
OBJ	(to be) the party/entity who is greeted	

NOTE: the old FORMAL and INFORMAL stems previously associated with this root are now distributed between this root and the following two new roots:

-TTR- ‘LEAVETAKING / SAYING GOODBYE / FAREWELL’		
BSC	STEM 1: (to be) a state/act of casual leavetaking, saying “see you later”; to casually take one’s leave (until an expected and predictable meeting); to say “bye” or “good night” or “see you [tomorrow, this weekend, next week, etc.], to bid one a casual/temporary goodbye until an expected, predictable, soon-to-come remeeting.	STEM 2: (to be) a state/act of leavetaking, saying goodbye (for the present, until an eventual remeeting at some future time); to take one’s leave, to say goodbye, to bid one goodbye (for the present, until an eventual remeeting at some future time) STEM 3: (to be) a formal farewell, bidding farewell (with no expectation of when or if the parties will meet again); to bid farewell, to bid adieu
CTE	(to be) a state of casual leavetaking	
CSV	(to be) an act of casually taking one’s leave; the actual words/actions employed to casually take leave of someone; to say words of casual/temporary leavetaking	
OBJ	(to be) the party/entity to whom one directs one’s casual/temporary goodbye	

-ZKY- ‘MODULATION OF ELECTRO-MAGNETIC WAVE FOR COMMUNICATION PURPOSES’		
BSC	Stem 1: (to be) a state/act of amplitude modulation of an e-m frequency for purposes of communication with an e-m (i.e., radio/television) receiver [i.e., an AM broadcast]	Stem 2: (to be) a state/act of frequency modulation for communication purposes [i.e., an FM broadcast] Stem 3: (to be) a state/act of polarity modulation for communication purposes [i.e., a Polarity Modulation broadcast]
CTE	(to be) a state of amplitude modulation; to be an AM broadcast	
CSV	(to be) an act of modulating the amplitude of an e-m frequency; to make an AM broadcast	
OBJ	(to be) the message/communicative content of an AM broadcast	

-MSX- ‘PLAY-ON-WORDS / PUN / DOUBLE-ENTENDRE’		
BSC	STEM 1: (to be) a play on words, witty or clever use of words; to play on words, to say/write something witty/clever using wordplay	STEM 2: (to be) a pun; make a pun STEM 3: (to be) a double-entendre; say/write/make a double-entendre
CTE	(to be) what one says/writes that constitutes a play-on-words	
CSV	(to be) a physical act of saying/writing something that is a play-on-words; to physically speak/write such	
OBJ	(to be) the subject/topic/situation/allusion “hidden” in a play-on-words	

-DN- ‘NAME / DESIGNATION / LABEL’		
BSC	Stem 1: (to be) a name [plus the entity named]; to be named/called something	Stem 2: (to be) a designation or reference [plus the entity so designated]; to refer to as Stem 3: (to be) a label [plus the entity so labeled]; to label as
CTE	(to be) an entity having a name	
CSV	(to have) a name; to bear a name	
OBJ	(to be) the name that an entity has	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RDN- ‘TITLE / ROLE’		
BSC	STEM 1: (to be) a title [plus the entity so titled] [here, “title” refers to a word or phrase acting as a name, as in the title of a book or work of art, etc.]	STEM 2: (to be) a title [plus the entity so titled] [here, “title” refers to a formal designation given a person indicating their societal/occupational role/function, as in “Doctor”, “Queen,” “President”, “Deputy”, “Minister”, “Countess,” etc.] STEM 3: (to be) a role [plus the entity carrying out the role] (i.e., a formally assigned functional niche or societal status, as in a role in a play, or a role in society, e.g., jester, Hamlet, yenta, amanuensis, matchmaker, femme fatale, scapegoat, etc.
CTE	(to be) an entity having a title	
CSV	(to have) a name; to bear a name	
OBJ	(to be) the name that an entity has	

-ND- ‘QUESTION / QUERY / ANSWER / RESPONSE’		
BSC	STEM 1: (to be) an act/process of question & answer [statement requesting information + the answer/reply/response thereto]	STEM 2: (to be) an act of questioning/querying STEM 3: (to be) an act of answering/responding
CTE	(to be) an act/process of asking a question and receiving an answer [focus on the inquiry/response process itself]	
CSV	(to be) the act/process of tangibly/physically/linguistically expressing a question and hearing/reading/discerning an answer (i.e., regardless of the content of the question or answer)	
OBJ	(to be) the actual words or specific /communicative expression(s) of a question and answer	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-NDL- ‘INQUIRY / INVESTIGATION / RESEARCH / DISCOVERY’		
BSC	STEM 1: (to be) an act/process of inquiry + answer or resulting discovery; to inquire into something [i.e., seek an explanation or answer(s) for something that (one believes_ needs explaining]	STEM 1: (to be) an act/process of formal investigation or research; to investigate/research STEM 3: (to be) an act/process of discovering/finding the explanation(s)/answer(s) to one’s inquiry or investigation; to discover/find out something one has inquired about or investigated
CTE	(to be) the state of there being something unexplained that (one believes) needs an explanation	
CSV	(to be) the physical actions taken and/or question(s) posed that constitute an inquiry; to physically take the actions and/or physically state/ask the questions constitute an inquiry	
OBJ	(to be) that which is unexplained and (that one believes) needs to be inquired about/investigated	

-RRJ- ‘ASSERTION / CERTAINTY / ASSURANCE / ALLEGATION / AFFIRMATION’		
BSC	STEM 1: (be) an (act of) assertion; to assert that something is certain based on one’s belief/knowledge that it is so	Stem 2: (act of) assurance/allegation; to assure that something is so based on intuition, speculation, hope, or in the (immediate) absence of evidence. Stem 3: (process of) affirmation; to affirm/swear that something is so.
CTE	(be in) a state of certainty about something based on one’s belief/knowledge about it	
CSV	(be) a process of asserting; declare that something is so	
OBJ	(be) that which is being asserted; an asserted fact	

This root is also used as the **CONTENSIVE (CNV) Bias affix:** = ‘I’m telling you...’, ‘I told you so!’, ‘You see?!’

-TFL- ‘OFFER / INVITATION / ACCEPTANCE’		
BSC	STEM 1: (to be) a state/act/instance of offering something to someone; to offer something to someone	STEM 2: (to be) a state/act/instance of invitation/inviting someone to (do/participate in) something; to invite someone to (do/participate in) something STEM 3: (to be) an act/instance of accepting an offer or invitation; to accept an offer or invitation
CTE	(to be) a state of there being something offered or on offer	
CSV	(to be) a physical act of offering; to perform an act of offering	
OBJ	(to be) an offer(ing), what one offers, that which is offered	

-VŽŘ- ‘METAPHOR / METANYM / ALLEGORY’		
BSC	STEM 1: (to be) a state/act of communication via a metaphor; to be metaphorical, speak metaphorically, use a metaphor	STEM 2: (to be) a state/act of communication via a metonym STEM 3: (to be) a state/act of communication via an allegory
CTE	(to be) (in) a metaphorical state	
CSV	(to be) an act of using/speaking/writing/communicating/conveying information by means of a metaphor	
OBJ	(to be) the metaphor one uses; to be a metaphor	

-FX- ‘DEGREE OF CONFIDENCE/FORTHRIGHTNESS/HUMILITY’ Affix: CFD (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of meekness/confidence (= self-confidence, self-effacement) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of humility; be humble STEM 3: (to be/have a) degree of authoritativeness (= manifestation of control / leadership; expectation of obedience / acquiescence / complacency by others)
CTE	(to be) something with a degree of meekness/confidence	
CSV	(to be) a degree of meekness/confidence	
OBJ	(to be) an entity/party impacted/affected by one’s degree of meekness/confidence	

-NX- ‘DEGREE OF FURTIVENESS / COVERTNESS’ Affix: CVT (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of furtiveness/covertiness (= extent to which an activity is furtive) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree to which something is obscure/obfuscated/ambiguous/difficult to discern or interpret STEM 3: (to be/manifest a) degree of sneakiness / stealth / surreptitiousness
CTE	(to be) something with a degree of furtiveness/covertiness	
CSV	(to be) a degree of physical/technical furtiveness/covertiness	
OBJ	(to be) an entity/party impacted/affected by one’s degree of furtiveness/covertiness	

-MT- ‘DEGREE OF PUBLICITY / PRIVACY / SECRECY / CONCEALMENT / AVAILABILITY’ Affix: DSR (use SUF/EXN/EXD, etc.)		
BSC	STEM 1. (to be) something with a particular degree of publicity, notoriety vs. secrecy, confidentiality [i.e., degree to which something is generally known] — [both the quality and the entity manifesting such]	STEM 2. (to be) something with a particular degree of privacy/concealment/seclusion [i.e., degree to which something is generally seen/heard/witnessed]
CTE	(to be) something with a degree of publicity, notoriety vs. secrecy, confidentiality	
CSV	(to be) a degree of physical/technical publicity, notoriety vs. secrecy, confidentiality	STEM 3. (to be) something with a particular degree of diffusion/availability/accessibility [i.e., degree to which something is generally available/accessible]
OBJ	(to be) an entity/party impacted/affected by one’s degree of publicity, notoriety vs. secrecy, confidentiality	

-VVT- ‘TACT(FULNESS) / INGRATIATE / OBSEQUIOUSNESS / SYCOPHANCY’		
BSC	Stem 1: (be) an instance of tact(fulness), i.e., speak or act in a manner designed to preserve the appearance of dignity for all parties, despite the parties’ likely knowledge that the situation involved is other than dignified	STEM 2: (to be) ingratiating STEM 3: (to be) obsequious, unctuous, sycophantic
CTE	(be) a state of tactfulness; to manifest tactfulness, have a tactful air/manner	
CSV	(be) the tangible action(s)/word(s) used in an act/display of tact(fulness)	
OBJ	(be) the matter/issue/subject/situation requiring/necessitating/eliciting a display of tact(fulness)	

This root is also used as the **EUPHEMISTIC (EUP) Bias Affix:** *‘Let’s just say that....’ or ‘Well, let me put it this way....’*

-LLM- ‘SELF / IDENTITY / PERSONALITY’		
BSC	STEM 1: (be) one’s own self (= one’s own person as an object of reflection or reference), oneself; to be/act (as) oneself	STEM 2: (be) one’s sense of identity, i.e., what one senses/believes/observes introspectively about oneself that makes one feel unique as compared to others; what one senses/believes about oneself that distinguishes oneself from others; to have a sense of identity [OBJ = one’s identity as established by authorized means; i.e., how one is formally/authoritatively distinguished from others] STEM 3: (be) a one’s personality, set of one’s personality traits
CTE	(be) one’s sense of self-awareness, i.e., the conscious subjective sense that one exists as an individual	
CSV	(be) the physical body plus tangible/conscious beliefs, values, thoughts, ideas, drives, personal characteristics, etc.that one is consciously aware of about oneself that constitute the “ingredients” which make up one’s sense of self	
OBJ	(be) a person/entity [as observed externally by others] having a conscious self	

This root is also used as the **RELECTIVE (RFL) Bias Affix:** *‘Look at it this way...’ ‘As I see it,...’ ‘In my opinion,...’ or ‘From my point of view,...’*

-CČ- ‘MODESTY / HUMBLENESS / MEEKNESS’		
BSC	STEM 1: (be) an act/instance of modesty; to act/behave modestly; to be modest (i.e., not boastful, conceited, or demonstrating pride about one’s identity, talents, characteristics, accomplishments, etc.)	STEM 2: (be) an act/instance of humility/humbleness; be humble (i.e., behaving/being with a conscious sense of one’s own defects or shortcomings, so that one is unassertive) STEM 3: (be) an act/instance of meekness; be meek (i.e., patient and mild in character/personality and not inclined to anger or resentment)
CTE	(be) a modest person, have a modest character/personality	
CSV	(be) an appearance of modesty, i.e., to behave/act as (if) one who is modest	
OBJ	(be) a person whom others generally perceive as being modest	

This root is also used as the **DIFFIDENT (DFD) Bias Affix:** ‘*sorry, but...*’ ‘*It’s nothing. It’s just...*’

-ŽŽT- ‘ORDINARINESS / UNORIGINALITY’		
BSC	Stem 1: (be) something ordinary or commonplace	Stem 2: (be) something matter-of-fact, down-to-earth or prosaic (i.e., lacking in any features or characteristics or behavior which would cause one to infer or guess their nature, motives, meaning, intentions, etc.)
CTE	(be) a state of being ordinary or commonplace (i.e., the subjective state of ordinariness)	
CSV	(be) physical/tangible aspects/characteristics of a party/entity/object/event/situation that make it ordinary or commonplace	
OBJ	(be) what is common-place or ordinary, i.e., the party/entity/object/event/situation that is commonplace or ordinary	Stem 3: (be) something unoriginal and predictable (i.e., lacking in any original or innovative aspects)

This root is also used as the **PROSAIC (PSC) Bias Affix:** — ‘*Meh... (said in disappointment)*’ ‘*How ordinary!*’

-DXW- ‘TAKING A BREAK / VACATION / HOLIDAY / SABBATICAL’		
BSC	Stem 1: (be) an act/instance of taking a break from something, ceasing one’s activity in order to recuperate/rest; to take a break, to stop what one is doing to recuperate/rest	Stem 2: (be) an act/state of being on/taking a vacation/holiday; to take or be/go on a vacation/holiday Stem 3: (be) a act/state of being on leave, to be on sabbatical; to be on leave/sabbatical, to be on an extended break from something
CTE	(be) a state of being on a break, temporarily resting/recuperating from an activity	
CSV	(be) an act of taking a break; to physically stop what one is doing in ordert to recuperate/rest	
OBJ	(be) what one is taking a break from	

-MSF- ‘ABANDONMENT / GIVING UP ON / RESIGNATION’		
BSC	Stem 1: (be) an act/instance of giving up on something; to give up on (i.e., losing one’s faith/belief that something is or functions as one thought it would or as it used to [be])	Stem 2: (be) an act/instance of abandonment; to abandon Stem 3: (be) a act/instance of resignation (i.e., officially vacating one’s role, duty, job)
CTE	(be) a state of having given up	
CSV	(be) an act of giving up	
OBJ	(be) what one gives up on, what one no longer believes in	

This root is also used as the **RENUNCIATIVE (RNC) Bias Affix:** — ‘*So much for...!*’ ‘*There goes...!*’

NOTE: for the meaning of the old FORMAL stems previously associated with the above root, use the following new root with the same Specification pattern:

-RMSF- ‘RENUNCIATION / DESERTION / ABDICATION’	
Stem 1: (be) an act of renunciation; to renounce	
Stem 2: (be) an act of desertion	
Stem 3: (be) an act/instance of abdication; to abdicate, to abjure	

-ŇŇS- ‘SOLICITATION / SUPPLICATION / URGING / IMPLORE / BESEECH / ENTREATY / PRAYER’		
BSC	(be) an act of solicitation, i.e., a polite or humble request made to a 2nd party that the 2nd party provide some desired service/relief/resource, etc.; a plea, a supplication	Stem 2: (be) an act/process of urging/begging/imploring/beseeching/entreating, i.e., an emotionally earnest/intense form of solicitation; to beseech, entreat, beg Stem 3: (be) an act of prayer; to pray (i.e., to a deity or supernatural entity)
CTE	(be) the psycho-social aspects of an act of solicitation	
CSV	(be) the physical act/process/words involved in making a solicitation	
OBJ	(be) the object/entity/service which the soliciting party hopes to obtain	

This root is also used as the **SOLICITATIVE (SOL) Bias Affix:** ‘*please*’

NOTE: for the meaning of the old FORMAL stems previously associated with the above root, use the following new root with the same Specification pattern:

-RŇS- ‘CLAIM / LAWSUIT / APPEAL’	
Stem 1: (be) a process of claiming; to make a claim (i.e., to seek relief from some injustice done)	
Stem 2: (be) an act/process of suing; to sue, file a (law)suit	
Stem 3: (be) an act/process of appealing; to appeal (i.e., to seek reversal of some punishment meted)	

-PĻĻ- ‘HUMOR / WIT / JEST’		
BSC	Stem 1: (to be) something funny/humorous/comical; to be funny/humorous/comical	Stem 2: (to be) something witty (i.e., subtly and cleverly humorous which strikes an audience as charming); to be witty
CTE	(to be) the state of funniness/humor induced	
CSV	(to be) the actual manifestation (act(s), word(s), circumstance(s), situation(s), <i>object(s)</i> , etc.) of whatever is funny	Stem 3: (to be) something farcical or sardonic (i.e., something humorous in a double-edged manner based in irony or sarcasm); to be a farce, to be farcical
OBJ	(be) what is funny, i.e., the party/entity/object/event/situation that is the focus of the humor	

This root is also used as the **COMEDIC (CMD) Bias Affix**: — **-pļļ** ‘Funny!’ ‘LOL’

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RPLĻ- ‘JEST / PRANK / JOKE’		
BSC	STEM 1: (to be) a joke; make a joke (i.e., a communicated story or message designed to evoke humor)	STEM 2: (to be) a jest; make a jest STEM 3: (to be) a prank; pull a prank (i.e., an act or situation designed to evoke humor through embarrassment)
CTE	(to be) the state of funniness/humor induced by a joke	
CSV	(to be) the actual manifestation (act(s) and/or word(s) or circumstance(s) that constitute a joke; to tell/perpetrate a joke	
OBJ	(to be) the butt of a joke, what or who the joke is about	

-MY- ‘GRATITUDE / THANKFULNESS’		
BSC	STEM 1: (to be) an offer of thank(s)/gratitude for a favor, honor, courtesy or convenience performed; to offer gratitude for a favor, honor, courtesy or convenience performed (= both the motivating desire to offer gratitude and its tangible/physical/verbal expression)	STEM 2: (to be) thank(s) / offer gratitude due to being relieved/rescued from an adverse situation STEM 3: (to be) thank(s) / offer gratitude within ironic circumstances or merely as a superficial courtesy, i.e., where expectation of thanks is for an unwanted, unnecessary, or purely symbolic act or an act which required little or no effort on the doer’s part
CTE	(to be) the psychological state motivating one to offer thanks/gratitude for a favor, honor, courtesy or convenience performed	
CSV	(to be) the physical/tangible/linguistic expression of an act of thanks or gratitude for a favor, honor, courtesy or convenience performed; to communicate/express one’s thanks or gratitude for a favor, honor, courtesy or convenience performed	
OBJ	(to be) the actual words or other form(s) of expression used in communicating one’s thanks/gratitude for a favor, honor, courtesy or convenience performed	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RMY- ‘PRAISE / BEING BEHOLDEN’		
BSC	STEM 1: (to be) an act of praising an entity; to praise someone/something (= both the act of praise and its tangible/physical/verbal expression)	STEM 1: (to be) a state/act of gratefulness to another; manifestation of being beholden to someone or something [feeling is justified and an honor to be feeling]
CTE	(to be) the socio-psychological state of praise	
CSV	(to be) the physical/tangible/linguistic expression of an act of praise	STEM 3: (to be) a manifestation of being beholden or obliged to someone or something [feeling is resented and unwanted]
OBJ	(to be) what one is praising an entity for; to be the motivating reason one praises another/something	

-LL- ‘ACKNOWLEDGEMENT / DISCLOSURE / ADMISSION’		
BSC	Stem 1: (be) an act/instance of acknowledgement of something (i.e., demonstrating to another one’s awareness of something)	Stem 2: (be) an act/instance of disclosing or revealing something (i.e., let others see/know something which has previously not been seen by or known to them)
CTE	(be) the state of mutual awareness/understanding created by an act of acknowledgement	
CSV	(be) an act of physically acknowledgement; to physically acknowledge (e.g., nodding, verbally, a wave of one’s hand, a wink, etc.)	Stem 3: (be) a act/instance of admitting to something; to admit to, grant that something is so (i.e., acquiesce to allowing others to know of one’s awareness of, association with, or involvement in something)
OBJ	(be) that which is acknowledged	

This root is also used as the **ADMISSIVE (ADM) Bias Affix:** ‘*mm-hmm*’ ‘*uh-huh*’, ‘*I see*’.

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-LLW- ‘ASSENT / ACQUIESCENCE / CONFESSION’	
Stem 1:	(be) an act of assent/acquiescence
Stem 2:	(be) an act of divulging/exposing something; to divulge or expose something (i.e., let others see/know what has previously been private or secret)
Stem 3:	(be) an act of confessing something, owning up to something; to confess or own up to something

-NF- ‘PARTNERSHIP / COLLEAGUE’		
BSC	Stem 1: (to be) a state/act of partnering, being a partner to or with; to be a partner with or to, to partner with, to partner up (i.e., teaming up with someone to accomplish something together)	Stem 2: (to be) state/act of being in league with, to be one’s cohort, to be one’s fellow-[X], to be one’s co-[X] Stem 3: (to be) a state/act of being a colleague to another, be one’s colleague
CTE	(to be) a state of partnership	
CSV	(to be) be an act of partnering; to take on a partner	
OBJ	(to be) the entity/party which/who partners with one; be one’s partner	

NOTE: the old INFORMAL and FORMAL stems previously associated with this root have been newly distributed between the above root and the following new root:

-MFL- ‘UNION / BETROTHAL / MARRIAGE’		
BSC	STEM 1: (to be) a state/act of union, being united; to unite	STEM 2: (to be) a state/act of being engaged/betrothed/promised/plighted to another as a mate STEM 3: (to be) a state/act of being married/wedded; to marry, to wed, to be the spouse of another
CTE	(to be) a state of union	
CSV	(to be) be an act of uniting; to do something that unites	
OBJ	(to be) the entity/party which/whom one joins in a union	

-MŽ- ‘SEXUAL/ROMANTIC RELATIONSHIP / SEXUAL RELATIONS’		
BSC	Stem 1: (to be) a sexual/romantic relationship between two or more parties; to have a sexual/romantic relationship with another party or parties	Stem 2: (to be) an act of sexual relations; to have sex, engage in sex(ual activity) Stem 3: (to be) an act of pursuing a sexual/romantic relationship; to pursue a sexual/romantic relationship; to date / to court
CTE	(to be) the psychological/emotional state of being in a sexual/romantic relationship	
CSV	(to be) a physical act/manifestation of a sexual/romantic relationship	
OBJ	(to be) one’s sexual/romantic partner/ “lover”, boyfriend/girlfriend, significant other	

-BŽG- ‘PROSTITUTION / PIMPING’		
BSC	STEM 1: (to be) a state/act of prostituting oneself, to engage in an act of prostitution (i.e., offering oneself for sexual relations in exchange for money or other for of remuneration) CPT Version = to successfully procure a paying customer for sex	STEM 2: (to be) a state of requesting sex from a prostitute; to offer money (or other remuneration) in exchange for sex. OBJ Specification = prostitute’s customer STEM 3: (to be) a state of managing/overseeing/arranging customers for a prostitute; to manage/oversee/arrange; to pimp. OBJ Specification = pimp
CTE	(to be) an act of sex(ual relations) performed as a prostitute	
CSV	(to be) a physical act of offering oneself for sexual relations; to offer sex for monetary or other remuneration	
OBJ	(to be) a prostitute	

-JV- ‘COOPERATION / TEAM / ALLIANCE’		
BSC	Stem 1: (to be) a state/act of cooperation; to cooperate	Stem 2: (to be) state/act of teaming up with; be/form a team Stem 3: (to be) a state/act of alliance; to ally with
CTE	(to be) a state of cooperation; be cooperative	
CSV	(to be) be an act of cooperating; to do something which demonstrates cooperation	
OBJ	(to be) the entity/party with whom one cooperates	

NOTE: the old INFORMAL and FORMAL stems previously associated with this root have been newly distributed between the above root and the following root:

-JVY- ‘COLLABORATION / COLLUSION / CONSPIRACY’		
BSC	STEM 1: (to be) a state/act of collaboration; to collaborate	STEM 2: (to be) a state/act of collusion; to collude STEM 3: (to be) a state/act of conspiracy; to conspire
CTE	(to be) a collaborative state; be collaborative	
CSV	(to be) be an act of collaborating; to do something which demonstrates collaboration	
OBJ	(to be) the entity/party with whom one collaborates	

-PPL- ‘CELEBRATION / PARTY / FÊTE’		
BSC	STEM 1: (to be) a state/act of celebrating something, a celebration; to celebrate something	STEM 2: (to be) a state/act of partying, having a party; to (have/throw a) party [i.e., an event whose purpose is a social gathering where one is free/expected to be disinhibited/carefree] STEM 3: (to be) a state/act of having/conducting/participating in a fête; to (have/conduct/participate in a) fête [i.e., a formalized social gathering where one is expected to interact amicably with other members of one’s community]
CTE	(to be) a mental/emotional state of celebration; be in a celebratory state/mood	
CSV	(to be) be a physical act/state of celebrating; what one does that constitutes celebration	
OBJ	(to be) that which is being celebrated, the reason/motive for the celebration	

-KB- ‘ASSOCIATION / DEALING WITH / RELATION TO / ENGAGEMENT WITH’		
BSC	Stem 1: (to be) a state/act of dealing with something/someone; to spend time or effort dealing with something/someone, having to focus attention upon something/someone	Stem 2: (to be) a state/act of relating to or with something/someone, a relation; to bear upon, to pertain to, to have to do with Stem 3: (to be) an act of engaging in, becoming involved with; to become involved with
CTE	(to be) a state of having to deal with something/someone; be in such a state	
CSV	(to be) an act of dealing with or focusing one’s attention upon; to deal with, to focus one’s attention upon	
OBJ	(to be) what/who one must deal with	

Derivations: to associate/interact with

The above root may be used with the following **SYM** affix below to specify the nature of an interrelationship:

-čň	SYM Symbiotic Relationship
1	in an obligate [i.e., required/mandatory/necessary] relationship with another party to mutual benefit, i.e., obligate mutualistic relationship
2	in an obligate [i.e., required/mandatory/necessary] relationship to the benefit of oneself but neutral to the other party, i.e., obligate commensal relationship
3	in an obligate [i.e., required/mandatory/necessary] relationship to the benefit of oneself but harmful to the other party, i.e., obligate parasitic relationship
4	in a facultative [i.e., optional] relationship with another party to mutual benefit, i.e., optionally mutualistic relationship
5	in a facultative [i.e., optional] relationship to the benefit of oneself but neutral to the other party, i.e., optional commensal relationship
6	in a facultative [i.e., optional] relationship to the benefit of oneself but harmful to the other party, i.e., optional parasitic relationship
7	in an obligate or facultative relationship with another party of no benefit to oneself but advantageous/beneficial to the other party
8	in an obligate or facultative relationship with another party harmful to oneself but advantageous/beneficial to the other party
9	in a competitive relationship with another party [potentially] harmful to both parties

-NN- ‘HELP / AID / ASSISTANCE / SUPPORT / ADVOCACY’		
NOTE: This root and its stems refer to the conscious giving/rendering of help/aid/support by a conscious entity, motivated by a desire to do so. To denote assistance/ helpfulness/support via a non-animate or collective entity, see the root -NṬR- below.		
BSC	Stem 1: (to be) a state/act of aiding/helping; to aid, to help, to render aid, to give help to	Stem 2: (to be) a state/act of assisting/assistance; to assist, to lend a hand in doing/accomplishing something, to help to accomplish something Stem 3: (to be) a state/act of supporting/advocating; to support, to advocate (i.e., to verbally advocate for and/or provide tangible or intangible resources to reinforce something or someone)
CTE	(to be) the state of helpfulness	
CSV	(to be) a physical act of helping/aiding; to do something that helps or renders aid	
OBJ	(to be) what one does that is helpful, the help one gives	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-NNW- ‘MINISTRY / PATRONAGE / SUSTENANCE / ENDORSEMENT / CHAMPIONING’		
BSC	STEM 1: (to be) a state/act of ministering to, tending to; to minister to, to tend to, wait upon	STEM 2: (to be) a state/act of patronage, sustenance or subsidization; to grant one’s patronage, to subsidize
CTE	(to be) a state of being ministered or tended to	
CSV	(to be) a physical act of ministering/tending to; to physically minister/tend to	STEM 3: (to be) a state/act of endorsing, championing, rallying, garnering support for something/someone; to endorse, to champion, to rally/garner support for something/someone
OBJ	(to be) what one does that constitutes ministry/tending to	

-MK- ‘IMITATION / MIMICRY / PRETENDING’		
BSC	Stem 1: (to be) an act/state of imitation; imitate	Stem 2: (to be) an act of mimicry; to mimic, to feign
CTE	(to be) a state of imitation	
CSV	(to be) a physical act of imitating; perform specific actions/behaviors which imitate those of another party/entity	Stem 3: (to be) an act of pretending to be (a state or role) / act of make-believe; to pretend (to be) / to make-believe
OBJ	(to be) the party/entity one is imitating	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-MKR- ‘SIMULATION / IMPERSONATION / DRAMATIC ACTING’		
BSC	STEM 1: (to be) a state/act/instance of simulation; to simulate	STEM 2: (to be) a state/act/instance of impersonation; to impersonate
CTE	(to be) a state of simulation	
CSV	(to be) a physical act of simulating; to perform specific act(ions) that simulate those of another entity	STEM 3: (to be) a state/act/instance of dramatic performance / an acting performance; act / enact / enact a (dramatic) role
OBJ	(to be) that which is being simulated	

-ŠG- ‘CAPTURE / CATCH / APPREHENSION / SEIZURE / TAKE-OVER’		
BSC	Stem 1: (to be) an act of apprehending/capturing; to apprehend, capture (i.e., apprehension or removal from present location/environs for purpose of seizure and/or restriction of freedom of movement)	Stem 2: (to be) an act of catching; to catch (= stop trajectory-based movement for purpose of seizure or control) Stem 3: (to be) an act of taking over or co-opting; to take over, to co-opt, take the reigns from, relieve someone of duty, take charge
CTE	(to be) a state of captivity	
CSV	(to be) an act of physically capturing/apprehending/seizing	
OBJ	(to be) a party/entity that is captured/apprehended/seized	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-ŠGW- ‘DETENTION / CONFISCATION / USURPATION’		
BSC	STEM 1: (to be) an act/instance of detaining something, an act of detention; to detain (i.e., to prevent something/someone from continuing what they/it is doing or from proceeding further along a course or proceeding with an action)	STEM 2: (to be) an act/instance of confiscating, an act of confiscation or appropriation; to confiscate, appropriate STEM 3: (to be) an act of usurping something, an act of usurpation; to usurp
CTE	(to be) a state of (being under) detention	
CSV	(to be) a physical act of detaining; to physically act to detain	
OBJ	(to be) a party/entity that is detained	

-TKW- ‘ATTENDANCE / PRESENCE’		
BSC	Stem 1: (to be) a state/act of being physically present at some place/event/occurrence; to be present at	Stem 2: (to be) in attendance at some scheduled event; to attend [a scheduled event] Stem 3: (to be) a state of making a [surprise or unscheduled] appearance at a place/event; to grace an event/place with one's presence
CTE	(to be) a state of being present at some place/event/occurrence	
CSV	(to be) be an act of being physically present at a place/event/occurrence	
OBJ	(to be) the place/event/occurrence at which one is present	

-ZM- ‘FLEE / ESCAPE / EVASION / ELUDE / SHIRK’		
BSC	Stem 1: (to be) an act of fleeing or escaping from some threat or adverse situation	Stem 2: (to be) an act evading or eluding something/someone (i.e., to take steps so that some other entity does not find one or encounter one) Stem 3: (to be) an act of shirking, deserting, abandoning something/someone
CTE	(to be) a state of being escaped from; to be in a state of being/having been fled from	
CSV	(to be) a physical act of fleeing/escaping	
OBJ	(to be) what one is fleeing or escaping from	

-ŃT- ‘PRIVACY / SECLUSION / SOLITUDE / ISOLATION’		
BSC	Stem 1: (to be) a state/act of privacy, being private	Stem 2: (to be) a state/act of seclusion/solitude, being secluded, be sequestered; to be/live in seclusion/solitude Stem 3: (to be) a state/act of isolation, being isolated; to (be) isolate(d)
CTE	(to be) a state of privacy	
CSV	(to be) a physical act of privacy; to do something that is private in nature	
OBJ	(to be) what one is being private about, what one does not want others to observe	

-JNW- ‘ATTRIBUTION / CREDIT / PUBLIC RECOGNITION’		
BSC	Stem 1: (to be) a state/act of giving and receiving credit/attribution/recognition to someone for something	Stem 2: (to be) a state/act of giving/conferring credit/attribution/recognition to someone for something Stem 3: (to be) a state/act of being credited with being or having done something
CTE	(to be) a state of attribution/credit/recognition given and received	
CSV	(to be) a physical act of giving and receiving credit/attribution/recognition to someone for something	
OBJ	(to be) what one is credited/recognized for being or having done	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RJN- ‘AWARD / PRIZE’		
BSC	Stem 1: (to be) a state/act of giving and receiving a prize or award for something	Stem 2: (to be) a state/act of giving/conferring a prize/award to someone for something; to award, to give a prize to someone Stem 3: (to be) a state/act of being rewarded or given a prize being or having done something; to receive a prize/award, to be given a prize/award
CTE	(to be) a state of a prize/reward given and received	
CSV	(to be) a physical act of giving and receiving a prize/award to someone for something	
OBJ	(to be) what one is awarded or given a prize for being or having done	

-PV- ‘IGNORE / DISREGARD / STATE OF DENIAL’		
BSC	Stem 1: (to be) a state/act of ignoring something or someone; to ignore something/someone (i.e., to behave as if something/someone present or pressing does not exist)	Stem 2: (to be) an act of disregarding; to disregard (i.e., to not take something/someone into account) Stem 3: (to be) a state/act of denial (i.e., deluding oneself into believing that something important/consequential does not exist or is of no account.
CTE	(to be) a state of being ignored	
CSV	(to be) a physical act of ignoring; to behave/act in a manner which manifests ignoring something/someone	
OBJ	(to be) what/whom one ignores	

-ŽH- ‘AVOID / SHUN / ESCHEW’		
BSC	Stem 1: (to be) a state/act of avoidance; to avoid, stay away from, steer clear of, shy away from	Stem 2: (to be) a state of shunning, to shun (i.e., refuse to have dealings with or to partake of something) Stem 3: (to be) a state/act of eschewing/abstaining/refraining from something; to eschew something, abstain from something, refrain from doing something
CTE	(to be) a state of avoidance, state of being avoided	
CSV	(to be) a physical act of avoidance	
OBJ	(to be) what one is avoiding or trying to avoid	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RŽH- ‘REJECTION / OSTRACIZATION / BANISHMENT / BOYCOTT / EMBARGO’		
BSC	STEM 1: (to be) a state/act of rejecting something; to reject something	STEM 2: (to be) a state/act of ostracization/banishment; to ostracize, to banish
CTE	(to be) a state of rejection, state of being rejected	
CSV	(to be) a physical act of rejection; to physically act to reject	STEM 3: (to be) a state/act of boycotting or embargo; to boycott, to establish an embargo against
OBJ	(to be) that which is rejected	

-FČ- ‘EXCLUSION / EXPULSION / EXILE’		
BSC	Stem 1: (to be) a state/act of excluding, act of exclusion; to exclude (i.e., to take steps to ensure that some entity is not part of or does not participate in one’s activities or does not appear in one’s presence)	Stem 2: (to be) an act of expulsion/ejection Stem 3: (to be) an act of exiling; to exile
CTE	(to be) a state of exclusion, state of being excluded	
CSV	(to be) a physical act of excluding	
OBJ	(to be) what/whom one excludes	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root whose Specification pattern is the same as the root **-FČ-** above:

-RFČ- ‘SEQUESTERING / DEPORTATION / EXPATRIATION / SEGREGATION’	
Stem 1: (to be) a state/act of sequestering; to sequester	
Stem 2: (to be) a state/act of deportation/expatriation; to deport/expatriate	
Stem 3: (to be) a state/act of segregation; to segregate	

-JKW- ‘TENDENCY / PREFERENCE / INCLINATION / APTNESS’		
BSC	Stem 1: (to be) a tendency/propensity towards something; to tend to, to have a propensity to	Stem 2: (to be) a preference /inclination; to lean toward , be inclined to (choose something over something else), to favor, to prefer something (over something else) *
CTE	(to be) the psychological state of having a tendency propensity toward something	
CSV	(to be) the physical manifestation of one’s tendency; to physically manifest one’s tendency/propensity	
OBJ	(to be) that toward which one has a tendency/proclivity/propensity	Stem 3: (to be) an aptness for / a proneness to; to be apt to, to be prone to

* for the translation of ‘preference/inclination’ referring to one’s tastes/proclivities, see the root **-JKF-** below.

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-JKY- ‘TREND / PREDISPOSITION / BIAS’		
BSC	STEM 1: (to be) a trend; to trend toward something	STEM 2: (to be) a bias toward something; to be biased toward something [i.e., theoretically having a choice]
CTE	(to be) the state of there being a trend	
CSV	(to be) the physical manifestation of a trend; to physically manifest a trend	STEM 3: (to be) a predisposition toward something; to be predisposed to [i.e., having no choice]
OBJ	(to be) that which constitutes the trend, i.e., what opinions/beliefs/actions/choices/physical manifestations constitute a trend as a collective societal movement	

-JKF- ‘PERSONAL TASTE(S) / PREFERENCE(S) / PROCLIVITY / INCLINATION’		
BSC	STEM 1: (to be) a state of something being to one’s personal taste(s) or preference(s) /proclivities; to be to one’s taste(s) or preference(s) /proclivities; to have to do with what one personally likes/prefers	STEM 2: (to be) a state of something being a matter of taste (i.e., for the evaluation/outcome/status of something or a situation to be dependent on whether it conforms to one’s personal taste(s)/preference(s) /proclivities
CTE	(to be in) a state of something being (in conformance) to one’s personal taste(s) or preference(s) /proclivities	
CSV	(to be) the act of engaging/indulging in something based on one’s personal taste(s)/preference(s) /proclivities; to engage/indulge in something that is to one’s personal taste(s)/preference(s) /proclivities	
OBJ	(to be) what one likes as a matter of course; that which is to one’s personal taste(s)/preference(s)	STEM 3: (to be) a secret inclination/temptation; to have a secret inclination/temptation for something

-N- ‘TRANSFER OF POSSESSION / GIVE / RECEIVE’		
BSC	(to be) a transfer (of) possession of an item; an occurrence/instance/act of giving & taking an item; to engage in an act of giving & taking a gift (the complementary nature of such act can be underscored by use of CPL valence)	STEM 2: an act of giving; to give STEM 3: an act of receiving; to receive
CTE	(to be) the process/act of giving and taking of a particular item [focus on the item being transferred, irrespective of the parties involved]	
CSV	(to be) the process/act of transferring an item between one party and another [irrespective of what is given]	
OBJ	(to be) an item transferred by one to another / the thing given or received; to be an item transferred from one party to another	

NOTE: for the meaning of the previous FORMAL stems associated with this root, use the above stems with the MEC/8 affix.

-NXW- ‘TRANSFER OF ENTITY FROM ONE PLACE TO ANOTHER / DELIVERY / CONVEYANCE / SENDING / BRINGING’ [this root is similar to the root -N- above but is focused on the physical conveyance/transferral to a destination, rather than the participatory “roles” of giver/receiver]		
BSC	STEM 1: (to be) an act/process of transferring/delivering/conveying an object/entity to a destination and/or intended recipient	STEM 2: (to be) an act of sending something to a destination or recipient / sending for delivery to a destination or intended recipient; to send something STEM 3: (to be) an act of bringing something to a destination or recipient / bringing as a delivery to a destination or intended recipient; to bring something
CTE	(to be in) a process/act of transfer/delivery/conveyance of an entity [focus on the item, irrespective of the sending/recieving parties]	
CSV	(to be) a process/act of transfer/delivery/conveyance of an entity [focus on the process of transfer/delivery/conveyance, irrespective of the entity/object/item being transferred or the parties involved]	
OBJ	(to be) an item being transferred/delivered/conveyed	

-DV- ‘EXCHANGE / TRADE’		
Note: the stems below are generally used in conjunction with PROCESSUAL versus COMPLETIVE version in order to distinguish an offer of exchange from a completed exchange. Alternately, the distinction between MONOACTIVE and COMPLEMENTARY valence can be used for the same purpose.		
BSC	STEM 1: (to be) an act of exchanging/swapping; to exchange/swap/trade	STEM 2: (to be) an act of taking something offered in exchange for something; to take something offered in exchange for something STEM 3: (to be) an act of giving away something in exchange for something desired; to give something away in exchange for something desired
CTE	(to be) that which leaves one’s possession in an act of exchange/trading	
CSV	(to be) the physical (trans-)action of exchanging/swapping/trading	
OBJ	(to be) that which one receives in an act of exchange/trading	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RDV- 'COMMERCIAL EXCHANGE / PRICE / COST / PURCHASE / BUY / SELL'

Note: the stems below are generally used in conjunction with PROCESSUAL versus COMPLETIVE version in order to distinguish an offer to purchase from a completed purchase. Alternately, the distinction between MONOACTIVE and COMPLEMENTARY valence can be used for the same purpose.

BSC	STEM 1: (to be) an act of commerce, buying-and-selling something; to conduct a commercial (monetary) transaction	STEM 2: (to be) an act of buying/purchasing something; to buy something, to purchase something STEM 3: (to be) an act of selling/vending something; to sell something
CTE	(to be) what gets exchanged in a commercial transaction, what gets bought or sold	
CSV	(to be) the physical act of conducting a commercial transaction; to engage in an act of buying and selling	
OBJ	(to be) the price/cost charged/owed or (to be) paid for goods received in a commercial exchange	

-DŇ- 'COMMERCIAL ENTERPRISE / BUSINESS / INDUSTRY'

BSC	Stem 1: (to be) a state/act of conducting business as a commercial enterprise, a business doing business, an entrepreneurial company; to do/engage in business as a commercial enterprise	Stem 2: (to be) a state/act of providing/making available for purchase a service or product on a commercial basis Stem 3: (to be) an industrial enterprise; to engage in an industrial-level business; provide/sell an industrial-level product or service
CTE	(to be) a particular business establishment, a company, a commercial enterprise	
CSV	(to be) an act of doing commercial business; to engage in business-level commerce	
OBJ	(to be) the product/service being manufactured/produced/sold as the basis for a business establishment	

--ŠČ- 'MEDIUM OF EXCHANGE / CURRENCY / MONEY'

BSC	STEM 1: (to be) a state/act of utilizing a medium of exchange (i.e., intermediary method of trade in avoidance of the inconveniences of a pure barter system); to utilize a medium of exchange to carry out a purchase or commercial/financial transaction	STEM 2: (to be) a state/act of utilizing money/currency to pay for something {OBJ = unit of money/currency} STEM 3: (to be) a state/act of utilizing a quasi-contractual document equivalent to currency (e.g., a cheque, scrip, bond, promissor note)
CTE	(to be) a state of there being a medium of exchange for use in financial/commercial/trade transactions (as opposed to simple bartering or stealing)	
CSV	(to be) an act of purchasing using a medium of exchange; to buy/purchase something utilizing a medium of exchange	
OBJ	(to be) a medium/means of exchange (e.g., beads, shells, gems, coins, bills, etc.)	

-RŠČ- ‘EARN MONEY / RAISE MONEY / ACCOUNTING’			
	STEM 1	STEM 2	STEM 3
BSC	(to be) a state/act/process of monetary accumulation (via earning wages, investments, etc.); earn/raise money	(to be) a state/act of monetary accumulation via an item of financial capital or financial instrument other than currency (e.g., stocks, bonds, trade in commodities, etc.)	(to be) an act/process of financial accounting; to financially account [i.e., an accurate economic evaluation of (one's) material/financial assets]
CTE	(to be) a state of earning/accumulating money	(to be) a state of earning/accumulating financial assets via investment or trade in financial instruments	(to be) one's monetary state/situation, how one is “set” for money; to have or be in a particular monetary situation (i.e., the extent/degree to which one is able to afford day-to-day and other expenses)
CSV	(to be) a state/act of physically doing something to earn/raise money; to physically perform a task (e.g., labor, choosing an investment, organizing a fundraiser, etc.) that earns/raises money (e.g., paid labor/organizing a fundraiser, etc.)	(to be) a state/act of physically doing something to earn/raise money using financial capital or a financial instrument; to perform a physical act of investment or trade in financial instruments	(to be) a physical act/process of accounting/arithmetically figuring out one's (or another's) financial state/situation; to engage in a process of accounting
OBJ	(to be) an amount of money; to have/possess an amount of money	(to be) an amount of money earned/accumulated via investment, etc.; to have/possess an amount of money earned via investment/financial instruments, etc.	(to be) one's personal funds or monetary assets/the amount of money and other financial assets one owns

-TKW- ‘CONTRACTUAL AGREEMENT / HIRING / EMPLOYMENT / JOB’		
BSC	STEM 1: (to be) an act/state/process of contractual agreement, having a contractual agreement; to have/make/agree via a binding/formal contract	STEM 2: (to be) a state of being in (or subject to the terms of) contract(ual agreement); to enforce or operate per the terms of a contract STEM 3: (to be) an act/state/process of being in a contract for employment, to be an act/process of hiring; to employ, to hire, to be employed, to be hired, to offer/take/have a job
CTE	(to be) a state of there being a formal/binding contract in place	
CSV	(to be) an act/process of making/agreeing to/signing a binding/formal contract; to make a binding/formal contract with another party, to contract	
OBJ	(to be) the (terms of a) contract itself	

-ŠTL- ‘ONE’S PAY / EARN PAYMENT / WAGE / SALARY’		
BSC	STEM 1: (to be) an act/state of being paid in exchange for one’s labor/service	STEM 2: (to be) a state of there being a wage; to establish/be a wage [i.e., the rate at which one is paid per time period for one’s labor/service] STEM 3: (to be) a state of having a salary; to establish/be a salary [i.e., a guaranteed amount or rate of payment based on one’s employment position]
CTE	(to be) a state of gainful employment; earn money in exchange for one’s labor/service	
CSV	(to be) the act of paying for another’s labor/service; to grant payment for one’s labor/service, to pay for one’s work/service	
OBJ	(to be) one’s payment/pay-out for labor/service rendered	

-ŠPL- ‘MATERIAL WEALTH / BEING RICH / MATERIAL POVERTY / BEING POOR’		
BSC	STEM 1: (to be) a state/process of having/accruing an amount of material wealth; to have/accrue the amount of material wealth one has [i.e., monetary plus material assets]	STEM 2: (to be) a state/process of being/getting rich, having/accruing a large amount of material wealth; to be rich, to be materially wealthy STEM 3: (to be) a state/process of being poor/impooverished, having little or no material wealth; to be poor, to be impoverished, to be in poverty
CTE	(to be) a state of (having) one’s material wealth	
CSV	(to be) an act/process of monetization; to monetize [i.e., creating material wealth out of something]	
OBJ	(to be) the particular amount of material wealth (e.g., money and material assets) one has	

-TPL- ‘FEE / LEVY / TAX / FINE’		
BSC	STEM 1: (to be) a state/process of there being a fee for something; to charge a fee for something	STEM 2: (to be) a state/process of there being a tax/levy due for something; to charge a tax/levy on something STEM 3: (to be) a state/process of there being a fine due as punishment for something; to levy a fine on someone as punishment for something
CTE	(to be) a fee	
CSV	(to be) an act/process of paying a fee; to pay a fee	
OBJ	(to be) the particular amount charged as a fee	

-ÇPL- ‘INVESTMENT’

BSC	STEM 1: (to be) a state/process of investing one’s time and /or effort into something; to invest one’s time and/or effort into something [i.e., giving of one’s resources in the belief or hope that this will aid in the return of future benefits once one’s investment comes to fruition]	STEM 2: (to be) a state/process of investing (seed) money and/or material goods/resources into something; to invest (seed) money and/or material goods/resources into something
CTE	(to be) a state of there being an investment in something, a state of having an investment in something	STEM 3: (to be) a state/process of formally investing in stock shares of a stock fund/corporation or other formal financial investment instrument; to invest in a company/stock fund/financial investment instrument by purchasing shares
CSV	(to be) a physical act/process of investing one’s time/effort; to physically invest one’s time and/or effort	
OBJ	(to be) the amount/degree of time/effort one invests	

-KN- ‘DESERVE / WORTHINESS / MERIT / RECOMPENSE / REPARATION’

BSC	Stem 1: (to be) a state of being deserving of something; to deserve/warrant/bear/be worth something (as in <i>This bears worth looking into, Your attitude warrants investigation, Her application is worth considering.</i>)	Stem 2: (to be) a state of worthiness/merit; to be worthy, to merit (i.e. demonstrate that one has the necessary attributes/character/skill to qualify for some privilege or status or recognition or reward)
CTE	(to be) a state of deserving	Stem 3: (to be) a state/act of granting/bestowing recompense or reparation to a party/entity; to grant recompense, to grant reparation to
CSV	(to be) a physical act of demonstrating one deserves something; to do/say something that demonstrates that one deserves something	
OBJ	(to be) what one is or has done that warrants one’s deserving something	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RKN- ‘ENTITLEMENT / ENROLLMENT / CONFERRING / ORDAINMENT / ANOINTMENT’

BSC	STEM 1: (to be) a state of entitlement/legally warranting the granting of something to a party/entity; to be entitled to something	STEM 2: (to be) an act of enrolling someone in something; to enroll someone into something (i.e., to proclaim/announce/authorize the bestowal of a particular status/task/position)
CTE	(to be) a state of having/enjoying an entitlement that has been granted	STEM 3: (to be) an act of conferring/ ordaining or anointing; to confer, ordain or anoint someone (i.e., the official/authorized granting/bestowing of a specialized/honored/sacred status/position)
CSV	(to be) an act of entitlement; to grant an entitlement	
OBJ	(to be) that to which a party is entitled	

-BÇ- ‘REGISTRATION / APPLICATION / ENLISTMENT / RESERVATION / BOOKING’		
BSC	STEM 1: (to be) an act/process of registration/application/enrollment; to register/enroll/apply for/sign up for something	STEM 2: (to be) an act/process of enlistment; to enlist [i.e., have one’s enrollment application accepted and activated] STEM 3: (to be) an act/process of reserving/booking, scheduling a reservation/booking; to reserve/book something, make a reservation/booking, schedule a reservation/booking
CTE	(to be) a state of having a (pending) enrollment application registered or on file	
CSV	(to be) a physical act of registering, signing up, applying for, enrolling in; to file the necessary documents or undergo the necessary procedure(s) to register/apply/enroll/sign up	
OBJ	(to be) what one is registering/registered for	

-MBY- ‘PROMISE / OATH / VOW / PLEDGE’		
BSC	STEM 1: (to be) an act of promising; to (make a) promise	STEM 2: (to be) an act of vowing/pledging; to (make/take a) vow/pledge (i.e., a solemn/sacred long-term promise to oneself or to oneself and others) STEM 3: (to be) an act of taking/swearing an oath; to take/swear an oath (i.e., a legally enforceable solemn vow/promise with adverse social/legal consequences if broken)
CTE	(to be) a state of being bound by/to a promise	
CSV	(to be) the physical act (e.g., words spoken, signed statement) of promising; to perform an action (e.g., in words or writing) that constitutes making a promise	
OBJ	(to be) what one has promised	

-MFM- ‘ASSURANCE / VOUCHING FOR / GUARANTEE / UNDERWRITE’		
BSC	STEM 1: (to be) an act of assurance/vouching for something or someone; to assure/vouch for someone or someone	STEM 2: (to be) an act of guaranteeing; to (make a) guarantee STEM 3: (to be) an act of underwriting/securing something; to underwrite/secure something (i.e., a legal contract to financially secure/back up a contract)
CTE	(to be) a state of being bound by having vouched for something or someone	
CSV	(to be) the physical act (e.g., words spoken, signed statement) of vouching for someone or something; to perform an action (e.g., in words or writing) that constitutes vouching for someone or something	
OBJ	(to be) what/who one has vouched for	

-MFN- ‘COMPENSATION / REIMBURSEMENT / REPARATION / INSURANCE / INDEMNIFICATION’		
BSC	STEM 1: (to be) an act/instance of offering reimbursement; to offer to reimburse [i.e., to offer remuneration to someone as compensation for a loss or damages] CPT version = reimburse	STEM 2: (to be) an act/instance of offering compensation/reparation; to offer compensate/offer reparation [i.e., to offer goods/services/material as a token of payment for a moral wrong or ethical debt to a party] STEM 3: (to be) an act of insuring/indemnification; to insure/indemnify [i.e., to take responsibility for promising to reimburse/compensate for a material loss or damages]
CTE	(to be) the money/remunerative material goods one offers as reimbursement	
CSV	(to be) the physical act of offering reimbursement; to	
OBJ	(to be) that for which one offers reimbursement	

-MFY- ‘LOYALTY / ALLEGIANCE / BOND / FELLOWSHIP’		
BSC	STEM 1: (to be) a state/act of loyalty/fealty/allegiance; to be loyal to a party/entity	STEM 2: (to be) a state/act of being morally/emotionally/legally bonded/tied to a party/entity
CTE	(to be) a state of loyalty/fealty/allegiance	
CSV	(to be) an act of loyalty/fealty; to do something that manifests/demonstrates loyalty/fealty	STEM 3: (to be) a state/act of being bound in fellowship to others; to be a member of a fellowship (i.e., a bond between members of a collective entity to trust, defend, support, aid one another)
OBJ	(to be) the basis/reason for one’s loyalty/fealty/allegiance, why one is loyal to a party/entity	

-VZ- ‘SUBJECTIVE INTERPRETATION / “READING” ’		
BSC	Stem 1: (to be) a state/act of “reading” (i.e., interpreting) clues/signs/evidence (e.g., the clouds in the sky for a coming storm, footprints, animal tracks, a crime scene, etc.)	Stem 2: (to be) a state/act of “reading” (i.e., interpreting) a subjective situation or subjective set of clues, e.g., “reading” a person’s face, “reading between the lines”, “reading” a social situation, etc.) Stem 3: (to be) a state/act of “reading” (i.e., interpreting) signs/marks within a specific arcane branch of knowledge (e.g., read palms, read the stars, read the I-Ching or other arcane symbology, etc.)
CTE	(to be) a state of subjective interpretation based on clues/signs/evidence	
CSV	(to be) an act of “reading”/interpreting clues/signs/evidence; to “read”/interpret clues/signs/evidence	
OBJ	(to be) the clue(s)/sign(s)/piece(s) of evidence one “reads”/interprets	

-RB- ‘MEANING / SIGNIFICATION / TRANSLATION / INTERPRETATION’		
BSC	Stem 1: (to be) a state/act of meaning; to mean/signify/denote something (i.e., to have a specific/correct interpretation/signification/denotation)	Stem 2: (to be) a state/act/instance of translating; to create a translation of something, to translate Stem 3: (to be) an act of interpretation; to interpret (i.e., act/function as skilled medium between an information source and its audience for purposes of making the source information comprehensible) *
CTE	(to be) the meaning/signification/denotation of something, what something means/signifies/denotes	
CSV	(to be) an act of conveying/communicating/indicating the meaning of something; to signify, to express/convey the meaning of	
OBJ	(to be) that which has (a) meaning/signification/denotation	

* for ‘interpret’ meaning ‘ability to understand something by observation/analysis as in ‘to interpret signs/clues’, see the root **-VZ-** immediately above.

NOTE: the old FORMAL and INFORMAL stems previously associated with this root have been distributed between this and the following new root:

-RBR- ‘DEFINITION / EXPLANATION / EXPOSITION / ELUCIDATION’		
BSC	STEM 1: (to be) an act/instance of defining something; to define (i.e., a formal explanation of the meaning of an entity]	STEM 2: (to be) an act/instance of explaining something; to explain something STEM 3: (to be) an act/instance of expounding upon or elucidating something; to expound, elucidate
CTE	(to be) the definition of something, how something is defined	
CSV	(to be) an act of conveying/communicating/indicating a definition; to express/convey a definition	
OBJ	(to be) that which has a definition	

-ŘW- ‘CLARITY / PERSPICUITY / PELLUCIDITY / EXPLICITNESS / PRECISION / METICULOUSNESS’		
BSC	Stem 1: (to be) a state of something being perspicuous, (pel)lucid, clear, easily understood, readily comprehensible; to be/make something perspicuous, (pel)lucid, clear, easily understood, readily comprehensible	Stem 2: (to be) a state of explicitness; be/make explicit/telling/graphic Stem 3: (to be) state/act of being precise/well-defined/scrupulous/meticulous; be/make precise(ly)/well-defined(ly)/scrupulous(ly)/meticulous(ly)
CTE	(to be) a state perspicuity/lucidity/clarity, easy comprehension	
CSV	(to be) an act of perspicuity/lucidity/clarity; do something (in a manner that is) clear/perspicuous/(pel)lucid/easily understood/readily comprehensible	
OBJ	(to be) that which is clear/(pel)lucid/perspicuous/easily understood/readily comprehensible	

-JŇ- ‘OPPOSITION / UNDERMINING’		
BSC	Stem 1: (to be) a state/act of being opposed to something or someone, being against something or someone based on one’s moral principles and/or self-interest	Stem 2: (to be) a state/act of working openly against something or someone, openly acting inimically toward something or someone; to openly work against something or someone, be inimical toward something or someone Stem 3: (to be) state/act of undermining something or someone (i.e., working secretly or underhandedly or “behind one’s back” against their interests; to undermine something or someone
CTE	(to be) a state of being in opposition	
CSV	(to be) an act of opposition; to do something that constitutes an act of opposing	
OBJ	(to be) one’s opponent	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RJŇ- ‘CONFLICT / ANTIPATHY / DEFIANCE / PASSIVE RESISTANCE’		
BSC	STEM 1: (to be) a state of being antithetical toward something or someone, to be irreconcilably in conflict/antipathy with an entity/party	STEM 2: (to be) a state/act of defiance/disobedience toward something or someone STEM 3: (to be) an act/state of passive resistance or passive/aggressive behavior toward another party; to passively resist or engage in passive/aggressive behavior toward another party
CTE	(to be) a state of antipathy/conflict	
CSV	(to be) a physical act of antipathy/conflict; to act in a manner demonstrating antipathy/conflict	
OBJ	(to be) one’s nemesis or adversary in a conflict	

-JTH- ‘VIOLENCE / FIGHTING / ENMITY / WAR’		
BSC	STEM 1: (to be) a state/act of violence against a party/entity; to commit an act of violence against another	STEM 2: (to be) a state/act of physical fighting with another party; to be engaged in a physical fight with another party STEM 3: (to be) an act/state of enmity/war with a party; to be at war with a party, to go to war [OBJ = one’s enemy]
CTE	(to be) a state of (there being) violence	
CSV	(to be) a physical act of violence; to commit a physical act of violence against a party/entity	
OBJ	(to be) the victim of an act of violence	

-JBW- ‘RENTAL’

BSC	Stem 1: (to be) an act/state of renting; to rent (e.g., an apartment, an automobile, etc.) [both the service being paid for, and the offering/providing of what is being rented in exchange for payment]	Stem 2: (to be) an act/state of renting a service/entity from a vendor/owner in exchange for payment
CTE	(to be) a state of two parties having a rental agreement or contract	Stem 3: (to be) an act/state of offering/providing a service/entity for rent
CSV	(to be) an act/process of a party offering something for rental and another party renting it	
OBJ	(to be) what is being rented or offered/provided as a rental	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-JBY- ‘LEASING’

BSC	Stem 1: (to be) an act/state of leasing; to lease (e.g., an apartment, an automobile, etc.) [both the service being paid for, and the offering/providing of what is being leased in exchange for payment]	Stem 2: (to be) an act/state of leasing a service/entity from a vendor/owner in exchange for payment
CTE	(to be) a state of two parties having a leasing contract	Stem 3: (to be) an act/state of offering a service/entity for lease
CSV	(to be) an act/process of a party offering something for lease and another party leasing it	
OBJ	(to be) what is being leased or offered for lease	

-ḐF- ‘GOVERNMENT’

BSC	Stem 1: (to be) a form of governance; to govern (i.e., to be the authorized system for legal regulation/oversight of a community)	Stem 2: (to be) a state/act/event that is political (i.e., motivated by, or in furtherance or support of a particular government or the authorities within that government)
CTE	(to be) the carrying out of an act as part of the process of governance	Stem 3: (to be) the particular collective group of authorities authorized as being the government for a particular community, i.e., “the [(contextually) current] government”
CSV	(to be) a praxis/custom/rule/law or defining characteristic of a particular form of government	
OBJ	(to be) a party who is subject to governance	

-DT- ‘REPRESENTATIVE GOVERNMENT’		
BSC	Stem 1: (to be) a democratic form of government, i.e., direct governance by the people as a shared responsibility; to govern democratically	Stem 2: (to be) a republican/representative form of governance, i.e., governance by the people through elected representatives to a central debating/decision-making body Stem 3: (to be) a federalist form of governance, i.e., where an elected body of representatives (essentially a republican governing body) in turn appoints/establishes a non-elected, bureaucracy for centralized administration purposes at a national level, while permitting local governance to remain in charge of local law and governance.
CTE	(to be) a state of democratic governance	
CSV	(to be) a practice associated with democratic governance; to perform/carry out an act associated with, or demonstrating democratic governance	
OBJ	(to be) a society/group/party governed by means of democracy	

-LLK- MONARCHAL GOVERNANCE / TOTALITARIAN GOVERNMENT / OLIGARCHICAL GOVERNMENT		
BSC	Stem 1: (to be) a monarchical form of government, i.e., governance by a (hereditary) monarch; to govern monarchically	Stem 2: (to be) a totalitarian/dictatorial form of governance Stem 3: (to be) an oligarchical form of governance
CTE	(to be) a state of monarchic governance	
CSV	(to be) a practice associated with monarchic governance; to perform/carry out an act associated with, or demonstrating monarchic governance, to reign	
OBJ	(to be) a society/group/party governed by means of monarchism/monarchy.	

-ZT- ‘LAW / STATUTE / LEGAL COMPLIANCE’		
BSC	Stem 1: (to be) a statute, a particular law	Stem 2: (to be) a state of compliance with a law or statute Stem 3: (to be) the applicability of a statute/law to a particular situation or geopolitical area; rule of law
CTE	(to be) the meaning/intent of a law/statute	
CSV	(to be) the actual wording of a law/statute	
OBJ	(to be) the physical manifestation of the law whereby the general public becomes familiar with it, e.g., codebook, news article, press release, announcement, etc.	

-ZTR- ‘LEGAL ENFORCEMENT / LEGAL AUTHORITY’		
BSC	Stem 1: (to be) an act of official law enforcement; to enforce the law	Stem 2: (to be) a state of having the authority to enforce a law or statute; to have legal authority to Stem 3: (to be) a state of having legal jurisdiction/applicability of enforcement powers to a particular situation or geopolitical area; to have legal jurisdiction
CTE	(to be) a state of having laws be enforced	
CSV	(to be) a physical act of enforcing a law (i.e. specific actions/words utilized)	
OBJ	(to be) the particular law enforced	

-ZDY- ‘CRIMINAL WARRANT / SEIZURE OF EVIDENCE / DETENTION OF SUSPECT / ARREST OF SUSPECT’		
BSC	Stem 1: (to be) an act/process of issuing/obtaining a warrant authorizing the seizure of evidence or detention of criminal suspect	Stem 2: (to be) a state of seizure of evidence or detention of a suspect in a criminal investigation; to seize evidence or detain a suspect as part of a criminal investigation Stem 3: (to be) a state of formal arrest of a suspect in a criminal investigation
CTE	(to be) a state of being subject to a warrant	
CSV	(to be) a physical act of issueing/granting a warrant	
OBJ	(to be) a warrant authorizing the seizure of evidence or detention of criminal suspect	

-ZDR- ‘INCARCERATION / ARRAIGNMENT / INDICTMENT’		
BSC	Stem 1: (to be) a state/act of incarceration pending arraignment; to incarcerate someone pending arraignment, to hold someone in jail pending arraignment	Stem 2: (to be) a state/act/process of arraignment; to arraign [the presentation/registration of formal charges against a suspect before a judicial entity] CPT Version = indictment; to indict Stem 3: (to be) a state of incarceration following indictment and/or sentencing; to put in jail, send to jail following indictment and/or sentencing
CTE	(to be) a state of being incarcerated pending arraignment, being held in jail pending arraignment	
CSV	(to be) a physical act of jailing/incarcerating someone pending arraignment	
OBJ	(to be) a jail cell or criminal detention room where someone is held pending arraignment	

-ZTL- ‘CRIMINAL ADJUDICATION / CRIME / PROSECUTION / VERDICT’		
BSC	Stem 1: (to be) an act of criminal adjudication; to try a criminal complaint, go to trial, conduct a criminal trial	Stem 2: (to be) a presentation of evidence at a trial in support of an alleged crime; an act of prosecution; to prosecute [CTE Specification = ‘a criminal allegation’; OBJ Specification = ‘a prosecutor’] Stem 3: (to be) an act of weighing of evidence by a judge or jury; to weigh evidence [CTE Specification = ‘a piece of evidence’; OBJ Specification = ‘judge/juror’] CPT Version = ‘verdict’
CTE	(to be) the alleged crime	
CSV	(to be) a physical/tangible act of conducting a criminal trial; a piece/aspect/stage/step of the adjudicatory process	
OBJ	(to be) the defendant in a criminal complaint	

-RZT- ‘PUNISHMENT / JUSTICE / SENTENCE / PENANCE’		
BSC	Stem 1: (to be) an act/process of punishment; to punish (i.e., mete out physical and/or psychological pain or adverse circumstances to a party as a deterrent-oriented consequence of, and/or moral recompense for, their (actual or perceived) wrongdoing or negligence);	Stem 2: (to be) an act/process of justice or sentencing; to sentence, to carry out an act of justice (i.e., officially mete out a form of punishment against a party found legally guilty of or legally liable for a crime or wrongdoing) (CTE Specification = to serve/suffer a sentence) Stem 3: (to be) a state/act of imposing a penance on a party for a moral transgression or moral wrongdoing; to impose a penance (CTE = to do penance)
CTE	(to be) a state of being punished or enduring punishment	
CSV	(to be) a physical act of punishing; to physically punish, to mete out punishment	
OBJ	(to be) to be the specific form of punishment meted out	

-GŽŽ- ‘CORRUPTION’		
BSC	Stem 1: (to be) a state/act of moral/ethical corruption	Stem 2: (to be) a state of legal/business/governmental corruption (e.g., accepting bribes or kickbacks, embezzling funds, back-room or under-the-table deals, quid pro quo arrangements, extortion schemes, etc.) Stem 3: (to be) a state of material corruption (e.g., of data, records, process flow, etc.)
CTE	(to be) a state of moral/ethical corruption	
CSV	(to be) a physical act of corruption; to do something corrupt	
OBJ	(to be) what one does that is corrupt or constitutes corruption	

This root may be used as a new **CRP CORRUPTIVE** Bias suffix indicating one’s disgust at discovering/observing corruption

-XČ- ‘MURDER / HOMICIDE / MANSLAUGHTER’		
BSC	Stem 1: (be) an act of murder/homicide; to [commit] murder/homicide [both the act of commission and the death of the victim]	Stem 2: (be) a state/act of negligent homicide (i.e., death caused by criminal negligence) Stem 3: (be) a state/act of manslaughter (i.e., unintentional killing of another)
CTE	(be) the state/act of being/having been murdered	
CSV	(be) a physical act of murdering	
OBJ	(be) a murder victim	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RXČ- ‘HOMICIDE IN SELF-DEFENSE / ASSASSINATION / EXECUTION’	
Stem 1: (be) an act of killing another in self-defense or war-time battle	
Stem 2: (be) a state/act of assassination	
Stem 3: (be) a state/act of legal execution	

-XTR- ‘BATTERY / AGGRAVATED ASSAULT / MAIMING / TORTURE’		
BSC	Stem 1: (be) an act of battery or aggravated assault against another; to assault with great bodily harm, to commit battery against another [both the act and the undergoing of the act by a victim]	Stem 2: (be) a state/act of maiming another; to maim another Stem 3: (be) a state/act of torturing someone; to torture another
CTE	(be) a state of being/having been assaulted	
CSV	(be) a physical act of battery; to violently assault another	
OBJ	(be) a victim of battery or aggravated assault	

-XPR- ‘SEXUAL HARASSMENT / SEXUAL ASSAULT / RAPE’		
BSC	Stem 1: (be) state/act of sexual harassment against another; to sexually harass another [both the act and the state undergone by the victim]	Stem 2: (be) a state/act of sexual assault/molestation; to sexually assault/molest Stem 3: (be) an act of rape; to rape someone, commit rape
CTE	(be) a state of being a victim of sexual harassment	
CSV	(be) a physical act of sexually harassing; to sexually harass	
OBJ	(be) a victim of sexual harassment	

-DPL- ‘THEFT / BURGLARY / ROBBERY’		
BSC	Stem 1: (be) state/act of stealing something from someone, the theft of something from someone; to steal something from someone, to commit the theft of something from someone	Stem 2: (be) a state/act of burglary of something from someone (i.e., theft under cover of secrecy or despite security measures) Stem 3: (be) a state/act of robbery (i.e., theft under threat of, or commission of violence)
CTE	(be) what one steals	
CSV	(be) a physical act of stealing; to steal	
OBJ	(be) the party whose property is stolen	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RDPL- ‘EMBEZZLEMENT / LOOT / PLUNDER’	
Stem 1: (be) an act embezzlement; to embezzle	
Stem 2: (be) a state/act of looting; to loot (i.e., to plunder private property left unprotected or undefended)	
Stem 3: (be) a state/act of plundering/pillaging/ransacking/spoliation; to plunder/pillage/ransack/spoliate/despoil	

-DPR- ‘KIDNAPPING / FALSE IMPRISONMENT / CONSCRIPTION’		
BSC	Stem 1: (be) a state/act of kidnapping someone; to kidnap someone [both the act and the process undergone by the victim]	Stem 2: (be) a state/act of false imprisonment (i.e., restricting/preventing another’s freedom of movement without legal grounds to do so); to falsely imprison another Stem 3: (be) a state/act of conscription; to conscript someone
CTE	(be) a state of being a victim of kidnapping	
CSV	(be) a physical act of kidnapping; to commit an act of kidnapping	
OBJ	(be) a kidnap victim	

-DPW- ‘BLACKMAIL / EXTORTION / LARCENY’		
BSC	Stem 1: (be) state/act of blackmailing someone over something; to blackmail someone over something	Stem 2: (be) a state/act of extortion (i.e., obtaining a benefit through coercion of another) Stem 3: (be) a state/act of larceny (i.e., non-consensual removal of another’s property under threat of punishment or adverse consequences)
CTE	(be) what one is being blackmailed regarding	
CSV	(be) a physical act of blackmailing; to (commit) blackmail, do something that constitutes an act/state of blackmail	
OBJ	(be) the party being blackmailed	

-DPY- ‘QUID PRO QUO ARRANGEMENT / BRIBERY’		
BSC	Stem 1: (be) state/act of offering or being offered a <i>quid pro quo</i> arrangement; to offer or be offered a <i>quid pro quo</i> arrangement [CPT = to engage in a <i>quid pro quo</i> arrangement]	Stem 2: (be) a state/act of offering a <i>quid pro quo</i> arrangement; to offer a <i>quid pro quo</i> arrangement [CPT = act of bribery; to bribe]
CTE	(be) a state of a <i>quid pro quo</i> arrangement having been offered	
CSV	(be) a physical act of offering a <i>quid pro quo</i> arrangement	
OBJ	(be) a party offering or being offered a <i>quid pro quo</i> arrangement, be one of the parties in a potential <i>quid pro quo</i> arrangement	Stem 3: (be) a state/act of accepting a <i>quid pro quo</i> arrangement; to accept a <i>quid pro quo</i> arrangement [CPT = act of accepting a bribe; to accept a bribe, to be bribed]

-DPŘ- ‘TRADE IN STOLEN GOODS’		
BSC	Stem 1: (be) state/act of trading in (i.e., offering/receiving) stolen goods; to trade in (i.e., engage in the transportation/receipt of) stolen goods [both the offering and accepting/receipt/possession thereof]	Stem 2: (be) a state/act of offering [for sale or use] stolen goods Stem 3: (be) a state/act of possessing/receiving stolen goods; to possess/receive stolen goods
CTE	(be) a party engaged in the possession/offering/receipt of stolen goods	
CSV	(be) a physical act of trading in stolen goods; to engage in a trade of stolen goods	
OBJ	(be) a stolen item	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RDPŘ- ‘SMUGGLING’	
Stem 1: (to be) an act of smuggling, to smuggle (i.e., the transportation and offering/receipt of contraband for sale or use); to deal in smuggled goods	
Stem 2: (to be) a state/act of offering (for sale or use) smuggled goods; to offer (for sale or use) smuggled goods	
Stem 3: (to be) a state/act of receiving/possessing smuggled good; to possess/receive stolen goods	

-DPÇ- ‘FRAUD / BREACH OF CONTRACT / FORGERY / COUNTERFEITING’		
BSC	Stem 1: (be) state/act of fraud against another; to defraud another [i.e., engage in a deception in the realm of business, contracts, or formal agreements]	Stem 2: (be) a state/act of breach of contract; to breach the terms of a contract, to renege on a contract Stem 3: (be) a state/act of counterfeiting or forgery; to forge, to counterfeit
CTE	(be) a fraudulent state, (be) the circumstance(s) or nature of the fraudulent act/state	
CSV	(be) a physical act of fraud; to engage in or commit an act of defrauding	
OBJ	(be) the defrauded party	

-DPL- ‘PLAGIARISM / INTELLECTUAL PROPERTY THEFT / COPYRIGHT INFRINGEMENT’		
BSC	Stem 1: (be) state/act of plagiarism; to plagiarize	Stem 2: (be) a state/act of intellectual property theft Stem 3: (be) a state/act of copyright or trademark infringement
CTE	(be) the written/spoken content that has been plagiarized	
CSV	(be) a physical act of plagiarizing; to engage in an act of plagiarism	
OBJ	(be) the victim of an act of plagiarism	

-ŘJ- ‘PRIVACY VIOLATION / STALKING / ASSAULT’		
BSC	Stem 1: (be) a state/act of violating the privacy of another	Stem 2: (be) a state/act of stalking; to stalk Stem 3: (be) a state/act of assault (i.e., to make non-consensual physical contact with another)
CTE	(be) a state of having one’s privacy violated	
CSV	(be) a physical act of violating someone’s privacy; to do something that constitutes a violation of another’s privacy	
OBJ	(be) the party whose privacy is violated	

NOTE: This root lends itself to use with the EMO affix.

4.2 KINSHIP TERMS

The various kinship roots/stems below all have the following Specification pattern:

BSC	(to be/have) a particular kin relation to someone [both the relational connection itself and the being in the relationship]
CTE	(to be) the nature/manifestation of the particular kin relationship between two parties
CSV	(to be) a particular kinship relationship
OBJ	(to be) the person who has the particular kin relation to someone

-BČ- ‘KIN / EXTENDED FAMILY RELATION’ (use SEX affix to distinguish gender-based delineations if necessary) Associated Affix: KIN	
STEM 1	(to be) a member of a(n extended) family; to be related [either genetically, by marriage, by legal adoption, or long-term informal adoption] to other persons
STEM 2	(to be) a member of a(n extended) family; to be related [genetically or by marriage], by legal adoption, or long-term informal adoption] to other persons
STEM 3	(to be) a member of a(n extended) family; to be related [by legal adoption or long-term informal adoption] to other persons

-MP- ‘NUCLEAR FAMILY MEMBER’ (signifies functional relationship, not necessarily genetic relationship) (use SEX affix if necessary)	
STEM 1	(to be) a parent (i.e., person who raised another from childhood, whether genetic parent, foster parent, adoptive parent, guardian, etc.); to parent; to raise a child as a parent
STEM 2	(to be) a child (i.e., person being raised by a parent/guardian)
STEM 3	(to be) a grandparent (i.e., parent of a parent)

-MM- ‘MEMBER OF GENETIC PARENT-OFFSPRING RELATION’ (use SEX affix to distinguish gender-based delineations if necessary)	
STEM 1	(to be) a parent/progenitor (i.e., person who is the genetic father or mother of a child); to procreate; to create a child
STEM 2	(to be) a child (i.e., genetic offspring/progeny of another)
STEM 3	(to be) a grandparent (i.e., genetic parent of a parent)

-VV- ‘STEP-KIN RELATIONS’ (use SEX affix to distinguish gender-based delineations if necessary)	
STEM 1	(to be) a step-parent
STEM 2	(to be) a step-child
STEM 3	(to be) a step-sibling

-SR- ‘SIBLING RELATIONS’ (use SEX affix to distinguish gender-based delineations if necessary)	
STEM 1	(to be) a sibling
STEM 2	(to be) a maternal half-sibling
STEM 3	(to be) a paternal half-sibling

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-LH- ‘COLLATERAL FAMILIAL RELATIONS’ (use SEX affix to distinguish gender-based delineations if necessary)	
STEM 1	(to be) a parent’s sibling (i.e., aunt/uncle)
STEM 2	(to be) a sibling’s child (i.e., nephew/niece)
STEM 3	(to be) a parent’s sibling’s child (i.e., first cousin)

Use the above kinship roots/stems with the KIN and KSD affixes to specify additional relationships.

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4.3 CHARACTER TRAITS & SOCIO-PSYCHOLOGICAL STATES

-PSS- ‘EXPERIENCE / PERCEIVE / LIVE’		
BSC	STEM 1: (to be) a state/act of experiencing and perceiving one’s present moment in life; to experience and perceive what is happening to oneself at any given moment	STEM 2: (to be) a state/act of conscious awareness of and thinking about/considering the present moment one is living through and experiencing/perceiving STEM 3: (to be) a state/act of acting/doing something to affect/effect/deal with/manipulate one’s experience and perception of a given moment in one’s life; to act/do something to deal with/affect/effect/manipulate what is happening at a given moment in one’s life
CTE	(to be) the internal psychological, and proprioceptive sensation of living and experiencing a particular moment in one’s life; to experience/perceive such sensations	
CSV	(to be) a physical act of living/experiencing/perceiving what is happening to oneself at a given moment in one’s life; to go through a moment in one’s life, to live a moment of one’s life	
OBJ	(to be) that which is happening to oneself at a given moment in one’s life; that which one experiences and perceives	

This root is also used as the new **EXP EXPERIENTIAL** Bias, meaning ‘Ah!’, ‘Well, now!’ ‘So!’ ‘Alright!’ [Italian ‘Allora!’]

-GV- ‘DESIRE / WANT / WISH / HOPE’ Associated Affix: -DSI-		
BSC	STEM 1: (to be/manifest) an affective (i.e., unwilling) state of want/desire [affective state + object of desire]; to want something, to desire something	STEM 2: (to be/manifest) a wish/hope for something STEM 3: (to be/manifest) an aspiration + thing aspired to; to aspire to something
CTE	(to be) the internal, psychological, proprioceptive manifestation of being in a state of desire; to experience such a state	
CSV	(to be) the outwardly discernible manifestations of a state of desire; to have the “look” of (i.e., outwardly manifest the signs of) being in a state of desire	
OBJ	(to be) an entity wanted/desired, a want, a desire; to be the entity wanted/desired	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RGV- ‘REQUEST / DEMAND’		
	STEM 1: (to be) a request + entity requested; to ask for something (out of desire), to request something	STEM 2: (to be) a demand + entity demanded; to demand something STEM 3: (to be) a legal warrant/subpoena, etc. for something, to officially demand something via legal warrant/subpoena, etc.
CTE	(to be) the internal, psychological, proprioceptive manifestation of being in a state of desire; to experience such a state	
CSV	(to be) the outwardly discernible manifestations of a state of desire; to have the “look” of (i.e., outwardly manifest the signs of) being in a state of desire	
OBJ	(to be) an entity requested; that which is requested	

-VK- ‘ATTRACTION’		
BSC	Stem 1: (to be) a state/act of physical attraction to another	Stem 2: (to be) a state of psychological/philosophical attraction to an abstract entity (e.g., a cause, a socio-political movement, a philosophy, a religion, etc.) Stem 3: (to be) a state of psychological/emotional attraction to an inanimate object or non-human entity (e.g., a sports car, a diamond ring, a cute puppy, etc.)
CTE	(to be) the psychological/emotional state of physical attraction itself	
CSV	(to be) a physical state/act or tangible behavior manifested as a result of physical attraction to another	
OBJ	(to be) the target/source of one’s physical attraction, what/whom one is attracted to	

-RY- 'FREEDOM / SELF-DETERMINATION / INDEPENDENCE / AUTONOMY'		
BSC	Stem 1: (to be) a state/act of being free; be free, get free, to free (i.e., not be subject to another's permission/control/oversight/restriction in regard to one's actions/decisions/lifestyle/choices, etc.)	Stem 2: a state of self-determination/autonomy; to determine/decide one's own course of action Stem 3: (to be) a state/act of independence, of being unaffiliated with another party; be independent, act independently
CTE	(to be) a state of freedom, a state of being free; to be free as an existential state	
CSV	(to be) a physical act taken to (attempt to) be free; to get free (from), to free	
OBJ	(to be) what one is (attempting to become) free from	

-ŠJ- 'BEING BUSY / OCCUPY ONESELF / ACTIVITY / DUTY / OBLIGATION'		
BSC	Stem 1: (to be) a state/act of being busy/occupied with (doing) something; be busy with, be occupied with/by, be engaged in (doing) something	Stem 2: (to be) state/act of performing a task; to perform a task Stem 3: (to be) a perform or carry out one's duty/obligation
CTE	(to be) a state of engagement, being occupied, being busy	
CSV	(to be) a physical act of being busy/occupied with or engaged in doing; to do or be doing something which occupies one's time, engages one's attention or causes one to be busy	
OBJ	(to be) an activity, what one is busy/occupied with or engaged in doing	

-ŇS- 'REPUTE / REPUTATION / PUBLIC IMAGE / PRESTIGE'		
BSC	Stem 1: (to be) one's reputation, i.e., how one is judged by one's community in comparison to ethical/behavioral as well as socio-cultural and socio-economic standards/norms/expectations; to have/garner a reputation	Stem 2: (to be) one's public image, how one presents oneself for judgement by one's community in terms of reputation/opinion Stem 3: (to be) one's sense of prestige (i.e., the extent to which one's accomplishments/status/celebrity makes a positive impression on others)
CTE	(to be) what one's reputation actually is (i.e., what is said/believed by the community about something/someone)	
CSV	(to be) a state/act of establishing/maintaining one's reputation	
OBJ	(to be) the party/entity having a particular reputation	

-RZ- ‘AUTHORITY / OBEDIENCE’		
BSC	Stem 1: (to be) a state/act of enforceable authority and obedience thereto	Stem 2: (to be) a state/act of mastery/guardianship/parental authority and obedience/subservience/submission thereto
CTE	(to be) a state/act of obedience to authority; to obey	
CSV	(to be) a state/act of enforceable authority; to wield authority	Stem 3: (to be) a state/act of enforceable governmental authority (e.g., police, court ruling, codified law/ordinance) and obedience/adherence thereto
OBJ	(to be) a particular rule/edict/moral/law, etc. which is to be obeyed	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root which has the same Specification pattern:

-RZW- ‘OCCUPATIONAL AUTHORITY / SLAVERY / MILITARY AUTHORITY’		
Stem 1: (to be) a state/act of contractual occupational authority (i.e., employer/supervisor/boss) and employee compliance thereto		
Stem 2: (to be) a state/act of slavery and subjugation thereto as a slave		
Stem 3: (to be) a state/act of military authority and obedience to/following of orders		

-TKH- ‘ARMED SECURITY / POLICE / ARMED FORCES’		
BSC	Stem 1: (to be) a private/commercial/corporate armed security/policing agency or guard force	Stem 2: (to be) an authorized police force/law enforcement agency for an official governmental jurisdiction (e.g., municipal police, county sheriff, state police, military police, federal police, U.N. police, etc.)
CTE	(to be) a state of security/guardianship/policing enforced/maintained by a private/commercial/corporate armed security/policing agency or guard force	
CSV	(to be) a physical act/process of armed security enforcement/guardianship/policing by an agent of a private/commercial/corporate armed security/policing agency or guard force	Stem 3: (to be) an authorized national army/navy/marines/coast guard or similar national armed defensive force of a sovereign nation
OBJ	(to be) an individual agent/officer/guard with a private/commercial/corporate armed security/policing agency or guard force	

-LP- ‘PRIDE (FOR ANOTHER) / RESPECT / ADMIRATION’		
BSC	Stem 1: (to be) a feeling of pride for someone/something; be proud of someone/something	Stem 2: (to be) a feeling of respect for someone/something; respect someone/something
CTE	(to be) the feeling of pride itself as a personal emotional state	
CSV	(to be) the physical manifestation (i.e., act(s)/word(s)/behavior) of a state of pride felt for an entity	Stem 3: (to be) a feeling of admiration for someone/something; admire someone/something
OBJ	(to be) the entity/party/event/situation/state one is proud of	

-NZ- ‘GOODWILL / BEING NICE / BEING DECENT / GOOD SAMARITANSHIP’		
BSC	Stem 1: (to be) an instance of being nice to another party; to be nice/decent [i.e., emotional/spiritual/physical support of another’s interests]	Stem 2: (to be) a feeling and display of goodwill, benevolent intent, kindness Stem 3: (to be) an instance of good samaritanship, go out of one’s way to help another party
CTE	(to be) the feeling/experience of decency/being nice to another	
CSV	(to be) the specific act(s)/word(s) which constitute an act/instance of decency/being nice	
OBJ	(to be) the party to whom one is decent/nice	

NOTE: the meaning of the old FORMAL and INFORMAL stems previously associated with this root have been distributed between this root and the following new root:

-RNZ- ‘AMICABILITY / FRIENDSHIP / PEACE’		
BSC	STEM 1: (to be) a feeling and display of amicability / friendliness	STEM 2: (to be) a state of friendship (unidirectional); to be someone’s friend STEM 3: (to be) a state of peace; to be/live in peace (i.e., non-enmity)
CTE	(to be) the feeling/experience of amicableness/amicability	
CSV	(to be) the specific act(s)/word(s) which constitute an act/instance of amicability	
OBJ	(to be) the party to whom one is amicable	

-LTM- ‘WELCOME / HOSPITALITY / GUEST’		
BSC	STEM 1: (to be) a formal welcome; to bid one welcome	STEM 2: (to be) a state/act of hospitality toward a party; to host a guest [OBJ Specification = ‘guest’] STEM 3: (to be) a state/act of temporary commercial/paid accommodation (e.g., at a hotel, inn, resort, retreat, etc.); to accommodate, take in, or host a paying guest (as customer) [OBJ Specification = paying guest]
CTE	(to be) a state of welcom(ing)	
CSV	(to be) an act of welcoming someone; the actual words/actions employed to welcome someone; to say words of welcome, to demonstrate one’s welcome	
OBJ	(to be) the party/entity who is welcomed	

-LL- ‘VISIT / SIGHT-SEE / TOUR’		
BSC	Stem 1: a state/act of visiting someone socially, being on a social visit to see someone; to visit someone socially, to go and see someone, to come and see somebody [go somewhere for the purpose of being with a party/entity]	Stem 2: (to be) a state/act of visiting a place, sight-seeing; to tour, to visit [a place to see what’s there]; to sight-see, to tour Stem 3: (to be) a formal visit (for other than mere social purposes); to pay a visit to or on [visiting someone as an obligation, duty, job, etc.]
CTE	(to be) a state of social visitation; to be visiting	
CSV	(to be) an act of social visiting, the physical act of traveling to see a particular person for the purpose of being with them	
OBJ	(to be) the party/entity visited	

-B- ‘BELIEF / FAITH / DOCTRINE / DOGMA’		
BSC	Stem 1: (to be) a state of believing in something; to believe something	Stem 2: (to be) an article of faith / an item of doctrine or; to believe something as an article of faith/doctrine Stem 3: (to be) dogma; to believe dogmatically (i.e., to intransigently hold as an unquestionable belief which, to doubt such, constitutes an act of apostasy/heresy)
CTE	(to be) a state of belief	
CSV	(to be) an act or physical manifestation of one’s belief	
OBJ	(to be) what one believes	

-BS- ‘RELIGIOUS BELIEF / RELIGION / RELIGIOUS WORSHIP’			
	Stem 1	Stem 2	Stem 3
BSC	(to be) a state/act of holding a religious belief; to hold a religious belief, be a believer in a (set of) religious tenet(s)	(to be) a state/act of being a member of a particular organized religion; be a member of or believe/practice the tenets of a particular organized religion	(to be) a state/act of religious worship; to worship a religious deity
CTE	(to be) a state of being religious; to have religious faith	(to be) a state of being a member of a particular organized religion; to	(to be) a state of worship; to experience a state of communion with a deity through worship
CSV	(to be) a physical act of religious faith; to engage in an act based on religious belief(s)/faith (e.g., pray, partake in a religious service or sacrament, participate in a religious ritual, burn heretics or non-believers, commit atrocity, etc.)	(to be) a physical act of faith associated with one’s chosen religious faith; to engage in a particular act as required by a particular religion’s tenets/praxes	(to be) a physical act of worshipping; to engage in an act of worship
OBJ	(to be) a religious tenet or dogma	(to be) a particular organized religion; to be a recognized set of tenets/praxes constituting belief/membership in a particular organized religion	(to be) the god/deity/spirit/icon/idol, etc. one worships

-LṬṬṬ- ‘AFTERLIFE / HEAVEN / HELL / UNDERWORLD’		
BSC	Stem 1: (to be) a state of belief in an afterlife [i.e., a life/realm after death]	Stem 2: (to be) a state of belief in heaven or paradise-like afterlife Stem 3: (to be) a belief in hell/the Underworld or a hell-like or underworld-like afterlife
CTE	(to be) the state of there being an afterlife	
CSV	(to be) the physical state of living/being in the afterlife	
OBJ	(to be) the afterlife [i.e., the actual physical realm in which life after death takes place]	

-MX- ‘APOSTASY / HERESY / HETERODOXY / ICONOCLASM’		
BSC	Stem 1: (to be) a state/act of being apostatic; practice apostasy, hold apostatic beliefs (i.e., a loss of one’s faith/belief in some system of belief/doctrine/religion/cause, etc.)	Stem 2: (to be) a state/act of being heretical; practice heresy/heterodoxy; to hold heretical beliefs Stem 3: (to be) a state/act of being iconoclastic; practice iconoclasm, act iconoclastically (i.e., a belief that certain venerated or sacred institutions/beliefs are superstitious nonsense)
CTE	(to be) a state of apostasy	
CSV	(to be) a physical act of apostasy; to say/do something that conveys/manifests one’s apostasy	
OBJ	(to be) the tenet(s)/beliefs/doctrine the apostate no longer believes in	

-TP- ‘MINDFULNESS / ALERTNESS / CAUTION / WARNING’		
BSC	Stem 1: (to be) a state/act of being mindful/aware of one’s surroundings and the actions of others; be mindful/aware of one’s surrounding and the actions of others	Stem 2: (to be) a state/act of alertness/caution; be alert/cautious (i.e., mindfulness/awareness of one’s surroundings as a precautionary measure against potential threats) Stem 3: (to be) a state/act of warning; to warn, to be warned, to beware (i.e., advisement that one’s safety or well-being is potentially at risk)
CTE	(to be) the state of mindfulness/awareness itself	
CSV	(to be) a physical act of mindfulness; do something that manifests mindfulness	
OBJ	(to be) what one is mindful of	

NOTE: for wariness/caution as an emotional state, see the root **-KSG-**.

-ŠF- ‘EXAGGERATION / EMBELLISHMENT / OVERSTATEMENT / HYPERBOLE / OVER-REACTION’		
BSC	Stem 1: (to be) a state/act of exaggerating/embellishing facts; to exaggerate or embellish (i.e., magnification, amplification, embellishment of facts with the intent to impress or garner attention)	Stem 2: (to be) a state/act of overstating or resorting to hyperbole; to overstate, resort to hyperbole (i.e., exaggeration with the intention to misrepresent) Stem 3: (to be) a state of being overwrought, over-reaction; to over-react, be overwrought (i.e., an over-the-top emotional or reactionary response the degree of which is not warranted by circumstances)
CTE	(to be) a state of exaggeration	
CSV	(to be) a physical act of exaggeration; to do/say something that constitutes/manifests exaggeration	
OBJ	(to be) what one exaggerates about	

-RT- ‘ANNOYANCE / IRRITATION / VEXATION / BOTHER / HARASSMENT’		
BSC	Stem 1: (to be) a state/act of annoyance/vex/irritate emotionally; to annoy someone, to irritate someone (emotionally) (i.e., cause someone to become annoyed/irritated)	Stem 2: (to be) a state of bother/pestering/nagging; to bother/pester/nag (i.e., to cause someone against their will/consent to have to deal/treat with the bothering party) Stem 3: (to be) state/act of harassing/harassment; to harass
CTE	(to be) a state of annoyance/irritation/vexation	
CSV	(to be) an act of annoying/irritating/vexing; to do something that annoys, irritates (emotionally), vexes	
OBJ	(to be) the party/entity/object/situation which causes annoyance	

-FPL- ‘RATIONALIZATION / WHITEWASHING / COVER-UP’		
BSC	Stem 1: (to be) a state/act/process of rationalization; to rationalize [i.e., to convince oneself that one’s selective and/or distorted interpretation of facts/evidence justifies a conclusion that one desires to be true, regardless of whether such a conclusion is, in fact, true]	Stem 2: (to be) a state/act/process of whitewashing; to whitewash [i.e., the deliberate and selective distortion/suppression/highlighting data/facts/evidence to create a favorable impression/interpretation/explanation of something] Stem 3: (to be) a state/act/process of conducting a cover-up; to (conduct a) cover-up [i.e., the deliberate concealment and/or tampering/destruction of data/facts/evidence and/or the suppression of witnesses in order to conceal evidence of an illegal and/or immoral act/situation]
CTE	(to be) a state of believing in/holding a rationalization	
CSV	(to be) an act/process of rationalizing; to engage in an act/process of rationalization	
OBJ	(to be) the rationalization itself [i.e., what one convinces oneself is true via a process of rationalization]	

-RKŠ- ‘BUFFOONERY / ABSURDITY / SURREALISM / ECCENTRICITY		
BSC	Stem 1: (to be) an act/state/instance of buffoonish/silly behavior; to behave in a silly/bufooning manner, do something silly/buffoonish [i.e., with the (intended) effect of causing derisive humor in an audience toward the bufooning party]	Stem 2: (to be) an act/state/instance of absurdist, “dada-esque” behavior; to behave in an absurdist, “dada-esque” manner [i.e., with the (intended) effect of creating ironic humor through a process of bewilderment/confusion/weirdness/inappropriate irony, etc.] Stem 3: (to be) an act/state/instance of eccentric/surreal behavior; to behave in an eccentric/surreal manner [i.e., with the (intended) effect of creating a sense of the impossible/quasi-contradictory/unimaginable made real/imaginable]
CTE	(to be) silly/buffoonish as a behavioral motivation/trait	
CSV	(to be) a particular act/behavior considered silly/buffoonish	
OBJ	(to be) a buffoon, a person whose silliness is looked at derisively by others	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-KŠ- ‘CLOWN / ABSURDISM AS ART / SURREALISM AS ART’		
BSC	STEM 1: (to be) an act/state/instance of performing as a clown; to perform as a clown	STEM 2: (to be) an act/state/instance of absurdist/dada-esque art STEM 3: (to be) an act/state/instance of surrealist art
CTE	(to be) clownish, clown-like	
CSV	(to be) a clown-like act; to act as a clown, do what a clown does/would do	
OBJ	(to be) a clown	

-RJ- ‘EMBARRASSMENT / SHAME / HUMILIATION’		
BSC	Stem 1: (to be) a state/act of embarrassment; to embarrass (i.e., make one feel embarrassed)	Stem 2: (to be) a state/act of shaming someone; to shame someone (i.e., to make someone feel guilty about something) Stem 3: (to be) a state/act of humiliation/abasement; to humiliate/abase someone
CTE	(to be) a state of embarrassment	
CSV	(to be) an act of embarrassing someone; to do something to embarrass another	
OBJ	(to be) what one is (or should be) embarrassed about	

-VP- ‘LAXITY / LENIENCY / NEGLIGENCE’		
BSC	Stem 1: (to be) a state/act of laxity, being lax about something; to be lax about something (i.e., not having a strong desire or sense of responsibility about controlling or overseeing something/someone where it is appropriate to have such a desire or sense of responsibility)	Stem 2: (to be) a state/act of leniency; be lenient toward another, act leniently (i.e., allow another to act with a lesser degree of oversight than others might expect based on one’s belief/sense that the party one has oversight of or responsibility for is capable of making their own decisions or able to act responsibly themselves) Stem 3: (to be) a state/act of being remiss/negligent; to be remiss/negligent
CTE	(to be) a state of feeling lax/unconcerned regarding a responsibility	
CSV	(to be) a physical act of laxity; to do something that manifests one’s laxity about something	
OBJ	(to be) what one is lax about	

-ŇZ- ‘CRITICIZE / DISPARAGE / DENIGRATE / REBUKE / SCOLDING / DEFAMATION’		
BSC	Stem 1: (to be) a state/act of criticizing/disparaging/denigrating/putting down/speaking ill of; to criticize/disparage/put down/ speak ill of a party/entity	Stem 2: (to be) a state/act of rebuking, scolding, reproaching, berating, chastisement, castigation; to rebuke/scold/reproach/berate/chastise/castigate Stem 3: (to be) a state/act of defamation/slander/libel (i.e. attempt to damage the reputation of a party/entity)
CTE	(to be) a state of disparagement/denigration	
CSV	(to be) an act of criticizing/disparaging/putting down/speaking ill of	
OBJ	(to be) what one is being criticized/disparaged for or about	

-TÇ- ‘INTENTION / DECISION / DETERMINATION’		
BSC	Stem 1: (to be) a state/act of intending (to do) something; to intend (to do) something	Stem 2: (to be) a state/act/process of deciding, decision-making; to weigh a decision [CPT version = decide, make a decision] Stem 3: (to be) a state/act/process of determining something, a process of determination; to undergo a process of determining [CPT version = determine, make a determination]
CTE	(to be) a state of intention; to have an intention	
CSV	(to be) an act of intention; do something that manifests one’s intention	
OBJ	(to be) what one intends (to do), one’s intention	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RTÇ- ‘PURPOSE / JUDGEMENT / RESOLUTION’		
BSC	STEM 1: (to be) a state/act of having a purpose; to have a purpose	STEM 2: (to be) a state/act/process of judging, a process of judgement; to judge over, to weigh evidence toward making a judgement [CPT version = to judge, make/render a judgement] STEM 3: (to be) a state/act/process of resolving something, coming up with a resolution; to consider/work out a resolution [CPT version = to resolve, come to a resolution]
CTE	(to be) a state of purposefulness; to have a feeling of purpose	
CSV	(to be) an act of purposefulness; do something that manifests one’s purposefulness	
OBJ	(to be) one’s purpose	

-TB- ‘AUDACITY / “NERVE” / CONFRONTATION / CIVIL DISOBEDIENCE’		
BSC	Stem 1: (to be) a state/act of audacity; be audacious (i.e., have the “nerve” or pluck or “balls” to do something]	Stem 2: (to be) a state of facing/confronting an adverse entity/situation; to face/confront an adverse entity/situation Stem 3: (to be) a state/act of civil disobedience; to practice/engage in civil disobedience [i.e., a willful refusal to comply with certain laws that are perceived to constrain or restrict one’s rights]
CTE	(to be) a psychological state of being/feeling audacious	
CSV	(to be) a physical act of audacious behavior; to do something audacious	
OBJ	(to be) what one is audacious about or towards	

-ČČ- ‘NAÏVETÉ / FOOLISHNESS / IGNORANCE’		
BSC	Stem 1: (to be) a state of being naïve/foolish; act naively or foolishly (i.e., ill-conceived thinking/behavior due to a failure to analyze a situation or one’s circumstances realistically and/or thoroughly)	Stem 2: (to be) a state of being obtuse or “clueless”; be obtuse or clueless (i.e., fail to draw appropriate/expected conclusions from a situation or fail to recognize a situation for what it is despite the seeming obviousness thereof) Stem 3: (to be) a state of ignorance, “blindness” or unawareness; be unaware or ignorant of something
CTE	(to be) a state of naïveté or foolishness	
CSV	(to be) a physical act/manifestation of naïveté or foolishness; to do/say something that is naïve or foolish	
OBJ	(to be) the situation or circumstances one is (being) foolish/naïve about	

-ŘZ- ‘DISINTEREST* / PROBITY / HONESTY / SUBLIMITY / NOBILITY / VIRTUE’		
BSC	Stem 1: (to be) an state/act of personal disinterest* (i.e., not concerned with or motivated by personal interest, personal gain, or self-centered motivations)	Stem 2: (to be) an act/state of probity, moral uprightness, honesty in one’s dealings with others; to behave/act in an honest, morally upright, probitive manner Stem 3: (to be) a state/act of moral sublimity, nobility, virtue; to behave/act/be morally sublime, noble, virtuous
CTE	(to be) a state of disinterest(edness)	
CSV	(to be) a physical act manifesting personal disinterest; to do something that displays one’s disinterest	
OBJ	(to be) that regarding which one is disinterested	

* does not mean “lack of interest” or “boredom” or “indifference”

-ST- ‘MAGNANIMITY / ACCEPTING / RESIGNATION’		
BSC	Stem 1: (to be) an act magnanimity, being forgiving; to behave/act/be magnanimous(ly), to be forgiving	Stem 2: (to be) an act/state of being accepting of one’s adverse circumstances, discomfiture, unfair treatment, etc.; to behave/act/be accepting of one’s adverse circumstances, discomfiture, unfair treatment, etc. Stem 3: (to be) an act/state of being resigned to one’s adverse circumstances, discomfiture, unfair treatment, etc.; to behave/act/be resigned to one’s adverse circumstances, discomfiture, unfair treatment, etc., behave/act/be stoical(ly)
CTE	(to be) a state of magnanimity, forgiveness	
CSV	(to be) a physical act/manifestation of magnanimity or forgiveness	
OBJ	(to be) that toward which/whom one is magnanimous or forgiving	

-BX- ‘GENEROSITY / ALTRUISM / SELF-SACRIFICE / SELF-ABNEGATION’		
BSC	Stem 1: (to be) an act/state of generosity; to be generous, act generously	Stem 2: (to be) an act/state of altruism; to be altruistic, act altruistically (i.e., helping/giving to another against one’s own self-interest, self-sacrifice) Stem 3: (to be) an act of self-abasement, self-abnegation, self-denial
CTE	(to be) a state of generosity as a character trait	
CSV	(to be) a physical act of being generous; to do something generous	
OBJ	(to be) the party/entity toward which/whom one is generous	

-LS- ‘AMIABILITY / VIVACIOUSNESS / BOISTEROUSNESS’		
BSC	Stem 1: (to be) a state/act of being friendly/amiable, having a sunny/amiable/warm disposition	Stem 2: (to be) a state of being vivacious; having joie-de-vivre; be vivacious, display joie-de-vivre Stem 3: (to be) a state of being larger-than-life/boisterous/ebullient/spunky; behave/be larger-than-life/boisterous/ebullient/spunky; act/behave with boisterousness/ebullience/spunkiness
CTE	(to be) a state of friendliness/amiability/sunnniness as a character trait	
CSV	(to be) a physical act/manifestation of friendliness/amiability/sunnniness	
OBJ	(to be) the party/entity toward which/whom one is (being) friendly/amiable/warm/sunny	

-MF- ‘APPRECIATION / HONORING / VENERATION’		
BSC	Stem 1: (to be) a state/act of appreciation or commendation for someone/something; appreciate/commend someone/something	Stem 2: (to be) a state/act of honoring upon someone; to honor someone Stem 3: (to be) a state/act of veneration or reverence for someone/something; venerate or revere someone/something
CTE	(to be) the feeling of appreciation itself as a personal emotional state	
CSV	(to be) the physical manifestation (i.e., act(s)/word(s)/behavior) of a state of appreciation felt for an entity	
OBJ	(to be) the entity/party/event/situation/state one appreciates	

-ČR- ‘HOSTILITY / AGGRESSION / HARM’		
BSC	Stem 1: (to be) a state/act of verbal abuse, verbally hostile behavior toward another party, to attack someone verbally	Stem 2: (to be) a state/act of passive-aggressive hostility toward another party; to attack someone via passive-aggressive behavior Stem 3: (to be) an act of physical hostility/aggression toward another party; to deliberately physically hurt, abuse or harm someone, to hurt, to assault, to attack physically
CTE	(to be) a state of being verbally abused; to suffer verbal abuse	
CSV	(to be) a physical act/manifestation of verbal abuse, i.e., the word(s)/phrase(s) used	
OBJ	(to be) the entity/party which is the target of verbal hostility/abuse/aggression	

	-RRS- ‘URGENCY / HURRY / HASTE / EXIGENCY / EMERGENCY’	
BSC	Stem 1: (be) something pressing or urgent, requiring one to hurry, requiring haste; to be pressing, to be urgent, to make haste, to hurry	Stem 2: (be) something exigent or critical, of critical importance requiring immediate attention/action Stem 3: (be) something constituting an emergency; a situation of dire need for immediate action/aid/resolution
CTE	(be) a state of pressing or urgent need, a state of urgency/haste/hurry	
CSV	(be) the physical/tangible aspects/characteristics of an event/situation that is pressing/urgent	
OBJ	(be) what is pressing or urgent, i.e., the entity/event/situation that is the source of the urgency	

This root is also used as the **EXIGENT (EXG) Bias Affix**: — *‘It’s now or never!’*

	-MSK- ‘NECESSITY / REQUIREMENT / DEMAND / ORDER’	
BSC	Stem 1: (be) a necessity/requirement, something needed/required of someone	Stem 2: (be) a demand; to make a demand Stem 3: (be) an order or command; to order, to (issue a) command
CTE	(be) a state of there being something needed/required of someone; to need, to require	
CSV	(be) the physical/tangible aspects/characteristics of an event/situation needing/requiring something of someone	
OBJ	(be) what is needed/required	

This root is also used as the **MANDATORY (MAN) Bias Affix**: — *‘take it or leave it,’ ‘this is your last chance,’*

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RMSK- ‘IMPERATIVE / MANDATE / ULTIMATUM’	
Stem 1: (be) an imperative, something essential; to state an imperative	
Stem 2: (be) a mandate or injunction or precept; to mandate	
Stem 3: (be) an ultimatum; to issue an ultimatum	

-LŇ- ‘PSYCHE / MIND’		
BSC	Stem 1: one’s psyche (i.e., the amalgamation of both the conscious and unconscious mind)	Stem 2: (to be) one’s conscious mind (i.e., the amalgamation of consciousness, perception, thinking, judgement, imagination, language, and memory)
CTE	(to be) the state of having a psyche; to have a psyche	
CSV	(to be) a state/act of one’s psyche in operation; to experience or engage in conscious or unconscious mental activity	Stem 3: one’s unconscious mind (i.e., the seat of subliminal perceptions, automatic skills, repressed feelings and values, instinct, etc.)
OBJ	(to be) a phaneron or quale (i.e., the “content” of what is being experienced by one’s mind at any given moment)	

-RL- ‘SENTIENCE / SUBJECTIVITY’		
BSC	Stem 1: (to be) a state/act of sentience (i.e., self-awareness plus awareness of both a [seemingly] external reality and a subjective, personal reality); to be sentient	Stem 2: (to be) a state of subjectivity (i.e., one’s personal viewpoint, perspective, or way of thinking about something based on one’s conscious and unconscious values, biases, memories, experiences, etc.)
CTE	(to be) the state of sentience itself as an ontological phenomenon	
CSV	(to be) an act/state of awareness of self and/or external/internal reality by which one manifests sentience; to manifest sentience	Stem 3: (to be) a subjective experience; to undergo a subjective experience (i.e., an experience which occurs solely within one’s mind, or which entails subjective/introspective implications/consequences for oneself)
OBJ	(to be) a thought/feeling/instinctive reaction by which one determines one’s sentience	

-LD- ‘MORAL VALUE / VIRTUE / PRINCIPLE’		
BSC	Stem 1: (to be) a state of holding a moral/personal value; to have/hold a moral/personal value [i.e., a standard or quality one holds dear as desirable and good for one’s life as the foundation for one’s moral principles]	Stem 2: (to be) a state of displaying/manifesting/practicing a personal virtue; to display/manifest/practice a personal virtue [i.e., a behavioral/psychological trait or characteristic that defines the parameters of one’s actions]
CTE	(to be) a state of something being a moral/personal value	
CSV	(to be) a state/act/process of achieving/retaining a moral/personal value	Stem 3: (to be) a state of (up)holding a moral principle; to (up)hold a moral principle [i.e., a guiding rule or belief based on one’s values that governs one’s behavior]
OBJ	(to be) a particular moral/personal value one holds	

-VŽW- ‘SPIRITUALITY / TRANSCENDENCE / UNIVERSAL ONENESS’		
BSC	Stem 1: (to be) a state/act of spirituality; be spiritual [i.e., a sense/feeling of communion/connectedness to the incorporeal nature/energy of the universe, to the sacred, or what one interprets as God]	Stem 2: (to be) a state/act of personal transcendence; to transcend to a more spiritual/universal plane of existence Stem 3: (to be) a state of universal oneness or metaphysical interconnectedness between all things
CTE	(to be) a state of belief/faith in the spiritual realm	
CSV	(to be) an act/state of being engaged in a spiritual experience; to “feel the spirit”	
OBJ	(to be) what one learns/obtains from a spiritual experience	

-DK- ‘MENTAL IMAGE / IMAGINATION / CREATIVITY’		
BSC	Stem 1: (to be) a mental image of something that is or might be; to form an image in one’s mind of something that is or might be [NOTE: while use of the word “image” here suggests only a visual mental construct, this stem also refers to tactile, olfactory, gustatory, aural, interoceptive, or other sensory mental constructs]	Stem 2: (to be) a state/act of imagination; to imagine something (i.e., to form a subjective mental image/narrative about something which does not exist in reality) Stem 3: (to be) a state/act of creativity or being creative; to be creative (i.e., to engage in a mental or physical manipulation of subjective and/or objective reality for the purpose of personal artistic expression or to test/disturb/alter/extend the boundaries of socio-cultural expectations or one’s own psychological expectations)
CTE	(to be) the state of being (only) a mental image/visualization	
CSV	(to be) an act/process of forming/holding a mental image; to visualize	
OBJ	(to be) the mental image itself that one holds/forms in one’s mind, a visualization	

-ŽD- ‘SUPERNATURAL OR SPIRITUAL ENTITY’		
BSC	Stem 1: (to be) a state of being something supernatural (whether substance/presence/entity/being/ability, etc.)	Stem 2: (to be) a state/act of being a ghost or spirit from the afterlife or beyond death (e.g., ghost, spirit, zombie, etc.) Stem 3: (to be) a state/act of being an entity associated with supernatural, magical, spiritual, or a heavenly/infernal realm (e.g., angel, demon, devil, leprechaun, banshee, etc.)
CTE	(to be) a state of having supernatural ability or essence	
CSV	(to be) an act/state created or performed by supernatural means or by a supernatural entity	
OBJ	(to be) a supernatural entity/being/presence	

Note: for ‘god/deity’ see Stem 3 of -BS- ‘RELIGIOUS BELIEF / RELIGION / RELIGIOUS WORSHIP’

-KŠK- ‘FANTASTIC OR IMAGINARY BEING OR CREATURE / MONSTER’		
BSC	Stem 1: (to be) a fantastic or imaginary being/creature	Stem 2: (to be) a monster (i.e., a malevolent and/or hideous terrifying creature) Stem 3: (to be) alien/extraterrestrial being
CTE	(to be) one’s emotional and physical state due to thinking about, seeing, or confronting an imaginary being or creature	
CSV	(to be) an act of seeing/confronting/dealing with an imaginary being or creature	
OBJ	(to be) one who believes in or sees/confronts/deals with an imaginary being/creature	

Note: use the new **IMX** affix shown below with the above root to indicate status as mythological, legendary, fantasy-based, fiction-based, hypothetical, etc.

-cč	IMX Type of Imaginary Existence
1	mythological
2	religion-based / scripture-based
3	legendary (i.e., based on a legend)
4	fantastic (i.e., based in fantasy)
5	fictional (i.e., based on a work of fiction)
6	dreamed (i.e., conjured from or in a dream)
7	made-up, pretend, imagined
8	theoretical / theoretically-speaking
9	hypothetical / hypothetically-speaking

-SML- ‘MAGIC / MIRACLE / SUPERNATURAL / OCCULT’		
BSC	Stem 1: (to be) a state/act/instance of magic, something magical; to be magical, to practice magic [i.e., the supernatural ability to manipulate reality or the semblance thereof in seeming violation of the laws of physics]	Stem 2: (to be) a state/act/instance of thaumaturgy, wonderworking, or miracle-working; to be/constitute/perform a miracle Stem 3: (to be) something supernatural or of the occult, a supernatural/occult phenomenon; do/practice ritual activity based upon a(n assumed) capacity to manipulate reality based on supernatural or occult arts/practices/beliefs
CTE	(to be) the essence/state of magic itself; the supernatural existence of magic as an existential force or art	
CSV	(to be) a physical act/ritual of performing/practicing magic; to do/make/practice magic, to conjure, to perform a ritual of magic	
OBJ	(to be) a product of magic (e.g., a potion, an apparition, the appearance of a spirit or demon, a conjured state of affairs, etc.)	

-SMR- ‘PSYCHIC ABILITY OR PARANORMAL POWER’		
BSC	Stem 1: (to be) a state/act of having/using a psychic power or paranormal psychic ability (e.g., telekinesis, telepathy, levitation, ESP, pyrokinesis, precognition, etc.)	Stem 2: (to be) a paranormal ability/power beyond the normal range of bodily or mental ability (e.g., super strength, X-ray vision, inability to be frozen or burnt, etc.)
CTE	(to be) a state of having/undergoing a psychic/paranormal experience	
CSV	(to be) a physical act of applying/practicing/using one’s paranormal psychic power/ability; to perform an act of using/applying one’s paranormal psychic power/ability	Stem 3: (to be) an act/process of casting a magical spell; to cast a spell
OBJ	(to be) a product of, or a state of affairs resulting from, the use/application/performance of one’s paranormal psychic power/ability	

The list of stems below follow the Specification pattern of the root **-SMR-** above:

- LSML-** Stem 1: mediumship/channeling [i.e., the ability to communicate with spirits]
Stem 2: psychometry/psychoscopy (i.e., ability to obtain information about an entity through touch)
Stem 3: astral projection / mental projection [i.e., ability to voluntarily project the consciousness of an entity outside of its body]
- LSMR-** Stem 1: telekinesis/psychokinesis
Stem 2: pyrokinesis [i.e., ability to start and/or control heat/flame]
Stem 3: automatic writing
- NSML-** Stem 1: precognition/premonition Stem 2: Postcognition/retrocognition Stem 3: remote sensing/telesthesia
- NSMR-** Stem 1: telepathy
Stem 2: energy medicine [i.e., ability to heal with one’s mind]
Stem 3: psychic surgery [i.e., ability to remove disease or disorder within a body via an “energetic” incision that heals immediately afterwards]
- RSML-** Stem 1: levitation/transvection Stem 2: walking on water Stem 3: dowsing
- RSMR-** Stem 1: invisibility
Stem 2: apportion [i.e., ability to perform/undergo materialization, disappearance or teleportation of an object/entity]
Stem 3: ability to pass through solid objects
- ÑSML-** Stem 1: divination (“reading” signs/portents in objects, aeromancy, haruspexy, etc.)
Stem 2: fortune-telling
Stem 3: aeromancy

-ŃĹ- ‘EXISTENCE / REALITY / SOLIPSISM’		
BSC	Stem 1: (to be) something ontologically existent/real; to exist ontologically, be ontologically real (i.e., to exist in reality regardless of anyone’s beliefs, opinions, philosophy, interpretation, societal convention, decree, etc.	Stem 2: (to be) something epistemologically real; to exist epistemologically, be epistemologically real (i.e., to exist based on another entity’s beliefs, opinions, philosophy, interpretation, societal convention, decree, etc.
CTE	(to be) a state of ontological existence; to exist in reality regardless of anyone’s beliefs, opinions, etc.	
CSV	(to be) the physical manifestation of one’s ontological existence *	Stem 3: (to be) one’s own solipsistic existence; to exist solipsistically (i.e., the existence of one’s own psyche as the only ontologically existent entity)
OBJ	(to be) an entity that ontologically exists, an ontologically existent thing/entity/object/party	

*The CSV Specification of this stem is essentially synonymous with the CTE Specification of Stem 1 of the root **-ŠŘ-** ‘SPACETIME / SPACE / PASSAGE OF TIME’.

-LÇ- ‘PSYCHO-SOCIAL IDENTITY’		Affix: SID
BSC	STEM 1: (to be/manifest) one’s psychological identity; to psychologically identify as a particular type of person) — [both the particular gender identity and the psychological state/process of identifying as such]	STEM 2: (to be/manifest) a state/act of realizing/understanding that one’s identity is becoming established or that one’s psycho-social identity is changing or that a suppressed psycho-social identity is surfacing
CTE	(to be) a state of having a psycho-social identity	
CSV	(to be) an act/process/state of psycho-social identification; to (self-)identify as a particular type of person	STEM 3: (to be/manifest) a process of transition / change to a particular psychological identity; to change/transition to a different psychological identity
OBJ	(to be) the particular psycho-social identity one has/seeks	

-NŠ- ‘WELL-MANNERED BEHAVIOR / DECORUM / CIVILITY’		
BSC	Stem 1: (to be) a state/act of being well-behaved; display good behavior, be well-behaved	Stem 2: (to be) a state/act of being well-mannered; display good manners
CTE	(to be) the psychological state which allows/causes one to behave well	
CSV	(to be) a physical act/manifestation of good behavior	Stem 3: (to be) a state of manifesting decorum/civility; have/display a sense of decorum, politeness and civility
OBJ	(to be) the party/entity thought of as / observed to be behaving well	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-NŠW- ‘DIGNITY / POLITENESS / COURTESY / NOBLE-BREEDING’

Stem 1: (to be) a state/act of having/displaying dignity; have dignity, be dignified

Stem 2: (to be) a state/act of being polite/courteous; show politeness/courtesy, be polite/courteous

Stem 3: (to be) a state of being well-bred, noble, distinguished, refined, cultivated, being a person of quality/taste; have/display a noble, distinguished or cultivated air

-MBR- ‘SUCCESS / COMPETITION / WINNING / ACHIEVEMENT’

BSC	Stem 1: (to be) a state/act/process of striving to succeed at something; to strive to succeed at something; to pursue success at something [CPT Version = to succeed]	Stem 2: (to be) a state/act/process of competing to win something; to compete [CPT Version = state/act of winning something; to win something]
CTE	(to be) a state of striving for success [CPT Version = state of success]	
CSV	(to be) a physical act of striving to succeed; to strive to succeed {CPT = succeed}	Stem 3: (to be) a state/act of attempting to achieve something; to work at achieving something [CPT Version = state/act of achievement; to achieve something]
OBJ	(to be) what one is striving to succeed at [CPT Version = what one succeeds at]	

-PG- ‘FOOLING / PSYCHO-LINGUISTIC MANIPULATION / HYPNOSIS’

BSC	Stem 1: (to be) an instance/act of fooling another party (i.e., into believing/doing something);	Stem 2: (to be) an instance/act of “playing games” with someone, i.e., to psychologically manipulate another via words/behavior/actions as a means of temporarily making them feel inferior, sad, confused, etc.; to play games with, to toy with
CTE	(to be) a state of having been fooled	
CSV	(to be) the psychological/linguistic or other means employed by which someone is fooled; to take actions or employ means to fool a party	Stem 3: (to be) an act/state of hypnosis; to hypnotize
OBJ	(to be) the entity/party fooled	

-ŽK- ‘SELF-RIGHTEOUSNESS / SANCTIMONIOUSNESS / HYPOCRISY’

BSC	Stem 1: (to be) a state of being self-righteous/sanctimonious; behave/act self-righteously or sanctimoniously	Stem 2: (to be) a state/act of unctuousness/holier-than-thou behavior; to behave/act/speak unctuously/in a holier-than-thou manner
CTE	(to be) a state of self-righteousness/sanctimoniousness	
CSV	(to be) a physical act of self-righteous/sanctimonious behavior; to behave/speak/act self-righteously or sanctimoniously	Stem 3: (to be) a state/act of hypocrisy; to behave/act hypocritically or as a hypocrite
OBJ	(to be) what one is self-righteous/sanctimonious about	

-ČX- ‘IRRATIONALITY / HYSTERIA / PARANOIA’		
BSC	Stem 1: (to be) a state/act of being irrational; behave/act irrationally	Stem 2: (to be) a state/act of being hysterical and impervious to serenity; to behave/act hysterically Stem 3: (to be) a state/act of being paranoid; behave/act in a paranoid manner
CTE	(to be) a state of irrationality as a character trait; to be chronically irrational	
CSV	(to be) a physical act/manifestation of irrationality; to do/say something irrational	
OBJ	(to be) what one is irrational about	

-TV- ‘INTELLIGENCE / ASTUTENESS / PERSPICACITY’		
BSC	Stem 1: (to be) a state/act of intelligence, demonstrating intelligence; be/act intelligent(ly)	Stem 2: (to be) a state/act of astuteness/quick-wittedness/clever; to be/act astute(ly), quick-witted(ly), clever(ly) Stem 3: (to be) state/act of being farsighted/perceptive/perspicacious; to have foresight about something, to be perceptive/perspicacious
CTE	(to be) a state of intelligence	
CSV	(to be) an act of intelligence; do/say something that demonstrates one’s intelligence	
OBJ	(to be) what one does/says to demonstrate/manifest their intelligence	

-ČP- ‘STUPIDITY / “SHALLOWNESS” ’		
BSC	Stem 1: (to be) a state of being stupid/“dumb”/simple-minded; to be stupid/dumb, act stupidly/simple-mindedly	Stem 2: (to be) a state/act of being non-intellectual, non-conceptual/non-analytical in one’s thinking; to be non-intellectual/non-analytical in one’s thinking Stem 3: (to be) a state of being “shallow”/anti-intellectual; be “shallow”/anti-intellectual, act in a “shallow”/anti-intellectual manner (i.e., unconcerned with or indifferent to intellectual prowess or analytical thinking)
CTE	(to be) a state of stupidity/simple-mindedness	
CSV	(to be) an act of stupidity; do something stupid	
OBJ	(to be) what one is (being) stupid about	

-RS- ‘SINCERITY / HONESTY / GUILLESSNESS’		
BSC	Stem 1: (to be) a state/act of sincerity/personal genuineness; to be sincere/personally genuine	Stem 2: (to be) a state/act of honesty; to be/act honest(ly) (i.e., without deceit, withholding necessary information) Stem 3: (to be) a state/act of guilelessness, being without guile; be/act without guile, to be/act guileless(ly) (i.e., be/act without ulterior motive)
CTE	(to be) a state of sincerity//personal genuineness	
CSV	(to be) an act of sincerity/honesty; to do/say something sincere/genuine	
OBJ	(to be) what one is sincere/genuine about	

-JM- ‘DEGREE OF OPEN-MINDEDNESS / BIGOTRY / ABSOLUTISM’ (use EXN/SUF, etc. affixes)		
BSC	Stem 1: (to be) a degree of open-mindedness vs. narrow-mindedness, willingness to consider new ideas; to manifest a particular degree of open-mindedness	Stem 2: (to be) a degree of one’s capacity to see/consider the world from a relative as opposed to an absolute perspective Stem 3: (to be) a degree of personal prejudice/bigotry
CTE	(to be) a state of having a particular degree of open-mindedness vs. narrow-mindedness	
CSV	(to be) a physical act which manifests a particular degree of open-mindedness vs. narrow-mindedness	
OBJ	(to be) the particular degree of open-mindedness vs. narrow-mindedness	

-TR- ‘RESPECT / ESTEEM / HONOR’		
BSC	Stem 1: (to be) a state of feeling respect/esteem for someone/something	Stem 2: (to be) a state/act of respectability; be respectable/estimable (i.e., having a degree of potential for being respected/esteemed) Stem 3: (to be) a state/act of being honorable; to have honor (i.e., a sense of high regard and great respect given or received based on one’s adherence to actions or principles considered by one’s community/society as right)
CTE	(to be) a state of respect/esteem	
CSV	(to be) an act of respect/esteem; do/say something that conveys/manifests one’s respect for something/someone	
OBJ	(to be) the party/entity respected/esteemed	

-ŽT- ‘MODESTY / HUMILITY’		
BSC	Stem 1: (to be) a state of being modest/humble; to be modest/humble, act modestly/humbly	Stem 2: (to be) a state/act of being demure/reserved; be/act demure(ly)/reserved(ly) Stem 3: (to be) a state of being unassuming/unobtrusive; be/act unassuming(ly)/unob-trusive(ly)
CTE	(to be) a state of humility/modesty	
CSV	(to be) an act of modesty/humility; to do something modest/humble	
OBJ	(to be) what one is modest/humble about	

-ÇF- ‘CIVILITY / PEACEABLENESS’		
BSC	Stem 1: (to be) a state/act of civility; be civil, act civilly (i.e., in accordance with socio-cultural/societal norms and expectations)	Stem 2: (to be) a state/act of conciliation; to be/act in a conciliatory manner
CTE	(to be) a state of peace/civility	
CSV	(to be) a physical act of civility; to do something that constitutes an act of civility or peaceableness	Stem 3: (to be) a state/act of being peaceable, peace-inspiring, non-violent; to be/act peaceably, non-violently
OBJ	(to be) a symbol of peace/civility	

-VSP- ‘CONDONATION / PLACATING / APPEASEMENT / PROPITIATION / CONCILIATION’		
BSC	Stem 1: (to be) a state/act of condoning/forbearance; to condone, to forbear [i.e., refraining from acting against or attempting to stop something (potentially) adverse to one’s interests]	Stem 2: (to be) a state/act of attempting to placate or appease; to attempt to placate, to attempt to appease CPT version = placate, appease
CTE	(to be) a state of condonation, to be a state of something being/having been condoned	
CSV	(to be) a physical act of condoning	Stem 3: (to be) a state/act of propitiating or conciliating; to propitiate, to conciliate [i.e., act to obtain the good will of or be in the good graces of another CPT version = to (re-)gain the favor of someone
OBJ	(to be) what one condones	

-ŘŠ- ‘DIFFIDENCE / SHYNESS / BASHFULNESS / TIMIDITY / TIMOROUSNESS / PUSILLANIMITY / COWARDICE’		
BSC	STEM 1: (be) an act/instance of diffidence/shyness/bashfulness; to act/ behave diffidently/shyly/bashfully; to be diffident/shy/bashful/timidly (i.e., lacking self-confidence to the point of being incapable of self-assertiveness or behaving/communicating in a straightforward manner)	STEM 2: (be) an act/instance of timidity/timorousness, i.e., being/feeling easily frightened by everyday occurrences and interactions
CTE	(be) a diffident/shy/bashful person, have a modest character/personality	
CSV	(be) an appearance of diffidence/shyness/bashfulness, i.e., to behave/act as (if) one who is	STEM 3: (be) an act/instance of pusillanimity/cowardice/faint-heartedness
OBJ	(be) a person whom others generally perceive as being diffident/shy/bashful	

-CJ- ‘SMUGNESS / CONCEIT / FOPPISHNESS’		
BSC	Stem 1: (to be) a state/act of being conceited, full of oneself; be conceited, act conceitedly	Stem 2: (to be) a state/act of smugness; to be smug, act smugly
CTE	(to be) a state of conceit	
CSV	(to be) an act of conceited behavior; do/say something conceited	Stem 3: (to be) a state/act of being prim, foppish, priggish; be/act prim(ly), foppish(ly), priggish(ly)
OBJ	(to be) what one is smug/conceited about	

-FL- ‘POMPOSITY / PRETENSION / OSTENTATIOUSNESS / BRAGGADOCCIO / BOASTING / ONE-UPMANSHIP’		
BSC	Stem 1: (to be) a state/act of pomposity/ostentation/pretentiousness; be/act pompous(ly)/ostentatious(ly)/pretentious(ly)	Stem 2: (to be) an act of bragging/boasting; to brag/boast about something Stem 3: (to be) an act of one-upmanship; to one-up (i.e., do/say something to another with the intent to impress upon them that one’s own story/experience/feat, etc. is better or more impressive than theirs)
CTE	(to be) a state of ostentatiousness/pomposity/pretentiousness	
CSV	(to be) an act of ostentatiousness/pomposity/pretentiousness; do/say something ostentatious/pretentious/pompous	
OBJ	(to be) what one is being pompous/pretentious/ostentatious about	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RFL- ‘VAINGLORIOUSNESS / MEGALOMANIA / SELF-AGGRANDIZEMENT’	
Stem 1: (to be) a state of vaingloriousness; be/act vainglorious(ly)	
Stem 2: (to be) a state megalomania; be/act megalomaniacal(ly)	
Stem 3: (to be) a state self-aggrandizement; to self-aggrandize	

-ZČ- ‘SELF-CONCERN / SELFISHNESS / SELF-CENTEREDNESS’		
BSC	Stem 1: (to be) a state/act of being self-centered and inconsiderate of the state of others	Stem 2: (to be) a state of state of being selfish (as a negative, i.e., where one’s being considerate of others would not constitute altruism or self-sacrifice) Stem 3: (to be) a state/act of being self-indulgent and whim-worshipping at the expense of others
CTE	(to be) a state of self-centeredness as a psychological character trait	
CSV	(to be) a physical act of self-centered behavior; to behave in a self-centered manner or do something self-centered(ly)	
OBJ	(to be) one’s sense of self-interest without consideration/concern for others or the negative consequences to oneself or others caused by one’s self-concern	

-ṬḖ- ‘SELF-INTEREST / INDIVIDUALITY / INTEGRITY’		
NOTE: This root reflects self-interest as a virtue, in that it implies egoism not at the expense of others nor interference with others’ rights. This root should be distinguished from -ṢḖ- “selfishness/self-centeredness” above which implies negative traits which potentially affect others adversely.		
BSC	Stem 1: (to be) a state of being egoistic [NOT ‘egotistical’]; concerned with one’s self-interest (but not at the expense of other’s rights); to be egoistic [NOT ‘egotistical’]	Stem 2: (to be) a state of being individualistic; pursuing of one’s own rationally-conceived goals to one’s own benefit and implicitly to the benefit of others (or at least without harming them) Stem 3: (to be) a state of having personal integrity, i.e., adherence to one’s own values in the face of real-life circumstances
CTE	(to be) a psychological state of awareness of one’s own self-interest	
CSV	(to be) an act of egoism/self-interest [NOT ‘egotism’]	
OBJ	(to be) one’s (sense of) self-interest	

-ṢḖ- ‘HEEDLESSNESS / IMPETUOSITY / IMPRUDENCE / INDISCRETION / TEMERITY / FOOLHARDINESS / RASHNESS’		
BSC	Stem 1: (to be) a state/act of heedlessness/impetuosity; be/act heedlessly/impetuously [i.e., without giving thought to the (potential) consequences of one’s action/behavior]	Stem 2: (to be) a state/act of imprudence/indiscretion; be act imprudently/indiscreetly (i.e., without concern for the (potential) consequences of one’s action/behavior) Stem 3: (to be) a state of temerity/recklessness/rashness/foolhardiness; be/act in a reckless/rash/foolhardy manner (i.e., without proper concern for and/or realization of the adverse, or even dangerous consequences of one’s action/behavior)
CTE	(to be) a psychological state of being heedless/impetuous	
CSV	(to be) a physical act that is heedless/impetuous	
OBJ	(to be) the expected/normative state of affairs, situation, event or act that should/would occur or exist if not for the heedless/impetuous act	

-ṢḖ- ‘ARROGANCE / HAUGHTINESS / INSOLENCE’		
BSC	Stem 1: (to be) a state/act of arrogant behavior; be arrogant, display arrogance [i.e., behavior consistent with a belief that one is physically or intellectually superior to another]	Stem 2: (to be) a state/act of haughtiness; be haughty, display haughtiness [i.e., behavior consistent with a belief that one is socially/morally superior to another] Stem 3: (to be) a state/act of insolence/impudence; be insolent/impudent, display insolence/impudence [i.e., behavior that is disrespectful toward and/or heedless of the authority of another]
CTE	(to be) a psychological state/trait of arrogance	
CSV	(to be) a physical act of arrogant behavior; to do something considered arrogant	
OBJ	(to be) the party toward whom one is arrogant	

-PŠX - ‘CONDESCENSION / PATRONIZING BEHAVIOR / “BABY-ING” ’		
BSC	Stem 1: (to be) a state/act of condescending behavior toward another; be condescending toward another, display condescension [i.e., behavior toward another as if they are stupid/ignorant/incompetent]	Stem 2: (to be) a state/act of patronizing behavior toward another; be patronizing toward another [i.e., behavior toward another as if they are child-like, immature, incapable of understanding/learning] Stem 3: (to be) a state/act of “babying” or “fussing” or “coddling” over another as if they are helpless; to “baby” another, “fuss” over another as if they are helpless
CTE	(to be) a psychological state/trait of condescension	
CSV	(to be) a physical act of condescending behavior; to do/say something considered condescending	
OBJ	(to be) the party toward whom one is condescending	

-ŇZ- ‘EMOTIONALISM / WHIM-WORSHIPING / MYSTICISM’		
BSC	Stem 1: (to be) a state of being emotion-driven and controlled by melodrama in one’s daily life decisions, as opposed to relying on reason	Stem 2: (to be) a state of being whim-driven in one’s daily life decisions, as opposed to relying on reason or long-range analysis of one’s self-interest Stem 3: (to be) a state of relying on mysticism and anti-rational superstitions and supernatural forces as a basis for one’s life decisions, as opposed to relying on reason
CTE	(to be) the underlying psychological nature/essence of a person who is an emotionalist (as opposed to one who bases their life upon dispassionate reason)	
CSV	(to be) an act of emotion-driven decision-making	
OBJ	(to be) a decision made based on emotions as opposed to reason	

-ŘY- ‘DEGREE OF CAPACITY FOR EMOTION’		
BSC	Stem 1: (to be) a degree of emotional/intellectual engagement or interest vs. degree of boredom	Stem 2: (to be) a degree of emotional engagement/involvement or devotion vs. emotional detachment or noncommittedness Stem 3: (to be) a degree of capacity for or depth of emotional engagement/involvement or interest vs. emotional shallowness or lack of emotional development
CTE	(to be) the actual emotional/intellectual feeling of experiencing a particular degree of emotional/intellectual engagement or interest	
CSV	(to be) the physical manifestation (or lack thereof) of a particular degree of emotional/intellectual engagement or interest	
OBJ	(to be) what one feels a particular degree of emotional/intellectual engagement or interest (or not)	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-ŘNY- ‘DEGREE OF EMOTIONAL/INTELLECTUAL FULFILLMENT/STABILITY/OPENNESS’	
Stem 1:	(to be) a degree of emotional/intellectual fulfillment vs. emotional emptiness/hollowness
Stem 2:	(to be) a degree of emotional/intellectual stability vs. instability
Stem 3:	(to be) a degree of emotional openness or “being in touch” with one’s emotions vs. degree of emotional repression

-KH- ‘DEGREE OF SUBTLETY / NUANCE / CUNNING / GUILLE / STEALTH / INSIDIOUSNESS’		Affix: SBT (use SUF/EXN/EXD, etc.)
BSC	STEM 1: (to be/manifest a) degree of subtlety/nuance (= slight but meaningful variation in appearance/manifestation/color/sound, etc.) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of cunning / guile (= subtlety/nuance in terms of wordplay/behavior/actions, etc. with intention to manipulate a situation)
CTE	(to be) something with a degree of subtlety/nuance	
CSV	(to be) a degree of subtlety/nuance	STEM 3: (to be/manifest a) degree of stealth/insidiousness (= attempt to manipulate/act in an unseen/hidden/discreet manner for (quasi-)nefarious purposes)
OBJ	(to be) an entity/party impacted/affected by one’s degree of subtlety/nuance	

-XṬ- ‘DEGREE OF CONCERN / CARE / INDIFFERENCE / NEGLECT’		Affix: CNC (use SUF/EXN/EXD, etc.)
BSC	STEM 1: (to be/manifest a) degree of concern for — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of care for, degree to which one looks after / takes care of / has responsibility for the care or oversight of
CTE	(to be) something with a degree of concern for	
CSV	(to be) a degree of concern for	STEM 3: (to be/manifest a) degree of vigilance, watchfulness, surveillance
OBJ	(to be) an entity/party impacted/affected by one’s degree of concern for	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RXṬ- ‘DEGREE OF EMPATHY / NURTURING / PROTECTION’		(use SUF/EXN/EXD, etc.)
Stem 1:	(to be/have a) degree of empathy for	
Stem 2:	(to be/have a) degree to which one nurses / nurtures / provides for / has responsibility for the health and well-being of	
Stem 3:	(to be/have a) degree to which one protects/guards something (= protection via watchfulness/vigilance)	

-ŘH- ‘DEGREE OF TRUSTWORTHINESS / RELIABILITY / DEPENDENCY’		Affix: TRS (use SUF/EXN/EXD, etc.)
BSC	STEM 1: (to be/manifest a) degree of trust(worthiness) (= extent of one’s belief in another party’s steadfastness/reliability/loyalty/sturdiness, etc.) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of reliance upon; degree to which one must rely on the aid/help/resources/energy, etc. of another
CTE	(to be) something with a degree of trust(worthiness)	
CSV	(to be) a degree of trust(worthiness)	
OBJ	(to be) an entity/party impacted/affected by one’s degree of trust(worthiness)	STEM 3: (to be/manifest a) degree of dependency upon; degree to which one’s status/identity/nature/essence/form, etc. is determined by another

-FS- ‘WAITING / READINESS / PREPAREDNESS’		Affix: ATI (use SUF/EXN/EXD, etc.)
BSC	STEM 1: (to be in) a state of awaiting; to wait for, to await	STEM 2: (to be in a) state of readiness / preparedness for an anticipated / expected occurrence / phenomenon
CTE	(to be) something in a state of awaiting something	
CSV	(to be) a state of awaiting something	STEM 3: (to be in a) state of readiness / preparedness in case of an unexpected / unpredictable occurrence / phenomenon
OBJ	(to be) an entity/party impacted/affected by one’s a state of awaiting something	

NOTE: For the emotional aspect(s) of anticipation/expectation, see the emotion roots **-NTK-**, **-NŘ-**, and Stem 2 of **-VVZ-**.

-CB- ‘MOTIVE / INTENTION / GOAL / INCENTIVE / STIMULUS’		Affix: RSN
BSC	Stem 1: (to be/manifest) a motive / reason why — [both the psychological/epistemological state of having a motive and its content]	Stem 2: (to be/manifest) a purpose/intention/goal/aim; to aim to/for Stem 3: (to be/manifest) an incentive/stimulus
CTE	(to be) the psychological/epistemological state of having a motive/reason	
CSV	(to be) an act based upon or driven by one’s motive; to act based on a motive	
OBJ	(to be) a party/entity that embodies/represents a motive / reason why	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RCB- ‘PRINCIPLE / BASIS / ASPIRATION / WILL’		
BSC	STEM 1: (to be) a principle (moral or ontological) / grounds / basis; be/have a principle / be/have grounds / be/have a basis for something	STEM 2: (to be) an aspiration / “dream” ; to aspire, to “dream” STEM 3: (to be) one’s (free) will; to follow one’s will
CTE	(to be) a state of there being a principle or grounds	
CSV	(to be) an act based upon or driven by a principle; to act based on a principle	
OBJ	(to be) a party/entity that embodies/represents a (moral or ontological) principle/grounds/basis	

-DH- ‘DEGREE OF DIRECTNESS / FRANKNESS / OBVIOUSNESS’ Affix: DRC (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of directness/plain-spokenness/bluntness/candor/frankness (= easy to interpret/understand/see) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of obviousness / blatancy / be “glaring” (= inability to avoid noticing) STEM 3: (to be/manifest a) degree of straight-forwardness, simplicity, matter-of-factness (= absence of guile / trickery / chicanery)
CTE	(to be) something with a degree of directness/plain-spokenness/bluntness/candor/frankness	
CSV	(to be) a degree of directness/plain-spokenness/bluntness/candor/frankness	
OBJ	(to be) an entity/party impacted/affected by one’s degree of directness/plain-spokenness/bluntness/candor/frankness	

-BY- ‘COMMON-SENSE / PRUDENCE / WISDOM’		
BSC	Stem 1: (to be) a state/act of having common sense; use common sense	Stem 2: (to be) a state of being prudent/circumspect/discerning Stem 3: (to be) a state of being wise/sagacious based on keen analysis and introspection regarding one’s experiences and longterm observations
CTE	(to be) the feeling/subjective experience of having common sense; to experience the feeling of knowing one is using common sense	
CSV	(to be) a physical manifestation (i.e., actions, words) of using common sense	
OBJ	(to be) the particular situation/dilemma/event/state requiring the use/application of common sense	

-RBY- ‘PRACTICALITY / PRAGMATISM’		
BSC	Stem 1: (to be) a state/act of being practical, exercising practicality; be practical, exercise practicality	Stem 2: (to be) a state of being pragmatic; be pragmatic, exercise pragmatism (i.e., practicality out of necessity, choosing and pursuing a course of action based on weighing the impact or consequences of various alternatives) Stem 3: (to be) a state of being driven by value-based analysis; to choose and/or pursue a course of action based on a cost-benefit analysis where the outcome delivers the most value relative to the cost or consequences
CTE	(to be) the feeling/subjective experience of being practical; to experience the feeling of knowing one is being practical	
CSV	(to be) a physical manifestation of practicality; to do something practical or that demonstrates practicality	
OBJ	(to be) the particular situation/dilemma/event/state requiring the use/application of practicality, what one is being practical about	

-ŠBY- ‘INSIGHT / ASTUTENESS’		
BSC	Stem 1: (to be) a state/act/instance of being insightful about something, having insight about something; to be insightful about something, to have insight about something (i.e., able to make subtle and correct inferences about a situation or party)	Stem 2: (to be) a state/act/instance of being astute about something; be astute about something, (i.e., able to see/understand something clearly about something that is obscure/hidden/unobserved to/by others) Stem 3: (to be) a state/act/instance of “seeing through” something or someone; to “see through” something or someone, for something/someone to be transparent to one (i.e., to perceive/understand the true nature/purpose behind a façade/guise/ruse)
CTE	(to be) the feeling/subjective experience of being insightful or having insight; to experience the feeling of knowing one is being insightful or having insight	
CSV	(to be) a physical manifestation of; to do something practical or that demonstrates	
OBJ	(to be) what one is insightful about	

-MŠ- ‘COURAGE / BRAVERY / VALOR’		
BSC	Stem 1: (to be) a state of being brave, undaunted by dangerous situation at hand; to be brave	Stem 2: (to be) a state of being courageous/intrepid; have courage Stem 3: (to be) a state of being valorous/gallant/bold; act with valor/gallantry/boldness
CTE	(to be) the psychological state of being brave	
CSV	(to be) a physical act/manifestation of bravery; do something brave	
OBJ	(to be) that which one is brave against or undaunted by	

-KJ- ‘“TOUGHNESS” / RESILIENCY’		
BSC	Stem 1: (to be) a state of “toughness” or perseverance; to be “tough” or perseverant (i.e., having the ability to withstand an adverse situation without significant harm to oneself)	Stem 2: (to be) a state of personal resiliency; to be personally resilient (i.e., able to quickly recover from an adverse situation) Stem 3: (to be) a state of “anti-fragility”; to be “anti-fragile” (i.e., not only able to recover from and deal with an adverse situation, but to learn from it so as to be able to handle or deal with such situations in the future more easily)
CTE	(to be) the psychological state of being tough	
CSV	(to be) the physical manifestation of one’s toughness	
OBJ	(to be) that which one is tough against	

-ŽŽ- ‘NOSINESS’		
BSC	Stem 1: (to be) a state/act of nosiness; be nosy, “poke one’s nose” into another’s business [to allow curiosity to cause one to attempt to find or learn something that is not one’s business]	Stem 2: (to be) an act of prying; to pry (i.e., to persistently attempt to discover another’s secrets or learn about another’s private affairs) Stem 3: (to be) an act of interfering or “butting in” where/when one is not wanted or where/when inappropriate
CTE	(to be) a state of nosiness as a character trait	
CSV	(to be) a physical act of being nosy (i.e., what actions and/or words one employs that constitute an act of nosiness)	
OBJ	(to be) that which one discovers or attempts to discover while being nosy	

-JF- ‘VACILLATION / WISHY-WASHINESS / INDECISIVENESS / FLAKINESS / UNRELIABILITY / FICKLENESS’		
BSC	Stem 1: (to be) a state/act of vacillation/wishy-washiness/indecisiveness; to vacillate, be/act indecisively	Stem 2: (to be) a state/act of being fickle, changing one’s mind for no apparent/good reason; to be fickle, act in a fickle manner, be changing one’s mind for no reason Stem 3: (to be) a state/act of flakiness/unreliability; be flaky/unreliable, act in a flaky/unreliable manner
CTE	(to be) a state of wishy-washiness/indecisiveness as a character trait	
CSV	(to be) a physical act/instance of vacillating or being wishy-washy/indecisive; to do/say something that demonstrates/manifests vacillation/wishy-washiness/indecisiveness	
OBJ	(to be) that which one is vacillating over or indecisive/wishy-washy about	

-ŠR- ‘MOOD / TEMPERAMENT / COUNTENANCE / BEHAVIOR / DEMEANOR’		
BSC	Stem 1: (to be) one’s mood; to be in a particular mood [i.e., one’s temperament in a given/specific situation or temporary context]	Stem 2: (to be) one’s behavior; to behave in a certain way [i.e., how one acts/behaves in a given/specific situation or context] Stem 3: (to be) one’s (emotional) temperament/countenance/demeanor [i.e., how one behaves in general in regard to one’s mood or emotional reaction to situations]
CTE	(to be) what one feels mentally/emotional when one is in a particular mood	
CSV	(to be) an act or behavioral manifestation associated with a particular mood	
OBJ	(to be) a [particular] mood	

-ŽM- ‘OUTLOOK-ON-LIFE / SENSE-OF-LIFE / PERSONAL VALUE / CHARACTER’		
BSC	Stem 1: (to be) one’s sense-of-life, one’s outlook-on-life [i.e., one’s underlying subjective attitude toward life and the world in relation to oneself]	Stem 2: (to be) one’s personal value(s) [i.e., what one seeks to uphold, obtain, preserve, pursue, keep in furtherance of maintaining and living one’s life the way one desires or in the way one believes one’s life should be lived] Stem 3: (to be) one’s character [i.e., the combination of one’s temperament, values, sense-of-life, and life-stance]
CTE	(to be) an underlying (moral/ethical/pragmatic/religious, etc.) principle by which one forms one’s sense-of-life	
CSV	(to be) one’s life-stance [i.e., one’s subjective idea(s) on how to go about living life based on one’s sense-of-life]	
OBJ	(to be) that which reflects or demonstrates one’s sense-of-life or life-stance.	

-ŠŦ- ‘RECOGNITION/CONSIDERATION OF ANOTHER’S PERSPECTIVE’		
BSC	Stem 1: (to be) an instance of seeing/understanding another party’s perspective or point of view; recognize a difference of values/perspective/point of view between oneself and another party	Stem 2: (to be) an instance of recognizing an opportunity for a potential “win-win” situation due to being able to see/understand another party’s perspective or point of view Stem 3: (to be) an instance of recognizing the value of, or necessity for, compromise [i.e., recognize the potential for a “lose-lose” situation otherwise]; to recognize the value/necessity of compromise
CTE	(to be) one’s consideration of another party’s perspective; to consider another party’s perspective or point of view	
CSV	(to be) an instance of (attempting to) understand(ing) another party’s perspective or point of view [use CPT version to indicate success]	
OBJ	(to be) the perspective or point of view of another party; how another party views/understands a situation	

NOTE: The above root is used with the EMO affix to create the equivalent of Ithkuil-2011’s (in)famous word ‘*aštal*’.

-XTL- ‘SETTLING FOR / COMPROMISE / CONCESSION / RESIGNATION’		
BSC	Stem 1: (to be) an act/state/instance of settling for/on something as “middle-ground” or “good enough” solution or compromise; to (assent to a) compromise, to reconcile opposing views/constraints/issues by giving up some of one’s demands	Stem 2: (to be) an act/state/instance of conceding one’s position/viewpoint/stance regarding a situation, allowing an opponent’s or antagonist’s position to prevail as a means of compromise or to avoid further hostilities/stress
CTE	(to be) a compromise or solution/situation one settles for; to do what constitutes a compromise	
CSV	(to be) an act of settling for/compromising; to do something which constitutes settling for or compromising	Stem 3: (to be) an act/state/instance of giving up, resigning, walking away from a situation because one recognizes one’s position is hopeless or unwinnable
OBJ	(to be) the situation/entity one compromises about	

This root is also used as the new **ARBITRARY (ARB) Bias Affix**: ‘..Yeah, whatever...’, ‘...Ah, what the hell, I’m going ahead and....’

-JT- ‘FAMILIARITY / CUSTOM / TRADITION’		
BSC	Stem 1: (to be) something/someone with which one feels familiar, something/someone with which one is well-acquainted or well-versed	Stem 2: (to be) something which is customary; something to which people (in a community/culture/society) are naturally accustomed Stem 3: (to be) something which is traditional; something which people (in a community/culture/society) feel is a practice/artifact/manifestation of their historical/cultural ties to each other
CTE	(to be) a sense of familiarity; to feel a sense of familiarity/being acquainted with or well-versed in	
CSV	(to be) an instance/act of familiarity; to demonstrate/manifest one’s sense of familiarity with something/someone	
OBJ	(to be) the party or object one is familiar with or well-versed in	

-ZZ- EFFRONTERY / APPALL / AGHAST		
BSC	Stem 1: (to be) an act/instance of someone committing an act of effrontery to another	Stem 2: (to be) an act/instance of something/someone being appalling to another
CTE	(to be) an instance of feeling effronted; to be subject to someone’s effrontery	
CSV	(to be) a physical act/instance of effrontery	Stem 3: (to be) an act/instance of something/someone being ghastly to another; to cause another to be aghast
OBJ	(to be) something/someone who affronts or commits an act of effrontery	

	-LZP- ‘IRONIC FORTUITOUSNESS / DRAMATIC IRONY’	
BSC	Stem 1: (be) a situation in which one believes/assumes/expects something to be true or believes/assumes/expects something will happen, but in fact it is not true or does not happen, however, the non-existence or non-occurrence of the expectation/assumption turns out to be fortuitous or at least does not have the negative consequences that were/would have been anticipated.	Stem 2: (be) a seemingly adverse/undesirable/harmful situation/event whose outcome/aftermath ironically leaves the participant in a better/improved/beneficial state that is ultimately interpreted as “having been worth” the pain/suffering/turmoil/distress undergone. Stem 3: (be) a situation/event constituting a case of dramatic irony (i.e., where an audience or uninvolved third party has knowledge/awareness of information of importance to another party who is ignorant of that information).
CTE	(be) the psychological state/reaction by a party subject to the type of irony described by the BSC Specification	
CSV	(be) the physical/tangible acts/events constituting a situation involving the type of irony described by the BSC Specification	
OBJ	(be) the party/entity/situation/circumstance at the focal point of an anticipated but ultimately unrealized outcome, whose non-occurrence does not have the adverse impact/consequences one would have expected.	

This root is also used as the **FORTUITOUS (FOR) Bias affix:** = *‘It’s just as well that...’* or *‘All’s well that ends well...’*

	-ŠŠČ- ‘COINCIDENCE’	
BSC	Stem 1: (be) a coincidence, i.e., a situation in which a seemingly separate/unrelated but similar, parallel, corollary, or quasi-identical situation also occurs/exists at (approximately) the same time or place; to coincide	Stem 2: (be) a coincidence temporally-speaking (i.e., occurring at the same approximate time) Stem 3: (be) a coincidence, spatially-speaking (i.e., occurring in the same approximate place)
CTE	(be) the psychological impact of perceiving a coincidence	
CSV	(be) the physical/tangible circumstances constituting what makes an event/occurrence/state/act perceivable as being a coincidence	
OBJ	(be) a party/entity/object that is involved in, or is the focal point of, a coincidence	

Morphological Derivatives: serendipity, good timing, bad timing, bad luck, fortuitousness, be fortuitous

This root is also used as the **COINCIDENTAL (COI) Bias affix:** = *“What a coincidence!”*

-LF- ‘DEGREE OF LUCK/FORTUNE/FATE/CHANCE/PROBABILITY’ Associated Affix: LCK (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of luck/fortune (= unpredictable circumstances/outcome/event based on non-random or quasi-predictable input/circumstances) [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of fate/chance (= unpredictable circumstances/outcome/event based on unpredictable or random input/circumstances) STEM 3: (to be/manifest a) degree of probability; the “odds” (= quasi-predictable circumstances/outcome based on statistical probability)
CTE	(to be) a state of having/experiencing a particular degree of luck/fortune, be (un)lucky to a certain degree	
CSV	(to be) a degree of luck/fortune; to manifest a degree of luck/fortune	
OBJ	(to be) something with a degree of luck/fortune	

This root is also used as the **ACCIDENTAL (ACC) Bias Affix:** ‘*As luck would have it...*’ ‘*Fate has decided that...*’ ‘*What luck!*’

-MLL- ‘IRONIC RELIEF / IRONIC SURPRISE’ (Specification pattern for this root follows that of the Emotion roots)
Stem 1: feel(ing of) ironic surprise + relief + exasperation that an expected/anticipated adverse or detrimental state/event/outcome has not, in fact, occurred (the exasperation being due to a feeling of having either embarrassed oneself and/or feeling one has wasted one’s time and emotional energy fretting about the situation)
Stem 2: feel(ing of) negative astonishment (i.e., astonishment at perceiving/experiencing/discovering something awful/sad/horrible/devastating/terrible, etc.)
Stem 3: feel(ing of) negative wonder (i.e., a sense of dread-based wonder and awe at the power/formidableness of something awful/sad/horrible/devastating/terrible, etc.)

This root is also used as the **PROFITIOUS (PPT) Bias Affix:** — ‘*it’s a wonder that*’ as in *It’s a wonder he didn’t break a bone in that fall.*

-LLH- ‘UNEXPECTED/EXASPERATED BEWILDERMENT’ (Specification pattern for this root follows that of the Emotion roots)
Stem 1: feel(ing of) exasperated bewilderment, an “Huh?” feeling consisting of exasperation due to a situation/event/outcome turning out to be utterly different than expected/anticipated and utterly bewildering.
Stem 2: feel(ing of) angry surprise, a “What the hell?!” feeling due to a situation/event/outcome turning out to be utterly different than expected/anticipated and utterly enraging, disgusting or offensive
Stem 3: feel(ing of) feeling of emotional shock and not knowing what to do/say, due to a situation/event/outcome turning out to be utterly different than expected/anticipated and utterly outrageous/shocking.

This root is also used as the **PERPLEXIVE (PPX) Bias Affix:** — sudden angry bewilderment, as in ‘*Huh? What do you mean...? What the hell? You gotta be kidding me!*’

-NNT- ‘SINGLE-MINDEDNESS / PRESUMPTUOUSNESS / NARROW-MINDEDNESS’		
BSC	Stem 1: (be) an instance of single-mindedness, i.e., having one’s mental focus on one thing to the seeming exclusion of all other considerations or influences	Stem 2: (be) an instance of presumptuousness; having pre-conceived notion/idea before (or without) considering evidence to the contrary Stem 3: (be) an instance of narrow-mindedness; imperviousness to differing points of view; unable to consider any viewpoint
CTE	(be) the feeling/state of being single-minded	
CSV	(be) the actions/words or physical manifestation associated with being single-minded	
OBJ	(be) the idea/ /opinion/belief/event/act/state that one is single-minded about	

This root is also used as the **PRESUMPTIVE (PSM) Bias Affix**: *‘It can only mean one thing...,’ ‘and that’s that!’ ‘and that’s all there is to it!’ or ‘There’s no two ways about it,...’*

-MMŽ- ‘IRONY / SARCASM’		
BSC	Stem 1: (be) an instance of situational irony, i.e., an act/event/state/situation whose circumstances are different from (or opposite to) what is expected/assumed/appropriate	Stem 2: (be) an instance of verbal irony, i.e., a use of words to connote something other than their literal interpretation Stem 3: (be) an instance of sarcasm; say something sarcastic *
CTE	(be) a state of irony caused by or arising from an act/event/state/situation	
CSV	(be) the physical/tangible aspects/circumstances that constitute an instance of irony	
OBJ	(be) the focal point or source of an instance of irony	

* this stem can be used with the EMO affix to name various emotions associated with giving/receiving sarcasm

This root is also used as the **IRONIC (IRO) Bias affix**: *“Oh, nice!” “Just great!” “Well, now, isn’t this lovely!”*

-ŘS- ‘DEGREE OF ACCEPTANCE/TOLERANCE/CONSENT/PERMISSION/APPROVAL/AGREEMENT’		Affix: CNS
BSC	Stem 1: (to be/manifest a) degree of acceptance/tolerance, “being okay with something” [both the state of acceptance and that which is accepted]	Stem 2: (to be/manifest a) degree of assent/consent (= granting of informal permission) Stem 3: (to be/manifest a) degree of agreement/concurrence/accordance with
CTE	(to be) a state of acceptability/being accepted	
CSV	(to be) the physical act/state of accepting or being okay with	
OBJ	(to be) that which one accepts/tolerates or is okay with	

This root is also used as the **APPROBATIVE (APB) Bias Affix**: *‘(That’s) OK’ ‘(That’s) alright’ ‘(That’s) good’ ‘(That’s) fine’ ‘Very well’ ‘Sure’*

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-ŘSW- ‘PERMISSION / AFFIRMATION / CONFIRMATION / APPROVAL / ENDORSEMENT’		
BSC	STEM 1: (to be) a granting of permission; granting license to; to permit	STEM 2: (to be) a state/act of affirming/confirming or formally recognizing something; an affirmation/confirmation/formal recognition; to affirm, confirm, formally recognize
CTE	(to be) a state of something being/happening by permission	
CSV	(to be) an act of granting permission; to give/grant permission	
OBJ	(to be) what is permitted, what is allowed to be/happen by permission	STEM 3: (to be) a state/act of approval/endorsement; to approve, endorse

-ḐM- ‘BLUFF / TRICK / DELUDE / DISGUISE’		
BSC	Stem 1: (to be) a state/act of bluffing, misleading, feinting; to bluff, mislead, feint	Stem 2: (to be) a state/act of trickery; to trick, to delude Stem 3: (to be) a state/act of disguising something or oneself; to disguise
CTE	(to be) a state of being bluffed or misled	
CSV	(to be) an act of bluffing, misleading; to do something that constitutes a bluff or feint	
OBJ	(to be) a the entity/party being bluffed or misled	

NOTE: This root lends itself to use with the EMO affix.

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RḐM- ‘DECEPTION / CHEAT / SWINDLING’	
Stem 1: a state/act of deception/deceit or duplicity; to deceive	
Stem 2: a state/act of cheating; to cheat	
Stem 3: a state/act of chicanery, swindling; to swindle	

-ŘF- ‘FOOLING / LEGERDEMAIN / “MAGIC” TRICK’		
BSC	Stem 1: (be) an act of fooling/duping someone [i.e., causing someone to appear/act foolishly or be perceived as naive/gullible for having fallen for a deception]; to fool, to dupe someone	Stem 2: (be) an act of legerdemain; perpetrate an act of legerdemain [i.e., an informal or circumstantial trick to give someone the illusion that something has occurred which in fact has not]
CTE	(be) a state of being a fool or dupe; to play the fool or dupe	
CSV	(be) the physical act of fooling/duping; to say/do what constitutes an act of fooling/duping	
OBJ	(be) the party being fooled or duped	Stem 3: (be) an act of “magic”; a magic trick [i.e., a formally created illusion for the purposes of entertainment]

-PJ- ‘JUSTIFICATION / VINDICATION / EXHONERATION’		
BSC	Stem 1: (be) state/act of justification; to justify (i.e., to present an evidential/intellectual basis explaining the reason/necessity behind one’s actions)	Stem 2: (be) a state/act of vindication (i.e., being proved correct/right after the fact) Stem 3: (be) a state/act of exoneration/acquittal
CTE	(be) a state of being justified (in one’s actions/state/behavior)	
CSV	(be) a physical act of justification; do/say something that justifies one’s actions/state/behavior	
OBJ	(be) the state/act/situation/behavior one is justifying	

-ḐN- ‘LYING / DUPLICITY / DISHONESTY / PERJURY’		
BSC	Stem 1: (be) an act/instance of lying; tell a lie; state a falsehood	Stem 2: (be) state/act of dishonesty/disingenuousness Stem 3: (be) perjury
CTE	(be) the state of being lied to; the state of there being a lie having been told	
CSV	(be) the actual speaking/writing/communicating of words which constitutes a lie	
OBJ	(be) that which is the reason for (i.e., the pre-existing state giving rise to the need for) telling a lie	

NOTE: This root lends itself to use with the EMO affix.

-ČL- ‘BETRAYAL / DEVIOUSNESS / UNDERHANDEDNESS’		
BSC	Stem 1: (be) an act/instance of breaking/betraying one’s oath/promise/trust in/to someone/something; to break/betray one’s oath/promise/trust in/to someone/something	Stem 2: (be) an act/instance of deviousness/underhandedness; to do something devious or underhanded (i.e., act secretly without others knowing or in a manner which will be perceived to be innocent when in fact it is not) Stem 3: (be) an act/instance of going behind one’s back; an act of deception based on playing on one’s trust; to go behind one’s back, to deceive another by playing on their trust in you
CTE	(be) the state of having been betrayed	
CSV	(be) the act/words/deed which constitutes a betrayal of one’s promise/oath/trust	
OBJ	(be) the promise/oath or terms/understanding/bond which is betrayed/broken	

NOTE: This root lends itself to use with the EMO affix.

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RČĽ- ‘TREACHERY / PERFIDY / INFIDELITY / TREASON’	
Stem 1: (be) an act of treachery, perfidy	
Stem 2: (be) an act/instance of infidelity	
Stem 3: (be) an act of treason	

-RŽ- ‘REVENGE / VENGEANCE / VINDICTIVENESS’		
BSC	Stem 1: (be) state/act of revenge/vengeance; to avenge, take/get revenge	Stem 2: (be) a state/act of retaliation Stem 3: (be) a state/act of vindictiveness (i.e., a desire for revenge)
CTE	(be) a state of desire for revenge	
CSV	(be) a physical act of taking one’s revenge; to do something that takes revenge on someone for something, perpetrate an act of vengeance	
OBJ	(be) what one is avenging, what one is taking revenge for	

NOTE: This root lends itself to use with the EMO affix.

-ÇÇT- ‘CONTEMPLATION OF MORTALITY’		
BSC	Stem 1: (be) an instance of contemplating one’s mortality; realize/contemplate that one is going to die someday and that there is nothing one can do about it	Stem 2: (be) an instance of contemplating whether one’s life has any ultimate or lasting meaning or purpose Stem 3: (be) an instance of contemplating whether there is an afterlife
CTE	(be) the state of contemplation about one’s mortality	
CSV	(be) a specific thought associated with contemplating one’s mortality	
OBJ	(be) the state of being dead / no longer being alive (as the focus of one’s contemplation) [does not mean ‘death’ as in the actual act/process of dying, i.e., transitioning from life into death’]	

NOTE: This root lends itself to use with the EMO affix.

-SL- ‘FAUX PAS’

BSC	Stem 1: (be) an instance of committing a social faux pas	Stem 2: (be) an instance of being aware that one has committed a social faux pas Stem 3: (be) an instance of not presuming to speak or act upon one’s own opinion/viewpoint due one’s awareness of the potential for committing a social faux pas
CTE	(be) the state one finds oneself in socially (i.e., as perceived/judged by others) once one commits a social faux pas	
CSV	(be) the actual act/word(s) constituting a social faux pas	
OBJ	(be) the object/party/entity which constitutes the focal point of a faux pas*	

NOTE: This root lends itself to use with the EMO affix.

* Translating the OBJECTIVE specification for this stem depends upon the nature of the faux pas, specifically as to whether it signifies the person committing the faux pas or whether the ‘impropriety’ is due to a third-party object/person/entity. For example, if the faux pas consists of something inappropriate being said, the OBJ would refer to the person saying the words (since the words themselves would be indicated by the CSV Specification), whereas if the faux pas consists of using the wrong fork or wearing an inappropriate tie, then it would be the fork or the tie marked by OBJ. This should be distinguished from the CSV Specification, which in these examples would not signify the fork or the tie themselves, but rather the incorrect use of the fork or the inappropriateness of wearing the tie.

-ŽŽ- ‘TEASE / RIDICULE / SNICKERING / SNIGGERING / SCOFFING’

BSC	Stem 1: (be) an act/instance of teasing; to tease (i.e., make light-hearted embarrassment of someone for the sake of humor/fun or mild come-uppance)	Stem 2: (be) an act/instance of ridicule, making fun of; to ridicule, make fun of Stem 3: (be) a state/act of snickering/sniggering/scoffing at; to snigger/snickers/coff at
CTE	(be) the state of being teased	
CSV	(be) the actual act/word(s) constituting an act of teasing; to do/say something that teases another	
OBJ	(be) what one is teased about	

NOTE: This root lends itself to use with the EMO affix.

NOTE: the meaning of the old FORMAL and FORMAL stems previously associated with this root have been distributed between this and the following new root:

-ŘŘ- ‘DERISION / MOCKERY / PARODY / SATIRE / LAMPOONING’

Stem 1:	a state/act of derision/mockery; to deride, be derisive of, to mock
Stem 2:	a state/act of parody or caricature; to parody, to make a caricature of
Stem 3:	a state/act of satire/lamprooning; to satirize, lampoon

-TŠ- ‘INTROSPECTIVE CONTEMPLATION / ETHICAL WELL-BEING AND GROWTH		
BSC	Stem 1: (be) a state of deep personal introspection, contemplation, deliberation or meditation resulting in important personal decisions/conclusions being made	Stem 2: (be) a state/act of ethical maturation/growth (i.e., becoming more ethically enlightened based on the acquiring of wisdom and empathy) Stem 3: (be) a state/act of discovering that achieving a long-awaited vengeance/vindication is hollow/meaningless due to personal ethical maturation or present irrelevance of the original circumstances
CTE	(be) meditative, contemplative state of deep introspection	
CSV	(be) a state/act of contemplation/introspection/deep personal reflection; to undergo such a state/act	
OBJ	(be) what one contemplates, introspects upon, or deliberates	

NOTE: This root lends itself to use with the EMO affix.

-JD- ‘PREDICAMENT / QUANDARY / CRISIS / DILEMMA’		
BSC	Stem 1: (be) a state/act of having/facing/being in a predicament/quandary; be in or have/face a predicament/quandary, be in a “spot/jam/fix/pickle” (i.e., being involved in or having to deal with an unexpected negative situation)	Stem 2: (be) a state/act of having/facing/being in a crisis Stem 3: (be) a state/act of having/facing/being in a dilemma
CTE	(be) a state of being unable to know what to do or how to escape a predicament	
CSV	(be) a state/act of doing something that creates/causes a predicament; to do something to cause/create a predicament	
OBJ	(be) the predicament itself, i.e., the (set of) circumstance(s)/situation which constitutes an unexpected and undesirable situation	

NOTE: This root lends itself to use with the EMO affix.

-LY- ‘WITNESSING’		
BSC	Stem 1: (be) a state/act of being a witness to something; to witness something (visually and/or aurally)	Stem 2: (be) a state/act of witnessing something one wishes they hadn’t; to witness something negatively consequential, witness something one wishes they hadn’t witnessed Stem 3: (be) a state/act of witnessing something inappropriate or taboo; to witness something one shouldn’t or isn’t supposed to witness
CTE	(be) a state of having witnessed something	
CSV	(be) a state/act of doing something that causes one to witness something	
OBJ	(be) what one witnesses or has witnessed	

NOTE: This root lends itself to use with the EMO affix.

-ĽPH- ‘CONTEMPLATION OF THE WORLD’S COMPLEXITY OR ABSURDITY’		
BSC	Stem 1: (be) a state/act of contemplating/realizing just how little of the world and all its available experiences and people you will ever get to experience or meet	Stem 2: (be) a state/act of suddenly realizing that absolute strangers/passersby are living lives as full and complex as yours are have opinions, beliefs, values, feelings as strong as yours
CTE	(be) the state of unimaginable complexity itself that constitutes the nature of the world and its inhabitants	
CSV	(be) a state/act of contemplating such; to contemplate such	
OBJ	(be) the realizations/sense of understanding one comes to in contemplating such	Stem 3: (be) a state/act of contemplating the ubiquity of the small everyday absurdities of life, especially those that are human-made (e.g., overkill technology, useless social customs, ridiculous fashions, etc.)

NOTE: This root lends itself to use with the EMO affix.

-ČŘ- ‘HINDSIGHT’		
BSC	Stem 1: (be) a state/act of having hindsight about something; to have hindsight about something (i.e., to have a perspective/viewpoint on something via contemplation about it after the fact)	Stem 2: (be) a state/act of discovering in hindsight that one’s risk-avoidance or over-cautiousness was needless and has only succeeded in creating a lost opportunity; to discover such in hindsight
CTE	(be) a state of hindsight	
CSV	(be) a state/act of contemplating something in hindsight; to contemplate/ponder/consider something in hindsight	
OBJ	(be) what one has (or engages in) hindsight about	Stem 3: (be) a state/act of discovering in hindsight that a well-intentioned act has backfired due to having unintended/unforeseen consequences more harmful than if nothing had been done at all; to discover such in hindsight

NOTE: This root lends itself to use with the EMO affix.

The following root follows the same Specification pattern as the root **-ČŘ-** above:

-ŘL- ‘MISTAKE DISCOVERED THROUGH HINDSIGHT’	
Stem 1: (to be) a state/act of changing one’s mind after the consequences of one’s previous choice/opinion/belief have already occurred	
Stem 2: (to be) a state/act of discovering one has misread/misinterpreted/misjudged someone/something after having already acted on one’s initial interpretation/judgement	
Stem 3: (to be) a state/act of finally understanding a previously confusing/complex situation but only after it’s too late	

NOTE: This root lends itself to use with the EMO affix.

-SKY- [meaning explained below]		
<p>(to experience/feel/live by) a striving for (and, if achieved, the serenity resulting from) a delicate but sustained balance of the following personal states/ideals:</p> <ul style="list-style-type: none"> • a calm appreciation for, and acceptance of, those aspects of one's life/existence that cannot be controlled/avoided (e.g., death, pain, loss, misfortune, etc.), due to understanding that such things are necessary to have a true appreciation for the value of life's joys; • being able to identify/recognize opportunities to improve one's chances for happiness/achievement/self-esteem and having the willingness and determination to pursue such opportunities as long as doing so causes no harm to others or to Nature; • a deep appreciation and sense of wonder at the beauty and majesty of Nature; • a deep appreciation and sense of pride in those achievements of humankind that have brought happiness, prosperity and well-being to people's lives, while at the same time having a keen ability to distinguish the difference between those achievements which have truly benefited humankind versus those seeming achievements which are ultimately divisive, alienating, anxiety-causing or destructive in the long-term; • a sense of personal reward, pride, and personal sanction (i.e., a feeling that one's existence is justified) when experiencing joy in one's life; • joy from, and humble appreciation for, the giving and receiving of love to/from others; • humbleness in understanding that one's own joy and sense of personal sanction/reward for achieving one's goals/desires is a private, personal matter not to be used arrogantly as a weapon against the self-esteem of other people. 		
BSC	STEM 1: (to be) the outlook-on-life as described above, including the mental/emotional experience thereof as well as its associated beliefs/thoughts/tenets	<p>STEM 2: (to be) the outlook-on-life described above as the basis for one's public face/persona, i.e., personal relationships, business dealings, negotiating principles, politics, public expression, etc.</p> <p>STEM 3: (to be) the outlook-on-life described above as an aesthetic principle or basis for artistic self-expression</p>
CTE	(to be) the mental/emotional experience associated with the "life-stance" described above	
CSV	(to be) a belief/tenet associated with the outlook-on-life described above	
OBJ	(to be) a tangible praxis/behavior/activity/act associated with the outlook-on-life as described above	

-NKR- 'ONE'S SURROUNDINGS/ENVIRONMENT/SPACE/LOCALE/HOME / "THE WORLD" '		
BSC	Stem 1: (to be) one's surroundings/environment/space/locale/home (i.e., one's current quasi-permanent location as it relates to the interaction between oneself and one's environment	<p>Stem 2: (to be) one's personal situation/circumstances as it/they relate to, or are determined by, one's location/locale/surroundings/environment/locale/home</p> <p>Stem 3: (to be) "the World" (i.e., one's sense of their being an external reality/universe in which one lives and with which one interacts); to have/experience a sense of one's place in the World, one's niche, how/where one "fits in" to the grand scheme of things</p>
CTE	(to be) the state one is in due to one's environment/surroundings	
CSV	(to be) a physical interaction with one's environment/surroundings; to interact with one's environment/surroundings/home/locale	
OBJ	(to be) an object/entity directly associated with one's surroundings/environment/space/locale/home	

-MGR- ‘ZONE / HABITAT / ENVIRONMENTAL NICHE’		
BSC	Stem 1: (to be) a zone; to be within or inhabiting a zone [i.e., a physical area or volume identified by or associated with a specific purpose or (set of) attribute(s)/characteristic(s)]	Stem 2: (to be) a habitat; to be within or inhabiting a habitat (i.e., a zone identified as being the natural living environment for (a) particular (community of) life-form(s)) Stem 3: (to be) an environmental niche; to be within an environmental niche (i.e., a complementary set of naturally occurring environmental parameters such as climate, latitude, terrain, soil types, sources of food and water, etc., that supports and sustains various flora and fauna)
CTE	(to be) a defining attribute/characteristic or purpose of a zone	
CSV	(to be) the physically bounded space/volume comprising a zone	
OBJ	(to be) a party within or inhabiting a zone	

-LTM- ‘SOCIAL INTERACTION / SOCIETAL NORM / SOCIAL RESPONSIBILITY/ MEMBER OF SOCIETY’		
BSC	Stem 1: (to be) a state/act/process of social interaction; to socially interact (i.e., for a member of a social group or society to interact/deal with/engage with another member or other members of the group or society)	Stem 2: (to be) a state/act/process of having/meeting one’s social responsibilities; to have/meet one’s social responsibilities (e.g., to abide by the law, behave well toward one’s neighbors, adhere to social norms and societal expectations, etc.) Stem 3: (to be) a member of a social group or society; to do one’s part or participate (as expected/appropriate) in one’s social group or society
CTE	(to be) the sense of community and reciprocal responsibilities one feels and upholds and adheres to (or is expected to do so) as a member of a social group or society	
CSV	(to be) a physical act of interacting/dealing /engaging with another member or other members of a social group or one’s society	
OBJ	(to be) a societal norm, a societal custom (i.e., an expected behavior/act or adherence to a rule/law/custom which demonstrates one’s place and role in a social group or society)	

-ÇTL- ‘TRADITION / CUSTOM / RITUAL / CEREMONY’		
BSC	Stem 1: (to be) a state of there being something (considered) time-honored or traditional; to adhere to or engage in some traditional or time-honored practice	Stem 2: (to be) a state of there being something (considered) customary; to adhere to or engage in a custom(ary practice) Stem 3: (to be) a state of there being a ritual/ceremony; to practice or engage in a ritual/ceremony
CTE	(to be) a state/feeling of or belief in tradition	
CSV	(to be) an act of engaging in a traditional practice; to do something traditional, do something out of tradition	
OBJ	(to be) an object/entity utilized as part of a traditional practice	

-TKL- ‘SETTING / PLACE / SITE / VENUE’ *		
BSC	Stem 1: (to be) a state of being/functioning as the setting for something that exists or takes place	Stem 2: (to be) an assigned/allocated space/setting/area/room, etc. for something to be situated or to take place, the assigned/allocated site of/for something; to assign/allocate a space/setting/area/room, etc. for something
CTE	(to be) a physical setting, a physical place * (i.e., the physical 3-dimensional space involved along with any infrastructure/ building structure/boundary walls, and demarcated space/seating for persons/observers/participants, etc.)	
CSV	(to be) a state/act of something existing or taking place/occurring at a particular physical place or in a particular physical setting; to exist or occur at a particular physical place or physical setting	Stem 3: (to be) a venue/theater/hall/arena/stadium/gathering place for an assembly or public event or private/public entertainment or exhibition
OBJ	(to be) what takes place at, exists at, or distinguishes a particular place/setting from anywhere else	

* This root does not refer to the geographical location or spatial position of something relative to a system of spatial coordinates, but rather refers to the setting in and of itself where something exists or takes place (as distinguished from anywhere else).

-VTW- ‘RESTRICTED ACCESS / AUTHORIZED ENTRY / FARE / TICKET’		
BSC	Stem 1: (to be) a state/act/process of restricting/controlling access/entry/admission to an area/event/assembly/school, etc.; to restrict/control access/entry/admission to something	Stem 2: (to be) a state/act/process of charging an admission fare for an entry ticket to a venue/event
CTE	(to be) a state of there being restrictions/controls in allowing access/entry/admission to something	
CSV	(to be) a physical act of restricting/control access/entry/admission to something; to restrict/control; to carry out access-control procedures at an entry gate, border crossing, venue entrance, admissions counter, etc.	Stem 3: (to be) a state/act/process of charging a fare or fee for the use of some public/commercial utility or service (e.g., transportation fare, bridge toll, poll tax, customs duty, trash disposal, water delivery, etc.)
OBJ	(to be) a document or other tangible (and potentially verifiable) indicator/credentials that one may enter/be admitted to a restricted-access area/event/assembly/school, etc.	

-LTY- ‘ILLUSTRATION / VISUAL DEPICTION / VISUAL DESIGN / VISUAL MODEL’		
BSC	Stem 1: (be) an act/instance of drawing or painting or producing (e.g., via electronic means or photography) a 2-dimensional visual image or visual representation of something	Stem 2: (be) an act/instance of manually-manipulated creating a visual design (via manually-manipulated means)
CTE	(be) what is depicted/illustrated in a drawing or painting or 2-D image/representation	
CSV	(be) the physical act of creating a drawing or painting or 2-dimensional visual image or representation/illustration; to draw, to paint, to produce a 2-dimensional visual representation	Stem 3: (be) an instance of crafting a 3-dimensional visual representation/model of something
OBJ	(be) the medium utilized to create a drawing or painting or 2-D image/representation	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-LY- ‘VISUAL ARTWORK / ARTISTIC DESIGN / WORK OF SCULPTURE’		
BSC	STEM 1: (to be) an act/instance of creating a work of visual art (e.g., a painting, a watercolor, a fine drawing, an etching, etc.)	STEM 2: (to be) an act/instance of creating an visual design/image/picture/pattern for aesthetic purposes (e.g., a textile design, a wallpaper pattern, a design for a font, a visual representation of something, etc.)
CTE	(be) what is depicted/illustrated in a work of visual art	
CSV	(be) the physical act of creating a work of visual art	
OBJ	(be) the medium utilized to create a work of visual art	STEM 3: (to be) an act/instance of creating a work of sculpture

-ZD- ‘FORESIGHT / PREDICTION / PROGNOSTICATION’		
BSC	Stem 1: (to be) a state/act of foresight; to foresee	Stem 2: (to be) a state/act of prediction; to predict Stem 3: (to be) a state/act of forecasting/prognostication; to forecast/prognosticate
CTE	(to be) a state of (having) foresight	
CSV	(to be) an act of foresight; to do something that manifests foresight or one’s ability to foresee	
OBJ	(to be) what one foresees	

-LQP- ‘BOREDOM / TEDIUM / INSIPIDITY’		
BSC	Stem 1: (be) something boring (based on inactivity) which causes one to feel languor or torpidity; to be bored by something boring	Stem 2: (be) something tedious (based on mindless repetition or drudgery) causing one’s mind to wander or be inattentive Stem 3: (be) something insipid, dull, jejune, or uninteresting, which fails to inspire any positive emotional reaction or interest
CTE	(be) a state of experiencing boredom; be bored	
CSV	(be) physical/tangible aspects/characteristics of a party/entity/object/event/situation that is boring	
OBJ	(be) what is boring, i.e., the party/entity/object/event/situation that is the source of the boredom	

This root is also used as the **INSIPID (ISP) Bias Affix:** — ‘Meh... (said due to lack of interest)’ ‘How boring/tedious/dull!’

-DÇ- ‘RETIREMENT / SENESCENCE / DOTAGE / SENILITY’		
BSC	Stem 1: (to be) a state/process/act of retirement/stepping down, being retired; to retire, to step down from one’s role, to be retired [i.e., no longer working or active in one’s primary or professional role]	Stem 2: (to be in) a state of senescence, old-age; to be old in age and physical/mental condition, to be senescent Stem 3: (to be in) one’s dotage; to be a dotard, to be senile/doddering
CTE	(to be) a state of retirement; being retired	
CSV	(to be) a physical act/process of retiring, stepping down from one’s role	
OBJ	(to be) the role/work/job/function from which one retires or is retired	

4.4 COMPLEMENTARY INTERPERSONAL RELATIONSHIPS/INTERACTIONS

This section deals with roots/stem indicating complementary two-party interpersonal interaction, where a “primary” or “alpha” party is, does, performs, offers, or initiates some state, act, service, etc. which is directed toward, received, dealt with, undergone, submitted to, reacted to, or acted upon by a “secondary” or “beta” party (whether or not intentionally or consensually), the overall nature of the interaction being complementary in nature (i.e., the state/act/service does not take place or is not accomplished without the presence/participation/submission/receipt, etc. of the secondary party).

-LÇL- ‘COMPLEMENTARY INTERPERSONAL RELATIONSHIP OR INTERACTION’		
BSC	Stem 1: (be) a complementary interpersonal relationship or interaction (i.e., where one party is, does, performs, offers, or initiates some state, act, service, etc. which is directed toward, received, dealt with, undergone, submitted to, acted upon, or reacted to, by a “secondary” or “beta” party)	Stem 2: (be) the state/act/situation initiated, performed, offered, or undergone by the “alpha” or “primary” party of a complementary interpersonal relationship or interaction Stem 3: (be) the state/act/situation received, submitted to, dealt with, solicited or undergone by the “beta” or “secondary” party of a complementary interpersonal relationship or interaction
CTE	(be) a state of a complementary interpersonal relationship or interaction taking place or having taken place	
CSV	(be) the physical act of engaging in the specifics of a complementary interpersonal relationship or interaction	
OBJ	(be) a party engaged in a complementary interpersonal relationship or interaction	

Roots delineating the various sorts of such complementary interpersonal relationships or interactions are listed below. The Stem & Specification structure/pattern of each root is modeled after the above root **-LÇL-**. As an example, the root for the ‘PREDATION ~ PREY’ complementary interaction is given below:

-NTN- ‘PREDATION ↔ PREY’			
	Stem 1	Stem 2	Stem 3
BSC	(to be) a state/act of [attempted] predation upon a prey and the prey’s attempt to flee or defend itself	(to be) a state/act of stalking a prey; to stalk prey, to prey upon another [CPT = to attack a prey]	(to be) a state/act of being stalked or preyed upon; to be stalked or preyed upon; [CPT = to fall victim as prey to a predator]
CTE	(to be) a state of a predation (i.e., the “nature” of the predator/prey relationship)	(to be) a state of being a predator	(to be) a state of being prey
CSV	(to be) the physical act of predation by a predator and defensive act of its (potential) prey	(to be) the physical act of stalking/attacking prey; to engage in preying upon another	(to be) the physical act of fleeing or defending oneself from a predator
OBJ	(to be) a party to a predator~prey relationship	(to be) a predator	(to be) a predator’s prey

-VKY- ‘LEADING/BEING A LEADER/DIRECTOR (i.e.,one who takes charge of a situation and commands/directs) ↔ BEING A FOLLOWER’

-DDW- ‘BEING A SAGE/GURU ↔ BEING A DISCIPLE’

-DDY- ‘TEACHING ↔ BEING A STUDENT/PUPIL

-JBV- ‘LENDING ↔ BORROWING’

-JBR- ‘OFFERING OR GRANTING OF CREDIT ↔ OWE; BEING IN & PAYING OFF DEBT’

-SXW- ‘COMMISSION/PERPETRATION OF A CRIME ↔ BEING CRIMINALLY VICTIMIZED’

-TNW- ‘PROCESS OF JAILING/INCARCERATION ↔ BEING IMPRISONED/INCARCERATED’

-TNY- ‘ENSLAVEMENT ↔ BEING ENSLAVED’

-BŠT- ‘BEING A PRIEST/MINISTER/IMAM/RABBI, ETC. ↔ BEING A RELIGIOUS FOLLOWER/ACOLYTE/RELIGIOUS DISCIPLE’

-VSW- ‘PERFORMING ARTS PERFORMANCE ↔ ATTENDING/VIEWING AN ARTISTIC PERFORMANCE’

-VSY- ‘VISUAL ARTS EXHIBITION ↔ ATTENDING/VIEWING A VISUAL ARTS EXHIBITION’

-VSM- ‘AUTHORSHIP OF A WRITTEN WORK ↔ BEING A READER THEREOF’

-VSN- ‘COMPOSERSHIP OF A MUSICAL COMPOSITION ↔ BEING A LISTENER THEREOF’

-NSF- ‘BEING A PUBLIC CELEBRITY ↔ BEING A FAN’

-ŘDM- ‘BEING A PHYSICIAN/MEDICAL DOCTOR/HEALER/MEDICINEMAN/MEDICINWOMAN ↔ BEING A MEDICAL PATIENT’

-SCW- ‘CONDUCTING AN INTERVIEW ↔ BEING INTERVIEWED’

-SČW- ‘CONDUCTING AN INTERROGATION ↔ BEING INTERROGATED’

-ZJ- ‘INTIMIDATION ↔ BEING INTIMIDATED/DAUNTED’

-ZXM- ‘MAKING A THREAT/THREATENING ↔ BEING THREATENED/’

-ZXX- ‘HARASSMENT (NON-SEXUAL) ↔ BEING HARASSED’

- ~~Z~~XL- 'MENACE ↔ FACING A MENACE'
- ~~Z~~XR- 'BULLYING ↔ BEING BULLIED'
- ~~N~~TŘ- 'NAGGING/BROWBEATING ↔ BEING NAGGED/BROWBEATEN'
- ~~K~~ŠY- 'CLAIRVOYANCE/BEING PSYCHIC ↔ SEEKING/RECEIVING THE SERVICES THEREOF'
- RXN- 'BEING A MAGE/WIZARD/WITCH ↔ SEEKING/RECEIVING THE SERVICES THEREOF'
- ZGW- 'BEING A MATCHMAKER ↔ BEING A PARTY MATCHED OR "SET UP" BY A MATCHMAKER'
- LXM- 'BEING A SUPERVISOR/BOSS ↔ BEING AN UNDERLING'
- LXN- 'BEING AN EMPLOYER ↔ BEING AN EMPLOYEE'
- ~~D~~DY- 'BEING A COMMISSIONING PATRON ↔ BEING A COMMISSIONED ARTIST OR ARTISAN'
- LT- 'BEING AUTARCH/AUTOCRAT/RULER ↔ BEING A SUBJECT'
- BŠK- 'BEING AN ORATOR/SPEECHMAKER ↔ BEING AN AUDIENCE MEMBER'
- FKR- 'BEING AN IDOL ↔ BEING A SYCOPHANT'
- NTM- 'BEING A MASTER ↔ BEING A SERVANT'
- MPL- 'ADVICE/COUNSEL ↔ SEEKING/RECEIVING ADVICE/COUNSEL'
- ŠTH- 'BEING A LAWYER/ATTORNEY/LEGAL ADVOCATE ↔ SEEKING/RECEIVING THE SERVICES THEREOF'
- BŠP- 'BEING A GOVERNMENT OFFICIAL/AUTHORITY ↔ BEING A PETITIONER/APPLICANT/SUPPLICANT'
- ČXL- 'OWNING A PET ↔ BEING A PET'
- PPS- 'CRITICISM ↔ RECEIVING CRITICISM'
- STM- 'PSYCHOLOGICAL/RHETORICAL MANIPULATION ↔ BEING PSYCHOLOGICALLY/RHETORICALLY MANIPULATED'
- ~~L~~KR- 'CONSIDERATION OF FORGIVENESS ↔ SOLICITING FORGIVENESS/PENANCE'
- ~~L~~GW- 'GRANTING OF EXCUSE OR PARDON ↔ REQUESTING TO BE EXCUSED OR PARDONED'
- ~~L~~GY- 'CONSIDERATION OF AMNESTY/ABSOLUTION/INDEMNIFICATION ↔ SOLICITING AMNESTY/ABSOLUTION/INDEMNIFICATION'
- NST- 'INVADER/MILITARY OCCUPYING PARTY ↔ PARTY INVADED / INVADEE'

4.5 SENSORY PHENOMENA

-ŠK- ‘EXTERNAL SENSATION / EXTERNAL SENSORY PERCEPTION’ * Associated affix: SNX		
BSC	Stem 1: (to be/manifest) a sense/sensation [act of sensing + sensation itself]; an act of sensing something — [both the sensation and the sensing thereof]	Stem 2: (to be) a sensory organ Stem 3: (to be a) a sensory faculty; a bodily sense
CTE	(to be) a sensation, feeling, sensory input	
CSV	(to be) an act of sensing; to sense; to engage one’s sense(s); perceive via one’s sense(s)	
OBJ	(to be) the entity/event/object one applies/aims one’s senses at or which is the stimulus for one’s sensory state	

* Does not include proprioceptive, interoceptive, or vestibular senses

NOTE: the meaning of the old FORMAL stems previously associated with this root can be expressed by the following: for Stems 1 and 3, use appropriate Transrelative case marking for the arguments/participants; for Stem 2, utilize the MEC affix.

-ŇJ- ‘AWARENESS’		
BSC	STEM 1: (to be) an act of noticing something; to notice; take note of	STEM 2: (to be) an act of being aware of something; the awareness of something STEM 3: (to be) an act of keeping/bearing something in mind; to have in the back of one’s mind
CTE	(to be) the ability/capacity to notice something	
CSV	(to be) the physical/mental process of (an act of) noticing something	
OBJ	(to be) what one notices	

This root is also used as the **ATTENTIVE (ATE) Bias Affix:** ‘Well, whaddya know...’ ‘Well, will you look at that...!’ ‘Well, go figure...’ ‘Who would’ve thought...?’ ‘Well I’ll be!’

-MGR- ‘INTEROCEPTION’		
BSC	Stem 1: (to be) an interoceptive sensation and the sensing thereof [act of sensing + sensation itself]; an act of interoceptively sensing something — [both the sensation and the sensing thereof]	Stem 2: (to be) one of the body’s potentially interoceptive organs/structures/tissues Stem 3: (to be) the interoceptive faculty; the sense of interoception
CTE	(to be) an interoceptive sensation, interoceptive feeling	
CSV	(to be) an act of interoception; to sense interoceptively; to perceive via one’s interoceptive sense(s)	
OBJ	(to be) the organ/bodily system/process which gives rise to an interoceptive sensation	

NOTE: the meaning of the old FORMAL stems previously associated with this root can be expressed by the following: for Stems 1 and 3, use appropriate Transrelative case marking for the arguments/participants; for Stem 2, utilize the MEC affix.

-LVŘ- ‘PROPRIOCEPTION / KINAESTHESIA’ i.e., physical sense of bodily movement, position, and coordination		
BSC	Stem 1: (to be) an proprioceptive sensation and the sensing thereof [act of sensing + sensation itself]; an act of proprioceptively sensing something — [both the sensation and the sensing thereof]	Stem 2: (to be) one of the body’s proprioceptive organs/structures/tissues, i.e., muscle, joint, tendon. Stem 3: (to be) the proprioceptive/kinaesthetic faculty; the sense of proprioception/kinaesthesia
CTE	(to be) an proprioceptive sensation, proprioceptive feeling, feeling of bodily motor coordination	
CSV	(to be) an act of proprioception; to sense proprioceptively; to perceive via one’s proprioceptive sense(s)	
OBJ	(to be) an organ/bodily system/process which gives rise to an proprioceptive sensation, i.e., muscle, joint, tendon.	

NOTE: the meaning of the old FORMAL stems previously associated with this root can be expressed by the following: for Stems 1 and 3, use appropriate Transrelative case marking for the arguments/participants; for Stem 2, utilize the MEC affix.

-NDR- ‘VESTIBULAR SENSATION’ i.e., physical sense of bodily balance and spatial orientation		
BSC	Stem 1: (to be) a vestibular sensation and the sensing thereof [act of sensing + sensation itself]; an act of sensing one’s balance and spatial orientation — [both the sensation and the sensing thereof]	Stem 2: (to be) one of the body’s vestibular organs/structures/tissues Stem 3: (to be) the vestibular faculty; the sense of balance and spatial orientation
CTE	(to be) one’s feeling of physical balance and spatial orientation	
CSV	(to be) an act of vestibular sensation; to perceive one’s feeling of balance and spatial orientation	
OBJ	(to be) an organ/bodily system/process which gives rise to a vestibular sensation, i.e., inner ear organelle(s).	

NOTE: the meaning of the old FORMAL stems previously associated with this root can be expressed by the following: for Stems 1 and 3, use appropriate Transrelative case marking for the arguments/participants; for Stem 2, utilize the MEC affix.

4.5.1 Auditory/Aural Sense

-C- ‘HEAR(ING) / SOUND’		
BSC	Stem 1: (to be) a sound and the hearing thereof [act of hearing + sound heard]; an act of hearing something — [both the sound and the hearing thereof]	Stem 2: (to be) an inner ear (i.e., the organ(s)/tissue(s) responsible for generating aural signals to the brain) Stem 3: (to be) one’s aural faculty; one’s sense of hearing
CTE	(to be) a sound; something heard	
CSV	(to be) an act of hearing; to hear; to use one’s aural faculty	
OBJ	(to be) the entity/event/object whose sound(s) one hears	

NOTE: the meaning of the old FORMAL stems previously associated with the above root can be expressed by the following: for Stems 1 and 3, use appropriate Transrelative case marking for the arguments/participants; for Stem 2, utilize the MEC affix.

4.5.1.1 Various Types of Sounds

NOTE: Particular attention should be paid to the use of Phase categories when using the following roots, as well as various qualitative affixes, e.g., the word for a “crackling” sound would be derived from stem referring to a more basic single sound such as “pop” or “snap”, “rattle” would be derived from “click” or “clack”, while “jingling/tinkling” would be derived from “clank” or “ping/ding/ring” (or perhaps the incorporation of one into the other).

-BJ- ‘SOUND OF A BANG / BOOM / SUDDEN EXPLOSIVE SOUND’		
	STEM 1	STEM 2: (be) a state/instance of hearing a boom (i.e., a low-pitched bang/explosive sound) STEM 3: (be) a state/instance of hearing an explosion (e.g., detonation of a bomb, an explosion of an engine or large powerful machine, etc.)
BSC	(be) a state/instance of hearing a banging sound; a sound of a bang(ing), / sharp explosive sound (e.g., automobile engine backfiring, gunshot, etc.), including the circumstance(s) creating the sound and the hearing thereof.	
CTE	(be) the sound of a bang	
CSV	(be) the act/state of hearing a bang(ing sound); to hear a banging sound	
OBJ	(be) the entity or circumstances creating a banging sound	

The following sixteen roots/stems for various types of sound have Specification patterns modeled after the above root **-BJ-**.

-GP- ‘SOUND OF A CLAP / SNAP / CRACK’	
Stem 1	clap / slap (e.g., sound of hand clap or a hand slap onto a flat surface)
Stem 2	snap(ping) (e.g., finger snap, bone breaking, twig being stepped on, sudden burst of sparks from a wood fire, etc.)
Stem 3	crack (e.g., large tree branch snapping, thunderclap, sudden cracking of a machine block, etc.)

-DP- ‘SOUND OF A KNOCK / THUMP / SMACK’	
Stem 1	sound of a knock (i.e., sound of a light impact between solid objects)
Stem 2	sound of a thump (i.e., sound of a light impact between semi-solid objects)
Stem 3	sound of a smack (i.e., sound of a forceful impact between semi-solid objects)

	-ÇĞ- ‘SOUND OF A CRUNCH / SLAM / CRASH’
Stem 1	sound of a crunch / scrunch / grinding sound (e.g., something being pulverized/crushed, hard cookie being eaten, junked automobile being mechanically crushed, etc.)
Stem 2	sound of a slam (i.e., sound of a forceful impact between solid objects)
Stem 3	sound of a crash

	-ZŇ- ‘SOUND OF A CLINK / CLANK / CLACK’
Stem 1	sound of a clink (e.g., sound of a wineglass being lightly struck or “light” metallic striking sound, etc.)
Stem 2	sound of a clank(ing) (e.g., something metallic striking a hard surface)
Stem 3	sound of a clack (i.e., a higher-pitched knock between solid objects, e.g., of passing train wheels on a track)

	-ŽP- ‘SOUND OF A THUD / CLUNK / POP’
Stem 1	sound of a thud
Stem 2	sound of a pop
Stem 3	sound of a clunk / kerplunk

	-ĽT- ‘SOUND OF TICKING / CLICKING / TAPPING’
Stem 1	sound of a tick(ing)
Stem 2	sound of a click(ing)
Stem 3	sound of a tap(ping)

	-ÇŦ- ‘SOUND OF A HISS / WIND HOWLING / WHISTLE’
Stem 1	sound of a hiss
Stem 2	sound of wind blowing/howling
Stem 3	sound of whistle (i.e., the sound of air under pressure/constriction, e.g., high wind, a teapot, a person whistling [the sound, not the melody])

	-ŘZ- ‘SOUND OF A LOW HUM / WHIR / RUMBLE’
Stem 1	sound of a low hum / drone (e.g., an electrical or electronic device, a power line, etc.)
Stem 2	sound of a whir(ring) (i.e., continuous sound of light machinery in operation, e.g., an electric fan, an electric blender, a dentist’s drill, etc.)
Stem 3	sound of a rumble (e.g., of an idling engine, of a distant thunderstorm, etc.)

	-ŽD- ‘SOUND OF A ZAP / BUZZ / BEEP / PING’
Stem 1	sound of a zap / buzz (i.e., a low-oscillating sound which becomes the word “buzz” under duration, e.g., a bee flying, a door buzzer, a “wrong answer” signal on a TV game show, etc.)
Stem 2	sound of a beep / bleep (i.e., a high-pitched buzz)
Stem 3	sound of a ping / ding

	-ŘL- ‘SOUND OF CREAKING / SQUISHING / SQUELCHING / TEARING’
Stem 1	sound of a creak (e.g., walls of old wooden house shifting, old floorboards being walked upon, etc.)
Stem 2	sound of squishing / squelching (i.e., a sound of something “liquidy” or gelatinous being squeezed or crushed)
Stem 3	sound of a tearing/ripping (e.g., of paper, cardboard, fabric, etc.)

	-ŽB- ‘SOUND OF RINGING / CHIMING / CLANGING’
Stem 1	sound of a ring (e.g., of a small bell)
Stem 2	sound of a chime (e.g., of a bell)
Stem 3	sound of a clang (e.g., of a large bell)

	-LB- ‘SOUND OF FIZZING / GURGLING / BUBBLING / SPLASHING’
Stem 1	sound of fizzing (e.g., sound of a carbonated beverage or effervescent liquid)
Stem 2	sound of babbling / gurgling / boiling / bubbling sound
Stem 3	sound of a splash

	-ŠL- ‘SOUND OF RUSHING / WHOOSHING / SWISHING’
Stem 1	sound of rushing / swirling / whooshing (i.e., of a large volume of fast-moving water or air)
Stem 2	sound of swishing / swooshing (e.g., a broom sweeping, a scrub-brush being used, etc.)
Stem 3	sound of ocean wave crashing

	-ČD- ‘SOUND OF CHIRPING / SQUEAKING / SQUEALING / TOOTING’
Stem 1	sound of a cheep / chirp
Stem 2	sound of a squeak / squeal
Stem 3	sound of a toot / hoot (e.g., an old-style steam-based train whistle, an owl, etc.)

	-MŇ- ‘SOUND OF A WHINE / SNARL / GROWL / ROAR / HOWL / SHRIEK’
Stem 1	sound of a whine / screech / shriek (i.e., a general high-pitched annoying sound, e.g., of metal-on-metal friction, an animal in distress, fingernails on a chalkboard, etc.)
Stem 2	sound of a defensive animal (e.g., growl, snarl, hiss)
Stem 3	sound of an animal at maximum vocalization (i.e., due to hostility/pain/excitement/alarm, etc., e.g., roar, bark, bray, neigh/whinny, howl, scream, shriek, squawk, etc.)

	-PD- ‘SOUND OF A FOOTFALL / BODILY MOVEMENT / ORAL SOUND’
Stem 1	sound of footstep / footfall / footpad / patter of animal paw
Stem 2	sound of a body moving (e.g., a person, an animal)
Stem 3	a non-linguistic and inadvertent/non-deliberate oral sound (e.g., clucking of tongue, smacking of lips, sound of swallowing/gulping, etc.)

	-CPL- ‘SOUND MADE BY OR WITH PART OF ONE’S BODY’ *
Stem 1	sound made by a part of one’s body that mimics a non-bodily sound
Stem 2	sound made by a part of one’s body that potentially creates a humorous or embarrassing effect (e.g., fart, cracking knuckles)
Stem 3	a non-linguistic oral sound made to/for humorous or shocking effect (e.g., a “raspberry”, a sound of deliberate slobbering, a whistle, etc.)

* incorporate a stem from one of the other roots above into these stems to specify the type or nature of the sound being made

4.5.1.2 General Sound Parameters and Reaction To Sound

-TKR- ‘AUDIBILITY / EMISSION OF SOUND / LOUDNESS’		
	STEM 1	STEM 2: (be) a state/act/instance of emitting a sound; to emit a sound STEM 3: (be) a state/instance of being loud [i.e., having a greater audible volume than desired/necessary]
BSC	(be) a state/instance of being audible; be able to hear a sound, [for a sound] to be audible	
CTE	(be) the audible volume/level of a sound, i.e., how loud/soft it is	
CSV	(be) an act/state of a sound being within the threshold of hearing	
OBJ	(be) an entity or circumstances creating an audible sound	

-DVY- ‘SOUND PATTERN / RHYTHM’		
	STEM 1	STEM 2: (be) a state/act/instance of emitting a patterned sound; to emit a sound containing an audible pattern STEM 3: (be) a state/instance of a sound being rhythmic; [for a sound] to have a rhythm(ic pulse) or “beat”
BSC	(be) a state/instance of a sound having a discernible/audible pattern; to hear a pattern within a sound	
CTE	(be) the pattern heard within a sound	
CSV	(be) an act/state of hearing or listening to the pattern within a sound	
OBJ	(be) the entity or circumstances creating a patterned sound	

-DVW- ‘ECHO / REVERBERATION’		
	STEM 1	STEM 2: (be) a state/act/instance of emitting an echo; to emit an echo STEM 3: (be) a state/instance of a sound reverberating; [for a sound] to have a reverberation
BSC	(be) a state/instance of a sound echoing; to (make an) echo [both the making of the echo and hearing it]	
CTE	(be) the pattern of sonic repetition constituting an echo	
CSV	(be) an act/state of hearing or listening to an echo	
OBJ	(be) the entity or circumstances creating an echo	

-RČX- ‘ANNOYING/SHRILL/IRRITATING SOUND’		
	STEM 1	STEM 2: (be) a state/act/instance of emitting an annoying/shrill sound; to emit an annoying/shrill sound STEM 3: (be) the degree of desire/capacity to listen to a sound due to its unpleasant nature [use with EXN, SUF or similar affix]
BSC	(be) a state/instance of a sound being annoying/irritating/shrill; to hear/listen to an annoying/irritating/shrill sound [both the sound and the hearing/listening to it]	
CTE	(be) an annoying/irritating/shrill sound	
CSV	(be) an act/state of hearing or listening to an annoying/irritating/shrill sound	
OBJ	(be) the entity or circumstances creating an annoying/irritating/shrill sound	

The following roots have the same Stem & Specification pattern as the above root **-RČX-**:

-ČXW- ‘RAUCOUS SOUND / NOISE’

-ŠFY- ‘MUFFLED/UNCLEAR SOUND’

-MŽV- ‘SONOROUS/RESONANT SOUND’

-LÇW- ‘PLAINTIVE / WISTFUL SOUND’

-MSY- ‘PLEASANT/MELLIFLUOUS SOUND’

-LCL- ‘MELLOW/DULCET SOUND’

-RÇW- ‘LILTING VOCAL SOUND’

4.5.1.3 Music

-LK- ‘MUSIC/ PLAY MUSIC / COMPOSE MUSIC’			
BSC	Stem 1: (to be) a state/act of music playing (whether recorded or live)	Stem 2: (to be) a state/act of playing/making music (i.e., on a musical instrument)	Stem 3: (to be) a state/act of composing a passage of music, a musical phrase, a melody, a tune; to compose a melody/tune/musical phrase or passage
CTE	(to be) the state of there being music to be heard (playing)	(to be) the state of music being made by the playing of a musical instrument	(to be) the state of there being a musical phrase/passage/tune or melody in one’s mind; to be a melody/tune/musical phrase or passage one hears in one’s mind when composing
CSV	(to be) a state/act of hearing/listening to music	(to be) an act of playing music on a musical instrument; to (be) play(ing) a musical instrument	(to be) a state/act of composing music; to compose (a passage/piece) of music
OBJ	(to be) the sound of music, the particular (piece of) music being heard	(to be) a particular musical instrument (used to play music)	(to be) the particular melody/tune/musical phrase or passage being composed or played from one’s mind

-LLY- ‘SING / SONG’			
BSC	Stem 1: (to be) a state/act of singing being produced and heard (whether recorded or live)	Stem 2: (to be) a state/act of singing a song; to sing a song [both the physical act thereof and the audible song produced]	Stem 3: (to be) a state/act of composing a passage of singing, a musical vocal phrase, a vocal melody/tune and its lyrics; to compose a vocal melody/tune and its lyrics
CTE	(to be) the state of there being singing to be heard	(to be) the state of singing	(to be) the state of there being a vocal musical phrase/passage/ melody in one’s mind and associated lyrics; to be a melody/tune/musical phrase and lyrics one hears in one’s mind when composing vocal music or song
CSV	(to be) a state/act of hearing/listening to singing	(to be) an act of using one’s voice to sing; to physically use one’s voice to sing	(to be) a state/act of composing vocal music or song; to compose (a passage/piece) of vocal music/song
OBJ	(to be) the sound of singing, the particular (piece of) musical vocalization being heard	(to be) the song one sings	(to be) the particular melody/tune/musical phrase/passage and lyrics being composed or played from one’s mind

4.5.1.3.1 Musical Instruments

-LHW- ‘MUSICAL INSTRUMENT / MUSICAL VOCALIZATION’		
BSC	Stem 1: (to be) a state/act of playing a musical instrument (or object/device used to make musical sound or to accompany singing or music)	Stem 2: (to be) a state/act of sounding a musical instrument (i.e., making a sound/note on a musical instrument, but not necessarily playing something musical) Stem 3: (to be) a state/act of using one’s voice or vocal apparatus to make/mimic a musical sound (i.e., not singing a song with words [see the root -LLY-], but rather used in its capacity to make musical sound, as in humming, mimicking percussion sounds, used as a drone accompaniment, chanting, etc.); to make/mimic a musical sound using one’s vocal apparatus
CTE	(to be) a musical instrument itself	
CSV	(to be) an act/state of playing a musical instrument; to play (i.e., make musical sound from) a musical instrument	
OBJ	(to be) the sound emanating from playing a musical instrument	

This following affixes are used with the above root to indicate specific musical notes/tones:

-rpl	MNA Musical Notes A	-rpr	MNB Musical Notes B	-rpw	MNC Musical Notes C	-rpy	MND Musical Notes D
1	note/tone in A-flat/G-sharp	1	note/tone in B	1	note/tone in D	1	note/tone in F
2	bending/ <i>meend</i> applied to note/tone in A-flat/G-sharp	2	bending/ <i>meend</i> applied to note/tone in B	2	bending/ <i>meend</i> applied to note/tone in D	2	bending/ <i>meend</i> applied to note/tone in F
3	“blue” note/tone between A-flat and A	3	“blue” note/tone between B and C	3	“blue” note/tone between D and D-sharp/E-flat	3	“blue” note//tone between F and F-sharp/G-flat
4	note/tone in A	4	note/tone in C	4	note/tone in E-flat/D-sharp	4	note tone in F-sharp/G-flat
5	bending/ <i>meend</i> applied to note/tone in A	5	bending/ <i>meend</i> applied to note/tone in C	5	bending/ <i>meend</i> applied to note/tone in E-flat/D-sharp	5	bending/ <i>meend</i> applied to note/tone in F-sharp/G-flat
6	“blue” note/tone between A and A-sharp/B-flat	6	“blue” note/tone between C and C-sharp/D-flat	6	“blue” note/tone between E-flat and E	6	“blue” note//tone between G-flat and G
7	note/tone in B-flat/A-sharp	7	note/tone in C-sharp/D-flat	7	note/tone in E	7	note/tone in G
8	bending/ <i>meend</i> applied to note/tone in B-flat/A-sharp	8	bending/ <i>meend</i> applied to note/tone in C-sharp/D-flat	8	bending/ <i>meend</i> applied to note/tone in E	8	bending/ <i>meend</i> applied to note/tone in G
9	“blue” note/tone between B-flat and B	9	“blue” note/tone between D-flat and D	9	“blue” note/tone between E and F	9	“blue” note//tone between G and G-sharp/A-flat

The following roots/stems utilize the Specification pattern of the root **-LHW-** above:

-ŽP- ‘IDIOPHONIC PERCUSSIVE MUSICAL INSTRUMENT’ (i.e., vibration of the instrument itself)		
Stem 1: concussion/percussion idiophonic musical instrument (struck with the hand or other non-vibrating foreign object, or by being struck against each other)		
Stem 2: friction/rattling idiophonic musical instrument (shaking and/or scraping)		
Stem 3: lamellophone / plucked idiophonic musical instrument (e.g., jaw harp, mbira, music box)		

-ŽPW-	Stem 1: musical block (e.g., of wood or metal)	Stem 2: musical stick	Stem 3: clave
-ŽPY-	Stem 1: castanet	Stem 2: musical clapper (e.g., khartal, qraqeb)	Stem 3: musical spoon
-ŽPL-	Stem 1: triangle	Stem 2: musical metal plaque (e.g., of vibraphone)	Stem 3: musical plaque of wood or gourd (e.g., of xylophone or balafon)
-ŽPR-	Stem 1: cymbal	Stem 2: finger cymbal / hand cymbal (e.g., manjira, taal)	Stem 3: gong
-ŽPŘ-	Stem 1: bell	Stem 2: chime	Stem 3: standing bell / resting bell / singing bowl
-ŽPÇ-	Stem 1: musical rattle/shaker	Stem 2: vibra-slap/quijada	Stem 3: flexatone
-ŽPF-	Stem 1: tambourine (without membrane)	Stem 2: maraca	Stem 3: rainstick
-ŽPT-	Stem 1: güiro/ güira/guayo/guacharaca/reco-reco	Stem 2: washboard/frottoir	Stem 3: ratchet/noisemaker
-ŽPL-	Stem 1: slit drum	Stem 2: steel drum	Stem 3: steel tongue drum / tank drum
-ŽPH-	Stem 1: musical saw	Stem 2: thunder sheet / wobble board	Stem 3: daxophone
-ŽPHW-	Stem 1: clay/ceramic pot (e.g., ghatam, fou)	Stem 2: aerophone ceramic pot (e.g., udu, botija)	Stem 3: handpan (e.g., Hang)
-ŽMW-	Stem 1: jaw harp	Stem 2: morsing/gogona	Stem 3: mbira/kalimba
-ŽMY-	Stem 1: nail violin	Stem 2: waterphone	Stem 3: glass harmonica / glass harp / verrophone

-ŘBW- ‘STRUCK, SHAKEN, OR PLUCKED MEMBRANOPHONE MUSICAL INSTRUMENT’ (i.e., vibration of a membrane)		
Stem 1: struck membranophone (e.g., drum, conga drum, bongo, bodhran, tar, etc.)		
Stem 2: shaken membranophones (e.g., rattle drum)		
Stem 3: plucked membranophone (e.g., khamak/bugchu/anondo lahari, gubguba)		

-ŘBY-	Stem 1: tubular/cylindrical two-headed drum	Stem 2: tubular/cylindrical single-headed (open-ended) drum	Stem 3: kettle drum/bowl-shaped drum
-ŘBL-	Stem 1: snare drum	Stem 2: tom-tom	Stem 3: bass drum / kick-drum
-ŘBR-	Stem 1: bongo	Stem 2: conga drum	Stem 3: taiko / Japanese drum
-ŘBŘ-	Stem 1: tabla drum (either dayan or bayan)	Stem 2: dayan (of a set of tabla drums)	Stem 3: bayan (of a set of tabla drums)
-ŘBV-	Stem 1: pakhawaj	Stem 2: dholak	Stem 3: naal

-ŘBZ-	Stem 1: mridangam	Stem 2: mridanga	Stem 3: dhol
-ŘBŽ-	Stem 1: djembe	Stem 2: dabakan	Stem 3: other goblet-type drum (e.g., davul, tapan, atabal, tabl, darbuka, tonbak)
-ŘBZW-	Stem 1: tambourine (w/membrane)/riq/mazhar/dayereh	Stem 2: bodhrán	Stem 3: tar / daf / frame drum
-ŘBŽW-	Stem 1: rattle drum	Stem 2: khamak/gopichand	Stem 3: bugchu/anondo lahori/gubguba

-GZDV- ‘FRICTION, RUBBED, OR AIR-DRIVEN MEMBRANOPHONE MUSICAL INSTRUMENT’

Stem 1: friction membranophone (e.g., cuica, rommelpot)
Stem 2: rubbed membranophone
Stem 3: air-driven membranophone (e.g., kazoo, mirliton, swazzle)

-GZDW-	Stem 1: cuica	Stem 2: rommelpot	Stem 3: other friction-driven membranophone
-GZDY-	Stem 1: kazoo	Stem 2: mirliton	Stem 3: swazzle

-ŇÇN- ‘CHORDOPHONE MUSICAL INSTRUMENT’ (i.e., vibration of a string or strings)

Stem 1: zither-like or zither-based musical instrument (i.e., strings stretched across a frame with or without a non-integrated resonator box)
Stem 2: lute-like musical instrument [whether strummed/, plucked, or bowed (i.e., string-bearing frame is integrated with a resonator box)
Stem 3: harp-like musical instrument (i.e., plane of strings is perpendicular to the resonator box)

-ŇÇT-	Stem 1: guitar	Stem 2: guitarrón/huapanguera	Stem 3: Latin guitar-like instrument (e.g., jarana, bajo quinto, bajo sexto, requinto jarocho) *
-ŇÇTW-	Stem 1: lute	Stem 2: ukulele	Stem 3: dulcimer-guitar
-ŇÇTY-	Stem 1: Portuguese guitar	Stem 2: cavaquinho	Stem 3: viola braguesa
-ŇÇTL-	Stem 1: cittern/cithren/waldzither	Stem 2: tamburica/tamburitza	Stem 3: bağlama / saz
-ŇÇTR-	Stem 1: oud	Stem 2: sintir/guembri	Stem 3: kabuli rebab/rubab
-ŇÇTŘ-	Stem 1: mandolin	Stem 2: mandola	Stem 3: Algerian mandole
-ŇÇTF-	Stem 1: domra	Stem 2: bandura	Stem 3: kobza/bandurka
-ŇÇTÇ-	Stem 1: balalaika	Stem 2: torban	Stem 3: shamisen/sangen
-ŇÇTL-	Stem 1: pipa	Stem 2: ruan	Stem 3: yueqin / moon lute
-ŇÇTH-	Stem 1: charango/charanga	Stem 2: đàn tỳ bà	Stem 3: dranyen
-ŇÇTM-	Stem 1: çifteli	Stem 2: geierleier	Stem 3: tar (Persian/Middle-Eastern long-necked lute) *

* incorporate a number stem into these stems to indicate the number of strings in order to create words for Latin guitar-like instruments such as the *tres*, *cuatro*, *bajo quinto*, etc., and Central Asian lutes such as the *dutar*, *chartar*, *setar*, *shashtar*, etc.

-ŃÇTLW-	Stem 1: bouzouki (Greek)	Stem 2: Irish bouzouki	Stem 3: bandurria
-ŃÇTCW-	Stem 1: topshur	Stem 2: tovshuur	Stem 3: doshpuluur
-ŃÇTHW-	Stem 1: banjo	Stem 2: sazbüş	Stem 3: sanxian / sanshin
-ŃÇC-	Stem 1: zither or zither-like instrument	Stem 2: musical bow / harp-bow / berimbau	Stem 3: harp-zither
-ŃÇCW-	Stem 1: psaltery	Stem 2: koto	Stem 3: gayageum
-ŃÇČ-	Stem 1: piano	Stem 2: harpsichord	Stem 3: clavichord
-ŃÇČW-	Stem 1: dulcimer	Stem 2: santur	Stem 3: cimbalon or dulcimer/cimbalon-like instruments (e.g., yangquin, khim, klezmer)
-ŃÇCM-	Stem 1: harp	Stem 2: lyre	Stem 3: kora
-ŃÇCN-	Stem 1: cithara / kithara	Stem 2: krar/kirar	Stem 3: qanun
-ŃÇP-	Stem 1: viola/violin *	Stem 2: cello/double-bass *	Stem 3: pochette / sardino / kit violin / treble violin
-ŃÇPW-	Stem 1: viola d'amore	Stem 2: viol/viola da gamba	Stem 3: baryton
-ŃÇPY-	Stem 1: Hardanger fiddle	Stem 2: lătfiol	Stem 3: nyckelharpa
-ŃÇPL-	Stem 1: bowed zither (e.g., bowed psaltery, ajaeng, harppu, gue, yazheng/yaqin, zhengni)	Stem 2: crwth	Stem 3: bowed lyre (e.g., jouhikko, talharpa)
-ŃÇPR-	Stem 1: lyra	Stem 2: gadulka	Stem 3: gudok/gudochek/hudok
-ŃÇPŘ-	Stem 1: rebab	Stem 2: lijerica	Stem 3: rabeca
-ŃÇPF-	Stem 1: kemenche	Stem 2: ghijak	Stem 3: gheychak
-ŃÇPT-	Stem 1: sataer	Stem 2: khushhtar	Stem 3: yayli tambur
-ŃÇPC-	Stem 1: imzad	Stem 2: kobyz	Stem 3: sorahi
-ŃÇPL-	Stem 1: morin khuur	Stem 2: igil	Stem 3: byzaanchy
-ŃÇPS-	Stem 1: tro (incl. tro Khmer, tro sau toch, tro sau thorn)	Stem 2: [Thai] saw (incl. saw duang, saw sam sai, saw u, saw lo)	Stem 3: masenqo
-ŃÇPŠ-	Stem 1: đàn nhị	Stem 2: đàn hồ	Stem 3: đàn gáo
-ŃÇPH-	Stem 1: kokyū	Stem 2: haegeum	Stem 3: suroz
-ŃÇPHW-	Stem 1: agiarut	Stem 2: tautirut	Stem 3: laruan
-ŃÇPLW-	Stem 1: zhuihu/zhuiqin	Stem 2: leihu/leiqin	Stem 3: paqin
-ŃÇPCW-	Stem 1: mid-pitched huqin-type instrument (e.g., erhu, banhu, erxian, tiqin, sihu, maguhu, niutuiqin/niubaqin/niubatui) Stem 2: lower-pitched huqin-type instrument (e.g., zhonghu, dihu, gehu, dihu, diyingehu, tuhu) Stem 3: higher-pitched huqin-type instrument (e.g., gaohu, jinghu)		

* use the CAM/3 affix below with Stem 1 to designate a violin; use the CAM/1 affix below with Stem 2 to designate a double-bass from a cello

-ÑÇM-	Stem 1: sarod *	Stem 2: sitar *	Stem 3: tanpura
-ÑÇMW-	Stem 1: saraswati veena	Stem 2: rudra veena	Stem 3: vichitra veena / sagar veena
-ÑÇMY-	Stem 1: ektara	Stem 2: dotara	Stem 3: tumbi
-ÑÇML-	Stem 1: swarmandal	Stem 2: swarabat	Stem 3: gethuvadyam/jhallari
-ÑÇMR-	Stem 1: sarangi	Stem 2: sarinda	Stem 3: chikara
-ÑÇMR̥-	Stem 1: esraj / tarshenai	Stem 2: dilruba	Stem 3: taus / mayuri vina

* use CAM/2 affix below with Stem 1 to designate a *surshringar* and with Stem 2 to designate a *surbahar*

-ÑÇÑ-	Stem 1: hurdy-gurdy	Stem 2: dulcigurdy	Stem 3: other rosined wheel instrument (e.g., bowed clavier / ninera / viola organista)
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-ÇKM- ‘AEROPHONE MUSICAL INSTRUMENT’ (i.e., vibration of a volume of air)			
Stem 1: “wind” instrument which, when played, contains an enclosed column of vibrating air (e.g., clarinet, oboe, flute, didgeridoo, etc.)			
Stem 2: “free reed” instrument which utilize a reed or band but do not contain the vibrating air (e.g., harmonica, accordion, harmonium)			
Stem 3: instrument where an unenclosed air flow is interrupted other than by a reed or band (e.g., bullroarer, siren, boomwhacker, corrugaphone, whip)			

-ÇKW-	Stem 1: end-blown flute	Stem 2: end-blown flute w/fingerholes	Stem 3: end-blown flute without fingerholes
-ÇKY-	Stem 1: side-blown flute	Stem 2: side-blown flute w/fingerholes	Stem 3: side-blown flute without fingerholes
-ÇKL-	Stem 1: ductless flute (e.g., hocchiku, palendagpulalu/shakuhachi/tumpong) Stem 2: pan pipe Stem 3: Western concert flute (use CAM/3 affix below to signify a piccolo)		
-ÇKR-	Stem 1: kaval	Stem 2: kawala	Stem 3: ney
-ÇKR̥-	Stem 1: blul	Stem 2: svirka/tsafara/svorche	Stem 3: kobyrach/quray/choor
-ÇKF-	Stem 1: duct flute	Stem 2: suling/barbarak/lantey, dagoyong	Stem 3: whistle
-ÇKT-	Stem 1: fipple flute (e.g., bansuri, diple, flabiol, flageolet, khloy, khlui, salamuri, shvi, souravli, stabule, txistu, frula) Stem 2: recorder Stem 3: fujara		
-ÇKÇ-	Stem 1: willow flute/sallow flute	Stem 2: tin whistle/penny whistle	Stem 3: slide whistle/piston flute/swanee
-ÇKH-	Stem 1: vessel flute (e.g., xun, jug)	Stem 2: ocarina / huaca	Stem 3: gemshorn
-ÇKHW-	Stem 1: pipe organ	Stem 2: calliope	Stem 3: non-pipe organ (e.g., reed organ / pump organ / harmonium, electric organ)

-MÇKW-	Stem 1: single-reed instrument	Stem 2: double-reed instrument	Stem 3: reedless brass instrument (e.g., horn, trumpet)
-MÇKY-	Stem 1: clarinet	Stem 2: chalumeau	Stem 3: zummara / double clarinet
-MÇKL-	Stem 1: saxophone	Stem 2: xaphoon	Stem 3: venova
-MÇKR-	Stem 1: octavin	Stem 2: (modern) táragató	Stem 3: sneng
-MÇKŘ-	Stem 1: hornpipe	Stem 2: pku/pzuk	Stem 3: erkencho
-MÇKF-	Stem 1: stock-and-horn	Stem 2: pibgorn	Stem 3: alboka
-MÇKT-	Stem 1: zhaleika/bryolka	Stem 2: birbyné	Stem 3: ganurags
-MÇKÇ-	Stem 1: diplica	Stem 2: launeddas	Stem 3: çifte
-MÇKH-	Stem 1: argdul/yargdul	Stem 2: mijwiz	Stem 3: sipsi
-MÇKHW-	Stem 1: dozaleh/zanbooreh	Stem 2: pungi/geen/murli	Stem 3: pepa
-LÇK-	Stem 1: oboe	Stem 2: cor anglais	Stem 3: oboe d'amore
-LÇKW-	Stem 1: bassoon	Stem 2: contrabassoon	Stem 3: sarrusophone
-LÇKY-	Stem 1: shawm	Stem 2: surma	Stem 3: bombard
-LÇKL-	Stem 1: crumhorn	Stem 2: cromorne	Stem 3: (traditional) táragató
-LÇKR-	Stem 1: zurna	Stem 2: mizmar	Stem 3: duduk/tsiranapogh
-LÇKŘ-	Stem 1: hichiriki / fue	Stem 2: piri	Stem 3: taepyeongso/hojok/nallari/saenap
-LÇKF-	Stem 1: guan/bili/houguan	Stem 2: gyaling	Stem 3: suona/laba/haidi
-LÇKT-	Stem 1: shehnai	Stem 2: nadaswaram	Stem 3: kuzhal
-LÇKÇ-	Stem 1: sundari	Stem 2: tangmuri	Stem 3: mukhavina
-LÇKH-	Stem 1: sralai serunai)	Stem 2: pi nai	Stem 3: Southeast Asian quadruple reed instrument (e.g., hne, sawnay, sarunay,
-LÇKHW-	Stem 1: dulzaina/dolçaina	Stem 2: piffero	Stem 3: sople
-ÇKN-	Stem 1: bagpipe(s)	Stem 2: breath-blown bagpipes	Stem 3: bellows-driven bagpipes (e.g., uilleann pipes)
-NÇK-	Stem 1: conch-shell/seashell horn	Stem 2: didgeridoo	Stem 3: shofar
-NÇKW-	Stem 1: alphorn	Stem 2: trembita	Stem 3: vuvuzela / kudzela
-NÇKY-	Stem 1: lur	Stem 2: bucium	Stem 3: Tibetan horn
-NÇKL-	Stem 1: tiba	Stem 2: erke	Stem 3: trutruca

-NÇKR-	Stem 1: jez kernei/karnay	Stem 2: muiuz kernei/karnay	Stem 3: surnai
-NÇKŘ-	Stem 1: ekkalam	Stem 2: kamal	Stem 3: kombu/kompu
-NÇKF-	Stem 1: bhankora	Stem 2: buki	Stem 3: putaatara
-NÇKT-	Stem 1: nabal	Stem 2: kakaki	Stem 3: other straight and long valveless horn
-NÇKÇ-	Stem 1: cornetto/zink	Stem 2: serpent	Stem 3: vladimirskiy rozhok
-NÇKH-	Stem 1: natural horn	Stem 2: natural trumpet	Stem 3: bugle
-TÇK-	Stem 1: valved horn *	Stem 2: baritone horn	Stem 3: euphonium
-TÇKW-	Stem 1: valved trumpet	Stem 2: cornet	Stem 3: flugelhorn
-TÇKY-	Stem 1: saxhorn	Stem 2: helicon	Stem 3: mellophone
-TÇKL-	Stem 1: tuba	Stem 2: sousaphone	Stem 3: contrabass bugle
-TÇKR-	Stem 1: trombone	Stem 2: sackbut / slide trumpet	Stem 3: bazooka (musical instrument)
-TÇKŘ-	Stem 1: Firebird trumpet	Stem 2: saxotromba	Stem 3: saxtuba
-TÇKF-	Stem 1: jazzophone	Stem 2: kuhlohorn	Stem 3: ophicleide / sudrophone

* whether a French horn, German horn, or Vienna horn

-ÇÇKW-	Stem 1: harmonica	Stem 2: melodica	Stem 3: shruti box
-ÇÇKY-	Stem 1: accordion	Stem 2: concertina	Stem 3: melodeon
-ÇÇKL-	Stem 1: sheng / yu / he	Stem 2: khaen	Stem 3: sho
-ÇÇKR-	Stem 1: hulusi / gourd flute	Stem 2: hulusheng	Stem 3: bawu

-LHM- ‘ELECTRO-MECHANICAL OR ELECTRONIC MUSICAL INSTRUMENT’

Stem 1: electro-mechanical taped music controller (e.g., mellotron, byrotron)

Stem 2: early electronic (or electro-mechanical) musical instrument (e.g., telharmonium, theramin, Ondes Martenot, Trautonium, Hammond Organ, Novachord)

Stem 3: electronic synthesizer

-LHR- ‘PRE-PROGRAMMED MUSICAL INSTRUMENT’

Stem 1: music(al) box

Stem 2: player piano

Stem 3: pre-programmed musical instrument/device (use MEC/5, MEC/9, or MEA/4 affixes as appropriate to designate modern MIDI, sequenced, or software-based music)

The following affixes are available for use with many of the above musical instrument roots/stems (where applicable):

-ṣ	MIA Musical Instrument Attributes
1	instrument is non-pitched
2	instrument has a (quasi-) fixed pitch but is untunable
3	instrument is tunable to a fixed pitch
4	instrument is tunable and capable of a controllable range of pitches while being played (e.g., talking drum, banyan drum of a set of tabla, cuica, etc.)
5	instrument is a single component with various sub-parts or surfaces each of which is tunable/tuned to a distinct pitch (e.g., tongue drum, steel drum)
6	instrument is a set of tunable individual component instruments, each set/tunable to a distinct pitch
7	instrument is playable/played using multiple modes of contact (e.g., with both hand or stick, by both bow and hand, by striking and rubbing, etc.)
8	instrument's primary interface is via a keyboard or set of patterned buttons which trigger the actual striking/plucking/air-flow sounding mechanism
9	instrument is electrically/electronically amplified

-ḍ	CAM Customizations & Modifications
1	the largest (bass-oriented) version of the usual X
2	a larger (baritone-oriented) version of the usual X
3	a smaller (treble- or soprano-oriented) version of the usual X
4	a modified/enhanced version of the usual X (to give it a greater note-range)
5	a modified/enhanced version of the usual X (to make it louder)
6	a modified/enhanced version of the usual X (to give it more power/resonance)
7	a modified/customized version of the usual X tailored to the operator's specifications
8	a modified/customized version of the usual X tailored/sized for a child
9	a modified/customized version of the usual X tailored/simplified for learning

NOTE: While this affix primarily applies to stems for musical instruments, Degrees 5 through 9 may be used as needed for other devices/objects where applicable.

The eleven **Areal/Cultural Association** affixes may also be used with musical instrument stems (see the Affixes document)

4.5.2 Olfactory Sense

-ŽG- ‘SMELL / ODOR’ Affix: OLF		
BSC	Stem 1: (to be) a smell/odor and the smelling thereof [act of smelling + the odor itself]; an act of smelling something — [both the odor and the smelling thereof]	Stem 2: (to be) one’s nose [as olfactory organ, not one’s nasal proboscis (see -LMW-)] Stem 3: (to be) one’s olfactory faculty; one’s sense of smell
CTE	(to be) a smell/odor	
CSV	(to be) an act of smelling; to smell; to engage one’s olfactory sense	
OBJ	(to be) the entity/event/object whose odor one smells	

MORPHOLOGICAL DERIVATIONS: sniff, aroma, “bouquet”, perfume, stench

NOTE: the meaning of the old FORMAL stems previously associated with this root can be expressed by the following: for Stems 1 and 3, use appropriate Transrelative case marking for the arguments/participants; for Stem 2, utilize the MEC affix.

The four odor roots below have the following Specification pattern:

BSC	(to be) something having a (particular) smell/odor
CTE	(to be/manifest) the particular odor (of something)
CSV	(to be) the odor perceived by an observer as being identifiable as a particular odor (i.e., the odor of something known)
OBJ	(to be) an entity having a particular odor (e.g., “the acrid-smelling one”)

	-NKY- ‘PUNGENT/FUNKY/PUTRID/STINKY’
Stem 1	pungent odor (e.g., vinegar, ammonia, urine, stale coffee, vomit, etc.)
Stem 2	funky odor (e.g., of sweat, livestock, musk, tamri, ambergris, stinky cheeses, etc.)
Stem 3	putrid odor (e.g., as of rotting eggs, roadkill, feces, sulfur, low-tide, etc.)

	-RGY- ‘VEGETAL/PIQUANT/MUSTY’
Stem 1	vegetal odor (e.g., grass, garlic, onion, parsley, coriander, celery, etc.)
Stem 2	piquant odor (e.g., ginger, cinnamon, clove, chilies, horseradish, hot mustard, etc.)
Stem 3	musty odor (e.g., soil, mushrooms, aged compost, mold, moss, petrichor, etc.)

	-LMS- ‘SWEET/FRAGRANT/RESINOUS’
Stem 1	sweet odor (e.g., honey, raisin, caramel, apple, date, yam, etc.)
Stem 2	fragrant odor (e.g., vanilla, rose, almond, peach, jasmine, etc.)
Stem 3	resinous odor (e.g., camphor, sagebrush, eucalyptus, lavender, peppermint, etc.)

	-RZG- ‘CHEMICAL/BURNT/ACRID’
Stem 1	chemical odor (e.g., alcohol, gasoline, solvents, paint, etc.)
Stem 2	burnt odor (e.g., leather, toasted nuts, woodsmoke, tobacco, etc.)
Stem 3	acrid odor (e.g., salt, copper, blood, tar, burning rubber, etc.)

In addition to the above four roots, the OLF affix is available to identify the odor associated with any applicable formative.

4.5.3 Gustatory Sense

-SF- ‘SENSE OF TASTE / THE TASTE OF SOMETHING’ Associated Affix: GST		
BSC	Stem 1: (to be) the flavor of something and the act of tasting thereof [act of tasting + the flavor itself]; an act of tasting the flavor of something — [both the flavor and the sensing thereof]	Stem 2: (to be) a taste bud (i.e., the gustatory organ) Stem 3: (to be) one’s gustatory faculty; one’s sense of taste
CTE	(to be) a flavor	
CSV	(to be) an act of tasting; to taste; to engage one’s gustatory sense	
OBJ	(to be) the entity/event/object whose flavor one tastes	

NOTE: the meaning of the old FORMAL stems previously associated with this root can be expressed by the following: for Stems 1 and 3, use appropriate Transrelative case marking for the arguments/participants; for Stem 2, utilize the MEC affix.

The six flavor roots below take the following Specification pattern:

BSC	(to be) something having a (particular) flavor
CTE	(to be/manifest) the particular flavor (of something)
CSV	(to be) an identifiable flavor
OBJ	(to be) an entity having a particular flavor (e.g., “the bitter-tasting one”)

-MS- ‘SWEET FLAVOR’	
Stem 1	sweet flavor
Stem 2	fruity/citrus/tarty-flavor
Stem 3	floral-like sweet flavor

-ZG- ‘BITTER FLAVOR’	
Stem 1	bitter flavor
Stem 2	bitter + sweet
Stem 3	bitter + sour

-SFŘ- ‘SOUR FLAVOR’	
Stem 1	sour flavor
Stem 2	sour + rancid flavor
Stem 3	sweet + sour flavor

-ĹK- ‘SALTY / SPICY / UMAMI’	
Stem 1	salty flavor
Stem 2	spiciness / piquant flavor
Stem 3	umami/savory flavor

-XX- ‘FOUL/RANCID FLAVOR’	
Stem 1	foul/rancid flavor
Stem 2	spoiled/rotten flavor
Stem 3	vinegary flavor

-ŇŇ- ‘CHEMICAL-LIKE FLAVOR’	
Stem 1	chemical-like flavor
Stem 2	metallic flavor
Stem 3	astringent/acidy flavor

The following affix allows one to name any flavor:

-sf	GST Gustatory Associations
1	having the flavor of X
2	having an flavor like/similar to X
3	having an flavor reminiscent of X
4	having an flavor that has the same effect as X
5	having an flavor that has an effect similar to that of X
6	having both a flavor and aroma reminiscent of X
7	having both the flavor and aroma like/similar to X
8	having both the flavor and aroma of X
9	X's flavor; the flavor which one tastes when one eats/chews/drinks/consumes X

4.5.4 Visual Sense

-Z- ‘SEE / SIGHT / VISION’		
BSC	Stem 1: (to be) a sight and the seeing thereof; to see something [act of seeing + the sight itself]; an act of seeing something	Stem 2: (to be) an eye (as organ of vision) Stem 3: (to be a) the visual faculty/sense; one's vision
CTE	(to be) a visual image; the image one sees	
CSV	(to be) an act of seeing; to see; to engage one's visual faculty	
OBJ	(to be) the object/entity/sight one sees	

DERIVATIONS: view, glimpse, glance, ogle, gawk, stare, spy, espy, peep, voyeur, panorama, scrutinize (visually)

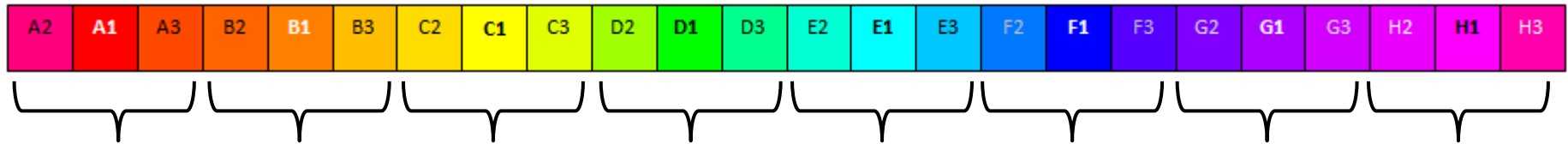
NOTE: the meaning of the old FORMAL stems previously associated with this root can be expressed by the following: for Stems 1 and 3, use appropriate Transrelative case marking for the arguments/participants; for Stem 2, utilize the MEC affix.

-ŠP- ‘COLOR’ Associated affix: VSR		
BSC	STEM 1: (to be) something having a (particular) color / something colored	STEM 2: Same as Stem 1 but a hue 15 degrees counter-clockwise on a 8-basic-valued 360-degree color-wheel (i.e., one-third of the way to the next basic color value, or half-way to Stem 3 of the next basic color value). STEM 3: Same as Stem 1 but a hue 15 degrees clockwise on a 8-basic-valued 360-degree color-wheel (i.e., one-third of the way to the next basic color value, or half-way to Stem 2 of the next basic color value).
CTE	(to be/manifest) the particular color (of something)	
CSV	(to be/manifest) the (reflected) light of (a certain wavelength) that is perceived by an observer as being a particular color	
OBJ	(to be) an entity having a particular color (e.g., “the red one”)	

INFORMAL Stems refer the (seemingly or presumed) natural or inherent color of objects

NOTE: the meaning of the old FORMAL stems previously associated with this root can be expressed by utilizing the TRF/3 or REA/4 affixes.

10.1.4.1 Primary Color Roots/Stems. There are eight roots for basic colors, shown below as A through H. The prototype color is Stem 1 (labeled as a numeral 1 following the letter); Stem 2 is the color one-third of the way to the next basic color to the left (labeled as a numeral 2 following the letter); Stem 3 is the color one-third of the way to the next basic color to the right (labeled as a numeral 3 following the letter). Thus, 24 basic color terms exist in the language.

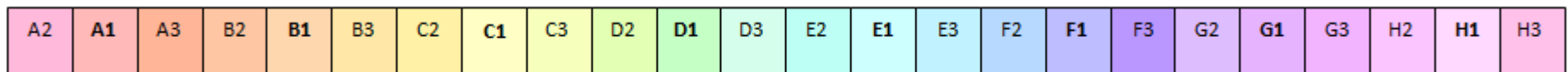


	-GY- ‘RED’	-ŇR- ‘ORANGE’	-ML- ‘YELLOW’	-ČW- ‘GREEN’	-DR- ‘CYAN’	-LW- ‘BLUE’	-ŽL- ‘VIOLET’	-VM- ‘MAGENTA’
Stem 1	red	orange	yellow	green	cyan	blue	violet, purple	magenta
Stem 2	pinkish-red, rose	reddish orange	orangy-yellow, gold(en yellow)	yellowish-green, chartreuse	greenish blue, teal blue	lighter blue, royal blue	blue-violet	violet-magenta, purple-magenta
Stem 3	orangy-red	yellowish orange, ochre	greenish-yellow	light-bluish green, teal green	azure blue	violet-blue	magenta-violet, magenta-purple	dark rose, rose-magenta

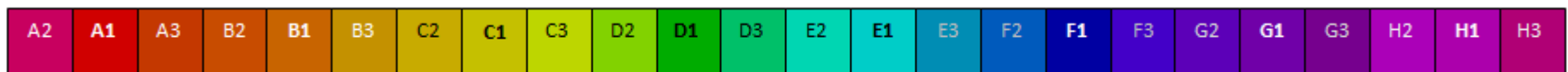
The CLD and COL affixes may be utilized with all color stems (as well as non-color stems where semantically productive). For dichromatic (2-colored) descriptions, incorporate one color stem into another using COMITATIVE format.

As can be seen from the two strips below, the eight basic color roots with their three stems, in conjunction with the CLD affix, are sufficient to provide equivalents to standard Western color terms. Note that the Western basic color terms ‘pink’ and ‘brown’ do not have roots. The various shades covered by those two color terms are expressed as derivatives of red or magenta, and orange respectively. Use of the CLD affix also provides terms for more obscure shades such as “peach”, “mauve”, “turquoise”, “indigo”, “olive”, “rust”, “burnt sienna”, “cobalt blue”, “forest green”, “beige”, “burgundy”, etc.

Light/pale colors: below is the same color strip of the basic color roots/stems plus the CLD/2 affix:



Dark/deep colors: Here is the color strip of the basic color roots/stems plus the CLD/8 affix:



Using the COL affix, in conjunction with Phase and the Modulative affixes, one can add qualities such as “gleaming,” “twinkling,” “opalescent,” “glittering,” etc. In addition to the above scheme, the COL/7 affix provides for terms based on the color of a tangible object.

Three Additional Basic Color Roots: The following three roots do not follow the same template as the eight roots above (as they do not have hue variation):

-BV- ‘WHITE’: Stem 1) something white; 2) something light-colored or pale-tinted; 3) something whose color/visibility is washed out by bright light/glare

-XM- ‘BLACK’ Stem 1) something black; 2) something of a dark shade; 3) something obscured by low light or poor viewing conditions

-CV- ‘GRAY’ Stem 1) something gray; 2) something light-gray; 3) something dark-gray

4.5.5 Tactile Sense

-FT- ‘TOUCH / FEEL / TEXTURE / TACTILE PERCEPTION’		
BSC	Stem 1: (to be) a tactile sensation/texture and the act of touching [act of tactilely feeling something + the sensation itself]; an act of touching/feeling something	Stem 2: (to be) one’s tactile organ(s) (i.e., the epidermal layer of the body as tactile sensor) Stem 3: (to be a) the tactile faculty; sense of touch
CTE	(to be) a tactile sensation, a tactile feeling, a texture; to feel a particular texture	
CSV	(to be) an act of touching; to touch, to feel (tactilely); to engage one’s tactile sense	
OBJ	(to be) the entity/object one touches/feels	

NOTE: the meaning of the old FORMAL stems previously associated with this root can be expressed by the following: for Stems 1 and 3, use appropriate Transrelative case marking for the arguments/participants; for Stem 2, utilize the MEC affix.

The 30 texture/tactile sensation roots listed below have the following Specification pattern:

BSC	something having a (particular) texture or tactile sensation; to be something having a (particular) texture or tactile sensation
CTE	the particular texture or tactile sensation (of something); to be/have a particular texture or tactile sensation
CSV	the texture or tactile sensation perceived and being identifiable as a particular texture or tactile sensation (i.e., the texture or tactile sensation of something known); to be the particular texture or tactile sensation perceived
OBJ	an object/entity having a particular texture or tactile sensation (e.g., “the spongy-feeling one”); to be an entity having a particular texture or tactile sensation (e.g., “to be the spongy-feeling one”)

	-GS- ‘CHUNKY/GRITTY TEXTURE’
Stem 1	chunky textured (chunk-like, irregular/coarse pieces one can easily hold between thumb and forefinger)
Stem 2	gravel-like sensation
Stem 3	coarse/gritty sensation like sand

	-DF- ‘BUMPY TEXTURE’
Stem 1	bumpy, i.e., having individually discernible bumps on an otherwise quasi-linear or quasi-planar surface
Stem 2	stucco-like texture, i.e., rough texture of small, irregular bumps individually discernible only through closer inspection
Stem 3	pitted or serrated texture

	-VT- ‘FLAKY / SCALY TEXTURE’
Stem 1	flaky textured
Stem 2	scaly textured
Stem 3	‘confetti’ textured - like small flat pieces of paper

	-ZH- ‘ROUGH / BRISTLY TEXTURE’
Stem 1	rough-textured like sandpaper
Stem 2	bristly textured
Stem 3	prickly textured

	-KD- ‘HARD / RIGID TEXTURE’
Stem 1	hard/rigid (not malleable/pliable when subject to pressure from a blow/hit/sustained pressure point, etc.)
Stem 2	hard/-rigid and naturally smooth/even-surfaced
Stem 3	hard/-rigid and naturally rough/uneven-surfaced

	-VX- ‘SEMI-HARD / SEMI-RIGID TEXTURE’
Stem 1	semi-hard/semi-rigid (slightly malleable/pliable when subject to pressure from a blow/hit/sustained pressure point, etc.)
Stem 2	semi-hard/semi-rigid and naturally smooth/even-surfaced
Stem 3	semi-hard/semi-rigid and naturally rough/uneven-surfaced

	-GC- ‘SOLID BUT MALLEABLE TEXTURE’
Stem 1	solid but malleable/bendable texture (e.g., like a piece of wire or thin piece of copper plating)
Stem 2	plastic-like texture
Stem 3	cartilaginous texture

	-BŠ- ‘SOFT TEXTURE’
Stem 1	soft like a cushion
Stem 2	downy texture
Stem 3	curvaceous/sensual (= soft/smooth/squeezable/rounded) texture/sensation

	-VC- ‘GROOVED / STRIATED TEXTURE’
Stem 1	grooved textural pattern
Stem 2	striated textural pattern
Stem 3	cross-hatched textural pattern

	-BT- ‘WET / MOIST TEXTURE’
Stem 1	wet / liquidy
Stem 2	moist / damp
Stem 3	soggy / waterlogged / liquid-saturated

	-FZ- ‘VISCOUS / GOOEY TEXTURE’
Stem 1	viscous, gooey textured
Stem 2	jelly-like texture
Stem 3	sticky textured

	-XZ- ‘DUSTY/POWDERY TEXTURE’
Stem 1	dusty
Stem 2	powdery
Stem 3	smooth granular (e.g., processed granules)

	-SG - ‘SLICK / SLIPPERY TEXTURE’
Stem 1	slick to the touch
Stem 2	slippery
Stem 3	slimy

	-ZF- ‘GUMMY / RUBBERY TEXTURE’
Stem 1	gummy texture
Stem 2	rubbery texture
Stem 3	clay-like texture

	-ŠD- ‘SLUSHY / MUSHY TEXTURE’
Stem 1	slushy texture
Stem 2	mushy texture
Stem 3	frothy / foamy texture

	-DL- ‘WAXY / OILY TEXTURE’
Stem 1	oily texture
Stem 2	waxy texture
Stem 3	lard-like. greasy texture;

	-FG- ‘HAIRY / FURRY TEXTURE’
Stem 1	hairy texture/sensation
Stem 2	soft furry/feathery/downy texture
Stem 3	woolly texture/sensation

	-TG- ‘PAPERY / FOIL-LIKE TEXTURE’
Stem 1	texture like paper
Stem 2	texture like metallic foil
Stem 3	texture like cellophane

	-JX- ‘GRATED TEXTURE’
Stem 1	grated / honeycomb-like texture (2-D planar)
Stem 2	grated / honeycomb-like texture (3-D volume, e.g., like a pinecone)
Stem 3	grated / honeycomb-like texture (malleable, pliable surface)

	-ŽT- ‘VARIATED TEXTURE’
Stem 1	lumpy texture; having congealed/harder lumps within a surrounding less-congealed or more pliable/malleable medium
Stem 2	multi-textured; quasi-predictable tactile patterns alternating between 2 or more sensations within the same tactile experience
Stem 3	irregularly textured; unpredictable tactile pattern alternating between two or more sensations within the same tactile experience

	-VD- ‘SHARPNESS’
Stem 1	point-like, needle-like sharpness
Stem 2	blade-like sharpness
Stem 3	sharpness of an irregular edge (e.g., broken glass)

	-SD- ‘BOUNCY / ELASTIC / SPONGY TEXTURE’
Stem 1	bouncy texture
Stem 2	elastic / stretchy texture
Stem 3	sponge-like recoiling texture / spongy

	-ZX- ‘TINGLY / VIBRATING TEXTURE’
Stem 1	tingly / tingling texture
Stem 2	vibrating/purring texture
Stem 3	pulsating/thumping texture

	-KD- ‘CAUSTIC / BURNING TACTILE SENSATION’
Stem 1	burning tactile sensation
Stem 2	caustic / corrosive tactile sensation
Stem 3	irritating tactile sensation

	-VT- ‘STRINGY, FIBROUS TEXTURE’
Stem 1	stringy, thread-like texture
Stem 2	fibrous, twine-like texture
Stem 3	rope-like, cord-like texture

	-ŠB- ORAL TEXTURE’
Stem 1	chewy texture (in mouth)
Stem 2	“tough” texture (in mouth, e.g., of meat)
Stem 3	“melt-in-your-mouth” savory texture

	-ŽXW- ‘WARM / HOT TACTILE SENSATION’
Stem 1	warm to the touch
Stem 2	hot to the touch
Stem 3	burning hot to the touch

	-KVV- ‘COOL / COLD TACTILE SENSATION’
Stem 1	cool to the touch
Stem 2	cold to the touch
Stem 3	freezing cold to the touch

	-LV- ‘WISPY / FLUFFY TEXTURE’
Stem 1	wispy/wafting/misty texture
Stem 2	fluffy/puffy/cottony texture
Stem 3	“cobwebby”/like cotton-candy texture

	-SB- ‘SMOOTH / ROUNDED TEXTURE’
Stem 1	smooth (i.e., having no discernible surface changes/irregularities/indentations)
Stem 2	rounded / knobbed (e.g., a doorknob)
Stem 3	dull / blunt

4.5.6 Affective Sensory States (i.e., Proprioceptive, Interoceptive, and Vestibular-Sensory States)

The affective proprioceptive, interoceptive, and vestibular-sensory roots listed below have the following Specification pattern.

BSC	(to be) the particular affective state and the sensing thereof [both the internal, psychological manifestation and the external, visible manifestation]; to experience the particular affective state [both the internal, psychological manifestation and the external, visible manifestation]
CTE	(to be) an affective sensation, an affective feeling/state itself
CSV	(to be) the physical manifestation(s) of an affective sensation; to undergo/experience the physical manifestation(s) of an affective state
OBJ	(to be) the state/act/event/situation which gives rise or causes the particular affective state

-DH- ‘SENSATION OF WARMTH’	
Stem 1	feel warm (inside one’s body)
Stem 2	feel hot (inside one’s body)
Stem 3	feel feverish (inside one’s body)

-XN- ‘SENSATION OF COOLNESS’	
Stem 1	feel cool (inside one’s body)
Stem 2	feel cold (inside one’s body)
Stem 3	feel chilled / have the chills (inside one’s body); be shivering, have the shivers

-GD- ‘PHYSICAL SENSE OF WELL-BEING’	
Stem 1	feel good, feel sense of physical well-being
Stem 2	feel relaxed
Stem 3	feel post-orgasmic/post-coital bliss; “afterglow”

-LTN- ‘PHYSICAL “HIGH” / ALTERED STATE OF CONSCIOUSNESS’	
Stem 1	natural “high” / natural state of euphoria (physical/sensory, not emotional in origin)
Stem 2	chemically-induced “high”
Stem 3	trance-like state / altered state of consciousness

-PSW- ‘RESPIRATION’	
Stem 1	breathe
Stem 2	pant (i.e., due to physical/sexual exertion, excitement, fright, pulmonary, illness, etc.); feel/be out of breath, short-of-breath
Stem 3	gasp (i.e., once, as in surprise, shock, pain, etc.)

-MSŘ- ‘RESPIRATORY DIFFICULTY’	
Stem 1	wheeze
Stem 2	have râles (pulmonary crepitations)
Stem 3	choke / asphyxiate

	-GZŘ- ‘AUTONOMIC RESPIRATORY REACTIONS’
Stem 1	feel need to yawn [CPT = to yawn]
Stem 2	feel need to cough [CPT = to cough]
Stem 3	feel need to sneeze [CPT = to sneeze]

	-KHW- ‘SEMI-CONSCIOUS RESPIRATORY REACTIONS’
Stem 1	sigh
Stem 2	huff (as in indignation, annoyance, or anger)
Stem 3	puff, blow out [held] breath (as when relieved, caught off guard, saying “phew!”)

	-JŘ- ‘GASTRO-INTESTINAL PAROXYSM 1’
Stem 1	feel need to belch/burp [CPT = to belch/burp]
Stem 2	experience a hiccup
Stem 3	experience gagging; to gag

	-ŘXM- ‘GASTRO-INTESTINAL PAROXYSM 2’
Stem 1	feel need to vomit [CPT = to vomit]
Stem 2	feel need to fart [CPT = to fart]
Stem 3	feel stomach or intestinal cramp

	-PSŘ- ‘HAVE AN ITCH; TO ITCH’
Stem 1	have an itch; to itch
Stem 2	feel a tingling sensation (on skin)
Stem 3	feel a burning sensation (on skin)

	-CXW- ‘TACTILE INJURIES TO SKIN’
Stem 1	feel a scrape
Stem 2	feel a bruising/contusion
Stem 3	feel a pinch(ing)

	-FN- ‘HUNGER / THIRST’
Stem 1	feel hunger/hungry
Stem 2	feel thirst/thirsty
Stem 3	feel undernourished

	-ŁM- ‘FEEL TIREDNESS/FATIGUE’
Stem 1	feel tiredness/fatigue
Stem 2	feel drowsiness/sleepiness
Stem 3	feel unfocused/groggy

	-ČŘ- ‘BODILY WASTE ELIMINATION’
Stem 1	feel need to urinate [CPT = to urinate]
Stem 2	feel need to defecate [CPT = to defecate]
Stem 3	salivate / feel need to spit [CPT = to spit]

	-TFŘ- ‘FEEL INTEROCEPTIVE BODILY MOVEMENT’
Stem 1	feel bloated/gassy
Stem 2	feel stomach/intestines “rumbling”
Stem 3	feel stomach contents “shift”

	-LW- ‘ABNORMAL INTEROCEPTIVE SENSATION’
Stem 1	feel light-headed / dizzy
Stem 2	feel faint
Stem 3	feel shock / be in shock

	-FTR- ‘ABNORMAL AFFECTIVE TACTILE SENSATION [ON SKIN]’
Stem 1	feel a tickle
Stem 2	feel a prickly sensation
Stem 3	feel an “ants/spiders crawling” sensation

	-MBŘ- ‘ABNORMAL VESTIBULAR-PROPRIOCEPTIVE SENSATION’
Stem 1	feel vestibular lack of balance; feel off-balance/unbalanced / having impaired balance / off-kilter
Stem 2	feel awkwardness/unfamiliarity with one’s bodily motor coordination (e.g., when drunk, following a stroke, during puberty, etc.)
Stem 3	feel “shaky”, difficulty in controlling one’s vestibular/muscular coordination (e.g., due to emotional shock, illness, fright, etc.)

	-CTW- ‘PENETRATIVE SENSATION THROUGH SKIN’
Stem 1	feel a sting/prick
Stem 2	feel a stab; feel a piercing; sharp penetration through skin
Stem 3	feel a bite (by a toothed entity)

	-ŘX- ‘PHYSICAL PAIN’
Stem 1	feel external tactile pain
Stem 2	feel interoceptive/proprioceptive pain
Stem 3	feel muscular strain

	-VZW- ‘SOCIALLY-BASED PLEASURABLE TACTILE SENSATION’
Stem 1	sensation from having body or part of body massaged
Stem 2	sensation from having back scratched
Stem 3	caress / feel of “soft touch” / “social touch” (a.k.a. affective touch, somatosensory touch)

	-JDW- ‘AFFECTIVE TACTILE REACTIONS’
Stem 1	feel “a thrill down one’s spine”
Stem 2	feel one’s “hairs standing on the back of one’s neck”
Stem 3	“have the creeps / have the willies”

	-MŽW- AFFECTION-BASED TACTILE SENSATION’ *
Stem 1	sensation from being kissed by another’s lips
Stem 2	sensation of being hugged/embraced in another’s arms
Stem 3	sensation of being cuddled

* use RCP Valence with these stems to indicate mutual interaction

	-LGV- ‘CARDIOGENIC SENSATION’
Stem 1	feel one’s heart beating
Stem 2	feel one’s heart racing
Stem 3	feel one’s heart fluttering

	-KŘ- ‘FEEL ILL / SICK / WEAKNESS’
Stem 1	feel ill/sick/unhealthy; feeling of general malaise, feel “blah”, feel so-so, feel poorly
Stem 2	feel torpor/lethargy
Stem 3	feel weakness

	-KSN- ‘POSITIVE OVERALL PHYSICAL STATE’
Stem 1	feel energized/alert
Stem 2	feel physically in shape
Stem 3	feel physically strong

	-MMH- ‘PHYSICAL/SENSORY PLEASURE’
Stem 1	feel physical/sensory pleasure
Stem 2	feel comfortable (i.e., no pain/strain/stress/fatigue/hunger/worry, etc.)
Stem 3	feel physical satisfaction/satiety or physical relief (from previous state of pain/strain/fatigue/hunger/worry, etc.)

	-GH- ‘BRUISE / SWELLING / INFLAMMATION’
Stem 1	have/feel a bruise
Stem 2	feel sore, have/feel inflammation, swelling
Stem 3	have a sensitive/tender feeling on the body (no visible swelling or bruise)

	-ZĞŘ- ‘INTERNAL BURNING/TINGLING/PRICKLY SENSATION’
Stem 1	have/feel an internal “burning” sensation
Stem 2	have/feel an internal tingling sensation
Stem 3	have/feel an internal prickly/stinging sensation

	-ZG- ‘ACHE / SHARP PAIN / RADIATING PAIN’
Stem 1	feel/have an ache (i.e., diffuse, non-sharp pain) [using SUF/EXN affixes, this stem can mean ‘feel throbbing/pounding pain’]
Stem 2	feel sharp/stabbing pain
Stem 3	feel radiating “shooting” pain

	-PFN- ‘TWITCHING / FLUTTERING / TREMBLING’
Stem 1	feel a twitch or twinge
Stem 2	feel a fluttering sensation
Stem 3	feel/experience a tremor or trembling

	-JDV- ‘NUMBNESS / “PINS & NEEDLES” FEELING’
Stem 1	feel that a limb has “fallen asleep”,
Stem 2	“pins & needles” feeling in one’s limb (after it has been “asleep”)
Stem 3	feel internal numbness or “dead” feeling (i.e., a lack of an expected internal sensation)

	-DĞŘ- ‘QUEASINESS / NAUSEA / VOMITING’
Stem 1	have no appetite (even though one has not recently eaten)
Stem 2	feel queasy (mildly nauseous feeling)
Stem 3	feel nauseous; have nausea, feel as if one is going to vomit [CPT version = ‘to vomit’]

	-ḐČ- ‘BLACK-OUT / SPELL / SEIZURE’
Stem 1	experience a feeling of “blacking out” or “blacking out”
Stem 2	experience an episode or spell of inattention or loss of awareness/focus; to “zone out”/ “space out”
Stem 3	experience a seizure

	-ÑH- ‘EXHAUSTION / FATIGUE / FEEL FLUSHED’
Stem 1	feel exhausted/exhaustion from physical/mental exertion
Stem 2	feel fatigue from illness, overwork, stress, etc.
Stem 3	feel flushed; have flushed feeling

4.5.7 Affective Mental/Psychological States

The 12 roots below designate various affective mental/psychological states which have quasi- or pseudo-informational “content”. They have the following Specification pattern:

BSC	(to be) the particular affective state and the sensing thereof [act of sensing + sensation itself]; to experience the particular affective state [both the sensing and the sensation itself]
CTE	(to be) the semiotic-informational content of the particular affective state
CSV	(to be) the physical manifestation(s) of the affective state; to undergo/experience the physical manifestation(s) of the particular affective state
OBJ	(to be) the circumstance(s)/event/situation/encounter which triggers or gives rise to the particular affective state

	-TW- ‘DREAM’
Stem 1	dream
Stem 2	lucid dream
Stem 3	nightmare

	-LḐŘ- ‘ILLUSION / SYNAESTHESIA / HALLUCINATION’
Stem 1	sensory illusion (i.e., misinterpretation of a real sensory experience)
Stem 2	synaesthetic experience
Stem 3	hallucination; apparition

	-LŘ- ‘INSTINCT’
Stem 1	instinct; act/behave on instinct [state + content]
Stem 2	involuntary state/act; reflex
Stem 3	autonomic state/reflex

	-MN- ‘MOOD / TEMPERAMENT / NATURE’
Stem 1	mood; behave based on a mood
Stem 2	one’s natural/usual “default” demeanor / temperament
Stem 3	one’s nature / the essence of one’s sense of self

	-FTW- ‘DECEPTION / BEGUILEMENT/ DELUSION’
Stem 1	state of being deceived/fooled; act/behave based on being under a deception
Stem 2	state of being beguiled/ /seduced; act/behave based on having been beguiled/seduced or psychologically manipulated
Stem 3	state of delusion, be deluded

	- ŠFW - ‘DÉJÀ VU / JAMAIS VU’
Stem 1	state of experiencing déjà vu
Stem 2	state of experiencing jamais vu
Stem 3	state of disbelief in one’s circumstance / sense of unreality regarding the present moment

	-ŽDW- ‘DISSOCIATIVE STATE’
Stem 1	state of daydreaming
Stem 2	state of being mesmerized (inattentive to surroundings)
Stem 3	state of sleepwalking

	-ŽDY- ‘INDUCED DISSOCIATIVE STATES’
Stem 1	meditative state
Stem 2	hypnotic state
Stem 3	out-of-body experience

	-BŽB- ‘ABSENT-MINDEDNESS / DISTRACTION / SCATTER-BRAINEDNESS’
Stem 1	state of absent-mindedness (i.e., forgetfulness of, and/or inattention to one’s routine responsibilities due to placing one’s narrow interests above other concerns)
Stem 2	state of distraction/preoccupation (i.e., inattentive to external stimuli other than the singular focus of one’s attention)
Stem 3	state of being scatter-brained or ditzzy (i.e., inattentive to analyzing one’s situation or using commonsense/judgement/reason while going about one’s business)

	-BŘ- ‘IRRATIONALITY / MENTAL ILLNESS’
Stem 1	state of irrationality
Stem 2	state of having a non-violent psychological disorder
Stem 3	state of violent or dangerous madness/insanity

	-VZN- ‘SPONTANEOUS SUSPICION OVER PERSONAL SPACE’
Stem 1	feeling of being watched
Stem 2	feeling that one is not alone; feeling that someone else is present
Stem 3	feeling that something ominous is about to happen

	-ŇC- ‘RELUCTANCE / SQUEAMISHNESS / COWARDICE’
Stem 1	feel reluctance, feel reluctant
Stem 2	feel squeamishness, feel squeamish, have qualms about
Stem 3	feel cowardice, feel cowardly

	-VĹ- ‘PSYCHOLOGICAL PLEASURE’ Associated Affix: PLE (Specification pattern for this root follows that of the Emotion roots)
Stem 1	feel psychological/emotional pleasure
Stem 2	feel psychological relief (from previous state of mental stress, grief, worry, etc.)
Stem 3	feel psychological sense of satisfaction/satiety

This root is also used as the **SATIATIVE (SAT) Bias Affix**: ‘*How satisfying...!*’
‘*At last, the pleasure of knowing/being/seeing/doing....*’ [psychological/emotional pleasure/satiety only]

4.5.8 Affective Unconscious/Semi-Conscious Autonomic States/Acts

These are similar to the interoceptive/proprioceptive/vestibular roots above. They take the following Specification pattern:

BSC	(to be) the particular affective state and the experience thereof [act of experiencing the state + the state itself]; to experience the particular affective state [both the experience and the state itself]
CTE	(to be) the particular affective experience, the affective act/state itself
CSV	(to be) the physical manifestation(s) of the affective experience; to undergo/experience the physical manifestation(s) of the particular affective state
OBJ	(to be) an organ/bodily system/process which gives rise to the particular affective state

	-JW- ‘LAUGHTER’
Stem 1	laugh
Stem 2	snicker
Stem 3	chuckle

	-SŇ- ‘ORAL-NASAL REFLEX’
Stem 1	make oral sound of derisiveness (e.g., “pfft”, “pshhh”, etc.)
Stem 2	drop jaw (i.e., open mouth suddenly in surprise/shock/pain)
Stem 3	snort (e.g., in disgust)

	-BDY- ‘MISC. AUTONOMIC BODILY PROCESS’
Stem 1	blink eyelids
Stem 2	digest stomach contents
Stem 3	sweat

	-ŽBŘ- ‘OSCILLATIVE AFFECTIVE BODILY STATE’
Stem 1	shiver
Stem 2	fidget (unconsciously)
Stem 3	shake leg or foot (unconsciously)

	-GŽ- ‘FLINCH / JOLT / DUCK’
Stem 1	flinch/jolt
Stem 2	duck/crouch (as self-preservation reflex)
Stem 3	jump/leap out of the way (as self-preservation reflex)

	-ZN- ‘AFFECTIVE SEXUAL RESPONSE’
Stem 1	sexual arousal response (e.g., erection, lubrication, hardening of nipples, etc.)
Stem 2	approach orgasm [CPT = achieve orgasm]
Stem 3	ejaculation

	-TKŘ- ‘NEURO-MUSCULAR REACTION’
Stem 1	nervous tic
Stem 2	spasm
Stem 3	cramp

	-NGR- ‘SEMI-CONSCIOUS ORAL-NASAL SOUND/ACTION’
Stem 1	grunt
Stem 2	clear throat
Stem 3	sniffle / snort (to clear nasal mucus)

4.5.9 Semi-Conscious Habitual Acts

The following roots for semi-conscious habitual acts follow the same Specification pattern as the affective states immediately above.

	-STN- ‘NERVOUS HABIT’
Stem 1	bite fingernails
Stem 2	pick nose
Stem 3	crack knuckles

	-XPW- ‘HABITUAL ACTION’
Stem 1	scratch oneself (unconsciously)
Stem 2	rub or pinch oneself
Stem 3	suck thumb

	-DMW- ‘EMOTION-BASED PHYSICAL REACTION’
Stem 1	shrug
Stem 2	roll eyes
Stem 3	drop one’s jaw in surprise/shock

	-TPŘ- ‘HABITUAL ORAL ACTION’
Stem 1	purse lips
Stem 2	make smacking or other oral clicking sound
Stem 3	trill lips

	-ŠKF- ‘FACIAL EXPRESSION’
Stem 1	(one’s) facial expression
Stem 2	(one’s) natural/relaxed/unconscious facial expression
Stem 3	a conscious/semi-conscious/affected facial expression, a “look”

	-ŠKT- ‘NEGATIVE FACIAL EXPRESSION’
Stem 1	frown
Stem 2	scowl
Stem 3	have crestfallen/dejected look

	-ŠKV- ‘ATYPICAL FACIAL EXPRESSION’
Stem 1	“scrunch up” one’s face in irritation/puzzlement/concentration
Stem 2	look of distraction / not paying attention / being “far away”
Stem 3	raise eyebrows due to encountering/considering something unexpected

	-ḐBŘ- ‘ONE’S POSTURE’
Stem 1	straight / “ramrod” / “good” / upright / attentive posture
Stem 2	relaxed / slouched posture; to slouch, relax one’s posture
Stem 3	stooped / “poor” posture

	-MW- ‘SMILE / GRIN / SMIRK’
Stem 1	smile (lips closed)
Stem 2	grin (i.e., smile with teeth visible)
Stem 3	smirk

	-RTN- ‘FIDDLE / PLAY ABSENT-MINDEDLY’
Stem 1	play with hair
Stem 2	play with piece of clothing or jewelry (unconsciousness)
Stem 3	fiddle with object

4.5.10 Emotional States

The following general root for any affective state provides the Stem & Specification pattern used with the over one hundred roots for emotional states listed beginning on the next page.

-ÇM- ‘AFFECTIVE STATE’		Associated Affix: EMO
BSC	STEM 1: (to be in) a non-volitional (affective) state (both internal, psychological manifestations and external, visible manifestations)	STEM 2: [same as Stem 1 except that the affective state is specifically a non-volitional emotional state] STEM 3: [same as Stem 1 except that the affective state is specifically a non-volitional physical/bodily (i.e., non-psychological state), e.g., being hot/cold, coughing, sneezing, fainting, sleepy/tired, hungry, etc.]
CTE	(to be) the internal psychological, and proprioceptive sensation of being in such a state; to experience such manifestations	
CSV	(to be) the “look” of being in such a state. i.e., the outward (visible or externally discernible) manifestation of being an affective state; to have the “look” of, (i.e., outwardly manifest the signs of) being in an emotional state	
OBJ	(to be) the act/event/situation/circumstance(s) which trigger or give rise to an affective state	

Roots for more than one hundred emotional states are listed below. They all follow the same Stem & Specification pattern as the root **-ÇM-** above:

4.5.10.1 Desirable/Positive Emotions

-ŃV-	1. feel(ing of) jollity/merriment/delight 2. feel(ing of) happiness 3. feel(ing of) jubilation (= short-term sense of joy)
-RPL-	1. feel(ing of being) upbeat / in a good mood 2. feel(ing of) being spirited, feeling “alive”, feeling uplifted 3. feel(ing of) mental/spiritual youthfulness and joie-de-vivre
-TKY-	1. feel(ing of) gleefulness/fun/amusement 2. feel(ing of) free-spiritedness/frivolity/being care-free 3. feel(ing of) playfulness, gregariousness
-RTK-	1. feel(ing of) sympathy / commiseration 2. feel(ing of) compassion 3. feel(ing of) empathy
-NTK-	1. feel(ing of being) hopeful; wishful for beneficial outcome 2. feel(ing of being) encouraged 3. feel(ing of) optimism
-TMY-	1. feel(ing of being) honored/privileged 2. feel(ing of being) beholden, wanting to give back 3. feel(ing of being) humble, humility
-RKY-	1. feel(ing of being) emotionally open/available/warm/inviting 2. feel(ing of) amiability/welcoming/accommodating/cordial 3. feel(ing of) amicability, friendliness, congeniality
-KTR-	1. feel(ing of being) resolved, resolute, committed, feel(ing) of commitment 2. feel(ing of) audacity; feel audacious 3. feel(ing of) tenacity/perseverance; feel tenacious/perseverant, determined against odds
-MSW-	1. feel(ing of) tolerance 2. feel(ing of being) accepting 3. feel(ing of being) trusting

-SMW-	1. feel(ing of) calm and rationality 2. feel(ing of) serenity, feel(ing) mentally/emotionally “refreshed” 3. feel(ing of) emotional well-being/peace of mind
-ZMM-	1. feel(ing of) enjoyment 2. feel(ing of) excitement 3. feel(ing of) a thrill, “whee!”
-TPL-	1. feel(ing of being) self-satisfied / pleased with one self / gratified 2. feel(ing of) pride in oneself/self-pride 3. feel(ing of) self-confidence, self-esteem
-VTL-	1. feel(ing of) being pleased, feel(ing of) emotional gratification 2. feel(ing of) satisfaction, feel(ing) that all is going well/has gone well 3. feel(ing of) deep satisfaction in one’s good fortune
-LKP-	1. feel(ing of) relief/reprieve from a burden or from anxiety 2. feel(ing of) personal independence/autonomy/self-determination 3. feel(ing of) freedom
-LPW-	1. feeling of peace of mind due to achieving solitude 2. peaceful euphoria of being alone with Nature’s beauty 3. serenity through solitude as a character trait
-RTR-	1. feeling of kindness, warm-heartedness, decency 2. feeling benevolent, helpful, beneficent 3. felling of kindliness, magnanimity, generosity
-GZZ-	1. feel(ing of) elation, feel(ing of being) on an emotional “high” 2. feel(ing of) euphoria, bliss 3. feel(ing of) ecstasy
-NR-	1. feel(ing of) enthusiasm 2. feel(ing of) enthusiastic anticipation/looking forward to / feel one can’t wait for 3. feel(ing of being) lucky/auspicious/propitious

-NTR-	<ol style="list-style-type: none"> 1. feel(ing of) joy [= long-term sustained sense of happiness + sense of security in one's happiness + serene introspective appreciation for the situation that brings such a state] 2. feel(ing of) joy centered on what one has accomplished 3. feel(ing of) joy from one's social/familial/romantic connections
-ŠLW-	<ol style="list-style-type: none"> 1. feel(ing of) calmness, composure, placidity 2. feel(ing of) patience; be patient, have patience 3. feel(ing of) sang-froid, keeping one's cool, grace under pressure, level-headedness under stress

-MÇW-	<ol style="list-style-type: none"> 1. feel(ing of) mental clarity; to sense that one's confusion or lack of understanding regarding something has vanished 2. feel(ing of) extreme mental efficacy; feel that one's mind can suddenly tackle any problem and find heretofore hidden solutions 3. feel(ing of) mental prowess; feel that one's mind is sufficiently powerful and intelligent to understand anything

4.5.10.2 Emotions Associated With Personal Relationships/Intimacy

-LTW-	<ol style="list-style-type: none"> 1. feel(ing of) fondness, affection 2. feel(ing of) a bond of fellowship, companionship, camaraderie 3. feel(ing of) friendship
-KVV-	<ol style="list-style-type: none"> 1. feel(ing of) aesthetic appreciation for something 2. feel(ing of) personal appreciation, admiration 3. feel(ing of being) impressed by / feel(ing of) pride in another or others
-RKW-	<ol style="list-style-type: none"> 1. feel(ing of) romantic love 2. feel(ing of) filial love 3. feel(ing of) love for an institution, country, place, ideal, or other abstraction
-RPY-	<ol style="list-style-type: none"> 1. feel(ing of being) part of something, feeling of belonging 2. feel(ing of) familiarity, feel(ing of being able to be) one's true self due to sense of familiarity with surroundings and the people present 3. feel(ing of) coziness, "home-sweet-home" feeling, hygge
-LTL-	<ol style="list-style-type: none"> 1. feel(ing of) surprise, floating-on-air, and joy when someone you love romantically tells you they love you in return 2. feel(ing of) emotional warmth plus relief plus pride plus awe at having reached the point in a relationship with another person where you truly understand and trust each other 3. feel(ing of) emotional solidity and depth of the mutual bond felt by persons in a longstanding, successful romantic relationship.

-LPY-	<ol style="list-style-type: none"> 1. feel(ing of) gladness (= pleasure at other's happiness or good fortune) 2. feel(ing of) cheerfulness (= light-hearted good will toward others) 3. feel(ing of) desire to spread cheer among others
-PKR-	<ol style="list-style-type: none"> 1. feel(ing of) embarrassment at receiving flattery 2. feel(ing of being) indebted to someone (willingly, fairly) 3. feel(ing of being) indebted to someone (unwillingly, resentfully)
-LTY-	<ol style="list-style-type: none"> 1. feel(ing of) tenderness/ protectiveness 2. feel(ing of being) nurturing/caring/nurse-like 3. feel(ing of) maternal- or paternal-love; love based on raising/nurturing/caring for someone
-RPR-	<ol style="list-style-type: none"> 1. feel(ing of) devotion 2. feel(ing of) personal loyalty 3. feel(ing of) allegiance/fealty
-MTL-	<ol style="list-style-type: none"> 1. feel(ing of) poignancy (= "aaw" reaction to an event characterized by irresistible cuteness) 2. feel(ing of) poignancy, feeling touched or moved by witnessing an act/event of compassion/tenderness/love, etc.) 3. feel(ing of having) the capacity to be easily moved

-TKR-	<ol style="list-style-type: none"> 1. feel(ing of being) worthy, deserving 2. feel(ing of) appreciated, recognized, honored 3. feel(ing of being) loved, adored, worshiped
-LŠ-	<ol style="list-style-type: none"> 1. feel(ing of) exaltation, “being on top of the world” 2. feel(ing of) ecstatic awareness at the joy and wonder of being alive 3. feel(ing of) achieving a moment in which one’s life-state is perfect; an ‘it doesn’t get any better than this’ feeling
-CD-	<ol style="list-style-type: none"> 1. feeling of love for existence / pantheistic love 2. feeling of inherent “connection” to or oneness with the universe through space and time 3. feeling of being deeply/personally moved/contemplative/humbled by something extraordinary such as a work of art, a moving speech, an inspiring sight of Nature, etc. Akin to the Spanish-language notion of <i>duende</i>, but applied to contexts beyond art.

-LTR-	<ol style="list-style-type: none"> 1. feel(ing of being) romantic (i.e., preoccupied with idealized, fabulous notions of life, adventure, and love) 2. feel(ing of having) a head-in-the-clouds fantasy feeling, “dreaming” 3. feel(ing of being) lost in one’s fantasies and daydreams
-ŽY-	<ol style="list-style-type: none"> 1. feel(ing of) being supportive; doing what one can to support another [= no implication of self-sacrifice or altruism, i.e., it is one’s genuine desire to use one’s own talents/resources/efforts to support or help another] 2. feel(ing of) wanting to participate or help out; desire to make an effort to accomplish something for others 3. feel(ing of being) wanting to make a difference, desire to find personal meaning or spiritual fulfillment for oneself by accomplishing something that helps others
-MML_Y-	<ol style="list-style-type: none"> 1. feel(ing of) sudden clarity/understanding upon discovery of the solution to a problem/puzzle/mystery — the “a-ha!” moment 2. feel(ing of) personal triumph, of conquering a personal challenge 3. feel(ing of) victory, that one has vanquished an enemy

4.5.10.3 Ambivalent Emotions

-VÇ-	<ol style="list-style-type: none"> 1. feel(ing of) pity 2. feel(ing of) mercy 3. feel(ing of) charitableness, altruism, self-sacrifice
-LC-	<ol style="list-style-type: none"> 1. feel(ing of) curiosity, piquancy, a desire for new experience 2. feel(ing of) interest, to be interested 3. feel(ing of) being intrigued
-ŽČ-	<ol style="list-style-type: none"> 1. feel(ing of) wistfulness/longing/yearning 2. feel(ing of) sentimentality/nostalgia 3. feel(ing of) saudade
-KFF-	<ol style="list-style-type: none"> 1. feel(ing of) nonchalance/indifference/incuriosity/lack of interest 2. feel(ing of) disdain/dismissiveness 3. feel(ing of) apathy

-KŠŠ-	<ol style="list-style-type: none"> 1. feel(ing of being) judgmental 2. feel(ing of) contempt; morally superior feeling + disgust, anger, or resentment 3. feel(ing of) vindictiveness, feeling of an “injustice collector”
-KSD-	<ol style="list-style-type: none"> 1. feel(ing of) bittersweetness 2. feel(ing of) solace/comfort in the face of sadness or grief 3. feel(ing of) forbearance/fortitude/inner strength in the face of sadness
-BZT-	<ol style="list-style-type: none"> 1. feel(ing of) determination/earnestness 2. feel(ing of) eagerness/fervor, feel driven 3. feel(ing of) zeal/zealotry/fanaticism
-GZP-	<ol style="list-style-type: none"> 1. feel(ing of) emotionally reckless, impetuous, feel like taking risks 2. feel(ing of) mischievousness/devilishness/spontaneous non-conformity 3. feel(ing of) exhilaration / feeling of fear plus thrill at taking risk

-GŽT-	1. feel(ing of) masochistic pleasure derived from being in pain 2. feel(ing of) masochistic pleasure derived from being humiliated 3. feel(ing of) masochism as a personality trait
-PSB-	1. feel(ing of being) whimsical, care-free 2. feel(ing of being) capricious, feel like playing pranks 3. feel(ing of being) wanton, wayward
-VVR-	1. feel(ing of) passion 2. feel(ing of) infatuation/obsessiveness 3. feel(ing of) worship/adoration
-JKÇ-	1. feel(ing of) contemplation; feel contemplative 2. feel(ing of) pensiveness; feel pensive 3. feel(ing of) brooding; feel in brooding mood
-KLL-	1. feel(ing of) surprise 2. feel(ing of) amazement, astonishment 3. feel(ing of) awe, wonder
-JK-	1. feel(ing of) willingness to take a risk, steeling one's nerves against 2. brave, fearless 3. feel(ing of) intrepidity, courageousness
-PSG-	1. feel(ing of) smugness 2. feel(ing of) conceit, feel(ing of being) full of oneself 3. feel(ing of) narcissism, self-aggrandizement
-KŠM-	1. feel(ing of) complacency, a lack of concern 2. feel(ing of) emotional/psychological detachment, 3. feel(ing of) unwillingness to get involved, psychological avoidance

-VZK-	1. craving (i.e., a greedy hunger for food, adventure, power, money, salacious or forbidden experiences, etc.) 2. sexual lust 3. greed / avarice
-KSG-	1. alert, senses-at-the-ready 2. feeling of wariness/suspicion (that something adverse may happen); be/feel wary, suspicious 3. feeling of watchfulness/vigilance; be/feel watchful/vigilant
-ŽŽJ-	1. feel(ing of) fascination; be/feel fascinated 2. feel(ing of) enthrallment; be/feel enthralled 3. feel(ing of) entrancement/rapture; be/feel entranced/rapturous
-GZT-	1. feel(ing of) impulsiveness; feel impulsive 2. feel(ing of) inspiration; feel inspired 3. feel(ing of) compulsion; feel compelled
-ĽĽČ-	1. feel(ing of being) startled 2. feel(ing of being) dazzled/astounded/spellbound, “wow!” 3. feel(ing of being) aghast/dumbfounded, feel stupefaction/stupor
-BZV-	1. open to adventure/hungry for (new) experience 2. feeling the itch to travel; feel the call of faraway places (German <i>Fernweh</i>) 3. bittersweet loneliness of not being able to share the joy of an adventure with others
-ČB-	1. feel(ing of being) daring, feel(ing) like taking a risk 2. (have) the nerve to, (have) the “cheek” to 3. feel(ing of) dauntlessness, “devil-may-care” attitude
-NZF-	1. feel(ing of) relief/triumph at having survived/overcome a danger with simultaneous feeling of foolishness/self-loathing due to the dangerous situation having been one's own fault 2. feel(ing of) guilty relief/triumph that one has gotten away clean with something mischievous/underhanded/sneaky 3. feel(ing of) guilty relief/triumph that one has gotten away clean with a criminal/illegal act

4.5.10.4 Undesirable/Negative Emotions

-KSK-	1. annoyance/irritation (caused by external event/state/situation/person) 2. anger, ire 3. rage, fury; feel furious
-JGR-	1. feel(ing of) disappointment, feel let down 2. feel(ing of) disillusionment 3. feel(ing of being) jaded, cynical
-MRŘ-	1. sadness/grief 2. sorrow/lamentation 3. woefulness/despair/desolation /misery
-PŠŠ-	1. feel(ing of being) misunderstood 2. feel(ing of) indignation/being offended/feel insulted 3. feel(ing of) resentment, bitterness, being treated unfairly
-KÇÇ-	1. feel(ing of) frustration, exasperation 2. feel(ing) emotionally upset, “not know what to think” 3. feel(ing of being) disconcerted, defeated
-MDR-	1. puzzlement as to why one is uncomfortable in a situation 2. feeling that something is wrong with a situation 3. restlessness/dissatisfaction that something is wrong w/ one’s life
-RNG-	1. feel(ing of) self-directed annoyance/irritation 2. feel(ing of) self-directed disappointment/letdown (at failure to meet one’s own expectations) 3. feel(ing of) anger at oneself over failure to meet one’s own expectations
-KSB-	1. feel(ing of) emotional numbness/ emotional weariness / emotional fatigue/saturation/burn-out 2. feel(ing of being) emotionally unavailable/closed/cold 3. feel(ing of being) stoic/phlegmatic/stolid/repressed
-JDR-	1. feel(ing of) emotional stress/pressure 2. feel(ing of being) at emotional breaking-point, feel(ing) that one “can’t take it anymore” 3. feel(ing of being) on the verge of loss of control of one’s composure or inhibitions [CPT = loss of emotional control; nervous breakdown]

-ŠŠTL-	1. repugnance/repellent feeling in reaction to sensory input 2. disgust at a situation or someone’s behavior, words, etc. 3. shock/disbelief in the face of unexpected repugnance/horror
-GZJ-	1. uncertainty, feel unsure of oneself 2. discomfiture at being out of one’s element or one’s depth 3. self-doubt, lacking self-confidence, low self-esteem
-BGR-	1. feel(ing of) mental “fogginess”, inability to concentrate or focus 2. feel(ing of) mental lassitude, mental laziness, feel uninspired / “stuck in a rut” 3. feel(ing of) anhedonia [inability to feel/experience pleasure]
-JBR-	1. feel(ing of) restlessness/disquietude/tension/being “on edge” 2. feel(ing of) nervousness / agitation 3. feel(ing of) hysteria/loss of emotional control
-ZGL-	1. feel(ing of) regret/remorse/ruefulness over one’s acts, behavior or words 2. feel(ing of) regret/remorse/pining over past might-have-beens or inactions 3. feel(ing of being) penitent, feel need to to make amends for past sins
-ZGR-	1. feel(ing of) apprehension, foreboding 2. feel(ing of) anxiety/nervousness/unease 3. feel(ing of) fear/trepidation /fright
-BZG-	1. feel(ing of) melancholy/emotional malaise 2. feel(ing of being) glum / gloomy / discontented 3. feel(ing of) depression/unhappiness
-ŘŘN-	1. feel(ing of) envy 2. feel(ing of) jealousy 3. feel(ing of) covetousness
-RMZ-	1. feel(ing of being) sullen/moody/morose 2. feel(ing of being) churlish, antisocial, irascible 3. feel(ing of being) rebellious

-FKT-	1. feel(ing of being) flustered at not knowing how to react or what to think/do 2. feel(ing of) embarrassment due to social faux pas/misstep 3. feel(ing of being) foolish, feel(ing of) shame over playing the fool
-GVV-	1. feel(ing of) puzzlement, perplexity 2. feel(ing of) confusion, feel one doesn't understand a situation 3. feel(ing of) bewilderment
-KTP-	1. feel(ing of being) spiteful, vindictive 2. feel(ing of being) begrudged, feel rancorous. unforgiving, holding a grudge 3. feel(ing of being) vengeful / feel a desire for revenge
-TMW-	1. feel(ing of being) cheated 2. feel(ing of being) victimized/used/violated 3. feel(ing of being) traumatized
-PŇ -	1. feel(ing of being) mean/malicious/malevolent/ill-willed 2. feel (a desire to be) cruel or sadistic 3. feel(ing of) sadistic pleasure at another's pain or torment
-BZB-	1. feel(ing of) bashfulness, timidity 2. feel(ing of) shyness 3. feel(ing of) stagefright
-LLČ-	1. feel(ing of) dismay 2. feel(ing of) alarm, surprise (at negative occurrence/experience) 3. feel(ing of) shock/reeling (from unexpected bad news/experience)
-GVR-	1. feel(ing of) awkwardness 2. feel(ing of) embarrassment 3. feel(ing of) humiliation
-JGL-	1. feel(ing of) world-weariness (German: <i>Lebenskrankheit</i>) 2. feel(ing of) Weltschmerz 3. feel(ing of) feeling of futility in the face of realizing the transience and seeming meaninglessness of life and the universe
-KNY-	1. feel(ing of) stinginess, feel stingy 2. feel(ing of) selfishness 3. feel(ing of) uncharitableness, uncompassionate, miserliness

-VVZ-	1. feel(ing of) worry/ feel(ing of being) preoccupied/fretful/concerned over 2. feel(ing of) dread (anticipation of something negative/detrimental) 3. feel(ing of) feel(ing of) angst
-ZDL-	1. feel(ing of) emotional emptiness/hollowness/shallowness 2. feel(ing of being) unemotional / lacking emotion / feel nothing 3. feel(ing of) cavalierness/lack of empathy
-RGZ-	1. feel(ing of being) flustered due to conflicting sensory/emotional input 2. feel(ing of) emotional overload/feel need to take an emotional break 3. feel(ing of being) emotionally overwhelmed / swooning
-VXW-	1. feel(ing of) shame or guilt 2. feel(ing of) apprehension and guilt that one is in trouble or has done something wrong 3. feel(ing of) self-loathing over one's own failings/wrongdoings
-RNŽ-	1. feel(ing of) doubt, dubiousness (= uncertainty as to whether to believe something is true/accurate) 2. feel(ing of) skepticism 3. feel(ing of) disbelief, incredulity
-MMF-	1. feel(ing of) doubt (= feel misgivings, feel one is being fooled or doesn't have all the facts) 2. feel(ing of) suspicion (that someone/something is not what it seems) 3. feel(ing of) caution (= feeling that one may be in unsafe situation)
-ŽŽG-	1. feel(ing of) dejection, downheartedness, crestfallenness 2. feel(ing of) rejection 3. feel(ing of) heartbreak, heartache
-KSP-	1. feel(ing of) pessimism / feeling that things are not okay 2. feel(ing of) defeatism, feel defeatist 3. feel(ing of) paranoia, feel paranoid
-VGR-	1. feel(ing of being) full of nervous energy, feel manic 2. feel(ing a) need to lash out or to make a scene, 3. feel(ing of being) nihilistic, feel like destroying/defacing the sublime
-PMW-	1. feel(ing of) stubbornness, obstinacy 2. feel(ing of) unyielding, steadfast 3. feel(ing of) intransigence/implacability

-XPL-	<ol style="list-style-type: none"> 1. feel(ing of being) distracted, distraction, feel difficulty in focusing or paying attention, feel unable to get one's mind off something 2. feel(ing of being) unaware/ignorant of what's going on in a situation 3. feel(ing of being) unaware/ignorant of what's going on in the world or in life 	-ŽŽV-	<ol style="list-style-type: none"> 1. feel(ing of) impatience 2. feel(ing of) irritability/being easily-angered, being on-edge 3. feel(ing of) needing to take matters into one's own hands, get things moving; feeling tired of sitting around not doing anything
-SGR-	<ol style="list-style-type: none"> 1. feel(ing of being) indecisive 2. feel(ing of being) fickle, vacillating 3. feel(ing of being) irresolute, lacking commitment, half-hearted 	-FFX-	<ol style="list-style-type: none"> 1. feel(ing of) dislike/distaste/disapproval 2. feel(ing of) loathsomeness/abhorrence/repugnance/detesting 3. feel(ing of) hate/hatred/enmity
-FSL-	<ol style="list-style-type: none"> 1. feel(ing of) mental fatigue/weariness at the state one has let their life become; tired of the same stale dead-end routine... 2. feel(ing of) worthlessness, uselessness 3. feel(ing of being) suicidal 	-XTL-	<ol style="list-style-type: none"> 1. feel(ing of) aesthetic fatigue/saturation; exposure to so much beauty that one ceases to appreciate it 2. feel(ing of) compassion fatigue 3. feel(ing of) futility, feel that all one's efforts are for naught in that they make no difference
-PXR-	<ol style="list-style-type: none"> 1. feel(ing of) reluctance/disinclination, feel(ing of) a desire to avoid 2. feel(ing of) unwillingness/aversion 3. feel(ing of) opposition, feel desire to stand against/oppose 	-LNY-	<ol style="list-style-type: none"> 1. feel(ing of being) lonesome, wanting company/companionship 2. feel(ing of) loneliness, feel a lack of love/friendship 3. feel(ing of) invisibility (as if no one ever notices you)
-VKR-	<ol style="list-style-type: none"> 1. feel(ing of) resignation, no further willingness to fight, giving up 2. feel(ing of) helplessness/inefficacy/inability 3. feel(ing of) renunciation, desire to turn one's back on the world and become a hermit 	-JVR-	<ol style="list-style-type: none"> 1. feel(ing of) pettiness, feel(ing of) unwarranted concern for trivial matters 2. feel(ing of) fussiness, finickiness (= spirit of uncooperativeness over trivial matters) 3. feel(ing of) a need to meddle/interfere/ "butt in"
-VZG-	<ol style="list-style-type: none"> 1. feel(ing of being) like a stranger in one's own life, like one does not understand oneself 2. feel(ing of) alienation from self and others (resigned disgust with oneself and one's inability to understand the world) 3. feel(ing of) disconnection or inability to relate to the world, feeling emotionally "adrift" (i.e., a quiet combination of boredom and resignation and bewilderment) in relation to the world 	-VTR-	<ol style="list-style-type: none"> 1. feel(ing of) sadness or melancholy in the face of happiness due to knowing the happiness is transient/ephemeral 2. feel(ing of) sadness or melancholy in the face of happiness due to knowing others are not happy 3. feel(ing of) inability to feel/enjoy happiness even upon achieving one's desires due to believing one does not deserve happiness
-RKR-	<ol style="list-style-type: none"> 1. feel(ing of) aloofness 2. feel(ing of) emotional superiority/maturity/feeling "above it all" 3. feel(ing of) disgust/spite at the inferiority/stupidity of other people 	-PFC-	<ol style="list-style-type: none"> 1. light-hearted or innocent amusement at another's behavior or words 2. mean-spirited amusement at another's behavior or predicament 3. Schadenfreude

In addition to over 100 emotion roots, the **EMO** Emotion **V_xC_s** affix allows for the creation of positive, ambivalent, or negative emotional states associated with any semantically appropriate stem. Several of the more complex or obscure emotion roots from Ithkuil are instead lexicalized in this language using the EMO affix.

5.0 MISCELLANEOUS ENTITIES AND OBJECTS

-DDL- ‘GROUND VEHICLE / CONVEY IN GROUND VEHICLE’		
BSC	Stem 1: (to be) an act/state of traveling/conveying objects or persons in an open-air wheeled vehicle (e.g., cart, wagon, open-bed truck/lorry, open-bed train car, wheelbarrow, wheelchair, wheeled stretcher or gurney, bicycle, skateboard, motorcycle, etc.); to travel/convey (an) object(s)/person(s) in an open-ai red wheeled vehicle [both the travel/conveyance and the vehicle itself]	Stem 2: (to be) an act/instance of traveling/conveying objects or persons in an enclosed wheeled vehicle (e.g., car, carriage, coach, van, bus, train car, etc.) Stem 3: (to be) an act/instance of traveling/conveying objects or persons in a non-wheeled vehicle (e.g., sled, palanquin, sedan chair, litter, etc.)
CTE	(to be) a wheeled open-air wheeled vehicle	
CSV	(to be) an act/instance of conveying/traveling in a wheeled open-air vehicle; to travel/convey by open-air wheeled vehicle	
OBJ	(to be) the entity/object(s)/party being conveyed by an open-air wheeled vehicle	

Use Degrees 3 and 5 of the **MEA** and **CVY** affixes with this root to designate motorized versus non-motorized vehicles/vessels.

The following stems have a Specification pattern which follows the root **-DDL-** above:

-ÇÇTR-	1. sled	2. sleigh	3. snowmobile
-LCF-	1. bicycle	2. tricycle	3. unicycle
-LCFW-	1. wheeled wagon/carriage	2. wheelchair	3. wheeled gurney
-LCFY-	1. baby carriage / pram	2. wheelbarrow	3. cart, pushcart
-NṬB-	1. scooter	2. motorized scooter	3. moped
-NṬD-	1. motor scooter	2. two-wheeled motorcycle	3. three-wheeled motorcycle
-NṬG-	1. go-cart	2. dune buggy	3. all-terrain vehicle
-NṬL-	1. passenger automobile (coupe)	2. passenger automobile (sedan)	3. passenger automobile (station wagon or automobile-chassis-based SUV)
-NṬN-	1. limousine / stretch car	2. hearse	3. police car
-NṬÑ-	1. passenger van	2. automobile-chassis-based pick-up truck	3. full-sized pick-up truck or truck-chassis-based SUV
-NṬW-	1. delivery van / box van	2. multi-passenger van/minibus	3. bus
-NṬY-	1. camper van / caravan	2. motorhome / motor coach	3. tractor truck / semi-trailer truck
-NṬŘ-	1. taxi cab	2. ambulance	3. fire engine
-NṬF-	1. tractor	2. dump truck	3. cement mixer
-NṬV-	1. jeep	2. forklift	3. specialized farming/agricultural vehicle
-NṬX-	1. military tank	2. crane	3. specialized construction vehicle (e.g., bulldozer, excavator)
-NKṬ-	1. streetcar / tram / metro car	2. funicular	3. aerial tram
-NKH-	1. train passenger car	2. train container car / box car	3. train locomotive / train engine

-DDR- ‘VESSEL / WATERCRAFT / AIRCRAFT / SPACECRAFT’		
BSC	Stem 1: (to be) an act/state of traveling/conveying objects or persons in a water vessel/watercraft (e.g., boat, ship, canoe, kayak, catamaran, dinghy, etc.); to travel/convey in a watercraft	Stem 2: (to be) an act/state of traveling/conveying objects or persons in an aircraft (e.g., airplane/aeroplane, jet plane, glider, hot-air balloon, etc.) Stem 3: (to be) an act/state of traveling/conveying objects or persons in a spacecraft
CTE	(to be) a watercraft	
CSV	(to be) an act/instance of conveying/traveling in a watercraft; to travel/convey by watercraft	
OBJ	(to be) the entity/object(s)/party being conveyed by a watercraft	

Use Degrees 3 and 5 of the **MEA** and **CVY** affixes with this root to designate motorized versus non-motorized vehicles/vessels.

The following stems have the the same Specification pattern as the root **-DDR-** above:

-ŇSM-	1. raft	2. inflatable raft	3. paddle boat
-ŇSN-	1. coracle / dinghy	2. kayak	3. umiak
-ŇSŇ-	1. canoe	2. rowboat/dory/gondola/skiff	3. jon boat / coble / flatbottomed small boat
-ŇSW-	1. single-masted sailboat	2. sailboat + rowboat (e.g., dragon boat, karve, bireme, trreme, skeid)	3. small sailboat (e.g., sloop, catboat, felucca, skipjack)
-ŇSY-	1. multi-masted sailboat (e.g., schooner, caravel, ketch, yawl)	2. sailing ship (e.g., galleon, brig, galleon, barque, clipper)	3. catamaran
-ŇSR-	1. motorboat	2. airboat	3. pontoon
-ŇSŘ-	1. barge	2. paddlewheel steamer	3. steamship
-ŇSF-	1. yacht	2. megayacht	3. hydrofoil
-ŇSV-	1. freighter ship	3. passenger liner	3. military gunship
-ŇSX-	1. aircraft carrier	2. submarine	3. other specialized watercraft
-LVL-	1. propeller-driven airplane/aeroplane	2. propeller-driven passenger airplane	3. propeller-driven cargo / freight airplane
-LVZ-	1. private jet aircraft	2. passenger jet airplane	3. cargo / freight jet airplane
-LVŽ-	1. military jetfighter	2. military jet airplane (e.g., bomber, cargo plane)	3. aerial drone
-LVŇ-	1. hot air balloon	2. blimp	3. helicopter
-LVN-	1. spaceship	2. space shuttle / space plane	3. orbital satellite

5.1 CLOTHING

-FB- ‘ARTICLE OF CLOTHING’		
BSC	Stem 1: (to be) a piece/article of clothing being worn for the purpose of covering or protecting (a part of) the body; to wear such	Stem 2: (to be) a piece/article of clothing being worn as a fashion statement (i.e., to create a fashionable appearance); to wear such Stem 3: (to be) a piece/article of clothing being worn as ornament or accessory; to wear such
CTE	(to be) a state of wearing an article of clothing as coverage/protection	
CSV	(to be) a physical act of putting on/donning an article of clothing as coverage/protection	
OBJ	(to be) the particular piece/article of clothing itself (i.e., not necessarily being worn)	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RFB- ‘CLOTHING AS UNIFORM OR COSTUME OR STATUS-INDICATOR’	
Stem 1: a piece/article of clothing being worn as (part of) a uniform (i.e., to indicate one’s job/position/organizational membership, etc.)	
Stem 2: a piece/article of clothing being worn as (part of) a costume	
Stem 3: an ornament or accessory being worn as an indicator of a particular rank, award, status, etc. (e.g., medal, sash, epaulets, medallion, special stripe, etc.)	

-FF- ‘TRY ON’		
BSC	Stem 1: (to be) an act/process of trying something on (e.g., an article of clothing) to see if it fits	Stem 2: (to be) an act/process of trying something on (e.g., an article of clothing) to see how it looks or how it makes one look Stem 3: (to be) an act/process of trying something on (e.g., an article of clothing) to see whether one can work/move/maneuver or manipulate things while wearing it
CTE	(to be) a state of wearing something as a trial to see if it fits	
CSV	(to be) an act of trying something on	
OBJ	(to be) that which is being tried on to see if it fits	

-MTR- ‘HEAD COVERING / HAT’		
BSC	Stem 1: (to be) a hat or head covering being worn as protection; to wear a hat or head covering as protection	Stem 2: (to be) a hat or head covering worn for fashion; to wear a fashionable hat Stem 3: (to be) a hat or head covering worn as indicator of one’s status, job, organizational membership, etc.
CTE	(to be) a state of wearing a hat or head covering for protection/coverage	
CSV	(to be) a physical act of donning a hat or head covering as protection/coverage	
OBJ	(to be) a hat or head covering itself (i.e., not necessarily being worn)	

The following roots follow the same Stem and Specification pattern as the above root **-MTR-** :

-LTL-	‘jacket / coat’	-GTL-	‘(single member of) footwear’	-VZD-	‘mask’
-RTL-	‘robe(s)’ [i.e., dress robes]	-NTL-	‘sandal’	-VJW-	‘waist sash / cummerbund’
-CTL-	‘shirt / blouse’	-ŽTL-	‘boot’	-ŠTR-	‘necklace / neck-chain’
-TTL-	‘dress’	-ÇTL-	‘slipper’	-ŠTL-	‘brooch / pendant’
-PTL-	‘skirt / kilt’	-NŁT-	‘undergarment (for the groin area)’	-ŠTW-	‘earring’
-XTR-	‘pants / trousers’	-NŁP-	‘undergarment (for the torso)’	-ŠTY-	‘medallion’
-CTR-	‘tunic’	-NŁM-	‘brassiere’	-ŠTF-	‘cuff links’
-ZTL-	‘sari / sari-like article of clothing’	-VDW-	‘apron’	-ŠTV-	‘tie pin / tie clip’
-ŃTR-	‘vest’	-VDY-	‘collar’	-ŠTR-	‘button / stud’
-ŃTL-	‘overcoat / long coat’	-VDV-	‘bandana / handkerchief’	-ŠTÇ-	‘ornament worn via piercing’ *
-ŁTR-	‘parka / heavy winter coat’	-VDN-	‘sleeve’	-PTR-	‘helmet’
-JTR-	‘sock’	-VDL-	‘scarf’	-LDY-	‘(pair of) goggles’
-ZTR-	‘glove’	-VDR-	‘belt’	-LDV-	‘monocle’
-PTR-	‘tights / leggings’	-VDR-	‘tie / cravat’	-LDW-	‘(pair of) eyeglasses’
-KTR-	‘stocking / hose’	-VZW-	‘over-the-shoulder sash’	-MVDR-	‘veil’
-ŽTR-	‘shoe / mocassin’	-ZMR-	‘jewel’	-MVDŘ-	‘hood’
		-ZMR-	‘piece of jewelry’		

* other than earring

5.2 WEAPONS

-DKL- ‘NON-BALLISTIC WEAPON’		
BSC	Stem 1: (to be) a hand-held or hand-thrown bladed weapon for cutting or stabbing something or someone	Stem 2: (to be) a pointed-tipped handheld or propelled weapon for piercing something or someone
CTE	(to be) an act of using a hand-held or hand-thrown bladed weapon; to wield/brandish/use a weapon	
CSV	(to be) the physical object used as a hand-held or hand-thrown bladed weapon	Stem 3: (to be) a blunt force-driven hand-held or propelled weapon
OBJ	(to be) the target/victim of a non-ballistic weapon	

The following two roots have the same Specification pattern as the above root:

-DKR- ‘BALLISTIC WEAPON’	
STEM 1	(to be) a ballistically launched projectile used as a weapon; to launch a ballistic projectile
STEM 2	(to be) an used as a weapon; to detonate an explosive/incendiary substance/device
STEM 3	(to be) an implement/device used for propelling/launching a ballistic projectile or explosive/incendiary device used as a weapon

-DKW- ‘MICROBIAL, SONIC, CYBER- WEAPON’	
STEM 1	(to be) a microbial agent used as a weapon
STEM 2	(to be) a sonic weapon
STEM 3	(to be) a cyber-weapon

The following list of roots/stems for offensive weapons have the Specification pattern shown below:

BSC	(to be) a particular weapon; to use (i.e., stab/cut/throw/fire, etc.) a particular weapon
CTE	(to be) a state of wielding/brandish/carrying a particular weapon
CSV	(to be) an act of physically attacking with a particular weapon
OBJ	(to be) the target/victim of a particular weapon

- XVL**- 'HAND-ASSOCIATED MELEE WEAPON' I 1. hand-held or hand-attached clawed or spiked weapon (e.g., tiger claws, bagh naka) 2. brass knuckles / knuckle dusters 3. caestus / battle glove
- XVR**- 'HAND-ASSOCIATED MELEE WEAPON' II 1. deer horn knives-like weapon 2. wind-and-fire wheel 3. tekkō
- XVW**- 'HAND-ASSOCIATED MELEE WEAPON' III 1. push dagger-like weapon (e.g., katar, African finger knife 2. emeici 3. writst-knife-like weapon (e.g., larim, nyepel)
- XVY**- 'HAND-ASSOCIATED MELEE WEAPON' IV 1. Japanese war fan (e.g., tessen, gunsen, gunbai) 2. Korean war fan / mubuchae) 3. other hand-held or hand-attached bladed or point-sharpened weapon
- KLY**- 'CHAKRAM / SHURIKEN / BOOMERANG' 1. chakram / chalikar / war-quoit 2. shuriken / ninja star / throwing star 3. boomerang / valari
- KLW**- 'SLING / BOLAS / LASSO' 1. sling 2. bolas or bolas-like weapon (e.g., aylo, lliwi, qilumitautit) 3. lasso / lariat
- ČY**- 'CLUB / BLUDGEON' 1. club or club-like weapon (e.g., bludgeon, baseball bat, truncheon, cudgel, shillelagh, knobkerrie) 2. stave-like weapon (e.g., quarterstaff, bō, jousting pole) 3. morning star
- ZY**- 'FLAIL / MACE' 1. flail 2. mace 3. pernach
- GPL**- 'WAR HAMMER / MAUL' 1. war hammer / totokia / maul 2. bec de corbin 3. lucerne hammer
- GPR**- 'BATTLE AXE' 1. battle axe 2. poleaxe / sparth / bardiche 3. horseman's pick
- ČKH**- 'STRAIGHT DAGGER / SWORD' 1. dagger / shortsword 2. one-handed sword / rapier 3. two-handed sword / longsword
- ČKŘ**- 'CURVED DAGGER / SWORD' 1. curved dagger 2. curved one-handed sword / sabre 3. curved two-handed sword
- ČKT**- 'AXE-LIKE SWORD' 1. machete 2. falx/rhomphaia-like or other hand-held sickle-like or scythe-like weapon 3. other single-bladed axe-like sword
- ČKF**- 'SWITCHBLADE / GRAVITY KNIFE' 1. switchblade / butterfly-knife / fan knife / folding knife 2. gravity knife / telescoping knife 3. brandistock
- TGL**- 'SPEAR / PIKE' 1. spear/javelin-like throwing weapon 2. pike/lance-like thrusting/stabbing weapon 3. bill/halberd-like weapon
- TGR**- 'WAR SCYTHE / FAUCHARD' 1. war scythe / fauchard 2. guisarme/glaive-like weapon 3. voulge-like weapon
- TGŘ**- 'PARTISAN / PLANÇON' 1. partisan-ranseur-spetum-like weapon 2. plançon/goedendag-like weapon 3. sword-like weapon extension (e.g., patta, bayonet)
- ŠXW**- 'BOW' 1. flatbow/longbow/recurve bow 2. crossbow 3. arrow
- KŠV**- 'WEAPONIZED PROJECTILE' 1. dart 2. arrow (used with bow, lanyard, armentum, atlatl, etc.) 3. propelled bladed projectile
- GŽB**- 'BATTERING RAM / BALLISTA / PETRARY' 1. battering ram 2. ballista 3. petrarry (e.g., catapult, trebuchet, mangonel)
- GŽD**- 'COMPRESSED-AIR PROJECTILE WEAPON' 1. blowgun 2. flamethrower 3. other pump-based or compression-based projectile weapon

- JTW**- 'LARGE GUNPOWDER WEAPON' 1. hand cannon 2. bombard / mortar 3. cannon
- JTY**- 'EARLY FIREARM' 1. arquebus / caliver / hackbut / harquebus 2. culverin / musket 3. blunderbuss / shotgun
- JTL**- 'MODERN FIREARM' I 1. handgun / pistol / revolver 2. rifle 3. carbine
- JTR**- 'MODERN FIREARM' II 1. submachine gun 2. machine gun 3. grenade launcher
- JTC**- 'MODERN FIREARM' III 1. multi-barrel firearm 2. grenade launcher 3. / anti-tank rifle
- JVL**- 'FIREARM-LAUNCHED PROJECTILE' 1. ball (small) 2. shot 3. bullet
- JVR**- 'ROCKET LAUNCHER' 1. bazooka / RPG / gyrojet 2. tank gun 3. rocket pod
- JVW**- 'LARGE GUNPOWDER OR ROCKET-LAUNCHED PROJECTILE' 1. cannon ball 2. grenade or other non-self-powered explosive projectile 3. self-powered explosive or warhead-containing projectile/missile
- JXL**- 'BOMB' 1. explosive/incendiary device / bomb 2. grenade 3. depth charge
- LTX**- 'CHEMICAL WEAPON' 1. noxious gas or aerosol (e.g., tear gas, pepper spray) 2. chemical weapon (e.g., mustard gas) 3. nerve gas / nerve agent
- ZVW**- 'ELECTROSHOCK WEAPON' 1. taser 2. stun gun 3. stun baton / cattle prod
- ZVY**- 'DIRECTED ENERGY WEAPON' 1. electromagnetic energy weapon (e.g., laser-based) 2. atomic particle beam 3. sonic weapon

The following list of roots/stems for defensive weapons have the Specification pattern shown below:

BSC	(to be) a particular defensive weapon; to deploy a particular weapon
CTE	(to be) a state of protection afforded by deployment of a particular defensive weapon
CSV	(to be) the physical act/process of a particular defensive weapon engaged in countering an attacking entity
OBJ	(to be) the target/victim of a particular defensive weapon

- PTW**- 'ANTI-PERSONNEL OR ANTI-VEHICLE DEFENSIVE WEAPON' 1. punji stick 2. caltrop 3. Czech hedgehog
- PTY**- 'BOOBY-TRAP / MINE' 1. non-explosive booby trap 2. explosive booby-trap 3. explosive mine

-ŽTW- ‘POISONOUS, VENOMOUS, OR RADIOACTIVE SUBSTANCE’		
BSC	Stem 1: (to be) a poisonous [i.e., chemical] substance, poison; to poison [with a chemical substance]	Stem 2: (to be) a venom; to poison by means of venom Stem 3: (to be) a radioactive substance; to expose to a radioactive substance
CTE	(to be) the experience of suffering from poisoning; to be poisoned	
CSV	(to be) the act of poisoning; to poison, to utilize poison	
OBJ	(to be) the entity/party which is poisoned	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the above stems with Degree 9 of the new ARO affix.

-SKH- ‘AIMING (A PROJECTILE/WEAPON) / TARGET / GOAL / OBJECTIVE’		
BSC	STEM 1: (to be) a act/process of targeting or aiming at a target; to target, to aim (at a target)	STEM 2: (to be) an act/process of targeting one’s (verbal/written) communication/message at a party; to aim for/at a (particular) audience STEM 3: (to be) a state/process of pursuing, driving at/towards a goal or objective; to drive towards/pursue a goal or objective
CTE	(to be) what one is aiming (e.g., a projectile weapon, a hand-held projectile, a basketball)	
CSV	(to be) an act/process of aiming, training one’s sights upon; to aim at, to target, to train one’s sights upon	
OBJ	(to be) a target, what one aims at	

5.3 GAMES AND SPORTS

-ŠV- ‘PLAY / RECREATION / RELAXATION Associated affix: DRE		
BSC	STEM 1: (to be) an act/instance of play or recreation [both the act and the motivating desire for self-amusement or relaxation]	STEM 2: (to be) an act/instance of a participatory or self-involved leisure/relaxation activity (activity + psychological motivations behind it), e.g., a dance, a hike, fishing, camping STEM 3: (to be/manifest) the practice of a hobby or pastime (activity + psychological motivations behind it))
CTE	(to be) the motivating desire for self-amusement behind an act/instance of play/recreation	
CSV	(to be) the physical act of engaging in play or recreation	
OBJ	(to be) particular activity/form of play in which one engages (e.g., a game, contest, puzzle, prank, etc.)	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-NZV- ‘PLAY FORMAL GAME / SPORTING ACTIVITY’		
BSC	STEM 1: (to be) an act/instance of playing a formal rule-oriented recreational activity, e.g., a board game, a sport, etc. (activity + feeling of amusement/enjoyment derived)	STEM 2: (to be) an act/instance of engaging in an individual (non-team) sporting activity (activity + feeling of competitive spirit) for motive of formal competition, e.g., an individual race, an individual track-and-field event, skiing, competitive shooting, etc.
CTE	(to be) the motivating desire for self-amusement behind an act/instance of playing a formal rule-oriented activity, board game, sport, etc.	
CSV	(to be) the physical act of engaging in a formal rule-oriented recreational activity	
OBJ	(to be) particular activity/form of play in which one engages (e.g., a board game, individual sport, etc.)	STEM 3: (to be) a team-oriented sporting activity normally involving equipment (e.g., a court, a playing field, a ball, goal area, projectile playing piece, horse, racket, clubs, etc.)

Stems for various point-scoring objects used when playing a game or sport are listed below. The Specification pattern for these stems is as follows:

BSC	(to be) an object used as a required point-scoring object when playing a game or sport
CTE	(to be) the state of an object used as a piece of an equipment in a game or sport being in use or being in play
CSV	(to be) the physical act of touching/handling/using/throwing/placing, etc. the particular point-scoring object while engaged in the particular game or sport
OBJ	(to be) the state (of play) signified by the position/placement/reading or resulting state/outcome (e.g., after being thrown or moved) of an object used as a required piece of equipment when playing a game or sport

	Stem 1	Stem 2	Stem 3
-NZŇ-	inflated ball used for throwing, kicking, bouncing, or volleying (e.g., volleyball, football/soccer, tetherball, basketball, European handball, water polo)	prolate spheroid shaped ball (e.g., rugby, American football, Australian football)	beachball
-RNZŇ-	hard small ball hit with club or mallet (e.g., golf, field hockey, croquet)	small rubberized ball hit with hand or racket (e.g., tennis, squash, racquetball, jai alai ball, American handball, lacrosse ball)	ping-pong ball
-RNZY-	ball used for hitting with a bat (e.g., baseball, cricket ball,)	softball	hard, heavy sphere (e.g., shot, bowling ball)
-RNZL-	hockey puck, shuffleboard puck	discus	frisbie, flying/aerial disc
-TBR-	throwing ring, hoop	recreational horseshoe	shuttlecock (e.g., badminton)
-TŁKW-	curling stone	bean bag	skull (jigger)
-TŁKY-	wiffleball, nerf ball, other ultralight ball	throwing dart	other playing projectile
-KFK-	standard playing card	specialized playing card (e.g., tarot card)	playing/gambling chip or token
-KVL-	game counter or marker	standard 6-sided playing die (i.e., one of a pair of dice)	non-standard die

-RNZR-	disc-like playing piece (e.g., for checkers or other board game)	playing marble or other small spheroid playing piece	specialty shaped playing piece or game token
-KVR-	playing tile	game-playing piece consisting of miniature model, picture, or representation of a real-world object (e.g., chess piece)	domino or other stackable playing piece/counter/marker
-KVŘ-	pin (bowling)	bail (cricket)	stump (cricket)

Stems for various pieces of equipment used as accessories when playing a game or sport are listed below. The Specification pattern for these stems is as follows:

BSC	(to be) an object used as an accessory or necessary piece of equipment when playing a game or sport
CTE	(to be) the state of an object being used as an accessory or necessary equipment in a game or sport being in use or being in play
CSV	(to be) the physical act of using the particular piece of equipment while engaged in the particular game or sport
OBJ	(to be) the particular state (of play) made possible by the use of the particular piece of equipment

	Stem 1	Stem 2	Stem 3
-TČP-	playing field, pitch, court, rink	field of play boundary, border, line	base, safe spot/zone of playing field
-ZGY-	goal / basket / end zone	goalpost	target
-ČTR-	bat	paddle	racquet
-ČTW-	stick, mallet	golf club	net
-ŁKW-	board (e.g., surf-, snow-, paddle-)	ski	ski pole
-ÇÇW-	sail	parasail	kite
-ÇÇL-	luge sled / skeleton sled	bobsled / bobsleigh	tobaggan
-TGL-	cue, cue stick (e.g., billiards, shuffleboard)	broom (curling)	jump rope
-RZTR-	protective glove (e.g., baseball)	boxing glove	protective face mask
-ŠTM-	pegged standard for high jump or pole vault	track-and-field crossbar (e.g., high jump, pole vault)	vaulting pole (pole vault)
-ŇBR-	barbell	weight (used with barbell)	caber
-BZŇ-	boxing ring	trampoline	caged ring, enclosed ring
-ṮFW-	roller skate	skateboard	ice skate
-ṮSP-	high bar (gymnastics)	uneven bars (gymnastics)	parallel bar(s) (gymnastics)
-ṮSPW-	balance beam (gymnastics)	pommel horse (gymnastics)	vault (gymnastics)
-ṮSPY-	still ring(s) (gymnastics)	floor mat (gymnastics), wrestling mat	trapeze
-CTY-	juggling pin or ball	baton	other hand-held recreative implement

Stems for various games/sports are listed below. The Specification pattern for these stems is as follows:

BSC	(to be) an act/instance of playing/participating in the particular game or sport (i.e., the activity + the feeling of amusement/enjoyment derived)
CTE	(to be) the motivating desire for self-amusement behind an act/instance of playing the particular game or sport
CSV	(to be) the physical act of engaging in the particular game or sport
OBJ	(to be) an individual play or move within a particular game or sport

Tabletop / Board Games

	Stem 1	Stem 2	Stem 3
-TSK-	chess	checkers / draughts	backgammon
-TSKW-	tic-tac-toe / naughts and crosses	nine-men's morris / mills / merels/ cowboy checkers	bul
-TSKY-	pashisi / chaupar-like game	snakes-and-ladders / chutes-and-ladders	tafl/ tablut-like game
-TSKL-	shogi	xiangi / janggi	Halma / Stern-Halma / Chinese-checkers
-TSKR-	go	gomoku / renju / five in a row	mah jong
-TSKF-	mancala-type game (e.g., bao, Kalah, oware / warri / ayo / ouril, coro, pallanguzhi, bohnenspiel, cups	permainan / surakarta / dam-daman	modern commercial tabletop/board game

Billiard-Type Games

	Stem 1	Stem 2	Stem 3
-KSVW-	carrom / pichenotte	pitchnut	crokinole
-KSVL-	novuss	chapayev	button football
-KSVR-	billiards / pool	snooker / English billiards / russian pyramid	other carrom or billiard like game

Card Games

	Stem 1	Stem 2	Stem 3
-KFKW-	bridge	whist	euchre
-KFKY-	spades	500 (card game)	other "trick-taking" card game
-KFKL-	rummy	go fish	other matching-tye card game
-KFKR-	war-type card game	slapjack	other catch-and-collect type card game

-KFKŘ-	poker	blackjack	baccarat
-KFKŤ-	bastra	cassino	other card-based gambling game
-KFKÇ-	crazy eights	daihinmin / Tycoon	Cheat / I Doubt It / Bluff
-KFKM-	switch / last card / two four jacks	one-card	other “shedding”-type card game
-KFKN-	solitaire / patience-type card game	drinking game with cards (alcohol imbibement)	other card game

Dice Games

	Stem 1	Stem 2	Stem 3
-VSR-	yahtzee	liar’s dice	bunco
-VSŘ-	sic bo, grand hazard, chuck-a-luck	cee-lo / see-low / four-five-six	other dice game

Puzzle Games

	Stem 1	Stem 2	Stem 3
-GVB-	jigsaw puzzle	construction puzzle (e.g., stick puzzle)	mechanical puzzle (e.g., rubik’s cube, puzzle box, folding puzzle, lock puzzle)
-GVBW-	crossword puzzle	sudoku	other logic puzzle game
-GVBY-	maze / labyrinth	spot-the-difference puzzle	other memory-based puzzle game
-GVBŘ-	anagrams	Scrabble or Scrabble-like game	other word search game

Hand Games

	Stem 1	Stem 2	Stem 3
-PSTŘ-	Rock paper scissors	chopsticks	odds and evens
-PSTW-	red hands / hot hands / slapsies / slap jack	sing-along hand-clapping game (e.g., pat-a-cake / patty-cake Double Double This This)	other hand game

Parlor Games / Party Games

	Stem 1	Stem 2	Stem 3
-MFT-	charades	Hangman or similar paper-and-pencil-based guessing game	Twenty Questions, Two Truths & a Lie, or similar investigative question game
-MFTW-	I Spy or similar guessing game	Psychiatrist or similar role-playing guessing game	Dictionary / Fictionary

-MFTL-	“would you rather” or similar choice-based game	Truth or Dare or similar game	other party/parlor game
-MFTR-	alcoholic drinking contest (e.g. speed, endurance)	arts/entertainment-based (e.g., while watching TV) drinking game	other drinking game

Children’s Playground Games

	Stem 1	Stem 2	Stem 3
-PST-	tag	blind man’s buff / blind man’s bluff / Marco Polo	other tagging-based game
-TÇF-	hide-and-seek	statues / red-light green-light	Mother May I? / Captain May I?
-TÇFW-	follow the leader	Simon says	Red Rover / forcing he city gates / octopus tag
-TÇFL-	hopscotch	keep away / monkey in the middle	jungle gym climbing / monkey bars
-TÇFR-	jumprope / skipping rope	Chinese jump rope / jumpsies / French skipping	other children’s playground game

Throwing or Target-based Games

	Stem 1	Stem 2	Stem 3
-ŽDL-	catch (back-and-forth tossing of ball, frisbee, etc.)	horseshoes, ring toss, washer pitching	darts, lawn darts
-ŽDR-	bean bag tossing / cornhole	ladder toss	lawn bowling / bocce / boules / pétanque / bowls
-ŽDŘ-	croquet	shuffleboard / quoits, sjoelen	other informal throwing or target-based game

Sports / Athletic Pasttime

	Stem 1	Stem 2	Stem 3
-LTK-	volleyball-like sport (e.g., volleyball, sipa, sepak akraw, footbag net, bossaball, jianzi, fistball, wallyball)	ball-over-net game with paddle (e.g., tennis, table-tennis, pickleball)	ball-against-wall sport (e.g., squash, racquetball, American handball, jai alai)
-LTKW-	football / soccer	rugby	American/Australian/Canadian/Gaelic football
-LTKY-	basketball-like game (e.g., basketball, netball, cestoball, korfbal, ringball)	team handball	water polo
-LTKL-	baseball-like game (e.g., baseball, softball, rounders, stickball, schlagball, palant, laptá, pesäpallo, oina, elle, tee-ball, wiffleball, brännboll)	cricket-like game (e.g., cricket, vigoro)	other bat-and-ball hitting game

-LTKR-	field hockey-like game (e.g., field hockey, floorball)	roller hockey	ice hockey-like game (e.g., ice hockey, bandy, broomball, ringette)
-LTKŘ-	hurling-like game (e.g., hurling/camogie, shinty, bando)	lacrosse	polo
-LTKÇ-	dodgeball-like game (e.g., dodgeball, warball, gaga)	kickball-like game (e.g., kickball, matball)	other ball-throwing, ball-hitting, ball-kicking or ball-catching game
-ṬFY-	rollerskating	skateboarding	roller derby
-ṬKY-	surfing	parasailing	kiteboarding
-ṬKH-	water skiing	wakeboarding	paddleboarding
-ṬKÇ-	snowboarding	snowkiting	other board-based sport
-ṬKL-	alpine skiing / downhill skiing	cross-country skiing / telemark skiing	ski jumping
-ṬKŘ-	speed skiing	freestyle skiing	other ski-based sport
-ÇÇŘ-	bobsleighbing / bobsledding	luge	skeleton bobsled
-ÇÇR-	competitive racing utilizing a non-motorized vehicle/vessel (e.g., cycling, sledding, rowing, sailing)	competitive racing utilizing a motorized vehicle/vessel	competitive racing of inanimate objects (e.g., radio-controlled toy trucks)
-ÇÇM-	competitive racing of animal [not being ridden or harness-controlled by human] (e.g., dog racing)	competitive skill contest involving an animal (e.g., bull-riding)	other sport involving an animal not being ridden or harness-controlled
-ÇÇN-	competitive horse-racing	rodeo event (e.g., roping, bronc rideing, steer wrestling)	eventing or similar activity (e.g., dressage, show jumpint, cross country equestiran jumping)
-LXC-	cutting, campdrafting, penning	jousting	other equitation-based sport
-ČṬY-	golf	disc golf	other golf-like sport
-ṬFL-	speedskating	figure skating	other ice-skating sport
-GŽR-	archery	target shooting	other sport involving a projectile and target
-LXV-	bowling	curling	other boules-type sport
-NSM-	unassisted competitive sprinting (e.g., sprinting, race-walking, race-hopping)	unassisted competitive endurance running (e.g., cross-country, long-distance running)	unassisted competitive obstacle running (e.g., hurdles, steeplechase)
-NSMW-	parkour	obstacle course running	other running-based sporting activity
-NSN-	competitive swimming	diving	other aquatic sporting activity
-PSTŘ-	non-contact tag-based version of contact sport (e.g., tag-rugby, tag-football [American])	kabaddi	jugger
-ŠTN-	track-and-field jumping/vaulting event (high jump, long jump, triple jump, pole vault)	track-and-field throwing event (discus, shot put, hammer throw, javelin)	track-and-field running event

- ŇBW -	highland games caber toss	highland games throwing event (weight throw, hammer throw, stone put)	highland games weight over the bar
- ŇBŘ -	weight-lifting	maide-leisg	other competitive brute strength feat
- ṪSPL -	gymnastics high bar	gymnastics uneven parallel bars	gymnastics parallel bars
- ṪSPR -	gymnastics balance beam	gymnastics pommel horse	gymnastics vault
- ṪSPŘ -	gymnastics still rings	gymnastics floor exercise	rhythmic gymnastic routine (ball, ribbon, rope, hoop, club, ball)
- ṪSPF -	flying trapeze	static trapeze	trampolining
- GŽGW -	freestyle wrestling	Greco-roman wrestling	sambo wrestling
- GŽGY -	jujutsu (judo, jiu-jitsu)	aikido	sumo wrestling
- GŽGL -	folk wrestling (e.g., collar-and-elbow, Cornish, gouden, kurash, Korean, shuai jiao, schwingen)	theatrical wrestling / professional wrestling	other wrestling / grappling sport
- GŽGR -	boxing	kick-boxing style fighting (e.g., sanda / muay thai, pradal serey, lethwei)	other combative striking sport
- GŽGŘ -	defensive martial art	hybrid martial art	weapons-based martial art
- ÇCTL -	parachuting	parasailing	kitesurfing, kite landboarding
- ÇCTW -	kite flying	snowkiting	other kite-based sport
- ÇCTY -	hanggliding	paragliding	gliding
- VZṲR -	wood chopping contest	logrolling	woodsman
- ŠTMW -	knife throwing	axe throwing	target spear throwing
- CTÇ -	juggling	baton twirling	stacking contest (e.g., cards, blocks, cups)
- ŇKHW -	tetherball	sleight-of-hand skills contest	other sporting activity

6.0 NATURE AND NATURAL PHENOMENA (Non-Biological)

6.1 THE QUALITY OR PROPERTY OF MATTER

-TKL- 'PHYSICAL STATE OF MATTER'		
BSC	Stem 1: (to be) a solid, something solid; to be/make solid, solidify	Stem 2: (to be) a liquid, something liquid; to be/make liquid, to liquefy
CTE	(to be) a state of being solid	
CSV	(to be) the physical process(es) by which one solidifies something (e.g., freezing, dehydration, oxidation, etc.)	Stem 3: (to be) a gas, something gaseous; to be/make into a gas, to render into a gaseous state
OBJ	(to be) that which is solid	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-RTKL- 'LESS TYPICAL PHYSICAL STATES OF MATTER'		
BSC	STEM 1: (to be) something in a semi-solid, semi-liquid, viscous, state (e.g., mud, something gelatinous, slime, etc.)	STEM 2: (to be) a plasma; to be/make into a plasma STEM 3: (to be) a Bose-Einstein condensate; to be/make into a Bose-Einstein condensate
CTE	(to be) a state of being semi-solid	
CSV	(to be) the physical process(es) by which one makes something semi-solid	
OBJ	(to be) that which is semi-solid	

-CN- 'SUBSTANCE'		
BSC	Stem 1: (to be) a fundamental manifestation (e.g., chunk, drop, flume, bit, piece, etc.) of a material substance + substance itself	Stem 2: (to be) an instance/act of utilizing, manipulating, handling, or working with a substance; to handle, manipulate, work with, utilizing a substance
CTE	(to be) the material substance being manifested	
CSV	(to be) the form of a fundamental manifestation of a material substance (i.e., chunk, drop, flume, bit, piece, etc.)	Stem 3: (to be) the source of a material substance / compound
OBJ	(to be) the party/entity in contact with, confronted with, observing, handling, etc. a material substance	

-ŘB- ‘QUALITY, ATTRIBUTE OR PROPERTY OF MATTER’ (use with the SUF, EXD, FLC, PTW, ITY, etc. affixes)		
	STEM 1	STEM2: (to be) a decrease in the degree of a particular quality/attribute/property of matter STEM 3: (to be) an increase in the degree of a particular quality/attribute/property of matter
BSC	(to be) a degree of a particular quality (= intrinsic/inherent behavioral property) of matter	
CTE	(to be) the intrinsic nature/essence of a particular quality of matter (i.e., the existence of the quality within or as part of an entity regardless of its physical manifestation)	
CSV	(to be) the physical manifestation of a particular quality of matter; to manifest a particular quality of matter	
OBJ	(to be) the object/entity having the particular quality of matter	

The Stems and Specifications of the following roots are modeled on the ‘QUALITY OR PROPERTY OF MATTER’ root above:

-BG- ‘FULLNESS/EMPTYNESS’	-MB- ‘ABSORPTIVITY’
-DB- ‘SOLIDITY/HOLLOWNESS’	-MD- ‘REFLECTIVITY’
-DG- ‘WEIGHT/MASS’	-MG- ‘TRANSPARENCY/OPACITY’
-XB- ‘TENSION (= STRAIN / MECHANICAL STRESS)’	-BD- ‘CONCAVITY / DEPRESSED’
-XD- ‘TIGHTNESS/SLACK’ (= TAUTNESS)	-GD- ‘CONVEXITY / ROTUNDITY’
-ĽG- ‘PERMEABILITY / POROUSNESS’	-GB- ‘COMPRESSED / SQUEEZED’
-ŇB- ‘RESILIENCE/DELICATENESS’ (= CAPACITY FOR RECOVERY FROM DAMAGE)	
-ŇD- ‘DURABILITY/FRAGILITY’ (= CAPACITY FOR NOT BEING DAMAGED)	
-NG- ‘PRESSURE’	
-LB- ‘STABILITY/INSTABILITY’	
-LD- ‘VOLATILITY/INERTNESS’	
-LG- ‘DURATION/TEMPORARINESS’ [i.e., the amount of elapsed time over which an event or state occurs]	
-BB- ‘EVEN/LEVEL’ (i.e., parallel in comparison to an external linear or planar reference standard)	
-DD- ‘PERPENDICULAR / UPRIGHT’ (relative to gravity)	
-GG- ‘STRAIGHTNESS/LINEARITY RELATIVE TO OBJECT ITSELF’	

-TH- ‘PLUME / CLOUD OF GAS / SMOKE / STEAM / GASEOUS PHENOMENON’		
BSC	STEM 1: (to be) a plume/cloud of smoke from an act/process of combustion (e.g., smoke from a fireplace, from an explosion, from a volcano, from a forest fire, etc.)	STEM 2: (to be) a plume/cloud of steam/water vapor [NOTE: for a cloud in the sky, see the root -FTH-] STEM 3: (to be) a plume/cloud of gas other than steam or smoke from combustion (e.g., a gas leak)
CTE	(to be) a state of smokiness; for the air to be filled with smoke	
CSV	(to be) an act/process of combustion which gives rise to a plume of smoke; for there to be smoke due to an act/process of combustion	
OBJ	(to be) the plume of smoke itself	

-TPR- ‘CONSISTENCY/MALLEABILITY/FLEXIBILITY/PLASTICITY/RHEOLOGICAL PHENOMENON’		
BSC	Stem 1: (to be) a particular degree of malleability, flexibility, plasticity; to have a certain degree of malleability, flexibility, plasticity	Stem 2: (to be) a particular degree of squeezability, compressibility Stem 3: (to be) a particular degree of elasticity
CTE	(to be) a state of malleability, flexibility, plasticity; to be malleable, flexible	
CSV	(to be) an act of determining the degree of malleability, flexibility, plasticity of something; to determine the degree of malleability, flexibility, plasticity of something	
OBJ	(to be) that which has a particular consistency in terms of malleability, flexibility, plasticity	

-TPW- ‘SPRINGINESS / BUOYANCY / RECOIL’		
BSC	Stem 1: (to be) a particular degree of springiness; to have/manifest a particular degree of springiness	Stem 2: (to be) a particular degree of buoyancy; to have/display a particular degree of buoyancy Stem 3: (to be) a particular degree of recoil; to have/display a particular degree of recoil
CTE	(to be) a state of springiness; to be springy	
CSV	(to be) an act of determining the degree of springiness	
OBJ	(to be) that which has a particular degree of springiness	

-LMW- ‘FRAGILITY / BRITTLINESS / CRUMBLINESS’		
BSC	Stem 1: (to be) a particular degree of fragility; to have/manifest a particular degree of flimsiness	Stem 2: (to be) a particular degree of brittleness Stem 3: (to be) a particular degree of crumbliness
CTE	(to be) a state of fragility; to be fragile	
CSV	(to be) an act of determining the degree of fragility; to determine the degree of fragility of something	
OBJ	(to be) that which has a particular degree of fragility	

-BGW- ‘LIMPNESS / FLACCIDITY / JIGGLINESS / FLABBINESS’		
BSC	Stem 1: (to be) a particular degree of limpness/flaccidity; to have/manifest a particular degree of limpness/flaccidity	Stem 2: (to be) a particular degree of jiggliness Stem 3: (to be) a particular degree of flabbiness
CTE	(to be) a state of limpness/flaccidity; to be limp/flaccid	
CSV	(to be) an act of determining the degree of limpness/flaccidity; to determine the degree of limpness/flaccidity of something	
OBJ	(to be) that which has a particular degree of limpness/flaccidity	

-LPW- ‘PLIANCY / DUCTILITY / SUPPLENESS / DEFORMABILITY / SPREADABILITY’		
BSC	Stem 1: (to be) a particular degree of pliancy/ductility/suppleness; to have/manifest a particular degree of pliancy/ductility/suppleness	Stem 2: (to be) a particular degree of deformability or “dentability” (i.e., how easily deformed or dented a material is) Stem 3: (to be) a particular degree of spreadability
CTE	(to be) a state of pliancy/ductility/suppleness; to be pliant/ductile/supple	
CSV	(to be) an act of determining the degree of limpness/flaccidity; to determine the degree of pliancy/ductility/suppleness of something	
OBJ	(to be) that which has a particular degree of pliancy/ductility/suppleness	

-CKW- 'FLIMSINESS / COHESIVENESS / STRUCTURAL INTEGRITY / STABILITY'		
BSC	Stem 1: (to be) a particular degree of flimsiness; to have/manifest a particular degree of flimsiness	Stem 2: (to be) a particular degree of cohesiveness (tendency to not break apart)
CTE	(to be) a state of flimsiness; to be flimsy	
CSV	(to be) an act of determining the degree of flimsiness; to determine the degree of flimsiness of something	
OBJ	(to be) that which has a particular degree of flimsiness	Stem 3: (to be) a particular degree of structural integrity/stability

-LLW- 'LIGHT / ILLUMINATION / BRIGHTNESS'		
BSC	Stem 1: (to be) a state of being bright/luminous; to be bright/luminous (i.e., either emanating or reflecting a relatively large amount of light from either external or internal illumination)	Stem 2: (to be) a state of being bright/luminous due to internal illumination (i.e., entity is, or carries within, its own source of illumination) Stem 3: (to be) a state/act of being bright/luminous due to high surface reflectivity
CTE	(to be) the state of being bright/luminous	
CSV	(to be) a physical act of brightening/illuminating; to brighten, to illuminate	
OBJ	(to be) something that is bright, highly reflective, or lit up, (to be) a (source of) light	

-ŘM- 'DIMNESS / PALENESS / SHADOW'		
BSC	Stem 1: (to be) a state of being dim or act of dimming; to be/make dim, to dim (i.e., difficult to see, not very visible due to insufficient external or internal illumination)	Stem 2: (to be) a state of being pale/blanched/pallid/wan; to be/make pale/pallid/wan/blanched Stem 3: (to be) a state/act of being/placing in the shade or in shadow; to be/place in the shade or in shadow
CTE	(to be) the state of being dim	
CSV	(to be) a physical act of dimming; do something to make an entity dim	
OBJ	(to be) something that is dim	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-ŘMW- ‘DULLNESS / FADEDNESS / MURKINESS / GLOOMINESS’		
BSC	STEM 1: (to be) a state/act of being/making something dull/lackluster in appearance; be/make dull/lackluster in appearance (i.e., decreased reflectivity)	STEM 2: (to be) a state/act of being something faded; to be faded, to fade (i.e., loss of former degree of brightness/visibility due to age, wear, decay)
CTE	(to be) the state of being dull/lackluster	
CSV	(to be) a physical act of making dull/lackluster; do something to make an entity dull/lackluster	STEM 3: (to be) a state/act of being something murky/gloomy; be/make murky/gloomy
OBJ	(to be) something that is dull/lackluster	

-ŽX- ‘FIRE / BURNING / MELTING / CALEFACTION’		
BSC	Stem 1: (to be) a state/act of burning with/by fire; to burn by fire	Stem 2: (to be) a state of a substance being/becoming heated by an external source of heat; to heat (up), to warm (up)
CTE	(to be) a state of being burned, being on fire; to be on fire, to be in flames	
CSV	(to be) an act of igniting or combustion; to ignite, to combust, to catch fire	Stem 3: (to be) a state of melting/liquefaction; to melt, to liquefy via heat
OBJ	(to be) a flame [Derivatives: a fire, a blaze, a conflagration, etc.]	

-KV- ‘COLDNESS / COOLING / FREEZING’		
BSC	Stem 1: (to be) a state/act of being/becoming cold/frigid; to be(come) cold/frigid	Stem 2: (to be) a state of a substance being/becoming cool/cold by an external source of cold; to cool (down), to get cold
CTE	(to be) a state of coldness, a state of being cold	
CSV	(to be) an act of chilling; to chill something	Stem 3: (to be) a state of being frozen; to freeze
OBJ	(to be) a tangible sign/indicator of coldness (e.g., ice, snow, frost, etc.)	

Derivations: air conditioner, refrigerator

-GÇ- ‘DISCARD AS RUBBISH / TRASH / GARBAGE / DETRITUS / REFUSE / RUBBLE / DEBRIS’		
BSC	Stem 1: (to be) an act/process of discarding something as rubbish/trash/garbage/refuse	Stem 2: (to be) an act/process of discarding something as junk/flotsam/dross/offal/leavings/scrap/remnants (i.e., worthless leftover material from some productive or consumptive process)
CTE	(to be) a state of being/constituting rubbish/trash/garbage/refuse	
CSV	(to be) a physical act of discarding something as rubbish/trash/garbage/refuse	Stem 3: (to be) an act/process whose material result/outcome constitutes rubble/debris/detritus/remains (i.e., disintegrated remnant material)
OBJ	(to be) an object/item/entity/amount of material discarded as rubbish/trash/garbage/refuse	

-DGL- ‘PLANAR ORIENTATIONAL INVERSION’		
BSC	Stem 1: (to be) a state/act of being/placing sideways; to (be) position(ed)/orient(ed) sideways (relative to an observer)	Stem 2: (to be) a state/act of being/placing upside-down; (be) position(ed)/orient(ed) upside-down Stem 3: (to be) a (to be) a state/act of being/placing backwards [i.e., only in sense of facing the opposite direction than expected]; (be) position(ed)/orient(ed) backward [i.e., facing the opposite direction]
CTE	(to be) the state of being in a sideways position	
CSV	(to be) an act of physically orienting/placing something sideways (relative to an observer)	
OBJ	(to be) the entity which is positioned sideways	

-BGL- ‘TOPOLOGICAL INVERSION’		
BSC	Stem 1: (to be) a state/act of being a mirror-image; to invert in a mirror-image fashion	Stem 2: (to be) a state/act of being/placing inside-out; to (be) position(ed)/orient(ed) inside-out Stem 3: (to be) a state/act of being a mirror-image both laterally and vertically (i.e., mirror-image plus upside-down)
CTE	(to be) the state of being a mirror-image	
CSV	(to be) an act of physically causing/making a mirror-image	
OBJ	(to be) the entity which is mirror-imaged	

-KSW- ‘BIFURCATION / MULTIFURCATION / BRANCHING’		
BSC	Stem 1: (to be) a state/act of forking into two, bifurcation; to bifurcate	Stem 2: (to be) a state of forking into three or more branches/paths, etc. Stem 3: (to be) a state of continuous (bi-)furcation/branching, so that the number of branches/paths multiplies over time or space (e.g., tree branches, a phylogenetic taxonomic chart, etc.)
CTE	(to be) a state of being bifurcate(d)	
CSV	(to be) a physical act/process of bifurcation	
OBJ	(to be) that which forks into two, that which is forked in two	

-LR- ‘BALANCE / EQUILIBRIUM / PROPORTION’		
BSC	Stem 1: (to be) a state/act of being in balance / act of balancing; to balance / to be/make balanced (i.e., so that a state/entity/construction is stable)	Stem 2: (to be) a state/act of equilibrium Stem 3: (to be) a state/act of a set of entities being in proper proportion to one another; to be in proper proportion to one other (i.e., in terms of optimal functionality or well-being)
CTE	(to be) a state of balance	
CSV	(to be) an act of balancing; adjust the position/state of something so that it is in balance	
OBJ	(to be) that which is balanced or in balance	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-TĽR- ‘SYMMETRY / PARITY / HOMEOSTASIS’		
BSC	STEM 1: (to be) a state/act of being symmetrical, or having/displaying symmetry; to be/make symmetrical, to have/display symmetry	STEM 2: (to be) a state/act of being in parity; to be/place in parity STEM 3: (to be) a state/act of homeostasis; to be/make homeostatic, have/display homeostasis
CTE	(to be) a state of symmetry	
CSV	(to be) an act of making something symmetrical; to make symmetrical	
OBJ	(to be) that which is symmetrical	

-ČŇ- ‘CURL / COIL / LOOP’		
BSC	Stem 1: (to be) a state/act of curling; to curl, to (be)form(ed) into a curl (both the shape/form and the entity so shaped/formed)	Stem 2: (to be) a state/act of looping, being in a loop; to (be) form(ed) into a loop Stem 3: (to be) a state/act of coiling, being coiled; to coil, be formed into a coil
CTE	(to be) in (the form of) a curl, be curled, be curly	
CSV	(to be) an act of forming into a curl; to (form into a) curl	
OBJ	(to be) that which is curled	

NOTE: The old FORMAL and INFORMAL stems previously associated with this root have now been distributed between this root and the following new root:

-RČŇ- ‘TWIST / TANGLE / KNOT’		
BSC	STEM 1: (to be) a state/act of twisting; to twist, be twisted, form into a twist [i.e., curled in more than one planar dimension]	STEM 2: (to be) an act/state of being knotted, tied in a knot; to knot, tie in a knot STEM 3: (to be) a state/act of tangling; to tangle, be tangled, form into a tangle
CTE	(to be) in (the form of) a twist; to be twisted	
CSV	(to be) an act of twisting; to (form into a) twist	
OBJ	(to be) that which is twisted or in a twist	

6.2 MEASUREMENT OF NATURAL PHENOMENA

-JGW- ‘MEASUREMENT OF A LINEAR DIMENSIONAL PROPERTY’		
BSC	Stem 1: (to be) a state/act of being/having/making something of a certain measure of a linear dimensional property (i.e., length, height, width, circumference, etc.)	Stem 2: (to be) a state/act of measuring a linear dimensional property of something; to measure the length or width or height or circumference, etc. of something Stem 3: (to be) a particular system of linear dimensional measurement; to utilize a particular system of linear dimensional measurement
CTE	(to be) the state of having/being a certain measure of a linear dimensional property	
CSV	(to be) a physical act of making something have/be a certain measure of a linear dimensional property; to make something a certain number of measurement units [long or wide or high or around, etc.]	
OBJ	(to be) the actual length/height/width/circumference, etc. of something	

The following new affixes are available for use with the above root.

-rtn	LDA Linear Dimensional Measurement A *
1	(in) Planck lengths
2	(in) angstroms
3	(in) microns
4	(in) millimeters
5	(in) meters
6	(in) kilometers
7	(in) astronomical units (AUs)
8	(in) light-years
9	(in) parsecs

-rtm	LDB Linear Dimensional Measurement B *
1	(in) inches
2	(in) feet
3	(in) yards
4	(in) fathoms
5	(in) rods
6	(in) furlongs
7	(in) miles
8	(in) nautical miles
9	(in) leagues

-rtk	ARM Areal Measurement
1	(in) barns
2	(in) squares
3	(in) acres
4	(in) roods
5	(in) hectares
6	(in) square perches or sq. rods or poles
7	(in) tetrads
8	(in) townships
9	(in) myriads

* The Type-2 form of these affixes refers to the measurement unit squared, e.g., square meters, sq. parsecs, sq. yards, sq. miles, degrees squared, arc-seconds², steradians, etc.

The following roots use the same Specification pattern as the above root:

-JGY- ‘MEASUREMENT OF PLANAR AREA’ as measured via the Type-2 forms of the **LDA/LDB** or **ARM** affixes shown above

-JGV- ‘MEASUREMENT OF A 3-DIMENSIONAL VOLUME’ (as measured via the new affixes shown below)

-řw	VMA Volumetric Measurement A
1	(in) cubic Planck lengths
2	(in) cubic angstroms
3	(in) cubic microns
4	(in) cubic millimeters
5	(in) cubic meters
6	(in) cubic kilometers
7	(in) cubic astronomical units (AUs)
8	(in) cubic light-years
9	(in) cubic parsecs

-řy	VMB Volumetric Measurement B
1	(in) cubic inches
2	(in) cubic feet
3	(in) cubic yards
4	(in) cubic fathoms
5	(in) cubic rods
6	(in) cubic furlongs
7	(in) cubic miles
8	(in) cubic nautical miles
9	(in) cubic leagues

-řl	VMC Volumetric Measurement C
1	(in) minims
2	(in) fluid drams
3	(in) teaspoons
4	(in) tablespoons
5	(in) milliliters
6	(in) liters
7	(in) fluid ounces
8	(in) gallons
9	(in) barrels

The following roots use the same Specification pattern as the above root:

-ÇPH- ‘MEASUREMENT OF A PLANAR ANGLE’ as measured via the ANG affix shown below

-ÇTH- ‘MEASUREMENT OF A SOLID ANGLE’ as measured via the Type-2 forms of the ANG affix shown below

-dg	ANG Angular Measurement *
1	(in) points
2	(in) hour angles
3	(in) grads
4	(in) mils
5	(in) radians
6	(in) sextants
7	(in) seconds of arc / (in) arc-seconds
8	(in) minutes of arc / (in) arc-minutes
9	(in) degrees

* The Type-2 form of these affixes refers to the measurement unit squared, e.g., degrees squared, arc-seconds², radians² (i.e., steradians), etc.

-STR- ‘DURATION / TAKING UP A SPAN OF TIME / SPENDING ONE’S TIME’			
	Stem 1	Stem 2	Stem 3
BSC	(to be) a state/act of being/lasting/enduring making something last a certain amount of time; to be a certain amount of time in duration, to last for a certain amount of time	(to be) a state/act/process of something taking up/requiring a certain amount/span of time; for something to take up/require a certain amount of time, to take up/require a certain amount of time	(to be) a state/act/process of spending a certain amount/span of (one’s) time doing something; to spend a certain amount/span of time doing something
CTE	(to be) the state of lasting/being a certain amount of time, a state of temporal duration	(to be) the state of taking up/requiring a certain amount/span of time, a state of required temporal duration	(to be) the state of spending a certain amount/span of (one’s) time
CSV	(to be) a physical act of making something last/be/endure a certain amount of time; to make something last a certain amount of time	(to be) a physical act of waiting (for)/enduring something that takes up a certain amount/span of time; to wait for/endure something taking up/requiring an amount of time	(to be) a physical act of spending a certain amount/span of (one’s) time; to go about an activity or activities which constitute a certain expenditure of (one’s) time
OBJ	(to be) the actual amount/length of time something lasts/endures/takes, a duration	(to be) the actual amount/length of time something takes/requires, a required duration/span of time	(to be) the actual amount/length of time one spends doing something, the amount/span of one’s time expenditure

-KSTR- ‘TEMPORAL MEASUREMENT’		
BSC	Stem 1: (to be) a state/act of measuring a certain amount/span of time	Stem 2: (to be) a particular system of timekeeping employed in a temporal measurement (i.e., what system of measurement units are employed) Stem 3: (to be) a state/act of recording/archiving/making available/acessing a temporal measurement made
CTE	(to be) the state of there being a span of time to measure	
CSV	(to be) a physical act of measuring an amount/span of time; to perform a temporal measurement	
OBJ	(to be) the actual amount/length of time measured	

The following roots use the same Specification pattern as the above root:

-LSTR- ‘MEASUREMENT OF CYCLIC/PERIODIC FREQUENCY’ as measured in the number of cycles per unit of time

-RSTR- ‘MEASUREMENT OF RECURRING BUT NON-CYCLIC/NON-PERIODIC EVENTS’ as measured in number of events per unit of time

The following new affixes are available for use with the above temporal measurement roots.

-řfs	USM Ultra-Short Temporal Measurement *
1	in/per yocto-second(s) (10^{-24} seconds)
2	in/per zepto-second(s) (10^{-21} seconds)
3	in/per atto-second(s) (10^{-18} seconds)
4	in/per femto-second(s) (10^{-15} seconds)
5	in/per pico-second(s) (10^{-12} seconds)
6	in/per nano-second(s) (10^{-9} seconds)
7	in/per micro-second(s) (10^{-6} seconds)
8	in/per millisecond(s) (10^{-3} seconds)
9	in/per second(s) (e.g., with root -LSTR- above = Hertz)

-rns	TPM Temporal Measurement
1	in/per minute(s)
2	in/per hour(s)
3	in/per day(s) (24-hour periods)
4	in/per week(s)
5	in/per month(s)
6	in/per calendar year(s)
7	in/per decade(s)
8	in/per (human) generation(s)
9	in/per (human) lifetime(s)

-rñs	LTM Long-TermTemp. Meas.
1	in centuries/per century
2	in millenia /per millenium
3	in/per 10,000-year period(s)
4	in/per 100,000-year period(s)
5	in/per age(s) (i.e., 1 million years)
6	in/per epoch(s) (i.e., 10 million years)
7	in/per era(s) (i.e., 100 million years)
8	in/per eon(s) (i.e. 500 million years)
9	in billions of years /per billion years

* this affix is the measurement counterpart to the **UST** affix

The following roots follow the same Specification pattern as the previous root and utilize the above affixes as well:

- LKK-** ‘ANGULAR VELOCITY OR ANGULAR FREQUENCY’ as measured in units of planar angle measurement per unit of time
- LKKW-** ‘SNAP OR JOUNCE’ as measured in distance per unit of time to the fourth power
- LKKY-** ‘JERK, JOLT, SURGE OR LURCH’ as measured in distance per unit of time cubed
- LKKL-** ‘YANK’ as measured by mass times distance/time³
- LKKR-** ‘KINEMATIC VISCOSITY OR DIFFUSIVITY COEFFICIENT’ as measured in distance squared per unit of time
- LKKŘ-** ‘VOLUMETRIC FLOW’ as measured in distance cubed per unit of time
- RKK-** ‘SPREAD RATE BY VOLUME’ as measured in distance cubed per distance squared
- RKKW-** ‘ENERGY DENSITY’ as measured by energy per cubic distance
- RKKY-** ‘SURFACE TENSION’ as measured by force per distance
- RKKL-** ‘STIFFNESS’ as measured by force per distance
- RKKR-** ‘RATE OF ABSORBED DOSE OF IONIZING RADIATION’ as measured by energy per mass/time
- NKKW-** ‘SPECIFIC ENERGY’ as measured by energy per unit mass
- NKKY-** ‘RADIANT EXPOSURE OF A SURFACE / ENERGY DISTRIBUTION OVER A SURFACE / INSOLATION / SOLAR RADIATION’ as measured by energy per square distance
- NKF-** ‘SPECTRAL FLUX BY FREQUENCY’ as measured by power per cycle/time

- NKFW**- ‘SPECTRAL FLUX BY WAVELENGTH’ as measured by power/distance
- NKFY**- ‘HEAT FLUX DENSITY / IRRADIANCE / RADIANT EXITANCE / RADIOSITY’ as measured by power/distance²
- NKFL**- ‘SPECTRAL EXITANCE / RADIOSITY / IRRADIANCE BY FREQUENCY / STRENGTH OF RADIO WAVE EMISSION’ as measured by power/distance² per cycle/time
- NKFR**- ‘SPECTRAL EXITANCE / RADIOSITY / IRRADIANCE BY WAVELENGTH’ as measured by power/distance² per distance
- NKFR**- ‘RADIANT INTENSITY’ as measured by power/distance² per steradian
- NKFM**- ‘SPECTRAL INTENSITY’ as measured by power/distance² per steradian per cycle/time
- NKFN**- ‘RADIANCE’ as measured by power/distance² per steradian per distance²
- NKFF**- ‘SPECTRAL RADIANCE BY FREQUENCY’ as measured by power/distance² per steradian per distance² per cycle/time
- ŘKK**- ‘DYNAMIC VISCOSITY’ as measured by pressure multiplied by time
- ŘKKW**- ‘ACOUSTIC IMPEDANCE’ as measured by pressure multiplied by time per distance

The above roots utilize the following affixes:

-lp	EMU Energy Measurement Units
1	(in) Planck energy units
2	(in) electronvolts
3	(in) ergs
4	(in) hartrees
5	(in) joules
6	(in) therms
7	(in) calories
8	(in) thermies
9	(in) quads

-lt	FMU Force Measurement Units
1	(in) Planck force units
2	(in) dynes
3	(in) poundals
4	(in) pound-force
5	(in) newtons
6	(in) kiliponds
7	(in) sthènes
8	(in) kips
9	(in) ton-forces

-lk	PMU Pressure Measurement Units
1	(in) bars
2	(in) baryes
3	(in) pounds per square. inch
4	(in) torrs
5	(in) pascals
6	(in) pièzes
7	(in) millimeters of mercury
8	(in) inches of mercury
9	(in) standard atmospheres

-lv	OEM Other Energy Measurement Units
1	(in) watts
2	(in) horsepower
3	(in) sieverts
4	(in) grays
5	(in) rads
6	(in) poises
7	(in) poiseuilles
8	(in) rayls
9	(in) janskys

For ‘VELOCITY’ and ‘ACCELERATION’ use the following root:

-FM- ‘DEGREE OF VELOCITY’ Affix: VEL (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of speed/velocity (= ratio of distance over time]	STEM 2: (to be/manifest a) degree of acceleration (i.e., increasing rate of speed/velocity) STEM 3: (to be/manifest a) degree of deceleration (i.e., decreasing rate of speed/velocity)
CTE	(to be) something with a degree of speed/velocity	
CSV	(to be) a degree of speed/velocity	
OBJ	(to be) an entity/party impacted/affected by one’s degree of speed/velocity	

In addition to the **VEL** affix associated with the above root, the following affix provides for exact measurement of velocity and acceleration:

-ng	VAM Velocity and Acceleration Measurement [NOTE: Use Type-2 affix to indicate time unit squared for measurement of acceleration]
1	kilometers per hour
2	kilometers per second
3	meters per second
4	millimeters per second
5	microns per second
6	miles per second
7	feet per second
8	inches per second
9	miles per hour

-LPS- ‘PHYSICAL MASS’ Associated Affix: MSS		
BSC	Stem 1: (to be) a state/act of having a certain mass	Stem 2: (to be) a state/act of measuring (or observing a measurement of) the mass of something; to measure or view a measurement of the mass of something Stem 3: (to be) a particular system of measuring mass; to utilize a particular system of measuring masst
CTE	(to be) the state of having a certain mass	
CSV	(to be) a physical act of making something have a certain mass	
OBJ	(to be) the actual mass of something	

The following affix is available for use with the above root.

-lps	MSS Measurement of Mass
1	(in) Planck masses
2	(in) daltons
3	(in) grains
4	(in) grams
5	(in) kilograms
6	(in) metric tonnes
7	(in) pounds
8	(in) (short) ton (= 2000 lbs.)
9	(in) solar masses

The following roots have the same Specification pattern as the root **-LPS-** above:

-LPSW- 'ENERGY/WORK' (as measured in mass times distance squared divided by unit of time squared)

-LPSM- 'FORCE' (as measured by mass times distance divided by unit of time squared)

-LPSN- 'PRESSURE' (as measured by (mass x (distance/time²)) / distance²)

-LPSF- 'POWER' (as measured by mass x distance² / time³)

-RPS- 'MOMENTUM' (as measured by mass times distance/time)

-RPSW- 'ANGULAR MOMENTUM' (as measured by mass times distance² /time)

-RPSL- 'THRUST' (as measured by mass times distance/time²)

-RPSR- 'TORQUE OR MOMENT' (as measured by mass times distance² /time²)

-RPSM- 'LINE DENSITY' (as measured by mass per distance)

-RPSN- 'VOLUMETRIC DENSITY' (as measured by mass per volume)

-ŘPS- 'SPECIFIC VOLUME' (as measured by volume per mass)

-ŘPSW- 'SPREAD RATE' (as measured by mass per area)

-ŘPSL- 'AREA DENSITY' (as measured by mass per area)

-PṬK- ‘TEMPERATURE’		
BSC	Stem 1: (to be) a state/act of having/being at or causing to have a certain/particular temperature; to be/have/make a certain temperature	Stem 2: (to be) a state/act of measuring (or observing a measurement of) the temperature of something; to measure or view a measurement of the temperature of something
CTE	(to be) the state of having/being at a certain/particular temperature	
CSV	(to be) a physical act of cooling/heating something to a certain temperature	Stem 3: (to be) a particular system of temperature measurement; to utilize (for measurement or calibration/cooling/heating) a particular system of temperature measurement
OBJ	(to be) the actual temperature of something	

The following affix is available for use with the above root.

-šj	TMS Temperature Measurement System
1	(in) Planck temperature / (in) T_P
2	(in) degrees Newton / (in) °N
3	(in) degrees Celsius / (in) °C
4	(in) degrees Rankine / (in) °R
5	(in) kelvins
6	(in) degrees Delisle / (in) °D
7	(in) degrees Fahrenheit / (in) °F
8	(in) degrees Rømer / (in) °Rø
9	(in) degrees Réaumur / (in) °Ré

The following roots have the same Specification pattern as the root **-PṬK-** above:

- PṬKW-** ‘HEAT CAPACITY OR ENTROPY’ (as measured in energy per unit temperature)
- PṬKY-** ‘ENTHALPY’ (as measured in units of energy)
- PṬKL-** ‘SPECIFIC HEAT CAPACITY OR SPECIFIC ENTROPY’ (as measured in energy per mass times temperature)
- PṬKR-** ‘THERMAL RESISTANCE’ (as measured in temperature per unit of power)
- PṬKŘ-** ‘THERMAL CONDUCTIVITY’ (as measured in power per distance times temperature)

-ŇŠP- ‘ELECTRO-MAGNETIC PHENOMENON’		
BSC	Stem 1: (to be) a state of there being an active electric current	Stem 2: (to be) a state/act of measuring (or observing a measurement of) an electric current Stem 3: (to be) a particular system of measuring an electric current; to utilize a particular system of electric current measurement
CTE	(to be) the state of there being an active electric current	
CSV	(to be) a physical act of generating/maintaining/manipulating an electric current; to generate/maintain/manipulate an electric current	
OBJ	(to be) the actual electric current itself	

The following roots have the same Specification pattern as the root **-ŇŠP-** above:

- ŇŠPW-** ‘ELECTRICAL CHARGE’ as measured by electric current times unit of time
- ŇŠPY-** ‘ELECTRICAL POTENTIAL DIFFERENCE AND ELECTROMOTIVE FORCE’ as measured in mass times distance² divided by unit of current multiplied by time³
- ŇŠPL-** ‘ELECTRICAL CAPACITANCE’ as measured by time⁴ times current² per mass times distance²
- ŇŠPR-** ‘ELECTRICAL INDUCTANCE’ as measured by mass times distance² divided by time² times current²
- ŇŠPŘ-** ‘ELECTRICAL RESISTANCE OF CIRCUITS’ as measured by mass times distance² divided by the quantity of time³ times current²
- ŇŠPF-** ‘ELECTRICAL CONDUCTANCE’ as measured by time³ times current² divided by the quantity of mass times distance²
- ŇŠPT-** ‘ELECTRIC FIELD’ as measured by force per unit charge or electrical potential difference per distance
- ŇŠPČ-** ‘ELECTRIC DISPLACEMENT FIELD, POLARIZATION VECTOR’ as measured by charge per distance squared
- MŠPW-** ‘ELECTRIC CHARGE DENSITY’ as measured by charge per distance cubed
- MŠPY-** ‘ELECTRIC CURRENT DENSITY’ as measured by current per distance squared
- MŠPL-** ‘ELECTRICAL RESISTIVITY’ as measured by electrical resistance times distance
- MŠPR-** ‘ELECTRICAL CONDUCTIVITY’ as measured by electrical conductance per distance
- MŠPŘ-** ‘ELECTROMAGNETIC EMITIVITY’ as measured by electrical capacitance per distance
- MŠPF-** ‘ELECTROMAGNETIC PERMEABILITY’ as measured by electrical inductance per distance
- MŠPT-** ‘ELECTRIC ELASTANCE’ as measured by the reciprocal of electrical capacitance
- LŠP-** ‘MAGNETIC FLUX’ as measured by energy per unit current = mass times distance² divided by time² times current
- LŠPW-** ‘MAGNETOMOTIVE FORCE’ as measured by a unit of current flowing in a single-turn loop in a vacuum
- LŠPY-** ‘MAGNETIC FLUX DENSITY or B-MAGNETIC FIELD STRENGTH’ as measured by force per electric current per distance
- LŠPL-** ‘H-MAGNETIC FIELD STRENGTH’ as measured by current per distance

- LŠPR-** ‘EXPOSURE TO IONIZING RADIATION’ as measured by charge per mass
- LŠPŘ-** ‘RELATIVE DIFFERENCE’ (i.e., ratio between two values of a physical quantity, e.g. power, intensity, current, voltage, loss or gain of an electronic signal, etc.)
- LŠPF-** ‘RECIPROCAL INDUCTANCE, RELUCTANCE’ as measured by the reciprocal of mass times distance² divided by time² times current²

The above roots utilize the following affixes:

-gc	EMA Electro-Magnetic Measurement A
1	(in) amperes
2	(in) franklins
3	(in) volts
4	(in) farads
5	(in) coulombs
6	(in) unit poles
7	(in) webers
8	(in) maxwells (or lines)
9	(in) henrys

-gč	EMB Electro-Magnetic Measurement B
1	(in) ohms
2	(in) ampere-turns
3	(in) siemens (or mhos)
4	(in) gilberts
5	(in) teslas
6	(in) nepers
7	(in) darafs (i.e., reciprocal of farad)
8	(in) oersteds (i.e., amperes per meter)
9	(in) ohm meters

-gz	EMC Electro-Magnetic Measurement C
1	(in) volts per meter
2	(in) newtons per coulomb
3	(in) coulombs per sq. meter
4	(in) coulombs per cu. meter
5	(in) amperes per sq. meter
6	(in) siemens per meter
7	(in) farads per meter
8	(in) henrys per meter
9	(in) coulombs per kilogram

Additional roots with the above Specification pattern:

- RŠP-** ‘LUMINOUS INTENSITY’ i.e., power emitted by a light source in a particular direction per unit solid angle as measured in candelas
- RŠPW-** ‘LUMINANCE’ as measured by luminous intensity per distance squared
- RŠPY-** ‘LUMINOUS FLUX’ i.e. “amount” of visible light emitted by a source, as measured by luminous intensity per solid angle
- RŠPL-** ‘ILLUMINANCE, LUMINOUS EXITANCE OR EMITTANCE’ as measured by luminous intensity per solid angle per distance squared
- RŠPR-** ‘PHOTON FLUX, AIRGLOW’ as measured in photons per distance squared per unit of time per solid angle
- RŠPŘ-** ‘LUMINOUS ENERGY’ i.e., the perceived energy of light, as measured by luminous intensity times unit of time per solid angle (e.g., talbots)
- RŠPF-** ‘LUMINOUS ENERGY DENSITY’ as measured by luminous intensity times unit of time per solid angle per cubic distance
- RŠPT-** ‘LUMINOUS EXPOSURE’ as measured by luminous intensity times unit of time per distance squared (e.g., lux second)
- RŠPČ-** ‘LUMINOUS EFFICACY’ as measured by luminous intensity per solid angle per unit power (e.g., lumen per watt)

Associated affixes for the above group of roots:

-fz	LOA Luminance & Optics A
1	(in) candelas
2	(in) candle-powers
3	(in) lumens (= candela steradians)
4	(in) foot-candles
5	(in) lux
6	(in) nits (= candelas per square meter)
7	(in) talbots
8	(in) rayleighs
9	(in) lux seconds

-fj	LOB Luminance & Optics B
1	(in) lumens per square meter
2	(in) lumen seconds per cubic meter
3	(in) lumens per watt
4	(in) lamberts
5	(in) foot-lamberts
6	(in) stilbs
7	(in) diopters
8	(in) skots
9	(in) brils

Additional roots with the above Specification pattern:

- GZK-** ‘DENSITY’ as measured by mass per volume
- GZKW-** ‘CATALYTIC ACTIVITY’ as measured by amount of substance per unit time
- GZKY-** ‘SUBSTANCE CONCENTRATION’ as measured by amount of substance per cubic distance
- GZKL-** ‘ENERGY PER AMOUNT OF SUBSTANCE’
- GZKR-** ‘VOLUME OCCUPIED BY AN AMOUNT OF A SUBSTANCE AT A GIVEN TEMPERATURE AND PRESSURE’ as measured in cubic distance per amount of substance
- GZKŘ-** ‘MOLAR HEAT CAPACITY, MOLAR ENTROPY’ i.e., ratio of the heat added to (or subtracted from) an object to the resulting temperature change, as measured in energy per unit temperature times amount of substance
- GZKF-** ‘MOLAR CONDUCTIVITY’ i.e., efficiency of electrical conductivity of a substance, as measured by electrical conductance times square distance per amount of substance
- GZKŤ-** ‘CHEMICAL CONCENTRATION’ as measured by amount of substance per unit mass

Associated affix with the above group of roots:

-fč	DMU Density-Related Measurement Units
1	(in) moles
2	(in) International Units (IU)
3	(in) katal (= moles per second)
4	(in) moles per cubic meter
5	(in) joules per mole
6	(in) molar volumes (= cubic meter per mole)
7	(in) molals (= mole per kilogram)
8	(in) joules per kelvin mole
9	(in) siemens times sq. meter per mole

-X- ‘SIZE / MEASURE / MEASURED DURATION’		(use SUF/EXN/EXD, etc. affixes to specify degree)
BSC	STEM 1: (to be/manifest a) degree of spatio-temporal size (= the amount/volume of space or time taken up by an entity)	STEM 2: (to be/manifest a) degree of spatial size, i.e., volume of space (whether uni-dimensional, 2-D, or 3-D)
CTE	(to be) something with a size [focus on the entity itself]	
CSV	(to be) a size (= the volume of space or time taken up)	STEM 3: (to be/manifest a) degree of temporal “size” (= an “amount” of time)
OBJ	(to be) the particular size of an entity; to measure the size of an entity	

Morphological derivations: enlarge, swell, expand (in volume), grow (in size); shrink, make smaller

-RF- PORTION / AMOUNT / RATION / ALLOTMENT		Associated Affix: PTW
BSC	Stem 1: (to be) an amount/quantity of a non-countable substance/entity [both the entity/substance and its amount]; to determine/fix/distribute an amount/quantity of something	Stem 2: (to be) a share, a portion (to be) distributed Stem 3: (to be) an allotment/allocation, set distribution
CTE	(to be) the entity/substance contained in or comprising an amount/quantity	
CSV	(to be) an (ostensibly or theoretically measurable) amount/quantity; to determine/fix/distribute/disperse a particular amount/quantity	
OBJ	(to be) the object/entity made of/consisting of an amount/quantity of something	

Derivations: to share, distribute, allocate, allot

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-RFW- ‘DOSE / PRESCRIBED AMOUNT / RATION / APPORTIONMENT / QUOTA’	
Stem 1:	(to be a) measure of, dose of, a formally pre-determined amount of a substance/entity
Stem 2:	(to be) an official/authorized share/ration, doled-out amount
Stem 3:	(to be) an official/authorized allotment/allocation/quota

6.3 PHYSICS AND COSMOLOGICAL/ASTRONOMICAL/GEOPHYSICAL PHENOMENA

-RSW- ‘PLANETARY BODY’		
BSC	Stem 1: (to be) a planet/planetary body; to travel one’s orbit in space as a planet	Stem 2: (to be) a moon of planetary body [i.e., sufficiently large to be spherical in shape]; to travel one’s orbit in space as a moon/satellite of a planet
CTE	(to be) a world [i.e., the planetary home of a holistic eco-system/biosphere, etc.]	
CSV	(to be) a physical planetary body	
OBJ	(to be) the orbit(al path) of a planetary body; to orbit	Stem 3: (to be) a large (spherical) asteroid or micro-planet

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-SW- ‘EARTH / MOON / NAMED MICRO-PLANET’		
BSC	STEM 1: (to be) the Earth/Terra (as both a planetary body and a “world” encompassing a particular biosphere/ecosystem and civilization)	STEM 2: (to be) the Moon/Luna STEM 3: (to be) one of the named asteroids or micro-planets of the solar system (e.g., Pluto, Ceres, Juno, Sedna, etc.)
CTE	(to be) “the world” [i.e., the Terran-based biosphere, ecosystem, environment and civilization which Terran life inhabits]	
CSV	(to be) the physical planetary body itself that constitutes the planet Earth/Terra	
OBJ	(to be) the orbit(al path) of the planet Earth/Terra	

-LXW- ‘NON-PLANETARY ASTRAL BODY’		
BSC	Stem 1: (to be) a stellar body / star	Stem 2: (to be) a comet Stem 3: (to be) a small [non-spherical] asteroid)
CTE	(to be) a state of a star shining	
CSV	(to be) the physical body/mass of a star	
OBJ	(to be) the location in space of a star (relative to other astral bodies)	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

-LX- ‘THE SUN (SOL) / NAMED COMET / NAMED PLANETESIMAL or ASTEROID’		
BSC	STEM 1: (to be) the Sun / Sol	STEM 2: (to be) a named comet STEM 3: (to be) a named small asteroid/planetesimal (e.g., Eros)
CTE	(to be) the functional (shining) state of the Sun/Sol; for there to be sunshine, (for the Sun) to shine	
CSV	(to be) they physical body/mass of the Sun/Sol	
OBJ	(to be) the location in space of the Sun/Sol relative to other astral bodies	

-MTR- ‘NEBULA’		
BSC	Stem 1: (to be) a gas-based emission-type nebula or volume of nebulosity in interstellar space (i.e. cloud in space of of high-temperature and/or ionized gas, e.g., an H II region or Herbig-Haro object)	Stem 2: (to be) a reflection nebula or dark nebulae (i.e., cloud of dust in space, whether reflecting or blocking light from another source) Stem 3: (to be) a planetary nebula (i.e., gaseous cloud thrown out by a star at the end of its life) CPT = supernova remnant nebula
CTE	(to be) a state of a gaseousness/nebulosity in a gas-based nebula	
CSV	(to be) the physical body/mass constituting a gas-based nebula	
OBJ	(to be) the location in space of a (relative to other celestial bodies) of a gas-based nebula	

-MTW- ‘CELESTIAL SPACE / CELESTIAL MEDIUM’		
BSC	Stem 1: (to be) a volume of celestial (i.e., interplanetary, interstellar/intergalactic) space; to be (situated) in space	Stem 2: (to be) a naturally occurring physical material filling or contained within a volume of celestial space (e.g., cosmic dust, plasma or ionized clouds of hydrogen or helium, etc. Stem 3: (to be) a magnetic or energy-based field occurring in or contained within a volume of celestial space
CTE	(to be) the state/quality of three-dimensional “spaciousness” or “room” within a volume of celestial space	
CSV	(to be) the physical body/structure/medium of celestial space; to occur or be situated in celestial space	
OBJ	(to be) a location in space (relative to celestial bodies within that space)	

-LXT- ‘ATYPICAL COMPACT STAR’		
BSC	Stem 1: (to be) a black hole	Stem 2: (to be) a neutron star (including pulsar and magnetar) Stem 3: (to be) a white dwarf star
CTE	(to be) a state/quality associated with the unusual physics of a black hole	
CSV	(to be) the physical body/mass of a black hole	
OBJ	(to be) the location in space of a black hole (relative to other celestial bodies)	

-KKW- ‘ATOM’		
BSC	Stem 1: (to be) an atom	Stem 2: (to be) the electron cloud of an atom (i.e., set of electron shells with “orbiting” electrons) of an atom Stem 3: (to be) an orbital state (i.e., state and behavior of an electron based on its orbital probability distribution)
CTE	(to be) the state of an atom in terms of its interaction (or lack thereof) with other atoms; for an atom to interact (via atomic bonding) with other atoms	
CSV	(to be) the tangible/physical “embodiment”/manifestation of an atom	
OBJ	(to be) a component/attribute/aspect of an atom (i.e., a particle, a charge, a force, etc.)	

a molecule (of a chemical element)

-KKY- ‘ATOMIC NUCLEUS’		
BSC	Stem 1: (to be) the nucleus of an atom	Stem 2: (to be) a nuclide (i.e., specific configuration of Z-value, N-value, and energy state for a particular atomic nucleus) Stem 3: (to be) an atom of pure neutronium (i.e., consisting of a nuclei only with their electron clouds/shells stripped away)
CTE	(to be) the state of an atomic nucleus in terms of its interaction (or lack thereof) with other atoms; for an atom to interact (via atomic bonding) with other atoms	
CSV	(to be) the tangible/physical “embodiment”/manifestation of an atomic nucleus	
OBJ	(to be) a component/attribute/aspect of an atomic nucleus (i.e., a particle, a charge, a force, etc.)	

-LTK- ‘SUB-ATOMIC PARTICLE’		
BSC	Stem 1: (to be) a sub-atomic particle	Stem 2: (to be) an elementary particle (i.e., fermion or boson) Stem 3: (to be) a composite particle (i.e., a hadron, whether baryon or meson)
CTE	(to be) the sub-atomic state or “force” (i.e., interaction) mediated or maintained by a sub-atomic particle	
CSV	(to be) the tangible/physical “embodiment”/manifestation/“stuff” of a sub-atomic particle	
OBJ	(to be) an attribute of sub-atomic particle (e.g., mass, charge, spin, angular momentum, etc.)	

The following roots follow the Specification pattern of the above root:

-LTKW-	‘PHOTON / GLUON / GRAVITON’ (Electromagnetism, Strong Nuclear Force, Gravity)	1. photon	2. gluon	3. graviton
-LTKY-	‘ELECTRON / PROTON / NEUTRON’	1. electron	2. proton	3. neutron
-LTKL-	‘NEUTRINO’	1. electron neutrino	2. muon neutrino	3. tau neutrino
-LTKR-	‘FERMION’	1. fermion	2. quark	3. lepton
-LTKŘ-	‘BOSON’	1. boson	2. “string” (from string theory) [CTE Specification = vibration of “string”] particle associated with dark energy theory)	3. acceleron (i.e., hypothetical)
-LTKF-	‘ANTI-FERMION’	1. anti-fermion	2. anti-quark	3. anti-lepton
-LTKT-	‘HIGGS BOSON / MUON / TAUON’	1. Higgs boson	2. muon	3. tauon (i.e., tau lepton)
-LTKÇ-	‘WEAK GAUGE BOSON (Weak Nuclear Force)’	1. W+ boson	2. W- boson	3. Z-zero boson
-LTKM-	‘BARYON’	1. nucleon	2. hyperon	3. charmed particle
-LTKN-	‘MESON’	1. vector meson	2. pseudoscalar meson	3. light-unflavored meson

Affixes available for some of the above stems:

-xj	ASP Attributes of Sub-Atomic Particles
1	having opposite charge, antimatter version of X
2	super-symmetrical partner of X, “sparticle” counterpart of X , e.g., photino, gluino, gravitino, slepton, squark, sneutrino, etc.
3	spin value (intrinsic angular momentum) of particle X
4	orbital angular momentum of particle X
5	mass of particle X
6	isospin of particle X
7	parity of particle X
8	G-parity of particle X
9	C-parity of particle X

-bj	CFQ “Colors” and “Flavors” of Quarks
1	up
2	charm
3	top
4	red
5	green
6	blue
7	bottom
8	strange
9	down

-LṬW- ‘WAVE / WAVE-FRONT / STANDING WAVE’		
BSC	Stem 1: (to be) a mechanical wave; to move/propagate/act as a mechanical wave (e.g., sound, water, seismic, surface, string vibration, etc.) [i.e., propagated oscillations through a medium]	Stem 2: (to be) an electromagnetic or other non-mechanical wave; to move/propagate/act as an electro-magnetic wave (e.g., visible light, radio, ultraviolet, infrared, x-ray, gamma ray, gravitational wave, reaction-diffusion wave, quantum probability wave, etc.)
CTE	(to be) the state of oscillation/vibration which makes up a wave	
CSV	(to be) an act/process of generating a wave; to generate a wave	
OBJ	(to be) a wave-front, the leading edge of a wave phenomenon	Stem 3: (to be) a standing wave (e.g., a plucked string of a violin vibrating); to vibrate as a standing wave

-VPR- ‘ELECTRICITY / MAGNETISM / IONIZATION’		
BSC	Stem 1: (to be) an act/instance/occurrence of electricity flowing	Stem 2: (to be) an act/instance/occurrence of magnetism, magnetic alignment, magnetic force
CTE	(to be) the state of electrical current flow	
CSV	(to be) an act/instance/occurrence of an electrical current or discharge; for electricity to flow or discharge	
OBJ	(to be) an object/entity acted upon by electricity	Stem 3: (to be) a act/instance/occurrence of ionization; to ionize

-SH- ‘AIR’		
BSC	Stem 1: (to be) the state/act/process of there being air in a particular spatio-temporal location (i.e., the standard combination of nitrogen/oxygen/argon/CO ₂ , etc. that constitutes the breathable atmosphere of Earth	Stem 2: (to be) the state/act/process of there being “fresh” air (i.e., air let in from an external source/outside to replenish the recycled or “stale” air in a location)
CTE	(to be) air as the primary/relevant component of Earth’s (or a planet’s) atmosphere	
CSV	(to be) an act of obtaining/providing/disseminating air (into a volume of space); to get air, give air, let air in	
OBJ	(to be) the air one breathes	Stem 3: (to be) the state/act/process of there being “stale” air (i.e., air with a lowered oxygen content and/or higher CO ₂ concentration and/or pollutants due to breathing in an enclosed space, air pollution, etc.)

-CHW- ‘OUTDOORS / OUTSIDE / INDOORS’		
BSC	Stem 1: (to be) the state/act of being/occurring/manifesting outdoors, in the open air, outside; to be/occur/manifest outdoors, be/take place in the open air	Stem 2: (to be) the state/act/process of being/occurring/manifesting indoors/inside, within the enclosed space(s) of an interior environment separate from the outdoors Stem 3: (to be) the state/act/process of being/occurring/manifesting in a protected/localized interior/enclosed environment while outdoors (e.g., in a spacesuit on a planetary surface, in a transparent tent outdoors, in a screened-off sun-room of a house, on the screen-enclosed balcony/ledge of a building)
CTE	(to be) a state of being in an outdoor, open-air setting	
CSV	(to be) a physical act/process of making/letting something happen outdoors	
OBJ	(to be) the outdoors, the open air, outside (as a location/setting/environment for something to be or take place in)	

-KTL- ‘AREA / AREAL FOOTPRINT / PLOT OF GROUND / PLOT OF LAND’		
BSC	Stem 1: (to be) the quantitative area of a bounded quasi-planar surface, i.e., the amount of square surface space contained within a bounded area (including area expanded by non-level variations in surface gradients); to measure the area of a bounded quasi-planar surface	Stem 2: (to be) the quantitative surface-footprint or areal footprint taken up by a quasi-planar surface regardless of non-level variations in surface gradients Stem 3: (to be) a formal/bounded plot of ground/land based on natural or authorized delineations
CTE	(to be) the physical ground/surface of a bounded area	
CSV	(to be) the act of measuring/determining the quantitative area of a bounded quasi-planar surface	
OBJ	(to be) the actual measured amount of area (i.e., how much acreage/square meters, etc.)	

-ÇB- ‘TERRESTRIAL TOPOGRAPHY / GEOGRAPHIC FEATURE / ARABILITY’		
BSC	Stem 1: (to be) a terrestrial/geographic land feature	Stem 2: (to be) an area of arable land Stem 3: (to be) an area of non-arable land
CTE	(to be) a particular geographic/terrestrial feature itself	
CSV	(to be) the particular aspects/characteristics of a particular type of terrestrial land feature (e.g., the aridness/starkness of a desert, the packed ice/snow of a glacier, the vastness/flatness of a the plains/pampas, etc.)	
OBJ	(to be) a particular (i.e., bearing a formal name) land feature (e.g., the Gobi Desert, Mt. Everest, etc.)	

-JL- ‘MOUNTAINOUS TOPOGRAPHY’ [use appropriate affixes to indicate degree of relative elevation]		
BSC	Stem 1: (to be) a terrestrial land feature of raised elevation in relation to sea level or surrounding flatlands; a hill or mountain	Stem 2: (to be) a peak, a single elevated terrestrial upwelling higher than the surrounding the terrain Stem 3: (to be) a plateau/butte/mesa (i.e., a high/elevated flatland)
CTE	(to be) the state of being a hill/mountain	
CSV	(to be) a state of dealing with mountainous/elevated terrain; to deal with (e.g., traveling through, living in, etc.) mountainous/elevated terrain	
OBJ	(to be) a particular (i.e., named) hill/mountain	

-ZH- ‘DESERT / STEPPE / TUNDRA’		
BSC	Stem 1: (to be) a desert	Stem 2: (to be) an area of steppe, steppe-like terrain Stem 3: (to be) an area of tundra, tundra-like terrain
CTE	(to be) the state of being a desert	
CSV	(to be) a state of dealing with desert terrain; to deal with (e.g., traveling through, living in, etc.) desert terrain	
OBJ	(to be) a particular (i.e., named) desert	

-VN- ‘VALLEY / CANYON / GORGE’		
BSC	Stem 1: (to be) a valley	Stem 2: (to be) a canyon Stem 3: (to be) a gorge
CTE	(to be) the state of being a valley	
CSV	(to be) a state of dealing with a valley as a type of terrain; to deal with (e.g., traveling through, living in, etc.) a valley	
OBJ	(to be) a particular (i.e., named) desert	

-CTH- ‘CONTINENT / TECTONIC PLATE / LAND MASS’		
BSC	Stem 1: (to be) a continent [i.e., raised land mass taking up a significant percentage of a planetary surface, mostly or entirely surrounded by ocean]	Stem 2: (to be) a tectonic plate Stem 3: (to be) a land mass
CTE	(to be) the state of being a continent	
CSV	(to be) a state of utilizing/living on a continent; to deal with living on a coninent	
OBJ	(to be) a particular (i.e., named) continent	

-CKH- ‘ISLAND / PENINSULA / ISTHMUS’		
BSC	Stem 1: (to be) an island	Stem 2: (to be) a peninsula Stem 3: (to be) an isthmus
CTE	(to be) the state of being an island	
CSV	(to be) a state of utilizing/living on an island; to deal with living on an island	
OBJ	(to be) a particular (i.e., named) island	

Derivations: islet, cape, land-bridge

-ṬR- ‘WATER / SOURCE OF WATER		
BSC	Stem 1: (to be) an amount of water; to water, pour/draw/procure some water	Stem 2: (to be) a natural source of fresh water (e.g., a natural well, river, spring, etc.) Stem 3: (to be) a human-made source of fresh water, i.e., a cistern, a reservoir, etc.
CTE	(to be) some water (as a substance)	
CSV	(to be) a state/act of drawing/pouring/filling/serving an amount of water; to draw/pour/fill/serve some water	
OBJ	(to be) the container, vessel, conveying implement which holds an amount of water	

NOTE: the old INFORMAL and FORMAL stems previously associated with this root have been newly distributed between this and the following new root:

-RṬR- ‘WATER IN MOTION OR USE: FLOW / IRRIGATION / CASCADE / WATERFALL’		
BSC	Stem 1: (to be) a state/act of water running or flowing; to run/flow [in reference to water or, by analogy, any liquid/fluid with water-like consistency]	Stem 2: (to be) state/act of utilizing water, irrigation, watering; to water / irrigate Stem 3: a waterfall, a cascade
CTE	(to be) a state of flowing; to be flowing	
CSV	(to be) an act of letting/making flow; to make/let flow	
OBJ	(to be) a flow of water [i.e., a particular amount of flowing water]	

-BW- ‘BODY OF SALT WATER’		
BSC	Stem 1: (to be) an ocean/sea	Stem 2: (to be) a lagoon Stem 3: (to be) a saltwater pond/lake
CTE	(to be) the state of being an ocean/sea	
CSV	(to be) a state of utilizing/living by the ocean/sea; to deal with, live by, utilize the ocean/sea	
OBJ	(to be) a particular (i.e., named) ocean/sea	

-JY- ‘WATER CHANNEL BETWEEN LAND MASSES / BAY / INLET’		
BSC	Stem 1: (to be) a channel-like body of water allowing passage between two land masses	Stem 2: (to be) a bay [i.e., body of water partially surrounded by land] Stem 3: (to be) a narrow river-like inlet (on a body of water)
CTE	(to be) the state of being a channel-like body of water	
CSV	(to be) a state of utilizing/living by channel-like body of water; to deal with, live by, utilize a channel-like body of water	
OBJ	(to be) a particular (i.e., named) channel-like body of water	

Derivations: strait, gulf, bight, fjord

-LZ- ‘BODY OF FRESH WATER’ [use appropriate affixes to specify size/volume]		
BSC	Stem 1: (to be) a pond/lake	Stem 2: (to be) a stream/river Stem 3: (to be) a freshwater inland sea
CTE	(to be) the state of being a pond/lake	
CSV	(to be) a state of utilizing/living by a pond/lake; to deal with, live by, utilize a pond/lake	
OBJ	(to be) a particular (i.e., named) pond/lake	

-LZW- ‘ESTUARY / RIVER DELTA / FRESHWATER-SALTWATER TRANSITION ZONE’		
BSC	Stem 1: (to be) an estuary	Stem 2: (to be) a river delta Stem 3: (to be) a freshwater-saltwater transition zone (e.g., the mouth of the Amazon or Mississippi Rivers)
CTE	(to be) the state of being an estuary	
CSV	(to be) a state of utilizing/living by an estuary; to deal with, live by, utilize an estuary	
OBJ	(to be) a particular (i.e., named) estuary	

-LZR- ‘SWAMP / MARSH / BOG / FEN / BAYOU / WETLANDS’		
BSC	Stem 1: (to be) a swamp/marsh	Stem 2: (to be) a bog/fen Stem 3: (to be) a bayou/wetland(s)
CTE	(to be) the state of being a swamp/marsh	
CSV	(to be) a state of utilizing/living by a swamp/marsh; to deal with, live by, utilize a swamp/marsh	
OBJ	(to be) a particular (i.e., named) swamp	

-ÇTY- ‘NORTH / SOUTH / LONGITUDE’		
BSC	Stem 1: (to be) a state of north-south directional orientation	Stem 2: (to be) a state/act of being northern or in/of/toward the northern part/area of something in terms of (relative) location/place/origin, etc. Stem 3: (to be) a state/act of being southern or in/of the southern part/area of something in terms of (relative) location/place/origin, etc.
CTE	(to be) a north-south (i.e., longitudinal) line/path/orientation	
CSV	(to be) a state/act of lying upon, traveling upon, or being directed along a north-south, i.e., longitudinal axis	
OBJ	(to be) what lies upon or is moving or being directed upon a longitudinal line/axis/path, etc.	

-DNY- ‘EAST / WEST / LATITUDE’		
BSC	Stem 1: (to be) a state of east-west directional orientation	Stem 2: (to be) a state/act of being eastern or in/of/toward the eastern part/area of something in terms of (relative) location/place/origin, etc. Stem 3: (to be) a state/act of being western or in/of the western part/area of something in terms of (relative) location/place/origin, etc.
CTE	(to be) an east-west (i.e., latitudinal) line/path/orientation	
CSV	(to be) a state/act of lying upon, traveling upon, or being directed along a east-west, i.e., latitudinal axis	
OBJ	(to be) what lies upon or is moving or being directed upon a latitudinal line/axis/path, etc.	

-NTÑ- ‘LATITUDINAL BASES [LATITUDINAL POLE / EQUATOR]’		
BSC	Stem 1: (to be) a state/act of being situated or occurring on/at the equatorial line of latitude; be/occur on/at/along the equator	Stem 2: (to be) a state/act of being situated or occurring on/at the [geographic, not magnetic] north pole Stem 3: (to be) a state/act of being situated or occurring on/at the [geographic, not magnetic] south pole
CTE	(to be) the equator	
CSV	(to be) an act of situating something or being situated at/on/along the equator; to happen or make happen at/on/along the equator	
OBJ	(to be) what is situated or takes place on/at the equator	

-VS- 'SEASON'

BSC	Stem 1: (to be) a particular season (i.e., spring, summer, autumn, winter)	Stem 2: (to be) the natural condition or state of growth/dormancy of Nature's flora, as associated with a particular season Stem 3: (to be) the solstice or equinox associated with a particular season; to be the first day of a season as determined by it being a solstice or equinox
CTE	(to be) the state of it being a certain season; be seasonal	
CSV	(to be) a phenomenon occurring during a particular season	
OBJ	(to be) a seasonal activity/event/state, i.e., something that happens during a particular season; be something seasonal	

-ZY- 'SPRING (SEASON) / SPRING-RELATED NATURAL PHENOMENON'

BSC	Stem 1: (to be) Spring, springtime	Stem 2: (to be) the blooming/flowering/growing phenomenon of Nature's flora occurring/due to it being springtime Stem 3: (to be) the Spring equinox
CTE	(to be) the state of it being springtime	
CSV	(to be) a phenomenon/event/state/act occurring during (or because it is) springtime; to occur during (or because it is) springtime	
OBJ	(to be) an activity one does/performs during/because it is springtime	

-MR- 'SUMMER (SEASON) / SUMMER-RELATED NATURAL PHENOMENON'

BSC	Stem 1: (to be) Summer, summertime	Stem 2: (to be) the peak state/condition of growth/vibrancy/life of Nature's flora occurring/due to it being summertime Stem 3: (to be) the Summer solstice
CTE	(to be) the state of it being summertime	
CSV	(to be) a phenomenon/event/state/act occurring during (or because it is) summertime; to occur during (or because it is) summertime	
OBJ	(to be) an activity one does/performs during/because it is summertime	

-ŇŠ- 'AUTUMN (SEASON) / AUTUMN-RELATED NATURAL PHENOMENON'

BSC	Stem 1: (to be) Autumn, fall	Stem 2: (to be) the withering/dying phenomenon of Nature's flora occurring/due to it being autumn Stem 3: (to be) the Autumn equinox
CTE	(to be) the state of it being autumn	
CSV	(to be) a phenomenon/event/state/act occurring during (or because it is) autumn; to occur during (or because it is) autumn	
OBJ	(to be) an activity one does/performs during/because it is autumn	

-ČČ- ‘WINTER (SEASON) / WINTER-RELATED NATURAL PHENOMENON’		
BSC	Stem 1: (to be) Winter, wintertime	Stem 2: (to be) the state/condition of dormancy/lifelessness of Nature’s flora occurring/due to it being wintertime Stem 3: (to be) the Winter solstice
CTE	(to be) the state of it being wintertime	
CSV	(to be) a phenomenon/event/state/act occurring during (or because it is) wintertime; to occur during (or because it is) wintertime	
OBJ	(to be) an activity one does/performs during/because it is wintertime	

-VSL- ‘SEASONALLY-DETERMINED SOLAR EXPOSURE OR TEMPERATURE’		
BSC	Stem 1: (to be) a state of the ambient outdoor temperature being in a certain range due to the season of the year; to be in a seasonal temperature range	Stem 2: (to be) the duration of daylight during a 24-hour period in a location due to the time (i.e., season) of the year Stem 3: (to be) the angle of the sun (i.e., height of the arc of the sun’s passage) due to the time (i.e., season) of the year
CTE	(to be) a state of it being a certain seasonally-determined temperature	
CSV	(to be) an act of determining the ambient temperature range; to see/feel how hot/cold it is outside (based on the expected temperature range of the season)	
OBJ	(to be) the ambient temperature (as expected for the season)	

-FŠL- ‘WEATHER’		
BSC	Stem 1: (to be) a weather condition; to be the weather (conditions)	Stem 2: (to be) a state of good weather conditions Stem 3: (to be) a state of adverse weather condition
CTE	(to be) the actual extant weather condition at a particular time	
CSV	(to be) the physical manifestation(s) of a particular weather condition (e.g., the rain itself, the fog itself, the sunniness itself, the heat itself, the wind itself, etc.)	
OBJ	(to be) a party effected/impacted by the weather conditions	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-FŠR- ‘CLIME / CLIMATE’	
Stem 1: (to be) the climate, clime	
Stem 2: (to be) a cold climate	
Stem 3: (to be) a warm climate	

-FTH- ‘SKY / ATMOSPHERE / ATMOSPHERIC PHENOMENON / ATMOSPHERIC PRESSURE / CLOUD’		
BSC	Stem 1: (to be) a state of there being a gaseous atmosphere enveloping a planetary body; to be a planetary atmosphere	Stem 2: (to be) the state/act/process of there being a particular amount of air pressure in the atmosphere; to be a certain atmospheric pressure [i.e., at any given altitude] Stem 3: (to be) the state/act/process of there being a cloud (in the sky); to be a cloud (in the sky, for a cloud (in the sky) to be present
CTE	(to be) the collection of gaseous elements which comprise an atmosphere	
CSV	(to be) a process/phenomenon of the atmosphere; to manifest an atmospheric phenomenon	
OBJ	(to be) the enveloping gaseous, visible (via reflected sunlight) medium of the atmosphere itself, i.e., the sky; to be the sky	

NOTE: for ‘fog; to be foggy’, incorporate Stem 2 of **-KTH-** (‘ground/surface of Earth’) in LOCATIVE format into Stem 3 of the above root (‘cloud’)

-MTR- ‘WATER-BASED WEATHER PHENOMENON’		
BSC	Stem 1: (to be) an amount of rainfall; to rain [CPT version = fallen rain, fallen precipitation]	Stem 2: (to be) an amount of snow; to snow CPT = fallen snow] Stem 3: (to be) an amount of hail; to hail [CPT = ice on the ground]
CTE	(to be) a state of rainfall, for rain to be falling	
CSV	(to be) a state/act of rain falling	
OBJ	(to be) an amount of rainwater (e.g., in a puddle, in a container, in one’s hand, etc.)	

NOTE: for ‘fog; to be foggy’, incorporate Stem 2 of **-KTH-** (‘ground/surface of Earth’) in LOCATIVE format into Stem 3 of **-FTH-** (‘cloud’)

-FPH- ‘WEATHER FRONT / AIR MASS’		
BSC	Stem 1: (to be) a state of there being a cold front	Stem 2: (to be) a state of there being a warm front Stem 3: (to be) a state of there being an air mass (as differentiated by temperature, water vapor content, and pressure from surrounding air masses)
CTE	(to be) the cold front itself (i.e., a ground-level low-pressure mass of cold air)	
CSV	(to be) a state/process of a cold front affecting the weather of a geographic area	
OBJ	(to be) the weather condition caused by a particular cold front	

-FKH- ‘WIND / STORM’		
BSC	Stem 1: (to be) a state of there being a momentary air-pressure-based atmospheric phenomenon, to be a gust of wind, for a gust of wind to blow, for an air current to blow	Stem 2: (to be) a storm Stem 3: (to be) a spirally-oriented storm driven by massive air-pressure variances and Coriolis forces [use appropriate affixes to indicate severity as a tropical depression, hurricane/cyclone/typhoon, tornado, etc.)
CTE	(to be) the collection of air (or other gas) reacting to pressure variance which comprise a gust wind	
CSV	(to be) a process/phenomenon of a gust of wind blowing; for a gust of wind to blow	
OBJ	(to be) the wave-front of a gust of wind (i.e., the concentration of gaseous molecules) which constitutes a (potentially destructive) energetic force which can be felt or which can physically impact objects contacted by the wave front.	

-MHW- ‘HUMIDITY / MUGGINESS / BALMINESS / CRISPNESS / BRISKNESS’		
BSC	Stem 1: (to be) a state of humid/muggy weather; to be muggy/humid	Stem 2: (to be) a state of balmy, calm, clear, pleasant weather; to be balmy, be calm, be clear, be pleasant weather Stem 3: (to be) a state of crisp/brisk weather; to be crisp/brisk weather
CTE	(to be) a state/process of ambient heat combined with high humidity that constitutes mugginess	
CSV	(to be) a state/process of having to deal with, be exposed to muggy weather conditions	
OBJ	(to be) a state of personal discomfort caused by humid/muggy weather	

-VPL- ‘LIGHTNING / ELECTRICAL STORM’		
BSC	Stem 1: (to be) a state of there being a lightning strike on something; for lightning to strike something	Stem 2: (to be) an electrical storm Stem 3: (to be) the ionized atmospheric conditions necessary to produce lightning
CTE	(to be) the electrical charge/voltage/amperage/power of a lightning strike	
CSV	(to be) a process/phenomenon of a bolt of lightening striking; for a bolt of lightning to strike	
OBJ	(to be) a bolt of lightning	

-ÑPL- ‘RAINBOW / AURORA / ZODIACAL LIGHT / GEGENSCHIN’		
BSC	Stem 1: (to be) a state of there being a visible rainbow; for there to be a visible rainbow	Stem 2: (to be) a state of there being a visible aurora Stem 3: (to be) a state of there being sunlight reflected from interplanetary dust particles visible under certain conditions (e.g., zodiacal light (“false dawn”), gegenschein/counterglow)
CTE	(to be) the light passing through aerosolized water vapor that allows a rainbow to be seen	
CSV	(to be) the state of seeing a rainbow; to see a rainbow	
OBJ	(to be) the atmospheric state of aerosolized water vapor conducive to/needed for seeing a rainbow	

6.4 MATHEMATICAL CONCEPTS

6.4.1 The Basic Number Roots

0	1	2	3	4	5	6	7	8	9	10	100	100 ²	100 ⁴	100 ⁸
-VR-	-LL-	-KS-	-Z-	-PŠ-	-ST-	-CP-	-NS-	-ČK-	-LZ-	-J-	-GZ-	-PC-	-KZ-	-ČG-

The following six number roots are used when needed to designate numbers beyond ten when needed for counting and mathematical operations involving non-decimal number bases up to base-16. They may also be used as “short-cut” substitutes for the standard decimal/centesimal forms using the TNX affix.

11	12	13	14	15
-CG-	-JD-	-IJ-	-BC-	-TŽ-

Whole numbers are full formatives signifying a set containing the particular number of members. The “simple” everyday counting system is base-100 (the mathematical sub-language will utilize base-12). Beginning with ‘two’, the Stem & Specification pattern is illustrated by the root **-Z-** ‘three’ below:

-Z- ‘THREE / TRINARY’ Associated Affix: 3XX			
	STEM 1	STEM 2	STEM 3
BSC	(to be a) set or group of three entities; (to be) a trio	(to be) something manifesting three aspects / facets; to manifest trinariness; be trinary	(to be) the third entity/party in a group or sequence
CTE	(to be) a party/entity of whom/which there are three	(to be) the state of having three aspects/facets; to be trinary; to be tri-fold or tri-faceted	(to be) the state of being third in a sequence/group/pattern
CSV	(to be) a process which determines/identifies a set as being three in number; to count out to three; to determine that there are three of something	(to be) a process which determines/identifies an entity as having three aspects/facets; identify/determine that something is trinary/tri-fold/tri-faceted	(to be) a process which determines/identifies an entity’s sequential place in a sequence or group/pattern to be third
OBJ	(to be) one in a group or sequence of 3; to be one of 3	(to be) one of the aspects/facets of a trinary, tri-fold, tri-faceted entity	(to be) the entity/party whose numerical place in a sequence/group/pattern is third

Numbers from 11 through 99 are formed utilizing the TNX affix. Beginning with the number 101, numbers are formed as in Ithkuil-2011 using the COMITATIVE case and the COO affix. Having no multiples, the roots for ‘ZERO’ and ‘ONE’ have a different Stem & Specification pattern:

-VR- ‘ZERO / NULL’

	STEM 1	STEM 2	STEM 3
BSC	(to be) zero as the empty-set / a set having no members; to have no quantity or amount	(to be) the zero-dimension; to have geometrically no length, area or volume	(to be) the baseline “zero”-state or null-state in a sequence, hierarchy, gradient, pattern, etc.
CTE	(to be) a party/entity of whom/which there are no members	(to be) the state of having no substance/tangibility due to being zero-dimensional	(to be) the state of being the baseline “zero”-state or null-state
CSV	(to be) a set having no members; to have no (i.e., zero) members in a set	(to be) the process/act of determining/identifying zero-dimensionality	(to be) a process which determines/identifies an entity’s being the baseline “zero”-state or null-state
OBJ	(to be) a null value / a value for a parameter that is undefined and/or for which the expected or standard value(s) is/are inapplicable	(to be) an entity having zero-dimensionality; (to be) a Euclidean point; to have geometrically no length, area or volume, i.e., to be a Euclidean point	(to be) the entity/party in the baseline “zero”-state or null-state in a sequence, hierarchy, gradient, pattern, etc.

-LL- ‘ONE / UNITY’

	STEM 1	STEM 2	STEM 3
BSC	(to be) a set or group of one; to have one member	(to be) something (quasi-)indivisible, (quasi-)inseparable, unified, unitary, united, a union, a unit	(to be) the first entity/party in a group or sequence
CTE	(to be) a party/entity of whom/which there is only one	(to be) the state of having only one functional aspect/facet; to function/manifest as a unified whole or unit	(to be) the state of being first in a sequence/group/pattern
CSV	(to be) a process which determines/identifies a set as being one in number; to count out to one; to determine that there is only one of something	(to be) a process which determines/identifies an entity as having only one functional aspect/facet; to determine that an entity is a (quasi-)indivisible whole/unit	(to be) a process which determines/identifies an entity’s sequential place in a sequence or group/pattern to be first
OBJ	[same as CTE]	(to be) the party/entity having only one functional aspect/facet; to be an entity which functions/manifests as single unit	(to be) the entity/party whose numerical place in a sequence/group/pattern is first

-TF- ‘ADDITION / SUBTRACTION’			
	STEM 1	STEM 2	STEM 3
BSC	(to be) an act/instance of changing the number of something via addition or subtraction	(to be) an act/instance of adding the number of something; to add something	(to be) an act/instance of subtracting the number of something; to subtract something
CTE	(to be) the party/entity that performs/initiates an act of adding or subtracting	(to be) the party/entity that performs/initiates an act of addition	(to be) the party/entity that performs/initiates an act of subtraction
CSV	(to be) a process of adding or subtracting	(to be) a process of addition	(to be) a process of subtraction
OBJ	(to be) the party/entity whose number is changed via addition or subtraction	(to be) the party/entity whose number is added to	(to be) the party/entity whose number is subtracted

-ZV- ‘MULTIPLICATION / DIVISION’			
	STEM 1	STEM 2	STEM 3
BSC	(to be) an act/instance of changing the number of something via multiplication or division; to multiply either by iteration or by division	(to be) an act/instance of multiplying the number of something; to multiply something	(to be) an act/instance of dividing the number of something; to divide something
CTE	(to be) the party/entity that performs/initiates an act of multiplying or dividing something	(to be) the party/entity that performs/initiates an act of multiplying something	(to be) the party/entity that performs/initiates an act of dividing something
CSV	(to be) a process of increasing via multiplication or division	(to be) a process of multiplication	(to be) a process of division
OBJ	(to be) the party/entity whose number is multiplied or divided	(to be) the party/entity whose number is multiplied	(to be) the party/entity whose number is divided

-NT- ‘COUNTING / TALLYING / SEQUENTIAL ENUMERATION’		Associated Affix: SEQ
BSC	STEM 1: (to be) a sequential numerical count(ing) of entities by natural numbers (i.e., positive integers) to determine the numerical quantity thereof; to count a set of entities, to tally the number of entities	STEM 2: (to be) a sequential numerical labeling [of entities by natural numbers] for purpose of identification, individuation, arrangement, etc. STEM 3: (to be) a numerical(ly-based) pattern/arrangement; to enumerate
CTE	(to be) the [natural] number of entities counted; the count; to count (up)/tally using natural numbers [= focusing on the accrual/addition of numbers in anticipation of the total/tally]	
CSV	(to be) the process of counting/tallying; to count (up)/tally [= focusing on the counting process itself irrespective of the eventual total]	
OBJ	(to be) the entity/entities so counted	

-NTH- ‘NUMBER / INTEGER / RATIONAL NUMBER’		
BSC	STEM 1: (to be) a number; to express numerically	STEM 2: (to be) an integer, express via integers * STEM 3: (to be) a rational number, express via rational numbers * (i.e., expressable as a ratio of two integers)
CTE	(to be) a state of being expressed/expressable numerically	
CSV	(to be) an act of performing something by expressing it numerically, do something by using numbers	
OBJ	(to be) a numerical expression	

* concatenate an appropriate stem from the root **-TVY-** with this stem to indicate positive or negative numbers *

-RNT- ‘REAL NUMBER / IRRATIONAL NUMBER / IMAGINARY NUMBER’		
BSC	STEM 1: (to be) a real number	STEM 2: (to be) an irrational number (i.e., not expressable as a ratio of two integers) STEM 3: (to be) an imaginary/complex number [i.e., a multiple of i]
CTE	(to be) a state of being expressed/expressable as a real number	
CSV	(to be) an act of performing something by expressing it as a real number, do something by using real numbers	
OBJ	(to be) a real number expression	

-NTHW- ‘VARIABLE / COEFFICIENT / CONSTANT’		
BSC	STEM 1: (to be) a mathematical variable; to express as a mathematical variable	STEM 2: (to be) a mathematical coefficient; to express as a mathematical coefficient STEM 3: (to be) a mathematical constant; to express as a mathematical constant
CTE	(to be) a state of being expressed/expressable as a mathematical variable	
CSV	(to be) an act of performing something by expressing it as a mathematical variable, do something by using a mathematical variable	
OBJ	(to be) a mathematical function, a mathematical expression using a variable or variables	

-ŃZX- ‘ABSTRACT OBJECT / ABSTRACT STRUCTURE / ABSTRACT OPERATION’			
BSC	STEM 1: (to be) an abstract object; to operate/ function as an abstract object [i.e., an abstract entity governed by abstract rules]	STEM 2: (to be) an abstract structure; to operate/function as an abstract structure [i.e., a grouping of abstract objects that displays certain predetermined qualities and supports certain operations, e.g., an algebraic structure]	STEM 3: (to be) an operation performed upon an abstract object or structure; to perform such an operation [i.e., a rule-based transformation of abstract objects]
CTE	(to be) a defining property (or set of defining properties) of an abstract object	(to be) a component of such a structure	(to be) the underlying rule that forms the basis for an abstract operation
CSV	(to be) the specific identity of an abstract object; to identify an abstract object	(to be) the defining purpose/function of such a structure; to define the purpose/function of such a structure	(to be) an act/process of performing/carrying out such an operation; to perform/carry out/apply an abstract operation
OBJ	(to be) a property/attribute peculiar to a particular abstract object	(to be) a property/operation manifested or supported by such a structure	(to be) the (desired) transformation precipitated by performance/application of an abstract operation

6.4.2 Shapes and Forms

-ŘŘ- ‘SHAPE / FORM / FIGURE’		Associated Affix: SHP
BSC	Stem 1: (to be/manifest) a two-dimensional shape or outline form — [both the shape and the entity manifesting that shape]	Stem 2: (to be/manifest) a three-dimensional shape/form Stem 3: (to be a) figure (reminiscent of something) based on shape/form
CTE	(to be) the entity manifesting a particular 2-D shape or outline form	
CSV	(to be/manifest) a two-dimensional shape or outline form	
OBJ	(to be) the background or “negative space” behind a 2-dimensional shape or outline form	


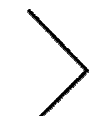




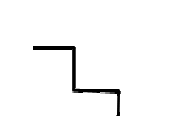









NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root with the same Specification pattern:

-ŘŘŘ- ‘CONTOUR / OUTLINE / MOLD / CAST’
Stem 1: (to be/manifest a) two-dimensional contour, pattern, or outline as a representation/model for something
Stem 2: (to be/manifest a) three-dimensional contour, pattern, or outline as a representation/model for something
Stem 3: (to be a) mold/pattern/cast (of/for something)

-JB- ‘TWO-DIMENSIONAL DECORATIVE PATTERN/TEXTURE’ Affix: PAT		
BSC	STEM 1: (to be/manifest) a two-dimensional (quasi-)overlying simple visual surface design/pattern (= repetitive visual design)— [both the design/pattern and the entity manifesting such]	STEM 2: (to be/manifest) a two-dimensional (quasi-) overlying complex/multi-faced visual surface pattern (= complex repetitive visual design)
CTE	(to be) something manifesting a 2-D overlying simple visual surface pattern	
CSV	(to be) a 2-D (quasi-)overlying simple visual surface pattern	
OBJ	(to be) the background upon or over which a 2-dimensional overlying design/pattern appears	STEM 3: (to be/manifest a) two-dimensional (quasi-) overlying visual surface texture (= repetitive visual-tactile design)

-CKL- OPEN-ENDED LINEAR OUTLINE SHAPE		
BSC	Stem 1: (be) an open-ended (quasi-)linear outline shape (i.e. for describing the outline shape of any visual or tactile object/entity), e.g., an arc, a straight line, an S-shape, a V-shape, a squiggly line, etc.	Stem 2: (be) the (quasi-)planar extension (in 3-dimensional space) of the Stem 1 linear shape, e.g., a hemisphere shape based on the Stem-1 linear shape of an arc, or a notch- or wedge-shaped indentation based on the Stem-1 linear shape of a V-shape.
CTE	(be) the state of having a particular (quasi-)linear outline shape	
CSV	(be) the act of discerning/observing/perceiving a (quasi-)linear outline shape	Stem 3: (be) the “negative” space delineated by a (quasi-)linear outline shape, e.g., the pointed area of one’s plane of vision created as the negative space set off by something in the foreground having a V-shaped outline.
OBJ	(be) an object/entity which manifests the particular (quasi-)linear outline shape	

The following roots all have a Stem & Specification pattern based on the root **-CKL-** above. The English names given each shape are, in many cases, rather stilted given the absence of concise nomenclature being available. Note also that the directional orientation of the shape as shown is arbitrary and irrelevant:

								
-VŘ-	-PLW-	-PLY-	-FTY-	-JKL-	-JKR-	-JKH-	-VTÇ-	-KSMY-
STRAIGHT LINE	RIGHT- ANGLE	ACUTE- ANGLE	OBTUSE-ANGLE	W-SHAPED	SAWTOOTH- SHAPED	STAIRCASE- SHAPED	3-POINTED SHAPE	IRREGULAR POINTS
								
-DĞL-	-MKŘ-	-NZŘ-	-GBL-	-ÇBŘ-	-GBR-	-GZB-		
ARC	SEMI-CIRCLE	CIRCULAR	HUMPED-SHAPE	U-SHAPED	DOUBLE-HUMPED	S-SHAPED		

**-KṭM-**

BULLET-SHAPED

**-KṭK-**

ARISTATE*

**-KṭTL-**

MUCRONATE*

**-KṭN-**

FLATTENED ARISTATE *

**-JBL-**

FLATTENED BULLET-SHAPED

**-ḐDL-**

SCALLOP-SHELL-SHAPED

**-ḐDW-**

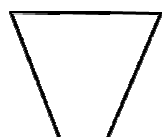
TRUNCATE*

**-VGL-**

SPADE-SHAPED

**-ŽTY-**

POINTED SPADE-SHAPED

**-XPY-**

WEDGE-SHAPED

**-XPR-**

CONCAVE WEDGE

**-ŽGL-**

Y-SHAPED

**-MNY-**

TRIPLE-LOBE

**-SSKY-**IRREGULAR
LINEAR**-PFW-**

TOOTH-SHAPED

**-PFY-**

AURICULATE*

**-PFČ-**

OBCORDATE *

**-PFR-**

PAIRED LOBES

**-ŘFL-**

ROUNDED Y-SHAPED

**-ŘFY-**

HASTATE *

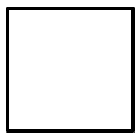
**-ŘTR-**MIXED ROUNDED
& POINTED

* Term borrowed from biology/botany for a particular leaf shape.

-CKR- ‘CLOSED LINEAR OUTLINE SHAPE’		
BSC	Stem 1: (be) a closed (quasi-)linear outline shape (i.e. for describing the outline shape of any visual or tactile object/entity)	Stem 2: (be) a (quasi-)planar object/entity whose edge(s) constitute the Stem 1 closed linear shape, e.g., a cookie in the shape of a circle, or a stop-sign in the shape of an octagon. Stem 3: (be) the background “negative” space delineated by a closed (quasi-)linear outline shape, e.g., the area of one’s plane of vision with a “hole” in it, created as the negative space set off by something in the foreground having a closed-linear outline.
CTE	(be) the state of having a particular closed (quasi-)linear outline shape	
CSV	(be) the act of discerning/observing/perceiving a closed (quasi-)linear outline shape	
OBJ	(be) an object/entity which manifests the particular closed (quasi-)linear outline shape	

The following roots all have a Stem & Specification pattern based on the above root.

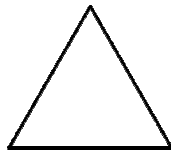
In general, the pattern of roots for planar and three-dimensional shapes is as follows: The basic closed planar shape (e.g., a circle, a square, an equilateral triangle, etc.) has a tri-consonantal root ending in **-L**. The three-dimensional extension of such a root with a rectilinear base changes this **-L** to **-R**. The three-dimensional extension of such a root with a radial or circular base changes it to **-W**. If the shape has an associated open-ended linear outline form, this is expressed by changing the last consonant of the root to **-Ř** or **-Y**.



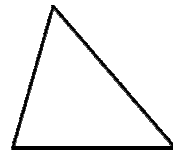
-PŠL-
SQUARE



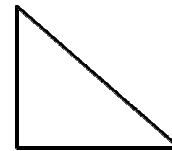
-KŠL-
RECTANGLE



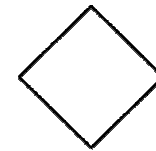
-ZL-
ISOSCELES TRIANGLE



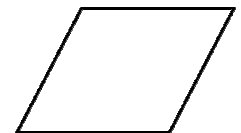
-ŘZL-
SCALENE TRIANGLE



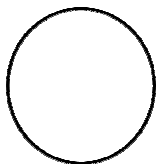
-RZL-
RIGHT TRIANGLE



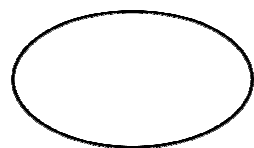
-RPŠL-
DIAMOND
SHAPED



-ŘPŠL-
RHOMBOID



-NZL-
CIRCLE



-MZL-
ELLIPSE



-KKL-
SLIVER-MOON SHAPED



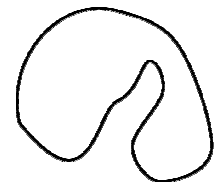
-MKL-
HALF-MOON
SHAPED



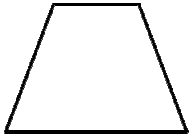
-KKR-
GIBBOUS-MOON
SHAPED



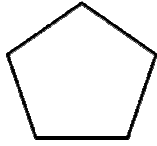
-SBL-
TEARDROP-
SHAPED



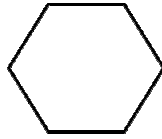
-SSKL-
IRREGULAR
ROUNDED SHAPE



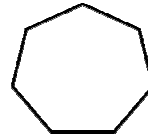
-LPŠL-
TRAPEZOID



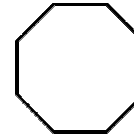
-STL-
PENTAGON



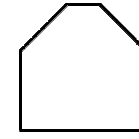
-CPL-
HEXAGON



-NSL-
HEPTAGON



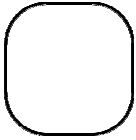
-ČKL-
OCTAGON



-KŠŘ-
DOUBLY-
TRUNCATED
SQUARE



-KSML-
IRREGULAR
POLYGONOID



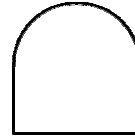
-NZM-
ROUNDED
SQUARE



-LKŠL-
ROUNDED RECTANGLE



-NZVL-
OVAL



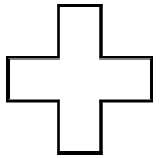
-ČBL-
HALF-
ROUNDED
SQUARE



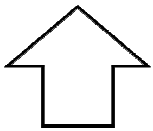
-TBL-
THICK ARCH SHAPED



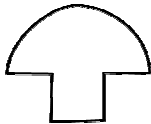
-ZBL-
VALENTINE
SHAPED



-FPŠ-
CROSS- or X=
SHAPED



-VKL-
ARROW-SHAPED



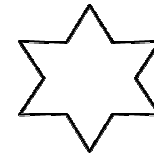
-BŽV-
MUSHROOM-SHAPED



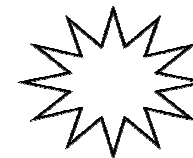
-PŠŘ-
4-POINTED STAR



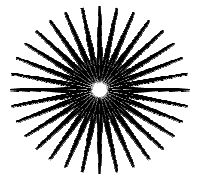
-STR-
5-POINTED STAR



-CPŘ-
SIX-POINTED STAR



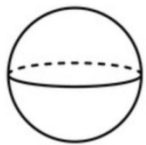
-SKL-
MULTI-POINTED
STAR



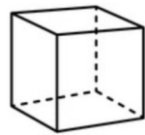
-FBL-
SPIKED CIRCLE

-TLK- ‘THREE-DIMENSIONAL FORM/LATTICE’	
BSC	Stem 1: (be) a solid three-dimensional outline form/shape, as determined by the holistic structure of its planar surfaces (e.g., a cube, a sphere, a pyramidal shape, etc.)
CTE	(be) the state of having a particular three-dimensional outline form/shape
CSV	(be) the act of discerning/observing/perceiving a three-dimensional outline form/shape
OBJ	(be) an object/entity which manifests the particular three-dimensional outline form/shape
Stem 2: [same as stem 1 except that the 3-dimensional form is hollow, consisting only of the collection of surface planes or geodesic/curved plane] Stem 3: (be) a a three-dimensional lattice form/shape, as determined by the collective structure/lattice formed by its linear edges (e.g., a cube-shaped lattice formed from eight linear elements of equal length whose end-points are connected to two others at right angles, a lattice in the form of a sphere, a pyramid-shaped lattice, etc.)	

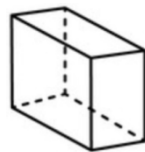
The following roots have the same Stem/Specification structure as the root above:



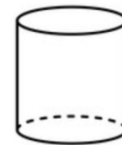
-NZW-
SPHERE



-PŠR-
CUBE



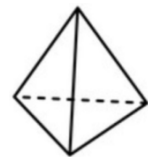
-KŠR-
RECTANGULAR CUBOID



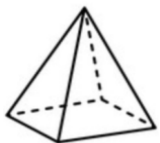
-NZN-
CYLINDER



-NZY-
CONE



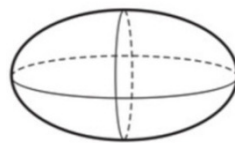
-PŠN-
TETRAHEDRON



-ZR-
PYRAMID



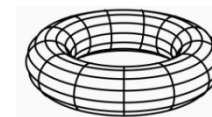
-MKW-
HEMISPHERE



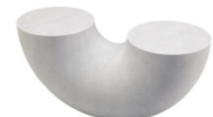
-MZW-
ELLIPSOID



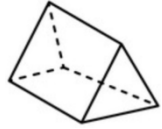
-RČKW-
TRIANGULAR
OCTAHEDRON



-TBW-
TORUS

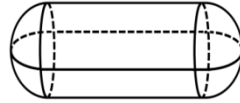


-TBY-
HALF-TORUS



-RZR-

EQUILATERAL TRIANGULAR
PRISM SHAPE



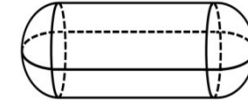
-NZVW-

OVOID



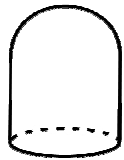
-NZR-

DISC



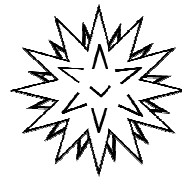
-MZR-

LOZENGE SHAPE [i.e., same as ovoid except that width-wise cross-section is an oval or ellipse rather than a circle]



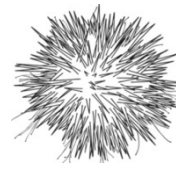
-ÇBW-

ROUND-TOPPED CYLINDER



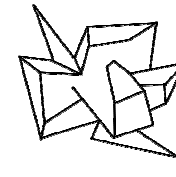
-SKR-

3-DIMENSIONAL MULTI-
POINTED STAR



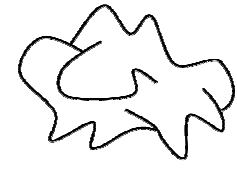
-FBR-

3-DIMENSIONAL SPIKED
SPHEROID



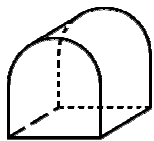
-KSMR-

3-DIMENSIONAL IRREGULAR
POLYHEDRON



-SSKR-

3-DIMENSIONAL IRREGULAR
“AMOEBOID” SHAPE



-ÇBR-

ROUND-TOPPED CUBOID



-LPŠR-

TRUNCATED PYRAMID

Additional Roots:

- ÑBL**- polygon [for a polygon with a specific number of sides more than eight, incorporate a number stem with either COMPOSITIVE format or UTILITATIVE format into this root]
- ŠBL**- polyhedron [for a polyhedron with a specific number of faces more than eight, incorporate a number stem with either COMPOSITIVE format or UTILITATIVE format into this root]
- RNZM**- concave disc (i.e., shaped like a Life-Saver piece of candy)
- RNZN**- half-concave disc (i.e., concave lens-shaped)
- RNZW**- convex disc (i.e., convex lens-shaped)

The following affix is available to modify the above stems for 3-dimensional forms:

-jk	VPF Variance From Prototypical 3-D Form
1	long axis obliquely angled/inclined away from the vertical/right-angled/rectilinear/perpendicular
2	elongated lengthwise/heightwise
3	elongated widthwise/girthwise
4	curved away from right-angled/rectilinear orientation
5	truncated at small/pointed/shorter/smaller end at angle parallel to base
6	truncated at small/pointed/shorter/smaller end at oblique angle to base
7	a quasi-planar longitudinal (i.e., perpendicular to base) slice through 3-D form X
8	a quasi-planar oblique slice through 3-D form/shape X
9	a quasi-planar latitudinal (i.e., parallel to base) slice through 3-D form X

-ļŗ	TDP Three-Dimensional Polyhedral Forms
1	symmetrical 3-dimensional polyhedron having X-number of triangular faces
2	symmetrical 3-dimensional polyhedron having X-number of quadrilateral faces
3	symmetrical 3-dimensional polyhedron having X-number of mixed triangular and quadrilateral faces
4	symmetrical 3-dimensional polyhedron having X-number of mixed polygonal faces
5	a 3-dimensional form/object whose 2-dimensional/planar outline shape (i.e., against a background) is X
6	asymmetrical 3-dimensional polyhedron having X-number of mixed polygonal faces
7	asymmetrical 3-dimensional polyhedron having X-number of mixed triangular and quadrilateral faces
8	asymmetrical polygon having X-number of quadrilateral faces
9	asymmetrical polygon having X-number of triangular faces

NOTE: For the roots **-ZR-**, **-RZR-**, and **-LPŠR-** above, incorporate a number-root with either COMPOSITIVE format or UTILITATIVE format to create words for X-sided pyramidal forms or X-sided prism forms.

-ļn	CNW Conway Polyhedral Mathematical Operations
1	dual
2	truncate
3	subdivide
4	augment
5	kis
6	bevel
7	chamfer
8	join
9	ambo

6.4.3 Chemical Elements, Compounds and Substances

-RZ- ‘CHEMICAL ELEMENT’		
BSC	Stem 1: (to be) a chemical element	Stem 2: (to be) a positive ion of a chemical element Stem 3: (to be) a negative ion of a chemical element
CTE	(to be) an elemental state; at a level involving individual chemical elements	
CSV	(to be) a state/act of manipulating/combining chemical elements; to perform chemistry	
OBJ	(to be) a chemical element in its naturally occurring (homonuclear) state, e.g., O ₂	

The roots for the elements below follow the same Specification and Stem pattern as the root **-RZ-** ‘CHEMICAL ELEMENT’ above:

-PÇK-	Hydrogen	-RTÑ-	Vanadium	-ZTW-	Cobalt	-ŠPW-	Boron	-ÑN-	Oxygen
-PÇKW-	Lithium	-RTÑW-	Niobium	-ZTY-	Rhodium	-ŠPY-	Aluminum	-ÑZD-	Sulfur
-PÇKY-	Sodium	-RSÑ-	Tantalum	-ZTF-	Iridium	-ŠPL-	Gallium	-ÑZDW-	Selenium
-PÇKL-	Potassium	-RSÑW-	Dubnium	-ZTV-	Meitnerium	-ŠPR-	Indium	-ÑZDY-	Tellurium
-PÇKR-	Rubidium					-ŠPŘ-	Thallium	-ÑZDL-	Polonium
-PÇKŘ-	Caesium	-ŠKR-	Chromium	-XDW-	Nickel	-ŠPŠ-	Nihonium	-ÑZDR-	Livermorium
-PÇKF-	Francium	-ŠKW-	Molybdenum	-XDY-	Palladium				
		-ŠKY-	Tungsten	-XDL-	Platinum	-ŽPL-	Carbon	-BZTW-	Fluorine
-LVG-	Beryllium	-ŠKŘ-	Seaborgium	-XDR-	Darmstadtium	-ŽPW-	Silicon	-BZTY-	Chlorine
-LVGW-	Magnesium					-ŽPY-	Germanium	-BZTL-	Bromine
-LVGY-	Calcium	-TŁN-	Manganese	-MŻ-	Copper	-ŽPR-	Tin	-BZTR-	Iodine
-LVGL-	Strontium	-TŁNW-	Technetium	-RŁ-	Silver	-ŽPŘ-	Lead	-BZTŘ-	Astatine
-LVGR-	Barium	-TŁÑ-	Rhenium	-LJ-	Gold	-ŽPF-	Flerovium	-BZTŁ-	Tennessine
-LVGŘ-	Radium	-TŁÑW-	Bohrium	-LJÑW-	Roentgenium				
-LVGV-	Scandium					-LXT-	Nitrogen	-GZPW-	Helium
-LVGZ-	Yttrium	-SGL-	Iron	-ĐBW-	Zinc	-LXTW-	Phosphorus	-GZPY-	Neon
		-SGW-	Ruthenium	-ĐBY-	Cadmium	-LXTY-	Arsenic	-GZPL-	Argon
-PLW-	Titanium	-SGY-	Osmium	-ĐBL-	Mercury	-LXTL-	Antimony	-GZPR-	Krypton
-PLM-	Zirconium	-SGV-	Hassium	-ĐBR-	Copernicium	-LXTR-	Bismuth	-GZPŘ-	Xenon
-PLN-	Hafnium					-LXTŘ-	Moscovium	-GZPF-	Radon
-PLÑ-	Rutherfordium							-GZPL-	Oganesson

-ŘCP-	Lanthanum	-ŘCPR-	Terbium	-ŘPST-	Actinium	-ŘPSC-	Berkelium
-ŘCPW-	Cerium	-ŘCPS-	Dysprosium	-ŘPSTW-	Thorium	-ŘPSC-	Californium
-ŘCPY-	Praseodymium	-ŘCPS-	Holmium	-ŘPSTY-	Protactinium	-ŘPSCW-	Einsteinium
-ŘCPÇ-	Neodymium	-ŘCC-	Erbium	-ŘPSTL-	Uranium	-ŘPSCW-	Fermium
-ŘCPL-	Promethium	-ŘCCW-	Thulium	-ŘPSTR-	Neptunium	-ŘPSS-	Mendelevium
-ŘCPF-	Samarium	-ŘCČ-	Ytterbium	-ŘPSTR-	Plutonium	-ŘPSSW-	Nobelium
-ŘCPL-	Europium	-ŘCČW-	Lutetium	-ŘPSTF-	Americium	-ŘPSSY-	Lawrencium
-ŘCPR-	Gadolinium			-ŘPSTL-	Curium		

The following new affixes are used for naming chemical compounds:

Ionic Compounds — inorganic compounds between metals [cations] and non-metals [anions] (like English **-ide** suffix but with electron charge explicitly stated):

-ltř	ION Ionic Compounding Elements
1	transition metal cation with +1 charge
2	transition metal cation with +2 charge
3	transition metal cation with +3 charge
4	transition metal cation with +4 charge
5	hydrogen + anion acid (i.e., hydro-...-ic acid), e.g., when used w/ chlorine, this results in hydrochloric acid, i.e., hydrochloride / chlorhydrate
6	compounding anion with -4 charge
7	compounding anion with -3 charge
8	compounding anion with -2 charge
9	compounding anion with -1 charge

Molecular Compounds — inorganic compounds between nonmetals:

-rtl	AMC Number of Atoms in a Molecular Compound
1	deca- *
2	di-
3	tri-
4	tetra-
5	penta-
6	hexa-
7	hepta-
8	octa-
9	nona-

* A single atom (equivalent to English “mono-”) is indicated by the absence of the suffix; therefore Degree 1 of this affix is used to signify ten atoms (deca-).

The following four affixes provide shortcut means of naming some common polyatomic ions:

-ct	PIA Polyatomic Ions A
1	sulfate
2	nitrate
3	chlorate
4	arsenate
5	carbonate
6	chromate
7	bromate
8	phosphate
9	iodate

-zt	PIB Polyatomic Ions B
1	sulfite
2	nitrite
3	chlorite
4	arsenite
5	hydroxide
6	chromite
7	bromite
8	phosphite
9	iodite

-ct	PIC Polyatomic Ions C
1	peroxide
2	silicate
3	citrate
4	acetate
5	oxide
6	cyanide
7	tartrate
8	formate
9	oxalate

-jt	PID Polyatomic Ions D
1	thiocyanate
2	thiosulfate
3	glycol
4	hexacyanoferrate
5	permanganate
6	succinate
7	azanide / amide
8	manganate
9	benzoate

-zt	CPI Polyatomic Cations
1	ammonium
2	fluoronium
3	hydronium
4	pyrylium
5	phosphonium
6	guanidinium
7	tropylium
8	triphenylcarbenium
9	cyclopropenium

-zt	PIC Additional Polyatomic Ionic Configurations
1	-ate (base oxyanion), e.g., sulfate
2	-ite (i.e., one less oxyanion than base form), e.g., sulfite
3	hypo- ... -ite (two less oxyanions than base form), e.g., hyposulfite
4	per- ... -ate (one more oxyanion than base form), e.g., persulfate
5	-ide (anionic element where electron charge not specified), e.g., sulfide
6	bi- ... -ate / hydrogen ... -ate (hydrogen + one oxyanion more than base form), e.g., bisulfate
7	dihydrogen ... -ate (two hydrogens + one oxyanion more than base form), e.g., dihydrogen phosphate
8	di- ... -ate (two atoms of an element + one oxyanion more than base form), e.g., dichromate
9	di ... -ide (two atoms of an element + base oxyanion), e.g., disulfide

The following nine affixes provide shortcut means of naming some functional groups for organic compounds:

-sd	GPA Functional Group A
1	alkane, alkyl-, -ane
2	alkene, alkenyl-, -ene
3	alkyne, alkynyl-, -yne
4	benzene deriv., phenyl-, benzene
5	halo-, alkyl halide
6	fluoro-, alkyl fluoride
7	chloro-, alkyl chloride
8	bromo-, alkyl bromide
9	iodo-, alkyl iodide

-sl	GPB Functional Group B
1	hydroxyl, hydroxy-, -ol
2	carbonyl, oxo-, -oyl-, -one
3	aldehyde, -formyl-, -al
4	haloformyl, carbonoo...oyl-, -oyl halide
5	carbonate ester, alkoxycarbonyloxy-, alkyl carbonate
6	carboxylate, carboxy-, -oate
7	carboxyl, carboxy-, -oic acid
8	carboalcoxy, alkanoyloxy-, alkyl alkanoate
9	methoxy, methoxy-

-šđ	GPC Functional Group C
1	hydroperoxy-, alkyl hydroperoxide
2	peroxy-, alkyl peroxide
3	ether, alkoxy-, alkyl ether
4	hemiacetal, alkoxy -ol, -al alkyl hemiacetal
5	hemiketal, alkoxy -ol, -one alkyl hemiketal
6	acetal, dialkoxy-, -al dialkyl acetal
7	ketal, dialkoxy-, -one dialkyl ketal
8	orthoester, -trialkoxy
9	orthocarbonate ester, tetralkoxy-, tetraalkyl orthocarbonate

-šļ	GPD Functional Group D
1	methlenedioxy-, -dioxole
2	carboxylic anhydride, anhydride
3	carboxamide, carboxamido-, carbamoyl-, -amide
4	primary amine, amino-, -amine
5	secondary amine, amino-, -amine
6	tertiary amine, amino-, -amine
7	ammonio-, -ammonium
8	imide, imido-, -imide
9	azide, azido-, alkyl azide

-zđ	GPE Functional Group E
1	primary ketimine, imino-, imine
2	secondary ketimine, imino-, -imine
3	primary aldimine, imino-, imine
4	secondary aldimine, imino-, -imine
5	azo diimide, azo-, -diazene
6	cyanate, cyanato-, alkyl cyanate
7	isocyanate, isocyanato-, alkyl isocyanate
8	nitrate, nitrooxy-, nitroxy-, alkyl nitrate
9	nitrite, nitrosooxy-, alkyl nitrite

-zļ	GPF Functional Group F
1	nitrile, cyano-, alkanenitrile, alkyl cyanide
2	isonitrile, isocyano-, alkaneisonitrile, alkyl isocyanide
3	nitro compound, nitro-
4	nitroso compound, nitroso-, nitrosyl-
5	oxime
6	pyridyl, 4-pyridyl, 3-pyridyl, 2-pyridyl, -pyridine
7	carbamate, -carbamoyloxy-, -carbamate
8	phosphine, phosphanyl-, -phosphane
9	phosphonic acid, phosphono-, -phosphonic acid

-žđ	GPG Functional Group G
1	phosphate, phosphonoxy-, O-phosphono-, ... phosphate
2	phosphodiester, hydroxyphosphoryloxy-, di...hydrogen phosphate
3	boronic acid, borono-, ... boronic acid
4	boronate, O-alkylboronyl-, ... boronic acid di... ester
5	borinic acid, hydroxyborino-, di... obrinic acid
6	borinate, O-alkoxydialkylboronyl-, di... borinic acid ... ester
7	alkylithium, -lithium
8	allylmagnesium halide, -magnesium halide
9	alkylaluminium, -aluminium / -aluminum

-žļ	GPH Functional Group H
1	sulfhydryl, sulfanyl-, -thiol
2	sulfide, -sulfanyl-, di... sulfide
3	disulfide, -disulfanyl-, di... disulfide
4	sulfoxide, -sulfinyl-, di... sulfoxide
5	sulfone, -sulfonyl-, di... sulfone
6	sulfinic acid, sulfinio-, -sulfinic acid
7	sulfonic acid, sulfo-, -sulfonic acid
8	sulfonate ester, alkoxysulfonyl-, -sulfonate
9	carbonothioyl, -thioyl-, sulfanylidene-, -thione

-zd	GPJ Functional Group J
1	thiocyanate, thocyanato-, ...thiocyanate
2	isothiocyanate, isothiocyano-, ...isothiocyanate
3	carbonothioyl, methanethioyl, sufanylidene-, -thial
4	carbothioic S-acid, mercaptocarbonyl-, -thioic S-acid
5	carbothioic O-acid, hydroxythiocarbonyl-, -thioic O-acid
6	thiolester, S-alkyl-alkane-thioate
7	thionoester, O-alkyl-alkane-thioate
8	carbodithioic acid, dithiocarboxy-, -dithioic acid
9	dithiocarboxylic acid ester, -dithioate

-RZB- ‘CHEMICAL COMPOUND / CHEMICAL REACTION’		
BSC	Stem 1: (to be) a chemical compound; to consist of a chemical compound	Stem 2: (to be) a chemical reaction; to chemically react, undergo a chemical reaction
CTE	(to be) an instance (i.e.g. piece, drop, granule, plume, glob) of the substance comprising a chemical compound	
CSV	(to be) a chemical reaction resulting in the formation of a chemical compound; to chemically react, make/undergo a chemical reaction	Stem 3: (to be) an amount of energy released as a result of a chemical reaction; to release energy as a result of a chemical reaction
OBJ	(to be) a chemical compound in its naturally occurring state	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the following new root:

- RZBW- ‘CHEMICAL COMPOUND BY TYPE OF MOLECULAR BOND’		
BSC	Stem 1: (to be) a chemical compound held together by covalent molecular bonds	Stem 2: (to be) a chemical compound held together by ionic bonds
CTE	(to be) an instance (i.e.g. amount, piece, drop, granule, flume, glob) of the substance comprising a chemical compound held together by covalent molecular bonds	
CSV	(to be) a chemical reaction resulting in the formation of a chemical compound held together by covalent molecular bonds; the chemically react, make/undergo a chemical reaction involving covalent molecular bonds	Stem 3: (to be) an intermetallic chemical compound or complex held together by metallic or coordinate covalent bonds
OBJ	(to be) a chemical compound held together by covalent molecular bonds in its naturally occurring state	

The following roots for common chemical compounds follow the same Specification pattern as the root **-RZ-** above:

-FD-	table salt / rock salt (sodium chloride)	-ZTC-	dynamite
-CPF-	baking soda	-XBW-	aspirin / ASA
-TPF-	plaster of Paris (calcium sulfate hemi-hydrate)	-JNY-	calomel (mercurous chloride)
-PPF-	talc / talcum	-KSPR-	gasoline
-DPF-	sodium bicarbonate (i.e., baking soda) NaHCO_3	-KSPL-	kerosene
-NPF-	washing soda (sodium carbonate decahydrate)	-KSPW-	benzene
-RPF-	magnesia (magnesium hydroxide)	-KSPY-	butane
-RPF-	lye / soda lye / caustic soda (sodium hydroxide)	-KSPŘ-	propane
-XPF-	lime / quicklime (calcium oxide)	-VML-	methanol / methyl alcohol / wood alcohol
-LPF-	slaked lime / caustic lime (calcium hydroxide)	-VMY-	grain alcohol (ethyl alcohol)
-SPF-	potash (potassium carbonate)	-TLMW-	graphite
-GPF-	saltpeter (potassium nitrate)	-TLMY-	graphene
-VPF-	bleaching powder (calcium hypochlorite)		
-CPF-	borax (sodium tetraborate)	-LCM-	table sugar (sucrose)
-ČPF-	emery / corundite	-LCN-	glucose
-DPF-	epsom salt (magnesium sulfate heptahydrate)	-LCMW-	fructose
-KCPF-	calcium oxychloride (i.e., bleaching powder)	-LCMY-	dextrose
-NLPF-	caustic potash (potassium hydroxide)		
-KTPF-	silica	-ZDŘ-	asbestos
-DMY-	bleach (sodium hypochlorite)	-XBŘ-	milk of magnesia
-PMY-	zinc white / zinc oxide		
-ZDW-	fluorspar / fluorite	-KFTW-	acetone
-DNW-	carbolic acid (phenol)	-KFTY-	ammonia
-ZDY-	copper sulphate (i.e., blue vitriol)	-KFTL-	rubbing alcohol / isopropyl alcohol
		-KFTR-	vinegar (acetic acid)
-CBL-	carbon dioxide	-KFTŘ-	glycerin (trihydroxy propanol)
-GVBL-	laughing gas (nitrous oxide)	-KFTČ-	oil of vitriol (sulfuric acid)
-GVBR-	methane	-KFTH-	formalin / aqueous formaldehyde solution
		-KFTHW-	muriatic acid (hydrochloric acid)

The following is a list of chemical compounds associated with organic lifeforms such as nucleic acids, essential nutrients, hormones, etc.

-PFK-	vitamin	-ŇZVL-	peptide	-MSG-	androgen
-PFKW-	vitamin A / retinol / beta-carotene	-ŇZVR-	eicosanoid	-MSGW-	testosterone
-PFKY-	vitamin B ₁ / thiamine	-ŇŽP-	hormone	-MSGY-	dehydroepiandrosterone
-PFKL-	vitamin B ₂ / riboflavin	-ŇŽPW-	adrenaline	-MSGL-	androstenedione
-PFKR-	vitamin B ₃ / niacin / niacinamide	-ŇŽPY-	melatonin	-MSGR-	dihydrotestosterone
-PFKŘ-	vitamin B ₅ / pantothenic acid	-ŇŽPL-	norepinephrine	-MSB-	estrogen
-PFKÇ-	vitamin B ₆ / pyridoxine	-ŇŽPR-	triiodothyronine	-MSBW-	estradiol
-PFKF-	vitamin B ₇ / biotin	-ŇŽPŘ-	thyroxine	-MSBY-	estrone
-PFKT-	vitamin B ₉ / folate / folic acid	-ŇŽPÇ-	dopamine	-MSBL-	estriol
-PFKM-	vitamin B ₁₂ / cobalamin,	-ŇŽPF-	prostaglandin	-MSBR-	progesterone
-PFKN-	vitamin B ₃ / niacin / niacinamide	-ŇŽPT-	leukotriene	-MSBŘ-	progesterone
-PFKH-	vitamin B ₃ / niacin / niacinamide	-ŇŽPL-	prostacyclin	-MSM-	corticoid
-PFG-	vitamin C / ascorbic acid	-ŇŽPH-	thromboxane	-MSMW-	aldosterone
-PFGW-	vitamin D ₂ / ergocalciferol	-ŇTP-	amylin	-MSMY-	cortisol
-PFGY-	vitamin D ₃ / cholecalciferol	-ŇTPW-	anti-Müllerian hormone	-MSN-	steroid
-PFGL-	vitamin E / tocopherol / tocotrienol	-ŇTPY-	adiponectin	-MSNW-	secosteroid
-PFGR-	vitamin K / phyloquinone / menaquinone	-ŇTPL-	corticotropin	-MSNY-	calcitriol
-PFX-	omega-3 fatty acid	-ŇTPR-	angiotensin	-MSŇ-	calcidiol
-PFXW-	omega-6 fatty acid	-ŇTPŘ-	angiotensinogen	-MSD-	thyroglobulin
-PFXR-	omega-9 fatty acid	-ŇTPÇ-	vasopressin	-MSDW-	troponin I
-PÇP-	protein	-ŇTPF-	brain natriuretic peptide	-MSDY-	troponin T
-PÇPW-	nucleic acid	-ŇTPT-	clacitonin	-MSDL-	creatine kinase
-PÇPY-	ribonucleic acid	-ŇTPL-	cholecystokinin	-MSDR-	prostate specific antigen
-PÇPL-	deoxyribonucleic acid	-ŇTPH-	corticotropin-releasing hormone	-MSDŘ-	carcinoembryonic antigen
-PÇPR-	nucleoside	-ŇFP-	cortistatin	-MFB-	alpha fetoprotein
-PÇPŘ-	nucleotide	-ŇFPW-	enkephalin	-MFBW-	myoglobin
-PÇPÇ-	adenine	-ŇFPY-	endothelin	-MFBY-	bilirubin
-PÇPF-	cytosine	-ŇFPL-	erythropoietin	-MFBL-	hemoglobin
-PÇPT-	guanine	-ŇFPR-	follicle-stimulating hormone	-MFBR-	ceruloplasmin

-PÇPL-	thymine	-ŇFPR-	galanin	-MFBŘ-	hemoglobin
-PÇPH-	uracil	-ŇFPC-	gastric inhibitory polypeptide	-MFG-	pyruvate
-PÇŇ-	ferritin	-ŇFPP-	gastrin	-MFGW-	uric acid
-PÇŇW-	C-reactive protein	-ŇFPT-	ghrelin	-MFGY-	urea
-PÇB-	amino acid	-ŇFPL-	gastrin	-MFGL-	lactate
-PÇBW-	histidine	-ŇFPH-	glucagon	-MFGR-	creatinine
-PÇBY-	isoleucine	-ŇFK-	glucagon-like peptide 1	-MFGŘ-	haptoglobin
-PÇBL-	leucine	-ŇFKW-	gonadotropin-releasing hormone	-MFD-	cholesterol
-PÇBR-	lysine	-ŇFKY-	hepcidin	-MFDW-	high-density lipoprotein
-PÇBŘ-	methionine	-ŇFKL-	human chorionic gonadotropin	-MFDY-	low-density lipoprotein
-PÇG-	phenylalanine	-ŇFKR-	growth hormone	-MFDL-	triglyceride
-PÇGW-	threonine	-ŇFKŘ-	inhibin	-MFDR-	alpha-1 antitrypsin
-PÇGY-	tryptophan	-ŇFKÇ-	insulin	-MFDŘ-	transferrin
-PÇGL-	valine	-ŇFKF-	somatomedin	-MSV-	fobrompgem
-PÇGR-	arginine	-ŇFKT-	leptin	-MSVW-	albumin
-PÇGRŘ-	cystine	-ŇFKM-	lipotropin	-MSVY-	enzyme
-PÇD-	glutamine	-ŇFKN-	luteinizing hormone		
-PÇDW-	glycine	-ŇFKS-	melanocyte stimulating hormone		
-PÇDY-	proline	-ŇFKŠ-	motilin		
-PÇDL-	tyrosine	-ŇFKH-	orexin		
-PÇDR-	alanine	-ŇTP-	osteocalcin		
-PÇDRŘ-	aspartic acid	-ŇTPW-	oxytocin / pitocin		
-PÇF-	asparagine	-ŇTPY-	pancreatic polypeptide		
-PÇFW-	glutamic acid	-ŇTPL-	parathyroid hormone		
-PÇFY-	serine	-ŇTPR-	pituitary adenylate cyclase-activating peptide		
-PÇFL-	selenocysteine	-ŇTPŘ-	prolactin		
-PÇFR-	pyrrollysine	-ŇTPÇ-	prolactin-releasing hormone		
-PÇFRŘ-	taurine	-ŇTPF-	relaxin		
-PÇTW-	choline	-ŇTPT-	renin		
-PÇTY-	inositol	-ŇTPL-	secretin		
-PÇTL-	polyphenol / lignan	-ŇTPH-	somatostatin		

-PÇTR- flavonoid
-PÇTRĤ- resveratrol

-ŇTF- thrombopoietin
-ŇTFW- thyroid-stimulating hormone
-ŇTFY- vasoactive intestinal peptide
-ŇTFL- guanylin
-ŇTFR- uroguanylin
-ŇTFRĤ- ventricular natriuretic peptide

-SY- ‘SUBSTANCE / MATERIAL / WHAT SOMETHING CONSISTS OF OR IS COMPOSED/MADE OF’		
BSC	STEM 1: (to be a) an instance/amount of a material substance; (to be a) manifestation of matter/material/ “stuff” / something material — [both the substance itself and the form/entity consisting thereof]	STEM 2: (to be) a state of consisting of or being composed/made of a particular material substance; to consist of/be composed of/made (out) of a particular material/substance STEM 3: (to be/manifest a) material consistency, i.e., a discernible (quasi-)tactile or (quasi-)visual or other (quasi-)sensory attribute/quality/characteristic)
CTE	(to be) the material substance of which something consists or is made; something material	
CSV	(to be) a form taken by something material, the shape/form of something material	
OBJ	(to be) an object/entity made from or consisting of a particular material	

The following roots for common substances/materials follow the same Specification pattern as the stems of the above root **-SY-** :

-NDW-	dirt/earth/soil	-TLM-	plastic	-ŇŽK-	polystyrene
-NDM-	clay	-KSY-	metal	-ŇŽKW-	polystyrene foam (“styrofoam”)
-NTF-	sand	-KSV-	steel / metal alloy	-ŇŽKY-	polyethylene
-NTFW-	lava	-XTW-	ceramic	-ŇŽKL-	polypropylene
-NTÇ-	tar/pitch	-XTY-	porcelain	-ŇŽKR-	polycarbonate
-NTW-	oil (plant-derived)	-XMW-	plaster	-ŇŽKŘ-	fiberglass
-NTY-	petroleum	-XMY-	mortar	-ŇŽKF-	linoleum
-NTR-	latex (natural)	-XNW-	adobe	-ŇŽKT-	polyurethane
-NDR-	wood	-XNY-	cement/concrete	-ŇŽKÇ-	plexiglass (polymethyl methacrylate)
-MNW-	honey	-BXW-	brick	-ŇŽKH-	epoxy (i.e., polyepoxide)
-MTÇ-	wax	-TTW-	glass	-NTV-	latex (synthetic)
-LTV-	silk	-TTY-	enamel	-NZX-	polymer
-LTH-	ivory	-TTR-	tile	-NZXW-	cyanoacrylate
-PNW-	starch (amylose/amylopectin)	-ŽTÇ-	asphalt/bitumen	-NZXL-	polyfluoroalkyl substance (PFAS)
-PNY-	cork	-SNW-	vinyl (i.e., polyvinyl chloride)		

-NDG-	resin	-SNY-	nylon
-NZD-	brine	-DGW-	paper
-NZB-	shellac	-DGY-	cardboard
-BGV-	grease (synthetic lubricant)	-VNW-	leather
-BGR-	non-greasy lubricant	-VNY-	cloth/fabric/textile
-TPY-	rubber	-LTN-	ink

Roots relating to common rocks, minerals, rock-forms, gemstones, and non-mineral materials treated as gemstones:

-GGR-	mineral	-GVY-	diamond
-GGW-	stone (material substance)	-GVM-	sapphire
-GGY-	marble	-GVN-	ruby
-GGL-	limestone	-GVW-	emerald
-GGR-	chalk	-GVL-	opal
-GDR-	granite	-GVG-	crystal
-GBR-	basalt	-STL-	jade
-GBW-	serpentine	-RTL-	topaz
-GBY-	syenite	-NTL-	aquamarine
-GDL-	quartz	-FTL-	amethyst
-GDR-	quartzite	-DTL-	alexandrite
-GNW-	slate	-LTL-	turquoise
-GNY-	coal	-MTL-	spinel
-GFL-	gneiss	-RTL-	malachite
-GFR-	calcite	-PTL-	garnet
-GFR-	gypsum (calcium sulfate dihydrate)	-KTL-	zircon
-GVR-	obsidian	-JTL-	lapis lazuli
-GZF-	feldspar	-GTL-	ammolite
-GZG-	pyroxene	-ZTL-	agate
-GFW-	mica	-CTL-	alabaster
-GFY-	amphibole		
-GZL-	schist	-TDW-	amber
-GZR-	shale	-TDY-	jet
-GZM-	tuff / volcanic tuff	-TDL-	pearl
-GZN-	pumice	-TDR-	petrified wood

7.0 NATURAL PHENOMENA (BIOLOGICAL/ZOOLOGICAL)

-LCP- 'CELLULAR ORGANELLE / PLASMA MEMBRANE / CYTOPLASM'		
BSC	STEM 1: (to be) an organelle within a biological cell	STEM 2: (to be) the plasma membrane / cell membrane of a biological cell
CTE	(to be) the physical body of an organelle within a biological cell	
CSV	(to be) the physical operation of an organelle within a biological cell	STEM 3: (to be) the cytoplasm (cytosol) within a biological cell
OBJ	(to be) function/purpose of an organelle within a biological cell	

The following stems follow the same Specification pattern as Stem 1 of the above root:

- PPW- 1. cellular nucleus 2. nucleolus 3. chromatin
- PPY- 1. nuclear envelope 2. nuclear pore 3. endoplasmic reticulum
- PPL- 1. ribosome 2. centrosome 3. peroxisome
- PPR- 1. mitochondrion 2. lysosome 3. microtubule
- PPŘ- 1. Golgi apparatus 2. Golgi vesicle 3. secretory vesicle
- PPH- 1. microfilament 2. intermediate filament 3. vacuole

7.1 FOOD/EATING/INGESTION

-TX- 'EAT / DRINK / NUTRITIONAL CONSUMPTION'		
BSC	STEM 1: (to be) food and drink; to eat and drink	STEM 2: (to be) food, i.e., (semi-/quasi-)solid consumable/digestible material; to eat (semi-/quasi-)solid food
CTE	(to be) the biological process of consuming food and drink; eat/drink as a biological process	
CSV	(to be) the physical process of food/drink consumption, the physical process of eating/drinking (i.e., placement of consumable in mouth/chewing/swallowing/digestion).	STEM 3: (to be) a drink, i.e., a consumable/digestible liquid; to drink
OBJ	(to be) the food and drink one consumes; the actual food/drink items one consumes	

NOTE: for the meaning of the old FORMAL stems previously associated with this root, use the above stems with either the **TRF** affix or one of the **three** affixes below:

-xč	CK1 Cooking Methods 1
1	sautéed; cook by sautéing X
2	stir-fried; cook by stir-frying X
3	pan-fried; cook by pan-frying X
4	seared; cook by searing X
5	deep-fried; cook by deep-frying X
6	flash-fried; cook by flash-frying X
7	grilled; cook by grilling X
8	broiled; cook by broiling X
9	roasted; cook by roasting X

-xc	CK2 Cooking Methods 2
1	steamed; cook by steaming X
2	blanched; heat/cook by blanching
3	poached; cook by poaching X
4	simmered; cook by simmering X
5	boiled; cook by boiling X
6	braised; cook by braising X
7	stewed; cook by stewing X
8	toasted; cook by toasting X
9	barbecued; cook by barbecuing

-xz	CK3 Cooking Methods 3
1	uncooked, raw; serve X raw/uncooked
2	smoked; cook by smoking X
3	cured; prepare/preserve by curing X
4	fermented; prepare by fermenting X
5	brewed; prepare by brewing X
6	pressure-cooked / pressure-steamed; cook by pressure-cooking X
7	slow-cooked in crockpot; cook by slow-cooking X in crockpot (e.g., underground or)
8	slow-cooked underground; cook by slow-cooking X underground)
9	baking; cook by baking X

NOTE: To express parboiling, parbaking, or parcooking, use the **PTT₃/4** affix with one of the affixes above.

-LKS- 'FOODSTUFF OR BEVERAGE' Associated affix: DFB			
	Stem 1	Stem 2	Stem 3
BSC	(to be) a state of there being a particular food or beverage available for consumption	(to be) a state/act of making/preparing/cooking or fermenting a particular food or beverage	(to be) a state/act of sourcing or raising or farming/growing/cultivating the animal/plant/mineral that will become a foodstuff
CTE	(to be) an amount/portion of a particular food/beverage (the entity/substance or liquid itself)	(to be) a state of a food or beverage in preparation/being cooked/being fermented	(to be) the state of an animal/plant/mineral being raised, grown, cultivated, or being a source for food
CSV	(to be) an act of eating/drinking a particular food or beverage; to eat/drink a particular food or beverage	(to be) the physical act of making/preparing/cooking or fermenting a particular food or beverage	(to be) a physical act of sourcing, raising, growing, cultivating an animal/plant/mineral for food
OBJ	(to be) a serving/dish/plate/glass/cup of a particular food or beverage; to serve (a dish/plate/glass/cup) of a particular food or beverage	(to be) the prepared/cooked/fermented food or beverage itself to be served	(to be) the plant/animal/mineral that will be (consumed as) food

The following roots follow the same Stem and Specification pattern as the root 'FOODSTUFF OR BEVERAGE' above:

- LKST- 'DISH/RECIPE MADE FROM/WITH ANIMAL PRODUCTS / NON-VEGAN DISH'
- LKSW- 'DISH/RECIPE MADE FROM/WITH FISH/SEAFOOD'
- LKSL- 'DISH/RECIPE MADE FROM/WITH MAMMALIAN FLESH'
- LKSR- 'DISH/RECIPE MADE FROM/WITH POULTRY/AVIAN FLESH'
- LKSŘ- 'DISH/RECIPE MADE FROM/WITH CEREAL GRAINS'
- LKSM- 'DISH/RECIPE MADE FROM/WITH EGGS'
- LKSN- 'DISH/RECIPE MADE FROM/WITH REPTILIAN OR AMPHIBIAN FLESH'
- LKSP- 'DISH/RECIPE MADE FROM/WITH A MIXTURE OF ANIMAL/PLANT PRODUCTS/PARTS'
- LKT- 'VEGAN DISH/RECIPE'
- LKTW- 'DISH/RECIPE MADE FROM/WITH FRUIT'
- LKTR- 'DISH/RECIPE MADE FROM/WITH SEEDS/NUTS'
- LKTL- 'DISH/RECIPE MADE FROM/WITH BEANS/LEGUMES'
- LKTY- 'DISH/RECIPE MADE FROM/WITH VEGETABLES'
- LKTR̂- 'DISH/RECIPE MADE FROM/WITH PLANT LEAVES/SHOOTS'
- LKSŇ- 'DESSERT'
- LKŠM- 'JAM/JELLY/MARMALADE/CONFITURE MADE FROM FRUIT'

- ṬMW- 'WINE' (i.e., an alcoholic beverage made by the fermentation of a fruit, whether grapes, apples, berries, etc. - thus this stem includes the meaning of the English terms (alcoholic) *cider* and *perry*)
- ṬDR- 'BEER'
- ṬGL- 'FERMENTED ALCOHOLIC BEVERAGE' (other than fruit-based wine or beer, e.g., mead, vegetable-based liquor, nut-based liqueurs, etc.)
- ṬGR- 'FERMENTED FOODSTUFF'
- ṬGW- 'DECOCTION/INFUSION' (including teas and tisanes)

- ČKW- 'CEREAL GRAIN'
- ČKY- 'BAKED GOOD'
- ČPW- 'BREAD'
- ČPY- 'FLATBREAD'
- ČPL- 'CAKE'
- ČPR- 'PASTRY'
- ČPŘ- 'PIE'

- ḐNY- 'MILK FROM MAMMAL'
- ḐNW- '(LAIN) EGG FROM ANIMAL'
- ḐMW- 'ICE CREAM / SHERBET/GELATO'
- ḐMY- 'SORBET'
- ḐŇ- 'CHEESE'
- ḐŇW- 'BUTTER'
- ḐḐN- 'CUSTARD/ PUDDING'

-**BVL**- ‘BROTH-BASED SOUP’
 -**BVR**- ‘PUREE-BASED SOUP’
 -**BVW**- ‘STEW’
 -**BVY**- ‘GRUEL/PORRIDGE’
 -**BVŘ**- ‘SAUCE’

-**ŁTY**- ‘FRUIT PUNCH’
 -**ŁTW**- ‘PROCESSED COMMERCIAL CARBONATED BEVERAGE / SODA’

7.1.1 Common Food Plants and Fungi

The stems listed in this section are excerpted from the listings of lexical roots for plants in Sections 7.3.2 and 7.3.3 of this document. Each stem refers to the plant or fungus itself (i.e., the tree, shrub-tree, shrub, bush, liana, vine, grass stalk, herb, etc.). To create words for the edible portion of the plant, use an **EPP** affix or the **DFB** affix, both shown here for convenience.

- kc	EPP Edible or Autonomous Plant Parts/Components
1	seed/nut of X
2	(seed) pod of X
3	fruit of X
4	leaf of X
5	flower/bloom/mushroom of X
6	juice of X
7	sap of X
8	rhizome/rootstalk/shoot/stolon of X
9	tuber/bulb/cormis of X

- lks	DFB Derived Foodstuff/Beverage
1	non-sweet (dry) fermented alcoholic beverage made from X
2	sweet alcoholic beverage made from X
3	non-alcoholic beverage made from X
4	fermented X as foodstuff
5	recipe/dish made from/with X
6	dessert made from X
7	puree of X
8	processed/derived food product made from X (e.g., flour)
9	flavoring/seasoning made from/with X

Fruit plants (including squashes):

-**BD**- **Stem 1:** European cantaloupe plant **Stem 2:** North American cantaloupe plant **Stem 3:** muskmelon plant
 -**BDN**- **Stem 1:** watermelon **Stem 2:** winter melon / wax gourd / ash gourd **Stem 3:** tinda / Indian squash / round melon
 -**BDW**- **Stem 1:** honeydew melon plant **Stem 2:** Crenshaw melon plant **Stem 3:** casaba melon plant
 -**BDY**- **Stem 1:** cucumber vine **Stem 2:** cackrey / West Indian gherkin vine **Stem 3:** aardvark cucumber / aardvark pumpkin
 -**CVR**- **Stem 1:** avocado, coyo
 -**DKW**- **Stem 1:** pineapple

- FMW- **Stem 2:** elderberry
- GDM- **Stem 1:** zucchini squash vine **Stem 2:** scallop summer squash **Stem 3:** crookneck squash vine
- GDN- **Stem 1:** pumpkin vine **Stem 2:** acorn squash vine **Stem 3:** spaghetti squash vine
- LČKL- **Stem 1:** durian
- LMSKW- **Stem 2:** starfruit / carambola
- LŠM- **Stem 1:** redcurrant **Stem 2:** white currant **Stem 3:** blackcurrant
- LŠN- **Stem 1:** gooseberry **Stem 2:** jostaberry **Stem 3:** golden currant / clove currant / pruterberry / buffalo currant
- MSFW- **Stem 3:** santol tree / sentul tree / cotton fruit tree
- NČP- **Stem 1:** banana, plantain **Stem 2:** enset **Stem 3:** Chinese dwarf banana / golden lotus banana
- ŇĐ- **Stem 1:** blueberry **Stem 2:** cranberry **Stem 3:** huckleberry, whortleberry
- NDK - **Stem 1:** guava / yellow guava / lemon guava, Costa Rican guava / cas, Jamaican guava, Cattley guava / strawberry guava / cherry guava, mountain guava, Galápagos guava, little guava, purple guava, araçá **Stem 3:** finger cherry / Cooktown loquat, native guava, rose myrtle
- NDKW- **Stem 1:** feijoa / pineapple guava / guavasteen **Stem 2:** ubajay
- ŇĐL- **Stem 1:** eastern teaberry [source of wintergreen flavoring] **Stem 2:** salal / shallon
- ŇĐR- **Stem 1:** lingonberry / partridge berry / cowberry / foxberry / redberry **Stem 2:** deerberry
- ŇĐW- **Stem 1:** kiwi **Stem 2:** kiwi berry / grape kiwi / dessert kiwi / cocktail kiwi / golden kiwi
- ŇĐY- **Stem 1:** Japanese persimmon **Stem 2:** date-plum **Stem 3:** American persimmon
- NL- **Stem 1:** sweet orange **Stem 2:** bitter orange **Stem 3:** key lime
- NLK- **Stem 3:** mango tree
- NLML- **Stem 1:** bael / Bengal quince / golden apple / Japanese bitter orange / stone apple / wood apple **Stem 2:** curd fruit / wood-apple / elephant-apple **Stem 3:** feroniella / ka sang / cra san / kawista-krikil / krasang / mak sang / canthan
- NLMW- **Stem 1:** African cherry orange
- NLN- **Stem 1:** lemon **Stem 2:** Meyer lemon **Stem 3:** grapefruit
- NLŇ- **Stem 1:** lime **Stem 2:** mandarin orange **Stem 3:** citron
- NLŇW- **Stem 1:** kumquat **Stem 2:** pomelo/shaddock **Stem 3:** other citrus fruit
- NLNY- **Stem 1:** clementine **Stem 2:** tangelo **Stem 3:** other citrus hybrid
- ŇŇP- **Stem 1:** pomegranate
- NŽ- **Stem 1:** apple tree **Stem 2:** crabapple **Stem 3:** pear
- ŇŽKR- **Stem 1:** chicle, ausubo / massaranduba / balatá, sapotilla, apota / sapodilla / naseberry **Stem 2:** eggfruit, abiu, lúcuma, mamey sapote, green sapote, black plum **Stem 3:** shea
- ŇŽKŘ- **Stem 1:** miracle berry / sweet berry **Stem 2:** tar apple / star apple / milk fruit / cainito / Damson plum / wild star-apple / caimitillo
- NŽT- **Stem 1:** almond tree **Stem 2:** peach tree **Stem 3:** peach tree bearing nectarine fruit / “nectarine tree”
- NŽTW- **Stem 1:** plum tree **Stem 2:** apricot tree **Stem 3:** plum-apricot hybrid (pluot, plumcot, apriplum)

- NŽTY- **Stem 1:** cherry tree
- NŽW- **Stem 1:** quince **Stem 2:** Chinese quince **Stem 3:** Japanese quince
- ŘČ- **Stem 1:** fig tree **Stem 2:** mulberry tree **Stem 3:** African breadfruit tree
- ŘČW- **Stem 1:** breadfruit **Stem 2:** jackfruit **Stem 3:** monkey fruit / lakoocha
- RMV- **Stem 1:** red beet / beetroot **Stem 2:** sugar beet
- ŘT- **Stem 1:** raspberry plant **Stem 2:** blackberry plant **Stem 3:** dewberry plant
- ŘTL- **Stem 1:** marionberry plant **Stem 2:** youngberry plant **Stem 3:** olallieberry plant
- ŘTW- **Stem 1:** cloudberry plant **Stem 2:** salmonberry plant **Stem 3:** thimbleberry plant
- ŘTY- **Stem 1:** loganberry plant **Stem 2:** boysenberry plant **Stem 3:** tayberry plant
- ŘŽ- **Stem 2:** strawberry cultivar
- RZX̣M- **Stem 1:** tamarind
- ṬN- **Stem 1:** (European *Vitus vinifera*) grape **Stem 2:** culinary/cultivated grape (other than *Vitus vinifera*)
- VSTW- **Stem 1:** lychee tree **Stem 2:** longan, alupag **Stem 3:** rambutan, korlan, pulasan
- VSTY- **Stem 1:** ackee fruit tree **Stem 2:** titberry, bastard taaibos, dune false crowberry / dune false currant **Stem 3:** native tamarind, small-leaved tamarind
- ZP- **Stem 2:** tomato **Stem 3:** eggplant / aubergine
- ZPČ- **Stem 1:** tomatillo **Stem 2:** winter-cherry, Chinese/Japanese lantern **Stem 3:** groundcherry, Inca berry, golden strawberry, strawberry-tomato
- ZPH- **Stem 1:** habanero pepper **Stem 2:** aji chili pepper **Stem 3:** tabasco pepper / piri piri / Hawaiian pepper / xiaomila pepper, manzano pepper / rocoto pepper / locoto pepper
- ZPL- **Stem 1:** wild tomato, currant tomato **Stem 2:** Ethiopian eggplant **Stem 3:** naranjilla / lulo
- ZPR- **Stem 1:** Turkey berry / wild eggplant / pea eggplant / susumber **Stem 2:** pepino melon / melon pear **Stem 3:** tamarillo / tree tomato / blood fruit
- ZPŘ- **Stem 1:** wolf apple **Stem 2:** cocona **Stem 3:** kangaroo apple, desert raisin / bush raisin / bush saltana, bush tomato, potato bush, Australian wild tomato
- ZPW- **Stem 1:** bell pepper **Stem 2:** sweet Italian pepper, pepperoncino **Stem 3:** paprika
- ZPY- **Stem 1:** serrano pepper **Stem 2:** cayenne pepper **Stem 3:** jalapeño pepper
- ŽŽPṬ- **Stem 1:** papaya / pawpaw

Tuberous plants:

- BVK- **Stem 2:** ulluco
- DKY- **Stem 1:** chufa flatsedge [tuber used as food]
- PŠMY- **Stem 2:** duck potato / swamp potato / tule potato / wapato / arrowhead / watato / wapati
- PSVL- **Stem 1:** sweet potato
- TXW- **Stem 1:** yam **Stem 2:** batflower, Polynesian arrowroot / pia

-ZP- Stem 1: potato

Spice/condiment plants:

-CVW- Stem 1: laurel / bay laurel / sweet bay

-CVY- Stem 1: cinnamon tree **Stem 2:** sassafras

-CFŘ- Stem 2: grains of Selim / Kani pepper / Senegal pepper / Ethiopian pepper

-FŠK- Stem 1: common mint / spearmint **Stem 2:** corsican mint

-FŠP- Stem 1: common thyme **Stem 2:** lemon thyme **Stem 3:** citrus thyme

-FŠPL- Stem 1: oregano **Stem 2:** marjoram

-FŠPŘ- Stem 1: sage **Stem 2:** rosemary

-FŠPR- Stem 1: summer savory **Stem 2:** winter savory / mountain savory

-FŠPW- Stem 1: caraway thyme

-FŠKL- Stem 1: peppermint **Stem 2:** gingermint / redmint / Scotch spearmint **Stem 3:** Cuban mint / mojito mint / large apple mint

-FŠPF- Stem 1: basil

-KBW- Stem 2: cumin

-KPW- Stem 2: fennel **Stem 3:** parsley

-KPY- Stem 1: dill

-KŠPL- Stem 2: adjwain / ajowan / bishop's weed / carom, radhuni / wild celery

-KŠPW- Stem 1: anise, short-fruit pimpinella **Stem 2:** caraway, meridian fennel, Persian cumin **Stem 3:** coriander, cilantro / Chinese parsley

-MŽDY- Stem 1: stevia

-NČPW- Stem 1: ginger **Stem 2:** turmeric **Stem 3:** cardamon

-NČPY- Stem 1: galangal **Stem 2:** Ethiopian cardamom plant, melegueta pepper / alligator pepper / grains of paradise **Stem 3:** torch ginger

-NDK - Stem 2: allspice / myrtle pepper / pimenta / pimento, West Indian bay tree / bay rum tree / ciliment

-NDKŤ- Stem 2: clove tree

-RDL- Stem 2: sugarcane

-RSPY- Stem 1: vanilla bean

-SSW- Stem 1: pepper, pepper vine, pepperleaf, peppercorn, root bear plant, yerba santa, betel leaf vine, long pepper, ant plant / ant piper, kawakawa, cubeb, kava, pariparoba

Palms:

-LBL- Stem 1: areca nut palm [i.e., betel nut palm]

-LBV- Stem 2: forest coconut palm

-LBW- Stem 1: coconut palm **Stem 2:** date palm **Stem 3:** açaí palm

-**LBY**- **Stem 1:** jelly palm, yatay palm, pindo palm **Stem 2:** oil palm, macaw-fat **Stem 3:** peach palm
 -**LBZ**- **Stem 2:** bertam / wild Bornean sago palm **Stem 3:** raffia palm

Grains/cereals/pseudo-cereals:

-**BK**- **Stem 1:** Asian rice **Stem 2:** African rice **Stem 3:** red rice / brownbeard rice
 -**BKL**- **Stem 1:** teff
 -**BKR**- **Stem 1:** finger millet
 -**BKW**- **Stem 1:** wild rice / Canada rice / Indian rice / water oats
 -**BT**- **Stem 1:** common wheat / bread wheat **Stem 2:** durum wheat / pasta wheat **Stem 3:** spelt / dinkel wheat
 -**BTH**- **Stem 1:** oat **Stem 2:** naked oat / hulless oat **Stem 3:** Ethiopian oat
 -**BTW**- **Stem 1:** barley **Stem 2:** rye **Stem 3:** triticale
 -**BTY**- **Stem 1:** einkorn wheat **Stem 2:** emmer wheat **Stem 3:** khorasan wheat / kamut wheat
 -**RDL**- **Stem 1:** corn / maize **Stem 3:** sorghum
 -**RMD**- **Stem 2:** quinoa
 -**RND**- **Stem 1:** amaranth
 -**RNTW**- **Stem 2:** buckwheat
 -**RZPŠ**- **Stem 3:** alfalfa plant
 -**TXL**- **Stem 1:** common millet **Stem 2:** pearl millet **Stem 3:** foxtail millet / Italian millet
 -**TXR**- **Stem 1:** fonio / hungry rice **Stem 2:** raishan

Leafy vegetables:

-**BVK**- **Stem 1:** Malabar spinach / vine spinach / Ceylon spinach
 -**RBZ**- **Stem 1:** (loose)leaf lettuce **Stem 2:** romaine/cos lettuce **Stem 3:** iceberg/cripshead lettuce
 -**RBZL**- **Stem 1:** endive / escarole **Stem 2:** common chicory, radicchio, Belgian endive
 -**RBZW**- **Stem 1:** butter(head) lettuce **Stem 2:** red leaf lettuce **Stem 3:** summercrisp lettuce
 -**RMD**- **Stem 1:** spinach
 -**RMDW**- **Stem 1:** saltbush / orache
 -**RMDY**- **Stem 1:** Good-King-Henry / poor-man's asparagus / Lincolnshire spinach / markery **Stem 2:** salt-green / sowbane / Australian-spinach
 -**RMFR**- **Stem 1:** sea beans / sea asparagus / samphire greens
 -**RMV**- **Stem 3:** (Swiss) chard
 -**RMVW**- **Stem 1:** Caucasian spinach
 -**RND**- **Stem 2:** Lagos spinach

- RNTW- **Stem 1:** rhubarb **Stem 3:** sorrel, dock
- RNX- **Stem 1:** New Zealand spinach, dune spinach
- RZH- **Stem 1:** salsify / oyster plant

Vegetables (including vegetable-like fruits, e.g., olive, okra):

- ÇX- **Stem 1:** arabica coffee **Stem 2:** robusta coffee
- FSPÇ- **Stem 1:** safflower
- DKL- **Stem 2:** Chinese water chestnut
- FSPR- **Stem 1:** burdock
- FSPW- **Stem 1:** globe artichoke / French artichoke / green artichoke **Stem 2:** cardoon **Stem 3:** white artichoke
- FSPY- **Stem 1:** lesser wild artichoke
- KBL- **Stem 2:** shepherd's-needle / Stork's needle / Venus' comb
- KBW- **Stem 1:** carrot **Stem 3:** chervil
- KPR- **Stem 1:** arracacha / racacha
- KPW- **Stem 1:** celery
- KŠP- **Stem 1:** parsnip **Stem 2:** lovage **Stem 3:** licorice
- LCKM- **Stem 1:** okra
- LZM- **Stem 1:** olive
- CK- **Stem 1:** tea
- ŇZKH- **Stem 1:** brazil nut **Stem 2:** paradise nut
- ŘŽBL- **Stem 1:** sesame
- SFW- **Stem 1:** asparagus **Stem 3:** agave
- SṬL- **Stem 1:** garlic **Stem 2:** chive **Stem 3:** scallion
- SṬR- **Stem 1:** onion **Stem 2:** shallot **Stem 3:** leek
- ŽGR- **Stem 1:** winter cress / yellow rocket, land cress / American cress / bank cress / Burmuda cress / herb barbara / rocketcress / winter rocket
Stem 2: horseradish
- ŽK- **Stem 1:** broccoli **Stem 2:** cauliflower, romanesco, broccoflower **Stem 3:** Chinese broccoli / gai lan, broccolini
- ŽKÇ- **Stem 1:** Siberian kale **Stem 2:** tatsoi
- ŽKF- **Stem 1:** radish, daikon **Stem 2:** watercress **Stem 3:** arugula / rocket
- ŽKH- **Stem 1:** brown mustard, wrapped heart mustard cabbage **Stem 2:** white mustard **Stem 3:** black mustard
- ŽKL- **Stem 1:** savoy cabbage **Stem 2:** rutabaga
- ŽKR- **Stem 1:** turnip **Stem 2:** Napa cabbage **Stem 3:** bok choy
- ŽKR- **Stem 1:** (field) mustard **Stem 2:** rapini / broccoli rabe **Stem 3:** komatsuna / Japanese mustard spinach

- ŽKT**- **Stem 1:** mizuna **Stem 2:** choy sum / flowering cabbage **Stem 3:** canola
 -**ŽKV**- **Stem 1:** wasabi **Stem 2:** garden cress, field cress **Stem 3:** wild arugula / perennial wall-rocket
 -**ŽKW**- **Stem 1:** cabbage **Stem 2:** brussel sprout **Stem 3:** kohlrabi
 -**ŽKY**- **Stem 1:** kale **Stem 2:** collard **Stem 3:** spring greens
 -**ŽŽP**- **Stem 1:** caper, karir **Stem 2:** shepherd tree, hanza **Stem 3:** swarstorm, cadaba

Edible Brown Alga (Kelp)

- ŽŽG**- **Stem 1:** (*Laminaria*) kombu, haidai seaweed, oarweed **Stem 2:** (*Saccharina*) kombu **Stem 3:** (*Undaria*) wakame, hiromi
 -**ŽŽGW**- **Stem 1:** (*Eisenia*) arame / sea oak **Stem 2:** (*Alaria*) winged kelp, badderlocks **Stem 3:** (*Ecklonia*) paddle weed / kajime / noro-kajime
 -**ŽŽGY**- **Stem 1:** (*Durvillaea*) rimurapa / cochayuyo **Stem 2:** (*Postelsia*) sea palm / palm seaweed **Stem 3:** (*Nereocystis*) bull kelp / bullwhip kelp / ribbon kelp
 -**ŽŽGL**- **Stem 1:** (*Kjellmaniella*) sugar kelp / sea belt / Devil's apron **Stem 2:** (*Fucus*) bladderwrack, spiral wrack **Stem 3:** (*Pelvetia*) channelled wrack
 -**ŽŽGR**- **Stem 1:** (*Himanthalia*) thongweed **Stem 2:** (*Hizikia*) hiziki **Stem 3:** (*Cladosiphon*) mozuku
 -**ŽŽGR**- **Stem 1:** (*Nemacystus*) ito-mozuku **Stem 2:** (*Tinocladia*) futo mozuku **Stem 3:** (*Sphaerotrichia*) ishi-mozuku

Legumes and Nuts:

- JFW**- **Stem 1:** soybean / soya bean, wild soybean, glycine, love creeper **Stem 2:** jicama plant / yam bean, ahipa / Andean yam bean, goiteño / nupe / jacatupe / Amazonian yam bean **Stem 3:** kudzu / Japanese arrowroot, puero, East Asian arrowroot
 -**JPL**- **Stem 1:** runner bean plant **Stem 2:** tepary bean plant **Stem 3:** year bean plant
 -**JPR**- **Stem 1:** cowpea, black-eyed pea, crowderpea, Chinese long-bean / pea-bean **Stem 2:** adzuki bean **Stem 3:** mung bean / green gram / golden gram / mash bean / green soybean / celera-bean / Jerusalem-pea
 -**JPR**- **Stem 1:** lima/butter bean plant **Stem 2:** spotted bean plant **Stem 3:** slimjim bean plant, other *Phaseolus* bean plant
 -**JPW**- **Stem 1:** kidney/red bean plant **Stem 2:** white/navy bean plant **Stem 3:** cannellini bean plant
 -**JPY**- **Stem 1:** pinto bean plant **Stem 2:** black turtle bean plant **Stem 3:** flageolet bean plant
 -**NLK**- **Stem 1:** pistachio plant **Stem 2:** cashew tree
 -**ŘNTÇ**- **Stem 2:** pecan tree
 -**ŘNTF**- **Stem 1:** walnut tree, butternut tree
 -**ŘNTN**- **Stem 3:** hazel tree, filbert tree
 -**ŘPP**- **Stem 1:** pea plant **Stem 2:** snap pea plant **Stem 3:** snow pea plant
 -**ŘPPL**- **Stem 1:** peanut plant
 -**ŘPPW**- **Stem 1:** fava bean plant **Stem 3:** lentil
 -**ŘPPY**- **Stem 2:** chickpea/garbanzo bean plant

Mushrooms/Fungi:

- GZNW- **Stem 2:** (*Fistulina*) beefsteak mushroom / ox tongue mushroom
- GZNY- **Stem 1:** (*Hygrophorus*) woodwax / waxy cap, herald of winter
- LVM- **Stem 1:** (*Merasmius*) parachute mushroom, fairy ring mushroom, pinwheel mushroom
- LVMW- **Stem 1:** (*Lentinula*) shiitake mushroom
- LVMY- **Stem 1:** (*Flammulina*) enoki / golden needle / seafood mushroom / lily mushroom / winter mushroom / velvet foot / velvet shank / velvet stem / winter fungus **Stem 2:** (*Amillaria*) honey mushroom / honey fungus
- NZGR- **Stem 1:** (*Pleurotus*) oyster mushroom, abalone mushroom, king tuber mushroom
- NZGW- **Stem 1:** (*Amanita caesaria*) Caesar's mushroom
- NZGY- **Stem 3:** (*Volvariella*) straw mushroom
- PŠXL- **Stem 1:** (*Hypsizygus*) beech mushroom, bunapi-shimeji, buna-shimeji **Stem 2:** (*Calocybe*) St. George's mushroom / marzolino
- PŠXR- **Stem 1:** (*Clitocybe*) wood blewit / blewitt mushroom
- PŤP- **Stem 1:** (*Agaricus*) common mushroom, agaricus mushroom, button mushroom, crimini mushroom, champignon, baby bella, portabella **Stem 2:** (*Coprinus*) shaggy ink cap / shaggy mane / lawyer's wig
- PŤPF- **Stem 1:** (*Stropharia*) winecap / burgundy / garden giant / king stropharia mushroom, roundhead mushroom **Stem 2:** (*Agrocybe*, a.k.a., *Cyclocybe*) pioppino / velvet pioppino / poplar mushroom / black poplar mushroom **Stem 3:** (*Pholiota*) nameko mushroom
- PŤPL- **Stem 1:** (*Macrolepiota*) parasol mushroom
- PŤPW- **Stem 2:** (*Calbovista*) sculptured puffball / sculptured giant puffball / warted giant puffball
- RJBW- **Stem 1:** (*Morchella*) morel
- RJTF- **Stem 1:** (*Gyromitra*) false morel
- RJTL- **Stem 1:** (*Tuber*) truffle
- RŤK- **Stem 1:** (*Cantherellus*) chanterelle / yellow chanterelle **Stem 2:** (*Craterellus*) tube chanterelle / yellowfoot chanterelle / yellow-leg, trompette de la mort / horn of plenty
- RŤKL- **Stem 1:** (*Laetiporus*) sulphur shelf / sulphur polypore / chicken-of-the-woods / crab-of-the-woods / lobster-of-the-woods **Stem 2:** (*Laccocephalum*, a.k.a. *Polyporus*) native bread / blackfellow's bread **Stem 3:** (*Cerioporus*) dryad's saddle / pheasant's back mushroom
- RŤKM- **Stem 2:** (*Lactarius*) milk-cap **Stem 3:** (*Lactifluus*) milky, milk-cap
- RŤKN- **Stem 1:** (*Hericium*) lion's mane / monkey head / bearded tooth / satyr's bear / bearded hedgehog / pom pom mushroom
- RŤKŘ- **Stem 1:** (*Auricularia*) wood ear / Judas' ear / jelly ear, cloud ear
- RŤKR- **Stem 1:** (*Grifola*) maitake mushroom / ram's head mushroom / sheep's head mushroom **Stem 2:** (*Sparassis*) cauliflower fungus / cauliflower mushroom
- RŤKT- **Stem 1:** (*Chroogomphus*) pine-spike / spike-cap

-RṬKW- Stem 1: (*Hydnum*) sweet tooth fungus / hedgehog mushroom / urchin of the woods, pied de mouton

-RṬX- **Stem 1:** (*Boletus*) cep mushroom / penny bun / porcini mushroom / bolete, old man of the woods **Stem 2:** (*Leccinum*) red-capped scaber stalk, northern roughstem, birch bolete, Aspen bolete, slate bolete, manzanita bolete **Stem 3:** (*Suillus*) weeping bolete / granulated bolete, Slippery Jack, woolly-capped suillus, Jersey cow mushroom / bovine bolete

-ZBV- **Stem 1:** (*Tremella*) snow fungus / snow ear / silver ear fungus / white jelly mushroom

Miscellaneous Food Stems:

-VST- **Stem 1:** maple tree

-PFTW- **Stem 1:** spirulina **Stem 2:** aphanizomenon **Stem 3:** nostoc

-KC- ‘PLANT PARTS I’		Associated Affix: EPP
BSC	Stem 1: (to be) a seed or pit of a plant	Stem 2: (to be) a fruit or nut of a plant Stem 3: (to be) a bulb/tuber/corm of a plant
CTE	(to be) the potential for germination/sprouting/nourishment contained within a plant seed or pit	
CSV	(to be) the physical flesh/material of which a plant seed or pit is composed	
OBJ	(to be) a seed/pit of a plant as an energy source; to consume a plant seed/pit as energy source (e.g., by burning, eating, fermenting, etc.)	

The following two roots have the same Specification pattern as the root **-KC-** above:

-KŠW- ‘PLANT PARTS II’		
1. root	2. stem/stalk/shoot	3. branch/limb/twig

-KŠN- ‘PLANT PARTS III’		
1. leaf	2. flower	3. bud

-VTY- ‘PSYCHOACTIVE/INTOXICATING SUBSTANCE’		
BSC	Stem 1: (to be) an act/state of being intoxicated by using/ingesting a naturally derived psychoactive chemical substance (e.g., ethyl alcohol, cannabis, peyote, psilocybin, ayahuasca, etc.); to be(come) intoxicated due to use/ingestion of such a substance	Stem 2: (to be) a synthetic medicinal chemical used recreationally (e.g., a prescription drug) Stem 3: (to be) a chemical substance repurposed for recreational use (e.g., glue/solvents, etc.)
CTE	(to be) in a state of intoxication from a naturally derived chemical substance; to be/get drunk/high/intoxicated	
CSV	(to be) an act of using/ingesting a naturally derived chemical substance; to use/ingest/smoke/inject an intoxicating substance	
OBJ	(to be) a(n amount/serving/hit/drink/cigarette, etc. of a) particular intoxicating/psychoactive substance itself	

-STH- ‘OTHER METHODS OF BODILY INGESTION’		
BSC	Stem 1: (to be) an act/state of smoking of a gaseous or aerosolized substance (i.e., the oral intake/inhalation of fumes via an ingressive velaric airstream)	Stem 2: (to be) an act/state of nasal inhalation of a substance (e.g., snuff, cocaine, other powdery substance) Stem 3: (to be) an act/process of subcutaneous or intravenous injection (e.g., with a syringe) of a substance
CTE	(to be) the smoke/fumes of a burning substance which one takes in or inhales orally via smoking	
CSV	(to be) an act of smoking; to smoke, to intake/inhale orally by means of smoking	
OBJ	(to be) the apparatus utilized for an act of smoking	

7.2 THE BODY

-NT- ‘BIRTH / BE BORN / GESTATION / CONCEPTION’		
BSC	Stem 1: (to be) a state/act of birth; to give birth or be born (i.e., the leaving of a child from their mother’s womb to enter the world, with no implied perspective as to it being an act/state of the mother or the child)	Stem 2: (to be) a state of maternal gestation; to gestate, carry a developing fetus within one’s womb Stem 3: (to be) an act of biological conception; to conceive a zygote
CTE	(to be) a state/act of being born [from the child’s perspective]	
CSV	(to be) the physical act of giving birth [from the perspective of the mother]	
OBJ	(to be) the newborn infant	

-Š- SEX (i.e., genetically-based, the normally 2-way distinction in higher living organisms for reproductive/procreative purposes) Associated Affix: SEX		
BSC	Stem 1: (be/manifest) a particular sex of an organism that is normally one of two sexes (e.g., chordates) [both the existence and the clinical/biological determination/identification thereof]	Stem 2: (to be/manifest) the female sex of an organism that is normally one of two biological sexes Stem 3: (to be/manifest) the male sex of an organism that is normally one of two biological sexes
CTE	(be) a particular biological sex	
CSV	(be) an act/process/state of clinical/biological determination/identification of sex; to clinically/biologically determine a particular sex	
OBJ	(to be) that which biologically determines or by which one identifies a particular sex	

-ŽF- 'HEALTHINESS / PHYSICAL CONDITION / FITNESS / SANITY' Associated Affix: HEA		
BSC	Stem 1: (to be) a state of physical and mental healthiness (i.e., freedom from illness or malady)	Stem 2: (to be) one's state of mental health Stem 3: (to be) one's physical condition or state of health/fitness (i.e., the extent to which one is sufficiently healthy/fit to carry out specialized physical tasks or feats of physical prowess/stress)
CTE	(to be) the state of healthiness itself; good health	
CSV	(to be) the state of living and going about one's desired normal life due to good health; to live in a state of healthiness, be healthy	
OBJ	(to be) what one does to stay healthy; a healthy living praxis (e.g., diet, exercise, avoiding stress, prophylactic medication, healthy lifestyle, etc.)	

-MT- 'ONE'S AGE / LIFE-STAGE OR PHASE'		
BSC	Stem 1: (to be) a state of aging; to age, get older	Stem 2: (to be) a (developmental) stage/phase in one's life (i.e., a period of time during the life of an entity where it displays/manifests certain characteristics, activities, ideas, values, attributes, etc. specific to that period of time) Stem 3: (to be) a state/act of celebration/recognition/acknowledgement of one reaching a particular age; a birthday; to celebrate/recognize/acknowledge one's birthday (i.e., anniversary of one's birth)
CTE	(to be) a state of being/having a certain age	
CSV	(to be) the state/process of aging, getting older; to do/feel/notice/observe something that manifests/demonstrates one is aging/getting older	
OBJ	(to be) one's age (i.e., the amount of elapsed time since an entity came into being)	

-ḌḌ- ‘SLEEP / UNCONSCIOUSNESS / COMA’		
BSC	Stem 1: (to be) a state of sleep, being asleep; (be) an act of putting to sleep; to sleep, be asleep	Stem 2: (to be) a state of unconsciousness, act of rendering an entity unconscious; to be/render unconscious Stem 3: (to be) a state of coma; act of putting someone into a coma; to be in a coma, to put into/induce a coma
CTE	(to be) the state of sleeping	
CSV	(to be) a state/act of falling asleep; to fall asleep, put to sleep	
OBJ	(to be) the quality/duration/description of one’s sleep; how one sleeps	

-ḲḲ- ‘WAKEFULNESS / CONSCIOUSNESS’		
BSC	Stem 1: (to be) a state of being awake, being fully conscious	Stem 2: (to be) a state/process of waking (up); to transition from sleep to wakefulness, to “come about”, to be waking up, to be regaining consciousness [CPT version = to regain consciousness, to come fully awake] Stem 3: (to be) a state of dozing or being half-awake; to doze, to be half-asleep, half-awake, to be in a state of half-sleep
CTE	(to be) the state of wakefulness/consciousness	
CSV	(to be) a state/act of doing something that demonstrates one is awake/conscious	
OBJ	(to be) the level of awareness of oneself and one’s surroundings one has while awake	

-MR- ‘DEATH’		
BSC	Stem 1: (to be) a state/act of dying; to die/perish	Stem 2: (to be) a state/process of approaching death, to be dying, to have a fatal condition, to be in a fatal state (i.e., to be in a terminal state where death is immanent, e.g., from a terminal illness, starvation, a mortal wound, etc.) Stem 3: (to be) a state of mortality; be mortal (i.e., certain that one will eventually die)
CTE	(to be) the state of being dead	
CSV	(to be) an act of dying; to undergo the act of passing from life to death	
OBJ	(to be) the cause/manner of one’s death	

-LM- ‘DEGREE OF BODILY STRENGTH / ENERGY / VIGOR’ Affix: STR (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of brute bodily strength; to manifest/apply a particular degree of strength (= available bodily dynamic energy) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of bodily energy/vigor/vitality; “feel weak/strong” STEM 3: (to be/manifest a) degree of stamina
CTE	(to be) something with a degree of brute bodily strength	
CSV	(to be) a degree of brute bodily strength	
OBJ	(to be) an entity/party impacted/affected by one’s degree of brute bodily strength	

-SM- ‘DEGREE OF BODILY APPLIED ENERGY / POWER / FORCE’ Affix: FRC (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of applied physical force — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of energy STEM 3: (to be/manifest a) degree of potency, “might” (= potential strength/power to cause or accomplish something)
CTE	(to be) something with a degree of applied physical force	
CSV	(to be) a degree of applied physical force	
OBJ	(to be) an entity/party impacted/affected by one’s degree of applied physical force	

-ŽŃ- ‘DEGREE OF PHYSICAL STAMINA / ENDURANCE / RESISTANCE TO PAIN’ (use with SUF/EXN affixes)		
BSC	Stem 1: (to be) a degree of brute bodily/physical stamina/endurance	Stem 2: (to be) a degree of resistance to physical pain; display/manifest a degree of resistance to physical pain, endure physical pain Stem 3: (to be) a degree of physical hardship; undergo physical hardship
CTE	(to be) one’s physical stamina as a faculty	
CSV	(to be) an act of maintaining physical stamina	
OBJ	(to be) what one is/must have stamina/endurance against or for	

-JMW- ‘HAND AS FLAT RIGID “BLADE”’		
BSC	Stem 1: (to be) a hand as flat rigid “blade” for use of outside “edge” of rigidly-held hand (as in a karate chop)	Stem 2: (to be) a hand as flat rigid “blade” for use of fingers used “head-on” for pressing/jabbing/poking Stem 3: (to be) a hand held flat and rigid for use in covering something or stopping something from escaping (e.g., from a hole or tear)
CTE	(to be) the physical process of chopping with one’s hand	
CSV	(to be) a closed fist used in chopping with one’s hand	
OBJ	(to be) the blow/impact delivered from chopping with one’s hand	

-JMY- ‘CLOSED FIST’		
BSC	Stem 1: (to be) a closed fist for pounding; use outside surface of closed fist in hammer-like manner for pounding	Stem 2: (to be) a closed fist for hitting; use front of fist (i.e, the surface created by the dorsal side of one’s fingers) in cudgel-like manner for hitting Stem 3: (to be) a closed fist for knocking; use knuckles of fist for knocking
CTE	(to be) the physical process of pounding with one’s fist	
CSV	(to be) a closed fist used in pounding	
OBJ	(to be) the blow/impact delivered from a pounding fist	

-ŇP- ‘COMMON HUMAN BODILY POSITION’		
BSC	Stem 1: (to be) a state/act of standing upright/erect; to (be) stand(ing) upright, stand erect	Stem 2: (to be) a state/act of sitting, being seated, being in a sitting/seated position; to sit, be seated, be in sitting/seated position, to be sitting down Stem 3: (to be) a state of lying prostrate; in prostrate position [whether prone, supine, or laterally recumbent]; to lie prostrate, to be lying down
CTE	(to be) a state of being standing (upright/erect)	
CSV	(to be) a physical act of standing up; to stand up, to get up on one's feet	
OBJ	(to be) what one stands/is standing upon or within	

-ŇPY- ‘RECUMBENT BODILY POSITION’		
BSC	Stem 1: (to be) a state/act of lying in laterally recumbent position; to lie with one's body in a laterally position position [i.e., on one's side]	Stem 2: (to be) a state/act of lying prone; to lie in a prone position [i.e., face-down on one's stomach] Stem 3: (to be) a state of lying in a supine position; to lie in a supine position [i.e., flat on one's back]
CTE	(to be) a state of being standing (upright/erect)	
CSV	(to be) a physical act of standing up; to stand up, to get up on one's feet	
OBJ	(to be) what one stands/is standing upon or within	

-ŇPW- ‘LESS COMMON HUMAN BODILY POSITIONS’		
BSC	Stem 1: (to be) a state/act of crouching (down), being in a crouch(ed position); to be crouched (down), be in a crouched/crouching position	Stem 2: (to be) a state/act of (being in a) kneeling (position); to kneel, be in a kneeling position, be on one's knees Stem 3: (to be) a state,act of being curled up in to a (quasi-)fetal position; to (be) curl(ed) up into a (quasi-)fetal position
CTE	(to be) a state of being in a crouched/crouching position	
CSV	(to be) a physical act of crouching down; to crouch down, to get down into a crouched/crouching position	
OBJ	(to be) what one crouches upon or within	

7.2.1 Parts of the Body

The various roots/stems below for bodily parts/organs/tissues all have the following Specification pattern:

BSC	(to be) a particular bodily part/organ/tissue [both the material/physical aspect and the functional aspect thereof]
CTE	(to be) the function of a particular bodily part/organ/tissue
CSV	(to be) the physical/material make-up of a particular bodily part/organ/tissue
OBJ	(to be) the body to whom the particular bodily part/organ/tissue belongs or is from

-GW- ‘BODILY ORGAN / GLAND / TISSUE’	
STEM 1	bodily organ
STEM 2	gland
STEM 3	tissue (non-organ, non-gland)

-PN- ‘UPPER G.I. ORGANS’	
STEM 1	stomach
STEM 2	esophagus
STEM 3	pancreas

-ŠM- ‘MANIPULATIVE OR AMBULATORY APPENDAGE’	
STEM 1	limb
STEM 2	tentacle
STEM 3	pseudopod

-LŇ- ‘TAIL / CAUDAL STRUCTURE’	
STEM 1	tail
STEM 2	flagellum
STEM 3	tail-like body part or appendage; caudal structure

-ŠN- ‘LEG’	
STEM 1	leg/strut as support structure of animal or inanimate entity
STEM 2	leg as ambulatory appendage of animal or ambulatory entity
STEM 3	leg as functional “tool”/manipulator (e.g., with which to kick, push, press, apply force, etc.)

-CM- ‘ARM’	
STEM 1	arm as support(ing) structure of animal or inanimate entity
STEM 2	arm as appendage of animal (or anthropomorphic entity) for holding, carrying, lifting
STEM 3	arm as functional “tool”/manipulator by which to reach, hit, push, press, apply force, protect oneself, etc.

-RŠN- ‘PART OF THE LEG’	
STEM 1	thigh
STEM 2	calf [i.e., lower half of leg between the knee and ankle]
STEM 3	shin [i.e., front/ventral portion of the lower leg]

-RCM- ‘PART OF THE ARM’	
STEM 1	upper arm
STEM 2	forearm
STEM 3	inside/dorsal portion of forearm

-TY- ‘HEAD’	
STEM 1	head as a living being’s primary “interface” or “access point” for communication, ingestion, non-tactile sensory input, etc.
STEM 2	head as seat of one’s consciousness/personality/identity/mind/brain
STEM 3	head as “top” or “forward” extension of bodily form

-NL- ‘HAND’	
STEM 1	hand as an animal’s primary body part for fine-motor physical manipulation/handling of external entities
STEM 2	hand as holder, grasper, striker
STEM 3	hand as primary tactile-sensory interface, “feeler”, toucher

-NR- ‘FOOT / PAW’	
STEM 1	foot/paw as an entity’s primary contact/support point with ground/firmament when standing/ambulating
STEM 2	foot/paw as ambulatory appendage
STEM 3	foot/paw as functional “tool”/manipulator (e.g., with which to kick, push, press, apply force, etc.)

-MFR- ‘PART OF HAND OR FOOT’	
STEM 1	quasi-flat ventral mid-part of appendage (incorporate ‘hand’ or ‘foot’ to specify whether palm or underside of foot)
STEM 2	ball of the foot or upper palmar ridge of the hand (incorporate ‘hand’ or ‘foot’ to specify which)
STEM 3	butt of the hand or foot (incorporate ‘hand’ or ‘foot’ to specify whether butt of the palm or heel)

-MPG- ‘HIP / BUTTOCK / HAUNCH’	
STEM 1	hip (area of flesh on the body, not just the bone-joint itself)
STEM 2	buttock
STEM 3	haunch / hindquarter

-TČŇ- ‘BODILY SURFACE INDENTATION’	
STEM 1	navel
STEM 2	bodily surface indentation on inside (opposite side) of elbow or knee
STEM 3	eye socket

-NK- ‘BODILY DIGIT’	
STEM 1	finger
STEM 2	thumb
STEM 3	toe

-DL- ‘CARDIO-PULMONARY ORGANS’	
STEM 1	heart
STEM 2	lung
STEM 3	diaphragm

-NDY- ‘BLOOD VESSEL’	
STEM 1	artery
STEM 2	vein
STEM 3	capillary

-VZ- ‘CENTRAL NERVOUS SYSTEM ORGAN/TISSUE’	
STEM 1	brain
STEM 2	brain stem
STEM 3	spinal chord

-NGY- ‘PERIPHERAL NERVOUS TISSUE’	
STEM 1	sensory (afferent) nerve tissue
STEM 2	motor (efferent) nerve tissue
STEM 3	somatic nerve tissue

-RDY- ‘AUTONOMIC NERVOUS TISSUE’	
STEM 1	sympathetic nerve tissue
STEM 2	parasympathetic nerve tissue
STEM 3	enteric nerve tissue

-ṬŘ- ‘BODILY LIMB-JOINT’	
STEM 1	mid-limb joint [incorporate stems for leg or arm to specify knee or elbow]
STEM 2	proximal limb joint [incorporate stems for leg or arm to specify hip-joint or shoulder-joint]
STEM 3	distal limb joint [incorporate stems for leg or arm to specify ankle or wrist]

-GŘ- ‘BONE’	
STEM 1	quasi-cylindrical bone (e.g., tibia, ulna, phalanx, etc.)
STEM 2	plate-like or quasi-planar bone (e.g., skull-section, scapula, pelvis)
STEM 3	special-shaped bone (e.g., vertebra, rib, calcaneus, talus, antler, etc.)

-ṬFR- ‘JOINT STRUCTURAL COMPONENT / CARTILAGE’	
STEM 1	cartilage
STEM 2	joint cavity [containing synovial fluid]
STEM 3	articular capsule of a joint

-ZGR- ‘MAJOR CONFIGURATIVE BONE SYSTEM OF BODY’	
STEM 1	skull
STEM 2	rib cage
STEM 3	spine/vertebral column (including cervical vertebrae and coccyx)

-PFL- ‘DETOXIFICATION/FILTRATION/RECYCLING ORGAN/TISSUE’	
STEM 1	liver
STEM 2	kidney
STEM 3	spleen

-LT- ‘INTEGUMENT / SKIN / PELLICLE’	
STEM 1	skin / hide / pellicle / integument
STEM 2	bark / integument of tree trunk/limb or plant main stem
STEM 3	peel / rind / husk / casing of seed or pod or fruit

-VMR- ‘ENDOCRINE GLANDS OF THE BRAIN’	
STEM 1	hypothalamus
STEM 2	pituitary gland
STEM 3	pineal gland

-FSR- ‘ENDOCRINE GLANDS OF THE BODY’	
STEM 1	thyroid gland
STEM 2	parathyroid gland
STEM 3	adrenal gland

-STY- ‘ORIENTATIONAL BODY SURFACE’	
STEM 1	dorsal surface (i.e., the back [or topside] of a corporeal body)
STEM 2	ventral surface (i.e., the front [or underbelly] of a corporeal body)
STEM 3	lateral surface (i.e., the side/flank of a corporeal body)

-LŽ- ‘FACE / VISAGE’	
STEM 1	face (as gestalt entity made up of the various facial quasi-planar surfaces plus the eyes, nose, lips, eyebrows, etc.)
STEM 2	face (as one’s primary interface area for vocalization and display of emotion)
STEM 3	face/visage (as one’s primary source/trait for recognition/identification)

-TČM- ‘EXCRETORY GLAND OR ORGAN’	
STEM 1	sweat gland; to sweat
STEM 2	bladder
STEM 3	sebaceous gland

-SKW- ‘CENTRAL BODY SECTION/PART’	
STEM 1	chest, pectoral area
STEM 2	abdomen, midriff, waist, “stomach”/ “belly” / “tummy” area
STEM 3	trunk, thorax

-LP- ‘PRIMATE MAMMARY ORGAN/TISSUE’	
STEM 1	breast (of human or primate)
STEM 2	nipple
STEM 3	areola

-LPŘ- ‘NON-PRIMATE MAMMARY ORGAN/TISSUE’	
STEM 1	non-primate mammary organ (e.g., udder, dug)
STEM 2	nipple of non-primate mammary organ
STEM 3	areola or surrounding structure of nipple in non-primate mammary organ

-MD- ‘BODILY HAIR / FUR / FEATHER’	
STEM 1	a (single strand of) human body hair (other than thick scalp/facial/pubic/armpit hair)
STEM 2	a (single strand of) non-human bodily hair/fur/fleece
STEM 3	a(n avian) feather

-ND- ‘HUMAN-SPECIFIC HAIR’	
STEM 1	a (single strand of) human head hair (other than androgenic facial hair or eyebrows/eyelashes)
STEM 2	a (single strand of) human androgenic facial hair
STEM 3	a (single strand of) human armpit or pubic or eyebrow/eyelash hair (i.e., thick body hair that stops growing at a certain length)

-DDR- ‘SPECIALTY HAIR-LIKE TISSUE’	
STEM 1	an eyelash
STEM 2	a whisker/vibrissa
STEM 3	barbel

-NZG- ‘HARD KERATINOUS TISSUE’	
STEM 1	fingernail/toenail or claw
STEM 2	hoof
STEM 3	horn of animal

-NZM- ‘MUCOSAL TISSUE’	
STEM 1	inside surface of oral/naso-pharyngeal cavity
STEM 2	interior lining of gastro-intestinal tract
STEM 3	interior lining of bodily orifice (anus/rectum, vaginal canal, etc.)

-MZV- ‘MUSCLE / LIGAMENT / TENDON’	
STEM 1	muscle
STEM 2	ligament
STEM 3	tendon

-MZF- ‘OTHER BODILY TISSUE TYPE’	
STEM 1	fascia / membrane
STEM 2	aponeurosis
STEM 3	epicondyle

-GZG- ‘SMALL INTESTINE’	
STEM 1	jejunum
STEM 2	duodenum
STEM 3	ileum

-RGD- ‘LARGE INTESTINE / COLON’	
STEM 1	ascending colon
STEM 2	transverse colon
STEM 3	descending and sigmoid colon

-DR- ‘TOOTH / FANG / TUSK’	
STEM 1	tooth
STEM 2	fang
STEM 3	tusk

-GN- ‘NON-ORAL BODILY ORIFICE’	
STEM 1	nostril
STEM 2	ear canal
STEM 3	anus

-ŇW- ‘NECK’	
STEM 1	neck
STEM 2	neck (as bodily support/swivel point for head)
STEM 3	neck (as narrowest, most vulnerable body part)

-NXF- ‘ABDOMINAL TISSUE’	
STEM 1	peritoneum
STEM 2	mesentery
STEM 3	caecum

-DDV- ‘SPECIFIC TOOTH TYPE OTHER THAN FANG’	
STEM 1	incisor tooth
STEM 2	bicuspid
STEM 3	molar

-KKF- ‘HARDENED NON-LIVING BODILY TISSUE’	
STEM 1	corn, callus
STEM 2	wart
STEM 3	scar

-LR- ‘WING’	
STEM 1	wing (avian/feathered)
STEM 2	wing (mammalian or reptilian, i.e., a membrane extending from arm-like appendages)
STEM 3	wing-like extension (mechanical, but still used for flying, e.g., wing of an airplane)

-PKL- ‘FIN / FLIPPER’	
STEM 1	fin (e.g., of a fish)
STEM 2	flipper (e.g., of a dolphin, seal, walrus, manatee, etc.)
STEM 3	fin- or flipper-like extension (mechanical)

-ŘC- ‘THROAT’	
STEM 1	throat (i.e., front/ventral portion of neck)
STEM 2	upper portion of throat (i.e., the underside of the jaw)
STEM 3	lower portion of the throat (i.e., overlying the gullet/trachea/larynx)

-XBY- ‘PARTS OF A BODILY JOINT’	
STEM 1	(to be) the superior/dorsal side of a bodily joint [i.e., the “hard/bony” side of a bodily joint]*
STEM 2	(to be) the inferior/ventral side of a bodily joint [i.e., the soft, concave side of a bodily joint]*
STEM 3	(to be) the internal “swivel” mechanism of a bodily joint (i.e., the internal anatomy of a joint which allows an appendage to bend/twist*)

*incorporate the stem of a specific limb or digit to specify ‘elbow’, ‘knee’, ‘knuckle (of finger)’, ‘knuckle (of toe)’, ‘shoulder’, etc.

-LDN- ‘GUM TISSUE / HARD PALATE	
STEM 1	gum tissue
STEM 2	alveolar ridge
STEM 3	hard palate

-LPF- ‘INTERIOR TISSUES OF MOUTH’	
STEM 1	soft area between jaws underneath the front half of the tongue
STEM 2	soft palate
STEM 3	tonsil

-BF- ‘GENERIC REPRODUCTIVE ORGANS / CELLS’	
STEM 1	gonad (i.e., testicle, ovary)
STEM 2	gamete (i.e., ovum/egg cell, spermatozoon/sperm cell)
STEM 3	transport duct/tubule for gametes from gonad (i.e., Fallopian tube, vas deferens)

-NM- ‘INTERNAL FEMALE REPRODUCTIVE ORGANS’	
STEM 1	uterus / womb
STEM 2	cervix
STEM 3	vagina

-GČ- ‘MALE REPRODUCTIVE ORGANS / TISSUES’	
STEM 1	penis
STEM 2	glans of penis
STEM 3	scrotum

-BDW- ‘EXTERNAL FEMALE REPRODUCTIVE ORGANS/ TISSUES’	
STEM 1	clitoris
STEM 2	inner labium
STEM 3	outer labium

-LMW- PROBOSCIS / NOSE / SNOUT / BEAK	
STEM 1	nose [i.e., the visible external proboscis, not the nostrils or one’s olfactory sense organ (see -ŽG-)]
STEM 2	snout, proboscis [mammalian, e.g., elephant trunk, tapir’s snout, etc.]
STEM 3	beak

-JGR- ‘ADIPOSE TISSUE (i.e., FAT)’	
STEM 1	adipose tissue / fat; have fat, be fat
STEM 2	blubber
STEM 3	cellulite

-NKW- ‘TONGUE’	
STEM 1	tongue as organ for manipulation of food for eating and seat of taste buds
STEM 2	tongue as manipulative organ for the production of spoken language
STEM 3	proboscis [non-mammalian], i.e., tubular organ(s) for feeding/sensing as in insects, worms, molluscs, etc.)

-LLN- ‘MEMBRANOUS TISSUE’	
STEM 1	eardrum, tympanic membrane
STEM 2	synovial membrane (interior lining of articular capsule of joint)
STEM 3	serous membrane (membrane lining a body cavity, e.g., peritoneal, pleural, pericardial membranes)

-MFP- ‘LIP’ *	
STEM 1	lip as aperture or “seal” to one’s mouth
STEM 2	lip as manipulative organ for the production of spoken language
STEM 3	lip as body part used in puckering; to pucker

-JPH- ‘CHEEK / CHIN / JAW’	
STEM 1	one’s cheek (on face)
STEM 2	one’s chin
STEM 3	one’s jaw (i.e., lower portion of face that moves on hinge-like joint)

* the stems of this root are almost always used with a DUPLEX configurations

-LPSL- ‘MAJOR ARTERY’ I	
STEM 1	aorta
STEM 2	coronary artery
STEM 3	pulmonary artery

-LPÇL- ‘MAJOR ARTERY’ II	
STEM 1	brachiocephalic artery
STEM 2	carotid artery
STEM 3	subclavian artery

-LPFL- ‘MAJOR ARTERY’ III	
STEM 1	iliac artery
STEM 2	obturator artery
STEM 3	genicular artery

-LBZL- ‘MAJOR VEIN’ I	
STEM 1	vena cava
STEM 2	hepatic vein
STEM 3	renal vein

-LBŽL- ‘MAJOR VEIN’ II	
STEM 1	brachiocephalic vein
STEM 2	jugular vein
STEM 3	azygos vein

-LŽL- ‘MAJOR VEIN’ III	
STEM 1	subclavian vein
STEM 2	axillary vein
STEM 3	cephalic vein

-LJL- ‘MAJOR VEIN’ IV	
STEM 1	iliac vein
STEM 2	adrenal vein
STEM 3	phrenic vein

-LDL- ‘LYMPHATIC SYSTEM’	
STEM 1	lymph node
STEM 2	lymph vessel
STEM 3	thoracic duct

-FSGR- ‘SALIVARY GLAND’	
STEM 1	parotid gland
STEM 2	sublingual gland
STEM 3	submandibular gland

-NKȚW- ‘AVIAN DIGESTIVE ORGANS’	
STEM 1	crop
STEM 2	proventriculus
STEM 3	gizzard

-JTF- ‘UROLOGICAL ORGAN’	
STEM 1	urethra
STEM 2	ureter
STEM 3	cloaca

-LPÇM- ‘BLOOD CELL TYPE’	
STEM 1	erythrocyte
STEM 2	thrombocyte
STEM 3	leukocyte

-LPÇN- ‘LEUKOCYTE TYPE’	
STEM 1	lymphocyte
STEM 2	granulocyte
STEM 3	monocyte

-CBR- ‘SKIN ERUPTION’	
STEM 1	pimple, pustule
STEM 2	blister on skin
STEM 3	boil on skin

-GZDR- ‘ADVERSE SKIN CONDITION’	
STEM 1	a rash
STEM 2	patch of eczema
STEM 3	patch of psoriasis

-JDL- ‘LESION / ABRASION / WOUND’	
STEM 1	lesion
STEM 2	abrasion
STEM 3	wound

-JKŘ- ‘ABNORMAL BODILY GROWTH’	
STEM 1	cyst
STEM 2	bodily nodule or amorphous malformation or plaque
STEM 3	tumor

-PČ- ‘MOUTH / GULLET / ORAL CAVITY’		
BSC	Stem 1: (to be) the mouth [of a chordate animal]	Stem 2: (to be) the gullet [of a non-chordate animal, plant, protist] Stem 3: (to be) the bodily apparatus/process by which an entity takes in external food
CTE	(to be) the oral cavity (i.e., the interior space of a mouth)	
CSV	(to be) the structural tissue(s) which form a mouth	
OBJ	(to be) that which enters or is placed within one’s mouth	

7.2.1.1 Technical Terms for Various Bones, Muscles, and Tissue Types

-LTÇP- ‘BONE TISSUE TYPE’	
STEM 1	(an amount/instance of) cortical bone tissue
STEM 2	(an amount/instance of) trabecular bone tissue
STEM 3	(an amount/instance of) myeloid bone tissue

-LTÇK- ‘BONE CELL TYPE’	
STEM 1	osteocyte
STEM 2	chondrocyte
STEM 3	stromal cell

-LÇPW- ‘TARSAL BONES’ I	
STEM 1	calcaneus bone
STEM 2	talus bone
STEM 3	navicular bone

-LÇTW- ‘TARSAL BONES’ II	
STEM 1	cuboideum bone
STEM 2	cuneiform bone
STEM 3	metatarsal bone

-LÇPY- ‘PHALANGES OF FOOT OR HAND OR PAW’	
STEM 1	proximal phalanx
STEM 2	medial (or intermediate) phalanx
STEM 3	distal phalanx

-LÇTY- ‘CARPAL BONES’	
STEM 1	scaphoid bone
STEM 2	lunate bone
STEM 3	triquetrum bone

-LÇPL- ‘CALF & ANKLE BONES’	
STEM 1	talus
STEM 2	tibia
STEM 3	fibula

-LÇTL- ‘MALLEOLUS’	
STEM 1	lateral malleolus
STEM 2	medial malleolus
STEM 3	posterior malleolus

-LÇPR- ‘SESAMOID BONES’	
STEM 1	patella
STEM 2	fetlock
STEM 3	pisiform

-LÇTR- ‘THIGH BONE & HIP SOCKET’	
STEM 1	femur
STEM 2	acetabulum
STEM 3	labrum

-LÇPŘ- ‘HIP BONES’	
STEM 1	ilium
STEM 2	ischium
STEM 3	pubis

-LÇTRŘ- ‘AVIAN HIP BONES’	
STEM 1	iliofemoralis
STEM 2	iliotibialis
STEM 3	iliofibularis

-LÇFW- ‘VERTEBRAE’	
STEM 1	thoracic vertebra
STEM 2	lumbar vertebra
STEM 3	cervical vertebra

-LÇFY- ‘TAIL BONES’	
STEM 1	sacrum
STEM 2	coccygial vertebra (=> coccyx)
STEM 3	pygostyle

-LÇFL- ‘THORACIC BONES’	
STEM 1	true rib
STEM 2	false rib
STEM 3	floating rib

-LÇFR- ‘SHOULDER BONES’	
STEM 1	clavicle
STEM 2	scapula plus acromion
STEM 3	caracoid

-LÇFŘ- ‘OTHER ABDOMINAL BONE’	
STEM 1	furcula/wishbone
STEM 2	keel/carina
STEM 3	cleithrum

-LÇFM- ‘STERNUM’	
STEM 1	body of the sternum
STEM 2	manubrium
STEM 3	xyphoid process

-LÇFN- ‘WRIST & ARM BONES’	
STEM 1	radius
STEM 2	ulna
STEM 3	humerus

-LTÇG- ‘JAW BONES’ I	
STEM 1	mandible/dentary bone
STEM 2	angular bone
STEM 3	surangular bone

-LTÇB- ‘JAW BONES’ II	
STEM 1	articular bone
STEM 2	splenial bone
STEM 3	gular bone

-LTÇD- ‘CHEEK BONES’	
STEM 1	zygomatic/jugal bone
STEM 2	squamosal/ptertotic bone
STEM 3	quadrate bone

-LTÇW- ‘SKULL BONES’ I	
STEM 1	temporal bone
STEM 2	sphenoid bone
STEM 3	ethmoid

-LTÇL- ‘SKULL BONES’ II	
STEM 1	vomer bone
STEM 2	palpebral
STEM 3	sclerotic ring1

-LTÇR- ‘SKULL BONES’ III	
STEM 1	hard palate
STEM 2	maxilla
STEM 3	palatine

-LTÇV- ‘SKULL BONES’ IV	
STEM 1	frontal bone
STEM 2	parietal bone
STEM 3	occipital bone

-LTÇN- ‘NOSE BONES’	
STEM 1	nasal bone
STEM 2	lacrimal bone
STEM 3	narial bone

-LTÇM- ‘CONNECTIVE TISSUE TYPE’	
STEM 1	(an amount/instance of) enthesis
STEM 2	bone fiber
STEM 3	periodontium

-MZN- ‘MUSCLE TISSUE TYPE’	
STEM 1	(an amount/instance of) skeletal muscle
STEM 2	(an amount/instance of) smooth muscle
STEM 3	(an amount/instance of) cardiac muscle

-MZN̂- ‘MUSCLE CELL TYPE’	
STEM 1	myocyte
STEM 2	sarcomere
STEM 3	sarcolemma

-MZNW- ‘MUSCLE FUNCTION TYPE’	
STEM 1	muscle as flexor type
STEM 2	muscle as extensor
STEM 3	muscle as abductor or adductor

-MZNY- ‘FORM OF MUSCLE FIBER’	
STEM 1	parallel muscle fiber
STEM 2	fusiform muscle fiber
STEM 3	pennate muscle fiber

-MZŇW- ‘ADDITIONAL MUSCLE FIBER FORM PLUS RETINACULUM’	
STEM 1	convergent muscle fiber
STEM 2	circular (i.e., sphincter-like) muscle fiber
STEM 3	retinaculum

-MZY- ‘MUSCLE FASCICLE TISSUE’	
STEM 1	(an amount/instance of) epimysium
STEM 2	(an amount/instance of) perimysium
STEM 3	(an amount/instance of) endomysium

-GŽP- ‘NEURAL TISSUE’	
STEM 1	(an amount/instance of) epineurium
STEM 2	(an amount/instance of) perineurium
STEM 3	(an amount/instance of) endoneurium

Muscles, Ligaments and Other Tissues/Structures

The following roots/stems name the various muscles and ligaments of the human and/or mammalian body. In a few instances, important tissues other than muscles and ligaments (e.g., fascia, retinacula, membranes, and tendons) have been assigned stems as well. For those non-bone or non-muscle tissues not assigned a stem, incorporate the stem for the particular tissue-type (e.g., tendon, fascia/membrane, retinaculum, enthesis) into the stem for the bone, muscle, or organ to which the tissue is connected or associated.

-MZX- ‘LATERAL FOOT MUSCLE’	
STEM 1	abductor digiti minimi
STEM 2	flexor digiti minimi brevis
STEM 3	opponens digiti minimi

-MZXW- ‘MIDDLE FOOT MUSCLE’	
STEM 1	lumbrical muscle
STEM 2	plantar interossei
STEM 3	dorsal interossei

-MZXL- ‘MEDIAL FOOT MUSCLE’	
STEM 1	abductor hallucis
STEM 2	flexor hallucis brevis
STEM 3	adductor hallucis

-MZXR- ‘DORSAL FOOT MUSCLE’	
STEM 1	extensor hallucis brevis
STEM 2	extensor digitorum brevis
STEM 3	flexor digitorum brevis

-MZFV- ‘MEDIAL HAND (VOLAR) MUSCLE’	
STEM 1	abductor digiti minimi
STEM 2	flexor digiti minimi brevis
STEM 3	opponens digiti minimi

-MZFV- ‘INTERMEDIATE HAND (VOLAR) MUSCLE’	
STEM 1	lumbrical muscle
STEM 2	palmar interossei
STEM 3	dorsal interossei

-MZFL- ‘LATERAL/THENAR HAND (VOLAR) MUSCLE’	
STEM 1	abductor pollicis brevis
STEM 2	flexor pollicis brevis
STEM 3	opponens pollicis

-MZFR- ‘OTHER HAND OR FOOT MUSCLE’	
STEM 1	palmaris brevis
STEM 2	adductor pollicis
STEM 3	quadratus plantae

-MZTW- ‘LATERAL CALF MUSCLE’	
STEM 1	peroneus longus
STEM 2	peroneus brevis
STEM 3	peroneus/fibularis tertius

-MZTY- ‘ANTERIOR CALF MUSCLE’	
STEM 1	tibialis anterior
STEM 2	extensor digitorum longus
STEM 3	fibularis longus

-MZTL- ‘OUTER POSTERIOR CALF MUSCLE’	
STEM 1	gastrocnemius
STEM 2	soleus
STEM 3	plantaris

-MZTR- ‘INNER POSTERIOR CALF MUSCLE’	
STEM 1	tibialis posterior
STEM 2	flexor hallucis longus
STEM 3	flexor digitorum longus

-MZPW- ‘FOREARM MUSCLE’ I	
STEM 1	flexor carpi radialis
STEM 2	flexor pollicis longus
STEM 3	flexor digitorum profundus

-MZPY- ‘FOREARM MUSCLE’ II	
STEM 1	flexor carpi ulnaris
STEM 2	flexor digitorum superficialis
STEM 3	supinator

-MZPL- ‘FOREARM MUSCLE’ III	
STEM 1	palmaris longus
STEM 2	pronator teres
STEM 3	pronator quadratus

-MZPR- ‘FOREARM MUSCLE’ IV	
STEM 1	extensor carpi radialis longus
STEM 2	extensor carpi radialis brevis
STEM 3	extensor digitorum

-MZPF- ‘FOREARM MUSCLE’ V	
STEM 1	brachioradialis
STEM 2	extensor digiti minimi
STEM 3	extensor carpi ulnaris

-MZPT- ‘FOREARM MUSCLE’ VI	
STEM 1	extensor pollicis
STEM 2	abductor pollicis longus
STEM 3	extensor indicis

-MZW- ‘ANTERIOR THIGH MUSCLE’ I	
STEM 1	vastus lateralis
STEM 2	vastus medialis
STEM 3	vastus femoris

-MZKY- ‘ANTERIOR THIGH MUSCLE’ II	
STEM 1	rectus femoris
STEM 2	articularis genu / subcrureus
STEM 3	tensor vastus intermedius

-MZKL- ‘ANTERIOR THIGH MUSCLE’ III	
STEM 1	sartorius
STEM 2	tensor fascia latae
STEM 3	gracilis muscle

-MZKR- ‘INNER THIGH/GROIN MUSCLE’	
STEM 1	adductor brevis
STEM 2	adductor longus
STEM 3	adductor magnus

-MZKŘ- ‘UPPER THIGH MUSCLE’	
STEM 1	pectineus muscle
STEM 2	obturator externus
STEM 3	obturator internus

-MZKÇ- ‘LATERAL ROTATOR MUSCLE’	
STEM 1	piriformis/caudofemoralis
STEM 2	superior gemellus
STEM 3	inferior gemellus

-MZKF- ‘POSTERIOR KNEE MUSCLE/LIGAMENT’	
STEM 1	popliteus muscle
STEM 2	poplitofibular ligament
STEM 3	patellar ligament (patellar tendon)

-MZKT- ‘HAMSTRING’	
STEM 1	biceps femoris
STEM 2	semimembranosus
STEM 3	semitendinosus

-MZKM- ‘ARM MUSCLE’ I	
STEM 1	biceps brachii
STEM 2	brachialis anticus
STEM 3	articularis cubiti

-MZKN- ‘ARM MUSCLE’ II	
STEM 1	triceps brachii (long head)
STEM 2	triceps brachii (medial head)
STEM 3	triceps brachii (lateral head)

-MZKH- ‘ARM MUSCLE’ III	
STEM 1	coracobrachialis
STEM 2	anconeus
STEM 3	epicondyle of humerus

-MZKV- ‘OTHER ARM TISSUE’	
STEM 1	tendon of biceps brachii
STEM 2	bicipital aponeurosis
STEM 3	antebrachial fascia

-MŽKW- ‘GLUTEAL MUSCLE’	
STEM 1	gluteus maximus
STEM 2	gluteus medius
STEM 3	gluteus minimus

-MŽKY- ‘ADDITIONAL HIP-RELATED TISSUE’	
STEM 1	iliotibial tract
STEM 2	ciribriform fascia
STEM 3	tensor fascia of lata

-MŽKL- ‘ILIOPSOAS MUSCLE’	
STEM 1	psoas major
STEM 2	psoas minor
STEM 3	iliacus

-MŽKR- ‘PELVIC (LEVATOR ANI) MUSCLE’	
STEM 1	pubococcygeus
STEM 2	iliococcygeus
STEM 3	puborectalis

-MŽKŘ- ‘PERINEAL MUSCLE’ I	
STEM 1	ischiocavernosus muscle
STEM 2	bulbospongiosus muscle
STEM 3	transverse perineal muscle

-MŽKČ- ‘PERINEAL MUSCLE’ II	
STEM 1	anal sphincter
STEM 2	urethral sphincter
STEM 3	coccygeus

-MŽKF- ‘ERECTOR SPINAE MUSCLE’	
STEM 1	spinalis
STEM 2	longissimus
STEM 3	iliocostalis

-MŽKT- ‘SEMISPINALIS MUSCLE’	
STEM 1	semispinalis capitis
STEM 2	cervicis
STEM 3	thoracis

-MŽKH- ‘OTHER PELVIC/UROGENITAL TISSUE’	
STEM 1	cremaster muscle
STEM 2	rectovaginal/rectoprostatic fascia
STEM 3	pubovesical ligament

-MŽBW- ‘VERTABRAL CONNECTIVE TISSUE’	
STEM 1	interspinalis muscle
STEM 2	interspinous ligament
STEM 3	supraspinous ligament

-MŽBY- ‘TRANSVERSOSPINALIS MUSCLE’	
STEM 1	multifidus
STEM 2	rotatores
STEM 3	intertransversarius

-MŽBL- ‘NECK MUSCLES’	
STEM 1	splenius capitis
STEM 2	splenius cervicis
STEM 3	levator scapulae

-MŽBR- ‘BACK MUSCLES’ I	
STEM 1	trapezius
STEM 2	latissimus dorsi
STEM 3	rhomboid muscle

-MŽBŘ- ‘BACK MUSCLES’ II	
STEM 1	serratus posterior inferior
STEM 2	serratus posterior superior
STEM 3	serratus anterior

-MŽGW- ‘THORACIC CAVITY’	
STEM 1	pectoralis major
STEM 2	pectoralis minor
STEM 3	subclavius

-MŽGY- ‘INNER CHEST MUSCLE’ I	
STEM 1	diaphragm
STEM 2	levator costarum
STEM 3	quadratus lumborum

-MŽGL- ‘INNER CHEST MUSCLE’ II	
STEM 1	intercostal muscle
STEM 2	subcostalis
STEM 3	transversus thoracis

-MŽGR- ‘ABDOMINAL MUSCLE’	
STEM 1	rectus abdominis
STEM 2	transversus abdominis
STEM 3	pyramidalis

-MŽGR- ‘ABDOMINAL WALL’	
STEM 1	abdominal external oblique
STEM 2	internal oblique
STEM 3	transversalis

-MŽGV- ‘THORACIC FASCIA’	
STEM 1	pectoral fascia
STEM 2	clavipectoral fascia
STEM 3	thoracolumbar fascia

-MŽDW- ‘SHOULDER MUSCLE’	
STEM 1	deltoid
STEM 2	teres major
STEM 3	teres minor

-MŽDY- ‘ROTATOR CUFF’	
STEM 1	supraspinatus
STEM 2	infraspinatus
STEM 3	subscapularis

-MŽDR- ‘SHOULDER FASCIA’	
STEM 1	supraspinous fascia
STEM 2	infraspinus fascia
STEM 3	deltoid fascia

-MŽDR- ‘UPPER ARM FASCIA’	
STEM 1	brachial fascia
STEM 2	antebrachial fascia
STEM 3	axillary fascia

-MŽTW- ‘NECK MUSCLE’ I	
STEM 1	longus colli
STEM 2	longus capiti
STEM 3	rectus capitis anterior

-MŽTY- ‘NECK MUSCLE’ II	
STEM 1	scalene muscle
STEM 2	obliquus capitis
STEM 3	rectus capitis posterior

-MŽTL- ‘NECK MUSCLE’ III	
STEM 1	platysma
STEM 2	sternocleidomastoid
STEM 3	rectus capitis lateralis

-MŽTR- ‘THROAT MUSCLE’ I	
STEM 1	digastric
STEM 2	mylohyoid
STEM 3	geniohyoid

-MŽTR- ‘THROAT MUSCLE’ II	
STEM 1	omohyoid
STEM 2	thyrohyoid
STEM 3	stylohyoid

-MŽTH- ‘THROAT MUSCLE’ III	
STEM 1	sternohyoid
STEM 2	sternothyroid
STEM 3	cricothyroid

-MŽP- ‘LARYNX’	
STEM 1	arytenoid
STEM 2	thyroarytenoid
STEM 3	cricothyroid

-MŽPW- ‘PHARYNGEAL/TRACHEAL MUSCLE’ I	
STEM 1	inferior pharyngeal constrictor
STEM 2	medial pharyngeal constrictor
STEM 3	superior pharyngeal constrictor

-MŽPY- ‘PHARYNGEAL/TRACHEAL MUSCLE’ II	
STEM 1	stylopharyngeus
STEM 2	salpingopharyngeus
STEM 3	trachealis

-MŽPL- ‘TONGUE MUSCLE & TISSUE’ I	
STEM 1	styloglossus
STEM 2	hyoglossus
STEM 3	genioglossus

-MŽPR- ‘TONGUE MUSCLE& TISSUE’ II	
STEM 1	superior longitudinal muscle
STEM 2	inferior longitudinal muscle
STEM 3	lingual mucosa

-MŽPŘ- ‘TONGUE MUSCLE & TISSUE’ III	
STEM 1	vertical muscle of the tongue
STEM 2	transverse muscle of the tongue
STEM 3	septum of the tongue

-MŽPF- ‘SOFT PALATE’ I	
STEM 1	tensor veli palatini
STEM 2	levator veli palatini
STEM 3	palatine aponeurosis

-MŽPT- ‘SOFT PALATE’ II	
STEM 1	musculus uvulae (uvula)
STEM 2	palatopharyngeus
STEM 3	palatoglossus

-MŽM- ‘MASTICATORY MUSCLE’	
STEM 1	lateral pterygoid
STEM 2	medial pterygoid
STEM 3	masseter

-MŽMW- ‘UPPER ORAL CAVITY’	
STEM 1	zygomaticus
STEM 2	levator labii superioris
STEM 3	levator anguli oris

-MŽMY- ‘INNER ORAL CAVITY’	
STEM 1	orbicularis oris
STEM 2	buccinator
STEM 3	risorius

-MŽŇ- ‘CHIN MUSCLE’	
STEM 1	mentalis
STEM 2	depressor labii inferioris / quadratus labii inferioris
STEM 3	depressor anguli oris

-MŽN- ‘NASAL MUSCLE’ I	
STEM 1	procerus
STEM 2	anomalous nasi
STEM 3	levator labii superior alaeque nasi

-MŽNW- ‘NASAL MUSCLE’ II	
STEM 1	alar nasalis
STEM 2	transverse nasalis
STEM 3	compressor narium minor

-MŽNY- ‘NASAL MUSCLE’ III	
STEM 1	dilator naris anterior
STEM 2	dilator naris posterior
STEM 3	depressor septi nasi

-MČF- ‘EYELID MUSCLE’	
STEM 1	corrugator supercilii
STEM 2	orbicularis oculi
STEM 3	superior tarsal

-MČFW- ‘EYEBALL MUSCLE’ I	
STEM 1	superior rectus
STEM 2	inferior rectus
STEM 3	medial or lateral rectus

-MČFY- ‘EXTRAOCULAR MUSCLE’ II	
STEM 1	levator palpebrae superioris
STEM 2	superior oblique
STEM 3	inferior oblique

-MČFL- ‘HEAD MUSCLE & TISSUE’ I	
STEM 1	frontalis
STEM 2	occipitalis
STEM 3	temporalis

-MČFR- ‘HEAD MUSCLE & TISSUE’ II	
STEM 1	temporal fascia
STEM 2	masseteric fascia
STEM 3	temporoparietalis

-MČFŘ- ‘EAR MUSCLE’	
STEM 1	auricularis superior
STEM 2	auricularis anterior
STEM 3	auricularis posterior

-PKW- ‘FOOT RETINACULUM’	
STEM 1	superior extensor retinaculum
STEM 2	inferior extensor retinaculum
STEM 3	other retinaculum of foot

-PKY- ‘OTHER FOOT TISSUE’	
STEM 1	calcaneal (Achilles) tendon
STEM 2	plantar fascia
STEM 3	arch of foot

-VZKW- ‘FOOT LIGAMENT’ I	
STEM 1	plantar interphalangeal ligament
STEM 2	plantar metatarsophalangeal ligament
STEM 3	plantar tarsometatarsal ligament

-VZKY- ‘FOOT LIGAMENT’ II	
STEM 1	collateral interphalangeal ligament
STEM 2	collateral metatarsophalangeal ligament
STEM 3	collateral tarsometatarsal ligament

-VZKL- ‘FOOT LIGAMENT’ III	
STEM 1	plantar intermetatarsal/metatarsal ligament
STEM 2	superficial transverse intermetatarsal/metatarsal ligament
STEM 3	deep transverse intermetatarsal/metatarsal ligament

-VZKR- ‘FOOT LIGAMENT’ IV	
STEM 1	dorsal intermetatarsal/metatarsal ligament
STEM 2	interosseous intermetatarsal/metatarsal ligament
STEM 3	interosseous intercuneiform ligament

-VZKŘ- ‘FOOT LIGAMENT’ V	
STEM 1	plantar cuneonavicular ligament
STEM 2	plantar cuboideonavicular ligament
STEM 3	plantar intercuneiform ligament

-VZKÇ- ‘FOOT LIGAMENT’ VI	
STEM 1	dorsal cuneonavicular ligament
STEM 2	dorsal cuboideonavicular ligament
STEM 3	dorsal intercuneiform ligament

-VZKF- ‘FOOT LIGAMENT’ VII	
STEM 1	plantar calcaneonavicular/spring ligament
STEM 2	dorsal talonavicular ligament
STEM 3	bifurcated (calcaneonavicular) ligament

-VZKŤ- ‘FOOT LIGAMENT’ VIII	
STEM 1	plantar or long plantar calcaneocuboid ligament
STEM 2	dorsal calcaneocuboid ligament
STEM 3	bifurcated (calcaneocuboid) ligament

-VZKV- ‘FOOT LIGAMENT’ IX	
STEM 1	anterior talocalcaneal ligament
STEM 2	lateral talocalcaneal ligament
STEM 3	interosseous talocalcaneal ligament

-VZKM- ‘FOOT LIGAMENT’ X	
STEM 1	posterior talocalcaneal ligament
STEM 2	medial talocalcaneal ligament
STEM 3	tibiocalcaneal ligament

-VZKN- ‘FOOT LIGAMENT’ XI	
STEM 1	anterior tibiotalar ligament
STEM 2	posterior tibiotalar ligament
STEM 3	tibionavicular ligament

-VZKH- ‘FOOT LIGAMENT’ XII	
STEM 1	anterior talofibular ligament
STEM 2	posterior talofibular ligament
STEM 3	calcaneofibular ligament

-VZXM- ‘LOWER LEG LIGAMENT’	
STEM 1	anterior tibiofibular ligament
STEM 2	posterior tibiofibular ligament
STEM 3	interosseous membrane of the leg

-VZXN- ‘LOWER LEG AND KNEE LIGAMENT’	
STEM 1	anterior ligament of the head of the fibula
STEM 2	posterior ligament of the head of the fibula
STEM 3	articular capsule of the knee / capsular ligament

-KṬC- ‘KNEE LIGAMENT’ I	
STEM 1	anterior cruciate ligament / cranial cruciate ligament
STEM 2	medial meniscus
STEM 3	transverse/anterior meniscomeniscal ligament

-KṬCW- ‘KNEE LIGAMENT’ II	
STEM 1	posterior cruciate ligament / caudal cruciate ligament
STEM 2	lateral meniscus
STEM 3	anterolateral ligament

-KṬCY- ‘KNEE LIGAMENT’ III	
STEM 1	anterior meniscofemoral ligament
STEM 2	medial/tibial collateral ligament
STEM 3	oblique popliteal ligament

-KṬCM- ‘KNEE LIGAMENT’ IV	
STEM 1	posterior meniscofemoral ligament
STEM 2	fibular/lateral collateral ligament
STEM 3	arcuate popliteal ligament

-KṬCN- ‘OTHER KNEE TISSUE’	
STEM 1	bursa of the knee
STEM 2	synovial membrane of the knee
STEM 3	intrapatellar fat pad

-KSLW- ‘HIP LIGAMENT’ I	
STEM 1	iliofemoral ligament / Y-ligament
STEM 2	pubofemoral ligament
STEM 3	ischiofemoral ligament

-KSLY- ‘HIP LIGAMENT’ II	
STEM 1	head of the femur ligament
STEM 2	transverse acetabular ligament
STEM 3	acetabular labrum

-PŠLW- ‘OTHER HIP TISSUE’	
STEM 1	articular capsule (capsicular ligament) of the hip
STEM 2	zona orbicularis / annular ligament
STEM 3	acetabulum / cotyloid cavity / hip socket

-KŠLW- ‘PELVIC LIGAMENT’ I	
STEM 1	anterior sacroiliac ligament
STEM 2	posterior sacroiliac ligament
STEM 3	interosseous sacroiliac ligament

-KŠLY- ‘PELVIC LIGAMENT’ II	
STEM 1	superior pubic ligament
STEM 2	inferior pubic ligament
STEM 3	sacroteruberous ligaent

-PŠLY- ‘OTHER PELVIC TISSUE’	
STEM 1	sacrospinous ligament
STEM 2	obturator membrane
STEM 3	obturator canal

-BZLW- ‘THORACO-VERTEBRAL LIGAMENT’ I	
STEM 1	anterior sacrococcygeal ligament
STEM 2	posterior sacrococcygeal ligament
STEM 3	intra-articular ligament

-GZLW- ‘THORACO-VERTEBRAL LIGAMENT’ II	
STEM 1	costotransverse ligament
STEM 2	lumbocostal ligament
STEM 3	radiate ligament

-ŽLW- ‘THORACO-VERTEBRAL LIGAMENT’ III	
STEM 1	intra-articular sternocostal ligament
STEM 2	radiate sternocostal ligament
STEM 3	costoxiphoid ligament

-BZLY- ‘VERTEBRAL LIGAMENT’ I	
STEM 1	iliolumbar ligament
STEM 2	anterior atlanto-axial ligament
STEM 3	posterior atlanto-axial ligament

-GZLY- ‘VERTEBRAL LIGAMENT’ II	
STEM 1	cruciate ligament of atlas (transverse ligament of atlas)
STEM 2	alar ligament
STEM 3	apical ligament of dens

-ZLY- ‘VERTEBRAL LIGAMENT’ III	
STEM 1	anterior longitudinal ligament
STEM 2	posterior longitudinal ligament
STEM 3	ligamenta flava

-JLY- ‘VERTEBRAL LIGAMENT’ IV	
STEM 1	supraspinous (nuchal) ligament
STEM 2	interspinous ligament
STEM 3	intertransverse ligament

-JLW- ‘SPINAL (INTERVERTEBRAL) DISC’	
STEM 1	anulus fibrosus
STEM 2	nucleus pulposus
STEM 3	tectorial membrane of atlanto-axial joint

-FSLW- ‘ATLANTO-OCCIPITAL JOINT LIGAMENT’	
STEM 1	atlanto-occipital articular capsule
STEM 2	anterior atlanto-occipital membrane
STEM 3	posterior atlanto-occipital membrane

-FSLY- ‘TEMPOROMANDIBULAR JOINT TISSUE’	
STEM 1	capsule and articular disk of temporo-mandibular joint
STEM 2	lateral temporomandibular ligament
STEM 3	medial temporomandibular ligament (including sphenomandibular and stylomandibular ligament)

-KTTW- ‘HAND LIGAMENT’ I	
STEM 1	collateral interphalangeal ligament
STEM 2	collateral metacarpophalangeal ligament
STEM 3	deep transverse metacarpal ligament

-KTTY- ‘HAND LIGAMENT’ II	
STEM 1	palmar interphalangeal ligament
STEM 2	palmar metacarpophalangeal ligament
STEM 3	superficial transverse metacarpal ligament

-KTTL- ‘HAND LIGAMENT’ III	
STEM 1	dorsal carpometacarpal ligament
STEM 2	radial collateral ligament
STEM 3	dorsal intercarpal ligament

-KTTR- ‘HAND LIGAMENT’ IV	
STEM 1	palmar carpometacarpal ligament
STEM 2	ulnar collateral ligament
STEM 3	palmar intercarpal ligament

-KTTR- ‘HAND LIGAMENT’ V	
STEM 1	radiate carpal ligament
STEM 2	interosseous intercarpal ligament
STEM 3	scapholunate ligament

-KTTC- ‘HAND LIGAMENT’ VI	
STEM 1	dorsal radiocarpal ligament
STEM 2	dorso ulnocarpal ligament
STEM 3	ulnar collateral ligament

-KṬTH- ‘HAND LIGAMENT’ VII	
STEM 1	palmar radiocarpal ligament
STEM 2	palmar ulnocarpal ligament
STEM 3	radial collateral ligament

-PṬTW- ‘OTHER HAND/WRIST TISSUE’	
STEM 1	pisiform joint ligament (including pisohamate and pisometacarpal ligament)
STEM 2	carpal tunnel
STEM 3	ulnar canal

-PṬTY- ‘FOREARM LIGAMENT’	
STEM 1	dorsal radio-ulnar ligament
STEM 2	palmar radio-ulnar ligament
STEM 3	interosseous membrane of the forearm

-PṬTL- ‘ELBOW LIGAMENT’ I	
STEM 1	anular ligament
STEM 2	oblique cord
STEM 3	quadrate ligament / ligament of Denucé

-PṬTR- ‘ELBOW LIGAMENT’ II	
STEM 1	radial collateral ligament
STEM 2	ulnar collateral ligament
STEM 3	capsule of elbow joint

-PṬTR̃- ‘SHOULDER LIGAMENT’ I	
STEM 1	anterior sternoclavicular ligament
STEM 2	posterior sternoclavicular ligament
STEM 3	interclavicular ligament

-PṬTL̃- ‘SHOULDER LIGAMENT’ II	
STEM 1	costoclavicular ligament
STEM 2	coraco-acromial ligament
STEM 3	acromioclavicular ligament

-PṬTÇ- ‘SHOULDER LIGAMENT’ III	
STEM 1	superior transverse scapular ligament
STEM 2	inferior transverse scapular ligament
STEM 3	coracoclavicular ligament

-PṬTH- ‘SHOULDER LIGAMENT’ IV	
STEM 1	superior glenohumeral ligament
STEM 2	middle glenohumeral ligament
STEM 3	inferior glenohumeral ligament

-PṬTHW- ‘SHOULDER LIGAMENT’ V	
STEM 1	coracohumeral ligament
STEM 2	transverse humeral ligament
STEM 3	capsule of shoulder joint (including glenoid labrum)

7.2.2 Bodily Fluids, Secretions, Excretia

While many bodily fluids/secretions/excretia can be named by either utilizing the **ROC/8** affix with an existing stem naming a bodily process (e.g., urination, ejaculation, etc.) or by incorporating **-TKL-** Stem 2 or **-RTKL-** Stem 1 into a stem naming a body part, it is nevertheless convenient to have lexical stems for the most common of such fluids/secretions/excretia.

Keep in mind that, while the English translations of the following stems are almost all non-count/mass nouns, the Ithkuil stems are countable, each meaning “(to be) an amount of” the particular substance/fluid in question. The stems below have the following Specification pattern.

BSC	Stem 1: (to be) a state/act/process of (the body) producing/having (a volume/amount of) the particular bodily fluid/secretion/excretia
CTE	(to be) an amount of the particular bodily fluid/secretion/excretia
CSV	(to be) a state/act/process of secreting/excreting an amount of the particular bodily fluid; to secrete/excrete an amount of the particular bodily fluid/secretion/excretia
OBJ	(to be) the organ or gland which secretes the particular bodily fluid/secretion/excretia

-LPL- 1. blood 2. blood plasma 3. lymph

-TÇN- 1. sweat 2. saliva 3. sebum

-NGM- 1. breast milk 2. vaginal fluid 3. amniotic fluid

-ÑZR- 1. earwax 2. perilymph 3. synovial fluid

-GPH- 1. feces 2. urine 3. pus

-ÑZL- 1. mucus 2. phlegm/sputum 3. rheum

-NXM- 1. tears 2. vitreous humor 3. aqueous humor

-KṬČ- 1. semen 2. bile/gall 3. gastric acid/stomach acid

-FṬŘ- 1. cerebrospinal fluid 2. peritoneal fluid 3. pericardial fluid

7.2.3 Disability/Disease/Sickness/Illness/Malady

-ÇK- ‘ILLNESS / SICKNESS / DISEASE / MALADY / AILMENT / SYMPTOM’			
	Stem 1	Stem 2	Stem 3
BSC	(to be) a state of physical or mental illness/sickness malady; to be physically or mentally ill/sick, to suffer an illness/disease/ailment/sickness/malady	(to be) a state of manifesting/displaying a symptom of an illness/disease/ailment/sickness/malady; to show/manifest/display a symptom of an illness/ailment/sickness/malady	(to be) a state of physical or mental incapacity or impairment or weakness or decrepitude due to an illness/disease/ailment/sickness/malady
CTE	(to be) a disease/illness/ailment/malady	(to be) a symptom an illness/disease/ailment/sickness/malady	(to be) the particular impairment(s) one suffers or experiences due to an illness/ailment/sickness/malady
CSV	(to be) the state of physically suffering from a disease/illness/ailment/malady; to suffer therefrom	(to be) the physical act of manifesting a symptom; for a symptom to physically occur	(to be) a state of having to deal/struggle with or adapt to a physical or mental impairment due to an illness/disease/ailment/sickness/malady
OBJ	(to be) a living being infected/suffering from an infectious illness/disease; entity/party that is sick	(to be) a living being suffering/manifesting/displaying a symptom of an illness/disease/ailment/sickness/malady	(to be) a living being experiencing/suffering from a physical or mental incapacity or impairment or weakness or decrepitude due to an illness/disease/ailment/sickness/malady

-KÇK- ‘PHYSICAL DISABILITY DUE TO INJURY’		
BSC	Stem 1: (to be) a state of living with a static/permanent physical or mental disability (i.e., not disease-related, e.g., missing a limb, paralysis due to a war injury, blindness due to an accident, etc.)	Stem 2: (to be) a state of living with a temporary physical or mental disability (i.e., not disease-related, e.g., a broken leg, blindness while recovering from eye surgery, etc.) Stem 3: (to be) a state of using/living with a prosthetic or adaptive device or process or routine to compensate for a physical disability
CTE	(to be) a state of physical disability (i.e., not having all of one’s potential abilities)	
CSV	(to be) a state of suffering/enduring/dealing with the effect(s) of a disability	
OBJ	(to be) the disability itself	

The following roots each denote a disease category or general disease type. Their stems and Specifications are modeled on the root **-ÇK-** above:

- MŠK-** infectious (i.e., microbial) illness/disease
- MŠKW-** disease/malady caused by exposure to adverse environmental element(s)
- MŠKY-** disease /malady caused by exposure to toxic chemical substance/poison

-MŠKL-	disease/malady caused by adverse personal habits (e.g., smoking, diet, sloth, etc.)
-MŠKR-	metabolic disorder/malady
-MŠKŘ-	neoplastic disorder/malady (i.e., cancer)
-MŠKF-	genetic disorder/malady
-MŠKT-	ideopathic disorder/malady
-MŠKÇ-	autoimmune disorder
-MŠKV-	malady caused by complications from an injury or injuries
-MŠKM-	iatrogenic or nosocomial disorder/malady caused by medical/medicinal/surgical treatment or hospitalization
-MŠKN-	prion-based disease
-MŠKH-	congenital defect
-MŠKHW-	disease/malady/disorder of unknown etiology, unrecognizable/unclassifiable disease/malady/disorder

The following roots refer to specific adverse physical or medical conditions/illnesses defined by a specific symptom or set of symptoms rather than a cause. Their Specification pattern is as follows:

BSC	(to be) a state of physical having/suffering from the particular symptom or set of symptoms; to experience/suffer from the particular symptom or set of symptoms
CTE	(to be) the underlying cause (i.e., disease/illness/ailment/malady) which gives rise to the particular symptom(s)
CSV	(to be) a state of physical manifesting the particular symptom or set of symptoms; to physically manifest/display the particular symptom or set of symptoms
OBJ	(to be) the living being manifesting/experiencing/suffering from the particular symptom(s)

-PÇW-	Stem 1: common cold	Stem 2: nasal congestion	Stem 3: pneumonia
-NŤM-	Stem 1: inflammation, immune reaction	Stem 2: sore throat	Stem 3: fever
-VMW-	Stem 1: nausea, stomach ache	Stem 2: vomiting, to vomit	Stem 3: diarrhea
-DPH-	Stem 1: shortness of breath, difficulty breathing	Stem 2: asthma	Stem 3: sleep apnea
-ŇMW-	Stem 1: anemia	Stem 2: hemochromatosis	Stem 3: hypercholesterolemia
-ŇMY-	Stem 1: ischemia	Stem 2: hemorrhage, bruising, hematoma	Stem 3: blood clot, to clot (blood), ischemia
-ŇNW-	Stem 1: hypertension	Stem 2: aneurysm	Stem 3: venous thromboembolism

- ŇNY -	Stem 1: cardiac arrhythmia	Stem 2: cardiac fibrillation, flutter	Stem 3: palpitation
- ŠKM -	Stem 1: syncope (fainting)	Stem 2: altitude sickness	Stem 3: nitrogen narcosis (“the bends”)
- ŠKN -	Stem 1: dehydration	Stem 2: heat exhaustion	Stem 3: heat stroke / sunstroke
- LCR -	Stem 1: gastro-intestinal upset	Stem 2: ulcer	Stem 3: diverticulitis
- JDŘ -	Stem 1: organ failure (i.e., insufficiency)	Stem 2: organ arrest (i.e., complete shutdown)	Stem 3: organ hyperactivity
- RCL -	Stem 1: osteoporosis	Stem 2: osteopenia	Stem 3: osteomalacia
- ĽPL -	Stem 1: spasm	Stem 2: tremor	Stem 3: convulsion => tonic-clonic seizure
- ĽPR -	Stem 1: spell, trance	Stem 2: non-convulsive seizure, absence seizure	Stem 3: fugue state / dissociative state
- PSX -	Stem 1: lethargy, torpor	Stem 2: listlessness, inability to come to full alertness	Stem 3: palpitation
- LKSX -	Stem 1: muscle weakness	Stem 2: muscle cramping	Stem 3: abdominal cramping
- RPSX -	Stem 1: calcification, calciferous hardening	Stem 2: ossification, hardening	Stem 3: fibrosis (including cirrhosis)
- SLW -	Stem 1: paresis, monoparesis	Stem 2: hemiparesis, paraparesis	Stem 3: quadriparesis
- SLY -	Stem 1: paralysis, monoplegia	Stem 2: hemiplegia, paraplegia	Stem 3: quadriplegia
- ĽNW -	Stem 1: paresthesia	Stem 2: dyskinesia	Stem 3: locked-in syndrome
- VPL -	Stem 1: bone fracture	Stem 2: concussion / traumatic brain injury	Stem 3: locked retinal detachment
- KNW -	Stem 1: delusion, deluded thinking	Stem 2: uncontrolled/inappropriate behavior	Stem 3: dementia

-ŘČK- ‘CAUSE OF AN ILLNESS / SICKNESS / DISEASE / MALADY / AILMENT’		
BSC	Stem 1: (to be) the pathogenic or toxicological cause of an illness/disease/ailment/sickness/malady (e.g., microbial, toxic substance, venom)	Stem 2: (to be) the idiopathic/congenital cause of an illness/disease/ailment/sickness/malady (e.g., the cause(s) of cancer, autoimmune disorder, mental illness, Type-1 diabetes) Stem 3: (to be) the iatrogenic or lifestyle/behavioral/environmental cause of an illness/disease/ailment/sickness/malady (e.g., smoking, gluttony, heatstroke, hypoxia due to living at high altitude, alcoholism, drug addiction, botched surgery, bodily injury)
CTE	(to be) a state of infection/exposure to a pathogen/poison/venom	
CSV	(to be) an act of contracting or being exposed to a pathogen/poison/venom	
OBJ	(to be) the microbe, poison, venom, toxic substance involved	

7.2.4 Parasitic/Microbial Diseases

The following are lists of diseases along with the stems indicating their parasitic or microbial pathogens. These parasitic/microbial stems are excerpted from the taxonomic lists in Sections 7.3.1, 7.3.3, 7.3.4, 7.3.5, and 7.3.6 of this document. To name a particular pathogenic disease, either incorporate a pathogen stem below into an appropriate stem from one of the various applicable roots shown above, or add the new **ADI** affix below to the stem.

-lkř	ADI Adverse Disease/Disorder/Illness
1	temporarily asymptomatic despite having [contracted] condition/illness/disorder/pathogen X
2	temporarily mildly ill/symptomatic due to having [contracted] condition/illness/disorder/pathogen X
3	temporarily moderately ill/symptomatic/disabled due to having [contracted] condition/illness/disorder/pathogen X
4	temporarily severely ill/symptomatic/disabled due to having [contracted] condition/illness/disorder/pathogen X
5	terminally ill due to having [contracted] condition/illness/disorder/pathogen X [CPT Version = deceased due to the condition//disorder]
6	permanently or chronically severely ill/symptomatic/disabled due to having [contracted] condition/illness/disorder/pathogen X
7	permanently or chronically moderately ill/symptomatic/disabled due to having [contracted] condition/illness/disorder/pathogen X
8	permanently or chronically mildly ill/symptomatic due to having [contracted] condition/illness/disorder/pathogen X
9	permanently or chronically asymptomatic despite having [contracted] condition/illness/disorder/pathogen X

Eukaryotic Endoparasites

Disease	Pathogen
anisakiasis	-LTPW- Stem 2: anisakis
ascariasis	-LTPY- Stem 1: ascaris / large roundworm
cercarial dermatitis	-LTTL- Stem 2: trichobilharzia
chlonorchiasis	-LTTR- Stem 2: chlonorchis / Chinese liver fluke
diphyllobothriasis	-LTTW- Stem 2: broad tapeworm / fish tapeworm / broad fish tapeworm
dicrocoeliasis	-LTTR- Stem 3: dicrocoelium / lancet liver fluke
dirofilariasis	-LTPL- Stem 1: dirofilaria
dracunculiasis	-LTPŘ- Stem 1: guinea worm
echinococcosis	-LTTY- Stem 2: echinococcus
elephantiasis	-LTPR- Stem 2: brugia, wuchereria
enterobiasis	-LTPŘ- Stem 3: pinworm / threadworm / seatworm
fascioliasis	-LTTR- Stem 1: fasciola / common liver fluke
gnathostomiasis	-LTPW- Stem 3: gnathostoma
gongylonemiasis	-LTPL- Stem 3: gongylonema
helminthiasis	-LTPÇ- Stem 1: Old World hookworm Stem 2: New world hookworm
hymenolepiasis	-LTTW- Stem 3: dwarf tapeworm, rat tapeworm

loiasis / Calabar swelling	-LTPY- Stem 2: loa
myiasis	-LZVL- Stem 1: [maggot of] dermatobia / [maggot of] human botfly
myiasis	-LZVL- Stem 2: [maggot of] cordylobia / [maggot of] tumbu fly / [maggot of] mango fly
myiasis	-LZVL- Stem 3: [maggot of] cochliomyia / [maggot of] screwworm
onchocerciasis (river blindness)	-LTPY- Stem 3: onchocerca
opisthorchiasis	-LTPŘ- Stem 1: opisthorchis / Southeast Asian liver fluke
paragonimiasis	-LPTL- Stem 3: paragonimus
schistosomiasis / bilharziosis / snail fever	-LPTL- Stem 1: schistosoma / blood fluke
sparganosis	-LPTY- Stem 1: cat tapeworm, dog tapeworm, raccoon tapeworm
streptocerciasis, mansonelliasis	-LTPR- Stem 1: mansonella
strongyloidiasis	-LTPÇ- Stem 3: threadworm
taeniasis, cysticercosis	-LPTW- Stem 1: taenia, pork tapeworm, beef tapeworm, Asian tapeworm
thelaziasis	-LTPL- Stem 2: thelazia
toxocariasis	-LTPŘ- Stem 2: toxocara, cat roundworm, dog roundworm, fox roundworm
trichinosis / trichinellosis	-LTPW- Stem 1: trichinella / trichina worm
trichuriasis, whipworm infection	-LTPR- Stem 3: whipworm
tungiasis	-ŘZŇW- Stem 3: tunga / Chigoe flea / jigger

Eukaryotic Ectoparasites

Disease	Pathogen
baker's itch	-ZFM- Stem 1: acarus / flour mite
cheyletiellosis / cheyletiella dermatitis / walking dandruff	-ZFR- Stem 3: cheyletiella mite
feather pillow dermatitis, oral mite anaphylaxis	-ZFL- Stem 2: dermatophagoides mite / dust mite / house dust mite Stem 3: euroglyphus / Mayne's house dust mite
gamasoidosis	-ZFR- dermanyssus (red mite)
grain itch	-ZFR- Stem 1: cheyletus mite Stem 2: tryophagus / cheese mite Stem 3: pyemotes / oak leaf gall mite / itch mite
grocer's itch	-ZFM- Stem 2: glyciphagus mite Stem 2: carpoglyphus mite
papular urticaria	-ZFY- Stem 1: Ixidoidea hard tick
papular urticaria (bed bug-induced)	-NLÇ- Stem 1: bed bug
pediculosis (head lice, body lice)	-CXL- Stem 2: pediculus / head louse, body louse
phthiriasis (crab lice)	-CXL- Stem 3: pthirus / crab louse / pubic louse

rodent mite dermatitis	-ZFN- Stem 1: liponyssoides / house rat mite Stem 2: laelaps / spiny rat mite
rodent mite dermatitis, gamasoidosis	-ZFR- Stem 2: ornithonyssus
scabies	-ZFL- Stem 1: sarcoptes / scabies mite
trombiculosis	-ZFN- Stem 3: trombiculid mite / chigger / red bug / harvest mite / scrub-itch mite, berry bug

Fungal/Yeast Pathogens [not including poisonous mushrooms]

Disease	Pathogen
allescheriasis, pseudallescheriasis	-RJTL- Stem 1: pseudallescheria
alternariasis	-RJTW- Stem 3: alternaria
aspergillosis, otomycosis	-RJTR- Stem 2: aspergillus
blastomycosis	-RJTC- Stem 2: blastomyces
candidiasis	-RJXM- Stem 2: candida yeast
coccidioidomycosis (valley fever)	-RJTR- Stem 1: coccidioides
cryptococcosis	-ZBV- Stem 2: cryptococcus
eumycetoma	-RJTW- Stem 2: pyrenochaeta
fusariosis, hyalohyphomycosis	-RJTH- Stem 1: fusarium
histoplasmosis	-RJTC- Stem 1: histoplasma
hyalohyphomycosis	-RJTH- Stem 2: acremonium
maduromycosis	-RJTH- Stem 3: madurella
mucormycosis	-RJGR- Stem 1: mucormycosis-causing fungus
paracoccidioidomycosis	-RJTC- Stem 3: paracoccidioides
phaeohyphomycosis	-RJTL- Stem 1: cladophialophora Stem 2: rhinocladiella Stem 3: exophiala
pneumocystis carinii pneumonia (PCP)	-RJXN- Stem 2: pneumocystis yeast
ringworm / tinea / athlete's foot / dermatophytosis	-RJTR- Stem 1: trichophyton Stem 2: microsporum Stem 3: epidermophyton
sporithrichosis (rose handler's disease)	-RJTL- Stem 2: sporothrix
talaromycosis	-RJTR- Stem 3: talaromyces
tinea nigra / superficial phaeohyphomycosis	-RJTW- Stem 1: Hortea wernecki
white piedra	-ZBV- Stem 3: trichosporon

Unicellular Protist Pathogens

Disease	Pathogen
acanthamoeba keratitis	- ŇŠKR - Stem 1: acanthamoeba
amoebiasis / amoebic dysentery	- ŇŠKN - Stem 1: entamoeba
babesiosis	- ŇFL - Stem 1: babesia
balantidiasis	- ŇTH - Stem 2: balantidium
cryptosporidiasis	- ŇFW - Stem 3: cryptosporidium
cyclosporiasis	- ŇFY - Stem 1: cyclospora
dientamoebiasis (traveller's diarrhea)	- SKMW - Stem 2: dientamoeba
endolimax infection with chronic diarrhea	- ŇŠKM - Stem 3: endolimax
equine piroplasmiasis	- ŇFL - Stem 3: theileria
giardiasis	- SKMW - Stem 3: giardia
granulomatous amoebic encephalitis	- ŇŠKR - Stem 2: balamuthia
leishmaniasis	- RSKÇ - Stem 2: leishmania
malaria	- ŇFW - Stem 1: plasmodium
primary amoebic meningoencephalitis	- RSKH - Stem 1: naegleria
rhinosporidiosis	- LMVR - Stem 3: rhinosporidium
toxoplasmosis	- ŇFW - Stem 2: toxoplasma
trichomoniasis	- SKMW - Stem 1: trichomonas
trypanosomiasis (sleeping sickness), Chagas disease	- RSKÇ - Stem 1: trypanosoma

Bacterial Pathogens

Disease	Pathogen
actinomycetoma	- PFTL - Stem 2: actinomadura
actinomycosis	- PFTL - Stem 1: actinomyces
anthrax	- PFP - Stem 1: bacillus
bacteraemia	- PFTÇ - Stem 1: eggerthella
bacterial vaginosis	- PFTR - Stem 3: gardnerella
bacterial vaginosis	- PFTŘ - Stem 1: atopobium

bacterial vaginosis	-PFTÇ- Stem 3: bifidobacterium
bacterial vaginosis	-PFTL- Stem 1: mobiluncus
bacteroides infection	-PFMW- Sem 1: bacteroides
botulism	-PFPL- Stem 1: clostridium
brucellosis	-KSKÇ- Stem 1: brucella
campylobacter enteritis	-KSKN- Stem 2: campylobacter
cat scratch disease, Carrion's disease, trench fever, bacillary angiomatosis	-KSKÇ- Stem 2: bartonella
chlamydia infection	-VZXW- Stem 1: chlamydia Stem 2: chlamydophila
cholera	-KSKY- Stem 3: vibrio
chromobacteriosis	-KSKT- Stem 1: chromobacterium
diarrhea-causing colstidioides infection	-PFPL- Stem 2: clostridioides
diphtheria	-PFTL- Stem 2: corynebacterium
E. coli infection, traveller's diarrhea, bloody diarrhea	-KSKW- Stem 3: escherichia
ehrlichiosis	-KSKM- Stem 3: ehrlichia
eikenella infection, infective endocarditis	-KSKT- Stem 2: eikenella
gonorrhea, neisseriasis, Waterhouse-Friderichsen syndrome	-KSKF- Stem 1: neisseria
haemophilus infection (bacteremia, pneumonia, meningitis, infective endocarditis)	-KSKY- Stem 2: haemophilus
infective endocarditis	-KSKHW- Stem 1: cardiobacterium
intestinal spirochaetosis	-LMSY- Stem 1: brachyspira
klebsiella pneumonia	-KSKR- Stem 3: klebsiella
legionnaire's disease, Pontiac fever	-KSKR- Stem 1: legionella
leptospirosis	-LMSW- Stem 2: leptospira
listeriasis	-PFP- Stem 2: listeria
Lyme disease	-LMSW- Stem 1: borrelia
melioidosis	-KSKF- Stem 3: burkholderia
mycoplasma pneumonia	-PFPL- Stem 1: mycoplasma
nocardiosis	-PFTR- Stem 1: nocardia
peptic ulcer	-KSKN- Stem 1: helicobacter
periodontal disease, Lemierre's syndrome	-LMS- Stem 1: fusobacterium
periodontal disease	-PFTR- Stem 2: Olsenella Stem 3: cryptobacterium
periodontal disease	-PFMW- Sem 2: Prevotella
periodontal disease	-PFMW- Sem 3: Porphyromonas

periodontal disease	-PFMY- Stem 1: tannerella
periodontal disease, infective endocarditis	-KSKR- Stem 1: aggregatibacter
plague	-KSKY- Stem 1: yersinia
pseudomonas infection	-KSKL- Stem 1: pseudomonas
Q-fever / query fever	-KSKR- Stem 2: coxiella
salmonellosis, typhoid fever	-KSKW- Stem 1: salmonella
scrub typhus	-KSKM- Stem 2: orientia
shigellosis / bacillary dysentery	-KSKW- Stem 2: shigella
staphylococcosis / “staph” infection	-PFP- Stem 3: staphylococcus
stenotrophomonas infection	-KSKHW- Stem 2: stenotrophomonas
“strep” infection, pneumococcal infection, scarlet fever, rheumatic fever	-PFPW- Stem 2: streptococcus
syphilis, yaws, bejel, pinta	-LMSW- Stem 3: treponema
tuberculosis, leprosy / Hanesen’s disease	-PFTL- Stem 3: mycobacterium
tularemia / rabbit fever	-KSKL- Stem 2: francisella
typhus, spotted fever (Rocky Mountain, Helvetica, Mediterranean, Queensland)	-KSKM- Stem 1: rickettsia
urinary tract infection	-PFPW- Stem 1: enterococcus
whooping cough	-KSKF- Stem 2: bordetella

Viral/Viroid Pathogens

Disease	Pathogen
aichi viral infection	-MÇPR- Stem 1: aichi virus
Alkhurma virus infection	-LFSC- Stem 3: Alkhurma virus
astrovirus infection	-ÑSTR- Stem 1: human astrovirus
Barmah Forest virus infection	-LFSN- Stem 2: Barmah Forest virus (BFV)
Bas-Congo virus infection, Ekpoma virus infection	-NXPL- Stem 1: Bas-Congo virus, Ekpoma virus 1 & 2
BK polyomavirus infection	-RŠTL- Stem 1: BK polyomavirus
California encephalitis, La Crosse virus infection, Jamestown Canyon virus infection, Cache Valley virus infection	-NXPY- Stem 2: California encephalitis virus, La Crosse virus (LACV), Jamestown Canyon virus, Cache Valley orthobunyavirus (CVV)
cardiovirus infection	-MÇPL- Stem 1: cardiovirus B, Saffold virus (SAFV)
Chandipura virus infection, vesicular stomatitis	-NXPC- Stem 3: Chandipura virus (CHPV), vesicular stomatitis virus
chicken pox, shingles	-LFMW- Stem 1: varicella zoster virus

Chikungunya virus infection	-LFSŘ- Stem 1: Chikungunya virus
CMV mononucleosis, cytomegalovirus infection	-LFMY- Stem 1: cytomegalovirus (CMV)
cold sores, oral herpes, genital herpes	-LFMW- Stem 2: herpes simplex 1, herpes simplex 2
Colorado tick fever, European Eyach infection	-MŠTW- Stem 1: Colorado tick fever virus, European Eyach virus
common cold, upper respiratory infection	-ŠŠTW- Stem 1: human coronavirus OC43, human coronavirus HKU1
common cold, upper respiratory infection	-ŠŠTL- Stem 1: human coronavirus 229E
common cold, upper respiratory infection	-GZXL- Stem 1: human mastadenovirus A/B/C/D/E/F/G
common cold, upper respiratory infection	-MČPY- Stem 1: human rhinovirus A Stem 2: human rhinovirus B Stem 3: human rhinovirus C
COVID-19	-ŠŠT- Stem 3: severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)
Crimean-Congo hemorrhagic fever	-NXPY- Stem 3: Crimean-Congo hemorrhagic fever orthonairovirus (CCHF)
dengue fever	-LFSK- Stem 2: dengue virus
ebola	-NXPŘ- Stem 1: ebolavirus
foot-and-mouth disease	-MČPF- Stem 1: foot-and-mouth disease virus (FMDV)
hantavirus infection	-NXPY- Stem 1: hantavirus
hepatitis A	-MČPČ- Stem 1: hepatovirus A, hepatitis A virus
hepatitis B	-RTČP- Stem 1: hepatitis B virus
hepatitis C	-LFSW- Stem 1: human hepatitis C virus
hepatitis E	-LFSL- Stem 2: orthohepevirus, human hepatitis E virus
HIV infection / AIDS	-RTČT- Stem 1: human immunodeficiency virus 1 / HIV-1 Stem 2: human immunodeficiency virus 2 / HIV-2
HPV infection	-RŠTY- Stem 1: human papillomavirus
influenza / “the flu”	-NXP- Stem 1: influenza A virus Stem 2: influenza B virus Stem 3: influenza C virus
Japanese encephalitis	-LFSČ- Stem 1: Japanese encephalitis virus
JC polyomavirus infection	-RŠTL- Stem 2: JC polyomavirus
Kaposi’s sarcoma, primary effusion lymphoma, Castleman’s disease	-LFML- Stem 1: rhadinovirus
Kyansur Forest disease	-LFSP- Stem 2: Kyansur Forest disease virus
Lassa virus infection, lymphocytic choriomeningitis, Lujo virus infection	-NXPL- Stem 1: Lassa virus (LASV), lymphocytic choriomeningitis virus (LCMV), Lujo virus (LUJV)
Marburg virus infection	-NXPŘ- Stem 2: Marburg virus, Ravn virus
Mayaro virus infection, Una virus infection	-LFSŘ- Stem 2: Mayaro virus, Una virus
measles / rubeola	-NXPT- Stem 1: measles virus (MeV)
Merkel cell polyomavirus infection	-RŠTL- Stem 3: Merkel cell polyomavirus

MERS	-ŠŠT- Stem 1: Middle East respiratory syndrome-related coronavirus (MERS-CoV)
Middelburg virus infection	-LFSN- Stem 1: Middelburg virus (MIDV)
mononucleosis / Epstein-Barr infection	-LFML- Stem 2: lymphocryptovirus / Epstein-Barr virus
mumps	-NXFW- Stem1: mumps virus (MuV)
Murray Valley encephalitis	-LFST- Stem 1: Murray Valley encephalitis virus (MVEV)
norovirus infection (winter vomiting bug), Sapporo viral infection	-MČPL- Stem 1: norovirus, winter vomiting bug 2. (genus <i>Sapovirus</i>) Sapporo virus
Omsk hemorrhagic fever	-LFSP- Stem 1: Omsk hemorrhagic fever virus
parechoviral infection	-MČPŘ- Stem 1: parechovirus A /human parechovirus 1 / HPeV1, human parechovirus 2
picobirnavirus infection	-NSTR- Stem 1: human picobirnavirus
poliomyelitis	-MČP- Stem 1: poliovirus, enterovirus C
Powassan virus infection	-LFSP- Stem 3: Powassan virus (POWV)
quarantavirus infection	-NXPW- Stem 1: quarantavirus
rabies	-NXPC- Stem 1: rabies virus (RABV)
respiratory syncytial virus infection, metapneumovirus infection	-NXFW- Stem 3: human respiratory syncytial virus (HRSV), human metapneumovirus (HMPV)
respirovirus infection	-NXPT- Stem 3: human respirovirus 1 & 3
Rift Valley fever, Punta Toro phlebovirus infection, Sicilian phlebovirus infection	-NXPL- Stem 3: Rift Valley fever phlebovirus, Punta Toro phlebovirus, Sicilian phlebovirus
roseola / sixth disease	-LFMY- Stem 2: roseolovirus / human betaherpesvirus 6 or 7
Ross River virus infection	-LFSŘ- Stem 3: Ross River virus (RRV)
rotavirus infection	-MST- Stem 1: rotavirus
rubella / German measles	-LFSL- Stem 1: rubella virus (RuV)
Saint Louis encephalitis	-LFSČ- Stem 2: Saint Louis encephalitis virus
SARS	-ŠŠT- Stem 2: severe acute respiratory syndrome coronavirus (SARS-CoV)
smallpox / variola	-PSF- Stem 1: smallpox virus / variola virus
T-cell lymphotropic virus infection	-RTČL- Stem 1: human T-cell lymphotropic virus (HTLV-1, HTLV-2, HTLV-3, HTLV-4)
thogotovirus infection, dhori virus infection	-NXPW- Stem 2: thogotovirus (THOV), dhori virus (DHOV)
tick-borne encephalitis	-LFST- Stem 1: tick-borne encephalitis virus (TBEV)
West Nile virus infection, Kunjin virus infection	-LFST- Stem 1: West Nile virus, Kunjin virus
Whitewater Arroyo virus infection, Machupo virus infection, Sabiá virus infection, Chapare virus infection, Guaranito virus infection, Junín virus infection	-NXPL- Stem 2: Whitewater Arroyo virus (WWAV), Machupo virus (MACV), Sabiá virus (SBAV), Chapare virus (CHAPV), Guaranito virus (GTOV), Junín virus (JUNV)
yellow fever	-LFSK- Stem 1: yellow fever virus
zika virus infection	-LFSK- Stem 3: zika virus

7.2.5 Non-Genetic Metabolic Disorders/Diseases (e.g., Due to Environmental Factors, Improper Nutrition, etc.)

Disease	Root
nutrient deficiency, malnutrition	-ŇZT-
scurvy	-ŇZTW-
rickets	-ŇZTY-
diabetes Type 2	-ŇZTL-
electrolyte imbalance	-ŇZTR-
ADH imbalance	-ŇZTR̂-

7.2.6 Genetic Disorders/Diseases

The Stems and Specifications of the following roots follow the pattern of the root -ÇK- shown in Sec. 7.2.3 above. They may also be used with the new **ADI** affix.

Disease	Root
1p36 deletion syndrome	-BZZGL-
18p deletion syndrome	-GZZGL-
21-hydroxylase deficiency	-VZZGL-
Alpha 1-antitrypsin deficiency	-MZZGL-
AAA syndrome (achalasia–addisonianism–alacrima syndrome)	-NZZGL-
Aarskog–Scott syndrome	-ŇZZGL-
ABCD syndrome	-LZZGL-
Aceruloplasminemia	-RZZGL-
Acheiropodia	-ŘZZGL-
Achondrogenesis type II	-BZZGR-
achondroplasia	-GZZGR-
Acute intermittent porphyria	-VZZGR-
adenylosuccinate lyase deficiency	-MZZGR-
Adrenoleukodystrophy	-NZZGR-
Alagille syndrome	-ŇZZGR-

ADULT syndrome	-LZZGR-
Aicardi–Goutières syndrome	-RZZGR-
Albinism	-ŘZZGR-
Alexander disease	-BZZGŘ-
alkaptonuria	-GZZGŘ-
Alport syndrome	-VZZGŘ-
Alternating hemiplegia of childhood	-MZZGŘ-
Amyotrophic lateral sclerosis – Frontotemporal dementia	-NZZGŘ-
Alström syndrome	-ŇZZGŘ-
Alzheimer's disease	-LZZGŘ-
Amelogenesis imperfecta	-RZZGŘ-
Aminolevulinic acid dehydratase deficiency porphyria	-ŘZZGŘ-
Androgen insensitivity syndrome	-BZZGW-
Angelman syndrome	-GZZGW-
Apert syndrome	-VZZGW-
Arthrogryposis–renal dysfunction–cholestasis syndrome	-MZZGW-
Ataxia telangiectasia	-NZZGW-
Axenfeld syndrome	-ŇZZGW-
Beare–Stevenson cutis gyrata syndrome	-LZZGW-
Beckwith–Wiedemann syndrome	-RZZGW-
Benjamin syndrome	-ŘZZGW-
biotinidase deficiency	-BZZGY-
Björnstad syndrome	-GZZGY-
Bloom syndrome	-VZZGY-
Birt–Hogg–Dubé syndrome	-MZZGY-
Brody myopathy	-NZZGY-
Brunner syndrome	-ŇZZGY-
CADASIL syndrome	-LZZGY-
CRASIL syndrome	-RZZGY-
Chronic granulomatous disorder	-ŘZZGY-
Campomelic dysplasia	-BZZBL-
Canavan disease	-GZZBL-

Carpenter Syndrome	-VZZBL-
Cerebral dysgenesis–neuropathy–ichthyosis–keratoderma syndrome (SEDNIK)	-MZZBL-
Cystic fibrosis	-NZZBL-
Charcot–Marie–Tooth disease	-ŇZZBL-
CHARGE syndrome	-LZZBL-
Chédiak–Higashi syndrome	-RZZBL-
Cleidocranial dysostosis	-ŘZZBL-
Cockayne syndrome	-BZZBR-
Coffin–Lowry syndrome	-GZZBR-
Cohen syndrome	-VZZBR-
collagenopathy, types II and XI	-MZZBR-
Congenital insensitivity to pain with anhidrosis (CIPA)	-NZZBR-
Congenital Muscular Dystrophy	-ŇZZBR-
Cornelia de Lange syndrome (CDLS)	-LZZBR-
Cowden syndrome	-RZZBR-
CPO deficiency (coproporphyrin)	-ŘZZBR-
Cranio-lenticulo-sutural dysplasia	-BZZBŘ-
Cri du chat	-GZZBŘ-
Crohn's disease	-VZZBŘ-
Crouzon syndrome	-MZZBŘ-
Crouzonodermoskeletal syndrome (Crouzon syndrome with acanthosis nigricans)	-NZZBŘ-
Darier's disease	-ŇZZBŘ-
Dent's disease (Genetic hypercalciuria)	-LZZBŘ-
Denys–Drash syndrome	-RZZBŘ-
De Grouchy syndrome	-ŘZZBŘ-
Down Syndrome	-BZZBW-
Di George's syndrome	-GZZBW-
Distal hereditary motor neuropathy	-VZZBW-
Distal muscular dystrophy	-MZZBW-
Duchenne muscular dystrophy	-NZZBW-
Dravet syndrome	-ŇZZBW-
Edwards Syndrome	-LZZBW-

Ehlers–Danlos syndrome	-RZZBW-
Emery–Dreifuss syndrome	-ŘZZBW-
Epidermolysis bullosa	-BZZBY-
Erythropoietic protoporphyria	-GZZBY-
Fanconi anemia (FA)	-VZZBY-
Fabry disease	-MZZBY-
Factor V Leiden thrombophilia	-NZZBY-
Fatal familial insomnia	-ŇZZBY-
Familial adenomatous polyposis	-LZZBY-
Familial dysautonomia	-RZZBY-
Familial Creutzfeld–Jakob Disease	-ŘZZBY-
Feingold syndrome	-BZZDL-
FG syndrome	-GZZDL-
Fragile X syndrome	-VZZDL-
Friedreich's ataxia	-MZZDL-
G6PD deficiency	-NZZDL-
Galactosemia	-ŇZZDL-
Gaucher disease	-LZZDL-
Gerstmann–Sträussler–Scheinker syndrome	-RZZDL-
Gillespie syndrome	-ŘZZDL-
Glutaric aciduria, type I and type 2	-BZZDR-
GRACILE syndrome	-GZZDR-
Griscelli syndrome	-VZZDR-
Hailey–Hailey disease	-MZZDR-
Harlequin type ichthyosis	-NZZDR-
Hemochromatosis, hereditary	-ŇZZDR-
Hemophilia	-LZZDR-
Hepatoerythropoietic porphyria	-RZZDR-
Hereditary coproporphyria	-ŘZZDR-
Hereditary hemorrhagic telangiectasia (Osler–Weber–Rendu syndrome)	-BZZDŘ-
Hereditary inclusion body myopathy	-GZZDŘ-
Hereditary multiple exostoses	-VZZDŘ-

Hereditary spastic paraplegia (infantile-onset ascending hereditary spastic paralysis)	-MZZDŘ-
Hermansky–Pudlak syndrome	-NZZDŘ-
Hereditary neuropathy with liability to pressure palsies (HNPP)	-ŇZZDŘ-
Heterotaxy	-LZZDŘ-
Homocystinuria	-RZZDŘ-
Huntington's disease	-ŘZZDŘ-
Hunter syndrome	-BZZDW-
Hurler syndrome	-GZZDW-
Hutchinson–Gilford progeria syndrome	-VZZDW-
Hyperlysinemia	-MZZDW-
Hyperoxaluria, primary	-NZZDW-
Hyperphenylalaninemia	-ŇZZDW-
Hypoalphalipoproteinemia (Tangier disease)	-LZZDW-
Hypochondrogenesis	-RZZDW-
Hypochondroplasia	-ŘZZDW-
Immunodeficiency–centromeric instability–facial anomalies syndrome (ICF syndrome)	-BZZDY-
Incontinentia pigmenti	-GZZDY-
Ischiopatellar dysplasia	-VZZDY-
Isodicentric 15	-MZZDY-
Jackson–Weiss syndrome	-NZZDY-
Joubert syndrome	-ŇZZDY-
Juvenile primary lateral sclerosis (JPLS)	-LZZDY-
Keloid disorder	-RZZDY-
Kniest dysplasia	-ŘZZDY-
Kosaki overgrowth syndrome	-BZZFL-
Krabbe disease	-GZZFL-
Kufor–Rakeb syndrome	-VZZFL-
LCAT deficiency	-MZZFL-
Lesch–Nyhan syndrome	-NZZFL-
Li–Fraumeni syndrome	-ŇZZFL-
Limb–Girdle Muscular Dystrophy	-LZZFL-
Lynch syndrome	-RZZFL-

lipoprotein lipase deficiency	-ŘZZFL-
Malignant hyperthermia	-BZZFR-
Maple syrup urine disease	-GZZFR-
Marfan syndrome	-VZZFR-
Maroteaux–Lamy syndrome	-MZZFR-
McCune–Albright syndrome	-NZZFR-
McLeod syndrome	-ŇZZFR-
MEDNIK syndrome	-LZZFR-
Mediterranean fever, familial	-RZZFR-
Menkes disease	-ŘZZFR-
Metachromatic leukodystrophy	-BZZFŘ-
Methemoglobinemia	-GZZFŘ-
Methylmalonic acidemia	-VZZFŘ-
Micro syndrome	-MZZFŘ-
Microcephaly	-NZZFŘ-
Morquio syndrome	-ŇZZFŘ-
Mowat–Wilson syndrome	-LZZFŘ-
Muenke syndrome	-RZZFŘ-
Multiple endocrine neoplasia type 1 (Wermer's syndrome)	-ŘZZFŘ-
Multiple endocrine neoplasia type 2	-BZZFW-
Muscular dystrophy	-GZZFW-
Muscular dystrophy, Duchenne and Becker type	-VZZFW-
Myostatin-related muscle hypertrophy	-MZZFW-
myotonic dystrophy	-NZZFW-
Natowicz syndrome	-ŇZZFW-
Neurofibromatosis type I	-LZZFW-
Neurofibromatosis type II	-RZZFW-
Niemann–Pick disease	-ŘZZFW-
Nonketotic hyperglycinemia	-BZZFY-
Nonsyndromic deafness	-GZZFY-
Noonan syndrome	-VZZFY-
Norman–Roberts syndrome	-MZZFY-

Ogden syndrome	-NZZFY-
Omenn syndrome	-ŇZZFY-
Osteogenesis imperfecta	-LZZFY-
Pantothenate kinase-associated neurodegeneration	-RZZFY-
Patau syndrome (Trisomy 13)	-ŘZZFY-
PCC deficiency (propionic acidemia)	-BZZVL-
Porphyria cutanea tarda (PCT)	-GZZVL-
Pendred syndrome	-VZZVL-
Peutz–Jeghers syndrome	-MZZVL-
Pfeiffer syndrome	-NZZVL-
Phenylketonuria	-ŇZZVL-
Pipecolic acidemia	-LZZVL-
Pitt–Hopkins syndrome	-RZZVL-
Polycystic kidney disease	-ŘZZVL-
Polycystic ovary syndrome (PCOS)	-BZZVR-
Porphyria	-GZZVR-
Prader–Willi syndrome	-VZZVR-
Primary ciliary dyskinesia (PCD)	-MZZVR-
Primary pulmonary hypertension	-NZZVR-
Protein C deficiency	-ŇZZVR-
Protein S deficiency	-LZZVR-
Pseudo-Gaucher disease	-RZZVR-
Pseudoxanthoma elasticum	-ŘZZVR-
Retinitis pigmentosa	-BZZVŘ-
Rett syndrome	-GZZVŘ-
Roberts syndrome	-VZZVŘ-
Rubinstein–Taybi syndrome (RSTS)	-MZZVŘ-
Sandhoff disease	-NZZVŘ-
Sanfilippo syndrome	-ŇZZVŘ-
Schwartz–Jampel syndrome	-LZZVŘ-
Sjogren-Larsson syndrome	-RZZVŘ-
Spondyloepiphyseal dysplasia congenita (SED)	-ŘZZVŘ-

Shprintzen–Goldberg syndrome	-BZZVW-
Sickle cell anemia	-GZZVW-
Siderius X-linked mental retardation syndrome	-VZZVW-
Sideroblastic anemia	-MZZVW-
Sly syndrome	-NZZVW-
Smith–Lemli–Opitz syndrome	-ŇZZVW-
Smith–Magenis syndrome	-LZZVW-
Snyder–Robinson syndrome	-RZZVW-
Spinal muscular atrophy	-ŘZZVW-
Spinocerebellar ataxia (types 1–29)	-BZZVY-
SSB syndrome (SADDAN)	-GZZVY-
Stargardt disease (macular degeneration)	-VZZVY-
Stickler syndrome (multiple forms)	-MZZVY-
Strudwick syndrome (spondyloepimetaphyseal dysplasia, Strudwick type)	-NZZVY-
Tay–Sachs disease	-ŇZZVY-
Tetrahydrobiopterin deficiency	-LZZVY-
Thanatophoric dysplasia	-RZZVY-
Treacher Collins syndrome	-ŘZZVY-
Tuberous sclerosis complex (TSC)	-BZZMW-
Tumor necrosis factor receptor-associated periodic syndrome (TRAPS)	-GZZMW-
Turner syndrome	-VZZMW-
Usher syndrome	-MZZMW-
Variegate porphyria	-NZZMW-
von Hippel–Lindau disease	-ŇZZMW-
von Willebrand disease	-LZZMW-
Waardenburg syndrome	-RZZMW-
Weissenbacher–Zweymüller syndrome	-ŘZZMW-
Williams syndrome	-BZZMY-
Wilson disease	-GZZMY-
Woodhouse–Sakati syndrome	-VZZMY-
Wolf–Hirschhorn syndrome	-MZZMY-
Xeroderma pigmentosum	-NZZMY-

X-linked intellectual disability and macroorchidism (fragile X syndrome)	- ŇZZMY -
X-linked spinal-bulbar muscle atrophy (spinal and bulbar muscular atrophy)	- LZZMY -
Xp11.2 duplication syndrome	- RZZMY -
X-linked severe combined immunodeficiency (X-SCID)	- ŘZZMY -
X-linked sideroblastic anemia (XLSA)	- BZZNW -
47,XXX (triple X syndrome)	- GZZNW -
XXXX syndrome (48, XXXX)	- VZZNW -
XXXXX syndrome (49, XXXXX)	- MZZNW -
XYY syndrome (47,XYY)	- NZZNW -
Zellweger syndrome	- ŇZZNW -

7.2.7 Autoimmune Diseases/Disorders

The Stems and Specifications of the following roots follow the pattern of the root -**ÇK**- shown in Sec. 7.2.3 above. They may also be used with the new **ADI** affix.

autoimmune myocarditis, autoimmune cardiomyopathy, Cocksackie myocarditis	- MMSPW -
postmyocardial infarction syndrome / Dressler's syndrome	- MMSPY -
postpericardiotomy syndrome	- MMSPL -
anti-glomerular basement membrane nephritis / Goodpastures syndrome, glomerulonephritis Type 1	- MMSPR -
Autoimmune hepatitis / Lupoid hepatitis	- MMSKW -
Primary biliary cholangitis (PBC)	- MMSKY -
Primary sclerosing cholangitis	- MMSKL -
Churg-Strauss syndrome / Eosinophilic pneumonia	- MMSKR -
Antisynthetase syndrome	- MMSTW -
Alopecia Areata	- MMSTY -
Autoimmune Angioedema	- MMSTL -

Autoimmune progesterone dermatitis	-MMSTR-
Autoimmune urticaria	-MMSTR̂-
Bullous pemphigoid	-MMSTH-
Cicatricial pemphigoid / Benign Mucosal Pemphigoid / Ocular cicatricial pemphigoid	-MMŠPW-
Dermatitis herpetiformis	-MMŠPY-
Discoid lupus erythematosus	-MMŠPL-
Epidermolysis bullosa acquisita	-MMŠPR-
Erythema nodosum	-MMŠPŘ-
Gestational pemphigoid	-MMŠPH-
Hidradenitis suppurativa	-MMŠKW-
Lichen planus	-MMŠKY-
Lichen sclerosus	-MMŠKL-
Linear IgA disease (LAD)	-MMŠKR-
Morphea	-MMŠKŘ-
Pemphigus vulgaris	-MMŠKH-
Pityriasis lichenoides et varioliformis acuta	-MMŠTW-
Mucha–Habermann disease	-MMŠTY-
Psoriasis	-MMŠTL-
Systemic scleroderma	-MMŠTR-
Vitiligo	-MMŠTR̂-
Addisons Disease / Autoimmune polyendocrine syndrome (APS) type 1 / Whitaker's Syndrome / Autoimmune polyendocrinopathy-candidiasis-ectodermal dystrophy (APECED) / Polyglandular Autoimmune Syndrome 1 (PGAS-1)	-MMÇPW-
Autoimmune polyendocrine syndrome (APS) type 2 / Schmidt syndrome / Polyglandular Autoimmune Syndrome 2 (PGAS-2)	-MMÇPY-
Autoimmune polyendocrine syndrome (APS) type 3	-MMÇPL-
Autoimmune pancreatitis (AIP)	-MMÇPR-
Diabetes mellitus type 1	-MMÇPŘ-
Autoimmune thyroiditis / Chronic lymphocytic thyroiditis / Hashimoto's thyroiditis	-MMÇPH-
Ord's thyroiditis	-MMÇKW-

Graves' disease	-MMÇKY-
Autoimmune oophoritis	-MMÇKL-
Endometriosis	-MMÇKR-
Autoimmune orchitis	-MMÇKŘ-
Sjögren syndrome	-MMÇKH-
Autoimmune enteropathy	-MMÇTW-
Coeliac disease	-MMÇTY-
Crohn's disease	-MMÇTL-
Esophageal achalasia	-MMÇTR-
Microscopic colitis	-MMÇTŘ-
Ulcerative colitis	-MMÇTH-
Antiphospholipid syndrome (APS, APLS) / Hughes syndrome	-MMFPW-
Aplastic anemia	-MMFPY-
Autoimmune hemolytic anemia	-MMFPL-
Autoimmune lymphoproliferative syndrome / Canale-Smith syndrome	-MMFPR-
Autoimmune neutropenia	-MMFPŘ-
Autoimmune thrombocytopenic purpura / Idiopathic Thrombocytopenic Purpura (ITP)	-MMFPH-
Cold agglutinin disease / Autoimmune hemolytic anemia	-MMFKW-
Essential mixed cryoglobulinemia	-MMFKY-
Evans syndrome	-MMFKL-
Pernicious anemia	-MMFKR-
Pure red cell aplasia	-MMFKŘ-
Thrombocytopenia / Neonatal thrombocytopenia	-MMFKH-
Adiposis dolorosa / Dercum's disease	-MMFTW-
Adult-onset Still's disease	-MMFTY-
Ankylosing spondylitis	-MMFTL-
CREST syndrome	-MMFTR-

Drug-induced lupus	-MMFTŘ-
Enthesitis-related arthritis	-MMFTH-
Eosinophilic fasciitis / Shulman's syndrome	-MMTPW-
Felty syndrome	-MMTPY-
IgG4-related autoimmune disease / IgG4-related systemic sclerosing disease / IgG4-associated multifocal systemic fibrosis / IgG4 syndrome / Hyper-IgG4 disease / Systemic IgG4-related plasmacytic syndrome	-MMTPL-
Juvenile arthritis / Juvenile rheumatoid arthritis / Juvenile idiopathic arthritis	-MMTPR-
Lyme disease (chronic)	-MMTPŘ-
Mixed connective tissue disease (MCTD)	-MMTKW-
Palindromic rheumatism / Hench-Rosenberg syndrome	-MMTKY-
Parry–Romberg syndrome	-MMTKL-
Parsonage–Turner syndrome	-MMTKR-
Psoriatic arthritis	-MMTKŘ-
Reactive arthritis / Reiter's syndrome	-MMTTW-
Relapsing polychondritis / Atrophic polychondritis / systemic chondromalacia / chronic atrophic polychondritis / Meyenburg–Altherr–Uehlinger syndrome / generalized chondromalacia / systemic chondromalacia	-MMTTY-
Retroperitoneal fibrosis	-MMTTL-
Rheumatic fever	-MMTTR-
Rheumatoid arthritis	-MMTTR̂-
Sarcoidosis	-MMZPW-
Schnitzler syndrome	-MMZPY-
Systemic lupus erythematosus (SLE) / Lupus	-MMZPL-
Undifferentiated connective tissue disease (UCTD) / Latent lupus, incomplete lupus	-MMZPR-
Dermatomyositis / Juvenile dermatomyositis	-MMZKW-
Fibromyalgia	-MMZKY-
Inclusion body myositis	-MMZKL-
Myositis	-MMZKR-
Myasthenia gravis	-MMZTW-
Neuromyotonia / Isaacs' syndrome	-MMZTY-

Paraneoplastic cerebellar degeneration	-MMZTL-
Polymyositis	-MMZTR-
Acute disseminated encephalomyelitis (ADEM) / Perivenous encephalomyelitis / Acute hemorrhagic leukoencephalitis (AHL, AHLE) / Acute necrotizing encephalopathy (ANE) / Acute hemorrhagic encephalomyelitis (AHM) / Acute necrotizing hemorrhagic leukoencephalitis (ANHLE) / Weston-Hurst syndrome /Hurst's disease	-NNSPW-
Acute motor axonal neuropathy	-NNSPY-
Anti-N-Methyl-D-Aspartate (Anti-NMDA) Receptor Encephalitis	-NNSPL-
Balo concentric sclerosis / Balo disease / Schilders disease	-NNSPR-
Bickerstaff's encephalitis	-NNSPŘ-
Chronic inflammatory demyelinating polyneuropathy / Relapsing polyneuropathy (CRP) / chronic inflammatory demyelinating polyradiculoneuropathy / Chronic inflammatory demyelinating polyneuritis	-NNSPH-
Guillain–Barré syndrome / Miller–Fisher syndrome / Landry's paralysis	-NNSKW-
Hashimoto's encephalopathy / Steroid-responsive encephalopathy associated with autoimmune thyroiditis (SREAT) / Nonvasculitic autoimmune meningoencephalitis (NAIM) / Encephalopathy Associated with Autoimmune Thyroid Disease (EAATD)	-NNSKY-
Idiopathic inflammatory demyelinating diseases	-NNSKL-
Lambert–Eaton myasthenic syndrome	-NNSKR-
Multiple sclerosis, pattern II / Primary progressive multiple sclerosis / Relapsing-remitting multiple sclerosis / disseminated sclerosis / encephalomyelitis disseminata	-NNSKŘ-
Oshtoran syndrome	-NNSKH-
Pediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococcus (PANDAS)	-NNSTW-
Progressive inflammatory neuropathy	-NNSTY-
Restless legs syndrome	-NNSTL-
Stiff-person syndrome	-NNSTR-
Sydenham's chorea	-NNSTR̂-
Transverse myelitis	-NNSTH-
Autoimmune retinopathy	-NNŠPW-
Autoimmune uveitis	-NNŠPY-
Cogan syndrome	-NNŠPL-
Glaucoma	-NNŠPR-

Graves' ophthalmopathy	-NNŠPŘ-
Intermediate uveitis / Pars planitis / peripheral uveitis	-NNŠKW-
Ligneous conjunctivitis	-NNŠKY-
Mooren's ulcer	-NNŠKL-
Neuromyelitis optica / Devic's disease	-NNŠKR-
Opsoclonus myoclonus syndrome	-NNŠKŘ-
Optic neuritis	-NNŠTW-
Scleritis	-NNŠTY-
Susac's syndrome / Retinocochleocerebral vasculopathy	-NNŠTL-
Sympathetic ophthalmia	-NNŠTR-
Tolosa–Hunt syndrome	-NNŠTṚ-
Autoimmune inner ear disease (AIED)	-NNŠPH-
Ménière's disease	-NNŠKH-
Behçet's disease, Hughes–Stovin syndrome	-NNÇPW-
Eosinophilic granulomatosis with polyangiitis (EGPA)	-NNÇPY-
Giant cell arteritis / Cranial arteritis / temporal arteritis	-NNÇPL-
Granulomatosis with polyangiitis (GPA)	-NNÇPR-
IgA vasculitis (IgAV) / Anaphylactoid purpura / Henoch-Schonlein purpura / purpura rheumatica / Schönlein–Henoch purpura	-NNÇPŘ-
Kawasaki disease / Kawasaki syndrome / lymph node syndrome / mucocutaneous lymph node syndrome	-NNÇKW-
Leukocytoclastic vasculitis	-NNÇKY-
Lupus vasculitis	-NNÇKL-
Rheumatoid vasculitis	-NNÇKR-
Microscopic polyangiitis (MPA) / Microscopic polyarteritis / microscopic polyarteritis nodosa	-NNÇKŘ-
Podoconiosis / non-filarial elephantiasis	-NNÇTW-
Polyarteritis nodosa (PAN) / Panarteritis nodosa / periarteritis nodosa / Kussmaul disease / Kussmaul–Maier disease	-NNÇTY-
Polymyalgia rheumatica	-NNÇTL-
Urticarial vasculitis	-NNÇTR-

Vasculitis	-NNÇTR-
Chronic fatigue syndrome	-NNTPW-
Complex regional pain syndrome / Amplified Musculoskeletal Pain Syndrome / Reflex Neurovascular Dystrophy / Reflex sympathetic dystrophy	-NNTPY-
Eosinophilic esophagitis	-NNTPL-
Gastritis	-NNTPR-
Interstitial lung disease	-NNTPŘ-
POEMS syndrome	-NNTKW-
Raynaud's phenomenon	-NNTKY-
Primary immunodeficiency	-NNTKL-
Pyoderma gangrenosum	-NNTKR-
IPEX syndrome / X-linked polyendocrinopathy / immunodeficiency and diarrhea-syndrome (XLAAD)	-NNTKŘ-

7.2.8 Idiopathic Diseases/Disorders, Non-Genetic Congenital Disorders, or Diseases/Disorders of Unknown/Uncertain Etiology

The Stems and Specifications of the following roots follow the pattern of the root -ÇK- shown in Sec. 7.2.3 above. They may also be used with the new **ADI** affix.

Agammaglobulinemia	-ÑÑSPW-
Amyloidosis	-ÑÑSPY-
Amyotrophic lateral sclerosis (ALS) / Lou Gehrig's disease / Motor Neuron Disease	-ÑÑSPL-
Anti-tubular basement membrane nephritis	-ÑÑSPR-
Arterio-venous malformation	-ÑÑSPŘ-
Atherosclerosis	-ÑÑSPH-
Atopic allergy	-ÑÑSKW-
Atopic dermatitis	-ÑÑSKY-
Autoimmune peripheral neuropathy	-ÑÑSKL-
Blau syndrome	-ÑÑSKR-
Castleman's disease	-ÑÑSKŘ-

Central hypoventilation syndrome, Congenital central hypoventilation syndromd, Acquired central hypoventilation syndrome / Ondine's curse	-NŠKH-
Chronic obstructive pulmonary disease (including emphysema, chronic bronchitis)	-NŠTW-
Chronic recurrent multifocal osteomyelitis / Majeeed syndrome	-NŠTY-
Complement component 2 deficiency	-NŠTL-
Congenital heart block	-NŠTR-
Contact dermatitis	-NŠTR-
Cushing's syndrome	-NŠTH-
Cutaneous leukocytoclastic angiitis	-NŠPW-
Dego's disease	-NŠPY-
Cerebral palsy	-NŠPL-
Eczema	-NŠPR-
Eosinophilic gastroenteritis	-NŠPŘ-
Erythroblastosis fetalis	-NŠPH-
Fibrodysplasia ossificans progressiva	-NŠKW-
Gastrointestinal pemphigoid	-NŠKY-
Gout	-NŠKL-
Hypogammaglobulinemia	-NŠKR-
Idiopathic giant-cell myocarditis / Giant cell myocarditis	-NŠKR-
Idiopathic pulmonary fibrosis / Fibrosing alveolitis	-NŠKH-
IgA nephropathy / IgA nephritis / Berger's disease / Synpharyngitic Glomerulonephritis	-NŠTW-
Irritable bowel syndrome	-NŠTY-
Ligneous conjunctivitis	-NŠTL-
Narcolepsy	-NŠTR-
Pellucid marginal degeneration (PMD)	-NŠTR-
Rapid-onset obesity with hypothalamic dysregulation, hypoventilation, and autonomic dysregulation (ROHHAD)	-NŠTH-
Rasmussen's encephalitis	-NŠPW-
Serum sickness	-NŠPY-
Spina bifida	-NŠPL-
Spondyloarthropathy	-NŠPR-

Sweet's syndrome	- ŇŇZPŘ -
Takayasu's arteritis	- ŇŇZPH -

7.2.9 Psychological/Behavioral Disorders

The Stems and Specifications of the following roots follow the pattern of the root **-ČK-** shown in Sec. 7.2.3 above. They may also be used with the new **ADI** affix.

Disabilities relating to a deficit in a particular behavior or skill can be expressed by a use of the Type-2 INB/7 or INB/8 affix or other applicable affixes (e.g., speech communication disorders, stuttering, etc., hand-eye coordination, insomnia, clumsiness, etc.). Phobias can be expressed either by use of the Type-2 ENG/1 or ENG/2 affix or by incorporating an appropriate stem into Stem 3 of the root **-ZGR-**.

intellectual disability / intellectual developmental disorder / global development delay	- MMZBW -
autism spectrum disorder	- MMZBY -
attention-deficit hyperactivity disorder	- MMZBL -
bipolar disorder	- MMZBR -
mania	- MMZBŘ -
monopolar depression, depressive disorder	- MMZGW -
generalized anxiety disorder	- MMZGY -
social anxiety disorder	- MMZGL -
panic disorder	- MMZGR -
separation anxiety disorder	- MMZGR̂ -
acute stress disorder	- MMZDW -
adjustment disorder	- MMZDY -
PTSD	- MMZDL -
reactive adjustment disorder	- MMZDR -
dissociative amnesia	- MMZDR̂ -
dissociative identity disorder	- NNZBW -
depersonalization/derealization disorder	- NNZBY -

somatic symptom disorder	-NNZBL-
conversion disorder	-NNZBR-
factitious disorder (e.g., Munchausen syndrome)	-NNZBŘ-
anorexia nervosa	-NNZGW-
bulimia	-NNZGY-
rumination disorder	-NNZGL-
pica	-NNZGR-
binge-eating disorder	-NNZGŘ-
parasomnia (e.g., sleepwalking, night terrors)	-NNZDW-
kleptomania	-NNZDY-
pyromania	-NNZDL-
intermittent explosive disorder	-NNZDR-
conduct disorder	-NNZDŘ-
oppositional defiant disorder	-ÑÑZBW-
substance addiction	-ÑÑZBY-
gambling disorder	-ÑÑZBL-
sex addiction	-ÑÑZBR-
delirium	-ÑÑZBŘ-
neurocognitive disorder	-ÑÑZGW-
schizophrenia	-ÑÑZGY-
catatonia	-ÑÑZGL-
obsessive-compulsive disorder (OCD)	-ÑÑZGR-
body-dysmorphic disorder	-ÑÑZGŘ-
hoarding disorder	-ÑÑZDW-
excoriation disorder	-ÑÑZDY-
personality disorder	-ÑÑZDL-
antisocial personality disorder	-ÑÑZDR-
avoidant personality disorder	-ÑÑZDŘ-
borderline personality disorder	-MMZVL-
dependent personality disorder	-MMZVR-

histrionic personality disorder	-MMZVŘ-
narcissistic personality disorder	-NNZVL-
obsessive-compulsive personality disorder	-NNZVR-
paranoid personality disorder	-NNZVŘ-
schizoid personality disorder	-ŇNZVL-
schizotypal personality disorder	-ŇNZVR-
Tourette syndrome	-ŇNZVŘ-

7.2.10 Miscellaneous Roots Related to Illness

-ŘD- ‘REMEDY / HEAL / RECOVER / RECUPERATE / RESTORE’		
BSC	Stem 1: (to be) a state/act of medically treating, remedying something or someone; to treat [medically], to (try to) remedy something	Stem 2: (to be) a state/act of recuperation/healing/recovery; to recuperate, to heal, to recover Stem 3: (to be) a state/act of restoration; to restore
CTE	(to be) a state of [medical] treatment	
CSV	(to be) a physical act of treating/remedying	
OBJ	(to be) a remedy/treatment	

-ŘDV- ‘MEDICATION/MEDICINE’		
BSC	Stem 1: (to be) an act/state of administering a medicine/medication orally in solid form (e.g., pill, tablet, capsule, etc.); to administer a (solid) oral medication	Stem 2: (to be) an act/state of administering a medicine/medication orally in liquid form (e.g., cough syrup, chemical dissolved in liquid, etc.); to administer a liquid medication Stem 3: (to be) to be) an act/state of administering a medicine/medication via injection; to inject a medication
CTE	(to be) a state of being on a solid oral medication	
CSV	(to be) an act of swallowing a (solid) oral medication; to swallow a pill/tablet/capsule	
OBJ	(to be) the (pill/tablet/capsule of) medication itself	

-ŠKL- ‘PSYCHIATRIC TREATMENT / THERAPY’		
BSC	STEM 1: (to be) an act of psychiatric treatment or therapeutic psychological therapy	STEM 2: (to be) an act of subliminal psychological manipulation STEM 3: (to be) an act of brainwashing [i.e., psychological manipulation to the extent that a person’s personality/motivations/values/memories/beliefs, etc. are changed for covert or nefarious purposes]
CTE	(to be) a state of being under or subject to psychiatric/psychological treatment/therapy	
CSV	(to be) a physical act of administering psychiatric/psychological treatment/therapy; to treat a patient by means of psychiatry/psychological therapy	
OBJ	(to be) the nature/specifics of a (course of) psychiatric/psychological therapy	

7.3 BIOLOGICAL LIFE-FORMS

In addition to roots and stems associated with formalized, hierarchically arranged biological taxonomies (which are beginning in Sec. 7.3.1-+), the following roots and stems are available for informal use when talking about biological life-forms in general:

-ŠW- ‘LIFE-FORM, LIVING THING’		
BSC	STEM 1: (to be) a living being; a life-form; a form of life; to be something that is alive	STEM2: (to be) something vital; manifest vitality; activity consistent with being alive STEM 3: (to be) something reproduced or brought to life; to reproduce [biologically], bring to life
CTE	(to be) the individual essence/soul, set of instincts, or mind of a life-form (that distinguishes it from other individuals)	
CSV	(to be) the physical body or corporeal aspect of a living thing	
OBJ	(to be) an entity/party impacted/affected by the presence of, or interaction with a living being	

As will be seen beginning in Sec. 7.3.1 in the quasi-taxonomic listings of animals, numerous animal classes are divided up into several roots due to the diversity of similar taxonomic/phylogenetic orders, sub-orders, infra-orders, families, super-families, etc. An example of this is the myriad number of moth types. However, it becomes necessary for laypersons to have a simple generic term for ‘moth’ irrespective of the particular type of moth. While the **RES**, **TXN**, and **HSR** affixes listed later below are available to form generic terms, these generic notions of animal types are semantically salient enough to warrant their own “shortcut” roots/stems for non-scientific, non-taxonomic lexical categorization. Such roots/stems are provided here; they follow the same Specification pattern as the root **-ŠW-** above:

-FST- ‘PROKARYOTIC, NON-VISIBLE LIFE FORMS’

1. bacterium
2. archaeon
3. virus

-SV- ‘EUKARYOTIC LIFE FORM’

1. plant
2. animal
3. non-plant / non-animal eukaryote, i.e., protist, fungus, or chromist)

-KST- ‘NON-PLANT & NON-ANIMAL EUKARYOTIC LIFE-FORM’

1. protist (i.e., protozoa, amoeboids, protophytic algae, slime molds)
2. fungus
3. chromist (brown algae, diatoms, water molds)

-LD- ‘TREE / SHRUB / BUSH’

1. tree
2. shrub
3. bush

-LDR- ‘GENERAL TREE TYPE’

1. conifer or conifer-like evergreen tree
2. non-conifer evergreen tree
3. deciduous tree

-LDL- ‘NON-VASCULAR (i.e., PRIMITIVE) PLANT FORM’

1. alga
2. moss
3. hornwort, liverwort, or lichen

-ZHW- ‘GRASS-LIKE, STALK-LIKE PLANT FORM’

1. grass
2. stalk-like plant
3. cereal grain or pseudo-cereal grain (e.g., wheat, rice, buckwheat, amaranth, etc.)

-ZTÇ- ‘FERN-LIKE PLANT’

1. fern
2. eusporangiate fern (e.g., whisk fern, grapefern, horsetail, adder’s tongue)
3. lycopod (e.g., club moss, firmoss, spike moss, quillwort)

-LMY- ‘FLOWERING PLANT’

1. flowering plant/tree/bush
2. herb
3. vine / liana

-VN- ‘BASIC ANIMAL TYPES’

1. animal of land or air (“terroid”)
2. waterlife-animal, animal living in water (“aquoid”)
3. amphibian

-TN- ‘MAMMAL’
<ol style="list-style-type: none"> 1. placental mammal 2. marsupial 3. monotreme (egg-laying mammal)

-L- ‘HUMAN BEING’
<ol style="list-style-type: none"> 1. adult human being 2. human child 3. adolescent human being, “teenager”

-TL- ‘ANIMALS OF THE AIR’ (i.e., capable of self-powered flight)
<ol style="list-style-type: none"> 1. bird 2. flying insect 3. bat

-ZZ- ‘(SMALLER) REPTILE’
<ol style="list-style-type: none"> 1. lizard-like reptile (e.g., lizard, skink, gecko, monitor) 2. snake or legless lizard 3. turtle/tortoise

-JXW- ‘AMPHIBIAN’
<ol style="list-style-type: none"> 1. Salientian amphibian (i.e., frog, toad) 2. Caudatan amphibian (i.e., salamander, newt) 3. Gymnophione (caecilian) amphibian (i.e., snake-like or worm-like amphibian)

-FŇ- ‘NON-PLANT WATERLIFE FORM’
<ol style="list-style-type: none"> 1. motile, free-swimming waterlife form, e.g., fish, eels, whales, octopus, etc. 2. crawling waterlife form, e.g., crustaceans, crabs 3. non-motile/sessile waterlife form, e.g., shellfish, sea urchin, starfish, etc.

-PFT- ‘TYPES OF FISH’
<ol style="list-style-type: none"> 1. skate / ray 2. shark 3. [lobe-finned or ray-finned] fish

-NGL- ‘MOLLUSC [other than cephalopod]’
<ol style="list-style-type: none"> 1. snail or slug 2. bivalve (e.g., clam, mussel, scallop, oyster, cockle, etc.) 3. other non-cephalopod mollusc (e.g., nautilus, chiton, solenogaster, etc.)

-NGW- ‘WORM-LIKE INVERTEBRATE’
<ol style="list-style-type: none"> 1. worm (i.e., annelid worm or nematode worm) 2. flatworm or tapeworm 3. fluke or leech

-NGŘ- ‘OTHER INVERTBRATE’
<ol style="list-style-type: none"> 1. cephalopod (e.g., octopus, squid, cuttlefish, argonaut, etc.) 2. sponge (i.e., poriferan) 3. cnidarian, ctenophore, or placozoan (e.g., jellyfish, coral, sea anemone, hydra, comb jelly, etc.)

-ŽJ- ‘ARTHROPOD’

1. hexapod or chelicerate (i.e., insect or arachnid, including springtail, conehead, dipluran, horseshoe crab, and sea spider)
2. crustacean
3. myriapod (i.e., millipede or centipede)

-ZT- ‘ARACHNID’

1. spider or harvester (a.k.a. harvestman or daddy longlegs)
2. scorpion or solifuge (a.k.a. wind scorpion, camel spider, sun spider)
3. tick or mite

-DP- ‘LARGE DECAPODIAN CRUSTACEAN’

1. lobster / crayfish
2. crab
3. shrimp / prawn

-GLL- ‘BUG-LIKE INSECT’

1. beetle or beetle-like insect (in terms of appearance/behavior)
2. ant or ant-like insect (in terms of behavior/appearance)
3. rounded “bug”-like insect other than beetle (e.g., bed bug, stink bug, junebug, etc.)

-ZZC- ‘STINGING FLYING INSECT’

1. bee, bumblebee or bee-like insect (in terms of appearance/behavior)
2. wasp, hornet, sawfly, or wasp-like insect (in terms of appearance/behavior)
3. gnat / midge / mosquito or similar insect (in terms of appearance/behavior)

-NNZ- ‘FLY-LIKE INSECT’

1. fly or fly-like insect (in terms of appearance/behavior)
2. louse, aphid, thrip or similar insect (in terms of behavior/appearance)
3. lacewing or lacewing-like insect (in terms of appearance/behavior), e.g., stonefly, alderfly, fishfly, antlion, owlfly, etc.

-NV- ‘BUTTERFLY / MOTH’

1. butterfly
2. moth
3. moth-butterfly, butterfly-moth, butterfly-mimicking moth

-KSTW- ‘FUNGUS FUNCTIONAL TYPE / MUSHROOM’

1. mushroom (edible)
2. non-harmful / non-parasitic fungus
3. harmful (i.e., parasitic, pathogenic or poisonous) fungus/mushroom

-KSTY- ‘OTHER FUNGUS-RELATED LIFEFORM’

1. a yeast
2. a mold
3. a lichen

-KSTF- ‘PROTIST-TYPE’
1. non-amoeboid protozoan 2. amoeboid life-form 3. protophytic alga or slime mold

-VŽG- ‘GAMETOPHYTE / SPOROPHYTE / ZYGOTE’
1. gametophyte 2. sporophyte 3. zygote

-ŽŇ- ‘NON-MAMMALIAN LIFE STAGE’			
BSC	STEM 1: (to be) a newborn, newly hatched, newly sprouted, first-stage life-form (e.g., sprout, larva, tadpole, caterpillar, gametophyte , sporophyte , etc.)	STEM 2: (to be) the pupal stage of a metamorphic life-form	STEM 3: (to be) the “birth” or hatching of a life-form from a cocoon, chrysalis, external (shell-bearing) egg, or other interim metamorphic life-stage; to hatch, emerge from a cocoon, emerge from a marsupial pouch, etc.
CTE	(to be) the individual essence/soul, set of instincts, or mind of a first-stage life-form (that distinguishes it from other individuals)	(to be) the state of metamorphosis undergone by a pupa	(to be) the state of having completed a metamorphic life-stage and becoming one’s final corporeal form
CSV	(to be) the physical body or corporeal aspect of a first-stage life-form	(to be) a pupa, i.e., a life-form in a pupal stage of development	(to be) the process of hatching/emerging itself
OBJ	(to be) an entity/party impacted/affected by the presence of, or interaction with a first-stage life-form	(to be) a cocoon or chrysalis	(to be) the discarded cocoon, egg-casing, bud, etc. emerged from

7.3.0.1 Preliminary Note on Quasi-Taxonomic Roots/Stems Denoting Biological Life-forms

Beginning in Section 7.3.1 below, the roots and stems or specific life-forms are presented. The general rule regarding roots associated with biological life-forms is the use of a simple two- or three- (sometimes four-) consonant root to designate the “base level” (i.e., most common or most representative) genus and/or species of a particular class/family/order/sub-order of animals, e.g., common domesticated animals, common insects, common birds, common reptiles, etc. Each of these roots then serves as the basis for expansion of the root by a single consonant (e.g., the adding of **-y**, **-w**, **-l**, **-r**, **-ř**, **-m**, **-n**, **-f**, **-t**, **-v**, etc. and/or the prefixing of **l-**, **r-** or **ř-**) to designate less common genera in the same class/family/order/sub-order or to designate corollary or associated roots.

When the distinction between similar life-forms is a common one, stems are assigned to individual species within a genus. Otherwise, the designation of species and sub-species is to be accomplished via use of a Type-2 $V_X C_S$ affix or via Type-2 stem incorporation, the specific affixes and incorporated roots as-yet-to-be-determined. As an example, Stem No. 3 of the root **-RRN-** ‘OCELOT-LIKE FELINES’ designates any less common species of the genus *Leopardus* other than the ocelot itself (*L. pardalis*) (designated by Stem No. 1) or the margay (*L. wiedii*) (designated by Stem No. 2). Therefore, Stem No. 3 refers to an animal that could be either an oncilla (*L. tigrina*), an Andean mountain cat (*L. jacobita*), a Pampas cat (*L. colocola*), a kodkod (*L. guigna*), a southern tigrina (*L. guttula*), or Geoffroy’s cat (*L. geoffroyi*). To distinguish these individual six species, either an appropriate Type-2 $V_X C_S$ affix would be used or a Type-2 incorporated stem. At this time the author has not yet assigned the specific affixes or stems to be used due to time constraints.

NOTE: The three stems of many of these roots are structured to reflect quasi-trinary divisions within the scientific taxonomies of each animal-type. Often, these quasi-trinary distinctions are of little practical importance to laypersons, in which case the use of Stem “Zero” may be of the most practical value when referring to the particular animal. As an example, the three stems of the root -**MVY**- refer to the three species (or sub-species) of bison; however, most speakers will likely be uninterested in (or ignorant about) distinguishing between a plains bison versus a wood bison versus a wisent; thus, use of Stem “Zero” to refer simply to a bison is convenient. (Alternately, use of Stem 1 with additional morphology such as a “fuzzy” configuration, or RPV Essence, or the REA/7 affix may be used.)

7.3.0.2 Affixes Used with Taxonomic Stems for Genus or Species or Sub-Species Identification

In addition to Type-2 stem-incorporation, the following affixes are available to use with biological life-form stems to help differentiate (or, if used as a Type-2 affix, to formally name) the species or sub-species of a particular genus, or in cases where a stem refers to an entire family or class of life-forms (as is the case for less familiar or less differentiated life-forms such as annelid worms), to identify or name a particular genus. (Note that the use of affixes to identify species of a genus are certainly not limited to the following affixes; these affixes are presented here only because they have been specifically designed for use with such stems. Conversely, these affixes may also be used with any relevant/applicable stem, and are not reserved solely for use with stems denoting biological/taxonomic life-forms.)

-zč	PG1 Physical Features Based on Geography 1 for Species or Sub-Species Differentiation
1	having physical features characteristic of mainland Asian origin or environment
2	having physical features characteristic of Southeast Asian/Polynesian origin or environment
3	having physical features characteristic of Central Asian origin or environment
4	having physical features characteristic of the Indian sub-continent in origin or environment
5	having physical features characteristic of Western Asian/Mesopotamian origin or environment
6	having physical features characteristic of Western European/Nordic origin or environment
7	having physical features characteristic of Eastern European/Balkans origin or environment
8	having physical features characteristic of sub-Saharan African origin or environment
9	having physical features characteristic of North African/Mediterranean origin or environment

-zj	PG2 Physical Features Based on Geography 2 for Species or Sub-Species Differentiation
1	having physical features characteristic of Arctic origin or environment
2	having physical features characteristic of Mediterranean Sea origin or environment
3	having physical features characteristic of Pacific Ocean or environment
4	having physical features characteristic of North Atlantic origin or environment
5	having physical features characteristic of South Atlantic origin or environment
6	having physical features characteristic of South Pacific oceanic origin or environment
7	having physical features characteristic of Indian Ocean origin or environment
8	having physical features characteristic of Antarctic origin or environment
9	having physical features characteristic of New World / American origin or environment

-zg	Biogeographic Realm/Ecozone
1	inhabiting or originating in the Palearctic ecozone
2	inhabiting or originating in the Nearctic ecozone
3	inhabiting or originating in the Holarctic ecozone
4	inhabiting or originating in the Afrotropic ecozone
5	inhabiting or originating in the Neotropic ecozone
6	inhabiting or originating in the Australasia ecozone
7	inhabiting or originating in the Indomalaya ecozone
8	inhabiting or originating in the Oceania ecozone
9	inhabiting or originating in the Antarctic ecozone

-šb	GEO Geographic or Environmental Niche for Species or Sub-Species Differentiation
1	inhabiting or associated with high mountains
2	inhabiting or associated with the desert
3	inhabiting or associated with rocky terrain
4	inhabiting or associated with the tundra
5	inhabiting or associated with brushland, scrubland, bushy terrain
6	inhabiting or associated with swampy/boggy/marshy terrain
7	inhabiting or associated with savannah/grassland
8	inhabiting or associated with trees / arboreal
9	inhabiting or associated with the rainforest

-šd	WBN Water-based Environmental Niche for Species or Sub-Species Differentiation
1	inhabiting or associated with islands
2	inhabiting or associated with offshore / shallow ocean dwelling
3	inhabiting or associated with the seashore / littoral
4	inhabiting or associated with estuaries/lagoons
5	inhabiting or associated with saltwater marshes
6	inhabiting or associated with freshwater lakes
7	inhabiting or associated with freshwater ponds
8	inhabiting or associated with rivers / riparian
9	inhabiting or associated with streams or brooks

-šg	OBN Ocean-based Environmental Niche for Species or Sub-Species Differentiation
1	inhabiting or associated with the intertidal zone
2	inhabiting or associated with a coral reef
3	inhabiting or associated with the neritic zone
4	inhabiting or associated with the pelagic zone
5	inhabiting or associated with seamount
6	inhabiting or associated with hydrothermal vent
7	inhabiting or associated with a cold seep
8	inhabiting or associated with the demersal zone
9	inhabiting or associated with the benthic zone

-zf	ENS Environmental Niche for Species or Sub-Species Differentiation
1	active at twilight / crepuscular
2	active at night / nocturnal
3	active around dawn
4	active during the morning
5	active during the day / diurnal
6	sessile, not motile -- adhering to a substrate by direct attachment (not via a stalk/stipe/pedicel/connecting medium)
7	attached to a substrate via a stalk/stipe/pedicel/connecting medium
8	motile in reaction to heat
9	motile in reaction to light

-tč	DBM Distinctive Bodily/Fur Markings for Species or Sub-Species Differentiation
1	having rows of lighter-colored spots
2	having rows of darker-colored spots
3	having lighter-colored facial band(s)
4	having darker-colored facial band(s)
5	having a distinctive pattern of fur/bodily markings colored differently from the rest of the body/fur
6	having lighter-colored dorsal band(s) or stripe(s)
7	having darker-colored dorsal band(s) or stripe(s)
8	having lighter-colored lateral band(s) or stripe(s)
9	having darker-colored lateral band(s) or stripe(s)

-vž	MB1 Morphological Bodily Distinctions for Species or Sub-Species Differentiation 1
1	having a longer-than-average tail
2	having a larger-than-average-mouth/beak/gullet
3	having larger-than-average eyes
4	having larger/longer-than-average wings/wingspan
5	having larger/longer-than-average nose/snout/proboscis
6	having larger/longer-than-average limbs
7	having a larger or more robust body than average
8	being longer/taller than average
9	being more rotund/fatter/thicker than average

-tj	MB2 Morphological Bodily Distinctions for Species or Sub-Species Differentiation 2
1	having a shorter-than-average tail
2	having a smaller-than-average-mouth/beak/gullet
3	having smaller-than-average eyes
4	having smaller/shorter-than-average wings/wingspan
5	having smaller/shorter-than-average nose/snout/proboscis
6	having smaller/shorter-than-average limbs
7	having a smaller body than average
8	being shorter than average
9	being more slender/streamlined than average

-cd	RES Resemblances to Other Species
1	having behavioral characteristics similar to X
2	having eating/foraging/hunting habits similar to X
3	having a voice/call/cry/whistle, etc. similar to X
4	inhabiting an environmental niche similar to X
5	having various factors of appearance and behavior similar to X
6	having a facial resemblance to X
7	having a bodily form similar to X
8	having bodily markings similar to X
9	having nesting/parenting/burrowing habits similar to X

The PTY affix can also be utilized to designate species differentiation.

-zv	SYM Symbiotic Relationship
1	in an obligate [i.e., required/mandatory/necessary] relationship with another party to mutual benefit, i.e., obligate mutualistic relationship
2	in an obligate [i.e., required/mandatory/necessary] relationship to the benefit of oneself but neutral to the other party, i.e., obligate commensal relationship
3	in an obligate [i.e., required/mandatory/necessary] relationship to the benefit of oneself but harmful to the other party, i.e., obligate parasitic relationship
4	in a facultative [i.e., optional] relationship with another party to mutual benefit, i.e., optionally mutualistic relationship
5	in a facultative [i.e., optional] relationship to the benefit of oneself but neutral to the other party, i.e., optional commensal relationship
6	in a facultative [i.e., optional] relationship to the benefit of oneself but harmful to the other party, i.e., optional parasitic relationship
7	in an obligate or facultative relationship with another party of no benefit to oneself but advantageous/beneficial to the other party
8	in an obligate or facultative relationship with another party harmful to oneself but advantageous/beneficial to the other party
9	in a competitive relationship with another party [potentially] harmful to both parties

The eleven **Areal/Cultural Association** affixes may also be used with taxonomic genus/species stems (see v.0.7 of the Affixes document)

7.3.0.3 Affixes for Grouping Biological Life-Form Roots/Stems into Classificatory Schemata/Taxonomies

-bv	TXN Taxonomic Classification Hierarchy (to be added to the Base Root forms for various groupings)	Type-2 TXN affixes are used specifically for biological taxonomic classification, as listed below:
1	X as representative of a 3rd-level sub-grouping of the basic-level grouping	the sub-species or strain of which X is a member
2	X as representative of a sub-sub-group or sub-sub-section of X's base-level group	the species of which X is a member
3	X as representative of a sub-group or sub-section of X's base-level group	the genus of which X is a member
4	X as the basic or common hierarchical level representative of a group; X as member, X as representative	the tribe of which X is a member
5	the "tribe", group, club, section of which X is a member	the family of which X is a member
6	the "family" of which X is a member; the grouping to which X's "tribe"/club/group/section belongs	the order of which X is a member
7	3rd-order hierarchical super-group of which X is a member; the grouping to which the grouping containing X's group/section belongs	the class of which X is a member
8	4th-order hierarchical super-group of which X is a member	the phylum of which X is a member
9	5th-order hierarchical super-group of which X is a member	the kingdom of which X is a member

-dv	HSR Hierarchical Sub- and Super-Rankings
1	sub-sub- (two degree of ranking below)
2	sub- (one degrees of ranking below)
3	comprising some of a section; some of the sub-sections of a section
4	comprising most of a section but not including all sub-sections; most of the sub-sections of a section
5	comprising more than one sub-section
6	comprising more than one section
7	comprising at least one section and at least one subsection of another section
8	super- (one degree of ranking above)
9	super-super (two degrees of ranking above)

7.3.0.4 Affixes for Describing Extinct Genera

With few exceptions, the list of quasi-taxonomic roots for life-forms below do not include extinct genera. To signify/name an extinct genus, choose an extant genus in the same family/order, etc., apply the appropriate RES affix (shown above), then add the new PEB affix in Degree-9 shown below, along with one of the additional affixes shown below indicating a particular era or epoch (if signifying a fossil species).

-rç-	PEB Overall Presence/Participation Within an Environmental Niche or Biosphere
1	dominant component/feature/element/life-form/factor
2	near-dominant
3	thriving
4	up-and-coming, close to thriving
5	newfound / newly arrived / newly present
6	declining
7	threatened
8	near-extinct
9	extinct

-xn-	PZE Paleozoic Era
1	of/from/during the Paleozoic Era
2	of/from/during the Early (or Lower) or Middle Cambrian Period
3	of/from/during the Late (Upper) Cambrian epoch or Furongian period
4	of/from/during the Ordovician epoch
5	of/from/during the Silurian epoch
6	of/from/during the Devonian epoch
7	of/from/during the Mississippian period of the Carboniferous epoch
8	of/from/during the Pennsylvanian period of the Carboniferous epoch
9	of/from/during the Permian epoch

-pn-	MZE Mesozoic Era
1	of/from/during the Mesozoic Era
2	of/from/during the Early (or Lower) Triassic epoch
3	of/from/during the Middle Triassic epoch
4	of/from/during the Late (or Upper) epoch
5	of/from/during the Early (or Lower) Jurassic epoch
6	of/from/during the Middle Jurassic epoch
7	of/from/during the Late (or Upper) Jurassic epoch
8	of/from/during the Early (or Lower) Cretaceous epoch
9	of/from/during the Late (or Upper) Cretaceous epoch

-gn-	CZE Cenozoic Era
1	of/from/during the Cenozoic Era
2	of/from/during the Paleocene epoch
3	of/from/during the Eocene epoch
4	of/from/during the Oligocene epoch
5	of/from/during the Miocene epoch
6	of/from/during the Pliocene epoch
7	of/from/during the Pleistocene epoch
8	of/from/during the Holocene epoch
9	of/from/during the Anthropocene epoch

7.3.1 Animals

All of the following stems referring to living animals have the following Specification structure:

BSC	(to be) an animal as a holistic entity, including its physical/corporeal body and its and mental identity and living essence; to live/be alive
CTE	(to be) that which gives a particular animal its individual identity; the living essence or mental identity of an animal
CSV	(to be) the physical body of an animal; the corporeal aspect of an animal
OBJ	(to be) an activity engaged in by an animal; what an animal is doing; to act (as a particular animal species does)

At this time, the author has completed the listing of roots and stems associated with the kingdoms Animalia and Plantae. They are listed below, grouped by more or less familiar taxonomic classification schemes, with pragmatic factors such as degree of familiarity/utility among laypersons taken into account. For example, animal orders/classes familiar to laypersons such as mammals have many stems at the species level, while unfamiliar orders/classes such as Annelids forego taxonomic lexicalization entirely and instead lexicalize common-sense, superficial morphological distinctions, i.e., ‘earthworm’ vs. ‘leech’, vs. ‘other ringed/segmented worm’.

Lexical roots/stems for other biological domains/kingdoms (fungi, unicellular eukaryotes, bacteria, archaea) remain to be worked on.

7.3.1.1 Mammals

Feliforms

-RR- ‘CAT’ 1. (*Felis catus*) cat (domestic) 2. (genus *Felis*, other than *catus* species) wildcat 3. (genera *Prionailurus* or *Otocolobus*) leopard cat, fishing cat, flat-headed cat, rusty-spotted cat, Pallas’s cat/manul

-RRW- ‘LARGE FELINE’ (genus *Panthera*)’ 1. tiger 2. lion 3. jaguar

-RRY- ‘LEOPARD’ (genera *Panthera* and *Neofelis*) 1. leopard 2. snow leopard 3. clouded leopard

-RRM- ‘LYNX-LIKE ANIMAL’ (genus *Lynx*) 1. (*L. rufus*) bobcat 2. (*L. lynx*, *L. pardinus*) Eurasian or Iberian lynx 3. (*L. canadensis*) Canada lynx

-RRN- ‘OCELOT-LIKE FELINE’ (genus *Leopardus*)’ 1. ocelot 2. margay 3. other ocelot-like feline (e.g., oncilla, pampas cat, kodkod, tigrina, etc.)

-RRL- ‘PUMA-LIKE FELINE’ 1. (genus *Acinonyx*) cheetah 2. (genus *Puma*) cougar (a.k.a. puma/panther/catamount) 3. (genus *Herpailurus*) jaguarundi

-RRF- ‘BAY CAT FELINE’ (genera *Catopuma*, *Pardofelis*)’ 1. bay cat 2. Asian golden cat 3. marbled cat

-RRṬ- ‘CARACAL FELINE’ (genera *Caracal*, *Leptailurus*)’ 1. caracal 2. African golden cat 3. serval

-RRC- ‘OTHER FELIFORM’ 1. (genus *Nandinia*) African palm civet 2. (genus *Prionodon*) banded linsang 3. (genus *Prionodon*) spotted linsang

Canines

- ZV**- ‘COMMON CANINE’ 1. (*Canis lupus familiaris*, *C. lupus dingo*) domestic dog, dingo 2. (*Canis lupus*) gray wolf 3. (*Canis latrans*) coyote (= American jackal)
- ZVY**- ‘OTHER CANINE’ 1. (genus *Canis*; species *anthus*, *simensis*, *aureus*, *mesomelas*, *adustus*) African wolf, Asian wolf, jackal 2. (genus *Cuon*) dhole, Asiatic wild dog 3. (genus *Lycaon*) African wild dog/painted wolf
- ZVW**- ‘FOX’ 1. (*Vulpes vulpes*) red fox 2. (other *Vulpes* species: *zerda*, *cana*, *chama*, *rueppellii*, *corsac*, *ferrilata*, *macrotis*, *lagopus*) fox 3. (genus *Otocyon*) bat-eared fox
- ZVL**- ‘SOUTH AMERICAN CERDOCYONINE FOX/DOG/WOLF’ 1. (genus *Lycalopex*; species *vetulus*, *sechurae*, *fulvipes*, *gymnocercus*, *griseus*, *culpaeus*) [South American] fox 2. (genus *Speothos*) bush dog 3. other South American cerdocyonine canine (e.g., genera *Chrysocyon*, *Dusicyon*, *Cerdocyon*, *Atelocynus*)
- ZVR**- ‘ADDITIONAL CANINE GENUS’ 1. (genus *Urocyon*) gray fox 2. (genus *Urocyon*) island fox 3. (genus *Nyctereutes*) raccoon dog

Ovids

- NÇ**- ‘GOAT-LIKE ANIMAL’ 1. (*Capra aegagrus hircus*) domestic goat 2. ibex 3. (genera *Capra*, *Hemitragus*, *Arabitragus*, *Ammotragus*) wild goat, tahr, tur, markhor
- NÇW**- ‘SHEEP-LIKE ANIMAL’ 1. (*Ovis aries*) domestic sheep 2. (genus *Ovis*, other than *aries* species) wild sheep, mouflon, argali, urial, dall 3. (genera *Nilgritragus*, *Pseudois*) bharal, dwarf blue sheep, Nilgiri tahr
- NÇL**- ‘OTHER CAPRINOID ANIMAL’ 1. (genus *Capricornis*) serow 2. (genus *Nemorhaedus*) goral 3. (genera *Oreamnos*, *Rupicapra*) mountain goat, chamois
- NÇR**- ‘OVIBOVINE’ 1. (genus *Ovibos*) musk-ox 2. (genus *Budorcas*) takin 3. golden takin
- NÇŘ**- ‘ANTELOPE’ 1. (genus *Hippotragus*) antelope 2. (genus *Oryx*) oryx, gemsbok 3. (genus *Addax*) addax
- NÇF**- ‘ALCELAPHINE ANTELOPE’ 1. (genus *Alcelaphus*) hartebeest 2. (genus *Connochaetes*) wildebeest 3. (genera *Damaliscus*, *Beatragus*) topi, bontebok, blesbok, tsessebe, korrigum, hirola
- NÇT**- ‘ANTELOPE-LIKE ANIMAL’ 1. (genus *Aepyceros*) impala 2. (genera *Gazella*, *Eudorcas*, *Nanger*, *Procapra*, *Antidorcas*) gazelle, springbok 3. (genera *Litocranius*, *Antelope*, *Ammodorcas*) East-African or Asian antelope (e.g., dibatag, gerenuk, blackbuck)
- NÇV**- ‘DWARF ANTELOPE’ 1. (genus *Madoqua*) dik-dik 2. (genera *Neotragus*, *Nesotragus*) Bates’ pygmy antelope, suni, royal antelope 3. (genera *Beira*, *Oreotragus*, *Ourebia*, *Raphicerus*) beira, klipspringer, oribi, steenbok, grysbok
- NÇM**- ‘DUIKER’ 1. (genus *Cephalophus*) duiker 2. (genus *Philantomba*) blue duiker, Maxwells’s duiker, Walter’s duiker 3. (genus *Sylvicapra*) common duiker
- NÇN**- ‘REDUNCINE ANTELOPE’ 1. (genus *Redunca*) reedbuck 2. (*Kobus ellipsiprymnus*) waterbuck 3. (genus *Kobus* other than *ellipsiprymnus* species) kob, puku, lechwe

Bovines

- MV**- ‘CATTLE’ 1. (*Bos primigenius*) cow/bull, cattle, auroch 2. (subgenus *Bibos*) gaur, gayal/mithun, banteng 3. (subgenera *Poephagus*, *Novibos*) yak, kouprey
- MVY**- ‘BISON’ 1. (*Bison bison bison*) American plains bison 2. (*Bison bison athabasca*) American wood bison 3. (*Bison bonasus*) European bison/wisent
- MVW**- ‘WATER BUFFALO’ 1. (genus *Bubalus*) Asian water buffalo 2. (genus *Bubalus*) anoa, tamaraw 3. (genus *Syncerus*) African water buffalo
- MVL**- ‘TRAGELAPHINE BOVINE’ 1. (genus *Taurotragus*) common eland, giant eland 2. (genus *Tragelaphus*) greater and lesser kudu, nyala, mountain nyala 3. (genus *Tragelaphus*) bongo, sitatunga, kéwel, imbabala/bushbuck
- MVR**- ‘BOVINE-RELATED ANIMAL’ 1. (genus *Giraffa*) giraffe 2. (genus *Okapia*) okapi 3. (genus *Pseudoryx*) saola
- MVŘ**- ‘OTHER BOVINE-RELATED ANIMAL’ 1. (genus *Antilocapra*) pronghorn 2. (genera *Hyemoschus*, *Moschiola*) chevrotain 3. (genus *Tragulus*) mouse-deer
- MVM**- ‘BOVINE HYBRID’ 1. dzo/yakow (cow/bull + yak) 2. “beefalo”/“zubron” (cow + bison) 3. “yakalo” (bison + yak)

Cervines

- LV- 'CERVINE (OLD WORLD DEER) (genera *Cervus*, *Rusa*)' 1. [Old World] deer 2. [American] elk, wapiti 3. (genera other than *Cervus* or *Rusa*) hog deer, fallow deer, chital, swamp deer, thamin
- LVW- 'LARGER CAPREOLINE (NEW WORLD DEER) 1. (genus *Alces*) moose / Eurasian elk 2. (genus *Rangifer*) reindeer/caribou 3. (genus *Blastocerus*) marsh deer
- LVY- 'SMALLER CAPREOLINE (NEW WORLD DEER)' 1. (genus *Mazama*) brocket 2. (genus *Hippocamelus*) taruca, huemul 3. (genera *Capreolus*, *Ozotoceros*, *Pudu*, *Odocoileus*) roe deer, pudu, pampas deer, white-tailed deer, mule deer
- LVR- 'OTHER DEER(-LIKE ANIMAL)' 1. (genus *Muntiacus*) muntjac 2. (genus *Elaphodus*) tufted deer 3. (genus *Moschus*) musk deer

Ursids

- RH- 'BEAR (Genus *Ursus*)' 1. Black Bear (species *americanus*) 2. Grizzly Bear (species *horribilis*) 3. Big Brown Bear (species *arctos*)
- RHM- 'OTHER URSUS BEAR SPECIES' (Genus *Ursus* [previously *Thalarctos*]) 1. Polar Bear (species *maritimus*) 2. Sun bear (species *malayanus*) 3. Sloth bear (species *ursinus*)
- RHN- 'OTHER BEAR GENUS' 1. giant panda (genus *Ailuropoda*) 2. Qinling panda (genus *Ailuropoda*) 3. spectacled bear (genus *Tremarctos*)

Musteloids

- ČT- 'PROCYONINE' 1. (genus *Procyon*) raccoon 2. (genera *Nasua*, *Nasuella*) coati 3. (genus *Bassariscus*) ringtail cat, cacomistle
- ČTW- 'OTHER PROCYONID' 1. kinkajou 2. olingo 3. olinguito
- ČTY- 'MUSTELID' 1. (genus *Mustela*) weasel/polecat/stoat/European mink 2. ferret (= genus *Mustela*; domesticated weasel/polecat) 3. (genus *Neovison*) American mink
- ČTL- 'GULONINE' 1. (genera *Martes*, *Pekania*) marten/sable/fisher 2. (genus *Gulo*) wolverine 3. (genus *Eira*) tayra
- ČTR- 'OTTER' 1. (genus *Enhydra*) sea otter 2. (genus *Lontra*) river otter 3. other otters (genera *Aonyx*, *Lutra*, *Hydricis*, *Lutrogale*, *Pteronura*)
- ČTR- 'BADGER' 1. (genus *Taxidea*) American badger 2. (genus *Meles*) European/Asian/Japanese badger 3. (genus *Arctonyx*) hog badger
- ČTF- 'SKUNK' 1. (genera *Mephitis*, *Spilogale*) skunk 2. (genus *Conepatus*) hognose skunk 3. (genus *Mydaus*) stink badger
- ČTÇ- 'ICTONYCHINEA' 1. (genus *Galictis*) grison 2. (genera *Ictonyx*, *Vormela*) striped polecat, marbled polecat 3. (genus *Lyncodon*, *Poecilogale*) Patagonian weasel, African striped weasel
- ČTH- 'OTHER MUSTELOID' 1. (genus *Ailurus*) red panda 2. (genus *Melogale*) ferret-badger, 3. (genus *Mellivora*) honey badger

Suids

- PX- 'SUID' 1. (*Sus scrofa domestica*) domestic pig 2. (*Sus scrofa*) wild boar 3. (other *Sus* species) warty pig, bearded pig
- PXW- 'OTHER SUID' 1. (genus *Porcula*) pygmy hog 2. (genus *Potamochoerus*) bushpig, red river hog 3. (genus *Babyrusa*) babirusa
- PXL- 'SUID-LIKE ANIMAL' 1. (genus *Phacochoerus*) warthog 2. (genus *Hylochoerus*) giant forest hog 3. (genus *Tayassu*) peccary/javelina/skunk pig

Hippopotamus

-VD- HIPPOPOTAMUS 1. (genus *Hippopotamus*) hippopotamus 2. (genus *Choeropsis*) pygmy hippo

Cetaceans

-BŽ- ‘CETACEAN’ 1. baleen whale 2. toothed whale 3. delphinoid (includes oceanic dolphins, river dolphins, porpoises, and narwhals)

-BŽW- ‘SPERM WHALE’ 1. (genus *Physeter*) sperm whale 2. (*Kogia breviceps*) pygmy sperm whale 3. (*Kogia sima*) dwarf sperm whale

-BŽY- ‘RIVER DOLPHIN’ 1. (genus *Platanista*) Asian river dolphin 2. (genus *Inia*) South American river dolphin 3. (genus *Pontoporia*) La Plata dolphin/franciscana

-BŽL- ‘BEAKED WHALE’ 1. (genus *Berardius*) giant beaked whale 2. (genus *Hyperoodon*) bottlenose whale 3. (genera *Indopacetus*, *Mesoplodon*, *Tasmacetus*, *Ziphius*) small beaked whale

-BŽR- ‘OCEANIC DOLPHIN’ 1. (genera *Delphinus*, *Tursiops*, *Lissodelphis*, *Sotalia*, *Sousa*, *Stenella*, *Cephalorhynchus*, *Grampus*, *Lagenodelphis*, *Lagenorhynchus*) dolphin 2. (genus *Orcinus*) killer whale 3. (genera *Feresa*, *Pseudorca*) pygmy killer whale, false killer whale

-BŽŘ- ‘OTHER OCEANIC DOLPHIN’ 1. (genus *Globicephala*) pilot whale 2. (genus *Peponocephala*) melon-headed whale 3. (genus *Orcaella*) snubfin dolphin

-BŽM- ‘PORPOISE’ 1. (genus *Phocoena*) porpoise 2. (genus *Neophocoena*) finless porpoise 3. (genus *Phocoenoides*) Dall’s porpoise

-BŽN- ‘MONODONT DELPHINOID’ 1. (genus *Delphinapterus*) beluga whale, white whale 2. (genus *Monodon*) narwhal 3. [stem unassigned]

Camelids

-ŇŁW- ‘CAMEL (genus *Camelis*)’ 1. dromedary camel 2. domesticated bactrian camel 3. wild bactrian camel

-ŇŁY- ‘LAMINID’ 1. (genus *Lama*) llama, guanaco 2. (*Vicugna pacos*) alpaca 3. (*Vicugna vicugna*) vicuña

Rhinoceros

-PŽ- ‘RHINOCEROS’ 1. (genus *Rhinoceros*) Indian & Javan rhinoceros 2. (genus *Dicerorhinus*) Sumatran rhinoceros 3. (genera *Ceratotherium*, *Diceros*) African white and black rhinoceros

Tapirs

-XJ- ‘TAPIR’ (genus *Tapirus*) 1. Central American tapir 2. South American and Mountain tapir 3. Asian tapir

Equines

-XC- ‘EQUINE (genus *Equus*)’ 1. (subgenus *ferus*) horse 2. (subgenus *asinus*) ass, kiang, onager, kulan, donkey 3. (subgenus *hippotigris*) zebra

-XCW- ‘EQUINE HYBRID’ 1. mule 2. hinny 3. “zebroid” (including “zorse”, “zeedonk”, “zony”)

Viverroids

-ZB- ‘VIVERRID’ 1. (Viverrines and Hemigalines: genera *Viverra*, *Viverricula*, *Civettictis*, *Hemigalus*, *Cynogale*, *Diplogale*, *Chrotogale*) civet 2. (Paradoxurines: genera *Paradoxurus*, *Arctictis*, *Paguma*, *Macrogalidia*, *Arctogalidia*) [Asian] civet, binturong/bearcat 3. (Genettines: genera *Genetta*, *Poiana*) genet, oyan or African linsang

-ZBY- ‘HYAENA’ 1. (genus *Crocota*) spotted hyaena 2. (genera *Hyaena*, *Parahyaena*) hyaena (striped, brown) 3. (genus *Proteles*) aardwolf

-ZBW- ‘MONGOOSE’ 1. (Herpestine subfamily: genera *Herpestes*, *Atilax*, *Cynictis*, *Ichneumia*, *Bdeogale*, *Galerella*, *Rhynchogale*, *Paracynictis*) mongoose 2. (Mongotine subfamily: genera *Mungos*, *Suricata*, *Crossarchus*, *Helogale*, *Dolgale*, *Liberiictis*) mongoose, meerkat, kusimanse, dwarf mongoose 3. (Euplerine and Galidiine subfamilies: genera *Cryptoprocta*, *Eupleres*, *Fossa*, *Galidia*, *Galidictus*, *Mungotictis*, *Salanoia*) fossa, falanouc, vontsira, Malagasy mongoose, Malagasy civet

Eulipotyphla (Hedgehogs, Gymnures, Shrews, Moles, Shrew-Moles, Desmans, Solenodons)

-DX- ‘HEDGEHOG’ 1. (genus *Erinaceus*) common hedgehog 2. (genus *Atelerix*) African hedgehog 3. (genera *Hemiechinus*, *Mesechinus*, *Paraechinus*) Asian hedgehog

-DXW- ‘MOONRAT/GYMNURE’ 1. (genus *Echinosorex*) moonrat 2. (genera *Hylomys*, *Neohylomys*, *Podogymnura*) gymnure 3. (genus *Neotetracus*) shrew gymnure, shrew hedgehog

-DXL- ‘SHREW’ 1. (Crociturines; genera *Crocituria*, *Diplomesodon*, *Feroculus*, *Palawanosorex*, *Paracrocituria*, *Ruwenzorisorex*, *Scutisorex*, *Solisorex*, *Suncus*, *Sylvisorex*) white-toothed shrew, large-headed shrew, armored shrew / hero shrew, forest shrew 2. (Myosoricines; genera *Myosorex*, *Congosorex*, *Surdisorex*) African shrew 3. (Soricines; genera *Anourosorex*, *Blarinella*, *Blarina*, *Cryptotis*, *Chimarrogale*, *Chodsigoa*, *Episoriculus*, *Nectogale*, *Neomys*, *Soriculus*, *Megasorex*, *Notiosorex*, *Sorex*) red-toothed shrew

-DXR- ‘MOLE/SHREW-MOLE/DESMAN/SOLENOTODON’ 1. (genera *Condylura*, *Parascalops*, *Scalopus*, *Scapanulus*, *Scapanus*, *Uropsilus*, *Euroscaptor*, *Mogera*, *Parascaptor*, *Scaptorchirus*, *Talpa*, *Scaptonyx*, *Dymecodon*, *Urotrichus*, *Neurotrichus*) mole, shrew-mole 2. (genera *Desmana*, *Galemys*) desman 3. (genus *Solenodon*) solenodon

Leporiforms And Rodents

-BZ- ‘RABBIT/HARE/PIKA’ 1. (genera *Nesolagus*, *Poelagus*, *Pronolagus*, *Romerolagus*, *Sylvilagus*, *Brachylagus*, *Caprolagus*, *Oryctolagus*, *Bunolagus*, *Pentalagus*) rabbit/bunny/coney 2. (genus *Lepus*) hare, jackrabbit 3. (genus *Ochotona*) pika

-BZW- ‘BEAVER’ 1. (*Castor canadensis*) North American beaver 2. (*Castor fiber*) Eurasian beaver 3. (genus *Aplodontia*) mountain beaver

-BZY- ‘CHIPMUNK/MARMOT/PRAIRIE DOG’ 1. (genera *Tamias*, *Eutamias*, *Neotamias*) chipmunk 2. (genus *Marmota*) marmot 3. (genus *Cynomys*) prairie dog

-BZL- ‘SQUIRREL’ 1. (genera *Spermophilus*, *Uroditellus*, *Notoditellus*, *Ammospermophilus*, *Otospermophilus*, *Callospermophilus*, *Xerospermophilus*, *Ictidomys*, *Atlantoxerus*, *Xerus*, *Spermophilopsis*, *Epixerus*, *Funisciurus*, *Heliosciurus*, *Myosciurus*, *Paraxerus*, *Protoxerus*, *Callosciurus*, *Dremomys*, *Exilisciurus*, *Glyphotes*, *Hyosciurus*, *Lariscus*, *Menetes*, *Nannosciurus*, *Prosciurillus*, *Rhinosciurus*, *Rubrisciuris*, *Sundasciurus*, *Tamiops*, *Funambulus*, *Ratufa*) ground squirrel, Asian ornate squirrel, Oriental giant squirrel 2. (genera *Sciurus*, *Rheithrosciurus*, *Microsciurus*, *Scirillus*, *Tamiasciurus*, *Sciurillus*) tree squirrel, neotropical pygmy squirrel 3. (genera *Eoglacomys*, *Glaucomys*, *Hylomys*, *Petaurillus*, *Petinomys*, *Aeretes*, *Aeromys*, *Belomys*, *Biswamoyopterus*, *Eupetaurus*, *Petaurista*, *Pteromys*, *Pteromyscus*, *Trogopterus*) flying squirrel

-BZR- ‘VOLE/LEMMING/MUSKRAT’ 1. (genera *Arvicola*, *Blanfordimys*, *Chionomys*, *Lasiopodomys*, *Lemmings*, *Microtus*, *Neodon*, *Phaiomys*, *Proedromys*, *Volemys*, *Ellobius*, *Alticola*, *Caryomys*, *Eothenomys*, *Hyperacrius*, *Myodes*, *Dinaromys*, *Prometheomys*, *Arborimus*, *Phenacomys*) vole, water vole, mole-vole, snow vole, tree vole, heather vole 2. (genera *Lemmus*, *Lagurus*, *Eolagurus*, *Dicrostonyx*, *Myopus*, *Synaptomys*) lemming, steppe lemming, bog lemming, collared lemming 3. (genera *Ondatra*, *Neofiber*) muskrat

-BZŔ- ‘HAMSTER’ 1. (genera *Cricetus*, *Allocricetulus*, *Cansumys*, *Tscherskia*) hamster 2. (genus *Mesocricetus*) golden hamster 3. (genera *Cricetulus*, *Phodopus*) dwarf hamster

-BZM- ‘RAT’ 1. (Murid/Old world rats; Murines, Lophiomyines, Leimacomyines; numerous genera) rat 2. (Sigmodontine and Tylomyine New World/South American rats; numerous genera) cotton rat, rice rat, marsh rat, fish-eating rat, water rat, forest rat, swamp rat, bunny rat, conyrrat, tapecua, giant rat, vesper rat, climbing rat 3.

(Neotomine, Nyctomyine, Nesomyid and Deomyine rats; numerous genera) woodrat, isthmus rat, hamster-rat, pouched rat, giant pouched rat, antsangy, tufted-tail rat, short-tailed rat, brush-furred rat, link rat

-BZN- ‘MOUSE’ 1. (Murid/Old world mice; numerous genera) mouse 2. (Sigmodontine/New World/South American mice; numerous genera) South American water mouse, bristly mouse, spiny mouse, cane mouse, montaine mouse, arboreal mouse, climbing mouse, Oldfield mouse, grass mouse, long-clawed mouse, brucie, bolo mouse, hocidudo, cerrado mouse, chaco mouse, vesper mouse, big-eared mouse, chincilla mouse, gerbil mouse, leaf-eared mouse 3. (Neotomine, Nesomyid, and Deomyine mice; numerous genera) pygmy mouse, deer mouse, harvest mouse, grasshopper mouse, pouched mouse, climbing mouse, African fat mouse, big-footed mouse, island mouse, voalavo, rock mouse, pygmy rock mouse, brush-furred mouse, spiny mouse

-BZK- ‘DORMOUSE’ 1. (genera *Glirulus*, *Glis*) dormouse 2. (genus *Graphiurus*) African dormouse 3. (genera *Chaetocauda*, *Dryomys*, *Eliomys*, *Muscardinus*, *Myomimus*, *Selevinia*) Asian dormouse

-BZKW- ‘PORCUPINE’ 1. (genera *Hystrix*, *Atherurus*, *Trychis*) Old World Porcupine 2. (genus *Erethizon*) North American porcupine 3. (genera *Coendou*, *Chaetomys*) South American prehensile-tailed porcupine, Brazilian bristle-spined porcupine

-BZKY- ‘GOPHER’ 1. (genera *Cratogeomys*, *Pappogeomys*, *Thomomys*, *Zygogeomys*) western & Mexican pocket gopher 2. (genus *Geomys*) eastern pocket gopher 3. (genus *Orthogeomys*) giant pocket gopher, taltuza

-BZKL- ‘HETEROMYID’ 1. (genus *Heteromys*) spiny pocket mouse 2. (genera *Dipodomys*, *Microdipodops*) kangaroo rat, kangaroo mouse 3. (genera *Perognathus*, *Chaetodipus*) pocket mouse

-BZKR- ‘DIPODID’ 1. (genus *Sicista*) birch mouse 2. (genera *Eozapus*, *Napaeozapus*, *Zapus*) jumping mouse 3. (genera *Allactaga*, *Allactodipus*, *Pygeretmus*, *Cardiocranius*, *Salpingotulus*, *Salpingotus*, *Dipus*, *Eremodipus*, *Jaculus*, *Stylodipus*, *Paradipus*, *Euchoreutes*) jerboa

-BZKŘ- ‘PLATACANTHOMYID’ 1. (genus *Platacanthomys*) spiny dormouse 2. (genus *Typhlomys*) Chinese pygmy dormouse

-BZKF- ‘SPALACID’ 1. (genera *Myospalax*, *Eospalax*) zokor 2. (genera *Rhizomys*, *Cannomys*, *Tachyoryctes*) bamboo rat (a.k.a., root rat), African mole-rat 3. (genus *Spalax*) blind mole-rat

-BZKC- ‘OTHER RODENT’ 1. (genus *Calomyscus*) mouse-like hamster 2. (genus *Pedetes*) springhare 3. (genus *Petromus*) dassie rat

-BZKT- ‘GERBIL / JIRDS / TATERIL’ 1. (genera *Dipodillus*, *Pachyuromys*, *Desmodilliscus*, *Ammodillus*, *Gerbillus*, *Microdillus*, *Desmodillus*, *Gerbilliscus*, *Gerbillurus*) gerbil, pygmy gerbil 2. (genera *Brachionis*, *Meriones*, *Psammomys*, *Rhombomys*, *Sekeetamys*) jird, sand rat 3. (genus *Taterillus*) tateril

-BZKH- ‘ANOMALURINE SCALY-TAILED FLYING SQUIRREL’ 1. genus *Anomalurus*) scaly-tailed flying squirrel 2. (genus *Idiurus*) long-eared flying mouse, pygmy scaly-tailed flying squirrel, 3. (genus *Zenkerella*) Cameroon scaly-tail

-BZKHW- ‘NICHE AFRICAN RODENT’ 1. (genera *Ctenodactylus*, *Felovia*, *Massoutiera*, *Pectinator*) gundi 2. (genus *Thryonomys*) cane rat 3. (genera *Georychus*, *Cryptomys*, *Fukomys*, *Heliophobius*, *Bathyergus*) blesmol / mole-rat

-BZD- ‘CHINCHILLA/VISCACHA/PACARANA’ 1. (genus *Chinchilla*) chinchilla 2. (genera *Lagidium*, *Lagostomus*) viscacha 3. (genus *Dinomys*) pacarana

-BZDL- ‘AGOUTI / ACOUCHI / PACA’ 1. (genus *Dasyprocta*) agouti 2. (genus *Myoprocta*) acouchi 3. (genus *Cuniculus*) paca

-BZDR- ‘GUINEA PIG / CAVY / CAPYBARA’ 1. (genera *Cavia*, *Galea*, *Microcavia*) guinea pig / cavy 2. (genus *Dolichotis*) Patagonian cavy (a.k.a. mara) 3. (genera *Hydrochoerus*, *Kerodon*) capybara, rock cavy

-BZDŘ- OCTODONTID RODENT 1. (genus *Aconaemys*) Andean rock rat 2. (genera *Octodon*, *Octodontomys*,) degu 3. (genera *Octomys*, *Pipanacoctomys*, *Tympanoctomys*) viscacha rat

-BZDW- ‘ECHIMYID RODENT’ 1. (numerous genera) spiny rat, spiny tree-rat, punaré, armored rat, guirara 2. (genera *Capromys*, *Geocapromys*, *Mesocapromys*, *Mysateles*, *Plagiodontia*) hutia 3. (genus *Myocastor*) nutria/coypu

-BZDY- ‘OTHER SOUTH AMERICAN RODENT’ 1. (genus *Ctenomys*) tuco-tuco 2. (genera *Abrocoma*, *Cuscomys*) chinchilla-rat 3. (genus *Spalocopus*) coruro

Bats

-BH- ‘BAT’ 1. (Microchiroptera; numerous genera) [micro]bat 2. (Megachiroptera; numerous genera) [mega]bat / fruit-bat [other than flying fox] 3. (genera *Pteropus*, *Acerodon*) flying fox

Treeshrews

-JÑW- ‘TREESHREW’ 1. (genus *Anathana*) Indian treeshrew 2. (genera *Dendrogale*, *Tupaia*, *Urogale*) Asian treeshrew 3. (genus *Ptilocercus*) pen-tailed treeshrew

Apes and Monkeys [for genus *Homo*, use the root **-L-** given earlier]

-LGW- ‘APE’ 1. (genus *Pan*) chimpanzee, bonobo 2. (genus *Gorilla*) gorilla 3. (genus *Pongo*) orangutan

-LGY- ‘GIBBON’ 1. (genera *Hylobates*, *Nomascus*) dwarf gibbon, crested gibbon 2. (genus *Hoolock*) hoolock gibbon 3. (genus *Symphalangus*) siamang

-LGL- ‘LEMUR’ 1. (genera *Lemur*, *Eulemur*, *Varecia*, *Hapalemur*, *Prolemur*, *Lepilemur*, *Indri*, *Avahi*, *Propithecus*, *Daubentonia*) lemur, indri, sifaka, aye-aye 2. (genera *Cheirogaleus*, *Microcebus*, *Mirza*, *Allocebus*, *Phaner*) dwarf lemur, mouse lemur 3. (genera *Cynocephalus*, *Gaelopterus*) colugo [flying lemur]

-LGR- ‘BABOON/MACAQUE/MANGABEY’ 1. (genus *Papio*) baboon 2. (genus *Macaca*) macaque 3. (genera *Lophocebus*, *Cercocebus*) mangabey

-LGŘ- ‘OTHER BABOON-LIKE MONKEY’ 1. (genus *Mandrillus*) drill, mandrill 2. (genus *Theropithecus*) gelada 3. (genus *Rungwecebus*) kipunji

-LGZW- ‘COLOBUS MONKEY’ 1. (genus *Colobus*) black-and-white colobus 2. (genus *Piliocolobus*) red colobus 3. (genus *Procolobus*) olive colobus

-LGZY ‘LANGUR/LUTUNG/ SURILLI’ 1. (genera *Trachypithecus*, *Simias*) lutung/langur/leaf monkey, pig-tailed langur 2. (genus *Semnopithecus*) gray langur 3. (genus *Presbytis*) surilli

-LGZL- ‘ODD-NOSED MONKEY’ 1. (genus *Pygathrix*) douc 2. (genus *Rhinopithecus*) snub-nosed monkey 3. (genus *Nasalis*) proboscis monkey

-LGZR- ‘CAPUCHIN/SQUIRREL MONKEY’ 1. (genus *Cebus*) [gracile] capuchin monkey 2. (genus *Sapajus*) [robust] capuchin monkey 3. (genus *Saimiri*) squirrel monkey

-LGZŘ- ‘CERCOPITHECINE MONKEY’ 1. (genus *Cercopithecus*) guenon, mona monkey 2. (genus *Miopithecus*) talapoin 3. (genera *Chlorocebus*, *Allenopithecus*, *Erythrocebus*) grivet, vervet, malbrouck, swamp monkey, patas monkey

-LGZM- ‘LORIS/POTTO/ANGWANTIBO’ 1. (genera *Loris*, *Nycticebus*) loris 2. (genera *Perodicticus*, *Pseudopotto*) potto, false potto 3. (genus *Arctocebus*) angwantibo

-LGZN- ‘GALAGO/BUSHBABY’ 1. (genera *Galago*, *Galagoides*) galago/bushbaby 2. (genus *Euoticus*) needle-clawed bushbaby 3. (genera *Otolemur*, *Sciurocheirus*) greater galago / thick-tailed bushbaby / squirrel galago

-LGZG- ‘TARSIER’ 1. (genus *Tarsius*) [South-East Asian] tarsier 2. (genus *Cephalopachus*) western tarsier 3. (genus *Carlito*) Philippine tarsier

-LGZD- ‘MARMOSET/TAMARIN’ 1. (genera *Cebuella*, *Callibella*, *Mico*, *Callithrix*, *Callimico*) marmoset 2. (genus *Saguinus*) tamarin 3. (genus *Leontopithecus*) lion tamarin

Seals, Sea Lions & Walrus

-VXL- ‘PHOCID (“EARLESS”/ “TRUE”) SEAL’ 1. (Arctic/Northern seals: genera *Phoca*, *Pusa*, *Halichoerus*, *Histiophoca*, *Pagophilus*, *Erignathus*, *Cystophora*) seal 2. (Antarctic seals: genera *Mirounga*, *Ommatophoca*, *Hydrurga*, *Leptonychotes*, *Lobodon*) [Antarctic] seal 3. (tropical seals: genera *Monachus*, *Neomonachus*) monk seal

-**VXR**- ‘OTARIID (“EARED”) SEAL’ 1. (genera *Arctocephalus*, *Callorhinus*) fur seal 2. (genera *Neophoca*, *Phocarcos*, *Zalophus*, *Otaria*, *Eumetopias*) sea lion 3. (genus *Odobenus*) walrus

Pangolins

-**ZDW**- ‘PANGOLIN (Scaly Anteaters)’ 1. (genus *Manis*) Asian scaly anteater 2. (genus *Phataginus*) African tree pangolin and long-tailed pangolin 3. (genus *Smutsia*) African giant pangolin and ground pangolin

Elephant Shrews, Sengis

-**ZKT**- ‘ELEPHANT SHREW / SENGI’ 1. (genus *Elephantulus*) ‘elephant shrew’ 2. (genera *Macroscelides*, *Petrodomus*, *Petrosaltator*) sengi 3. (genus *Rhynchocyon*) checkered elephant shrew / giant sengi

Tenrecs

-**ZKTW**- ‘TENREC’ 1. (genus *Tenrec*) common tenrec 2. (genera *Microgale*, *Nesogale*) shrew tenrec 3. (genera *Geogale*, *Setifer*, *Hemicentetes*, *Echinops*, *Oryzorictes*) large-eared tenrec, hedgehog tenrec, streaked tenrec, rice tenrec

-**ZKTY**- ‘AFRICAN INSECTIVORE (other than tenrecs)’ 1. (genus *Orycteropus*) aardvark 2. (genera *Potamogale*, *Micropotamogale*) otter shrew 3. (Chrysochloridae; numerous genera) golden mole

Elephants

-**GM**- ‘ELEPHANT/MAMMOTH’ 1. (genus *Loxodonta*) African elephant 2. (genus *Elephas*) Asian elephant 3. (genus *Mammuthus*) mammoth

-**GMW**- ‘HYRAX’ 1. (genus *Procavia*) rock hyrax 2. (genus *Heterohyrax*) bush hyrax 3. (genus *Dendrohyrax*) tree hyrax

-**GMY**- ‘MANATEE/DUGONG’ 1. (genus *Trichechus*) manatee / sea cow 2. (genus *Dugong*) dugong 3. (genus *Hydrodamalis*) Steller’s sea cow

Armadillos

-**VCW**- ‘ARMADILLO’ 1. (Tolypeutines and Dasypodides; genera *Cabassous*, *Priodontes*, *Tolypeutes*, *Dasypus*) naked-tailed armadillo, giant armadillo, three-banded armadillo, long-nosed armadillo 2. (Euphractines; genera *Eupractus*, *Zaedyus*, *Chaetophractus*) hairy armadillo, six-banded armadillo, pichi 3. (Clamyphorines; genera *Calyptophractus*, *Chlamyphorus*) fairy armadillo

(New World) Anteaters and Sloths

-**NDW**- ‘(NEW WORLD) ANTEATER’ 1. (genus *Myrmecophaga*) giant anteater 2. (genus *Cyclopes*) silky anteater 3. (genus *Tamandua*) tamandua

-**NDY**- ‘SLOTH’ 1. (genus *Bradypus*) three-toed sloth 2. (*Choloepus didactylus*) Linnaeus’ two-toed sloth / unau 3. (*Choloepus hoffmanni*) Hoffmann’s two-toed sloth

Opossums

-**MZTL**- ‘OPOSSUM’ 1. (numerous sub-families and genera) opossum 2. (genera *Caenolestes*, *Lestoros*, *Rhyncholestes*) shrew opossum (a.k.a. rat opossum, caenolestid) 3. (genus *Dromiciops*) colocolo opossum (a.k.a. monito del monte)

Marsupials

- RDK** - 'DASYURINE MARSUPIAL' 1. (genus *Dasyurus*) quoll 2. (genus *Myoictis*) dasyure 3. (genus *Neophascogale*) speckled dasyure
- RDKW** - 'OTHER DASYURINE MARSUPIAL' 1. (genus *Dasyercus*) mulgara 2. (genus *Dasykaluta*) kaluta 3. (genus *Dasyuroides*) kowari
- RDKY** - 'MORE DASYURINE MARSUPIAL' 1. (genus *Pseudantechinus*) false antechinus 2. (genus *Phascosorex*) marsupial shrew 3. (genus *Parantechinus*) dibbler
- RDKL** - 'PHASCOGALINE MARSUPIAL' 1. (genus *Antechinus*) antechinus 2. (genus *Phascogale*) phascogale / wambenger 3. (genera *Micromurexia*, *Murexechinus*, *Murexia*, *Paramurexia*, *Phascomurexia*) Habbema dasyure, black-tailed dasyure, short-furred dasyure, broad-striped dasyure, long-nosed dasyure
- RDKR** - 'SMINTHOPSINE MARSUPIAL' 1. (genus *Sminthopsis*) dunnart 2. (genus *Planigale*) planigale 3. (genera *Antechinomys*, *Ningaui*) kultarr, ningau
- RDKŘ** - 'OTHER DASYUROMORPHS' 1. (genus *Sarcophilus*) Tasmanian devil 2. (genus *Myrmecobius*) numbat 3. (genus *Thylacinus*) thylacine [Tasmanian tiger]
- RDKF** - 'PHALANGERIFORM POSSUM' 1. (Phalangerides; numerous genera) cuscus 2. (Trichosurines; genera *Trichosurus*, *Wyulda*) brushtail possum, scaly-tailed possum 3. (Burramyides; genera *Burramys*, *Cercartetus*) pygmy possum
- RDKT** - 'PETAUROID POSSUM' 1. (Pseudocheirides; numerous genera) ring-tailed possum 2. (Petaurides; genera *Dactylopsila*, *Gymnobelideus*, *Petaurus*) triok, glider 3. (Tarsipedes and Acrobatides; genera *Tarsipes*, *Acrobates*, *Distoechurus*) honey possum, feathertail glider, feather-tailed possum

Bandicoots and Bilbies

- KTXW** - 'PERAMELEMORPH & NOTORYCTEMORPH' 1. (Peramelines; numerous genera) bandicoot 2. (genus *Macrotis*) bilby 3. (genus *Notoryctes*) marsupial mole

Wombats and Koalas

- LJXW** - 'WOMBAT/KOALA' 1. (genus *Vombatus*) common wombat 2. (genus *Lasiorhinus*) hairy-nosed wombat 3. (genus *Phascolarctos*) koala

Kangaroos, Wallaroos, Wallabies

- LMKW** - 'KANGAROO/WALLAROO/WALLABY (genera *Macropus*, *Onychogalea*, *Wallabia*)' 1. kangaroo 2. wallaroo 3. wallaby
- LMKY** - 'POTOROIFORM' 1. (genera *Aepyprymnus*, *Hypsiprymnodon*) rat-kangaroo, musky rat-kangaroo 2. (genus *Bettongia*) bettong 3. (genus *Potorous*) potoroo
- LMKL** - 'OTHER MACROPODID' 1. (genus *Dendrolagus*,) tree-kangaroo, dingiso, tenkile 2. (genera *Dorcopsis*, *Dorcopsulus*, *Lagorchestes*) dorcopsis, hare-wallaby 3. (genus *Lagostrophus*) banded hare-wallaby/mernine/munning
- LMKR** - 'OTHER MACROPODINE' 1. (Genus *Petrogale*) rock-wallaby, monjon, nabarlek 2. (Genus *Setonix*) quokka 3. (Genus *Thylogale*) pademelon

Monotremes

- LCX** - 'MONOTREME' 1. (genus *Ornithorhynchus*) platypus 2. (genus *Tachyglossus*) short-beaked echidna 3. (genus *Zaglossus*) long-beaked echidna

7.3.1.2 Reptiles

Turtles

-**ZZC**- ‘TURTLE/TORTOISE’ 1. (Pleurodira turtles; numerous genera) snake-necked, side-necked, twist-necked, swamp, snapping, big-headed, helmeted turtle 2. (Polycryptodira turtles [except tortoises]; numerous genera) [pond, box, water, river, leaf, roofed, mud, sea, leatherback, softshell, pignose] turtle 3. (Testudinides; numerous genera) tortoise

Lizard-Like Animals [NOTE: To refer to “lizard” as a generic or catch-all term, use Stem 1 of the root **-ZZ-** shown in Sec. 7.3 above.]

-**ZZW**- ‘PLEURODONTINE LIZARD’ 1. (iguanide, liolaemid, and oplurine lizards; numerous genera) iguana, chuckwalla 2. (crotaphytine, hoplocercine, phrynosomatine, polychrotine, and leiosaurid lizards; numerous genera) [collared, leopard, wood, clubtail, earless, spiny, tree, side-blotched, horned] lizard 3. (tropidurides; numerous genera) neotropical ground lizard, lava lizard, Pacific iguana, whorltail iguana, thornytail iguana

-**ZZY**- ‘DISTINCTIVE PLEURODONTINE LIZARD’ 1. (corytophanides; genera *Basiliscus*, *Corytophanes*, *Laemantus*) basilisk, helmeted iguana, casquehead iguana 2. (dactyloids and polychrotides; numerous genera) anole 3. (genus *Leiocephalus*) curly tailed lizard

-**ZZL**- ‘AGAMIDE LIZARD’ 1. (agamide and uromastigine lizards; numerous genera) frilled lizard, agama, mastigure, dabb lizard 2. (amphibolurine, draconine, and hydrosaurine lizards; numerous genera) dragon lizard, fan-throated lizard, lyreshead lizard, gliding lizard, sailfin lizard 3. (leiolepidines; numerous genera) butterfly lizards

-**ZZR**- ‘OTHER IGUANA-LIKE ANIMAL’- 1. (chamaeleonide lizards; numerous genera) chameleon 2. (genus *Sphenodon*) tuatara 3. [stem unassigned]

-**ZZŘ**- ‘PALEOANGUIMORPH’ 1. (genera *Veranus*, *Lanthanotus* [other than *V. veranus komodoensis*]) monitor lizard 2. (*V. veranus komodoensis*) komodo dragon 3. (genus *Shinisaurus*) Chinese crocodile lizard

-**ZZM**- ‘NON-ANGUIOID NEOANGUIMORPH’ 1. (genus *Heloderma* [other than species *H. suspectum*]) beaded lizard 2. (*Heloderma suspectum*) gila monster 3. (genus *Xenosaurus*) knob-scaled lizard

-**ZZN**- ‘ANGUIOID’ 1. (genera *Celestus*, *Diploglossus*) galliwasp 2. (anguines and anniellids; several genera) slowworm, glass lizard, scheltopusik, American legless lizard 3. (genera *Gerrhonotus*, *Abronia*, *Elgaria*) alligator lizard

-**ZZF**- ‘TEIFORM LIZARD’ 1. (Teiine lizards; numerous genera) jungle-runner, whiptail lizard, desert tegu 2. (Tupinambine lizards; several genera) false monitor, Caiman lizard, tegu 3. (gymnophthalmids; numerous genera) spectacled lizard / microteiid

-**ZZV**- ‘LACERETIBAENIAN LIZARD’ 1. (Lacertid lizards; numerous genera) wall lizard, true lizard, lacerta 2. (Amphisbaenian legless lizards; numerous genera) worm lizard 3. (genus *Bipes*) Mexican mole lizard

Skinks

-**ZZÑ**- ‘SCINCIFORM LIZARD’ 1. (Scincids; numerous genera) skink 2. (Gerrhosaurids and Cordylides; several genera) plated lizard, girdled lizards/spinytail lizards 3. (Xantusiids; genera *Cricosaura*, *Lepidophyma*, *Xantusia*) night lizard

Geckos & Close Relatives

-**ZZH**- ‘GECKO (and genetically-related creatures)’ 1. (carphodactylids; numerous genera) gecko 2. (pygopodides; several genera) legless lizard, snake-lizard, flap-footed lizard 3. (dibamides; genera *Dibamus*, *Anelytropsis*) blind skink

Snakes [NOTE: To refer to “snake” as a generic or “catch-all” term, use Stem 2 of the root **-ZZ-** shown earlier.

- ZZG-** ‘PYTHON-LIKE SNAKE’ 1. (Pythonids; several genera) python 2. (genus *Xenopeltis*) sunbeam snake 3. (genus *Loxocemus*) Mexican python
- ZZB-** ‘BOA-LIKE SNAKE’ 1. (Boids; numerous genera) boa, anaconda 2. (genus *Xenophidion*) spinejaw snake 3. (genera *Bolyeria*, *Casarea*) splitjaw snake
- ZZD-** ‘VIPER’ 1. (Viperines; numerous genera) [true or pitless] viper, asp 2. (Crotalines; numerous genera) pit viper, lancehead, rattlesnake, moccasin, bushmaster, temple viper 3. (genus *Azemiops*) Fea’s viper
- ZZT-** ‘LESSER-KNOWN PROTEROGLYPH SNAKE’ 1. (Homalopsids; numerous genera) Indo-Australian water snake, mudsnake, bockadam 2. (Colubrids; numerous genera) colubrid snake 3. (Lamprophiids; numerous genera) lamprophiid snake
- ZZP-** ‘RARE CAENOPHID SNAKE’ 1. (genus *Acrochordus*) wart snake/ file snake/ elephant trunk snake/ dogface snake 2. (Xenodermids; several genera) xenodermid snake 3. (Pareids; several genera) pareid snake
- ZZD-** ‘NON CAENOPHID and NON-CONSTRICTING BOOIDE SNAKE’ 1. (Scolophorids and Anomalepidids; numerous genera) blind snake, thread snake, dawn blind snake 2. (Cylindrophids, Anomochids, and Aniliids; numerous genera) pipe snake 3. (Uropeltids; several genera) shield-tailed snake
- ZZK-** ‘ELAPID SNAKE’ I 1. (genera *Naja*, *Pseudohaje*, *Walterinnesia*, *Boulengerina*, *Aspidelaps*) cobra 2. (genus *Ophiophagus*) king cobra 3. (genus *Hemachatus*) ring-necked spitting cobra /rinkhal
- ZZKW-** ‘ELAPID SNAKE’ II 1. (genus *Dendroaspis*) mamba 2. (genus *Bungarus*) krait 3. (genus *Elapsoidea*) African garter snake / venomous garter snake
- ZZKY-** ‘ELAPID SNAKE’ III 1. (genera *Calliophis*, *Hemibungaris*, *Sinomicrurus*) Old World coral snake 2. (genera *Leptomicrurus*, *Micruroides*, *Micrurus*) New World coral snake 3. (genera *Salomonelaps*, *Simoselaps*) Solomon coral snake, Australian coral snake
- ZZKL-** ‘ELAPID SNAKE’ IV 1. (genus *Laticauda*) sea krait 2. (genus *Notechis*) tiger snake 3. (genus *Antaioserpens*) burrowing snake
- ZZKR-** ‘ELAPID SNAKE’ V 1. (genera *Ephalophis*, *Hydrelaps*) mudsnake 2. (genus *Hydrophis*) sea snake 3. (genera *Acalyptophis*, *Aipysurus*, *Astrotia*, *Emydocephalus*, *Enhydrina*, *Kerilia*, *Kolpophis*, *Lapemis*, *Parahydrophis*, *Pelamis*, *Praescutata*, *Rhinoplocephalus*, *Thalassophis*) other sea snake
- ZZKŘ-** ‘ELAPID SNAKE’ VI 1. (genus *Oxyuranus*) taipan 2. (genus *Ogmodon*) Fiji snake / bolo snake / bola 3. (genus *Pseudechis*) black snake / king brown snake
- ZZKF-** ‘ELAPID SNAKE’ VII 1. (genus *Acanthophis*) death adder 2. (genus *Aspidomorphus*) collared adder 3. (genus *Austrelaps*) copperhead
- ZZKŤ-** ‘ELAPID SNAKE’ VIII 1. (genus *Cacophis*) rainforest crowned snake 2. (genus *Brachyurops*) shovel-nosed snake 3. (genus *Demansia*) whipsnake
- ZZKÇ-** ‘ELAPID SNAKE’ IX 1. (genus *Echiopsis*) bardick 2. (genera *Drysdalia*, *Elapognathus*) grass snake 3. (genus *Denisonia*) ornamental snake
- ZZKS-** ‘ELAPID SNAKE’ X 1. (genus *Homoroselaps*) harlequin snake 2. (genus *Toxicocalamus*) New Guinea forest snake 3. (genus *Parapistocalamus*) Hediger’s snake
- ZZKŠ-** ‘ELAPID SNAKE’ XI 1. (genera *Hemiaspis*, *Hoplocephalus*, *Paroplocephalus*, *Pseudonaja*, *Tropidechis*, *Vermicella*) Australian venomous snake (various): swamp snake, broad-headed snake, pale-headed snake, Lake Cronin snake, dugite, brown snake, rough-scaled snake, bandy-bandy / hoop snake 2. (genus *Suta*) hooded snake, monk snake, black-backed snake, curl snake, myall snake, spotted snake, copper snake, short-tailed snake, whip snake, Dwyer’s snake, Rosens’s snake 3. (genera *Loveridgelaps*, *Microphechis*) small-eyed snake

Crocodylians

- GZW-** ‘CROCODYLIAN’ 1. (genera *Crocodylus*, *Osteolaemus*, *Mecistops*) crocodile 2. (genera *Alligator*, *Caiman*, *Paleosuchus*) alligator, caiman 3. (genera *Gavialis*, *Tomistoma*) gharial, false gharial

Extinct Sauropsids (including Dinosaurs)

-**GZY**- ‘SAUROPSID’ 1. (Avemetarsalians other than birds) dinosaur, pterosaur, aphanosaur 2. (all extinct Eureptilia other than Avemetarsalia) extinct non-dinosaurian reptile 3. parareptile (extinct non-reptilian sauropsid, i.e., mesosaur, millerettid, procolophonid, pareiasaur)

7.3.1.3 Amphibians

-**NXL**- ‘FROG/TOAD’ 1. (Neobatrachians [other than Bufonids] and Mesobatrachians; numerous genera) frog 2. (Bufonids; numerous genera) toad 3. (Archaeobatrachians; numerous genera) small primitive frog/toad

-**NXR**- ‘SALAMANDER/NEWT/SIREN’ 1. (Salamandrines, Cryptobranchids and Hynobiids; numerous genera) [mole, lungless, torrent, giant, Asiatic] salamander, mudpuppy/olm 2. (Pleurodelines; numerous genera) newt 3. (genera *Siren*, *Pseudobranchius*) siren, dwarf siren

7.3.1.4 Birds

-**NSD**- ‘PALEOGNATH’ I 1. (Struthionids; genus *Struthio*) ostrich 2. (Rheids; genus *Rhea*) rhea 3. (Dromaiids; genus *Dromaius*) emu

-**NSDW**- ‘PALEOGNATH’ II 1. (Casuariids; genus *Casuarius*) cassowary 2. (Apterygids; genus *Apteryx*) kiwi 3. (Tinamids; genus *Tinamus*) tinamou

-**NSDY**- ‘MEGAPODIID (BRUSHTURKEY/SCRUBFOWL)’ 1. (Alecturines; genera *Talegalla*, *Alectura*, *Aepyodius*) brushturkey 2. (genus *Leipoa*) malleefowl 2. (Megapodiids; genera *Macrocephalon*, *Eulipoa*, *Megapodius*) scrubfowl, maleo, megapode

-**NSDL**- ‘CRACID (GUAN & CURASSOW)’ 1. (Cracida - Penelopines and Orthalidines; several genera) guan, chachalaca 2. (Oreophasines; genus *Oreophasis*) horned guan 3. (Cracini; several genera) curassow

-**NSDR**- ‘ODONTOPHORID & NUMIDID (NEW WORLD QUAIL & GUINEAFOWL)’ 1. (Odontophorines; numerous genera) New World quail 2. (Ptilopachines; genus *Ptilopachus*) stone partridge, Nahan’s partridge 3. (Numidids; several genera) guineafowl

-**NSP**- ‘CHICKEN & TURKEY’ 1. (*Gallus gallus domesticus*) chicken 2. (genus *Gallus* other than *G. g. domesticus*) junglefowl 3. (genus *Meleagris*) turkey, wild turkey, ocellated turkey

-**NSPW**- ‘TETRAOGALLINE (PARTRIDGE / QUAIL)’ 1. (genera *Coturnix*, *Anurophasis*, *Synoicus*, *Excalfactoria*, *Ophrysia*, *Perdicula*) quail 2. (genera *Ammoperdix*, *Margaroperdix*, *Alectoris*) [Old World] partridge 3. (genus *Tetraogallus*) snowcock

-**NSPY**- ‘OTHER PARTRIDGE-LIKE BIRD’ 1. (Rollulines; several genera) Asiatic partridge / jungle partridge / wood partridge 2. (Tetraogallines and Perdicines - genera *Pternistis*, *Dendroperdix*, *Francolinus*, *Galloperdix*, *Peliperdix*, *Scleroptila*) francolin, spurfowl 3. (other Perdicines; genera *Arborophila*, *Bambusicola*, *Haematortyx*, *Lerwa*, *Perdix*, *Tetraophasis*, *Tropicoperdix*) partridge, monal-partridge

-**NSPL**- ‘PHASIANINE (PHEASANT)’ I 1. (genus *Phasianus*) [common] pheasant 2. (genus *Tragopan*) horned pheasant, tragopan 3. (genus *Ithaginis*) blood pheasant

-**NSPR**- ‘PHASIANINE (PHEASANT)’ II 1. (Pavonii; genera *Pavo*, *Afropavo*) peafowl (including peacock and peahen) 2. (Polyplectronini; genus *Polyplectron*) peacock-pheasant 3. (genus *Syrnaticus*) long-tailed pheasant

- NSPŘ-** 'PHASIANINE (PHEASANT)' III 1. (genus *Argusianus*) great argus 2. (genus *Rheinardia*) crested argus 3. (genus *Catreus*) cheer pheasant / Wallich's pheasant
- NSPF-** 'PHASIANINE (PHEASANT)' IV 1. (genus *Chrysolophus*) ruffed pheasant, golden pheasant 2. (genus *Crossoptilon*) eared pheasant 3. (genus *Lophophorus*) monal
- NSPV-** 'PHASIANINE (PHEASANT)' V 1. (genus *Lophura*) gallopheasant, fireback 2. (genus *Pucrasia*) koklass 3. [stem unassigned]
- NSPÇ-** 'TETRAONINE (GROUSE)' 1. (genera *Falci pennis*, *Dendragapus*, *Tetrao*, *Tetrastes*, *Bonasa*, *Centrocerus*) grouse, capercaillie 2. (genus *Lagopus*) ptarmigan 3. (genus *Tympanuchus*) prairie grouse, prairie chicken
- NSG-** 'DUCK' I 1. (Anatines; numerous genera) dabbling duck, mallard, teal, shoveler, pintail, widgeon, gadwall, Asian/Madagascar/East African/Pacific duck 2. (Merginines; numerous genera) seaduck, merganser, smew, eider, scoter, goldeneye, bufflehead, long-tailed duck, harlequin duck 3. (Oxyurini; genera *Heteronetta*, *Nomonyx*, *Oxyura*) black-headed duck, masked duck, stiff-tailed duck
- NSGW-** 'DUCK' II 1. (Dendrocynines; genera *Dendrocygna*, *Thalassornis*) whistling duck, white-backed duck 2. (Stictonettines; genus *Stictonetta*) freckled duck 3. (genus *Tachyeres*) steamer duck
- NSGL-** 'TADORNINE (SHELDUCK / SHELDGOOSE)' 1. (genera *Tadorna*, *Radjah*, *Hymenolaimus*, *Merganetta*, *Malacorhynchus*, *Aix*, *Carina*, *callonetta*, *Chenonetta*, *Salvadorina*, *Sarkidiornis*) shelduck, blue duck, torrent duck, pink-eared duck, Mandarin duck, wood duck, Muscovy duck, ringed teal, maned duck, Salvadorini's teal, knob-billed duck 2. (genera *Alopochen*, *Neochen*, *Chloephaga*, *Cyanochen*, *Plectropterus*) sheldgoose, Egyptian goose, Orinoco goose, Andean goose, blue-winged goose, spur-winged goose 3. (genera *Aythya*, *Netta*, *Marmaronetta*) diving duck, pochard, scaup, canvasback, marbled teal
- NSGY-** 'GOOSE' 1. (genus *Anser*) goose (including grey and white geese) 2. (genus *Branta*) black goose, Canada goose, barnacle goose, cackling goose, nene, brant 3. (genus *Cereopsis*) Cape Barren goose
- NSGR-** 'SWAN' 1. (genus *Cygnus*) swan 2. (genus *Olor*) black-and-yellow-billed swan 3. (genus *Coscoroba*) coscoroba swan
- NSGŘ-** 'ANSERIFORM' 1. (Anhimids; genera *Anhima*, *Chauna*) screamer 2. (Anseranatids; genus *Anseranas*) magpie goose 3. (genus *Nettapus*) pygmy goose
- NSB-** 'DOVE' 1. (Turturini, Claravinae and Phabini except *Ocyphaps*, *Petrophassa*, *Leucosarcia*; several genera) dove 2. (Zenaidini; several genera) quail-dove, zenaida dove 3. (genera *Reinwardtoena*, *Turacoena*, *Macropygia*) cuckoo-dove
- NSBW-** 'PIGEON' 1. (Raphini, Treronini, Ptilinopini; numerous genera) pigeon 2. (genus *Patagioenas*) American pigeon 3. (genera *Ocyphaps*, *Petrophassa*, *Leucosarcia*) phabine pigeon
- NSBY-** 'OTHER COLUMBIFORM BIRD' 1. (Mesitornithids; genera *Monias*, *Mesitornis*) mesite 2. (Pteroclidids; several genera) sandgrouse 3. ([Raphinae](#); genus [Rhaphus](#)) dodo bird
- NSBL-** 'GRUIFORM' 1. (Gruids; genera *Grus*, *Belearica*) crane 2. (Aramids; genus *Aramus*) limpkin / carrao / courlan / crying bird 3. (Psophiids; genus *Psophia*) trumpeter
- NSBR-** 'RALLID (RAIL)' I 1. (genera *Rallus*, *Lewinia*, *Gallirallus*, *Rallacula*, *Dryolimnas*, *Gymnocrex*, *Hypotaenidia*, *Pardirallus*, *Aramides*, *Himantornis*, *Megacrex*, *Coturnicops*) rail, weka 2. (genus *Crex*, *Anurolimnas*, *Mustelirallus*, *Amaurolimnas*, *Porzana*, *Aenigmatolimnus*, *Amauornis*, *Gallicrex*, *Rallina*, *Myrcropygia*, *Laterallus*, *Mundia*, *Hapalocrex*) crake, sora, bush-hen, watercock 3. (genera *Gallinula*, *Paragallinula*, *Porphyrio*, *Tribonyx*) moorhen, marsh hen, gallinule, nativehen, waterhen / swamp chicken
- NSBŘ-** 'RALLID (RAIL)' II 1. (genus *Canirallus*) grey-throated rail 2. (genus *Sarothrura*) flufftail 3. (genus *Rougetius*) Rouget's rail
- NSBV-** 'HELIORNITHID (FINFOOT)' 1. (genus *Heliopais*) masked finfoot / Asian finfoot 2. (genus *Podica*) African finfoot 3. (genus *Heliornis*) sungrebe
- ÑSBV-** 'OTIDIMORPH (CUCKOO / BUSTARD)' 1. (Cuculids; numerous genera) cuckoo, koel, malkoha, coua, yellowbill, roadrunner, coucal, ani 2. (Musophagids; several genera) turaco, go-away-bird, plantain-eater 3. (Otidids; numerous genera) bustard, florican, korhaan

- ŇSDV**- ‘CAPRIMULGIFORM (NIGHTJAR / NIGHTHAWK)’ I 1. (Caprimulgines and Eurostopodines; numerous genera) nightjar, poorwill, whip-poor-will, pauraque 2. (Chordeilines; genera *Nyctiprogne*, *Chordeiles*, *Lurocalis*) nighthawk 3. (Aegothelids; genus *Aegotheles*) owl-nightjar
- ŇSGV**- ‘CAPRIMULGIFORM (NIGHTJAR / NIGHTHAWK)’ II 1. (Podargids; genera *Podgarus*, *Batrachostomus*, *Rigidipenna*) frogmouth 2. (Nyctibiids; genus *Nyctibius*) potoo 3. (Steatornithids; genus *Steatornis*) oilbird
- NSGV**- ‘APODID (SWIFT / TREESWIFT)’ 1. (Cypseloidini, Apodini, Collocaliini; several genera) swift, palm swift, swallow-tail swift, swiftlet 2. (Chaeturini; several genera) needletail, spinetail, spine-tailed swift 3. (Hemiprocids; genus *Hemiprocne*) treeswift / crested swift
- NSDV**- ‘TROCHILID (HUMMINGBIRD)’ 1. (Trochilines; numerous genera) hummingbird 2. (Phaethornithines; several genera) hermit, sicklebill, barbthroat 3. [stem unassigned]
- ŇŠT**- ‘CHARADRIIFORM’ I 1. (Charadriids; genera *Pluvialis*, *Pluvianus*, *Charadrius*, *Thinornis*, *Phegornis*) plover 2. (Ibidorhynchids; genus *Ibidorhyncha*) ibisbill 3. (Charadriines, Anarhynchines, and Vanellines; genera *Orepholus*, *Eurodromias*, *Peltohyas*, *Erythrogonus*, *Anarhynchus*, *Vanellus*) dotterel, wrybill, lapwing
- ŇŠTW**- ‘CHARADRIIFORM’ II 1. (Haematopodids; genus *Haematopus*) oystercatcher 2. (Recurvirostrids; genus *Recurvirostra*) avocet 3. (Recurvirostrids; genera *Cladorhynchus*, *Himantopus*) stilt
- ŇŠTY**- ‘CHIONIDIFORM’ 1. (Burhinids; genera *Burhinus*, *Esacus*) stone-curlew, thick-knee 2. (Chionids; genus *Chionis*) sheathbill / paddy 3. (Pluvianellids; genus *Pluvianellus*) Magellanic plover
- ŇŠTČ**- ‘JACANID’ 1. (several genera except *Irediparra*) jacana 2. (genus *Irediparra*) lotusbird / lilytrotter / comb-crested jacana 3. [stem unassigned]
- ŇŠTF**- ‘THINOCOROID’ 1. (Rostratulids; genera *Rostratula*, *Nycticryphes*) painted-snipe 2. (Thinocorids; genera *Attagis*, *Thinocorus*) seedsnipe 3. (Pedionomids; genus *Pedionomus*) plains-wanderer
- ŇŠTL**- ‘SCOLOPACID (SANDPIPER)’ I 1. (genera *Calidris*/*Eriola*/*Ereunetes*, *Bartramia*, *Actitis*, *Xenus*, *Prosobonia*) sandpiper, stint / peep, knot, sanderling, dunlin, ruff, surfbird 2. (genus *Numenius*) curlew, whimbrel 3. (genus *Limosa*) godwit
- ŇŠTR**- ‘SCOLOPACID (SANDPIPER)’ II 1. (genus *Arenaria*) turnstone 2. (genus *Phalaropus*) phalarope 3. (genus *Tringa*) tattler, yellowlegs, shank
- ŇŠTŘ**- ‘SCOLOPACINE (SNIPE)’ 1. (genera *Gallinago*, *Coenocorypha*, *Lymnocyrtus*) snipe, jacksnipe 2. (genus *Limnodromus*) dowitcher 3. (genus *Scolopax*) woodcock
- ŇŠTV**- ‘TURNICID & GLAREOLOID’ 1. (Turnicids; genera *Turnix*, *Ortyxelos*) buttonquail, quail-plover 2. (Dromadids; genus *Dromas*) crab-plover 3. (Glareolids; genera *Glareola*, *Stiltia*, *Rhinoptilus*, *Cursorius*) pratincole, courser
- ŇŠTM**- ‘ALCOID (SKUA / PUFFIN / AUKLET)’ 1. (Stercorariids; genus *Stercorarius*) skua, jaeger 2. (Fratrculines; genera *Fratrcula*, *Cerorhinca*) puffin, rhinoceros puffin 3. (Fratrculines; genera *Aethia*, *Ptychoramphus*) auklet
- ŇŠTN**- ‘ALCINE (MURRE / GUILLEMOT / AUK)’ 1. (genera *Brachyramphus*, *Synthliboramphus*) murrelet 2. (genera *Cephus*, *Uria*) guillemot, murre / turr 3. (genera *Alle*, *Alca*) dovekie / little auk, razorbill / lesser auk
- NSDŘ**- ‘LAROID (GULL / TERN / NODDY / SKIMMER)’ 1. (Larines; numerous genera) gull / seagull, kittiwake 2. (Sternines and Gygines; numerous genera) tern 3. (Anoines and Rynchopines; genera *Anous*, *Rynchops*) noddy, skimmer
- ŇŠK**- ‘MIRADORNITHID’ 1. (Phoenicopterids; several genera) flamingo 2. (Podicipedids; several genera) grebe 3. [stem unassigned]
- ŇŠKW**- ‘EURYPYGIMORPH’ 1. (Phaetontids; genus *Phaethon*) tropicbird 2. (Eurypygid; genus *Eurypyga*) sunbittern 3. (Rhynochetids; genus *Rhynochetos*) kagu

- ŇŠKY**- ‘PROCELLARIFORM (TUBENOSE)’ 1. (Gaviids; genus *Gavia*) loon / diver 2. (Diomeduids; several genera) albatross, mollymawk 3. (Hydrobatids and Oceanitids; numerous genera) storm petrel
- ŇŠKL**- ‘PROCELLARIID (PETREL / PRION / SHEARWATER)’ 1. (genera *Macronectes*, *Fulmarus*, *thalassoica*, *Daption*, *Pagodroma*, *Pterodroma*) petrel, fulmar 2. (genera *Pachyptila*, *Halobaena*) prion 3. (genera *Calonectris*, *Puffinus*, *Ardenna*, *Bulweria*, *Pseudobulweria*, *Lugensa*, *Procellaria*) shearwater
- ŇŠKR**- ‘SPHENISCID (PENGUIN)’ 1. (genus *Aptenodytes*) king penguin, emperor penguin 2. (genus *Eudyptes*) crested penguin, rockhopper penguin, macaroni penguin, royal penguin, fiordland penguin 3. (genera *Spheniscus*, *Pygoscelis*, *Megadyptes*, *Eudyptula*) penguin, Megellanic penguin, Humboldt penguin, Galápagos penguin, African penguin, banded penguin, fairy penguin, gentoo penguin, Adélie penguin, chinstrap penguin, rump-legged penguin / brush-tailed penguin, yellow-eyed penguin, little penguin
- ŇŠKŘ**- ‘CICONIID (STORK)’ 1. (genera *Mycteria*, *Ciconia*, *Ephippiorhynchus*, *Leptoptilos*) stork, adjutant 2. (genus *Anastomus*) openbill 3. (genus *Jabiru*) jabiru
- ŇŠKM**- ‘SULIFORM (BOOBY / GANNET / FRIGATEBIRD)’ I 1. (Sulids; genera *Sula*, *Papasa*) booby 2. (Sulids; genus *Morus*) gannet 3. (Fregatids; genus *Fregata*) frigatebird
- ŇŠKN**- ‘SULIFORM (CORMORANT / DARTER)’ II 1. (Phalacrocoracids; genera *Phalacrocorax*, *Microcarbo*) cormorant, shag 2. (Phalacrocoracids; genus *Leucocarbo*) blue-eyed shag 3. (Anhingids; genus *Anhinga*) darter, snakebird, water turkey
- ŇŠKÇ**- ‘PELECANIFORM’ 1. (Pelecanids; genus *Pelecanus*) pelican 2. (Scopids; genus *Scopus*) hamerkop 3. (Balaenicipitids; genus *Balaeniceps*) shoebill / whalehead
- ŇŠKF**- ‘ARDEID (HERON / EGRET / BITTERN)’ 1. (Ardeines and Tigrionithines; numerous genera) heron 2. (Ardeines; genera *Egretta*, *Bubulcus*) egret, cattle egret 3. (Botaurines; several genera) bittern
- ŇŠKŤ**- ‘THRESKORNITHID (IBIS / SPOONBILL)’ 1. (Threskornithines; numerous genera) ibis 2. (Plataleines; genus *Platalea*) spoonbill 3. [stem unassigned]
- ŇSD**- ‘VULTURE / CONDOR’ 1. (Catharids; genera *Cathartes*, *Coragyps*, *Sarcoramphus*) [New World] vulture 2. (Catharids; genera *Gymnogyps*, *Vultur*) condor 3. (Aegypiines and Gypaetines; several genera) [Old World] vulture
- ŇSDW**- ‘ACCIPITRIFORM & OPISTHOCOMID’ 1. (Pandionids; genus *Pandion*) osprey 2. (Sagittariids; genus *Sagittarius*) secretarybird 3. (Opisthocomids; genus *Opisthocomus*) hoatzin
- ŇSDY**- ‘ACCIPITRIID’ I 1. (Aquilines; numerous genera) eagle, hawk-eagle 2. (Haliaeetines; genus *Haliaeetus*) sea eagle, ern, fish eagle, bald eagle 3. (Circaetines; several genera) snake-eagle, serpent-eagle, bateleur
- ŇSDL**- ‘ACCIPITRIID’ II 1. (Milvines and Elanines; numerous genera) kite 2. (Pernines; several genera) honey buzzard, kite 3. (Harpiines; genera *Harpia*, *Morphnus*, *Harpyopsis*) harpy eagle, crested eagle
- ŇSDR**- ‘ACCIPITRIID’ III 1. (Buteonines; numerous genera) hawk, buzzard, buzzard-eagle 2. (Accipitrines and Melieraxines; several genera) hawk, goshawk, sparrowhawk 3. (Circines and Polyboroidines; genera *Circus*, *Polyboroides*) harrier, harrier-hawk
- MSKW**- ‘OWL’ 1. (Strigids; numerous genera) owl (including screech owls, eared owls, horned owls, eagle-owls) 2. (Tytonines; genus *Tyto*) barn owl, grass owl, masked owl 3. (Tytonines; genus *Phodilus*) bay owl
- MSKY**- ‘CORACIIMORPH’ 1. (Coliids; genera *Colius*, *Urocolius*) mousebird 2. (Leptosomids; genus *Leptosomus*) cuckoo roller / courol 3. (Trogonids; several genera) trogon, quetzal
- MSKL**- ‘BUCEROTIFORM’ 1. (Bucerotids and Bucorvids; numerous genera) hornbill, ground hornbill 2. (Phoeniculids [except *Rhinopomastus*] and Upupids; genera *Phoeniculus*, *Upupa*) hoopoe, wood hoopoe 3. (Pheonculids; genus *Rhinopomastus*) scimitarbill

- ŇSP**- ‘PICIDS (WOODPECKER)’ 1. (Picines; numerous genera) woodpecker 2. (Picumnines and Nesocitines; genera *Picumnus*, *Sasia*, *Nesocitites*) piculet 3. (Jyngines; genus *Jynx*) wryneck
- ŇSPW**- ‘PICIFORM’ I 1. (Indicatorids; several genera) honeyguide, honeybird 2. (Megalaimids, Lybiids, Captonids, Semnornithids; numerous genera) barbet, toucan-barbet 3. (Ramphastids; several genera) toucan, toucanet, araçari
- ŇSPY**- ‘PICIFORM’ II 1. (Galbulids; several genera) jacamar 2. (Bucconids; genera *Notharchus*, *Bucco*, *Nystalus*, *Hypnelus*, *Malacoptila*, *Chelidoptera*) puffbird 3. (Bucconids; genera *Monasa*, *Hapaloptila*, *Nonnula*, *Micromonacha*) nunbird, nunlet, monklet
- ŇSPL**- ‘CORACIFORM’ I 1. (Coraciids; genera *Coracias*, *Eurystomus*) roller, dollarbird 2. (Brachypteraciids; several genera) ground roller 3. (Meropids; genera *Merops*, *Meropogon*, *Nyctyornis*) bee-eater
- ŇSPR**- ‘CORACIFORM’ II 1. (Alcedinids; numerous genera) kingfisher, kookaburra 2. (Todids; genus *Todus*) tody 3. (Momotids; several genera) motmot
- ŇSPŘ**- ‘FALCONIFORM & CARIAMIFORM’ 1. (Falconines; several genera) falcon, falconet, kestrel, hobby, gyrfalcon 2. (Polyborines; several genera) caracara 3. (Cariamids; genera *Cariama*, *Chunga*) seriema
- ŇSPF**- ‘PSITTACOID (PARROT)’ 1. (Psittacoids; numerous genera) parrot, parakeet, macaw, amazon, rosella, bluebonnet, racket-tail 2. (Loriines; numerous genera) lory, lorikeet 3. (Melopsittacines; genus *Melopsittacus*) budgerigar / budgie
- ŇSPV**- ‘CACATUID (COCKATOO)’ 1. (Cacatuines; several genera) cockatoo, corella, galah 2. (Calyptorhynchines; genus *Calyptorhynchus*) black cockatoo 3. (Nymphicines; genus *Nymphicus*) cockatiel / weiro / quarion
- ŇSPÇ**- ‘STRIGOPOID (NEW ZEALAND PARROT)’ 1. (genus *Nestor*) kaka 2. (*N. notabilis*) kea 3. (genus *Strigops*) kakapo
- ŇSGW**- ‘SAPAYOID & ACANTHISITTID BIRD’ 1. (Sapayoids; genus *Sapayoa*) sapayoa 2. (Acanthisittids; genus *Acanthisitta*) rifleman 3. (Acanthisittids; genus *Xenicus*) New Zealand rock wren
- ŇSGY**- ‘EURYLAIMOID BIRD’ 1. (Eurylaimids and Calyptomenids; several genera) broadbill 2. (Pittids; genera *Pitta*, *Hydronis*, *Erythropitta*) pitta 3. (Philepittids; genera *Philepitta*, *Neodrepanis*) asity, sunbird-acity
- ŇSGL**- ‘TYRANNIOID BIRD’ I 1. (Piprids; numerous genera) manakin, tyrant-manakin, piprites 2. (Cotingids; numerous genera) cotinga, plantcutter, berryeater, fruiteater, cock-of-the-rock, bellbird, piha, fruitcrow, capuchinbird, umbrellabird 3. (Tityrids; numerous genera) sharpbill, flycatcher, mylobius, tityra, schiffornis, mourner, purpletuft, laniisoma, xenopsaris, becard
- ŇSGR**- ‘TYRANNIOID BIRD’ II 1. (Tyrannids; numerous genera) flycatcher, tyrant, tyrannulet, kiskadee 2. (Platyrrhynchids; genus *Platyrrhynchus*) spadebill 3. (Rhynchocyclids; genera *Rhynchocyclus*, *Tolmomyias*, *Ramphotrigon*) flatbill
- ŇSBW**- ‘FORMICAROID BIRD’ I 1. (Melanopareids; genus *Malanopareia*) crescentchest 2. (Thamnophilids; numerous genera) antbird, antshrike, antwren, antvireo 3. (Conopophagids; genera *Conopophaga*, *Pittasoma*) gnateater
- ŇSBY**- ‘FORMICAROID BIRD’ II 1. (Grallariids; several genera) antpitta 2. (Rhynocryptids; numerous genera) tapaculo, huet-huet, turca, gallito, bamboowren, bristlefront 3. (Formicariids; genera *Formicarius*, *Chamaeza*) anthrush
- ŇSBL**- ‘FURNARIID (NEOTROPICAL OVENBIRD)’ I 1. (Furnariini; numerous genera) neotropical ovenbird, hornero, reedhaunter, rushbird, streamcreeper, earthcreeper, barbtail, tuftedcheeks 2. (Pygarrhichnini plus *Xenops* and *Berlepschia*; several genera) treerunner, xenops, earthcreeper, palmcreeper 3. (Philydorini; numerous genera) foliage-gleaner, hookbill, treehunter, great xenops
- ŇSBR**- ‘FURNARIID (NEOTROPICAL OVENBIRD)’ II 1. (Synallaxini; numerous genera) spintail, treerunner, rayadito, wiretail, tit-spinetail, thornbird, firweod-gatherer, brushrunner, cacholote, false canastero, wren-spinetail, prickletail, plushcrown, graveteiro, softtail, barbtail, reedhaunter 2. (Sclerurines; genera *Sclerurus*, *Geositta*) leafthosser, miner 3. (Dendrocolaptines; numerous genera) woodcreeper

- ŇST**- ‘MENUROID BIRD’ 1. (Menurids; genus *Menura*) lyrebird 2. (Atrichornithids; genus *Atrichornis*) scrubbird 3. [stem unassigned]
- ŇSTW**- ‘CLIMACTERIOID BIRD’ 1. (Ptilonorhynchids; genera *Archboldia*, *Amblyomis*, *Prionodura*, *Sericulus*, *Ptilonorhynchus*, *Chlamydera*) bowerbird 2. (Ptilonorhynchids; genera *Ailuroedus*, *Scenopoeetes*) catbird 3. (Climacterids; genera *Climacteris*, *Cormobates*) Australian treecreeper
- ŇSTY**- ‘MALURID (AUSTRALIAN WREN)’ 1. (Malurini; several genera) fairywren 2. (Stipiturini; genus *Stipiturus*) emu-wren 3. (Amytornithines; genus *Amytornis*) grasswren
- ŇSTL**- ‘ACANTHIZID (AUSTRALIAN WARBLER)’ I 1. (genera *Sericornis*, *Aethomyias*, *Neosericornis*) scrubwren 2. (genus *Orescopus*) fernwren 3. (genera, *Hylacola*, *Calamanthus*) fieldwren, heathwren
- ŇSTR**- ‘ACANTHIZID (AUSTRALIAN WARBLER)’ II 1. (genus *Acanthiza*) thornbill 2. (genus *Aphelocephala*) whiteface 3. (genus *Pachycare*) goldenface
- ŇSTRĚ**- ‘ACANTHIZID (AUSTRALIAN WARBLER)’ III 1. (genus *Gerygone*) gerygone 2. (genus *Acanthornis*) scrubtit 3. (genus *Smicornis*) weebill
- ŇSTÇ**- ‘ACANTHIZID (AUSTRALIAN WARBLER)’ IV 1. (genus *Pyncoptilus*) pilotbird 2. (genus *Pyrrholaemus*) redthroat, speckled warbler 3. (genus *Origma*) rockwarbler, mouse-warbler
- ŇSTM**- ‘MELIPHAGOID BIRD’ 1. (Dasyornithids; genus *Dasyornis*) bristlebird 2. (Pardalotes; genus *Pardalotes*) pardalote / peep-wren 3. (Meliphagids; numerous genera) honeyeater, myzomela, chat, friarbird, kika, straightbill, wattletail, melidectes, myza
- ŇSTN**- ‘ORTHONYCHOID BIRD’ 1. (Orthonychids; Genus *Orthonyx*) logrunner 2. (*O. spaldingii*) chowchilla 3. (Pomatostomids; genus *Pomatostomus*) Australasian babbler / pseudo-babbler
- ŇSTF**- ‘CORVIFORM BIRD’ 1. (Cinclosomatids; genera *Cinclosoma*, *Ptilorrhoa*) quail-thrush, jewel-babbler 2. (Campephagids; numerous genera) cuckooshrike, triller, minivet 3. (Neosittids; genus *Daphoenositta*) sittella
- ŇSTV**- ‘MOHOUID (genus *Mohoua*)’ 1. (*M. albicilla*) whitehead 2. (*M. novaeseelandiae*) pipipi / brown creeper 3. (*M. ochrocephala*) yellowhead
- ŇSK**- ‘ORIOID’ 1. (genus *Oriolus*) oriole 2. (genus *Sphecotheres*) figbird 3. (genus *Pitohui*) pitohui
- ŇSKW**- ‘ORIOLOID BIRD’ I 1. (Pachycephalids; several genera) whistler, strike-thrush 2. (Oreocids; several genera) Australo-Papuan bellbird 3. (Falcunculids; genus *Falcunculus*) crested shrike
- ŇSKY**- ‘ORIOLOID BIRD’ II 1. (Psophodids; genera *Psophodes*, *Androphobus*) whipbird, wedgebill 2. (Paramythyids; genera *Paramythia*, *Oreocharis*) painted berrypecker 3. (Eulacestomids; genus *Eulacestoma*) wattled ploughbill
- ŇSKL**- ‘VIREONID’ I 1. (genus *Vireo*) vireo 2. (genus *Vireolanius*) shrike-vireo 3. (genera *Hylophilus*, *Tunchiornis*, *Pachysylvia*) greenlet
- ŇSKR**- ‘VIREONID’ II 1. (genus *Cyclarhis*) peppershrike 2. (genus *Pteruthius*) shrike-babbler 3. (genus *Epornis*) white-bellied epornis
- ŇSKŘ**- ‘ARTAMID’ 1. (Artamines; genus *Artamus*) woodswallow 2. (Peltopsines; genus *Peltops*) peltops 3. (Cracticines; genera *Melloria*, *Cracticus*, *Strepera*, *Gymnorhina*) butcherbird, currawong, Australian magpie
- ŇSKM**- ‘MALACONOTOID BIRD’ I 1. (Machaerirhynchids; genus *Machaerirhynchus*) boatbill 2. (Rhagologids; genus *Rhagologus*) mottled berryhunter / mottled whistler 3. (Aegithinids; genus *Aegithina*) iora
- ŇSKN**- ‘MALACONOTOID BIRD’ II 1. (Pityriaseids; genus *Pityriasis*) bristled shrike / bald-headed wood-shrike / Bornean bristlehead 2. (Malaconotids; genera *Malaconotus*, *Laniarius*, *Telophorus*, *Chlorophoneus*, *Rhodophoneus*) bush-shrike, boubou, gonolek 3. (Malaconotids; genera *Nilais*, *Dryoscopus*, *Bocagia*, *Tchagra*) brubru, puffback, tchagra
- ŇSKÇ**- ‘PLATYSTEIRID’ 1. (genus *Platysteira*) wattletail 2. (genus *Batis*) batis 3. (genus *Lanioturdus*) white-tailed shrike
- ŇSKF**- ‘VANGID’ I 1. (genera *Vanga*, *Calicalicus*, *Schetba*, *Xenopirostris*, *Falculea*, *Artamella*, *Leptopterus*, *Cyanolanius*, *Oriolia*, *Tylas*, *Hypositta*) vanga 2. (genus *Newtonia*) newtonia 3. (genus *Tephrodornis*) woodshrike

- ŇSKV**- ‘VANGID’ II 1. (genus *Prionops*) helmetshrike 2. (genus *Philentoma*) philentoma 3. (genera *Bias*, *Pseudobias*, *Hemipus*, *Megabyas*, *Mystacornis*) flycatcher, flycatcher-shrike, shrike-flycatcher, Crossley’s babbler
- NST**- ‘CORVINE (CROW)’ 1. (genus *Corvus*) crow, raven, rook 2. (genus *Coloeus*) jackdaw 3. (genus *Nucifraga*) nutcracker
- NSTW**- ‘CORVID’ I 1. (genus *Pica*, *Cyanopica*, *Cissa*, *Urocissa*) magpie 3. (genus *Garrulus*) [Old World] jay 3. (Crypsirines; genera *Dendrocitta*, *Crypsirina*, *Temnurus*, *Platysmurus*) treepie
- NSTY**- ‘CORVID’ II 1. (genus *Podoces*) ground jay / ground chough 2. (genus *Ptilostomus*) piacpiac 3. (genus *Zavattariornis*) bush crow
- NSTL**- ‘CORVID’ III 1. (genera *Cyanocorax*, *Cyanocitta*, *Cyanolyca*) jay, blue-jay, Steller’s jay 2. (genus *Psilorhinus*) brown jay 3. (genus *Calocitta*) magpie-jay
- NSTR**- ‘CORVID’ IV 1. (genera *Aphelocoma*, *Gymnorhinus*) scrub-jay, pinyon jay 2. (genus *Perisoreus*) Canada jay, Siberian jay, Sichuan jay 3. (genus *Pyrhacorax*) chough
- NSTM**- ‘CORVID’ I 1. (Laniids; several genera) shrike 2. (Terpsiphonines; several genera) monarch, crested flycatcher, paradise flycatcher 3. (Monarchines; numerous genera) monarch, shrikebill, magpie-lark, torrent-lark, broad-billed flycatcher, ‘elepaio
- NSTN**- ‘CORVID’ II 1. (Dicrurids; genus *Dicrurus*) drongo, balicassiao 2. (Ifritids; genus *Ifrita*) blue-caped ifrit 3. (Melampittids; genus *Melampitta*) melampitta
- NSTŘ**- ‘RHIPIDURID’ 1. (genus *Rhipidura*) fantail, wagtail 2. (genus *Lamprolia*) silktail 3. (genus *Chaetorhynchus*) drongo fantail / pygmy drongo
- NSTŇ**- ‘CORCORACID (MUDNESTER)’ 1. (genus *Corcorax*) white-winged chough 2. (genus *Struthidea*) apostlebird 3. [stem unassigned]
- NSTÇ**- ‘PARADISAEID (BIRD-OF-PARADISE)’ I 1. (genera *Paradisaea*, *Pteridophora*, *Semioptera*, *Seleucidis*, *Cicinnurus*, *Paradisornis*) bird-of-paradise 2. (genera *Epimachus*, *Drepanornis*) sicklebill 3. (genera *Lophorina*) riflebird, superb bird-of-paradise
- NSTF**- ‘PARADISAEID (BIRD-OF-PARADISE)’ II 1. (genera *Manucodia*, *Phonygammus*) manucode 2. (genus *Astrapia*) astrapia 3. (genus *Parotia*) parotia
- NSTV**- ‘PARADISAEID (BIRD-OF-PARADISE)’ III 1. (genus *Lycocorax*) paradise-crow 2. (genus *Paradigalla*) paradigalla 3. [stem unassigned]
- MST**- ‘PASSERID’ I 1. (Melanocharitids; genera *Melanocharis*, *Rhamphocharis*) berrypecker 2. (Melanocharitids; genera *Toxorhamphus*, *Oedistoma*) longbill 3. (Cnemophilids; genera *Cnemophilus*, *Loboparadisea*) satinbird
- MSTW**- ‘PASSERID’ II 1. (Notiomystids; genus *Notiomystis*) stitchbird / hihi 2. (Petroicids; numerous genera) Australasian robin, flyrobin 3. (Callaeids; genera *Callaeas*, *Philesturnus*, *Heteralocha*) kokako, saddleback, huia
- MSTY**- ‘EUPETOID BIRD’ 1. (Picathartids; genus *Picathartes*) rockfowl / bald crow 2. (Chaetopids; genus *Chaetops*) rockjumper 3. (Eupetids; genus *Eupetes*) rail-babbler
- MSTL**- ‘PAROID BIRD’ 1. (Stenostirids; several genera) fairy fly-catcher, crested flycatcher, canary-flycatcher 2. (Hyliotids; genus *Hyliota*) hyliota 3. (Remizids; several genera) penduline tit, verdin
- MSTR**- ‘PARID (TIT / TITMOUSE / CHICKADEE)’ 1. (genus *Parus*, *Melaniparus*, *Sittiparus*, *Pardaliparus*, *Periparus*, *Sylviparus*, *Cephalopyrus*, *Machlolophus*, *Melanochlora*, *Pseudopodoces*, *Cyanistes*, *Poecile*) tit, chickadee 2. (genus *Baeolophus*) titmouse 3. (genus *Lophophanes*) crested tit
- MSTŘ**- ‘MACROSPHENID (AFRICAN WARBLER)’ 1. (genus *Macrosphenus*) longbill 2. (genus *Sylvietta*) crombec 3. (genera *Achaetops*, *Sphenoeacus*, *Cryptillas*, *Melocichla*) rockrunner, grass warbler, grassbird
- MSP**- ‘SYLVIOID BIRD’ I 1. (Alaudids; numerous genera) lark, skylark, sparrow-lark, hoopoe-lark 2. (Nicatorids; genus *Nicator*) nicator 3. (Panurids; genus *Panurus*) bearded reedling / bearded parrotbill / bearded tit

- MSPW**- ‘SYLVIOID BIRD’ II 1. (Pnoepygids; genus *Pnoepyga*) cupwing / wren-babbler 2. (Acrocephalids; genus *Acrocephalus*) reed warbler, swamp warbler, millerbird 3. (Locustellids; numerous genera) grass warbler, grassbird, bush warbler, grasshopper warbler, malia
- MSPY**- ‘SYLVIOID BIRD’ III 1. (Donacobiids; genus *Donacobius*) black-capped donacobius 2. (Bernierids; several genera) Madagascar warbler, yellowbrow, bernieria, wedge-tailed jery 3. (Phylloscopids; genus *Phylloscopus*) leaf warbler, chiffchaff
- MSPL**- ‘SYLVIOID BIRD’ IV 1. (Pycnonotids; numerous genera) bulbul, greenbul, bristlebill, brownbul, leaflove 2. (Cettiids; several genera) bush warbler, stubtail, tesia, broad-billed warbler 3. (Hylids; genera *Hylia*, *Pholidornis*) hylia
- MSPR**- ‘SYLVIOID BIRD’ V 1. (Sylviids; genus *Sylvia*) [Old World] warbler, blackcap, whitethroat, parisoma 2. (Sylviids; genera *Myzornis*, *Parphasma*) myzornis, Abyssian catbird 3. (Aegithalids; several genera) bushtit, tit-warbler
- MSPŘ**- ‘SYLVIOID BIRD’ VI 1. (Sylviids; genera *Myzornis*, *Pseudoalcippe*, *Horizorhinus*, *Lioptilus*, *Fulvetta*, *Chrysomma*, *Moupinia*, *Rhopophilus*) babbler, thrush-babbler, fulvetta 2. (Sylviids; genera *Conostoma*, *Cholornis*, *Suthora*, *Sinosuthora*, *Neosuthora*, *Chleuasicus*, *Psittiparus*, *Paradoxornis*) parrotbill 3. (Sylviids; genus *Chamaea*) wren
- MSPÇ**- ‘SYLVIOID BIRD’ VII 1. (Timaliids; numerous genera) [Old World] babbler, wren-babbler, scimitar-babbler, tit-babbler, tawny-bellied babbler, chestnut-capped babbler, wedge-billed babbler, dark-fronted babbler 2. (Pellorneids; numerous genera) babbler, grass babbler, fulvetta, wren-babbler, iliadopsis, grassbird 3. (Leiothrichids; numerous genera) laughingthrush, babbler, cutia, crocia, barwing, minla, sibia, liocichla, babax
- MSPF**- ‘HIRUNDID (SWALLOW / MARTIN)’ 1. (genera *Hirundo*, *Cecropsis*, *Alopocheilon*, *Neochelidon*, *Atticora*, *Haplocheledon*, *Notiochelidon*, *Tachycineta*, *Cheramoeca*, *Petrochelidon*) swallow, cliff swallow 2. (genera *Delichon*, *Progne*, *Ptyonoprogne*, *Riparia*, *Phedina*, *Pseudocheilon*) martin, river martin, crag martin, house martin 3. (genus *Psalidoprocne*) saw-wing
- ÑSB**- ‘CISTICOLID (AFRICAN & ASIAN WARBLER)’ I 1. (genus *Cisticola*) cisticola 2. (genus *Neomixis*) jery 3. (genera *Oreophilais*, *Incana*, *Drymocichla*, *Spiloptila*, *Phyllolais*, *Malcorus*, *Hypergerus*, *Eminia*, *Euryptila*, *Bathmocercus*, *Sceopmycter*, *Artisomus*, *Poliolais*) [African / Asian] warbler
- ÑSBŘ**- ‘CISTICOLID (AFRICAN & ASIAN WARBLER)’ II 1. (genera *Prinia*, *Schistolais*, *Phragmacia*) prinia 2. (genera *Apalis*, *Oreolais*) apalis 3. (genus *Orthotomus*) tailorbird
- ÑSG**- ‘CISTICOLID (AFRICAN & ASIAN WARBLER)’ III 1. (genus *Micromacronus*) miniature babbler 2. (genus *Urolais*) green longtail 3. (genus *Calamonastes*) wren-warbler
- ÑSGŘ**- ‘CISTICOLID (AFRICAN & ASIAN WARBLER)’ IV 1. (genus *Camaroptera*) camaroptera 2. (genus *Eremomela*) eremomela
- NSK**- ‘TURDID (THRUSH / BLACKBIRD)’ 1. (genus *Turdus*) thrush, [Old World] blackbird, ouzel, fieldfare, redwing, American robin 2. (genus *Sialia*) bluebird 3. (genera other than *Turdus* and *Sialia*) grandala, solitaire, cochoa, fruithunter
- NSKW**- ‘ERITHACINE’ I 1. (genus *Erithacus*) European robin / robin redbreast 2. (genus *Chamaetylas*) alethe 3. (genera *Cossypha*, *Cossyphicula*) robin-chat, cave chat, ground robin
- NSKY**- ‘ERITHACINE’ II 1. (genera *Swynnertonia*, *Pogonocichla*, *Stiphromis*) forest robin, robin-chat 2. (genus *Sheppardia*) akalat 3. (genus *Cichladusa*) palm thrush
- NSKL**- ‘SAXICOLINE’ I 1. (genus *Luscinia*) nightingale, thrust nightingale, redstart, bluethroat 2. (genera *Heinrichia*, *Heteroxenicus*, *Brachypteryx*) shortwing 3. (genera *Irania*, *Larvivora*, *Vauriella*, *Myiomela*, *Tarsiger*, *Cinclidium*) blue robin, bush robin, bluetail, blue-fronted robin
- NSKR**- ‘SAXICOLINE’ II 1. (genera *Saxicola*, *Campicoloides*, *Pinarochroa*, *Thamnolaea*, *Emarginata*, *Myrmecocichla*, *Pinarornis*, *Namibornis*) chat, stonechat, cliff chat, moorland chat 2. (genus *Phoenicurus*) redstart 3. (genus *Oenanthe*) wheatear
- NSKŘ**- ‘SAXICOLINE’ III 1. (genus *Calliope*) rubythroat, firethroat, blackthroat 2. (genus *Enicurus*) forktail 3. (genera *Ficedula*, *Muscicapella*, *Humblotia*) flycatcher, pygmy flycatcher
- NSKF**- ‘SAXICOLINE’ IV 1. (genus *Myophonus*) whistling thrush 2. (genus *Monticola*) rock thrush

- RNSK**- ‘MUSCICAPOID BIRD’ I 1. (Troglodytids; numerous genera) wren 2. (Certhiids; genera *Certhia*, *Salpornis*) treecreeper, spotted creeper 3. (Poliopitilids; genera *Poliopitila*, *Microbates*, *Ramphocaenus*) gnatcatcher, gnatwren
- RNSKW**- ‘MUSCICAPOID BIRD’ II 1. (Tichodromadids; genus *Tichodroma*) wallcreeper 2. (Sittids; genus *Sitta*) nuthatch 3. (Regulids; genus *Regulus*) kinglet / crest
- RNSKY**- ‘MUSCICAPOID BIRD’ III 1. (Elachurids; genus *Elachura*) spotted elachura / spotted wren-babbler 2. (Ptiliogonatids; several genera) silky-flycatcher, phainoptila, phainopepla 3. (Cinclids; genus *Cinclus*) dipper
- RNSKL**- ‘MUSCICAPOID BIRD’ IV 1. (Bombycillids; genus *Bombycilla*) waxwing 2. (Dulids; genus *Dulus*) palmchat 3. (Hypocoliids; genus *Hypocolius*) grey hypocolus
- RNSKR**- ‘MUSCICAPOID BIRD’ V 1. (Mimids; numerous genera) mockingbird, catbird, thrasher 2. (Sturnids; numerous genera) starling, myna, Philippine creeper 3. (Buphagids; genus *Buphagus*) oxpecker
- RNSKŘ**- ‘MUSCICAPID’ 1. (Muscicapini and Niltavines; several genera) [Old World] flycatcher, forest flycatcher, tit-flycatcher, silverbird 2. (Muscicapinae; genera *Copsychus*, *Cercotrichas*) magpie-robin, shama, scrub robin / bush-chat 3. (Niltavines; genus *Sholicola*) sholakili
- RNSKF**- ‘ZOSTEROPID (WHITE-EYE)’ 1. (numerous genera other than *Yuhina*, *Sterrhoptilus* and *Heleia*) white-eye, striped babbler, pygmy babbler 2. (genera *Yuhina*, *Sterrhoptilus*) yuhina 3. (genus *Heleia*) heleia
- ŇŠT**- ‘FRINGILLID (FINCH)’ 1. (Fringillines; genus *Fringilla*) chaffinch, brambling 2. (Carduellines; numerous genera) grosbeak, hawkfinch, bullfinch, rosefinch, drepanid / honeycreeper, greenfinch, twite, linnet, redpoll, crossbill, serin, mountain finch, desert finch, African canary, goldfinch, siskin 3. (Euphoniines; genera *Euphonia*, *Chlorophonia*) euphonia, chlorophonia
- ŇŠTW**- ‘ESTRILDROID BIRD’ 1. (Ploceids; numerous genera) weaver, bishop, widowbird, fody, quelea, malimbe 2. (Viduids; genera *Vidua*, *Anomalospiza*) indigobird, whydah, cuckoo-finch 3. (Estrildids; numerous genera) waxbill, mannikin, munia, silverbill, twinspot, firefinch, quailfinch, antpecker, nigrita, oliveback, pytilia, crimsonwing, seedcracker, bluebill, cordon-bleu, purple grenadier, avadavat, estrildid finch
- ŇŠTY**- ‘PASSERIFORM BIRD’ I 1. (Promeropids; genus *Promerops*) sugarbird 2. (Modulatricids; genera *Modulatrix*, *Arcanator*, *Kakamega*) spot-throat, dapple-throat, grey-chested babbler 3. (Dicaeids; genera *Dicaeum*, *Prionochilus*) flowerpecker
- ŇŠTL**- ‘PASSERIFORM BIRD’ II 1. (Nectariniids; numerous genera) sunbird, spiderhunter 2. (Urocynchramids; genus *Urocynchramus*) Przewalski’s finch / Przewalski’s pinktail 3. (Irenids; genus *Irena*) fairy-bluebird
- ŇŠTR**- ‘PASSERIFORM BIRD’ III 1. (Chloropseids; genus *Chloropsis*) leafbird 2. (Peucedramids; genus *Peucedramus*) olive warbler 3. (Prunellids; genus *Prunella*) accentor, dunnoek, hedge sparrow
- ŇŠTŘ**- ‘PASSAROID BIRD’ 1. (Passerids; numerous genera) [Old World] sparrow, rockfinch, snowfinch, bush sparrow, ibon 2. (Motacillids; several genera) wagtail, longclaw, pipit, shorttail, madanga 3. (Calcariids; genera *Calcarius*, *Plectrophenax*, *Rhynchophanes*) longspur, bunting
- ŇŠTÇ**- ‘ICTERID’ I 1. (genera *Agelaius*, *Xanthspar*, *Agelastus*, *Chrysomus*, *Nesopsar*, *Xanthocephalus*, *Dives*, *Euphagus*, *Gymnomystax*, *Amblyramphus*, *Curaeus*, *Anumara*, *Gnorimopsar*, *Oreopsar*) [New World] blackbird 2. (genera *Quiscalus*, *Hypopyrrhus*, *Lamprospars*, *Macroagelaius*) grackle 3. (genus *Icterus*) [New World] oriole, troupial
- ŇŠTF**- ‘ICTERID’ II 1. (genera *Molothrus*, *Agelaioides*) cowbird, baywing 2. (genus *Sturnella*, *Leistes*) meadowlark 3. (genus *Pseudoleistes*) marshbird
- ŇŠTV**- ‘ICTERID’ III 1. (genus *Psarocolius*) oropendola 2. (genera *Cacicus*, *Cassiculus*, *Amblycercus*) cacique 3. (genus *Dolichonyx*) bobolink
- ŇŠP**- ‘EMBERIZOID BIRD’ I 1. (Passerellids; numerous genera) [American] sparrow, towhee, lark bunting, ground sparrow, junco 2. (Emberizids; genus *Emberiza*) bunting, reed bunting, yellowhammer 3. (Rhodinocichlids; genus *Rhodinocichla*) rosy thrush-tanager
- ŇŠPW**- ‘EMBERIZOID BIRD’ II 1. (Phaenicophilids; genera *Phaenicophilus*, *Xenoligea*, *Microligea*) tanager, white-winged warbler, green-tailed warbler 2. (Zeledoniids; genus *Zeledonia*) wrenthrush 3. (Teretistrids; genus *Teretistris*) Cuban warbler

- NŠPY**- ‘EMBERIZOID BIRD’ III 1. (Parulids; numerous genera) [New World] warbler, wood warbler, oven bird, waterthrush, yellowthroat, whitestart, parula, redstart 2. (Icteriids; genus *Icteria*) yellow-breasted chat 3. (Spindalids; genus *Spindalis*) spindalis
- NŠPL**- ‘EMBERIZOID BIRD’ IV 1. (Microspingids; genera *Mitrospingus*, *Orthogonys*, *Lamprospiza*) microspingid tanager 2. (Calyptophilids; genus *Calyptophilus*) chat-tanager 3. (Nesospingids; genus *Nesospingus*) Puerto Rican tanager
- NŠPR**- ‘THRAUPID (TANAGER)’ I 1. (numerous genera) tanager, tanager-finch, conebill, flowerpiercer 2. (Tholospiza [finch-like tanagers]; numerous genera) bullfinch, orangequit, grassquit, warbler-finch, ground finch, tree finch, bananaquit 3. (genera *Cyanicterus*, *Bangsia*, *Buthraupis*, *Cnemathraupis*, *Chloromis*, *Wetmorethraupis*, *Anisognathus*, *Dubusia*, *Pseudosaltator*) mountain tanager
- NŠPŘ**- ‘THRAUPID (TANAGER)’ II 1. (genera *Tersina*, *Cyanerpes*, *Chlorophanes*, *Iridophanes*) honeycreeper 2. (genus *Dacnis*) dacnis 3. (genera *Sporophila*, *Dolospingus*, *Oryzoburus*) seedeater, seed-finch
- NŠPF**- ‘THRAUPID (TANAGER)’ III 1. (genera *Emberizoides*, *Embernagra*) grass-finch, pampa-finch 2. (genus *Hemispingus*) hemispingus 3. (genus *Nephelornis*) pardusco
- NŠPV**- ‘THRAUPID (TANAGER)’ IV 1. (genus *Catamblyrhynchus*) plushcap 2. (genus *Incaspiza*) Inca finch 3. (genera *Saltator*, *Saltatricula*) saltator, many-colored Chaco finch
- MSTF**- ‘CARDINALID (CARDINAL)’ I 1. (genera *Cardinalis*, *Gubernatrix*) cardinal 2. (genera *Periporphyrus*, *Caryothraustes*, *Rhodothraupis*, *Cyanocompsa*, *Cyanoloxia*, *Pheucticus*) grosbeak 3. (genera *Chlorothraupis*, *Habia*, *Piranga*) [cardinalid] tanager
- MSTV**- ‘CARDINALID (CARDINAL)’ II 1. (genus *Passerina*) [North American] bunting 2. (genera *Spiza*, *Amaurospiza*) dickcissel, seedeater 3. (genus *Granatellus*) chat

7.3.1.5 Fish, Tunicates and Lancelets

Hagfish, Lancelets, Tunicates, Lampreys, Skates, Sawfish, & Rays

- PSGW**- ‘HAGFISH / LANCELET’ 1. (genera *Rubicundus*, *Eptatretus*, *Myxine*, *Nemamyxine*, *Neomyxine*, *Notomyxine*) hagfish 2. (Ampioxiforms; several genera) lancelet
- PSGY**- ‘TUNICATE’ 1. (Phlebobranchians and Aplousobranchians; numerous genera) sea squirt 2. (Thaliaceans; numerous genera) salp, pyrosome, doliolid tunicate 3. (Stolidobranchians and Larvaceans; several genera) other tunicate
- PSGL**- ‘LAMPREY’ 1. (genus *Geotria*) pouched lamprey 2. (genus *Mordacia*) Southern topeyed lamprey 3. (Petromyzontids; numerous genera) Northern lamprey
- PSGR**- ‘SKATE’ 1. (Rajids and Gurgesiellids; numerous genera) skate 2. (Anacanthobatids; several genera) smooth skate / leg skate 3. (Arhynchobatids; numerous genera) softnose skate
- PSGŘ**- ‘SAWFISH’ (genera *Pristis*, *Anoxypristis*) 1. (*P. pristis*) [largetooth, common, wide, freshwater, river, northern] sawfish / carpenter shark 2. (Indo-Pacific species; *A. cuspidata*, *P. clavata*, *P. zijsron*) [knifetooth, pointed, Queensland, green, longcomb, narrowsnout, olive] sawfish 3. (Atlantic species; *P. pectinata*) smalltooth sawfish
- PSGD**- ‘ELECTRIC RAY’ 1. (genera *Torpedo*, *Tetronarce*) electric ray 2. (Narcinenes and Hypnines; several genera) numbfish, coffin ray 3. (Narkines, several genera) sleeper ray
- PSGV**- ‘STING RAY’ 1. (Myliobatoids; numerous genera) stingray, [cownose, eagle, manta, devil, butterfly, river, whiptail, deepwater, sixgill] ray 2. (genus *Zanobatis*) panray 3. (genera *Platyrrhina*, *Platyrrhinoidis*) thornback

Sharks and Chimaeras [To signify a ‘shark’ in general, use the appropriate stem from the general ‘TYPES OF FISH’ root **-PFT-** shown in Sec. 7.3 above]

-PSDW- ‘COW SHARK / FRILLED SHARK’ (Hexanchids; genera *Heptranchias*, *Notorhynchus*) sevengill cow shark 2. (genus *Hexanchus*) sixgill cow shark 3. (genus *Chlamydoselachus*) frilled shark

-PSDY- ‘SQUALIFORM SHARK’ I 1. (Squalids; genera *Cirrhigaleus*, *Squalus*) dogfish shark 2. (Dalatiids; several genera) kitefin shark 3. (Somniosids several genera) sleeper shark

-PSDL- ‘SQUALIFORM SHARK’ II 1. (Etmopterids; several genera) lantern shark 2. (genera *Centrophorus*, *Deania*) gulper shark 3. (genus *Oxynotus*) rough shark

-PSDR- ‘SQUATINIFORM SHARK’ 1. (genus *Squatina*) angel shark 2. (genera *Pliotrema*, *Pristiophorus*) sawshark 3. (genus *Echinorhinus*) bramble shark, prickly shark

-PSDŘ- ‘GROUND SHARK’ 1. (Carcharhinids; numerous genera) requiem shark 2. (Hemigaleids; several genera) weasel shark 3. (genera *Eusphyra*, *Sphyrna*) hammerhead shark, winghead shark, bonnethead, scoophead

-PSSDW- ‘HOUND SHARK / BULLHEAD SHARK’ 1. (Triakines; genera *Musteles*, *Scylliogaleus*, *Triakis*, *Leptocharius*) houndshark, barbeled houndshark 2. (Galeorhinines; several genera) whiskery shark, school shark, sailback houndshark, blacktip tope 3. (genus *Heterodontus*) bullhead shark

-PSSDY- ‘MACKEREL SHARK (LAMNID)’ 1. (genus *Carcharodon*) great white shark 2. (genus *Isurus*) mako 3. (genus *Lamna*) salmon shark, porbeagle

-PSBW- ‘LAMNIFORM SHARK’ I 1. (genus *Alopius*) thresher shark 2. (genus *Cetorhinus*) basking shark 3. (genus *Megachasma*) megamouth shark

-PSBY- ‘LAMNIFORM SHARK’ II 1. (genus *Mitsukurina*) goblin shark 2. (Odontaspidids; genera *Carcharias*, *Odontaspis*) sand shark / sand tiger shark / grey nurse shark / ragged tooth shark 3. (genus *Pseudocarcharias*) crocodile shark

-PSBL- ‘CARPET SHARK’ I 1. (Ginglymostomatids and Brachaelurids; numerous genera) nurse shark, blind shark 2. (Orectobids; several genera) wobbegong shark 3. Hemiscylliids; genera *Chiloscyllium*, *Hemiscyllium*) bamboo shark

-PSBR- ‘CARPET SHARK’ II 1. (genus *Rhincodon*) whale shark 2. (genus *Stegostoma*) zebra shark 3. (genera *Cirrhoscyllium*, *Parascyllium*) collared carpet shark

-PSBŘ- ‘CATSHARK’ 1. (Scyliorhinids; numerous genera) catshark 2. (Proscylliids, several genera) finback catshark (including ribbontail catshark, harlequin catshark, graceful catshark, magnificent catshark) 3. (Pseudotriakids; genera *Pseudotriakis*, *Planonassus*, *Gollum*) false catshark, gollumshark

-PSDV- ‘CHIMAERA’ 1. (Chimaerids; genera *Chimaera*, *Hydrolagus*) chimaera, rabbitfish, ghostshark, ratfish 2. (Callorhinchids; genus *Callorhynchus*) ploughnose chimaera, Cape elephantfish, Australian ghost shark 3. (Rhinochimaerids; genera *Harriotta*, *Neoharriotta*, *Rhinochimaera*) spookfish, sicklefin chimaera, paddle-nose chimaera, longnose chimaera

Lobe-Finned and Ray-Finned Fishes

-PSSGW- ‘ARCHAIC FISH’ 1. (Coelacanth; genus *Latimeria*) coelacanth 2. (Ceratodontids; Lepidosirenids; several genera) lungfish 3. (Polypterids; genera *Erpetoichthys*, *Polypterus*) reedfish, bichir

-PSSGY- ‘STURGEON / PADDLEFISH’ 1. (Acipenserids; several genera) sturgeon 2. (genus *Polyodon*) American paddlefish 3. (genus *Psephurus*) Chinese paddlefish

-PSSGL- ‘BOWFIN / GAR’ 1. (genus *Amia*) bowfin 2. (genus *Atractosteus*) alligator gar, Cuban gar, tropical gar 3. (genus *Lepisosteus*) spotted gar, longnose gar, shortnose gar, Florida gar

-PSSGR- ‘EEL & EEL-LIKE FISH’ 1. (Anguilliforms; numerous genera) eel, moray, conger 2. (Notacanthids; genera *Lipogenys*, *Notacanthus*, *Polyacanthonotus*) deep-sea spiny eel 3. (Halosaurids; genera *Aldrovandia*, *Halosaurus*, *Halosaropsis*) halosaur

-PSSGŘ- ‘ELOPIFORM & ALBULIFORM FISH’ 1. (genus *Elops*) ladyfish, skipjack, jack-rash, tenpounder 2. (genus *Megalops*) tarpon 3. (genera *Nemoossis*, *Pterothrissus*, *Albula*) bonefish

-PSSGV- ‘OSTEOGLOSSOID FISH’ I 1. (Arapaimids & Osteoglossids; genera *Heterotis*, *Arapaima*, *Scleropages*, *Osteoglossum*) bonytongue, arowana 2. (Pantodontids; genus *Pantodon*) butterflyfish 3. (Hiodontiforms; genus *Hiodon*) mooneye, goldeye

-PSSGD- ‘OSTEOGLOSSOID FISH’ II 1. (Notopterids; several genera) knifefish, featherback 2. (Gymnarchids; genus *Gymnarchus*) aba aba / freshwater rat-tail, 3. (Mormyrids; numerous genera) elephant fish

-PST- ‘CLUPEIFORM FISH’ 1. (Engraulids; numerous genera) anchovy 2. (Clupeids; numerous genera) herring, sprat, sardine, shad 3. (Clupeiforms other than Clupeids and Engraulids) denticle herring, longfin herring, wolf herring, round herring

-PSTW- ‘GONORYNCHID FISH’ 1. (genus *Chanos*) milkfish 2. (genus *Gonorynchus*) beaked salmon / beaked sandfish 3. (Knerioids; several genera) shellear, hingemouth/snake mudhead

-PSTY- ‘CYPRININE AND ALEPOCEPHALID FISH’ 1. (*Carassius auratus*) goldfish 2. (Cyprinines other than *Carassius*) carp, Crucian carp, Prussian carp, kimbuna 3. (Alepocephalids; numerous genera) smooth-head, slick-head marine smelt

-PSTL- ‘LEUCISCINE FISH’ I 1. (small Leuciscines; numerous genera) minnow 2. (genera *Condoma*, *Coreoleuciscus*, *Cyprinella*, *Luxilus*, *Lythrurus*, *Notemigonus*, *Notropis*, *Pteronotropis*) shiner 3. (genera *Hesperoleucus*, *Rutilus*, *Samarutilus*, *Leucos*) roach, pigo, kutum, other roach-like fish

-PSTR- ‘LEUCISCINE FISH’ II 1. (genera *Abramis*, *Ballerus*, *Blicca*) bream 2. (genera *Chrosomus*, *Clinostomus*, *Leuciscus*, *Margariscus*, *Leucalburnus*, *Telestes*) dace 3. (genera *Chondrostoma*, *Protochondrostoma*, *Pseudochondrostoma*) nase, sneep

-PSTR- ‘LEUCISCINE FISH’ III 1. (genus *Tica*) tench, doctor fish 2. (genus *Campostoma*) stoneroller 3. (genus *Acrocheilus*) chiselmouth

-PSTÇ- ‘LEUCISCINE FISH’ IV 1. (genus *Mylopharodon*) hardhead 2. (genus *Orthodon*) Sacramento blackfish 3. (genus *Mylocheilus*) peamouth

-PSTF- ‘LEUCISCINE FISH’ V 1. (genus *Leucaspius*) sunbleak, belica, moderlieschen 2. (genus *Pelecus*) sabre carp, sabrefish, ziece, sichel 3. (genus *Vimba*) vimba

-PSTL- ‘LEUCISCINE FISH’ VI 1. (genera *Hybopsis*, *Semotilus*, *Squalius*, *Hemitremia*, *Platygobio*, *Nocomis*, *Couesius*, *Iotichthys*, *Snyderichthys*, *Oregonichthys*, *Petroleuciscus*, *Erimystax*, *Gila*, *Siphateles*, *Algansea*) chub 2. (genus *Scardinius*) rudd 3. (numerous genera) other leuciscine fish 3. [stem unassigned]

-RPST- ‘CYPRINID FISH (Other than Cyprinines and Leuciscines)’ I 1. (Acheilognathines; several genera) bitterling 2. (Alburnines; several genera) bleak 3. (Gobionines; numerous genera) gobionine fish (including gudgeons, steeds)

-RPSTW- ‘CYPRINID FISH (Other than Cyprinines and Leuciscines)’ II 1. (Barbines and Leptobarbines; numerous genera) barbine fish (including barbs, barbels, snowtrouts) and *Leptobarbus* 2. (Labeonines; numerous genera) labeonine fish (including mud carps, labeos, yellowfish) 3. (Cultrines; numerous genera) cultrine fish (including sharpbellies)

-RPSTY- ‘CYPRINID FISH (Other than Cyprinines and Leuciscines)’ III 1. (Danionines; numerous genera) danionine fish (including carplets, rasboras, flying barbs, razorbelly minnows) 2. (Squaliobarbines & Xenocyprines; several genera) squaliobarbine and xenocyprine fish (including grass carp, black carp, bighead carp) 3. (Psylorhynchids and unclassified Cyprinids; numerous genera) other cyprinid fish [not otherwise indicated] (including giant salmon carp, blind barbs, mahseers, cavefish, catla, rohtees)

-RPSTL- ‘CYPRINOID FISH (Other than Cyprinids)’ 1. (Catastomids; numerous genera) sucker fish 2. (genus *Psylorhynchus*) psylorhynchus 3. (Cobitoids and Gyrinocheilids; numerous genera) loach, algae-eater

-RPSTR- ‘CHARACIFORM FISH’ 1. (Distichodontids; numerous genera) distichodontid fish 2. (Citharinids; genera *Citharidium*, *Citharinops*, *Citharinus*) lutefish 3. (Crenuchids; numerous genera) South American darter, sailfin tetra

-RPSTR- ‘ALESTIROID FISH’ 1. (Hepsetids; genus *Hepsetus*) African pike characin 2. (Alestiids; numerous genera) African tetra 3. [stem unassigned]

-RPSTH- ‘SERRASALMID FISH’ 1. (genera *Catoprion*, *Pristobrycon*, *Pygocentrus*, *Pygopristis*, *Serrasalmus*) piranha 2. (numerous genera) pacu 3. (numerous genera) silver dollar

- ŘPSM-** 'ERYTHINOID FISH' I 1. (Tarumaniids; genus *Tarumania*) tarumania 2. (Erythrins; genera *Erythrinus*, *Hoplerythrinus*, *Hoplias*) trahira/ tararira 3. (Cynodontids; several genera) dogtooth characin / vampire tetra / sabretooth tetra
- ŘPSN-** 'ERYTHINOID FISH' II 1. (Hemiodontids; several genera) hemiodontid fish 2. (Paradontids; several genera) pardontid fish 3. (Prochilodontids; several genera) flannel-mouthed characin
- ŘPSÑ-** 'ERYTHINOID FISH' III 1. (Chilodontids; genera *Caenotropus*, *Chilodus*) headstander 2. (Curimatids; several genera) toothless characin 3. (Anostomids; numerous genera) anostomid fish
- ŘPSMW-** 'CHARACID FISH' I (including TETRA) 1. (Characins; several genera) characin fish 2. (Stevardiins and Characines other than Characins) characin-like fish 3. (Spintherobolines and Stethapironines; numerous genera) other characin-like fish
- ŘPSNW-** 'CHARACID FISH' II 1. (Ctenoluciids; genera *Boulengerella*, *Ctenolucius*) pike-characin 2. (Lebiasinids; several genera) pencil fish (including valadora) 3. (genus *Salminus*) dorado
- PSL-** 'CATFISH' I 1. (Silurids; numerous genera) catfish 2. (Loricaroids; numerous genera) armored catfish, pencil catfish, parasitic catfish 3. (Diplomystids; numerous genera) velvet catfish
- PSLW-** 'CATFISH' II 1. (Pangasiids, Mochokids, Claroteids; numerous genera) shark catfish, African catfish, squeaker 2. (Plotosids, Ictalurids, Clariids, Ailiids, Sisorids, Bagrids; numerous genera) eeltail catfish, ictalurid, airbreathing catfish, naked catfish 3. (Doradoids and Pimelodoids; numerous genera) banjo catfish, thorny catfish/talking catfish, driftwood catfish, three-barbeled catfish, bumblebee/dwarf marbled catfish, long-whiskered catfish
- PSLY-** 'KNIFEFISH' 1. (Gymnotoids; numerous genera) banded knifefish 2. (Rhamphichthyoids; numerous genera) sand knifefish, bluntnose/grass/leaf knifefish 3. (Apterontoids; numerous genera) glass knifefish, rattail knifefish, ghost knifefish
- PSTH-** 'OTHER EUTELEOSTEOMORPHIC FISH' 1. (genus *Lepidogalaxias*) salamanderfish 2. (Argentinoids; numerous genera) smelt, barreleye 3. (Galaxiids; several genera) galaxia
- PSK-** 'SALMONINE FISH' 1. (genus *Oncorhynchus*) Pacific salmon (i.e., Chinook, Coho, Pink, Sockeye, Chum), Pacific trout (i.e., Cutthroat, Rainbow/Steelhead) 2. (genus *Salmo*) Atlantic salmon, Brown trout 3. (genera *Salvelinus*, *Salvelinus*) char (including brook trout, lake trout, bull trout, Dolly Varden trout), long-finned char
- PSKW-** 'SALMONID FISH' (other than salmon/trout/char) 1. Eurasian Salmonids; genera *Hucho*, *Parahucho*, *Brachymystax*) hucho, taimen/huchen, lenok 2. (genera *Coregonus*, *Prosopium*, *Stenodus*) whitefish 3. (genus *Thymallus*) grayling
- PSKY-** 'ESOCIFORM FISH' 1. (genus *Esox*) pike, pickerel 2. (*E. masquinongy*) muskellunge 3. (Umbrids; several genera) mudminnow
- PSKL-** 'OSMERIFORM FISH' 1. (Retropinnids and Osmerids; several genera) smelt, Australian-New Zealand grayling 2. (genus *Plecoglossus*) ayu / sweetfish 3. (Salangids; numerous genera) noodlefish / icefish
- PSKR-** 'STERNOPTYCHID FISH' 1. (Maurolucines other than *Valenciennellus*; several genera) bottlelight, pearlside 2. (genus *Valenciennellus*) constellationfish 3. (Sternoptychines; genera *Argyropelecus*, *Polyipnus*, *Sternoptyx*) marine hatchetfish
- PSKŘ-** 'STOMIIFORM' FISH (other than Sternoptychids) 1. (Gonostomatids; several genera) bristlemouth, anglemouth, fangjaw 2. (Stomiids; numerous genera) barbeled dragonfish, loosejaw, stareater, snaggletooth, viperfish 3. (Phosichthyids; several genera) lightfish
- RPSKW-** 'ALEPISAUROID FISH' I 1. (genus *Alepisaurus*) lancetfish 2. (genus *Anotopterus*) daggertooth 3. (genus *Omosudis*) hammerjaw
- RPSKY-** 'ALEPISAUROID FISH' II 1. (Evermannellids; several genera) sabertooth 2. (Paralepidids; numerous genera) barracudina 3. (Scopelarchids; several genera) pearleye

- RPSKL**- ‘AULOPIFORM FISH’ I 1. (genera *Bathysauropsis*, *Bathysauroides*) grinner 2. (Chlorophthalmids; genera *Chlorophthalmus*, *Parasudis*) greeneye 3. (Ipnopids; several genera) tripod fish
- RPSKR**- ‘AULOPIFORM FISH’ II 1. (Notosudids; several genera) waryfish 2. (genus *Bathysaurus*) deepsea lizardfish 3. (genus *Gigantura*) telescopefish
- RPSKŘ**- ‘SYNODONTOID FISH’ 1. (Synodontids; several genera, and *Pseudotriconotus*) lizardfish, Bombay duck / bummaloo, sand-diving lizardfish 2. (Aulopids; several genera) flagfin 3. (genus *Paraulopus*) cucumberfish
- PSSM**- ‘MYCTOPHIFORM FISH & ATELEOPOD FISH’ 1. (Myctophids; numerous genera) lanternfish 2. (Neoscolopelids; several genera) blackchin 3. (Ateleopodids; several genera) jellynose fish / tadpole fish
- PSSN**- ‘LAMPRIFORM FISH’ I 1. (Veliferids; genera *Velifer*, *Metavelifer*) sailfin moonfish 2. (genus *Lampris*) opah / moonfish / sunfish / kingfish 3. (genus *Radiicephalus*) tapertail
- PSSŇ**- ‘LAMPRIFORM FISH’ II 1. (Lophotids; genera *Lophotus*, *Eumecichthys*) crestfish 2. (Trachipterids; genera *Desmodema*, *Trachipterus*, *Zu*) ribbonfish 3. (Regalacids; genera *Agrostichthys*, *Regalecus*) oarfish
- PSKÇ**- ‘PERCOPSIFORM FISH’ 1. (genus *Percopsis*) trout-perch 2. (genus *Aphredotus*) pirate-perch 3. (Amblyopsids; several species) cavefish, swampfish, ricefish
- PSKF**- ‘ZEIFORM FISH’ I 1. (Zeids; genera *Zeus*, *Zenopsis*) dory 2. (Cyttids; genus *Cyttus*) lookdown dory, silver dory, king dory, silver dory 3. (Zeniontids; genera *Zenion*, *Capromimus*, *Cyttomimus*) zeniontid, capro dory
- PSKV**- ‘ZEIFORM FISH’ II 1. (Oreosomatids; several genera) oreo 2. (Parazenids; several genera) parazen 3. (Grammicolepidids; several genera) tinseltail
- PSP**- ‘GADID FISH’ I 1. (genus *Gadus*) [true] cod 2. (genus *Melanogrammus*) haddock 3. (genus *Merlangius*) whiting / merling
- PSPW**- ‘GADID FISH’ II 1. (genus *Microgadus*) tomcod 2. (genus *Micromesistius*) blue whiting 3. (genus *Pollachius*) pollock
- PSPY**- ‘GADID FISH’ III 1. (genera *Arctogadus*, *Boreogadus*) arctic/polar cod 2. (genera *Eleginus*, *Trisopterus*) saffron cod, navaga, poor cod, pout, pouting 3. (genus *Raniceps*) tadpole fish
- PSPL**- ‘LOTID FISH’ I 1. (genus *Lota*) burbot / bubbot / lingcod / mariah / eelpout / coneyfish 2. (genus *Brosme*) cusk / brismak / brosmius / torsk / moonfish 3. (genus *Molva*) ling
- PSPR**- ‘LOTID FISH’ II 1. (genus *Gaidropsaurus*) rockling 2. (genus *Enchelyopus*) fourbeard rockling 3. (genus *Ciliata*) ciliata fish
- PSPŘ**- ‘GADIFORM FISH’ 1. (Bregmacerotids; genus *Bregmaceros*) codlet 2. (Euclichthyids; genus *Euclichthys*) eucla cod 3. (Muraenolepidids; genera *Muraenolepis*, *Notomuraenobathys*) eel cod
- PSPÇ**- ‘MORID FISH’ 1. (genus *Mora*) common mora, googly-eyed cod 2. (genus *Auchenoceros*) ahuru 3. (other Morids; numerous genera) codling, hakeling, mora, beardie, skulpin, grenadier cod
- PSPF**- ‘OTHER PARACANTHOPTERYGIAN FISH’ 1. (Macrourids; numerous genera) rattail / grenadier 2. (Melanonids; genus *Melanonus*) pelagic cod, arrowtail 3. (Stylephorids; genus *Stylephorus*) tube-eye / thread-tail
- PSPH**- ‘MERLUCCIID FISH’ 1. (Merlucciids; several genera) hake 2. (genus *Maruronus*) blue grenadier 3. (Phycids; genera *Phycis*, *Urophycis*) phycid hake
- PSC**- ‘BERYCIFORM FISH’ I 1. (Berycids; genus *Beryx*) alfonsino 2. (Berycids; genus *Centroberyx*) nannygal 3. (Ostracoberycids; genus *Ostracoberyx*) shellskin alfonsino

-PSČ- ‘BERYCIFORM FISH’ II 1. (Cetomimids; numerous genera) flabby whalefish, tapetail, hairyfish 2. (Rondeletiids; genus *Rondeletia*) redmouth whalefish 3. (Barbourisiids; genus *Barbourisia*) velvet whalefish

-PŠČ- ‘BERYCIFORM FISH’ III 1. (Melamphids; several genera) ridgehead / bigscale 2. (Gibberichthyids; genus *Gibberichthys*) gibberfish 3. (Stephanoberycids and Hispidoberycids; several genera) pricklefish

-PSCW- ‘TRACHICHTHYFORM FISH’ I 1. (Trachichthyids; several genera except *Paratrychichthys*) roughy, slimehead, redfish, sawbelly 2. (genus *Paratrychichthys*) sandpaper fish 3. (Monocentrids; genera *Cleidopus*, *Monocentris*) pineapplefish / pinecone fish

-PSČW- ‘TRACHICHTHYFORM FISH’ II 1. (Anoplogastrids; genus *Anoplogaster*) fangtooth 2. (Diretmids; genera *Diretmus*, *Diretmoides*, *Diretmichthys*) spinyfin 3. (Anomalopids; several genera) lanternfish / flashlight fish, eyelight fish

-PŠČW- ‘HOLOCENTRIFORM & POLYMIXIIFORM FISH’ 1. (Holocentrines; genera *Holocentrus*, *Neomiphon*, *Sargocentron*) squirrelfish 2. (Myripristines; several genera) soldierfish 3. (Polymixiiforms; genus *Polymixia*) beardfish

-LPŠT- ‘OPHIDIIFORM FISH’ 1. (Carapids; several genera) pearlfish 2. (Ophidiids, Aphyonids and Parabrotulids; numerous genera) brotula, cusk-eel, false brotula, aphyonid 3. (Bythitids; numerous genera) viviparous brotula

-LPŠTW- ‘KURTIFORM FISH & BATRACHOIDID FISH’ 1. (Kurtids; genus *Kurtus*) nurseryfish 2. (Apogonids; numerous genera) cardinalfish 3. (Batrachoidids; numerous genera) toadfish / frogfish

-LPŠTY- ‘GEMPYLID FISH’ 1. (genus *Thyrsites*, *Tyrsitoides*) snoek 2. (genera *Tongaichthys*, *Rexichthys*, *Promethichthys*, *Lepidocybium*, *Diplospinus*) escolar 3. (genera *Epinnula*, *Gempylus*, *Nealotus*, *Neoepinnula*, *Nesiarchus*, *Paradiplospinus*, *Rexea*, *Ruvettus*, *Thyrsitops*) snake mackerel, domine, oilfish, sackfish, black gemfish

-LPŠTL- ‘GOBIOID FISH’ I 1. (Gobiines, Benthophilines, Gobionellines, Sicydiines; numerous genera) goby 2. (Amblyopines; numerous genera) eel goby / worm goby 3. (Oxucerids; several genera) mudskipper

-LPŠTR- ‘GOBIOID FISH’ II 1. (Ptereleotrids; numerous genera) dartfish 2. (Kraemeriids; genera *Kraemeria*, *Gobitrichinotus*) sand darter 3. (Microdesmines; several genera) wormfish

-LPŠTŘ- ‘GOBIOID FISH’ III 1. (Thalasseleotrids; genera *Thalasseleotris*, *Grahamichthys*) gudgeon 2. (Eleotrids, Butids and Odontobutids; numerous genera) sleeper goby / sleeper 3. (Milyeringids; several genera) blind cave goby

-LPŠTÇ- ‘GOBIOID FISH’ IV 1. (Rhyacichthyids; genera *Protogobius*, *Rhyacichthys*) loach-goby 2. (Schindleriids; genus *Schindleria*) infantfish 3. (Xenisthmids; several genera) wriggler / collared wriggler, flathead wriggler

-KŤS- ‘SCOMBRID FISH’ 1. (Thunnines; several genera) tuna 2. (Scombrines, Scoberomorines; Gasterochismatines; several genera) mackerel, Spanish mackerel, butterfly kingfish 3. (Sardini; genera *Sarda*, *Cybiosarda*, *Gymnosarda*, *Orcynopsis*) bonito

-KŤSP- ‘SCOMBRIFORM FISH’ I 1. (Bramids; several genera) pomfret, fanfish 2. (Stromateids; genera *Pampus*, *Peprilus*, *Stromateus*) butterfish, silver pomfret, harvestfish, Pacific pompano 3. (Nomeids and Ariommatids; genera *Cubiceps*, *Nomeus*, *Psenes*, *Ariomma*) driftfish, fathead, cubehead, cigarfish, man-of-war, bluebottle, ariomma, ariommid

-KŤST- ‘SCOMBRIFORM FISH’ II 1. (Scombrolabracids; genus *Scombrolabrax*) longfin escolar / black mackerel 2. (Amarsipids; genus *Amarsipus*) amarsipa 3. (Tetragonurids; genus *Tetragonurus*) squaretail

-KŤSK- ‘SCOMBRIFORM FISH’ III 1. (Centrolophids; several genera) medusafish, ruff, rudderfish, blackfish, barrellfish, butterfish, warehou / trevalla 2. (Icosteids; genus *Icosteus*) ragfish 3. (Scombropids; genus *Scombrops*) gnomefish

-KŤSB- ‘SCOMBRIFORM FISH’ IV 1. (genus *Sphyræna*) barracuda 2. (genus *Xiphias*) swordfish / broadbill 3. (Istiophorids; several genera) marlin / billfish

-KŤSD- ‘TRICHIURID FISH (CUTLASSFISH)’ 1. (genera *Aphanopus*, *Assurger*, *Evoxymetopon*, *Lepidopus*) scabbardfish 2. (genus *Benthodesmus*) frostfish 3. (genera *Eupleurogrammus*, *Demissolinea*, *Lepturacanthus*, *Tentoriceps*, *Thrichiurus*) hairtail

- KṬSG-** ‘SYNGNATHIFORM FISH’ I 1. (genus *Hippocampus*) seahorse 2. (Syngnathines; numerous genera) pipefish, pipehorse, seadragon 3. (Solenostomids; genus *Solenostomus*) ghost pipefish
- KṬSF-** ‘SYNGNATHIFORM FISH’ II 1. (Pegasids; genus *Pegasus*, *Euypegasus*) seamoth 2. (genus *Aulostomus*) trumpetfish 3. (genus *Fistularia*) cornetfish / flutemouth
- KṬSV-** ‘SYNGNATHIFORM FISH’ III 1. (Mullids; several genera) goatfish / red mullet 2. (Callionymids; numerous genera) dragonet 3. (Draconettids; genera *Draconetta*, *Centrodraco*) slope dragonet
- KṬSM-** ‘SYNGNATHIFORM FISH’ IV 1. (Macroramphosids; genus *Macroramphosus*) snipefish / bellowfish 2. (Centriscids; genera *Aeoliscus*, *Centriscus*) shrimpfish 3. (Dactylopterids; genera *Dactyloptena*, *Dactylopterus*) flying gurnard / helmet gurnard
- KṬSN-** ‘SYNBRANCHIFORM FISH’ 1. (Synbranchids; numerous genera) swamp eel 2. (Chaudhuriids; several genera) earthworm eel 3. (Mastacembelids; numerous - genera) spiny eel, fire eel
- KṬSÑ-** ‘ANABANTOID FISH (GOURAMI)’ 1. (Osphronemids; numerous genera) gourami 2. (Helostomids; genus *Helostoma*) kissing gourami, kisser 3. (Anabantids; several genera) climbing gourami / climbing perch
- KṬSH-** ‘ANABANTIFORM FISH’ 1. (Channids; several genera) snakefish 2. (Badids; genera *Badis*, *Dario*) chameleonfish 3. (Nandids and Pristolepidids; several genera) Asian leaf-fish
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- PṬS-** ‘CARANGID FISH’ I 1. (genus *Lichia*) leerfish / garrick 2. (genus *Trachinotus*) pompano 3. (genus *Scomberoides*) queenfish
- PṬSP-** ‘CARANGID FISH’ II 1. (genera *Oligoplites*, *Parona*) leatherjacket 2. (genus *Campogramma*) vadigo 3. (genus *Elagatis*) rainbow runner / rainbow yellowtail, Spanish jack / Hawaiian salmon
- PṬSP-** ‘CARANGID FISH’ III 1. (genus *Naucrates*) pilot fish 2. (genus *Seriola*) amberjack 3. (genus *Seriolina*) black-banded trevally
- PṬSK-** ‘CARANGID FISH’ IV 1. (genus *Alectis*) threadfish, diamond trevally 2. (genus *Alepes*) scad 3. (genus *Atropus*) cleftbelly trevally
- PṬSB-** ‘CARANGID FISH’ V 1. (genera *Caranx*, *Carangoides*, *Hemicaranx*) jack, trevally, bludger 2. (genus *Atule*) yellowtail scad 3. (genus *Chloroscombrus*) bumper / bumperfish
- PṬSD-** ‘CARANGID FISH’ VI 1. (genus *Decapterus*) mackerel scad, round scad, roughear scad, Indian scad, redbelly scad, Japanese scad, shortfin scad, koheru 2. (genus *Gnathodon*) golden trevally / golden kingfish / king trevally 3. (genus *Megalespis*) torpedo scad / hardtail scad / finny scad / finletted mackerel scad / cordyla scad
- PṬSG-** ‘CARANGID FISH’ VII 1. (genus *Pantoleus*) fringedfin trevally / round-finned trevally / reef herring 2. (genus *Parastromateus*) black pomfret 3. (genus *Pseudocaranx*) white trevally, skipjack trevally
- PṬSF-** ‘CARANGID FISH’ VIII 1. (genus *Selar*) oxeye scad, bigeye scad 2. (genus *Selaroides*) yellowstripe scad / yellowstripe trevally / yellow-banded trevally / smooth-tailed trevally / slender-scaled trevally 3. (genus *Selene*) lookdown, moonfish
- PṬSV-** ‘CARANGID FISH’ IX 1. (genus *Trachurus*) saurel / jack mackerel 2. (genus *Ulua*) silvermouth trevally, longcracked trevally 3. (genus *Uraspis*) whitetongue jack, cottonmouth jack, whitemouth jack
- PṬSM-** ‘CARANGIFORM FISH’ I 1. (genus *Nematistius*) roosterfish 2. (genus *Coryphaena*) dolphinfish 3. (genus *Rachycentron*) cobia / black kingfish / black bonito / lemonfish
- PṬSN-** ‘CARANGIFORM FISH’ II 1. (Echeneids; several genera) remora / suckerfish, lousefish 2. (Menids; genus *Mene*) moonfish 3. (Centropomids; genus *Centropomus*) snook
- PṬSÑ-** ‘CARANGIFORM FISH’ III 1. (Polynemids; several genera) threadfin, bobo, barbu, paradise fish 2. (Leptobramids; genus *Leptobrama*) beachsalmon 3. (Toxotids; genus *Toxotes*) archerfish

- PŠK-** ‘PLEURONECTID FISH (RIGHTEYE FLOUNDER)’ I 1. (*Hippoglossus hippoglossus*) Atlantic halibut 2. (*Hippoglossus stenolepis*) Pacific halibut 3. (genus *Reinhardtius*) Greenland halibut / Greenland turbot
- PŠKW-** ‘PLEURONECTID FISH (RIGHTEYE FLOUNDER)’ II 1. (genus *Hippoglossoides*) American plaice, flathead flounder, flathead sole, Bering flounder 2. (genus *Pleuronectes*) European plaice, Alaska plaice, American smooth flounder 3. (genus *Acanthopsetta*) scale-eye plaice
- PŠKY-** ‘PLEURONECTID FISH (RIGHTEYE FLOUNDER)’ III 1. (genus *Microstomus*) lemon sole, Pacific Dover sole, slime flounder 2. (genus *Eopsetta*) petrale sole, shotted halibut 3. (genus *Parophrys*) English sole
- PŠKL-** ‘PLEURONECTID FISH (RIGHTEYE FLOUNDER)’ IV 1. (genus *Embassichthys*) deepsea sole 2. (genus *Psettichthys*) Pacific sand sole 3. (genus *Lyopsetta*) slender sole
- PŠKR-** ‘PLEURONECTID FISH (RIGHTEYE FLOUNDER)’ V 1. (genus *Lepidopsetta*) rocksole, dusky sole, Northern rock sole 2. (genus *Isopsetta*) butter sole 3. (genus *Clidoderma*) roughscale sole
- PŠKŘ-** ‘PLEURONECTID FISH (RIGHTEYE FLOUNDER)’ VI 1. (*Glyptocephalus zachirus*) rex sole 2. (*Glyptocephalus cynoglossus*) witch flounder 3. (*Glyptocephalus stelleri*) blackfin flounder
- PŠKÇ-** ‘PLEURONECTID FISH (RIGHTEYE FLOUNDER)’ VII 1. (genus *Pleuronichthys*) curlfin sole, C-O sole, ridge-eyed flounder, ocellated turbot, spotted turbot, horny-head turbot 2. (genus *Limanda*) yellowfin sole, Sakhalin sole, common dab, longhead dab, yellowtail flounder, speckled flounder 3. (genus *Hypsopsetta*) diamond turbot
- PŠKF-** ‘PLEURONECTID FISH (RIGHTEYE FLOUNDER)’ VIII 1. (genus *Kereius*) stone flounder 2. (genus *Liopsetta*) Arctic flounder, Far Eastern smooth flounder 3. (genus *Platichthys*) European flounder, starry flounder, Baltic flounder
- PŠKH-** ‘PLEURONECTID FISH (RIGHTEYE FLOUNDER)’ IX 1. (genus *Pseudopleuronectes*) winter flounder, yellow-striped flounder, cresthead flounder, marbled flounder 2. (genus *Tenakius*) willowy flounder 3. (genus *Verasper*) barfin flounder, spotted halibut
- PŠKŤ-** ‘PLEURONECTID FISH (RIGHTEYE FLOUNDER)’ X 1. (genus *Paralichthodes*) peppered flounder / measles flounder 2. (genus *Atheresthes*) Kamchatka flounder, arrowtooth flounder 3. (genera *Cleisthenes*, *Dexistes*) other righteye flounder
- PŠKM-** ‘RHOMBOSOLEID FISH (SOUTHERN HEMISPHERE RIGHTEYE FLOUNDER)’ I 1. (genus *Ammotretis*) shortfin flounder, elongate flounder, Tudor’s flounder, longsnout flounder 2. (genus *Azygopus*) banded-fin flounder / spotted flounder 3. (genus *Oncopsetus*) Remo flounder
- PŠKN-** ‘RHOMBOSOLEID FISH (SOUTHERN HEMISPHERE RIGHTEYE FLOUNDER)’ II 1. (genus *Colistium*) New Zealand brill, New Zealand turbot 2 (genus *Peltorhamphus*) speckled sole, New Zealand sole 3. (genus *Pelotretis*) southern lemon sole / New Zealand lemon sole
- PŠKV-** ‘RHOMBOSOLEID FISH (SOUTHERN HEMISPHERE RIGHTEYE FLOUNDER)’ III 1. (genus *Rhombosolea*) yellowbelly flounder, sand flounder, black flounder, greenback flounder 2. (genus *Psammodiscus*) Indonesian ocellated flounder 3. (genus *Taratretis*) Derwent flounder
- LPSK-** BOTHID FISH (LEFTEYE FLOUNDER) I 1. (genus *Arnoglossus*) scaldfish 2. (genus *Bothus*) Pacific eyed flounder, Guinean flounder, Pacific leopard flounder, plate fish, mottled flounder, flowery flounder, St. Helena flounder, Indo-Pacific oval flounder, eyed flounder, leopard flounder, wide-eyed flounder, twospot flounder 3. (genus *Crossorhombus*) blue flounder, Kobe flounder, broadbrow flounder, Lord Howe Island flounder
- LPSB-** ‘BOTHID FISH (LEFTEYE FLOUNDER)’ II 1. (genus *Engyophrys*) speckled-tail flounder, American spiny flounder 2. (genus *Grammatobothus*) Krempf’s flounder, Pennant flounder, threespot flounder 3. (genus *Engyprosopon*) fringelip dwar flounder, Bellona flounder, Bleeker’s flounder, Largescale flounder, Hureau’s flounder, long pectoral fin flounder, olive wide-eyed flounder, Natal flounder, Regan’s flatfish, long snout flounder, seven pelvic ray flounder
- LPSG-** ‘BOTHID FISH (LEFTEYE FLOUNDER)’ III 1. (genus *Kamoharaia*) wide-mouthed flounder 2. (genus *Laeops*) clear fin-base flounder, Philippine slender flounder, Günther’s flounder, khaki flounder, blackspotted flounder, small headed flounder, Longarm flounder 3. (genus *Monolene*) slim flounder, Asaetae flounder, Acapulco flounder, Pacific deepwater flounder, Merten’s moonflounder, smalltooth moonflounder, deepwater flounder
- LPSD-** ‘BOTHID FISH (LEFTEYE FLOUNDER)’ IV 1. (genus *Lophonectes*) crested flounder 2. (genus *Perissias*) striped-fin flounder 3. (genera *Asterorhombus*, *Chascanopsetta*, *Japonolaeops*, *Neolaeops*, *Parabothus*, *Psettina*, *Taeniopsetta*, *Tosarhombus*, *Tricopsetta*) other lefteye flounder

- LPSC-** ‘PARALYCHTHYID FISH (LARGE-TOOTH FLOUNDER)’ I 1. (genus *Ancylopsetta*) Cyclope flounder, three-spot flounder, three-eye flounder, four-eyed flounder, Gulf of Mexico ocellated flounder 2. (genus *Citharichthys*) megrim / whiff, sanddab 3. (genus *Cyclopsetta*) Mexican flounder, spotfin flounder, God’s flounder, toothed flounder
- LPSCĚ-** ‘PARALYCHTHYID FISH (LARGE-TOOTH FLOUNDER)’ II 1. (genus *Etropus*) fringed flounder, shelf flounder, smallmouth flounder, Peruvian flounder, gray flounder, sole flounder, Delsman’s flounder 2. (genus *Gastropsetta*) shrimp flounder 3. (genus *Hippoglossina*) bigmouth flounder, fourspot flounder, American fourspot flounder
- LPSY-** ‘PARALYCHTHYID FISH (LARGE-TOOTH FLOUNDER)’ III 1. (genus *Paralichthys*) fine flounder, Cortez flounder, gulf flounder, Brazilian flounder, California flounder, summer flounder, fluke, bastard halibut, Patagonian flounder, broad flounder, tropical flounder, speckled flounder, olive flounder 2. (genus *Pseudorhombus*) ringed flounder, peacock flounder, largetooth flounder, cinnamon flounder, four twin-spot flounder, ocellated flounder, deep flounder, Javan flounder, small-toothed flounder, Malayan flounder, roughscale flounder, fivespot flounder, five-eyed flounder, spiny flounder, three spotted flounder 3. (genus *Syacium*) Papillose flounder, shoal flounder, beach flounder, longfin flounder, clearspot flounder, channel flounder, oval flounder, dusky flounder
- LPSŘ-** ‘PARALYCHTHYID FISH (LARGE-TOOTH FLOUNDER)’ IV 1. (genus *Tephrinectes*) Chinese brill 2. (genus *Xystreurus*) fantail flounder 3. (genera *Cephalopsetta*, *Tarphops*, *Thysanopsetta*) other large-tooth flounder
- LPST-** ‘CITHARID FISH (LARGESCALE FLOUNDER)’ 1. (genus *Brachypleura*) yellow-dabbled flounder 2. (genus *Lepidoblepharon*) scale-eyed flounder 3. (genera *Citharus*, *Citharoides*) branched ray flounder, twospot largescale flounder, spotted flounder
- LPSX-** ‘POECILOPSETTINE FISH (BIGEYE FLOUNDER)’ 1. (genus *Marleyella*) comb flounder 2. (genus *Nematops*) large-scale righteye flounder, narrow-body righteye flounder, small-mouth righteye flounder 3. (genus *Poecilopsetta*) deepwater dab, colored righteye flounder, African righteye flounder, tile-colored righteye flounder, Alcock’s narrow-body righteye flounder
- LPSV-** ‘ACHIROPSETTID FISH (SOUTHERN FLOUNDER)’ 1. (genera *Achiropsetta*, *Neoarchiropsetta*) finless flounder / prickly flounder, armless flounder 2. (genus *Mancopsetta*) Antarctic armless flounder 3. (genus *Pseudomancopsetta*) pygmy flounder
- LPSŇ-** ‘SAMARID FISH (CRESTED FLOUNDER)’ 1. (genus *Samaris*, *Samaretta*) crested flounder, cockatoo righteye flounder, large-scale crested righteye flounder 2. (genus *Samariscus*) coralline-red flounder, Huysman’s righteye flounder, deep-body righteye flounder, longfinned flounder, Luzon righteye flounder, large-mouth righteye flounder, spotted righteye flounder, New Caledonian righteye flounder, Nielsen’s righteye flounder, Sunier’s righteye flounder, three-spot righteye flounder 3. (genus *Plagiopsetta*) tongue flatfish
- PŠT-** ‘ACHIRID FISH (AMERICAN SOLE)’ 1. (genus *Achirus*) drab sole, plainfin sole, brown sole, lined sole, Mazatlan sole, American sole, network sole 2. (genus *Trinectes*) fringed sole, freshwater sole, spotted-in sole, scrawled sole, hogchoker, spotted-cheek sole, slipper sole 3. (genera *Apionichthys*, *Catathyridium*, *Gymnachirus*, *Hypoclinemus*, *Plinectes*) other American sole fish
- PŠTW-** ‘SOLEID FISH (TRUE SOLE)’ I 1. (*Solea solea*) common sole 2. (genus *Solea* [other than *S. solea*]) Egyptian sole, elongated sole, ovate sole, Senegalese sole, Stanaland’s sole 3. (genera *Achiroides*, *Barnardichthys*, *Bathysolea*, *Brachirus*, *Dagetichthys*, *Liachirus*, *Paradicula*, *Phyllichthys*, *Rendahlia*, *Rhinosolea*, *Synapturichthys*, *Synclidopus*, *Typhlachirus*) other true sole fish
- PŠTY-** ‘SOLEID FISH (TRUE SOLE)’ II 1. (genus *Buglossidium*) yellow sole / solonette 2. (genus *Dexillus*) tufted sole 3. (genus *Dicologlossa*) wedge sole
- PŠTL-** ‘SOLEID FISH (TRUE SOLE)’ III 1. (genus *Heteromycteris*) Cape sole, hook-nosed sole, bamboo sole, true sole 2. (genus *Leptachirus*) Allen’s sole, Bensbach River sole, Darwin sole, Kikori River sole, tailed sole, Lorentz River sole, manyscale sole, Robert’s sole, three-line sole 3. (genus *Microchirus*) bastard sole, Lusitanian sole, Frechkop’s sole, foureyed sole, thickback sole, banded sole
- PŠTR-** ‘SOLEID FISH (TRUE SOLE)’ IV 1. (genus *Monochirus*) whiskered sole 2. (genus *Pardachirus*) piebald sole, peacock sole, southern peacock sole, finless sole, Persian carpet sole, estuary sole 3. (genus *Pegusa*) Cadenat’s sole, Adriatic sole, sand sole, blackhand sole, Cyclope sole
- PŠTŘ-** ‘SOLEID FISH (TRUE SOLE)’ V 1. (genera *Aesopia*, *Pseudoaesopia*, *Zebria*) zebra sole, unicorn sole, banded sole, thickray sole, wavyband sole 2. (genus *Aseraggodes*) poisonous sole 3. (genus *Austroglossus*) west coast sole, mud sole

-PŠTČ- ‘SOLEID FISH (TRUE SOLE)’ VI 1. (genus *Soleichthys*) whiteblotched sole, small-head sole, banded-eye sole, snakeskin sole 2. (genus *Synaptura*) Kaup’s sole, Guinean sole, Commerson’s sole, Portuguese sole, white-margined sole, saltpan sole 3. (genus *Vanstraelenia*) African solonette

-PŠTF- ‘SCOPHTALMID FISH (TURBOT / BRILL)’ 1. (genus *Scophthalmus*) turbot, brill, Black Sea turbot, windowpane flounder 2. (genus *Lepidorhombus*) megrim / whiff 3. (genera *Phrynorhombus*, *Zeugopterus*) topknot

-PŠTH- ‘OTHER PLEURONECTIFORM FISH’ 1. (Psettodids; genus *Psettodes*) spiny turbot, spottail spiny turbot, Indian halibut 2. (Cynoglossids; several genera) tonguefish 3. [stem unassigned]

-PSSK- ‘CICHLIFORM FISH’ (Pholidichthyids; genus *Pholidichthys*) convict or engineer blenny / convict or engineer globy 2. (Tilapioids [Coelotilapines, Coptodonines, Heterotilapines, Oreochromines, Pelmatolapiines, Tilapiines]; numerous genera) tilapia 3. (other Cichlids; numerous genera) cichlid

-PSSKW- ‘AQUARIUM CICHLID FISH’ 1. (genus *Pterophyllum*) angelfish 2. (genus *Archocentrus*) convict cichlid / zebra cichlid 3. (genus *Symphysodon*) discus, pompadour fish

-PSSKY- ‘SPORT-FISHING CICHLID FISH’ 1. (genus *Cichla*) peacock bass 2. (genus *Astronotus*) oscar, tiger oscar, velvet cichlid, marble cichlid 3. (genus *Mayaheros*) Mayan cichlid / Mexican mojarra

-PSSKL- ‘BELONIFORM FISH’ I 1. (Adrianichthyids; several genera) ricefish, medaka 2. (Belonids; numerous genera) needlefish, long tom 3. (Exocoetids; several genera) flying fish / flying cod

-PSSKR- ‘BELONIFORM FISH’ II 1. (Scomberesocids; genera *Cololabis*, *Scomberesox*) saury 2. (Hemiramphids; several genera) halfbeak / spipefish, ballyhoo 3. (Zenarchopterids; several genera) viviparous halfbeak

-PSSKŘ- ‘CYPRINODONTIFORM FISH’ 1. (Aplocheiloids, Profundulids, Fundulids, Valenciids; numerous genera) killifish, topminnow 2. (Cyprinodontids; numerous species) pupfish 3. (Goodeids; numerous genera) springfish, poolfish, goodeid, splitfin, characodon, skiffia

-LPSKW- ‘ANABLEPID FISH’ 1. (genus *Anableps*) four-eyed fish 2. (genus *Jenynsia*) onesided livebearer 3. (genus *Oxyzygonectes*) white-eye

-LPSKY- ‘POECILIID FISH’ 1. (Procatopodines; numerous genera) lampeye 2. (Aplocheilichthines; genus *Aplocheilichthys*) banded lampeye 3. (Poeciliines; numerous genera) livebearer

-LPSKL- ‘ATHERINOPSID FISH (NEOTROPICAL SILVERSIDE)’ 1. (genus *Atherinops*) topmelt, topmelt silverside 2. (genus *Atherinopsis*) jacksmelt, jack silverside 3. (genus *Leuresthes*) grunion

-LPSKR- ‘ATHERINOFORM FISH’ 1. (other Atherinopsids, Notocheirids; genera *Odontesthes*, *Basilichthys*, *Colpichthys*, *Notocheirus*) other neotropical silverside fish 2. (Menidiines; numerous genera) menidiine silverside 3. (Atherinids; numerous genera) Old World silverside

-LPSKŘ- ‘ATHERINOID FISH’ 1. (Isonids; genus *Iso*) surf sardine, surf sprite, flower of the wave 2. (Phallostethids; several genera) priapium fish 3. (Atherionids and Dentatherinids; genera *Atherion*, *Dentatherina*) pricklenose silverside, bearded silverside, McCulloch’s hardyhead, tusked silverside

-LPST- ‘MELANOTAENIID FISH (RAINBOWFISH)’ 1. (Melanotaenines; several genera) rainbowfish 2. (Bedotiines and Telmatherinines; several genera) Madagascar rainbowfish, Celebes rainbowfish 3. (Pseudomugilines; genera *Kiunga*, *Pseudomugil*, *Scaturiginichthys*) blue-eye

-LPSTW- ‘AMBASSID FISH’ 1. (genera *Ambassis*, *Parambassis*, *Gymnochanda*, *Paradoxodacna*, *Pseudoambassis*, *Chanda*) glassy, perchlet, glass(y) perchlet, glassfish 2. (genus *Tetracentrum*) four-spined glass perchlet 3. (genus *Denariusa*) pennyfish

-LPSTY- ‘MUGILID, EMBIOTOCID, & GRAMMATID FISH’ 1. (Mugilids; numerous genera) grey mullet 2. (Embiotocids; numerous genera) surfperch / seaperch 3. (Grammatids; genera *Gramma*, *Lipogramma*) basslet

-LPSTL- ‘PLESIOPID FISH (LONGFIN / ROUNDHEAD)’ I 1. (genus *Acanthoclinus*) rockfish 2. (genus *Acanthoplesiops*) spiny basslet, scottie, longfin 3. (genus *Beliops*) Batan longfin, Southern longfin

-LPSTR- ‘PLESIOPID FISH (LONGFIN / ROUNDHEAD)’ II 1. (genus *Belonepterygion*) barred spiny basslet 2. (genus *Notograptus*) shark-tailed eel-blenny, spotted eel-blenny 3. (genus *Assessor*) yellow devilfish, blue devilfish, Randall’s devilfish

-LPSTRĚ- ‘PLESIOPID FISH (LONGFIN / ROUNDHEAD)’ III 1. (genus *Calloplesiops*) comet / marine betta 2. (genus *Fraudella*) carp prettyfin 3. (genus *Paraplesiops*) blue devil

-LPSTÇ- ‘PLESIOPID FISH (LONGFIN / ROUNDHEAD)’ IV 1. (genus *Plesiops*) longfin, prettyfin 2. (genus *Steeneichthys*) Christmas longfin, Steene’s prettyfin 3. (genus *Trachinops*) hulafish

-LPSP- ‘PSEUDOCROMID FISH (DOTTYBACK)’ 1. (Congrogadines; numerous genera) eel-blenny 2. (Pseudochromines and Anisochromines; numerous genera) dottyback 3. (Pseudoplesiopines; several genera) dottyback

-LPSPW- ‘POMACENTRID FISH’ 1. (Amphiprionines; genera *Amphiprion*, *Premnas*) clownfish / anemonefish 2. (Chromines [other than *Dascyllus*] and Lepidozygines; several genera) damselfish 3. (genus *Dascyllus*) dascyllus, humbug

-LPSPY- ‘POMACENTRINE FISH’ I 1. (genus *Abudefduf*) sergeant, sergeant-major, nightsergeant 2. (genus *Hypsypops*) garibaldi 3. (genus *Neopomacentrus*) demoiselle / lyretail damselfish

-LPSPŁ- ‘POMACENTRINE FISH’ II 1. (genus *Parma*) scalyfin, New Zealand black angelfish 2. (genus *Stegastes*) gregory 3. (genera *Chrysiptera*, *Amblyglyphidodon*, *Neopomacentrus*, *Cheiloprion*, *Dischistodus*, *Hemiglyphidodon*, *Teixeirichthys*, *Similiparma*, *Pomachromis*, *Plectroglyphidodon*, *Nexilosus*, *Microspathodon*, *Mecaenichthys*) damsel

-PSSP- ‘BLENNIOID FISH’ I 1. (Blenniids and Labrisomids; numerous genera) blenny, rockskipper, combtooth blenny 2. (Chaenopsids; numerous genera) pike-blenny, tube-blenny, flagblenny 3. (Dactyloscopids; numerous genera) sand stargazer

-PSSPW- ‘BLENNIOID FISH’ II 1. (Clinids; numerous genera) klipfish, cline, weedfish, kelpfish, eel blenny 2. (Tripterygiids; numerous genera) triplefin / threefin, triplefin blenny

-PSSPY- ‘BLENNIMORPHIC FISH’ 1. (Opistognathids; several genera) jawfish 2. (Gobiesocids; numerous genera) clingfish 3. [stem unassigned]

-PSSPL- ‘LABRID FISH (WRASSE)’ I 1. (genus *Halichoeres* and numerous other genera) wrasse 2. (genera *Bodianus*, *Lachnolaimus*) hogfish 3. (genus *Labroides*) cleaner wrasse

-PSSPR- ‘LABRID FISH (WRASSE)’ II 1. (genus *Xyrichtys*) razorfish 2. (genus *Coris*) rainbow wrasse, coris 3. (genus *Choerodon*) tuskfish

-PSSPŘ- ‘LABRID FISH (WRASSE)’ III 1. (genus *Tautoga*) tautog, blackfish 2. (genus *Tautogolabrus*) bergall 3. (genus *Achoerodus*) blue groper

-PSSPÇ- ‘LABRID FISH (WRASSE)’ IV 1. (genus *Labrichthys*) tubelip wrasse 2. (genus *Diproctacanthus*) yellowtail tubelip 3. [stem unassigned]

-PSSPF- ‘LABRIFORM FISH’ 1. (Odacids; several genera) cale, weed whiting 2. (Scarine labrids; numerous genera) parrotfish 3. [stem unassigned]

-PSSPT- ‘TRACHINIFORM FISH’ I 1. (Trachinids; genera *Trachinus*, *Echichthys*) weever / weeverfish 2. (Creediids; several genera) sandburrer / burrower, sand diver 3. (Ammodytids; several genera) sandlance / sand lance, sand eel, launce

-PSSPL- ‘TRACHINIFORM FISH’ II 1. (Chiasmodontids; several genera) snaketooth fish / swallower 2. (Champsodontid; genus *Champsodon*) crocodile toothfish, sabre-gill, gaper 3. (Cheimarrichthyids; genus *Cheimarrichthys*) torrentfish

-PSSPV- ‘TRACHINIFORM FISH’ III 1. (Leptoscopids; genera *Crapatalus*, *Leptoscopus*, *Lesueuina*) southern sandfish, flathead pygmy-stargazer, estuary stargazer 2. (Percophids; numerous genera) duckbill 3. (Pinguipedids; several genera) sandperch, grubfish

-PSSPH- ‘TRACHINIFORM FISH’ IV 1. (Trichodontids; genera *Trichodon*, *Arctoscopus*) sandfish 2. (Trichonotids; genus *Trichonotus*) sand-diver 3. (Uranoscopids; several genera) stargazer

- RPSP-** ‘CENTRARCHID FISH’ I 1. (genus *Lepomis*) sunfish 2. (genus *Micropterus*) black bass 3. (genus *Pomoxis*) crappie
- RPSPW-** ‘CENTRARCHID FISH’ II 1. (genus *Enneacanthus*) banded sunfish 2. (genus *Centrarchus*) flier 3. (genus *Archoplites*) Sacramento perch
- RSPY-** ‘CENTRARCHID FISH’ III 1. (genus *Ambloplites*) rock bass, shadow bass, Roanoke bass, Ozark bass 2. (genus *Acantharchus*) mud sunfish 3. [stem unassigned]
- RPSPL-** ‘CENTRARCHIFORM FISH’ I: 1. (Aplodactylids; genus *Aplodactylus*) marblefish, sea carp, rock cale 2. (Latrids and Cheilodactylids; several genera) trumpeter, morwong / butterfish / fingerfin / jackassfish / sea carp / snapper / moki 3. (Chironemids; genus *Chironemus*) kelpfish, silver spot
- RPSPR-** ‘CENTRARCHIFORM FISH’ II: 1. (Cirrhitiids; numerous genera) hawkfish 2. (Dichistiids; genus *Dichistius*) galjoen 3. (Elassomatids; genus *Elassoma*) pygmy sunfish
- RPSPRĚ-** ‘CENTRARCHIFORM FISH’ III: 1. (Enoplosids; genus *Enoplosus*) old wife 2. (Girellines; genera *Girella*, *Graus*) nibbler, drummer, opaleye, parore, blackfish, stripey bream 3. (Kuhliids; genus *Kuhlia*) flagtail
- RPSPH-** ‘CENTRARCHIFORM FISH’ IV: 1. (Kyphosines; several genera) sea chub 2. (Microcantines; several genera) footballer, moonlighter 3. (Scorpiinids; several genera) halfmoon, grey knifefish, blue knifefish, sweep
- RPSB-** ‘CENTRARCHIFORM FISH’ V: 1. (Oplegnathids; genus *Oplegnatus*) knifejaw 2. (Percichthyids, Percalatids, Perciliids, and Siniperchids; numerous genera) temperate perch, nightfish, pygmy perch, perchlet, mandarin fish, oriental perch 3. (Terapontids; numerous genera) grunter, tigerperch, terapon, trumpeter
- PSSC-** ‘TETRADONTIFORM FISH’ I: 1. (Tetradontids and Triodontids; numerous genera) puffer, pufferfish, blowfish, globefish, balloonfish, blowie, bubble fish, swellfish, toadfish, toady, honey toad, sugar toad, sea squab, toby, blaasop 2. (Diodontids; several genera) porcupine fish / blowfish, burrfish, swelltoad 3. (Triacanthodids; numerous genera) spikefish, trumpetsnout
- PSSČ-** ‘TETRADONTIFORM FISH’ II: 1. (Balistids; numerous genera) triggerfish, picasso fish 2. (Triacanthids; several genera) triplespine / tripodfish 3. (Monacanthids; numerous genera) filefish, foolfish, shingle, leatherjacket, scraper
- PŠŠČ-** ‘TETRADONTIFORM FISH’ III: 1. (Molids; genera *Mola*, *Mastrurus*, *Ranzania*) sunfish / mola 2. (Ostraciids and Aracanids; several genera) boxfish, cowfish, trunkfish, turretfish, basketfish 3. [stem unassigned]
- PSST-** ‘SCORPAENIFORM FISH’ I: 1. (Scorpaenids; numerous genera) scorpionfish, rock fish, red rock cod 2. (genus *Taenionotus*) paperfish / leaf scorpionfish 3. (genus *Centrogenys*) false scorpionfish
- PSSTW-** ‘SCORPAENIFORM FISH’ II: 1. (genus *Dendrochirus*) lionfish, firefish, turkey fish 2. (genus *Ebrosia*) lionfish 3. (genus *Pterois*) lionfish, zebrafish, firefish, turkeyfish / tastyfish / butterfly-cod
- PSSTY-** ‘SCORPAENIFORM FISH’ III: 1. (Apistids and Tetraogids; numerous genera) wasp scorpionfish, waspfish 2. (genus *Centropogon*) fortescue 3. (genera *Glyptauchen*, *Neovespicula*) goblinfish, leaf goblinfish
- PSSTL-** ‘SCORPAENIFORM FISH’ IV: 1. (genus *Gymnapistes*) cobbler / estuary cobbler 2. (genus *Notesthes*) bullrout / freshwater stonefish / kroki 3. (genus *Tetraroge*) bearded roguefish
- PSSTR-** ‘SCORPAENIFORM FISH’ V: 1. (Agonids, Bathyagonines and Bothragonines; several genera) poacher, snailfish, starsnout, rockhead 2. (genus *Agonus*) hooknose / pogge / armed bullhead 3. (Anoplagonines; several genera) alligatorfish
- PSSTRĚ-** ‘SCORPAENIFORM FISH’ VI: 1. (Anoplopomatids; genera *Anoplopoma*, *Erilepsis*) sablefish / butterfish / black cod / blue cod / bluefish / candlefish / coal cod / coalfish / beshow, skilfish 2. (Hexagrammids; several genera) greenling, ling cod / buffalo cod 3. (Normanichthyids; genus *Normanichthys*) mole sculpin
- PSSTÇ-** ‘SCORPAENIFORM FISH’ VII: 1. (Sebastids; several genera) rockfish, rock perch, ocean perch, sea perch, thornyhead, sea ruffe, rockcod 2. (Neosebastids; genera *Neosebastes*, *Maxilllicosta*) gurnard perch, gurnard scorpionfish 3. (Triglids; numerous genera) sea robin, gurnard, latchet, piper gurnard
- PSSTF-** ‘SCORPAENIFORM FISH’ VIII: 1. (Synanceids; numerous genera) stonefish, stinger, stingfish, ghoul, devilfish 2. (Congiopodids and Perryenids; several genera) pigfish, horsefish, racehorse 3. (Pataecids; several genera) Australian prowfish, red Indianfish

-PSSTH- ‘SCORPAENIFORM FISH’ IX: 1. (Eschmeyerids; genus *Eschmeyer*) cofish 2. (Plectrogenids; genus *Plectrogenium*) stinger flathead 3. (Setarchids; several genera) deep-sea bristly scorpionfish

-PSSTL- ‘SCORPAENIFORM FISH’ X: 1. (Aploactinids and Gnathanacanthids; numerous genera) velvetfish, red velvetfish 2. (genus *Adventor*) visitor 3. (Caracanthids; genus *Caracanthus*) coral croucher, orbicular velvetfish

-PSSDL- ‘COTTOID FISH (SCULPIN)’ I: 1. (Cottids; numerous species) sculpin, bullhead, cabezon 2. (Bathylutichthyids; genus *Bathylutichthys*) Antarctic sculpin 3. (Hemitripteryids; several genera) sea raven

-PSSDR- ‘COTTOID FISH (SCULPIN)’ II: 1. (Icelids; genus *Icelus*) scaled sculpin 2. (Comephorids; genus *Comephorus*) Baikal oilfish 3. (Cottocomephorids; several genera) Baikal sculpin / bighead sculpin

-PSSDR- ‘COTTOID FISH (SCULPIN)’ III: 1. (Ereuniids; genera *Ereunias*, *Marukawichthys*) deepwater bullhead sculpin 2. (Psychrolutids; numerous genera) blobfish, toadfish, flathead sculpin, tadpole sculpin, fathead sculpin 3. (Rhamphocottids; genus *Rhamphocottus*) grunt-fish / grunt sculpin

-PSSDV- ‘COTTOID FISH (SCULPIN)’ IV: 1. (Cyclopterids; several genera) lumpsucker / lumpfish 2. (Liparids; numerous genera) snailfish / sea snail 3. (Abyssocottids; several genera) deep-water sculpin

-PSBV- ‘PLATYCEPHALOID (FLATHEAD) FISH’ 1. (Platycephalids, Bembrids, Parabembrids, and Hoplichthyids; numerous genera) flathead, deep-water flathead, ghost flathead / armoured flathead 2. (genus *Papilloculiceps*) crocodilefish 3. (Peristediids; several genera) armored searobin / armored gurnard

-PSPT- ‘GASTEROSTEOID FISH’ 1. (Gasterosteids; several genera) stickleback 2. (Aulorhynchids; genus *Aulorhynchus*) tube-snout 3. (Hypoptychids; genera *Hypoptychus*, *Aulichthys*) sand-eel, tubenose, sandlance

-PSSBW- ‘LOPHIIFORM FISH (ANGLERFISH)’ I 1. (Lophiids; several genera) angler, goosefish, monkfish, sea-devil 2. (Brachionichthyids; several genera) handfish / warty angler 3. (Chaunacids; genera *Chaunax*, *Chaunacops*) sea toad / coffinfish, frogmouth

-PSSBY- ‘LOPHIIFORM FISH (ANGLERFISH)’ II 1. (Antennariines and Lophichthyids; several genera) frogfish 2. (Histiophrynines; several genera) anglerfish 3. (Tetrabrachiids; genera *Tetrabrachium*, *Dibrachichthys*) four-armed frogfish

-PSSBL- ‘LOPHIIFORM FISH (ANGLERFISH)’ III 1. (Ogcocephalids; numerous genera) batfish, seabat 2. (Himantolophids; genus *Himantolophus*) footballfish 3. (Centrophrynids; genus *Centrophryne*) horned lantern fish / prickly seadevil

-PSSBR- ‘LOPHIIFORM FISH (ANGLERFISH)’ IV 1. (Ceratiids; genera *Ceratias*, *Cryptopsaras*) warty seadevil 2. (Diceratiids; genera *Diceratias*, *Bufoceratias*) double angler / double-spine seadevil 3. (Neoceratiids; genus *Neoceratias*) toothed seadevil / spiny seadevil / netbeard seadevil

-PSSBR- ‘LOPHIIFORM FISH (ANGLERFISH)’ V 1. (Caulophrynids; genera *Caulophryne*, *Robia*) fanfin / hairy anglerfish / fanfin seadevil 2. (Melanocetids; genus *Melanocetus*) black seadevil 3. (Thaumaticthyids; genera *Thaumaticthys*, *Lasiognathus*) wolftrap angler

-PSSBV- ‘LOPHIIFORM FISH (ANGLERFISH)’ VI: 1. (Oneirodids; numerous genera) dreamer, dreamarm, tyrant devil 2. (Gigantoactinids; genera *Gigantactis*, *Rhynchactis*) whipnose / whipnose angler / whipnose seadevil 3. (Linophrynids; several genera) leftvent / bearded seadevil, netdevil

-PŠP- ‘PERCID FISH’ 1. (Percines; several genera) perch, ruffe, schraetzer, percarina 2. (Etheostomatines; several genera) darter 3. (Lucioperines; several genera) sculpin-perch, asprete, walleye, pike-perch, Zander, Sauger, streber, zingel

-PŠPW- ‘LUTJANIFORM FISH’ 1. (Lutjanids; numerous genera) snapper, jobfish, wenchman, pinjalo, beeliner, Chinamanfish 2. (Haemulines and Plectorhynchines; several genera) grunt, sargo, porkfish, margate, porgy, bonnetmouth, boga, dara, grunter, piggy, salema, sweetlips, rubberlip, slatey, thicklip, hotlips 3. (Caesionids; several genera) fusilier, banana fish

- PŠPY-** ‘LOBOTIFORM FISH’ 1. (Datnioidids; genus *Datnioides*) tigerfish, tiger perch, freshwater tripletail 2. (Lobotids; genus *Lobotes*) tripletail 3. (Hapalogenyids; genus *Hapalogenys*) barbeled grunter, velvetchin, javelinfish
- PŠPL-** ‘ACANTHUROID FISH’ I 1. (genera *Acanthurus*, *Ctenochaetus*, *Prionurus*, *Paracanthurus*) surgeonfish, sawtail, doctorfish 2. (genus *Naso*) unicorn fish 3. (genus *Zebrasoma*) tang
- PŠPR-** ‘ACANTHUROID FISH’ II: 1. (Siganids; genus *Siganus*) rabbitfish / spinefoot 2. (Scatophagids; genera *Scatophagus*, *Selenotoca*) scat 3. (Luvarids; genus *Luvaris*) louvar / luvar
- PŠPŘ-** ‘ACANTHUROID FISH’ III: 1. (Ephippids; several genera) spadefish, batfish 2. (Drepaneids; genus *Drepane*) sicklefish, concertina fish 3. (Zanclids; genus *Zanclus*) Moorish idol
- PŠPÇ-** ‘PRIACANTHIFORM & CAPROIFORM FISH’ 1. (Priacanthids; several genera) bigeye, bulleye, bullseye, catalufa, glasseye 2. (Cepolids; several genera) bandfish 3. (Caproids; genera *Capros*, *Antigonia*) boarfish
- PŠPF-** ‘SPARIFORM FISH’ 1. (Sparids; numerous species) sea bream, porgy, picarel, musselcracker, pinfish, oblate, scup, salema, goldline 2. (Nemipterids; several genera) whiptail bream, false snapper, thread-fin bream, monocle bream, whiptail 3. (Lethrinids; several genera) emperor, emperor bream, big-eye-bream, pigface bream, large-eye bream
- PŠPH-** ‘SERRANID FISH (SEA BASS & GROUPER)’ 1. (Anthiades, Liopropomatines, & Serranines; numerous genera) sea bass, wirrah, koester, seaperch, splitfin, swallowtail, jewelfish, harlequin fish, perchlet, anthias, basslet, goldie, hamlet, comber 2. (Epinephelinae; numerous genera) grouper, coral grouper, lyretail, hind, mutton hamlet 3. (Grammistines; several genera) soapfish, podge, skunkfish
- PSKH-** ‘ZOARCOID FISH’ I 1. (Anarhichadids; genera *Anarhichas*, *Anarrhichthys*) wolffish / sea wolf, wolf eel 2. (Bathymasterids; genera *Bathymaster*, *Rathbunella*, *Ronquilus*) ronquil / ronchil, searcher 3. (Zoarcids; numerous genera) eelpout, pout, fish doctor
- PSKM-** ‘ZOARCOID FISH’ II 1. (Cryptacanthodids; genus *Cryptacanthodes*) wrymouth 2. (Scytalinids; genus *Scytalina*) graveldiver 3. (Ptilichthyids; genus *Ptilichthys*) quillfish
- PSKŤ-** ‘ZOARCOID FISH’ III 1. (Pholids; several genera) gunnel 2. (Stichaeids; numerous genera) prickleback / shanny 3. (Zaprroids; genus *Zaprora*) prowfish
- PŠTL-** ‘NOTOTHENIOID FISH’ I 1. (Nototheniids; numerous genera) cod icefish / notothen, icedevil, toothfish, notie, rockcod, Antarctic silverfish, southern cod, scalyhead 2. (Bathydraconids; numerous genera) Antarctic dragonfish, ploughfish 3. (Channichthyids; numerous genera) crocodile icefish / white-blooded fish, icefish
- PŠTV-** ‘NOTOTHENIOID FISH’ II 1. (Pseudaphritids; genus *Pseudaphritis*) congoli / tupong, catadromous icefish 2. (Eleginopsids; genus *Eleginops*) Patagonian blenny / Falkland’s mullet 3. (Bovichtids; several genera) thornfish, bull blenny
- PŠPL-** ‘NOTOTHENIOID FISH’ III 1. (Harpagiferids; genus *Harpagifer*) spiny plunderfish / plunderfish 2. (Artedidraconids; several genera) barbeled plunderfish 3. [stem unassigned]
- PŠTHW-** ‘PEMPHERIFORM FISH’ I 1. (Pemptherids; genera *Pempheris*, *Parapriacanthus*) sweeper, bullseye 2. (Symphsanodontids; genus *Symphysanodon*) slopefish 3. (Banjosids; genus *Banjos*) banjofish
- PŠKHW-** ‘PEMPHERIFORM FISH’ II 1. (Epigonids; several genera) deepwater cardinalfish 2. (Pentacerotids; several genera) armorhead, boarfish 3. (Glaucosomatids; genus *Glaucosoma*) pearl perch, jewfish
- PŠPHW-** ‘PEMPHERIFORM FISH’ III 1. (Howellids; several genera) oceanic basslet 2. (Bathyclupeids; genera *Bathyclupea*, *Neobathyclupea*) deep-sea herring 3. (Polyprionids; genera *Polyprion*, *Stereolepis*) wreckfish, giant sea bass, bass grouper

- RPŠK-** ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ I 1. (Gerreids; several genera) mojarra 2. (Chaetodontids; several genera) butterflyfish, coralfish bannerfish, pennantfish, talma, barberfish 3. (Leiognathids; numerous genera) ponyfish, slipmouth, toothpony, slimy
- RPŠKW-** ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ II 1. (Lateolabracids; genus *Lateolabrax*) Asian seabass 2. (Dinopercids; genera *Dinoperca*, *Centrarchopos*) cavebass, barred seabass, lampfish 3. (Callanthiids; genera *Callantias*, *Grammatonotus*) splendid perch, groppo
- RPŠKY-** ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ III 1. (Moronids; genera *Morone*, *Dicentrarchus*) temperate bass, white perch 2. (Acropomatids; several genera) lanternbelly / temperate ocean bass, rosy seabass / blackthroat seaperch, seabass, splitfin 3. (Latids; several genera) lates perch, spikey bass, Waigieu seaperch, Waigeo barramundi
- RPŠKL-** ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ IV 1. (Caristiids; several genera) manefish 2. (Polycentrids; genera *Monocirrhus*, *Polycentrus*) leafish 3. (Pomacanthids; several genera) marine angelfish
- RPŠKR-** ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ V 1. (Arripids; genus *Arripis*) ruff / Australian herring, Australian salmon, kahawai 2. (Malacanthids; several genera) tilefish, Quakerfish, blanquillo 3. (Zaniolepidids; genus *Zaniolepis*) combfish
- RPŠKŘ-** ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ VI 1. (Dinolestids; genus *Dinolestes*) long-finned pike / yellowfin pike 2. (Parascorpidids; genus *Parascorpius*) jutjaw 3. (Sillaginids; several genera) whiting, smelt-whiting, sand borer, sand-smelt, sillago
- RPŠKH-** ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ VII 1. (Sciaenids; numerous genera) drum, croaker, sheephead, wuss fish, shepherd’s pie, gou, Gasper goo, grinder, meagre, kob, mulloay, weakfish, bahaba, corvina, spot, king fish, curbinata, pacora, drummer, red, queenfish, stardrum, totoaba / totuava 2. (Monodactylids; genera *Monodactylus*, *Schuettea*) moony, mono / Malayan angel, moonyfish, fingerfish, pomfret 3. (Emmelichthyids; several genera) rover, redbait, rubyfish, kali kali
- RPŠG-** ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ VIII 1. (Pomatomids; genus *Pomatomus*) bluefish, tailor, elf 2. (Lactariids; genus *Lactarius*) false trevally 3. [stem unassigned]

7.3.1.6 Echinoderms, Hemichordates, and Xenacoelomorphs

- LMZW-** ‘STARFISH / BRITTLE STAR / BASKET STAR’ 1. (Asteroidea; numerous genera) starfish, sea star 2. (Ophiurids; numerous genera) brittle star 3. (Euryalids; several genera) basket star
- LMZY-** ‘SEA URCHIN / SAND DOLLAR’ 1. (all Echinoids except Clypeasteroids and Spatangoids) sea urchin 2. (Clypeasteroids; numerous genera) sand dollar 3. (Spatangoids; several genera) heart urchin
- LMZL-** ‘SEA CUCUMBER’ 1. (Holothuroids other than Molpadiids, Dendrochiroitids, and Elasipodids) sea cucumber 2. (Molpadiids; several genera) molpadiid sea cucumber 3. (Dendrochiroitids and Elasipodids; numerous genera) tentacled sea cucumber
- LMZR-** ‘SEA FLOWER’ 1. (all Crinoids except Comatulids; several genera) sea lily 2. (Comatulids; several genera) feather star 3. (genus *Xyloplax*) sea daisy
- LMZŘ-** ‘HEMICHORDATE’ 1. (Enteropneusta; numerous genera) acorn worm 2. (genus *Cephalodiscus*) cephalodiscus 3. (genus *Rhabdopleura*) rhabdopleura
- LMZV-** ‘XENACOELOMORPH’ 1. (genus *Xenoturbella*) Xenoturbella 2. (Acoela; numerous genera) acoel 3. (Nemertodermatids; several genera) nemertodermatid acoel

7.3.1.7 Protostomes (other than Arthropods)

Annelids & Related Animals

- LTP-** ‘ANNELID’ 1. earthworm 2. leech 3. other annelid / ringed worm / segmented worm

- LTPW**- ‘DISEASE-CAUSING NEMATODE’ I 1. (genus *Trichinella*) trichinella / trichina worm 2. (genus *Anisakis*) anisakis 3. (genus *Gnathostoma*) gnathostoma
- LTPY**- ‘DISEASE-CAUSING NEMATODE’ II 1. (genus *Ascaris*) ascaris / large roundworm 2. (genus *Loa*) loa 3. (genus *Onchocerca*) onchocerca
- LTPL**- ‘DISEASE-CAUSING NEMATODE’ III 1. (genus *Dirofilaria*) dirofilaria 2. (genus *Thelazia*) thelazia, eyeworm 3. (genus *Gongylonema*) gongylonema
- LTPR**- ‘DISEASE-CAUSING NEMATODE’ IV 1. (genus *Mansonella*) mansonella 2. (genera *Brugia*, *Wuchereria*) brugia, wuchereria 3. (genus *Trichuris*) whipworm
- LTPŘ**- ‘DISEASE-CAUSING NEMATODE’ V 1. (genus *Dracunculus*) guinea worm 2. (genus *Toxocara*) toxocara, cat roundworm, dog roundworm, fox roundworm 3. (genus *Enterobius*) pinworm / threadworm / seatworm
- LTPÇ**- ‘DISEASE-CAUSING NEMATODE’ VI 1. (genus *Ancylostoma*) Old World hookworm 2. (genus *Necator*) New world hookworm 3. (genus *Strongyloides*) threadworm
- LTPL**- ‘NEMATODE(-LIKE ANIMAL)’ 1. (Nematoda other than named genera in the six roots above; numerous genera) other nematode/roundworm 2. (Nematomorphs; numerous genera) horsehair worm / Gordian worm 3. (Onychophora; numerous genera) velvet worm
- LTB**- ‘MICROSCOPIC ECDYSOZOAN’ 1. (Tardigrada; numerous genera) tardigrade / “water bear” 2. (Loricifera; numerous genera) loriciferan 3. (Kinorhyncha; numerous genera) mud dragon / spiny crown worm
- LTBW**- ‘PRIAPULID WORM’ 1. (Priapulids; genera *Priapulus*, *Priapulosis*) priapulid worm (a.k.a. penis worm) 2. (genus *Tubilucus*) tubiluchide penis worm 3. (genus *Halicryptus*) giant penis worm
- LTTY**- ‘ROTIFER’ 1. (Eurotatoria; numerous genera) rotifer 2. (Monogonanta; numerous genera) monogonant rotifer 3. (Seisonids; genera *Seison*, *Paraseison*) seisonid rotifer
- LTL**- ‘GNATHIFER (OTHER THAN ROTIFER)’ 1. (Acanthocephala; numerous genera) thorny-headed worm, spiny-headed worm 2. (Chaetognatha; numerous genera) arrow worm 3. (Cycliophora; genus *Symbion*) symbion
- LTBŘ**- ‘OTHER SPIRALIA’ 1. (Gnathostomulids; numerous genera) jaw worm 2. (Micrognathozoa; genus *Limnognathia*) limnognathia 3. (Gastroticha; numerous genera) gastrotrich / hairyback
- LTTW**- ‘CESTODA (TAPEWORM)’ I 1.(genus *Taenia*) taenia, pork tapeworm, beef tapeworm, Asian tapeworm 2. (genus *Diphyllobothrium*) broad tapeworm / fish tapeworm / broad fish tapeworm 3. (genus *Hymenolepis*) dwarf tapeworm, rat tapeworm
- LTTY**- ‘CESTODA (TAPEWORM)’ II 1.(genus *Spirometra*) cat tapeworm, dog tapeworm, raccoon tapeworm 2. (genus *Echinococcus*) echinococcus 3. (Cestoda other than named genera; numerous genera) other tapeworm
- LTL**- TREMATODE (FLUKE)’ I 1. (genus *Schistosoma*) schistosoma / blood fluke 2. (genus *Trichobilharzia*) trichobilharzia 3. (genus *Paragonimus*) paragonimus
- LTR**- ‘TREMATODE (FLUKE)’ II 1. (genus *Fasciola*) fasciola / common liver fluke 2. (genus *Chlonorchis*) chlonorchis / Chinese liver fluke 3. (genus *Dicrocoelium*) dicrocoelium / lancet liver fluke
- LTRŘ**- ‘TREMATODE & OTHER FLATWORM’ 1. (genus *Opisthorchis*) opisthorchis / Southeast Asian liver fluke 2. (Trematoda other than named genera; numerous genera) other fluke 3. (non-cestoid, non trematoid platyhelminths; numerous genera) other flatworm, planarian
- LTTÇ**- ‘BRYOZOAN / ENTOPROCT’ 1. (Bryozoa/Ectoprocta; numerous genera) moss animal 2. (Entoprocta/Kamptozoa; numerous genera) entoproct / kamptozoan
3. [stem unassigned]
- LTL**- ‘ANNELID-RELATED ANIMAL’ I 1. (Phoronida; genera *Phoronis*, *Actinotrocha*) horseshoe worm 2. (Brachiopoda; numerous genera) brachiopod 3. (Sipuncula; numerous genera) peanut worm

-LṬTH- ‘ANNELID-RELATED ANIMAL’ II 1. (Nemertea; numerous genera) ribbon worm / proboscis worm 2. (Myzostomida; numerous genera) myzostomid 3. (Dicyemida/Rhombozoa; several genera) dicyemid/rhombozoan

Molluscs

Gastropods [Note: recent genetics-based studies show that gastropod phylogeny and taxonomy bears little relation to the distinctive morphological traits by which the gastropods were traditionally classified. Since laypersons are likely to be familiar only with practical distinctive morphology in distinguishing these creatures, the classificatory scheme below will utilize morphology as its lexico-semantic basis]

-ṬPW- ‘SNAIL’ 1. terrestrial snail 2. sea snail / whelk 3. limpet

-ṬPY- ‘DISTINCTIVE SEA SNAIL’ 1. abalone 2. conch [i.e., sea snail with pointed/spired/horned shell] 3. (Thecosomes; numerous genera) sea butterfly

-ṬPL- ‘SLUG’ 1. slug 2. sea slug / nudibranch 3. (Anaspids; several genera) sea hare

Bivalves

-ṬPR- ‘CLAM’ 1. clam 2. cockle 3. (Limids; several genera) file shell

-ṬPŘ- ‘MYID / HIATELLID’ 1. (Myids; several genera) soft-shell clam 2. (Hiatellids; several genera) geoduck 3. (genus *Teredo*) shipworm

-ṬPÇ- ‘OYSTER’ 1. (Ostreoids; numerous genera) [true] oyster, foam oyster / honeycomb oyster 2. (Pteroids; numerous genera) hammer oyster, pearl oyster, tree oyster, winged oyster, feather oyster, pulvinitid 3. (Dimyids; several genera) dimyarian oyster

-ṬPF- ‘MUSSEL / SCALLOP’ 1. (Unionoids; numerous genera) freshwater mussel 2. (Mytiloids; numerous genera) saltwater mussel 3. (Pectinids, Propeamussids, Entoliids; numerous genera) scallop, glass scallop, mud scallop

-ṬPS- ‘PTERIOMORPH’ I 1. (Anomiids; several genera) jingle shell / saddle oyster 2. (Placunids; windowpane shell / windowpane oyster 3. (Pinnids; several genera) pen shell

-ṬPŠ- ‘PTERIOMORPH’ II 1. (Arcids; numerous genera) ark shell / ark clam / bittersweet 2. (genus *Plicatula*) kittenpaw 3. (genus *Spondylus*) spiny oyster / thorny oyster

Cephalopods

-ṬPT- ‘OCTOPOD’ 1. (Octopoda; numerous genera) octopus 2. (genus *Vampyroteuthis*) vampire squid 3. (genus *Argonauta*) argonaut / paper nautilus

-ṬPL- ‘SQUID / CUTTLEFISH’ 1. (Myopsida, Oegopsida; numerous genera) squid 2. (Sepiolida, Spirulida; numerous genera) bobtail squid, ram’s horn squid 3. (Sepiadariids; numerous genera) cuttlefish

Other Molluscs

-ṬPSS- ‘CHITON / NAUTILUS / SCAPHOPOD’ 1. (genera *Allonautilus*, *Nautilus*) [chambered] nautilus 2. (Polyplacophorans; numerous genera) chiton / sea cradle 3. (Scaphopods; several genera) tusk shell / tooth shell

-ṬPŠŠ- ‘OTHER MOLLUSC’ 1. (Solenogastres/Neomeniomorphs; numerous genera) solenogaster 2. (Caudofoveata/Chaetodermomorpha; numerous genera) caudofoveate 3. (Monoplacophorans; several genera) monoplacophoran

7.3.1.8 Porifera, Ctenophora, Placozoa, and Cnidaria

Porifera

- KFW**- ‘PORIFERA (SPONGE)’ I 1. (Calcarea; numerous genera) calcareous sponge 2. (Hexactinellids; numerous genera) glass sponge 3. (Demosponges; numerous genera) demosponge / coralline sponge
- KFY**- ‘PORIFERA (SPONGE)’ II 1. (Plakinids; several genera) spiculate sponge 2. (Oscarellids; genera *Oscarella*, *Pseudocortidium*) slime sponge, aspiculate sponge 3. [stem unassigned]

Ctenophora and Placozoa

- KFM**- ‘CTENOPHORE (COMB JELLY) and PLACOZOAN’ 1. (Tentaculates; numerous genera) comb jelly, Venus girdle 2. (Beroids; genera *Beröe*, *Neis*) beroid / cigar comb jelly 3. (Placozoa; genera *Trichoplax*, *Hoilungia*, *Polyplacotoma*) placozoan

Cnidaria

- KFL**- ‘SEA ANEMONE’ 1. (Actiniaria; numerous genera) sea anemone 2. (Zoanthids; numerous genera) zoanthid / zoanthid coral 3. (Penicillaria and Spirularia; numerous genera) tube-dwelling anemone
- KFR**- ‘HEXACORALLINE CORAL’ 1. (Scleractinia; numerous genera) stony coral / hard coral 2. (Corallimorpharia; numerous genera) mushroom coral, elephant ear anemone 3. (Antipatharia; numerous genera) black coral / thorn coral
- KFR**- ‘OCTOCORALLINE CORAL’ 1. (Pennatulacea; numerous genera) sea pen, sea pansy) 2. (Alcyonaea; numerous genera) soft coral, sea fan, sea whip, gorgonian 3. (Heliopora; genera *Heliopora*, *Nanipora*) soft coral
- KFT**- ‘JELLYFISH’ 1. (Coronamedusae and Discomedusae; numerous genera) jellyfish 2. (Cubozoa; numerous genera) box jellyfish 3. (Stauromedusae; several genera) stalked jellyfish
- KFP**- ‘HYDROZOAN’ 1. (Hydrozoa in hydroid or polypoid stage; numerous genera) hydroid, polyp 2. (Hydrozoa in medusoid stage; numerous genera) hydrozoan jelly 3. (Siphonophorae; numerous genera) siphonophore [colonial hydrozoan] (including Portuguese man o’war)
- KFN**- ‘PARASITIC CNIDARIA’ 1. (Polypodiids; genus *Polypodium*) polypodium 2. (Myxosporea; numerous genera) myxosporean myxozoan 3. (Malacosporea-Saccosporids; genera *Buddenbrockia*, *Tetracapsuloides*) saccosporid myxozoan

7.3.1.9 Arthropods (including Arachnids, Crustaceans, Myriapods, and Insects)

Chelicerates

Chelicerates > Euchelicerata > Arachnida > Araneae > Mesothelae (containing single family Liphistiidae)

-ŽŇW- ‘LIPHISTIID SPIDER (ASIAN TRAPDOOR SPIDER)’ 1. (genera *Heptathela*, *Ryuthela*) Japanese and Ryuku Island trapdoor spider, including kimura spider 2. (genera *Ganthela*, *Sinothela*, *Songthela*, *Vinathela*, *Qionghela*) Chinese and Vietnamese trapdoor spider 3. (genus *Liphistius*) Thai/Malaysian/Burmese/Laotian trapdoor spider

Chelicerates > Euchelicerata > Arachnida > Araneae > Mygalomorphae

Chelicerates > Euchelicerata > Arachnida > Araneae > Mygalomorphae > Atypoidea

-ZMŘ- ‘MYGALOMORPHIC ATYPOID SPIDER’ 1. (Antrodiaetids; genera *Aliatypus*, *Antrodiaetus*, *Atypoides*) folding trapdoor spider 2. (Atypids; genera *Atypus*, *Calommata*, *Sphodros*) purseweb spider / atypical tarantula 3. (Mecicobothrids; genera *Hexura*, *Hexurella*, *Mecicobothrium*, *Megahexura*) sheet funnel-web spider / dwarf tarantula

Chelicerates > Euchelicerata > Arachnida > Araneae > Mygalomorphae > Avicularioidea

-ZMW- ‘AVICULARIOID SPIDER’ I 1. (Actinopodids; genera *Actinopus*, *Missulena*, *Plesiolenia*) Actinopod spider, including mouse spider 2. (Atracids; genera *Atrax*, *Hadronyche*, *Illawarra*) atracid / Australian funnel-web spider 3. (Hexathelids, Macrothelids, Porrhothelids; several genera) funnel-web tarantula

-ZMY- ‘AVICULARIOID SPIDER’ II 1. (Diplurids; numerous genera) curtain-web spider 2. (genus *Macrothele*) macrothelid funnel-web spider 3. (genus *Porrhothele*) porrhothelid curtain-web spider

-ZML- ‘AVICULARIOID SPIDER’ III 1. (Ctenizids; genera *Cteniza*, *Cyrtocarenum*, *Stasimopus*) ctenizid / cork-lid trapdoor spider 2. (Halonoproctids; several genera) halonoproctid trapdoor spider 3. (Nemsiids; numerous genera) nemesiid / funnel-web tarantula

-ZMR- ‘AVICULARIOID SPIDER’ IV 1. (Cyrtaucheniids; numerous genera) wafer trapdoor spider 2. (Euctenizids; several genera) euctenizid trapdoor spider 3. (Idiopids; numerous genera) armoured trapdoor spider

-ZNW- ‘AVICULARIOID SPIDER’ V 1. (Barychelid; numerous genera) barychelid / brushed trapdoor spider / trapdoor baboon spider 2. (Migids; numerous genera) tree trapdoor spider 3. (Microstigmatids; several genera) microstigmatid spider

-ZNY- ‘AVICULARIOID SPIDER’ VI 1. (Theraphosids; numerous genera) tarantula 2. (Paratropidines; genera *Anisaspis*, *Anisaspoides*, *Paratropis*, *Stormtropis*) [paratropidine] baldlegged spider 3. (genus *Melloina*) [glabropelmatine] baldlegged spider

Chelicerates > Euchelicerata > Arachnida > Araneae > Mygalomorphae > Araneomorphae > Hypochilidae, Filistatids, and Synspermiata

-BZPW- ‘PRIMITIVE ARANEOMORPHIC SPIDER’ I 1. (Hypochilids; genera *Ectatosticta*, *Hypochilus*) lampshade spider 2. (Filistatids; numerous genera) crevice weaver spider 3. (Austrochilids; genera *Austrochilus*, *Thaïda*) austrochilid spider

-BZPY- ‘PRIMITIVE ARANEOMORPHIC SPIDER’ II 1. (Gradungulids; several genera) large-clawed spider 2. (genus *Hickmania*) Tasmanian cave spider 3. (Leptonetids; numerous genera) leptonetid spider

-BZPL- ‘SYNSPERMIATIC (HAPLOGYNE) SPIDER’ I 1. (Diguetiids; genera *Diguetia*, *Segestrioides*) coneweb spider 2. (Plectreurids; genera *Kibramoa*, *Plectreurys*) plectreurid spider 3. (Paculiids; several genera) paculiid spider

-BZPR- ‘SYNSPERMIATIC (HAPLOGYNE) SPIDER’ II 1. (Tetrablemmids; numerous genera) armoured spider 2. (Pholcids; numerous genera) daddy long-legs / cellar spider / carpenter spider / vibrating spider / skull spider 3. (Caponiids; numerous genera) caponiid spider

-BZPŘ- ‘SYNSPERMIATIC (HAPLOGYNE) SPIDER’ III 1. (Dysderids; numerous genera) woodlouse hunter / cell spider / sowbug-eating spider 2. (Segestriids; several genera) tube-dwelling spider / tubeweb spider 3. (Orsolobids; numerous genera) orsolobid spider

-BZPF- ‘SYNSPERMIATIC (HAPLOGYNE) SPIDER’ IV 1. (Oonopids; numerous genera) goblin spider / dwarf hunting spider 2. (Ochyroceratids; numerous genera) midget ground weaver spider 3. (Trogloraptorids; genus *Trogloraptor*) trogloraptor spider

-BZPL- 'SYNSPERMIATIC (HAPLOGYNE) SPIDER' V 1. (Sicariids; genera *Loxosceles*, *Hexophthalma*, *Sicarius*) recluse spider, violin spider, sand spider 2. (Drymusids; genera *Drymusa*, *Izithunzi*) false violin spider 3. (Periegopids; genus *Periogops*) periegops spider

-BZPÇ- 'SYNSPERMIATIC (HAPLOGYNE) SPIDER' VI 1. (Scytodids; several genera) spitting spider 2. (Teleuids; numerous genera) long-legged cave spider 3. other synspermiatic (haplogyne) spider

Chelicerates > Euchelicerata > Arachnida > Araneae > Mygalomorphae > Araneomorphae > Palpimanoidea

-BZPH- 'PALPIMANOID SPIDER' I 1. (Archaeids; several genera) assassin spider / pelican spider 2. (Stenochilids; genera *Colopea*, *Stenochilus*) stenochild spider 3. (Palpimanids; numerous genera) palp-foot spider

-BZPHW- 'PALPIMANOID SPIDER' II 1. (Mecysmaucheniids; several genera) mecysmaucheniid spider 2. (genus *Huttonia*) huttonia spider 3. [stem unassigned]

Chelicerates > Euchelicerata > Arachnida > Araneae > Mygalomorphae > Araneomorphae > Entelegynae

-SPW- 'ENTELEGYN SPIDER' I 1. (Theridiids; numerous genera) tangle-web spider / cobweb spider / comb-footed spider, common house spider, widow 2. (Araneids; numerous genera) orb-weaver spider 3. (Tetragnathids; numerous genera) long-jawed orb weaver / long jawed spider

-SPY- 'ENTELEGYN SPIDER' II 1. (Mysmenids; numerous genera) spurred orb-weaver spider 2. (Symphytognathids; several genera) dwarf orb-weaver 3. (Arkyids; genera *Arkys*, *Demadiana*) arkyid orb-weaver, triangular spider / ambush spider

-SPŘ- 'ENTELEGYN SPIDER' III 1. (Anapids; numerous genera) anapid spider 2. (Nesticids; numerous genera) scaffold web spider 3. (Linyphiids; numerous genera) sheet weaver spider / money spider / dwarf spider

-SPF- 'ENTELEGYN SPIDER' IV 1. (Theridiosomatids; numerous genera) ray spider 2. (Cyatholipids; numerous genera) cyatholipid spider 3. (Pimoids; several genera) pimoid spider

-SPT- 'ENTELEGYN SPIDER' V 1. (Synaphrids; several genera) synaphrid spider 2. (Synotaxids; genus *Synotaxus*) synotaxus spider 3. (Physoglenids; numerous genera) physoglenid spider

-SPV- 'ENTELEGYN SPIDER' VI 1. (Agelenids; numerous genera) funnel weaver spider 2. (Toxopids; numerous genera) toxopid spider 3. (Amaurobiids; numerous genera) tangled nest spider

-SPL- 'ENTELEGYN SPIDER' VII 1. (Corinnids; numerous genera) corinnid sac spider / dark sac spider 2. (Liocranids; numerous genera) liocranid sac spider 3. (Clubionids; numerous genera) sac spider

-SPÇ- 'ENTELEGYN SPIDER' VIII 1. (Gnaphosids; numerous genera) ground spider / flat-bellied ground spider / long-spinneret ground spider 2. (Lamponids; numerous genera) lamponid spider 3. (Trochanteriids; numerous genera) flat spider

-SPH- 'ENTELEGYN SPIDER' IX 1. (Ammonoaxenids; several genera) termite hunter spider 2. (Cithaeronids; genera *Cithaeron*, *Inthaeron*) cithaeronid spider 3. (Gallieniellids; several genera) gallieniellid spider

-SPFW- 'ENTELEGYN SPIDER' X 1. (Salticids; numerous genera) jumping spider 2. (Selenopids; several genera) wall spider / wall crab spider / flatty 3. (Anyphaenids; numerous genera) anyphaenid sac spider

-SPFY- 'ENTELEGYN SPIDER' XI 1. (Thomisids; numerous genera) crab spider, flower spider / flower crab spider 2. (Sparassids; numerous genera) huntsman spider / giant crab spider, wood spider, rain spider, wheel spider 3. (Philodromids; numerous genera) running crab spider

-SPFL- 'ENTELEGYN SPIDER' XII 1. (Desids; numerous genera) intertidal spider 2. (Phrurolithids; numerous genera) phrurolithid spider 3. (Trachelids; numerous genera) trachelid spider

-SPFR- 'ENTELEGYN SPIDER' XIII 1. (Dictynids; numerous genera) dictynid spider 2. (Cybaeids; numerous genera) cybaeid spider 3. (Hahniids; numerous genera) dwarf sheet spider

- SPFR-** 'ENTELEGYNE SPIDER' XIV 1. (Eresids; numerous genera) velvet spider 2. (Hersiliids; numerous genera) tree trunk spider 3. (Oecobiids; several genera) disc web spider
- SPHW-** 'ENTELEGYNE SPIDER' XV 1. (Lycosids; numerous genera) wolf spider 2. (Ctenids; numerous genera) wandering spider / tropical wolf spider 3. (Viridasiids; genera *Viridasius*, *Vulsor*) viridasiid spider
- SPÇW-** 'ENTELEGYNE SPIDER' XVI 1. (Oxyopids; several genera) lynx spider 2. (Pisaurids; numerous genera) nursery web spider 3. (Stiphidiids; numerous genera) sheetweb spider
- SPÇÇ-** 'ENTELEGYNE SPIDER' XVII 1. (Psechrids; genera *Fecenia*, *Psechrus*) psechrid spider 2. (Senoculids; genus *Senoculus*) senoculus spider 3. (Trechaleids; numerous genera) trechaleid spider
- SPTW-** 'ENTELEGYNE SPIDER' XVIII 1. (Zoropsids; numerous genera) false wolf spider 2. (Udubids; several genera) udubid spider 3. (Penestomids; genus *Penestomus*) penestomus spider
- SPTY-** 'ENTELEGYNE SPIDER' XIX 1. (Malkarids; numerous genera) shield spider 2. (Mimetids; numerous genera) pirate spider 3. (Nicodamids; several genera) nicodamid spider
- SPTL-** 'ENTELEGYNE SPIDER' XX 1. (Phyxelidids; numerous genera) lace web spider 2. (Titanocids; several genera) titanoecid spider 3. (Megadictynids; genera *Forstertyna*, *Megadictyna*) megadictynid spider
- SPTR-** 'ENTELEGYNE SPIDER' XXI 1. (Uloborids; numerous genera) hackled orb weaver 2. (Deinopids; genera *Deinopis*, *Menneus*) net-casting spider 3. (Zodariids; numerous genera) ant spider
- SPTR-** 'ENTELEGYNE SPIDER' XXII 1. (Miturgids; numerous genera) long-legged sac spider 2. (Cheiracanthiids; numerous genera) cheiracanthiid spider 3. (Xenoctenids; several genera) xenoctenid sac spider
- SPLW-** 'ENTELEGYNE SPIDER' XXIII 1. (Cycloctenids; several genera) cycloctenid spider 2. (Homalonychids; genus *Homalonychus*) homalonychus spider 3. (Entelegyne spider other than from named family) other entelegyne spider

Chelicerates > Euchelicerata > Arachnida > Scorpiones

- GGZ-** 'SCORPION' I 1. (Buthida; numerous genera) thick-tailed scorpion, fat-tailed scorpion, bark scorpion 2. (Hemiscorpiidae; genus *Hemiscorpius*) rock scorpion / creeping scorpion / tree scorpion 3. (Euscorpiidae; several genera) wood-scorpion
- GGV-** 'SCORPION' II 1. (Scorpionidae; numerous genera) giant forest scorpion, emperor scorpion, burrowing scorpion / hissing scorpion / serkets, pale-legged scorpion 2. (Vaejovidae; numerous genera) stripetailed scorpion, sand scorpion, slendertailed scorpion, northern scorpion, dune scorpion, unstriped scorpion, devil scorpion 3. (Caraboctonidae; genus *Hadrurus*) giant desert hairy scorpion, black-back scorpion
- GGD-** 'SCORPION' III 1. (Pseudochactida; three genera) pseudochactid cave-dwelling scorpion 2. (Chaerilida, Bothriuridae, Iuridae, Superstitioniidae, Chactidae; numerous genera) other scorpion 3. [stem unassigned]

Chelicerates > Euchelicerata > Arachnida > remaining families

- ZFW-** 'DISEASE-CARRYING TICK' 1. (genus *Ixodes*) deer tick 2. (genus *Dermacentor*) wood tick 3. (genus *Amblyomma*) Cayenne tick, lone star tick
- ZFY-** 'METASTIGMA (TICK)' 1. (Ixodids; numerous genera) hard tick 2. (Argasids; numerous genera) soft tick 3. (Nuttalliellids; genus *Nuttalliella*) nuttalliella tick
- ZFL-** 'PARASITIC MITE' I 1. (genus *Sarcoptes*) itch mite / scabies mite 2. (genus *Dermatophagoides*) dust mite / house dust mite 3. (genus *Euroglyphus*) Mayne's house dust mite
- ZFR-** 'PARASITIC MITE' II 1. (genus *Dermanyssus*) red mite 2. (genus *Ornithonyssus*) tropical rat mite, tropical fowl mite, northern fowl mite, bird mite 3. (genus *Cheyletiella*) cheyletiella mite

- ZFR**- 'PARASITIC MITE' III 1. (genus *Cheyletus*) cheyletus mite 2. (genus *Tryophagus*) cheese mite 3. (genus *Pyemotes*) oak leaf gall mite, itch mite
- ZFM**- 'PARASITIC MITE' IV 1. (genus *Acarus*) flour mite 2. (genus *Glyciphagus*) glyciphagus mite 3. (genus *Carpoglyphus*) fruit mite
- ZFN**- 'PARASITIC MITE' V 1. (genus *Liponyssoides*) house rat mite 2. (genus *Laelaps*) spiny rat mite 3. (Trombiculidae; numerous genera) chigger / red bug / harvest mite / scrub-itch mite, berry bug
- ZFN**- 'OTHER MITE' 1. (Sarcoptiformes; numerous genera) sarcoptiform mite (i.e., astigmatine, endeostigmatid, or oribatid mite) 2. (Trombidiformes; numerous genera) trombidiform mite (i.e., prostigmatid or sphaerolichid mite), chigger 3. (Holothyrids, Mesostigma, and Opilioacariformes; numerous genera) parasitiform mite
- ZNW**- 'OTHER ARACHNID' I 1. (Opiliones; numerous genera) harvestman / harvester / shepherd spider 2. (Pseudoscorpiones; numerous genera) pseudoscorpion / false scorpion / book scorpion 3. (Solifugae; numerous genera) solifuge / sun spider / camel spider / wind scorpion
- ZNY**- 'OTHER ARACHNID' II 1. (Amblypygids; numerous genera) whip spider / tailless whip scorpion 2. (Shizomids; numerous genera) shorttailed whipsorpion 3. (Thelyphonids; numerous genera) whip scorpion / vinegaroon
- ZNW**- 'OTHER ARACHNID' III 1. (Palpigradids; numerous genera) paligrade / microwhip scorpion 2. (Ricinuleids; genera *Cryptocellus*, *Pseudocellus*, *Ricinoides*) hooded tickspider 3. [stem unassigned]

Chelicerates > non-arachnids

- SPLL**- 'NON-ARACHNID CHELICERATE' 1. (Xiphosura; genera *Tachypleus*, *Limulus*, *Carcinoscorpius*) horseshoe crab 2. (Pycnogonid; numerous genera) sea spider 3. [stem unassigned]

Crustaceans

Crustaceans > branchiopods (brine shrimp)

- KTKW**- 'BRANCHIOPOD' I 1. (Anostraca; numerous genera) fairy shrimp, brine shrimp 2. (Notostraca; genera *Triops*, *Lepidurus*) tadpole shrimp / shield shrimp 3. (Cladocera; numerous genera) water flea
- KTKY**- 'BRANCHIOPOD' II (CLAM SHRIMP) 1. (Laevicaudata; genera *Lynceiopsis*, *Lynceus*, *Paralimnetes*) [laevicaudate] clam shrimp 2. (Cyclestherida; genera *Cyclestheria*, *Paracyclsthereia*) [cyclestherid] clam shrimp 3. (Spinicaudata; numerous genera) [spinicaudate] clam shrimp
- KTKÇ**- 'OTHER SMALL CRUSTACEAN' 1. (Cephalocarids; several genera) horseshoe shrimp 2. (Ostracods; numerous genera) seed shrimp 3. (Remipedia; several genera) remipede

Crustaceans > maxillopods (barnacles, copepods, fish lice, etc.)

- KTKL**- 'COPEPOD & MYSTACOCARID' 1. (Calanoids, Cyclopoids, Poecilostomatoids, Monstriloids, Mormonillids, Platycopiids, Siphonostomatoids; numerous genera) [primarily] planktonic marine or freshwater copepod 2. (Harpacticoids, Speleophriids; numerous genera, plus Gelyellids; genus *Gelyella*) sea-floor -dwelling or cave-dwelling copepod 3. (Mystacarids; genera *Derocheilocaris*, *Ctenocheilocharis*) mystacocarid
- KTKR**- 'THECOSTRACA (BARNACLE & BARNACLE-LIKE CREATURE)' 1. (Thoracica; numerous genera) [common] barnacle 2. (Rhizocephala; numerous genera) parasitic barnacle 3. (Acrothoracica, Ascothoracids, Facetotecta; several genera) acrothoracic (i.e., calcareous material-boring) barnacle, ascothoracid parasite, facetotectid / Hansenocaris
- KTKR**- 'SMALL PARASITIC MAXILLOPOD CRUSTACEAN' 1. (Branchiura; several genera) fish louse, carp louse 2. (Pentastomids; numerous genera) tongue worm 3. (Tantulocarids; numerous genera) tantulocarid

Crustaceans > Malacostraca (lobsters, crabs, shrimp, etc.)

Crustaceans > Malacostraca > Eumalacostraca > Peracarida

-KṬMW- ‘AMPHIPOD (SCUD / SIDESWIMMER)’ 1. (Gammarids and Senticaudates; numerous genera) shrimp-like amphipod / scud / sideswimmer 2. (Ingolfiellids; several genera) worm-like amphipod 3. (Hyperiid; numerous genera) marine parasitic/predatory amphipod

-KṬMY- ‘ISOPOD (WOOD LOUSE / PILL BUG & SIMILAR)’ 1. (Oniscidea; numerous genera) wood louse / pill bug / armadillo bug / roly-poly / potato bug / sow bug 2. (Asselotes, Calabazoids, Cymothoids, Limnoriids, Phoratopids, Phreatoicids, Sphaeromatids, Tainisopids, Valviferids; numerous genera) marine or freshwater isopod 3. (Microcerberids; several genera) tiny worm-like isopod

-KṬNW- ‘PERACARID (BROOD-POUCH BEARING SHRIMP)’ I 1. (Cumacea; numerous genera) hooded shrimp / comma shrimp 2. (Mysida; numerous genera) opossum shrimp 3. (Tanaidacea; numerous genera) tanaid

-KṬNY- ‘PERACARID (BROOD-POUCH BEARING SHRIMP)’ II 1. (Mictacea, Lophogastrids; several genera) mictacean or lophogastrid crustacean 2. (Spelaeogriphacea; several genera) spelaeogriphacean (cave-dwelling) crustacean 3. (Thermosbaenacea; several genera) thermosbaenacean (thermal spring-dwelling) crustacean

Crustaceans > Malacostraca > Eumalacostraca > Eucarida

Crustaceans > Malacostraca > Eumalacostraca > Eucarida > Euphausiacea

-KṬPW- ‘NON-DECAPOD EUCARID’ 1. (Euphausiids; several genera) krill 2. (Bentheuphausiids; genus *Bentheuphausia*) deep sea krill 3. (Amphionidacea; genus *Amphionides*) amphionides

Crustaceans > Malacostraca > Eumalacostraca > Eucarida > Decapoda

Crustaceans > Malacostraca > Eumalacostraca > Eucarida > Decapoda > Dendrobranchiata

-KṬPY- ‘DENDROBRANCHIATE (PRAWN)’ 1. (Aristeids; several genera) gamba prawn / deep-sea shrimp 2. (Penaeoids other than Aristeids; numerous genera) [benthescymid, penaeid, sicyonid, or solenocericid] prawn 3. (Sergestoids; several genera) [luciferid or sergestid] prawn

Crustaceans > Malacostraca > Eumalacostraca > Eucarida > Decapoda > Caridea

-KṬPL- ‘CARIDEAN SHRIMP’ I 1. (Alpheoids; numerous genera) snapping shrimp / pistol shrimp / alpheid shrimp, cleaner shrimp, broken-back shrimp / anemone shrimp 2. (Crangonoids; numerous genera) crangonoid shrimp 3. (Pandalids; numerous genera) pandalid shrimp

-KṬPR- ‘CARIDEAN SHRIMP’ II 1. (Atyids; numerous genera) atyid shrimp 2. (Campylonotoids; several genera) compylonotoid shrimp 3. (Palaemonoids; numerous genera) palaemonoid shrimp

-KṬPŘ- ‘CARIDEAN SHRIMP’ III 1. (Nematocarcinoids; several genera) nematocarcinoid shrimp 2. (Pasiphaeids; several genera) pasiphaeid shrimp 3. (Processoids; several genera) processoid shrimp

-KṬPH- ‘CARIDEAN SHRIMP’ IV 1. (Stylodactyloids; several genera) stylodactyloid shrimp 2. (Oplophorids; several genera) oplophorid shrimp 3. (Bresilioids; numerous genera) bresilioid shrimp

-KṬPÇ- ‘RARE CARIDEAN SHRIMP’ 1. (Psalidopodoids; genus *Psalidopus*) psalidopus shrimp 2. (Physetocaridoids; genus *Physetocaris*) physetocaris shrimp 3. (Galatheacaridoids; genus *Galatheacaris*) galatheacaris shrimp

-KṬL- ‘LOBSTER’ 1. (genus *Nephrops*) Norway lobster, Dublin Bay prawn, langoustine, scampi 2. (genus *Homarus*) American lobster / Maine lobster / Atlantic lobster / true lobster, European lobster / common lobster 3. (all other genera) Japanese lobster, China lobster, Australian scampi, New Zealand scampi, Bight lobster, Caribbean lobster, Cape lobster, etc.

-KṬR- ‘ACHELATE LOBSTER’ 1. (Palinurids; several genera) spiny lobster 2. (Synaxids; genera *Palinurellus*, *Palibythus*) furry lobster, mole lobster 3. (Scyllarids; numerous genera) slipper lobster / shovel-nose lobster / locust lobster

-KṬŘ- ‘LOBSTER-LIKE CREATURE’ 1. (Glypheidea; genera *Neoglyphea*, *Laurentaeglyphea*) glypheid lobster 2. (Polychelids; several genera) polychelid lobster 3. (Enoplometopids; genus *Enoplometopus*) reef lobster

-KṬF- ‘CRAYFISH’ 1. (Astacids; genera *Astacus*, *Austropotamobius*, *Pacifastacus*) European or Western N. American crayfish 2. (Cambarids; numerous genera) Eastern N. American & Central American crayfish 3. (Parastacids; numerous genera) Southern Hemisphere crayfish

-KṬṬ- ‘CRAB’ 1. (Eubrachyura; numerous genera) crab 2. (Raninids; several genera) frog crab 3. (Dromiaceans and Cyclodorippoids; numerous genera) podotremate crab

-KṬṬW- ‘CRAB-LIKE CREATURE’ I 1. (Paguroids; numerous genera) hermit crab, coconut crab / robber crab 2. (Lithodoids; numerous genera) king crab 3. (Hippoids; several genera) sand crab / mole crab

-KṬṬY- ‘CRAB-LIKE CREATURE’ II 1. (Galatheoids, Chirostyloids; numerous genera) squat lobster, porcelain crab 2. (Aeglids; genus *Aegla*) aegla crab 3. (Lomisids; genus *Lomis*) hairy stone crab

-KṬŇ- ‘OTHER DECAPOD’ 1. (Stenopodidea; numerous genera) stenopod crustacean, glass sponge shrimp 2. (Procarididea; genera *Procaris*, *Vetericaris*) procarid shrimp 3. (Axiids and Gebiids; numerous genera) mud shrimp / mud lobster, ghost shrimp, burrowing shrimp

-KṬŇW- ‘OTHER CRUSTACEAN’ 1. (Stomatopods; numerous genera) mantis shrimp 2. (Leptostraca; several genera) leptostracan 3. (Syncarids; numerous genera) syncarid crustacean, anaspid crustacean

Myriapods

-BḌL- ‘CHILOPOD (CENTIPEDE)’ 1. (Scutigermorphs; numerous genera) house centipede 2. (Lithobiomorphs; numerous genera) stone centipede 3. (Geophilomorphs, Scolopendromorphs, Craterostigmomorphs; numerous genera) soil centipede, tropical centipede, craterostigmus centipede

Myriapods > Diplopods (millipedes)

-BḌR- ‘DIPLOPOD (MILLIPEDE)’ 1. (Helminthomorphs; numerous genera) worm-like millipede 2. (Pentazonids; numerous genera) short-bodied pill millipede 3. (Penicillates; numerous genera) bristle millipede / bristly millipede / pincushion millipede

-BḌŘ- ‘OTHER MYRIAPOD’ 1. (Pauropod; numerous genera) pauropod 2. (Symphyla; several genera) symphylan / garden centipede / pseudocentipede 3. [stem unassigned]

Hexapods

Hexapods > Entognatha

-CDW- ‘ENTOGNATHID’ 1. (Collembola; numerous genera) springtail 2. (Diplura; numerous genera) dipluran / two-pronged bristletail 3. (Protrura; numerous genera) protruran / conehead

Hexapods > Insects

- CDY**- ‘SILVERFISH / JUMPING BRISTLETAIL’ 1. (Zygentoma; numerous genera except *Thermobia domestica*) silverfish / fishmoth 2. (*Thermobia domestica*) firebrat 3. (Archaeognatha; numerous genera) jumping bristletail
- CDL**- ‘DRAGONFLY’ 1. (Aeshnoids and Epiophlebiids; numerous genera) aeshnid / hawk / darner dragonfly, petaltail dragonfly, clubtail dragonfly, Himalayan relict dragonfly 2. (Cordulegastriids; numerous genera) spiketail / biddie / flying addie dragonfly, neopetalia 3. (Libelluloids; numerous genera) emerald, skimmer / percher, pennant, dasher, sylph, dragonlet, pondhawk, setwing, pintail, forestwatcher, rainpool glider, amberwing, meadowhawk / darter, saddlebag, whiteface, dropwing dragonfly
- CDR**- ‘DAMSELFLY’ 1. (Hemiphlebiids and Coenagrionoids; numerous genera) ancient greenling, pond, narrow-wing, white-legged, shadowdamsel, threadtail, forest giant damselfly 2. (Lestoids; numerous genera) spreadwing, bluestrak, flatwing, shortwing, sylph damselfly 3. (Calopterygoids; numerous genera) relict, demoiselle, jewel, bareleg, odalisque, bannerwing damselfly
- CDŘ**- ‘MAYFLY (a.k.a. SHADFLY / FISHFLY / UP-WINGED FLY)’ 1. (Pannota; numerous genera) pannotic mayfly, including spiny crawler mayfly, armored mayfly 2. (Schistonota; numerous genera) schistonotic mayfly, including brushlegged mayfly, minnow mayfly, flat-headed mayfly / stream mayfly, spiny-headed burrowing mayfly 3. (Leptophlebiids; numerous genera) leptophlebiid / prong-gilled mayfly
- CDV**- ‘DERMAPTERAN / ZORAPTERAN’ 1. (Dermaptera [except Labiids and Spongiphorids]; numerous genera) earwig 2. (Labiids, Spongiphorids; numerous genera) little earwig 3. (Zoraptera; numerous genera) angel insect

Hexapods > Insects > Orthoptera (crickets, grasshoppers, katydids, etc.)

- XFW**- ‘CRICKET’ 1. (Grylloids; numerous genera) cricket, scaly cricket 2. (Gryllotalpids; several genera) mole cricket 3. (Myrmecophilids; several genera) ant cricket / ant-loving cricket
- XFY**- ‘CRICKET-LIKE CREATURE’ I 1. (Tettigoniids; numerous genera) katydid / bush cricket 2. (Hagloids; several genera) grig 3. (Stenopelmatids; several genera) stenopelmatid, Jerusalem cricket
- XFL**- ‘CRICKET-LIKE CREATURE’ II 1. (Anostomatids; numerous genera) weta [except cave weta] / king cricket 2. (Gryllacridids; numerous genera) leaf-rolling cricket / raspy cricket 3. (Cooloolids; genus *Cooloola*) Cooloola monster, dingo monster, Pearson’s monster, sugarcane monster
- XFR**- ‘CRICKET-LIKE CREATURE’ III 1. (Rhaphidophorids; numerous genera) cave weta / cave cricket, camleback cricket / camel cricket, spider cricket, sand treader 2. (Schizodactylids; genera *Comicus*, *Schizodactylus*) dune cricket / splay-footed cricket 3. [stem unassigned]
- XFM**- ‘GRASSHOPPER’ 1. (Acridoidea, Pyrgomorphoidea; numerous genera) grasshopper 2. (Pneumorids; several genera) bladder grasshopper 3. (Trigonopterygoidea; several genera) leaf grasshopper
- XFN**- ‘GRASSHOPPER-LIKE CREATURE’ 1. (Eumastacids; numerous genera) monkey grasshopper / matchstick grasshopper 2. (Proscopiids; numerous genera) stick grasshopper / jumping stick 3. (Tetrigids; several genera) groundhopper / pygmy grasshopper / pygmy devil
- XFŘ**- ‘TRIDACTYLOID’ 1. (Cylindrachetids; several genera) sandgroper 2. (Ripipterygids; genera *Mirhipipteryx*, *Ripipteryx*) mud cricket 3. (Tridactylids; several genera) pygmy mole cricket
- XTW**- ‘NOTOPTERA & EMBIOPTERA’ 1. (Grylloblattids; several genera) ice bug, ice-crawler 2. (Mantophasmatids; numerous genera) gladiator / rock crawler / heelwalker 3. (Embioptera; numerous genera) webspinner
- XTY**- ‘PHASMATODE (WALKING STICK / WALKING LEAF)’ 1. (Verophasmatodes [other than Phylliids] and Timematids; numerous genera) walking stick / stick-bug / bug stick 2. (Phylliids; several genera) walking leaf / leaf insect 3. (Agathemerids; genus *Agathemera*) agathemera

Hexapods > Insects > Mantodea (mantises)

-DPL- ‘MANTIS’ 1. (Mantids; numerous genera) praying mantis 2. ([various genera and species]) flower mantis 3. ([numerous genera]) mantis (other than Mantids and flower mantises) mantis

Hexapods > Insects > Blattodea (cockroaches and termites)

-ČŇ- ‘COCKROACH’ 1. (Blattoids; numerous genera) Oriental, American, Australian, Brown, Smokbrown, Florida woods, Botany Bay, common shining, wood roach / brown-hooded cockroach 2. (Blaberoids; numerous genera) blaberid, giant cockroach, death’s head, false death’s head / drummer / discoid, speckled / lobster, greenhouse / Surinam, hissing, Dubia / orange-spotted, giant burrowing, Asian, brown-banded, European native, fulvous wood, German, Pennsylvania wood, Virginia wood, small yellow cockroach 3. (Corydioids; numerous genera) sand cockroach, cave cockroach

-ČŇW- ‘TERMITE’ 1. (Neoisopterans; numerous genera) [higher/newer] termite 2. (Euisopterans; numerous genera) dampwood termite, harvester termite, drywood termite 3. (Mastotermitids; *Mastotermes darwiniensis*) giant northern termite / Darwin termite

-CXM- ‘APHID’ 1. (Aphidids; numerous genera) aphid 2. (Adelgids; several genera) pine aphid, spruce aphid, wooly aphid 3. (Phylloxerids; several genera) phylloxeran

-CXL- ‘LOUSE’ 1. (Phthiraptera; numerous genera) louse 2. (genus *Pediculus*) head louse, body louse 3. (genus *Phthirus*) crab louse / public louse

-CXR- ‘PARANEOPTERAN BUG’ 1. (Thysanoptera; numerous genera) thrip 2. (Liposcelididae; numerous genera) booklouse 3. (Psocoptera other than Liposcelididae; numerous genera) barklouse / barkfly / psocid

Hexapods > Insects > Hemiptera (true bug)

-NLT- ‘CICADOMORPHIC BUG’ 1. (Cicadoids; numerous genera) cicada 2. (Cercopoids; numerous genera) froghopper / spittlebug 3. (Membracoids; numerous genera) treehopper / thorn bug

-NLTW- ‘REDUVIID (ASSASSIN BUG)’ I 1. (Triatomines; numerous genera) kissing bug / conenose bug / cone-headed bug / vampire bug 2. (Peiratines; numerous genera) corsair 3. (remaining Reduviid families or sub-families) assassin bug, wheel bug

-NLTY- ‘REDUVIID (ASSASSIN BUG)’ II 1. (Phymatines; numerous genera) ambush bug 2. (Emesines; numerous genera) three-legged bug 3. (Hemipterines; several genera) feather-legged bug / ant wolf

-NLTL- ‘PENTATOMOMORPHIC BUG’ I 1. (Pentatomoids; numerous genera) shield bug, stink bug, burrowing bug, jewel bug, ebony bug, chust bug, giant shield bug 2. (Lygaeoids; numerous genera) seed bug, stilt bug, big-eyed bug, dirt-colored seed bug, ash-gray leaf bug 3. (Pyrrhocoroids; numerous genera) red bug, cotton stainer, bordered plant bug

-NLTR- ‘PENTATOMOMORPHIC BUG’ II 1. (Hyocephalids; genera *Hyocephalus*, *Maevius*) hyocephalid bug 2. (Stenocephalids; genus *Dicranocephalus*) dicranocephalus 3. (Termitaphidid; Termitaphis, Termitaradus) termite bug

-NLTR- ‘STERNORRHYNCHAN BUG’ 1. (Psylloids; numerous genera) jumping plant lice 2. (Aleyrodids; numerous genera) whitefly 3. (Coccoids; numerous genera) scale insect, mealybug, cochineal, ground pearl

-NLTF- ‘COREOID BUG’ 1. (Alydids; numerous genera) broad-headed bug 2. (Coreids; numerous genera) leaf-footed bug, squash bug 3. (Rhopalids; numerous genera) scentless plant bug, soapberry bug

-NLTC- ‘FULGOROID BUG’ 1. (Fulgoridae; numerous genera) fulgorid planthopper 2. (Fulgoroidea other than Fulgoridae; numerous genera) other planthopper 3. [stem unassigned]

-NLIC- ‘CIMICOMORPHIC BUG’ I 1. (Cimicids; numerous genera) cimicid, bed bug 2. (Anthocorids, Lasiochilids, Lyctocorids; numerous genera) minute pirate bug / flower bug 3. (Microphysids; several genera) minute bladder bug

-NLICW- ‘CIMICOMORPHIC BUG’ II 1. (Mirids; numerous genera) capsid bug / mirid bug / plant bug / leaf bug / grass bug, lygus bug, apple dimpling bug, mosquito bug, honelylocust plant bug, green mind, potato mind 2. (Nabids; numerous genera) damsel bug 3. (Aradids; numerous genera) flat bug

- NĹČ**- ‘CIMICOMORPHIC BUG’ III 1. (Tingids; numerous genera) lace bug 2. (Thaumastocorids; several genera) royal palm bug 3. (Polycitenid; several genera) Old World bat bug / polycitenid bat bug
- NĹČW**- ‘CIMICOMORPHIC BUG’ IV 1. (Velocipedids; several genera) velocipedid bug 2. (Joppeicids; genus *Joppeicus*) joppeicus bug 3. (Curaliids; genus *Curalium*) curalium bug
- NĹTV**- ‘CIMICOMORPHIC BUG’ V 1. (Plokiophilids; several genera) plokiophilid bug 2. (Medocostids; genus *Medocostes*) medocostes bug 3. (Pachynomids; several genera) pachynomid bug
- NĹF**- ‘GERROID (SEMI-AQUATIC) BUG’ 1. (Gerrids; numerous genera) water strider / water skeeter / pond skater / water skipper / Jesus bug 2. (Veliids; numerous genera) riffle bug / broad-shouldered water strider 3. (Hermatobatids; genus *Hermatobates*) coral-treader
- NĹFW**- ‘GERROMORPHIC (SEMI-AQUATIC) BUG’ 1. (Hydrometroids; several genera) water measurer / marsh treader 2. (Hebroids; several genera) velvet water bug 3. (Mesovelioids; numerous genera) water treader
- NĹFY**- ‘DIPSOCOROMORPHIC BUG (LITTER BUG)’ 1. (Ceratocombids; several genera) litter bug 2. (Schizopterids and Hypsipterygids; numerous genera) jumping soil bug 3. (Stemmocryptid; genus *Stemmocrypta*) stemmocrypta bug
- NĹFL**- ‘NEPOMORPHIC BUG’ I 1. (Belostomatids; numerous genera) giant water bug / toe-biter / electric-light bug / alligator tick / alligator flea 2. (Nepids; numerous genera) water scorpion, needle bug, water stick insect 3. (Corixids; numerous genera) water boatman
- NĹFR**- ‘NEPOMORPHIC BUG’ II 1. (Gelastocorids; genera *Gelastocoris*, *Nerthra*) toad bug 2. (Ochterids; several genera) velvety shore bug 3. (Naucorids; numerous genera) creeping water bug / saucer bug
- NĹŘ**- ‘NEPOMORPHIC BUG’ III 1. (Notonectids and Pleoids; numerous genera) backswimmer, pygmy backswimmer 2. (Aphelochairids; genus *Aphelocheirus*) aphelocheirus bug 3. (Potamocorids; genera *Potamocoris*, *Coleopterocoris*) potamocorid bug
- NĹV**- ‘HETEROPTERAN BUG’ 1. (Peloriids; numerous genera) moss bug / beetle bug 2. (Enicocephalomorphs; numerous genera) gnat bug, unique-headed bug, aenictopheheid 3. (Leptopodomorphs; numerous genera) shore bug, spiny shore bug

Hexapods > Insects > Hymenoptera

Hexapods > Insects > Hymenoptera > Apoidea (bees and sphecoid wasp)

- BZZ**- ‘APID BEE (CORBICULATE)’ 1. (Apini [genus *Apis*] and Meliponini; numerous genera) honey bee, stingless honey bee 2. (Bombini; genus *Bombus*) bumblebee 3. (Euglossini; several genera) orchid bee
- BZZW**- ‘APID BEE (NON-CORBICULATE)’ 1. (Non-corbiculate Apines; numerous genera) digger bee, long-horned bee, non-corbiculate apine bee 2. (Nomadines; numerous genera) cuckoo bee 3. (Xylocopines; numerous genera) carpenter bee
- BZZY**- ‘NON-APID BEE’ 1. (Megachilids; numerous genera) mason bee, leafcutter bee, carder bee 2. (Colletids; numerous genera) plasterer bee / polyester bee, yellow-faced bee 3. (Andrenids, Halictids, Melittids, Stenotritids; numerous genera) non-apid bee, sweat bee, mining bee
- BZZL**- ‘SPHECID (THREAD-WAISTED) WASP’ 1. (Sceliphines; several genera) mud wasp, mud dauber 2. (Chloriontines; genus *Chlorion*) cricket-hunter wasp 3. (Ammophilines and Sphecines) thread-waisted wasp, sand wasp
- BZZR**- ‘SPHECOID WASP’ 1. (Ampulicids;) cockroach wasp 2. (Philanthines; several genera) predatory wasp, bee-hunter, bee-killer wasp, ant-queen kidnapping wasp 3. (Pemphredonids, Psenids, Ammoplanids; numerous genera) aphid wasp
- BZZŘ**- ‘BEMBICINE WASP’ 1. (Bembicini; numerous genera) sand wasp 2. (Nyssonini; numerous genera) kleptoparasitic bembicine wasp 3. (Astatines and Heterogynoids; several genera) bembicine wasp
- BZZV**- ‘CABRONID WASP’ 1. (Cabronines; numerous genera) digger wasp, square-headed wasp 2. (Mellinines; genera *Mellinus*, *Xenosphex*) mellinine wasp 3. [stem unassigned]

Hexapods > Insects > Hymenoptera > Vespoidea & Chrysidoidea

-BZZX- ‘GENUS VESPA (HORNET)’ 1. (*Vespa crabro*) common European hornet 2. (*V. mandarinia*) Asian giant hornet / murder hornet 3. (all other *Vespa* species) other hornet

-BZZM- ‘VESPINE WASP’ 1. (genera *Vespula*) common wasp, red cuckoo wasp, red wasp, oriental hornet 2. (genus *Dolichovespula*) yellowjacket, tree wasp, Saxon wasp, Norwegian wasp, bald-face hornet 3. (genus *Provespa*) night wasp / night hornet

-BZZN- ‘VESPID WASP’ 1. (Eumenines and Zethines; numerous genera) potter wasp 2. (Polistines; numerous genera) paper wasp 3. (Stenogastrines; several genera) hover wasp

-BZZŇ- ‘CHRYSIDOID / VESPOID WASP’ I 1. (Chrysidids; numerous genera) cuckoo wasp, emerald wasp, jewel wasp, gold wasp, ruby wasp 2. (Chrysidoids other than Chrysidids [i.e., Bethyids, Dryinids, Embolemids, Plumariids, Sclerogibbids, Scolebythids]; numerous genera) chrysidoid wasp 3. (Massarines, Euparagiines, Gayellines; numerous genera) pollen wasp

-BZZD- ‘CHRYSIDOID / VESPOID WASP’ II 1. (Mutillids; numerous genera) velvet wasp / velvet ant 2. (Pompilids; numerous genera) spider wasp / spider-hunting wasp, tarantula hawk 3. (Vespoidea other than Mutillids, Pompilids, and Vespids [i.e., Bradynobaenids, Rhopalosomatids, Sapygids, Scoliids, Sierolomorphids, Tiphiids]; numerous genera) other vespid wasp

Hexapods > Insects > Hymenoptera > parasitoid [i.e., non-aculeate] wasps

-BZZB- ‘CHALCID WASP’ 1. (Agaonids; numerous genera) fig wasp 2. (Chalcidids; numerous genera) chalcid wasp 3. (Eurytomids; numerous genera) seed chalcid wasp

-BZZD- ‘PARASITOID [NON-ACULEATE] WASP’ I 1. (Mymarids; numerous genera) fairy wasp / fairyfly 2. (Aphelinids, Encyrtids, Eucharitids, Eulophids, Eupelmids, Leucospids, Ormyrids, Perilampids, Pteromalids, Rotoitids, Signiphorids, Tanaostigmatids, Tetracampids, Torymids, Trichogrammatids; numerous genera) chalcidoid wasp 3. (Ceraphronids and Megaspilids; numerous genera) ceraphronoid wasp

-BZZG- ‘PARASITOID [NON-ACULEATE] WASP’ II 1. (Cynipids; numerous genera) gall wasp / gallfly 2. (Figitids, Ibaliids, Lipterids, Austrocynipids) cynipoid wasp 3. (Diapriids, Maamingids, Monomachids, Austroniids) diaprioid wasp

-BZZP- ‘PARASITOID [NON-ACULEATE] WASP’ III 1. (Evaniids; numerous genera) ensign wasp / nightshade wasp / hatchet wasp 2. (Aulacids, Gasteruptiids, Trigonaloids; numerous genera) evanioid wasp, trigonaloid wasp 3. (Megalyrids; several genera) megalyrid wasp

-BZZT- ‘PARASITOID [NON-ACULEATE] WASP’ IV 1. (Ichneumonids; numerous genera) ichneumon wasp, scorpion wasp 2. (Braconids; numerous genera) braconid wasp [including the mummy-wasp] 3. (Mymarommatids; several genera) false fairy wasp

-BZZK- ‘PARASITOID [NON-ACULEATE] WASP’ V 1. (Sephanids; several genera) crown wasp 2. (Helorids, Plelcinids, Peradeniids, Proctorenyxids, Proctotrupids, Roproniids, Vanhorniids; numerous genera) proctotrupoid wasp 3. (Platygastrids, Scelionids; numerous genera) platygastroid wasp

Hexapods > Insects > Hymenoptera > Formicidae (ants)

-MŤK- ‘FORMICINE ANT’ I 1. (genus *Formica*) wood ant, mound ant, thatching ant, field ant, meadow ant, horse ant 2. (genus *Cataglyphis*) desert ant 3. (genus *Dinomyrmex*) giant forest ant

-MŤKW- ‘FORMICINE ANT’ II 1. (genus *Camponotus*) carpenter ant 2. (genus *Oecophylla*) weaver ant 3. (genus *Polyergus*) Amazon ant

-MŤKY- ‘FORMICINE ANT’ III 1. (genus *Brachymyrmex*) rover ant 2. (genus *Gigantiops*) Gigantiops jumping ant 3. (all other Formicine genera) formicine ant

-MŤKL- ‘MYRMICINE ANT’ I 1. (genus *Solenopsis*) fire ant, ginger ant, tropical fire ant 2. (genus *Monomorium*) monomorium ant, flower ant, pharaoh ant 3. (genus *Pogonomyrmex*) harvester ant, Maricopan harvester ant

-MŤKR- ‘MYRMICINE ANT’ II 1. (genus *Crematogaster*) Saint Valentine ant / cocktail ant / acrobat ant 2. (genus *Cephalotes*) turtle ant 3. (all other Myrmicine genera) myrmicine ant

-MṬKŘ- ‘MYRMECIINE ANT’ 1. (genus *Myrmecia*) jack jumper ant / bulldog ant / bull ant 2. (genus *Nothomyrmecia*) dinosaur ant / dawn ant 3. (Pseudomyrmecines; genera *Pseudomyrmex*, *Myrccridis*, *Tetraponera*) pseudomyrmecine ant, slender ant

-MṬKF- ‘DOLICHODERINE ANT’ I 1. (genus *Linepithema*) Argentine ant 2. (genus *Iridomyrmex*) rainbow ant 3. (genus *Dorymyrex*) cone ant

-MṬKT- ‘DOLICHODERINE ANT’ II 1. (*Tapinoma erraticum*) erratic ant 2. (*Tapinoma sessile*) stink ant / odorous house ant / sugar ant / coconut ant 3. (all other Dolichoderine genera) dolichoderine ant

-MṬKV- ‘OTHER ANT’ 1. (Ectatommines, Heteroponerines, Amblyoponines, Paraponerines, Ponerines, Proceratiines); numerous genera) poneromorph ant 2. (Aneuretines, Martialines, Agroecomyrmecines; several genera) other non-poneromorph ant 3. [stem unassigned]

Hexapods > Insects > Hymenoptera > Symphyta (sawflies)

-ZZVW- ‘SYMPHYTE (SAWFLY)’ I 1. (Tenthredinids; numerous genera) common sawfly 2. (Diprionids; numerous genera) conifer sawfly / pine sawfly 3. (Argids, Blasticotomids, Cimbicids, Pergids; numerous genera) tenthredinoid sawfly

-ZZVY- ‘SYMPHYTE (SAWFLY)’ II 1. (Xyelids; several genera) xyelid sawfly 2. (Pamphiliids; several genera) leaf-rolling sawfly / web-spinning sawfly 3. (Megalodontesids; several genera) megalodontesid sawfly

-ZZVL- ‘SYMPHYTE (SAWFLY)’ III 1. (Cephoids; numerous genera) stem sawfly 2. (Siricids; several genera) horntail 3. (Anaxyelids; genus *Syntexis*) cedar wood wasp

-ZZVR- ‘WOOD WASP’ 1. (Xyphidiids; numerous genera) wood wasp 2. (Orussids; numerous genera) parasitic wood wasp 3. [stem unassigned]

Hexapods > Insects > Neuropterids (net-winged insects: lacewings, mantidflies, antlions, etc.)

-ZGW- ‘PRIMITIVE FLY’ 1. (Plecoptera; numerous genera) stonefly 2. (Raphidioptera; numerous genera) snakefly 3. (Nevrorthids; genera *Nevrorthus*, *Austroneurorthus*, *Nipponeurorthus*) nevrorthid lacewing

-ZGY- ‘MEGALOPTERA’ 1. (Sialids; numerous genera) alderfly 2. (Chaulioidines; numerous genera) fishfly 3. (Corydalines; several genera) dobsonfly

-ZBW- ‘NEUROPTERID (LACEWING)’ I 1. (Osmylids; numerous genera) giant lacewing 2. (Ithonids; several genera) moth lacewing 3. (Chrysopids; numerous genera) green lacewing, stinkfly

-ZBY- ‘NEUROPTERID (LACEWING)’ II 1. (Hemerobiids; numerous genera) brown lacewing 2. (Coniopterygids; numerous genera) dustywing 3. (Dilarids; several genera) pleasing lacewing

-ZBL- ‘NEUROPTERID (LACEWING)’ III 1. (Mantispids; numerous genera) mantidfly / mantisfly 2. (Rhachiberothids; several genera) thorny lacewing 3. (Berothids; several genera) beaded lacewing

-ZBR- ‘NEUROPTERID (LACEWING)’ IV 1. (Nymphids; several genera) split-footed lacewing 2. (Nemopterids; numerous genera) spoonwing, thread-winged 3. (Sisyrids; several genera) spongilla fly

-ZBŘ- ‘NEUROPTERID (LACEWING)’ V 1. (Psychopids; several genera) silky lacewing 2. (Myrmeleontids; numerous genera) antlion 3. (Ascalaphids; numerous genera) owlfly

Hexapods > Insects > Coleoptera (beetles)

Hexapods > Insects > Coleoptera > Adephaga

-FBW- ‘ADEPHAGAN BEETLE’ I 1. (Carabids; numerous genera) ground beetle, bombardier beetle, ant nest beetle / paussine, sand beetle, tiger beetle, harp beetle, violin beetle 2. (Rhysodids; numerous genera) wrinkled bark beetle 3. (Trachypachids; genera *Trachypachus*, *Systolosoma*) false ground beetle

- FBY**- ‘ADEGPHAGAN BEETLE’ II 1. (Dystiscids; numerous genera) predacious diving beetle 2. (Halipilids; several genera) crawling water beetle, halipilid 3. (Noterids; numerous genera) burrowing water beetle
- FBL**- ‘ADEGPHAGAN BEETLE’ III 1. (Amphizoans; genus *Amphizoa*) troutstream beetle 2. (Gyrinids; numerous genera) whirligig beetle 3. (Hygrobiids; genus *Hygrobia*) squeak beetle / screech-beetle
- FBR**- ‘ADEGPHAGAN BEETLE’ IV 1. (Aspidytids; genus *Aspidytes*) aspidytes beetle 2. (Meruids; genus *Meru*) meru beetle 3. [stem unassigned]

Hexapods > Insects > Coleoptera > Polyphaga

Hexapods > Insects > Coleoptera > Polyphaga > Cucujiformia

- RÇK**- ‘CUCUJOID BEETLE’ I 1. (Coccinellids; numerous genera) ladybug / ladybird / lady beetle 2. (Discolomatids; numerous genera) Mexican hat beetle 3. (Phalacrids; numerous genera) shining flower beetle
- RÇKW**- ‘CUCUJOID BEETLE’ II 1. (Endomychids; numerous genera) handsome fungus beetle 2. (Erotylids; numerous genera) pleasing fungus beetle 3. (Cryptophagids; numerous genera) silken fungus beetle
- RÇKY**- ‘CUCUJOID BEETLE’ III 1. (Cucujids; several genera) flat bark beetle 2. (Bothriderids; numerous genera) dry bark beetle / cocoon-forming beetle 3. (Cerylonids; numerous genera) minute bark beetle
- RÇKL**- ‘CUCUJOID BEETLE’ IV 1. (Sylvanids; numerous genera) sylvan flat bark beetle 2. (Laemophloeids; numerous genera) lined flat bark beetle 3. (Passandrids; several genera) parasitic flat bark beetle
- RÇKR**- ‘CUCUJOID BEETLE’ V 1. (Nitidulids; numerous genera) sap beetle, picnic beetle / beer bug, small hive beetle 2. (Kateritids; several genera) short-winged flower beetle 3. (Latridiids; numerous genera) minute brown scavenger beetle / fungus beetle
- RÇKŘ**- ‘CUCUJOID BEETLE’ VI 1. (Monotomids; numerous genera) root-eating beetle 2. (Corylophids; numerous genera) minute hooded beetle / minute fungus beetle 3. (Smicripids; genus *Smicrips*) palmetto beetle
- RÇKÇ**- ‘CUCUJOID BEETLE’ VII 1. (Sphindids; several genera) cryptic slime mold beetle 2. (Phloeostichids, Priasilphids, Propalticids, Protocucujids, Lamingtoniids, Helotids, Boganiids, Alexiids, Akalyptoischion; numerous genera) other cucujoid beetle 3. (Myraboliids, Tasmosalpingids, Hobartiids, Cyclaxyrids, Agapythids; several genera) Australasian cucujoid beetle
- RÇKF**- ‘CURCULIONOID BEETLE (i.e., WEEVIL)’ I 1. (Curculionids; numerous genera) true weevil / snout beetle, flower weevil, acorn weevil, nut weevil, broad-nosed weevil, ambrosia beetle / pinhole borer, bark beetle 2. (Brentids; numerous genera) straight-snouted weevil 3. (Attelabids; several genera) leaf-rolling weevil
- RÇKT**- ‘CURCULIONOID BEETLE (i.e., WEEVIL)’ II 1. (Nemonychids; numerous genera) pine flower weevil 2. (Anthribids; numerous genera) fungus weevil 3. (Belids and Carids; numerous genera) primitive weevil, belid, cycad weevil, carid weevil
- RÇKH**- ‘CLEROID BEETLE’ I 1. (Clerids; numerous genera) checkered beetle, ant beetle, steely blue beetle, ham beetle, yellow-horned clerid 2. (Melyrids; numerous genera) soft-winged flower beetle 3. (Biphylids; several genera) false skin beetle
- RÇKHW**- ‘CLEROID BEETLE’ II 1. (Byturids; several genera) fruitworm beetle 2. (Trogossitids; numerous genera) bark-gnawing beetle 3. (Chaetosomatids, Lophocaterids, Acanthocnemids, Mauroniscids, Peltids, Phloiophilids, Phycosecids, Prionocerids, Thaneroclerids, Protopeltids, Rentoniids, Rhadalids, Thymalids; numerous genera) other claroid beetle
- RÇKM**- ‘CHRYSOMELOID & LYMEXILID BEETLE’ 1. (Chrysomelids, Megalopodids, Orsodacnids; numerous genera) leaf beetle, Colorado potato beetle / ten-striped spearman 2. (Cerambycids, Disteniids, Oxypeltids, Vesperids; numerous genera) long-horned beetle / longicorn, titan beetle, red milkweed beetle, huhu beetle, harlequin beetle 3. (Lymexilids; several genera) ship-timber beetle, timberworm beetle
- RÇG**- ‘TENEBRIONOID BEETLE’ I 1. (Aderids; numerous genera) ant-like leaf beetle 2. (Ciids; numerous genera) minute tree-fungus beetle 3. (Mycetophagids; several genera) hairy fungus beetle

- RÇGW**- ‘TENEBRIONOID BEETLE’ II 1. (Mordellids; numerous genera) tumbling flower beetle / pintail beetle 2. (Anthicids; numerous genera) ant-like flower beetle 3. (Scraptiids; numerous genera) false flower beetle
- RÇGY**- ‘TENEBRIONOID BEETLE’ III 1. (Zopherids other than Colydiines; several genera) ironclad beetle 2. (Colydiines; numerous genera) cylindrical bark beetle 3. (Salpingids; numerous genera) narrow-waisted bark beetle
- RÇGL**- ‘TENEBRIONOID BEETLE’ IV 1. (Meloids; numerous genera) blister beetle 2. (Oedemerids; numerous genera) false blister beetle / pollen-feeding beetle 3. (Pyrochroids; numerous genera) fire-colored beetle
- RÇGR**- ‘TENEBRIONOID BEETLE’ V 1. (Stenotrachelids; several genera) false long-horned beetle 2. (Prostomids; two genera) jugular-horned beetle 3. (Ripiphorids; numerous genera) wedge-shaped beetle
- RÇGŘ**- ‘TENEBRIONOID BEETLE’ VI 1. (Tenebrionids; numerous genera) darkling beetle, flour beetle 2. (Melandryids; numerous genera) false darkling beetle 3. (Archeocrypticids, Borids, Chalcodryids, Mycterids, Perimylopids, Pterogeniids, Pythids, Synchronoids, Tetratomids, Trachelostenids, Trictenotomids, Ulodids; numerous genera) other tenebrionoid beetle

Hexapods > Insects > Coleoptera > Polyphaga > Scarabaeoidea

- RBK**- ‘SCARABAEID (SCARAB) BEETLE’ I 1. (Scarabaeines; numerous genera) true dung beetle 2. (Aphodiines; numerous genera) small dung beetle 3. (Cetoniines; numerous genera) flower chafer, flower scarab
- RBKW**- ‘SCARABAEID (SCARAB) BEETLE’ II 1. (Dynastines; numerous genera) rhinoceros beetle / unicorn beetle / horn beetle, Atlas beetle, Hercules beetle, Neptune beetle, Caucasus beetle, rabbit beetle, Siamese beetle, Mars beetle, elephant beetle, actaeon beetle, ox beetle 2. (Rutelinae; numerous genera) shining leaf chafer, Japanese beetle 3. (Melolonthinae; numerous genera) May beetle, May bug, Junebug, cockchafer, monkey beetle, white-grub beetle
- RBKY**- ‘SCARABAEID (SCARAB) BEETLE’ III 1. (Euchirines; several genera) long-armed scarab 2. (Aclopininae, Aegialiinae, Allidiostomatinae, Chironinae, Dynamopodinae, Aulonocneminae, Eremazinae, Phaenomeridinae, Orphninae, Temitotroginae; numerous genera) other scarab beetle 3. [stem unassigned]
- RBKL**- ‘SCARABAEID BEETLE’ I 1. (Hybosoridae; numerous genera) scavenger scarab beetle 2. (Ceratocanthids; numerous genera) pill scarab beetle 3. (Ochodaeids; numerous genera) sand-loving scarab beetle
- RBKR**- ‘SCARABAEID BEETLE’ II 1. (Lucanids; numerous genera) stag beetle 2. (Diphylostomatids; genus *Diphylostoma*) false stage beetle 3. (Passalids; numerous genera) bess beetle / bessbug / betsy beetle / horned passalus beetle
- RBKŘ**- ‘SCARABAEID BEETLE’ III 1. (Pleocomids; genus *Pleocomma*) rain beetle 2. (Trogids and; several genera) hide beetle 3. (Glarerinae; genus *Glaresis*) enigmatic scarab beetle
- RBKÇ**- ‘SCARABAEID BEETLE’ IV 1. (Geotrupids; numerous genera) earth-boring dung beetle 2. (Glaphyrids; several genera) bumble bee scarab beetle 3. (Belohinids; genus *Belohina*) belohina beetle

Hexapods > Insects > Coleoptera > Polyphaga > Staphyliniformia

- RBKF**- ‘STAPHYLINOID BEETLE’ I 1. (Silphids; numerous genera) carrion beetle / burying beetle 2. (Agyrtids; numerous genera) primitive carrion beetle 3. (Staphylinids; numerous genera) rove beetle, ant-like stone beetle, crab-like rove beetle
- RBKV**- ‘STAPHYLINOID BEETLE’ II 1. (Leiodids; numerous genera) round fungus beetle, mammal-nest beetle 2. (Ptiliids; numerous genera) featherwing beetle 3. (Hydraenids; numerous genera) minute moss beetle
- RBKŤ**- ‘STAPHYLINIFORM BEETLE’ 1. (Hydrophiloids; numerous genera) water scavenger beetle, minute mud-loving beetle 2. (Histerids and Sphaeritids; numerous genera) clown beetle, false clown beetle 3. (Synteliids; genus *Syntelia*) syntelia beetle

Hexapods > Insects > Coleoptera > Polyphaga > Elateriformia

Hexapods > Insects > Coleoptera > Polyphaga > Elateriformia>Elateroidea

-RBD- ‘ELATEROID BEETLE’ I 1. (Elaterids; numerous genera) click beetle / snapping beetle / spring beetle / elater / skipjack, false firefly 2. (Eucnemids; numerous genera) false click beetle 3. (Ceropphytids; several genera) rare click beetle

-RBDW- ‘ELATEROID BEETLE’ II 1. (Cantharids; numerous genera) soldier beetle / leatherwing 2. (Omethids; several genera) false soldier beetles, long-lipped beetle 3. (Lycids; numerous genera) net-winged beetle

-RBDY- ‘ELATEROID BEETLE’ III 1. (Lampyrids; numerous genera) firefly / lightning bug 2. (Phengodids, Rhagophthalmids, Osmalids; numerous genera) glowworm beetle 3. (Throscids; several genera) false metallic wood-boring beetle

-RBDL- ‘ELATEROID BEETLE’ IV 1. (Brachysectrids; genus *Brachysectra*) Texas beetle 2. (Artematopodids; several genera) soft-bodied plant beetle 3. (Jurasids, Podabrocephalids, Rhinorhipids; several genera) other elateriform beetle

Hexapods > Insects > Coleoptera > Polyphaga > Elateriformia>Buprestoidea

-RBDR- ‘BUPRESTOID BEETLE’ 1. (Buprestids; numerous genera) jewel beetle / metallic wood-boring beetle 2. (Schizopodids; several genera) false jewel beetle 3. [stem unassigned]

Hexapods > Insects > Coleoptera > Polyphaga > Elateriformia>Dascilloidea

-RBDV- ‘DASCILLOID BEETLE’ 1. (Dascillids; several genera) soft-bodied plant beetle 2. (Rhipicerids; several genera) cicada parasite beetle 3. [stem unassigned]

Hexapods > Insects > Coleoptera > Polyphaga > Elateriformia>Scirtoidea

-RBDŽ- ‘SCIRTOID BEETLE’ 1. (Scirtids; numerous genera) marsh beetle 2. (Clambids; several genera) minute beetle / fringe-winged beetle 3. (Eucinetids and Decliniids; several genera) plate-thigh beetle, declinia beetle

Hexapods > Insects > Coleoptera > Polyphaga > Elateriformia>Byrrhoidea

-RBC- ‘BYRRHOID BEETLE’ I 1. (Byrrhids; numerous genera) pill beetle 2. (Callirhipids; several genera) cedar beetle 3. (Chelonariids; several genera) turtle beetle

-RBČ- ‘BYRRHOID BEETLE’ II 1. (Limnichids; numerous genera) minute mud beetle / minute marsh-loving beetle 2. (Heterocerids; numerous genera) variegated mud-loving beetle 3. (Psephenids; numerous genera) water-penny beetle

-RBZ- ‘BYRRHOID BEETLE’ III 1. (Eulichadids; several genera) forest stream beetle 2. (Elmids; numerous genera) riffle beetle 3. (Dryopids; numerous genera) long-toed water beetle

-RBJ- ‘BYRRHOID BEETLE’ IV 1. (Ptilodactylids; several genera) toe-winged beetle 2. (Lutrochids; genus *Lutrochus*) travertine beetle 3. (Cneoglossids; genus *Cneoglossa*) cneoglossa beetle

Hexapods > Insects > Coleoptera > Polyphaga > Bostrichiformia

-RBVM- ‘BOSTRICHIFORM BEETLE’ I 1. (Bostrichids; numerous genera) horned powderpost beetle, false powderpost beetle, auger beetle 2. (Dermestids; numerous genera) carpet beetle, skin beetle, larder beetle, hide beetle / leather beetle, museum beetle, warehouse beetle, cabinet beetle, Khapra beetle / buscuit beetle 3. (Ptinids; numerous genera) death-watch beetle, spider beetle, common furniture beetle

-RBVN- ‘BOSTRICHIFORM BEETLE’ II 1. (Endecatomids; genus *Endecatomus*) endecatomus beetle 2. (Derontids; several genera) tooth-necked fungus beetle 3. (Nosedendrids, Jacobsoniids; several genera) wounded-tree beetle, slime flux beetle, Jacobson’s beetle

Hexapods > Insects > Coleoptera > remaining families

-RBKH- ‘OTHER COLEOPTEROID’ 1. (Myxophagans; several genera) myxophagan beetle, skiff beetle 2. (Archostematans; several genera) reticulated beetle, telephone-pole beetle, other archostematid beetle 3. (Strepsiptera; numerous genera) twisted-winged parasite / twisted-wing insect / stylops

Hexapods > Insects > Amphiesmenoptera (butterflies, moths, and caddisflies)

Hexapods > Insects > Amphiesmenoptera > Lepidoptera (butterfly, moth)

-LSP- ‘PRIMITIVE MOTH’ I 1. (Aglossata [Agathiphagids]; genus *Agathiphaga*) kauri moth 2. (Heterobathmiids; genus *Heterobathmia*) heterobathmiid moth, southern beech moth 3. (Zeugloptera [Micropterigids]; numerous genera) mandibulate archaic moth / small primitive metallic moth

-LSPW- ‘PRIMITIVE MOTH’ II 1. (Dacnonypha [Eriocraniids]; several genera) eriocraniid metallic moth 2. (Acanthopteroctetids; genera *Acanthopteroctetes*, *Catapterix*) archaic sun moth 3. (Lophocoronids; genus *Lophocorona*) lophocorona moth

-LSPY- ‘PRIMITIVE MOTH’ III 1. (Neopseustids; several genera) archaic bell moth 2. (Aenigmatineids; genus *Aenigmatinea*) enigma moth 3. (Exoporia; several genera) swift moth, ghost moth, New Zealand primitive moth

Hexapods > Insects > Amphiesmenoptera > Lepidoptera > Monotrysiina (monotrysiid moths)

-L SPL- ‘ADELOID MOTH’ 1. (Adelids; several genera) fairy longhorn moth 2. (Prodoxids; several genera) prodoxid moth, currant shoot borer, yucca moth, bogus yucca moth 3. (Cecidosids, Heliozelids, Incurvariids; numerous genera) adeloid leaf-miner moth

-LSPR- ‘NEPTICULOID MOTH’ 1. (Nepticulines; several genera) pigmy moth / midget moth 2. (Pectinivalvines; genera *Pectinivalva*, *Roscidotoga*) Australian pigmy/midget moth 3. (Opotegids; several genera) white eyecap moth

-LSPŘ- ‘MONOTRYSIAN MOTH’ 1. (Andesianids; genus *Andesiana*) Andean endemic moth 2. (Palaephatids; several genera) Gondwanaland moth 3. (Tischerioids; several genera) trumpet leaf miner moth

Hexapods > Insects > Amphiesmenoptera > Lepidoptera > Dytrysia

-LSPF- ‘TINEOID MOTH’ 1. (Tineids; numerous genera) clothes moth, carpet moth, fungus moth, tineid moth 2. (Psychids; numerous genera) bagworm moth / bagworm / bagmoth / case moth 3. (Acrolophids; several genera) burrowing webworm moth

-LSPV- ‘OTHER TINEOID MOTH & MILLIERIID MOTH’ 1. (Eriocottids; several genera) Old World spiny-winged moth 2. (Arrhenophanids; several genera) arrhenophanid moth 3. (Millieriids; genera *Millieria*, *Phormoestes*, *Nyx*) millieriid moth

-LSPĽ- ‘GRACILLARIOID MOTH’ 1. (Bucculatricids; genus *Bucculatrix*) ribbed cocoon maker / bucculatricid moth 2. (genus *Ogmograptis*) scribbly gum moth 3. (Gracillariids and Roeslerstammids; numerous genera) gracillarioid moth

-LSPÇ- ‘YPONOMEUTOID MOTH’ I 1. (Yponomeutids; numerous genera) ermine moth, 2. (Argyresthiids; several genera) shiny head-standing moth 3. (Praydids; several genera) false ermine moth

- LSPH-** ‘YPONOMEUTOID MOTH’ II 1. (Plutellids; numerous genera) diamondback moth 2. (Acrolepiids; several genera) false diamondback moth 3. (Glyphipterigids; numerous genera) sedge moth
- LSPÇW-** ‘YPONOMEUTOID MOTH’ III 1. (Heliodinids; numerous genera) sun moth 2. (Bedelliids; genus *Bedellia*) bedelliid moth, sweet potato leaf miner moth 3. (Lyonetiids; numerous genera) lyonetiid moth
- LSPHW-** ‘YPONOMEUTOID MOTH’ IV 1. (Ypsolophids several genera) ypsolophid moth 2. (Attevids; genus *Atteva*) atteva moth 3. [stem unassigned]

Hexapods > Insects > Amphiesmenoptera > Lepidoptera > Apoditrysia

- LFP-** ‘PTEROPHORID & ALUCITOID MOTH’ 1. (Pterophorids; numerous genera) plume moth 2. (Alucitids; several genera) many-plumed moth 3. (Tineodids; numerous genera) false plume moth
- LFPW-** ‘TORTRICID (a.k.a. TORTRIX or LEAFROLLER) MOTH’ I 1. (Tortricids; numerous genera) leafroller moth / tortrix moth 2. ((genus *Cydia*) cydia tortrix, rusty oak moth, slash pine seedworm moth, hickory shuckworm moth, filbertworm moth, tea flush worm moth, alfalfa moth, larch gall moth, pea moth, jumping bean moth, spruce bark tortrix, ponderosa pine seedworm moth, codling moth, pear fruit moth / pear fruit tortricid, chestnut tortrix / acorn moth, spruce seed moth, beech moth, longleaf seedworm moth, nut fruit tortrix, larch bark moth, eastern pine seedworm moth 3. (genus *Grapholita*) grapholita tortrix, hemp moth / hemp borer, oriental fruit moth, cherry fruitworm moth, clover seed moth, hawthorn leafroller, peach moth, appleseed moth / small fruit tortrix, three-lined grapholita moth, grapholitha roseticolana / deep-brown piercer / rose-hip tortricid / briar moth
- LFPY-** ‘TORTRICID (a.k.a. TORTRIX or LEAFROLLER) MOTH’ II 1. (genus *Archips*) fruit-tree leafroller moth, ugly-nest caterpillar moth, brown oak tortrix, oak webworm moth, baldcypress leafroller, black shield leafroller / gray archips moth, larger boxelder leafroller, large fruit tree tortrix, rose tortrix / rose leaf roller, oak leafroller, apple leafroller, variegated golden tortrix, striated tortrix moth / striated leafroller, southern ugly-nest caterpillar moth, spring spruce needle moth / spruce needleworm moth, omnivorous leafroller, dusky-back leafroller, smoked leafroller / hickory webworm moth, Georgia archips moth, exotic leafroller moth / apple tortrix, boldly-marked archips moth, Asiatic leafroller, groundnut leafroller 2. (genus *Tortrix*) green oak tortrix / green oak moth / European oak leafroller, Japanese oak leafroller 3. (genus *Sparganothis*) sparganothis fruitworm moth / blueberry leafroller, aproned sparganothis / beautiful sparganothis, aproned ceopis moth, white-tailed fruitworm moth, distinct sparganothis moth, chokecherry leafroller moth, spring dead-leaf roller, gray sparganothis moth, three-streaked sparganothis moth, one-lined sparganothis moth, mosaic sparganothis moth, long-palped tortrix / vine leaf roller
- LFPL-** ‘TORTRICID (a.k.a. TORTRIX or LEAFROLLER) MOTH’ III 1. (genus *Choristoneura*) broken-banded leafroller / dark-banded fireworm moth, large aspen tortrix, two-year cycle budworm moth, spruce budworm moth, western spruce budworm moth, eastern spruce budworm moth, mountain-ash tortricid, strawberry leafroller, sugar pine tortrix, parallel-banded leafroller moth, jack pine budworm moth, oblique banded leaf roller / rosaceous leaf roller, zapulata moth 2. (genus *Argyrotaenia*) white-spotted leafroller, pondapple leafroller moth, orange tortrix / apple skinworm moth, Ivana leafroller moth, hickory leafroller moth, Kimball’s leafroller moth, fall spruce needle moth, gray-banded leafroller moth, pine tube moth, yellow-winged oak leafroller moth, four-lined leafroller / four-banded leafroller / lesser all-green leafroller, jack pine tube moth / lodgpole needletier moth, red-banded leafroller moth 3. (genus *Pandemis*) chequered fruit-tree tortrix / hazel tortrix moth / filbert tortricid / barred fruit tree moth, barred fruit-tree tortrix, green aspen leaftier, dark fruit-tree tortrix / apple brown tortrix, woodgrain leafroller moth, three-lined leafroller, apple pandemis / pandemis leafroller moth
- LFPR-** ‘TORTRICID (a.k.a. TORTRIX or LEAFROLLER) MOTH’ IV 1. (genus *Spilonota*) bud moth, white fruit moth / larger apple fruit moth / eye-spotted bud moth, larch leafroller, apple fruit lick 2. (genus *Thaumatotibia*) cacao husk borer, false codling moth / orange moth / citrus codling moth / orange codling moth 3. (genus *Spilonota*) white fruit moth / larger apple fruit moth / eye-spotted bud moth, larch leafroller, apple fruit lick, bud moth
- LFPŘ-** ‘TORTRICID (a.k.a. TORTRIX or LEAFROLLER) MOTH’ V 1. (genus *Adoxophyes*) appleleaf-curling moth, summer fruit tortrix moth, shimmering adoxophyes moth, bell moth / orange tip moth 2. (genus *Lobesia*) European grapevine moth 3. (genus *Paralobesia*) tulip-tree leaftier moth, grape berry moth
- LFPF-** ‘TORTRICID (a.k.a. TORTRIX or LEAFROLLER) MOTH’ VI 1. (genus *Taniva*) spruce needleminer moth 2. (genus *Synnoma*) rabbitbrush webbing moth 3. (genus *Pammene*) chestnut leafroller, pygmy piercer moth
- LFPV-** ‘COSSOID MOTH’ 1. (Cossids, Dudgeoneids, Metarbelids; numerous genera) carpenter moth / carpenter miller / cossid miller / goat moth / wood moth 2. (genus *Coryphodema*) quince borer / sad goat moth / apple-trunk borer moth 3. (genus *Prionoxystus*) carpenterworm moth / locust borer moth

- LFPT-** ‘SESSOID MOTH’ 1. (Brachodids; numerous genera) little bear moth 3. (Castniids; numerous genera) giant butterfly-moth, sun moth 3. (Sessiids; numerous genera) clearwing moth
- LFPS-** ‘ZYGAENOID MOTH’ I 1. (Zygaenids; numerous genera) burnet moth, forester moth, smoky moth, skeltonizer moth, vine bud moth 2. (Megalopygids; numerous genera) flannel moth / crinkled flannel moth 3. (Epipyropids and Cyclotornids; numerous genera) planthopper parasite moth
- LFPŠ-** ‘ZYGAENOID MOTH’ II 1. (Dalcerids, Limacodids; numerous genera) slug moth / cup moth, jewel caterpillar moth 2. (Heterogynids, Lacturids, Phaudids, Aidids, Anomoeotids, Somabrachyids, Himantopterids; numerous genera) other zygaenoid moth 3. [stem unassigned]
- LFPL-** ‘GELECHIOID MOTH’ I 1. (Gelechioids other than Gelechiids; numerous genera) gelechioid moth / curved-horn moth 2. (Coleophorids; numerous genera) case-bearer moth / casebearing moth / case moth 3. (Cosmopterigids; numerous genera) cosmet moth
- LFPLW-** ‘GELECHIOID MOTH’ II 1. (Elachistids; numerous genera) grass-miner moth 2. (Argonoxenines and Blastodacnids; numerous genera) palm moth 3. (Lecithocerids; numerous genera) long-horned moth
- LFPH-** ‘GELECHIOID MOTH’ III 1. (Momphids; numerous genera) mompha moth 2. (Oecophorids; numerous genera) concealer moth 3. (Schistonoeids; genus *Schistonoea*) scavenger moth
- LFPHW-** ‘GELECHIOID MOTH’ IV 1. (Scythridids; numerous genera) flower moth 2. (Xyloryctids; numerous genera) hermit moth / timber moth 3. (Austostichids, Batrachedrids, Blastobasids, Chimabachids, Pterolonchids, Epimarptids, Lypusids, Depressariids, Peleopodids, Stathmopodids, Syringopids; numerous genera) other gelechioid moth
- LFPŠW-** ‘GELECHIID (TWIRLER) MOTH’ 1. (Gelechiids; numerous genera) twirler moth 2. (genera *Anarsia*, *Aproaerema*, *Keiferia*, *Phthorimaea*, *Sitotraga*, *Tecia*, *Tuta*) gelechiid twig, groundnut, tuber, grain, or tomato pest 3. (genus *Pectinophora*) pink bollworm moth
- LFPC-** ‘APODITRYSIAN MOTH’ I 1. (Carposinids; numerous genera) fruitworm moth 2. (Copromorphids; numerous genera) tropical fruitworm moth 3. (Immids; numerous genera) immid moth
- LFPCW-** ‘APODITRYSIAN MOTH’ II 1. (Epermeniids; numerous genera) fringe-tufted moth 2. (Schreckensteiniids; several genera) bristle-legged moth 3. (Simaethistids; genera *Simaethistis*, *Metaprotus*) simaethistid moth
- LFPSW-** ‘APODITRYSIAN MOTH’ III 1. (Choreutids; numerous genera) metalmark moth 2. (Urodids; several genera) false burnet moth 3. (Galacticids; several genera) galacticid moth
- LFPSY-** ‘APODITRYSIAN MOTH’ IV 1. (Prodidactid; genus *Prodidactis*) prodidactis moth 2. (Douglassiids; genera *Tinagma*, *Klimeschia*, *Protonyctia*) Douglas moth 3. [stem unassigned]

Hexapods > Insects > Amphiesmenoptera > Lepidoptera > Obtectomera

- LKW-** ‘PAPILIONID (SWALLOWTAIL) BUTTERFLY’ I 1. (Parnassiines; several genera) snow Apollo, mountain Apollo, false Apollo, souther festoon, eastern festoon, Spanish festoon, Bhutan glory, luehdorfina 2. (Papilionines; numerous genera) swallowtail, swordtail, kite swallowtail, bluebottle, triangle, jay, graphium, white-lady, zebra, dragontail, gorgon, Kaiser-i-hind, golden Kaiser-i-hind, batwing, windmill, clubtail, rose, clearwing swallowtail / big greasy, birdwing, cattleheart 3. (Baronines; genus *Baronia*) short-horned baronia
- LKY-** ‘HESPERIID (SKIPPER) BUTTERFLY’ I 1. (Coeliadines; several genera) awl, awlet, policeman, African giant skipper 2. (Euschemonines; genus *Euschemon*) regent skipper 3. (Eudamines; numerous genera) dicot skipper
- LKL-** ‘HESPERIID (SKIPPER) BUTTERFLY’ II 1. (Pyrgines; numerous genera) spread-winged skipper, firetail skipper 2. (Heteropterines; numerous genera) skipperling 3. (Hesperines; numerous genera) grass skipper / banded skipper

-LKR- 'HESPERIID (SKIPPER) BUTTERFLY' III 1. (Megathymines; several genera) giant skipper 2. (Trapezitines; numerous genera) Australian/New Guinea skipper 3. [stem unassigned]

-LKR- 'PIERID BUTTERFLY' I 1. (Pierines; numerous genera) white butterfly, orange tip, marble, yellow tip, black-tip, sulphur, sawtooth, dotted border, Jezebel, gull, puffin, albatross, blackvein, caper white, Arab, vagrant 2. (Coliadines; numerous genera) yellow butterfly, dogface, sulphur, emigrant 3. (Dismorphiines and Pseudopontiines; several genera) mimic sulphur, mimic white butterfly, pseudopontia

-LKÇ- 'LYCAENID (GOSSAMER-WINGED) BUTTERFLY' I 1. (Lycaenines; numerous genera) copper butterfly, sapphire butterfly 2. (Curetines; genus *Curetis*) sunbeam butterfly 3. (Polyommattines; numerous genera) blue, hairtail, Pierrot, argus, cerulean, azure, tailed-blue, cupid butterfly

-LKF- 'LYCAENID (GOSSAMER-WINGED) BUTTERFLY' II 1. (Miletines; numerous genera) harvester, wooly legs, moth butterfly 2. (Theclines; numerous genera) hairstreak, elfin, posy, imperial, oakblue, Atala 3. (Aphnaeines; numerous genera) opal, Roger's gem, silver spot, silver-spotted copper, highflyer, scarce scarlet / golden flash, daisy copper, king copper

-LKT- 'RIODINID & OTHER LYCAENID BUTTERFLY' 1. (Riodinids; numerous genera) metalmark butterfly, Duke of Burgundy, orange harlequin, columbine, punch, punchinello 2. (Poritiines; numerous genera) poritine, zulu, pentila, buff, glasswing / white mimic, tiger mimic, acraea mimic, harlequin, dot, acraea blue, epitola 3. [stem unassigned]

-LKM- 'NYMPHALID (FOUR-FOOTED / BRUSH-FOOTED) BUTTERFLY' I 1. (Nymphalines; numerous genera) tortoiseshell, admiral, mapwing, anglewing, comma, jester, painted lady, tiger beauty, pirate, eggfly, diadem, oakleaf, leaf, malachite, peacock, Fatima, pansy, commodore, blue beauty, buckeye, meadow argus, northern argus, mother-of-pearl butterfly 2. (Melitaeines; numerous genera) checkerspot, patch, crescent / crescent spot, fritillary, European peacock butterfly 3. (other Nymphalids; genera *Rhinopalpa*, *Kallimoides*, *Vanessula*) wizard, African leaf, black and orange / lady's maid butterfly

-LKN- 'NYMPHALID (FOUR-FOOTED / BRUSH-FOOTED) BUTTERFLY' II 1. (Cyrestines; genera *Cyrestis*, *Chersonesia*, *Marpesia*) map, maplet, daggerwing butterfly 2. (Biblidines; numerous genera) tropical brushfoot, eighty-eight, numberwing, Pericloud, sailor, greenwing, asterope, glory, banner, cracker, calico, beauty, red flasher, firewing, catone, shoemaker, olivewing, bluewing, tree nymph, purplewing, red rim / crimson-banded black, castor, piper, sailor, Drury's delight, joker, mestra, azeca banner 3. (Apaturines; numerous genera) emperor, empress, hackberry, courtesan, pasha, sorcerer, circe, siren, prince, courtier

-LKV- 'NYMPHALID (FOUR-FOOTED / BRUSH-FOOTED) BUTTERFLY' III 1. (Heliconiines; numerous genera) acraea, legionnaire, tawny coster, actinote, altinote, bematistes, lacewing, gulf fritillary / passion butterfly, longwing, postman, banded orange / orange tiger, Julia / flame / flambeau, Juliette, scarce bamboo page / longwing dido, leopard, spotted rustic, blotched leopard, cruiser, yeoman, royal Assyrian, rustic, vagrant, fritillary, polka dot 2. (Limenitidines; numerous genera) clipper, marquise, duke, archduke, count, earl, viscount, forest-glade nymph, pathfinder, brilliant nymph, forester, figeater, commander, guineafowl, false fritillary, false sergeant, sister, admiral, commodore, lascar, aeroplane, glider, knight, false acraea, blue sailer / blue sergeant 3. (Libytheines; genera *Libythea*, *Libytheana*) beak / snout butterfly

-LKB- 'NYMPHALID (FOUR-FOOTED / BRUSH-FOOTED) BUTTERFLY' IV 1. (Danaini; several genera) cleric, monarch, queen, tiger, glassy tiger, tree-nymph, wood-nymph, Schneider's surprise, blue tiger, crow, paper, mimic queen, magpie butterfly 2. (Ithomiines; numerous genera) clearwing, tigerwing, clapping ticlear, glasswing butterfly 3. (Tellervini; genus *Tellervo*) tellervo butterfly

-LKH- 'NYMPHALID (FOUR-FOOTED / BRUSH-FOOTED) BUTTERFLY' V 1. (Calinagines; genus *Calinaga*) freak butterfly 2. (Charaxines; numerous genera) leafwing, nawab, rajah, pasha, begum, palla, forest queen, prepona, Nemesis 3. (Morphines; numerous genera) dryad, palmking, koh-i-noor, duffer, caliph jungle queen, jungleking, jungle glory, owl, giant owl, morpho

-LKŠ- 'SATYRID BUTTERFLY' 1. (Satyrini; numerous genera) brown, satyrid, satyr, grayling, ringlet, false grayling, wood-nymph, meadowbrown, xenica, alpine, widow, heath 2. (Elymiini; numerous genera) palmfly, diqadem, white owl, pearly-eye, wall, wallbrown, treebrown, woodbrown, bushbrown, labyrinth, goldenfork, silverstripe, lilacfork, silverfork, mystic 3. (Melanitini, Eritini, Haeterini, Ragadiini; numerous genera) mountain pride / Table Mountain beauty, bush beauty / forest pride, brown

-LKH- 'BUTTERFLY- MOTH / MOTH-BUTTERFLY' 1. (Callidulids; several genera) Old World butterfly-moth 2. (Hedylids; genus *Macrosoma*) American moth-butterfly 3. [stem unassigned]

-LKÇW- OBTECTOMERAN MOTH' I 1. (Thyridids; numerous genera) picture-winged leaf moth 2. (Hyblaeids; genera *Hyblaea*, *Erythrochrus*) teak moth 3. (Whalleyanids; genus *Whalleyana*) whalleyana moth

-LKŠW- 'OBTECTOMERAN MOTH' II 1. (Crambids; numerous genera) grass moth, European corn boere / European corn worm moth / European high-flyer, sod grass webworm moth, rice stem borer 2. (Pyralids; numerous genera) snout moth / pyralid moth, Indian meal moth / weevil moth / pantry moth / flour moth / grain moth, coconut spike moth / oil palm bunch moth, cacao moth / tobacco moth / warehouse moth, Mediterranean flour moth / mill moth, wax moth, rice moth 3. (Mimallonids; numerous genera) mimallonid moth / sack-bearer moth

Hexapods > Insects > Amphiesmenoptera > Lepidoptera > Macroheterocera

-ŘZB- 'BOMBYCOID MOTH' I 1. (Bombycids; numerous genera) silk moth, emperor moth, sphinx moth, silkworm moth, Brahmin moth, true silkmoth / mulberry silkmoth 2. (Drepanoids; numerous genera) hook-tip moth, false owlet, gold moth, doid moth, drepanid moth 3. (Lasiocampids; numerous genera) eggar, snout moth, lappet moth, tent caterpillar moth

-ŘZBW- 'BOMBYCOID MOTH' II 1. (Saturnids; numerous genera) oakworm moth, regal moth, pine-devil moth, splendid royal moth, rosy maple moth, imperial moth, io moth, buck moth, emperor moth, moon moth, tussar moth, comet moth, Polyphemus moth, mopane moth, cecropia moth, silkmoth, Hercules moth, Atlas moth 2. (Sphingids; numerous genera) sphinx moth, hawk- moth 3. (Apateleids; numerous genera) American silkworm moth, shag-carpet caterpillar moth

-ŘZBY- 'BOMBYCOID MOTH' II 1. (Eupterotids, Phiditiids, Endromids, Carthaeids; numerous genera) bombycoid moth, dryandra moth 2. (Brahmaeids; several genera) brahmin moth, owl moth 3. (Anthelids; several genera) anthelid moth, rose anthelid

-ŘZBL- 'GEOMETRID (GEOMETER) MOTH' 1. (Geometrids; numerous genera) geometer, spinach, phoenix, barred straw, carpet, delicate, rivulet, seraphim, pug, oblique striped, mallow, chimney sweeper, vestal, blood-vein, zachera, wave, lace border, scallop, mocha, maiden's blush, emerald, diminutive, purple-barred yellow moth 2. (Epicopeia; several genera) oriental swallowtail moth 3. (Sematurids and Pseudobistonids, several genera) sematurid moth, pseudobistonid moth

-ŘZBR- 'URANIID MOTH' 1. (Uraniines; numerous genera) urania, green page, tropical swallowtail, Laos brown butterfly, sunset moth, uraniine moth 2. (Epiplamines; numerous genera) scoopwing moth 3. (Auzeines, Microniines; several genera) auzeine moth, microniine moth

-ŘZV- 'EREBID MOTH' I 1. (Erebines; numerous genera) underwing moth, witch moth 2. (Arctiines; numerous genera) tiger, lichen, footman, wasp moth 3. (Calpinesand Scoliopterygines; several genera) fruit-piercing, fruit-sucking, piercing moth, cotton leaf worm moth

-ŘZVW- 'EREBID MOTH' II 1. (Herminiines; numerous genera) litter moth 2. (Hypenines; numerous genera) snout moth, bomolocha, hypena, hop looper / hop vine, lantana defoliator, cloverworm moth 3. (Lymantriines; numerous genera) tussock moth, gypsy moth

-ŘZVY- 'EREBID MOTH' III 1. (Aganaines; several genera) aganaine, tiger moth 2. (Scoleocampines; several genera) scoleocampine, algibelle, sigela, dead-wood borer moth 3. (Anobines, Boletobiines, Eulepidotines, Hycalines, Pangraptines, Rivulines, Tinoliines, Toxocampines; numerous genera) other erebid moth

-ŘZVL- 'NOCTUID (OWLET) MOTH' 1. (Noctuines; numerous genera) owlet moth, cutworm moth, dart, clay, square-spot, Hebrew character, rustic 2. (Acronictines, Agaristines, Amphipyrrines, Bagisarids, Bryophilines, Condiciines; numerous genera) dagger, sycamore, marsh, slowpoke, Canadian giant, rusty shoulder knot moth, amphipyra, copper underwing, mouse moth, mountain forester, day flying moth, bagisara, marbled green, marbled gray, red groundling / pied groundling moth 3. (Cuculliines, Dilobines, Eustrotiines, Hadenines, Heliothines, Pantheines, Plusiines, Raphiines; numerous genera) star-wort, woodworm moth, asteroid, merveille du jour, sallow, catabena, toadflax, brocade, figure of eight, armyworm moth, cabbage moth, arch, zebra caterpillar moth, glaucous shears, feathered ear, white-point, wainscot, bright-eye, double line, white-speck, drab, Quaker, corn earworm moth, bollworm moth, pease blossom, yellowhorn, looper, burnished brass, pitcher plant, alpine beauty, silver Y, Bröther moth

-ŘZVR- 'NOCTUOID (OWLET) MOTH' 1. (Notodontids; numerous genera) prominent, puss moth, buff-tip, lobster, poplar kitten, California oakworm, beech caterpillar, oakleaf caterpillar, yellownecked caterpillar, walnut caterpillar 2. (Nolids; numerous genera) nolid, nola, hieroglyphic moth, green pea moth 3. (Oenosandrids, Doids, Thaumetopoeids; numerous genera) stub, Boisduval's autumn, epicoma, black spot, long-tailed bombyx / Sparshall's moth, notodontid moth

Hexapods > Insects > Amphiesmenoptera > Trichoptera

-ŘŽŇ- ‘TRICHOPTERAN (CADDISFLY / SEDGE-FLY / RAIL-FLY)’ 1. (Annulipalpans; numerous genera) net-spinning caddisfly, tube-making caddisfly, trumpet-net caddisfly, finger-net caddisfly 2. (Integripalpans; numerous genera) portable case-maker caddisfly, snail-case caddisfly, stonecase caddisfly, tubecase caddisfly 3. (Spicipalpans; numerous genera) spicipalpan, purse-case caddisfly / microcaddisfly

Hexapods > Insects > Antliophora

Hexapods > Insects > Antliophora > Siphonaptera (flea)

-ŘŽŇW- ‘SIPHONAPTERAN (FLEA)’ 1. (Pulicids; numerous genera) common flea / cat flea 2. (Pulicioids other than Pulicids; numerous genera) pulicioid flea 3. (Hectopsyllids; genera *Tunga*, *Hectopsylla*) jigger / chigoe flea, hectopsyllid flea

Hexapods > Insects > Antliophora > Mecoptera (scorpionflies)

-ŘJŇ- ‘MECOPTERAN (SCORPIONFLY)’ I 1. (Panorpids; several genera) common scorpionfly 2. (Panorpodids; genera *Panorpodes*, *Brachypanorpa*) short-faced scorpionfly 3. (Boreids; several genera) snow scorpionfly

-ŘJŇW- ‘MECOPTERAN (SCORPIONFLY)’ II 1. (Bittacids; numerous genera) hangingfly / hanging scorpionfly 2. (Meropeids; genera *Merope*, *Austromerope*) earwigfly / forcefly 3. (Eomeropids, Apteropanorpid, Choristids, Nannochoristids; several genera) notiothauma scorpionfly, apteropanorpa scorpionfly, choristid scorpionfly, nannochoristid scorpionfly

Hexapods > Insects > Antliophora > Diptera (true fly)

Hexapods > Insects > Antliophora > Diptera > Nematocera > Ptychopteromorpha (phantom and primitive crane-flies)

-LZGV- ‘TUPILOMORPHIC FLY (CRANE FLY)’ I 1. (Tanyderids; several genera) primitive crane fly 2. (Ptychopterids; several genera) phantom crane fly 3. (Trichocerids; three genera) winter crane fly, winter gnat

-LZGD- ‘TUPILOMORPHIC FLY (CRANE FLY)’ II 1. (Tipulids and Limoniines; numerous genera) crane fly, limoniid crane fly, snow fly 2. (Cylindrotomids; several genera) long-bodied crane fly 3. (Pediciids; several genera) hairy-eyed crane fly

Hexapods > Insects > Antliophora > Diptera > Nematocera > Culicomorpha (mosquitoes and biting midges)

-LZG- ‘CULICOMORPH’ I 1. (Culicids; numerous genera) mosquito 2. (Dixids; numerous genera) meniscus midge 3. (Chaoborids; numerous genera) phantom midge / glassworm midge

-LZGW- ‘CULICOMORPH’ II 1. (Simuliids; numerous genera) black fly / buffalo gnat / turkey gnat / white socks 2. (Ceratopogonids; numerous genera) biting midge / no-see-um 3. (Corethrellids; two genera) frog-biting midge

-LZGY- ‘CULICOMORPH’ III 1. (Chironomids; numerous genera) nonbiting midge / lake fly, harlequin fly 2. (Thaumaleids; several genera) solitary midge / trickle midge 3. [stem unassigned]

Hexapods > Insects > Antliophora > Diptera > Nematocera > Blephariceromorpha (net-winged midges, etc.)

-LZGŘ- ‘BLEPHARICEROMORPH’ 1. (Blepharicerids; several genera) net-winged midge, torrent midge 2. (Deuterophlebiomorph; genus *Deuterophlebia*) mountain midge 3. (Nymphomyiids; genus *Nymphomyia*) nymphomyiid fly / nymphomyiid midge

Hexapods > Insects > Antliophora > Diptera > Nematocera > Bibionomorpha (march fly, midges, gnats)

-LZGL- ‘BIBIONOMORPH’ I 1. (Bibionids; several genera) march fly / St. Mark’s fly, love bug / honeymoon fly / double-headed bug 2. (Anisopodids; several genera) wood gnat / window-gnat 3. (Cecidomyiids; numerous genera) gall midge / gall gnat, wood midge

-LZGR- ‘BIBIONOMORPH’ II 1. (Mycetophilids; numerous genera) fungus gnat 2. (Lygistorrhinids; several genera) long-beaked fungus gnat 3. (Sciarids; numerous genera) dark-winged fungus gnat

-LZGZ- ‘BIBIONOMORPH’ III 1. (Rangomaramids; several genera) long-winged fungus gnat 2. (Keroplatids; numerous genera) predatory fungus gnat 3. (Ditomyids, Diadocidiids, Bolitophilids, Hesperinids; several genera) sciaroid gnat, bibionomorphic gnat

-LZGŽ- ‘OTHER NEMATOCERAN FLY’ 1. (Pachyneurids; several genera) pachyneurid gnat, pachyneurid fly, pachyneurid midge 2. (Axymyiids; three genera) axymyiid fly 3. [stem unassigned]

Hexapods > Insects > Antliophora > Diptera > Nematocera > Psychodomorpha

-LZBĐ- ‘PSYCHODOMORPH’ (Psychodids; numerous genera) drain fly / sink fly / filter fly / sewer gnat / moth fly 2. (Scatopsids; numerous genera) dung midge / minute black scavenger fly 3. (Cnathyloscelids and Perissommatids; several genera) other scatopsoid fly

Hexapods > Insects > Antliophora > Diptera > Brachycera > Tabanomorpha, Xylophagomorpha, and Stratiomyomorpha

-LZB- ‘TABANID FLY’ 1. (Tabanines; numerous genera) horse-fly, cleg 2. (Chrysopsines; numerous genera) deer fly / banded horse-fly 3. (Pangoniines; numerous genera) long-tongued horse-fly

-LZBW- ‘TABANOMORPHOID FLY’ 1. (Rhagionids, Pelecorhynchids, Bolbomyiids, Austroleptids, Oreoleptids; numerous genera) snipe fly 2. (Athericids; numerous genera) ibis fly / water snipe fly 3. (Xylophagids; several genera) awl-fly

-LZBY- ‘STRATIOMORPHIC FLY’ 1. (Stratiomyids; numerous genera) soldier fly 2. (Xylomyids; several genera) wood soldier fly 3. (Pantophthalmids; 2 genera) timber fly

Hexapods > Insects > Antliophora > Diptera > Brachycera > Asilomorpha > Asiloidea

-LZBL- ‘ASILOID FLY’ I 1. (Asilids; numerous genera) robber fly / assassin fly 2. (Bombyliids; numerous genera) bee fly / humblefly 3. (Mydids and Apiocerids; numerous genera) Mydas fly, flower-loving fly

-LZBR- ‘ASILOID FLY’ II 1. (Therevids; numerous genera) stiletto fly 2. (Scenopinids; numerous genera) window fly 3. (Apsilocephalids, Evocoids; several genera) other theravoid fly

-LZBŘ- ‘ASILOID FLY’ III 1. (Mythicomyiids; numerous genera) mythicomyiid fly 2. (Hilarimorphids; genus *Hilarimorpha*) hilarimorphid fly 3. (Apystromyiids; genus *Apystomyia*) apystomyiid fly

Hexapods > Insects > Antliophora > Diptera > Brachycera > Asilomorpha > Empidoidea

-LZBZ- ‘EMPIDOID FLY’ I 1. (Empidids; numerous genera) dagger fly / balloon fly 2. (Hybotids; numerous genera) dance fly 3. (Dolichopodids; numerous genera) long-legged fly

-LZBŽ- ‘EMPIDOID FLY FLY’ II 1. (Ragadids; several genera) ragadid fly 2. (Atelestids; several genera) atelestid fly 3. [stem unassigned]

Hexapods > Insects > Antliophora > Diptera > Brachycera > Asilomorpha > Nemestrinoidea & Vermileonomorpha

-LZBV- ‘NEMESTRINOID & VERMILEONID FLY’ 1. (Acrocerids; numerous genera) small-headed fly / hunch-back fly / spider fly 2. (Nemestrinids; numerous genera) tangle-veined fly 3. (Vermileonids; several genera) wormlion fly

Hexapods > Insects > Antliophora > Diptera > Brachycera > Muscomorpha

Hexapods > Insects > Antliophora > Diptera > Brachycera > Muscomorpha > Aschiza

-LZKW- ‘PLATYPEZOID FLY’ 1. (Phorids; numerous genera) coffin fly, scuttle fly, ant-decapitating fly 2. (Lonchopterids; several genera) spear-winged fly / pointed-wing fly 3. (Platyppezids and Opetiids; numerous genera) flat-footed fly

-LZKY- ‘SYRPHOID & OTHER ASCHIZATE FLY’ 1. (Syrphids; numerous genera) hoverfly / flower fly / syrphid fly, drone fly / “H-bee” 2. (Pipunculids; numerous genera) big-headed fly 3. (Ironomyiids; genus *Ironomyia*) ironic fly

Hexapods > Insects > Antliophora > Diptera > Brachycera > Muscomorpha > Schizophora

Hexapods > Insects > Antliophora > Diptera > Brachycera > Muscomorpha > Schizophora > Acalyptrata

-LZK- ‘TEPHRITOID FLY’ I 1. (Tephritids; numerous genera) [tephritid] fruit fly / small fruit fly / peacock fly 2. (Platystomatids; numerous genera) signal fly 3. (Ulidiids; numerous genera) picture-winged fly

-LZKL- ‘TEPHRITOID FLY’ II 1. (Pallopterids; numerous genera) flutter-wing fly / trembling-wing fly / waving-wing fly 2. (Piophilids; numerous genera) cheese fly 3. (Pyrgotids, Ctenostylids, Richardiids; numerous genera) other tephritoid fly

-LZKR- ‘NERIOID FLY’ 1. (Neriids; numerous genera) cactus fly, banana stalk fly 2. (Micropezids; numerous genera) stilt-legged fly 3. (Cypselosomatids, several genera) cypselosomatid fly

-LZKŘ- ‘DIOPSOID FLY’ 1. (Diopsids; several genera) stalk-eyed fly 2. (Psilids; several genera) rust fly, carrot fly 3. (Gobryids, Megamerinids, Nothybids, Somatiids, Stongylophthalmyiids, Syringogastrids, Tanypezids; numerous genera) other diopsoid fly, stretched-foot fly

-LZKF- ‘SCIOMYZOID FLY’ I 1. (Sciomyzids; numerous genera) marsh fly, snail-killing fly 2. (Sepsids; numerous genera) black scavenger fly / ensign fly 3. (Coelopids; several genera) kelp fly / seaweed fly

-LZKV- ‘SCIOMYZOID FLY’ II 1. (Heterocheilids; genus *Heterochela*) half-bridge fly 2. (Dryomyzids, Helcomyzids, Helosciomyzids, Ropalomerids; numerous genera) other sciomyzoid fly

-LZKM- ‘SPHAEROCEROID FLY’ 1. (Sphaerocerids; numerous genera) small dung fly / lesser dung fly / lesser corpse fly 2. (Chyromyids, Heleomyzids, Nannodastiids; numerous genera) other sphaerocerooid fly 3. [stem unassigned]

-LZKÇ- ‘LAUXANIOID FLY’ 1. (Chamaemyiids; numerous genera) aphid fly 2. (Celyphids; several genera) beetle fly / beetle-backed fly 3. (Lauxaniids, Cremifaniids; numerous genera) other lauxanioid fly

-LZKH- ‘OPOMYZOID FLY’ I 1. (Agromyzids; numerous genera) leaf-miner fly 2. (Aulacigastrids; several genera) sap fly 3. (Clusiids; numerous genera) druid fly / lekking fly

-LZKHW- ‘OPOMYZOID FLY’ II 1. (Opomyzids; several genera) opomyzid fly, cereal fly, grass fly 2. (Neurochaetids; two genera) upside-down fly 3. (Anthomyzids, Asteiids, Odiniids, Periscelidids, Teratomyzids, Xenasteiids; numerous genera) other opomyzoid fly

-LZKFW- ‘EPHYDROID FLY’ I 1. (Ephydriids; numerous genera) shore fly, brine fly 2. (Diastatids; several genera) bog fly 3. (Drosophilids; numerous genera) fruit fly / vinegar fly

-LZKFY- ‘EPHYDROID FLY’ II 1. (Curtonotids; several genera) quasimodo fly 2. (Camillids; several genera) camillid fly 3. (Braulids; two genera) bee louse

-LZKFL- ‘CARNOID FLY’ I 1. (Carnids; several genera) bird fly / filth fly 2. (Canacids; numerous genera) beach fly / surf fly / surge fly 3. (Milichiids; numerous genera) freloader fly / jackal fly

-LZKFR- ‘CARNOID FLY’ II 1. (Chloropids; numerous genera) frit fly / grass fly, eye gnat / eye fly 2. (Inbiomyiids; genus *Inbiomyia*) inbiomyiid fly 3. (Australimyziids; genus *Australimyza*) australimyziid fly

-LZKT- ‘OTHER ACALYPTRATE FLY’ I 1. (Conopids; numerous genera) thick-headed fly 2. (Lonchaeids; several genera) lance fly 3. (Cryptochetids; several genera) scale parasite fly

-LZKTW- ‘OTHER ACALYPTRATE FLY’ II 1. (Paraleucophids; several genera) paraleucophid fly 2. (Mormotomyiids; genus *Mormotomyia*) frightful hairy fly / terrible hairy fly 3. [stem unassigned]

Hexapods > Insects > Antliophora > Diptera > Brachycera > Muscomorpha > Schizophora > Calyptrata

-LZL- ‘MUSCID FLY’ 1. (genus *Musca*) housefly, face fly / autumn housefly, bazaar fly / eye-seeking fly, Australian bush fly 2. (ectoparasitic Stomoxyines; numerous genera including *Haematobia*, *Haematobosca*, *Stomoxys*) horn fly, buffalo fly, moose fly, stable fly / barn fly / dog fly / biting house fly / power mower fly 3. (Muscines [other than *Musca*], Atherigonines, Azeliines, Coenosiines, Cyrtoneurines, Mydaeines, Phaoniines; numerous genera) other muscid fly

-LZŘ- ‘MUSCOID FLY’ 1. (Fanniids; several genera) little housefly 2. (Anthomyiids; numerous genera) root-maggot fly, cabbage fly, turnip root fly / summer cabbage fly, raspberry cane fly, beet leafminer, spinach leafminer, bean seed fly, onion fly, wheat bulb fly, willow catkin fly, knotting gall fly, seed fly 3. (Scathophagids; numerous genera) dung fly

-LZV- ‘PARASITIC OESTROID FLY’ 1. (genus *Dermatobia*) human bot fly 2. (genus *Cordylobia*) tumbu fly / mango fly / putzi fly / skin maggot fly 3. (genera *Cochliomyia*, *Chrysomya*) screw-worm fly

-LZVL- ‘OESTROID FLY’ I 1. (Oestrids; numerous genera) botfly / heel fly / warble fly / gadfly 2. (Calliphorids; numerous genera) bow fly / carrion fly / bluebottle / greenbottle / cluster fly, 3. (Sarcophagids; numerous genera) flesh fly

-LZVW- ‘OESTROID FLY’ II 1. (Rhinophorids; numerous genera) woodlouse fly 2. (Mystacinobiids; genus *Mystacinobia*) New Zealand bat fly 3. (Tachinids, Rhiniids, Ulurumyiids, Mesembrinellids; numerous genera) other oestroid fly

-LZVY- ‘HIPPOBOSCOID FLY’ 1. (Glossinids; genus *Glossina*) tsetse fly / tik-tik fly 2. (Hippoboscids; numerous genera) louse fly / ked fly 3. (Nycteribiids and Streblids; numerous genera) bat fly

7.3.2 Plants

IMPORTANT NOTE: When utilizing lexical stems relating to plants, care should be taken to remember that each of these stem refers to the entire plant as a whole. If the context is referencing a particular part of a plant (e.g., fruit, seed, leaf, stem, root, tuber, flower, nut, pod, etc.), an appropriate EPP affix should be utilized or the stem should be incorporated into another stem naming the relevant part of the plant.

All of the following stems referring to plants have the following Specification structure:

BSC	(to be) a plant as a holistic entity, including its physical/corporeal body and its living essence; to live/be alive (as a plant)
CTE	(to be) that which gives a particular plant its living essence; the living essence of a plant
CSV	(to be) the physical body of a plant; the corporeal aspect of a plant
OBJ	(to be) a particular stage of a plant's life-cycle (e.g., dormancy as seed, sproutling, budding, in bloom, withering, winter dormancy, etc.)

7.3.2.1 Bryophytes (non-vascular land plants)

-**FXW**- 'GREEN ALGA' 1. (Chlorophytes; numerous genera) chlorophyte, chlorophytic green alga 2. (Charophyta [other than Embryophyta]; numerous genera) charophytic green alga 3. (Mesostigmatophyceae, Spirotaenia, Chlorokybophyceae; several genera) other green alga

-**FXM**- 'EDIBLE GREEN ALGA' 1. (genera *Monostroma*) aonori / hitoegusa-nori / green laver seaweed 2. (genus *Caulerpa*) sea grapes / green caviar 3. (genus *Ulva*) sea lettuce, green nori, gutweed

-**FXX**- 'NON-VASCULAR LAND PLANT' 1. (Marchantiophyta; numerous genera) liverwort / hepatic 2. (Anthocerotophyta; several genera) hornwort 3. (Bryophyta; numerous genera) moss

-**FXL**- 'MOSS (by branching type)' 1. acrocarpous moss 2. pleurocarpous moss 3. cladocarpous moss

-**FXR**- 'MOSS (by taxonomic class)' 1. (Sphagnopsida; numerous genera) peat moss 2. (Bryopsida; numerous genera) bryopsid moss 3. (Takakiopsids, Andreaeopsids, Andreaeobryopsids, Oedipodiopsids, Polytrichopsids, Tetraphidopsids; numerous genera) other moss

7.3.2.2 Tracheophytes (Vascular Plants)

-**CŃW**- 'LYCOPOD' 1. (Lycopodiaceae; numerous genera) clubmoss 2. (Selaginellaceae; genus *Selaginella*) spikemoss, lesser clubmoss 3. (Isoetaceae; genus *Isoetes*) quillwort

-**CNW**- 'POLYPODIOPSISID (FERN)' I 1. (Equisetid; genus *Equisetum*) horsetail / horsetail fern 2. (Ophioglossids; several genera) moonwort, grape-fern, goblin fern, rattlesnake fern, hand fern, adder's-tongue fern, whisk fern 3. (Marattiids; several genera) marattiid fern, giant fern, king fern, horse shoe fern

-**CNY**- 'POLYPODIOPSISID (FERN)' II 1. (Polypodiales; numerous genera) wood fern / male fern / buckler fern, macho fern / swordfern, deersfoot fern / hare's foot fern / rabbit foot fern / ball fern / shinobu fern, mahogany maidenhair, shieldfern, beech fern, bog fern / Massachusetts fern, maiden fern, swamp shield-fern, New York fern, Sierra marsh fern / Nevada march fern, lady-fern, twinsorus fern, silvery glade fern, spleenwort, Japanese lady fern, cliff fern, ostrich fern, sensitive fern, chain fern, waterfall fern, hard fern, water fern, rasp fern / amaumau fern, deer fern, half-net fern, bladderfern / fragile fern, oak fern, glade fern, hayscented fern / cup fern, batwing fern, beadfern, lace fern, bracken, brackenfern / eagle fern, maidenhair fern, cloak fern, false cloak fern, lip fern, brake, cliff brake, rock brake, leather fern, gold fern, shoestring fern, soralpouch fern, necklace fern 2. (Cyatheaales; numerous genera) tree fern, scaly tree fern, manfern 3. (Salviniales; several genera) watermoss, water fern / fairy moss / duckweed fern / mosquito fern, pillwort, water clover

-**CMW**- 'POLYPODIOPSISID (FERN)' III 1. (Schizaeaceae; several genera) ray fern, curlygrass fern / comb fern 2. (Lygodioids; genus *Lygodium*) climbing fern 3. (Anemioids; genus *Anemia*) pine fern, hemlock fern, flowering fern

-**CMY**- 'POLYPODIOPSISID (FERN)' IV 1. (Gleicheniales; several genera) forked fern, coral fern, tangle fern, umbrella fern, fan fern 2. (Hymenophyllaceae; several genera) filmy fern, bristle fern 3. (Osumdaceae; several genera) royal fern, interrupted fern, lancea flowering fern, cinnamon fern

Tracheophytes > Spermatophytes (seed plants)

-PSÑ- ‘CYCAD & GINGKO’ 1. (Cycads [other than genus *Ecephalartos*; several genera] cycad, king sago, queen sago, Dukour sago 2. (genus *Encephalartos*) bread tree / bread palm / kaffir bread tree 3. (Ginkophyta; genus *Ginkgo*) ginkgo tree

-PSÑW- ‘GNETOPHYTE’ 1. (Gnetaceae; genus *Genetum*) gnetum tree, gnetum shrub, gnetum liana 2. (Welwitschiaceae; genus *Welwitschia*) welwitschia / tree tumbo 3. (Ephedraceae; genus *Ephedra*) joint-pine / jointfir / Mormon-tea plant / Brigham tea plant

Tracheophytes > Spermatophytes > Pinophyta (conifers)

-LSK- ‘PINE TREE’ I (genus *Pinus*, subgenus *Pinus*) 1. (*P.P.* Subsection *Ponderosae*; numerous species) ponderosa, Jeffrey / yellow / black, Torrey, gray / foothill / digger pine, Durango, Coulter / big-cone, Arizona, various Mexican and Central American pines 2. (*P.P.* Subsections *Australes* and *Contortae*; numerous species) lodgepole, jack, sand, Virginia, knobcone, bishop, Monterey, Caribbean, Cuban, shortleaf, slash, spruce pine, egg-cone, longleaf, paula, pitch, pond, loblolly, ocote, various Mexican and Central American pines 3. (*P.P.* Subsection *Pinus* and *Pinaster*; numerous species) mountain pine, red, Scots, tropical, various Eurasian pines

-LSKW- ‘PINE TREE’ II (genus *Pinus*, subgenus *Strobus*) 1. (*P.S.* Subsections *Strobus*, *Krempfianae*, and *Gerardianae*; numerous species) whitebark, sugar, white, blue, limber, Chiapas, lacebark, chilgoza, various Eurasian white pines 2. (*P.S.* Subsection *Balfourianae*; several species) bristlecone pine, foxtail pine 3. (*P.S.* Subsections *Cembroides* and *Nelsonianae*; numerous species) pinyon pine

-LSKY- ‘LARCH TREE’ (genus *Larix*) 1. ([North American larches] *L. laricina*, *L. lyallii*, *L. occidentalis*) western larch, tamarack, subalpine larch 2. ([Northern Eurasian larches] *L. decidua*, *L. sibirica*, *L. gmelinii*, *L. kaempferi*, *L. czekanowskii*) European, Siberian, Dahurian, Japanese larch 3. ([Southern Eurasian larches] *L. ptaninii*, *L. mastersiana*, *L. griffithii*) chinese larch, Masters’ larch, Himalayan larch

-LSKL- ‘PINACEAE’ I 1. (genus *Picea*) spruce tree 2. (genus *Pseudotsuga*) Douglas fir / Oregon pine 3. (genus *Cathaya*) cathaya

-LSKR- ‘PINACEAE’ II 1. (genus *Abies*) fir tree 2. (genus *Cedrus*) cedar tree 3. (genus *Tsuga*) hemlock tree

-LSKŘ- ‘PINACEAE’ III 1. (genus *Nothotsuga*) bristlecone hemlock tree 2. (genera *Keteleeria*) keteleeria tree 3. (genus *Pseudolarix*) golden larch

-LSKÇ- ‘PINOPSID’ 1. (Araucariaceae; three genera) araucarian, kauri / dammara, wollemia 2. (Podocarpaceae; numerous genera) silver pine / Westland pine / white silver pine, creeping pine, celery pine, Huon pine / Macquarie pine, Asian bayberry, podocarp 3. (Sciadopityaceae; genus *Sciadopitys*) Japanese umbrella-pine

-LSKH- ‘CUPRESSOID’ 1. (genus *Cupressus*) cypress tree 2. (genus *Juniperus*) juniper 3. (Cupressoids other than *Cupressus* and *Juniperus*; several genera) thuja / arborvitae, hiba, false cypress, Fujian cypress, incense-cedar, Chinese arborvitae, sandarac / Barbary thuja, Siberian carpet-cypress / Russian arbor-vitae, Nootka cypress, Vietnamese golden cypress

-LSKŤ- ‘SEQUOIOID’ 1. (genus *Sequoia*) coast redwood 2. (genus *Sequoiadendron*) giant sequoia 3. (genus *Metasequoia*) dawn redwood

-LSKF- ‘CUPRESSACEAE’ 1. (Callitroids; several genera) cypress-pine, alerce / Patagonian cypress, callitroid 2. (Taxodioids; several genera) bald cypress, swamp cypress, sugi 3. (Athrotaxioids, Taiwanoids, Cunninghamioids; several genera) Tasmanian cedar, taiwania, cunninghamia

-LSKM- ‘TAXACEAE (YEW)’ I 1. (genus *Taxus*) common yew 2. (genus *Pseudotaxus*) whiteberry yew 3. (genus *Austrotaxus*) southern yew / New Caledonia yew

-LSKN- ‘TAXACEAE (YEW)’ II 1. (genus *Cephalotaxus*) plum-yew 2. (genus *Torreya*) nutmeg yew, torreya, gopher wood 3. (genus *Amentotaxus*) catkin-yew

Tracheophytes > Spermatophytes > Angiosperms (flowering plants)

-CML- ‘NYMPHAEALES’ 1. (Nymphaeaceae; several genera) water lily / pond-lily / bonnet lily / alligator-bonnet / spatterdock, blue lotus, Miami rose, Egyptian lotus, prickly waterlily / foxnut / gorgon nut / makhana 2. (Cobombaceae; genera *Brasenia*, *Cabomba*) water-shield, fanwort, cabomba 3. (Hydatellaceae; genus *Trithuria*) trithuria

-CMR- ‘PRIMITIVE ANGIOSPERM’ I 1. (Austrobreileyaceae; genus *Austrobaileya*) austrobaileya 2. (Trimeniaceae & Schisandrids; genera *Trimenia*, *Schisandra*, *Kadsura*, *Illicium*) trimenia, schisandrid, star anise / badian 3. (Amborellaceae; genus *Amborella*) amborella

-CMŘ- ‘PRIMITIVE ANGIOSPERM’ II 1. (Chloranthaceae; genera *Chloranthus*, *Sarcandra*, *Ascarina*, *Hedyosmum*) chloranthus, sacandra herb, hutu, ascarina 2. (Ceratophyllaceae; genus *Ceratophyllum*) coontail / hornwort 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > monocots

Tracheophytes > Spermatophytes > Angiosperms > monocots > alismatid monocots

-PŠM- ‘ARACEAE (ARUM)’ I 1. (Orontiods; three genera) skunk cabbage, golden club 2. (Gymnostachyoideae; genus *Gymnostachys*) settler’s twine / boorgay 3. (Lemnoids; several genera) duckweed / water lentil / water lens, bogmat / mud-midget, watermeal, dotted duckmeat

-PŠMW- ‘ARACEAE (ARUM)’ II 1. (Pothoids; several genera) anthurium / tailflower / flamingo flower 2. (Aroids; numerous genera) arum lily, aroid, corpse flower, elephant yam, elephant ear / heart of Jesus / angel wing, calla / bog arum / marsh calla / wild calla / squaw claw / water-arum, Chinese evergreen, green dragon, water cabbage / water lettuce / shellflower / Nile cabbage, philodendron, rascagarganta, vilevine, arrow arum, arum lilly / calla lily, dead horse arum lily 3. (Lasioids, Zamioculcadoids; numerous genera) other aroid

-PŠMY- ‘ALISMATACEAE’ 1. (genus *Damasonium*] star-fruit / thrumwort, star water-plantain 2 (genus *Sagittaria*] arrowhead / duck potato / katniss / swamp potato / tule potato / wapato / wapato / wapati / watato 3. (Alismataceae other than Stems 1 and 2; numerous genera) water-plantain, burhead / Amazon sword plant, yellow velvetleaf / sawah flower rush / sawah lettuce

-PŠML- ‘ALISMATID’ I 1. (Butomaceae; genus *Butomus*) flowering rush / grass rush 2. (Hydrocharitaceae; numerous genera) waterweed, tape-grass, waterthyme, European frogbit / water-poppy, oxygen weed, spongeplant / American frogbit, eelgrass / vallis, water nymph / naiad, guppy grass / najas grass, duck lettuce, swamp lily, water soldier, turtlegrass 3. (Tofieldiaceae; several genera) rush featherling, tofieldia, Scottish asphodel / Scotch false asphodel, false asphodel, Harper’s beauty

-PŠMR- ‘ALISMATID’ II 1. (Aponogetonaceae; genus *Aponogeton*) cape-pondweed / water hawthorn, laceleaf / lattice leaf / lace plant 2. (Scheuchzeriaceae; genus *Scheuchzeria*) rannoch-rush / pod grass 3. (Juncaginaceae and Maundiaceae; several genera) arrowgrass, flowering quillwort / awl-leaf lilaea, southern water-ribbon / dwarf water-ribbon

-PŠMŘ- ‘ALISMATID’ III 1. (Posidoniaceae; genus *Posidonia*) Neptune grass / Mediterranean tapeweed, fibreball weed, posidonia seagrass 2. (Ruppiaceae; genus *Ruppia*) ruppia / widgeonweed / ditch grass / widgeon grass, tasselweed, tassel pondweed 3. (Cymodoceaceae; several genera) manatee-grass, little Neptune grass, narrowleaf seagrass, shoalweed / shoal grass, wire weed, sickle-leaved cymodocea

-PŠŇ- ‘ALISMATID’ IV 1. (Potamogetonaceae; several genera) pondweed, horned pondweed 2. (Zosteraceae; genera *Zostera*, *Phyllospadix*) marine eelgrass, surfgrass 3. (Acoraceae; genus *Acorus*) calamus / sweet flag

-PŠŇW- ‘MONSTEROID’ 1. (genus *Epipremnum*) satin pothos / silver vine, golden pothos / money plant / hunter’s robe / devil’s vine / devil’s ivy / marble queen / Ceylon creeper 2. (genus *Monstera*) monsteroid, shingle plant, Adanson’s monstera / five holes plant, ceriman / monster fruit plant / fruit salad plant / Swiss cheese plant 3. (Monsteroids other than *Epipremnum* and *Monstera*; several genera) spath / peace lily, centipede tongavine, other monsteroid

Tracheophytes > Spermatophytes > Angiosperms > monocots > lilioid monocots > Dioscoreales

-TXW- ‘DIOSCOREACEAE’ 1. (genera *Dioscorea*, *Tamus*) yam, purple yam / greater yam / ube, Chinese yam / Chinese potato / cinnamon-vine / nagaimo, Indian three-leaved yam, Japanese mountain yam / yamaimo, Zanzibar yam, white yam / guinea yam / African yam, black bryony / lady’s seat / black bindweed, barbasco, Mexican yam, wild yam, lesser yam, pencil yam, Indian yam / cush-cush / yampee, fourleaf yam / devil’s bones / rheumatism root, fiveleaf yam 2. (genus *Tacca*) batflower, Polynesian arrowroot / pia 3. (genera *Borderea*, *Epipetrum*, *Rajania*, *Stenomeris*, *Avetra*, *Trichopus*) other dioscorean plant

-TXL- ‘NARTHECIACEAE’ 1. (genus *Alettris*) colicroot / colicweed / crow corn / unicorn root 2. (genus *Lophiola*) goldencrest 3. (genus *Nartheceium*) yellow asphodel / bog asphodel

- **TXR**- ‘OTHER DIOSCOREALES’ I 1. (Burmanniaceae; numerous genera) nodding-nixie, northern bluethread, yellowseed, thismia, fairy lantern, burmanniate 2. (Nartheciaceae; genera *Nietneria*, *Metanartheceum*) other nartheciacean 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > monocots > lilioid monocots > Liliales

-**LSW**- ‘LILIACEAE’ I 1. (genus *Lilium*) [true] lily 2. (genus *Fritillaria*) fritillary, spotted missionbells / spotted mountainbells, chocolate lily, kaiser’s crown / crown imperial, adobe lily, yellowbells, brown bells, checkered daffodil / frog-cup 3. (genus *Cardiocrinum*) giant lily

-**LSY**- ‘LILIACEAE’ II 1. (genera *Tulipa*, *Amana*) tulip 2. (genus *Gagea*) gagea, star-of-Bethlehem, Radnor lily, mountain spiderwort / Snowdon lily / common alplily, yellow star-of-Cypress 3. (genus *Erythronium*) fawn lily, trout lily, dog’s-tooth violet, avalanche-lily, adder’s tongue

-**LSL**- ‘LILIACEAE’ III 1. (genus *Clintonia*) bead lily / bride’s bonnet / queen’s cup, speckled wood lily / Clinton’s lily, blue-bead lily / corn lily / snakeberry / dogberry / straw lily, clintonia 2. (genus *Medeola*) Indian cucumber-root / Cuke root 3. (genus *Calochortus*) globelily, mariposa lily, beavertail grass, star tulip, sego lily, pussy ears, cat’s ear lily

-**LSR**- ‘LILIACEAE’ IV 1. (genus *Streptotus*) twistedstalk / rosybells / rose mandarin / scootberry / liverberry / rose-bellwort 2. (genus *Posartes*) fairybells, drops of gold, yellow mandarin, spotted mandarin, Siskiyou bells 3. (genus *Scoliopus*) fetid adderstongue, slinkpod / brownies

-**LSŘ**- ‘LILIACEAE’ IV 1. (genus *Tricyrtis*) toad lily, hairy toad lily, tricyrtis 2. (genera *Nomocharis*, *Notholirion*) other liliace 3. [stem unassigned]

-**LSX**- ‘PARIDS’ 1. (genus *Trillium*), trillium / wakerobin / birthroot / birthwort / tri flower 2. (genus *Paris*) paris, herb-paris / true lover’s knot, bunchflower 3. (genus *Pseudotrillium*) brook wakerobin

-**LSF**- ‘MELANTHIDS’ I 1. (genus *Amianthium*) fly poison 2. (genus *Anticlea*) elegant camas / alkali grass, deathcamas 3. (genus *Melanthium*) slender bunchflower / cripesd bunchflower, Ozark bunch-flower / Wood’s bunchflower

-**LSV**- ‘MELANTHIDS’ II 1. (genus *Toxicoscordion*) deathcamas, star zigadene, sand-corn 2. (genus *Zigadenus*) sandbog death camas 3. (genus *Stenanthium*) featherbell, Osceola’s plume / black snakeweed / crow poison, pinebarren deathcamas

-**LST**- ‘MELANTHIDS’ III 1. (genus *Veratrum*) false hellebore / corn-lily 2. (genus *Schoenocaulon*) feathershank, sabadilla 3. [stem unassigned]

-**LSĹ**- ‘MELANTHIACEAE’ 1. (Heloniads; genera *Helonias*, *Heloniopsis*, *Ypsilandra*) swamp pink 2. (Chionographids; genera *Chamaelirium*, *Chionographis*) blazing-star / devil’s bit / false unicorn / fairy wand 3. (Xerophylleae; genus *Xerophyllum*) turkey beard / beartongue / grass-leaved helonias

-**LSM**- ‘COLCHICAEAE’ 1. (Burchardideae; genus *Burchardia*) milkmaid 2. (Uvularieae; genera *Uvularia*, *Disporum*) bellwort / bellflower / merrybells, fairy bells 3. (Tripladenieae; three genera) tripladene, lilac lily

-**LSN**- ‘COLCHICACEAE’ I 1. (genus *Colchicum* [including *Androcymbium* and *Merendera*]) autumn crocus / meadow saffron / naked lady 2. (genus *Gloriosa*) flame lily / fire lily / gloriosa lily / glory lily / superb lily / climbing lily / creeping lily 3. (genus *Hexacyrtis*) Namib lily

-**LSÑ**- ‘COLCHICACEAE’ II 1. (genus *Sandersonia*) Christmas bells / golden lily of the valley / Chinese lantern lily / chinese lantern bulb 2. (Anguillarieae; genera *Baeometra*, *Wurmbea*) beetle lily, wurmbea, early Nancy, eight Nancy 3. (genera *Ornithoglossum*, *Iphigenia*, *Camptorrhiza*) other colchicace plant

-**LSS**- ‘LILIALES’ I 1. (Smilacaceae; genera *Smilax*, *Heterosmilax*) greenbrier / catbrier / prickly-ivy 2. (Ripogonaceae; genus *Ripogonum*) supplejack 3. (Philesiaceae; genera *Lapageria*, *Philesia*) Chilean bellflower / copihue, austral bellflower

-**LSH**- ‘LILIALES’ II 1. (Alstroemeriaceae; genera *Alstroemeria*, *Bomarea*) Inca-lily, Peruvian lily / lily of the Incas, bomarea, salsilla 2. (Luzuriagaceae; genera *Drymophila*, *Luzuriaga*) turquoise berry / native Solomons seal, orange berry, quilineja, almond flower 3. (Corsiaceae, Campynemataceae, Petermanniaceae; several genera) other liliales plant

Tracheophytes > Spermatophytes > Angiosperms > monocots > lilioid monocots > Asparagales

Tracheophytes > Spermatophytes > Angiosperms > monocots > lilioid monocots > Asparagales > Asparagaceae

- SFW-** ‘ASPARAGOIDEAE & AGAVOIDEAE’ I 1. (genus *Asparagus*) asparagus plant, large forest sicklethorn, katbos, bridal creeper, florist’s fern 2. (genera *Yucca*, *Hesperoyucca*) yucca plant, Grand Canyon Quixote plant / Newberry’s yucca, Quixote yucca / foothill yucca / Spanish bayonet 3. (genus *Agave*) agave / century plant, tuberose
- SFY-** ‘ASPARAGOIDEAE & AGAVOIDEAE’ II 1. (genus *Camassia*) camas / quamash / Indian hyacinth / wild hyacinth 2. (genus *Chlorogalum*) soap plant / soaproot / amole 3. (genus *Eremocrinum*) Utah solitaire lily / desert lily / sand lily / lonely lily / intermountain false-wheatgrass
- SFL-** ‘ASPARAGOIDEAE & AGAVOIDEAE’ III 1. (genus *Hastingsia*) rushlily 2. (genus *Hosta*) hostas, plantain lily 3. (genus *Leucocrinum*) common starlily, mountain lily
- SFR-** ‘ASPARAGOIDEAE & AGAVOIDEAE’ IV 1. (genus *Shoenolirion*) rush-lily / sunnybell 2. (genus *Hemiphylacus*) hemiphylacus 3. (Aphyllanthoideae; genus *Aphyllantes*) aphyllantes
- LSFW-** ‘NOLINOIDS’ I 1. (genus *Nolina*) beargrass, Bigelow’s nolina, palmilla 2. (genus *Convallaria*) lily-of-the-valley 3. (genus *Danae*) Alexandrian laurel / poet’s laurel
- LSFY-** ‘NOLINOIDS’ II 1. (genus *Maianthemum*) false Solomon’s seal, wild lily-of-the-valley, false lily-of-the-valley / Canada mayflower, false mayflower, May lily 2. (genus *Liriope*) monkey grass, creeping lilyturf, spider grass, liriope 3. (genus *Ophiopogon*) lilyturf
- LSFL-** ‘NOLINOIDS’ III 1. (genus *Dracaena*) dragon tree, shrubby dracaena, snake plant, African spear, sansevieria, golden hala pepe, “lucky bamboo”, Sait George’s sword / mother-in-law’s tongue / viper’s bowstring hemp 2. (genus *Polygonatum*) King Solomon’s seal 3. (genus *Rohdea*) Nippon lily / sacred lily
- LSFR-** ‘NOLINOIDS’ IV 1. (genus *Ruscus*) butcher’s broom 2. (genera *Aspidistra*, *Beaucarnea*, *Calibanus*, *Campylandra*, *Comospermum*, *Dasyllirion*, *Disporopsis*, *Eriospermum*, *Hereopolygonatum*, *Peliosantes*, *Pleomele*, *Reineckea*, *Semele*, *Speirantha*, *Theropogon*, *Tupistra*) other nolinoid 3. [stem unassigned]
- RSFW-** ‘LOMANDROIDS’ I 1. (genus *Lomandra*) fish bones, mat-rush, basket grass 2. (genus *Chamaescilla*) blue stars / blue squill / mudrurt 3. (genus *Cordyline*) cabbage tree
- RSFY-** ‘LOMANDROIDS’ II 1. (genus *Dichopogon*) chocolate lily 2. (genus *Eustrephus*) wombat berry vine 3. (genus *Laxmannia*) paperlily
- RSFL-** ‘LOMANDROIDS’ III 1. (genus *Arthropodium*) renga lily / New Zealand rock lily, vanilla lily 2. (genus *Sowerbaea*) purple tassels, vanilla lily, chocolate flower, many-stemmed lily 3. (genus *Thysanotus*) fringe-lily
- RSFR-** ‘LOMANDROIDS’ IV 1. (genus *Xerolirion*) Basil’s asparagus 2. (genera *Acanthocarpus*, *Chamaexeros*, *Murchisonia*, *Romnaldia*, *Trichopetalum*) other lomandroid 3. [stem unassigned]
- ŘSFW-** ‘SCILLOIDEAE’ I 1. (genus *Hyacinthus*) hyacinth 2. (genus *Muscari*) grape hyacinth 3. (genus *Hyacinthoides*) bluebells
- ŘSFY-** ‘SCILLOIDEAE’ II 1. (genus *Scilla*) squill, glory-of-the-snow, Dalmation scilla 2. (genus *Drimia*) drimia, sea squill / sea onion 3. (genus *Prospero*) autumn squill
- ŘSFL-** ‘SCILLOIDEAE’ III 1. (genus *Ledebouria*) silver squill / wood hyacinth, ledebouria 2. (genus *Leopoldia*) tassel hyacinth / tassel grape hyacinth 3. (genus *Ornithogalum*) star-of-Bethlehem, sun star, chinchinchee, snake flower, Bath asparagus / Prussian asparagus
- ŘSFR-** ‘SCILLOIDEAE’ IV 1. (genus *Eucomis*) pineapple flower, pineapple lily 2. (genus *Drimiopsis*) little white soldiers / leopard plant / false hosta 3. (genus *Massonia*) hedgehog lily, blistered massonia
- ŘSFŘ-** ‘OTHER SCILLOIDEAE & BRODIAEOIDEAE’ 1. (genus *Albuca*) slime lily 2. (Scilloideae other than previously named genera) other scilloid plant 3. (Brodiaeoideae; numerous genera) cluster-lily, Mexican star, triplet lily, Baja lily / blue sand lily, brodiaeoid

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-STR- ‘ALLIEAE (ONION)’ I (genus *Allium*) 1. (*A. cepa*) onion plant 2. (*A. oschaninii*) shallot plant 3. (*A. ampeloprasum*) leek plant

- STL**- ‘ALLIEAE (ONION)’ II (genus *Allium*) 1. (*A. sativum*) garlic 2. (*A. schoenoprasum*) chive plant 3. (various other *Allium* species) scallion plant
- STW**- ‘ALLIOIDEAE’ 1. (Leucocoryneae; several genera) glory-of-the-sun, starflower / spring starflower, springstar, crowpoison / false garlic, honeybells / onion weed 2. (Tulbaghieae; genera *Tulbaghia*, *Prototulbaghia*) wild garlic / society garlic 3. (Gilliesieae; several genera) South American allioid / gilliesid
- LSTW**- ‘AMARYLLIDACEAE’ I 1. (Amaryllids; several genera) amarylid, swampily, poisonbulb / Queen Emma lily, seven sisters 2. (Cyrtantheae; genus *Cyrtanthus*) fire lily, Knysna lily, falcate fire lily 3. (Haemantheae; several genera) Natal lily / bush lily / Kaffir lily, green-tip forest lily, paintbrush, blood flower / blood lily, haemanthus, Inyanga fireball, kukumakranka
- LSTY**- ‘AMARYLLIDACEAE’ II 1. (Calostemmatae; genera *Proiphys*, *Calostemma*) Cardwell lily, Brisbane lily / Moreton Bay lily, wilcannia lily, garland lily 2. (Lycorideae; genera *Lycoris*, *Ungernia*) hurricane lily, cluster amaryllis, red spider lily / hell flower / red magic lily / equinox flower, resurrection lily / surprise lily / magic lily / naked lady, ungernia 3. (Griffineae; genera *Griffinia*, *Worsleya*) griffinid, Empress-of-Brazil
- LSTL**- ‘AMARYLLIDACEAE’ III 1. (Narcisseae; genera *Narcissus*, *Sternbergia*, *Lapiedra*) daffodil, winter daffodil / autumn daffodil / lily-of-the-field / yellow autumn crocus 2. (Pancractiae; genera *Pancratium*, *Vagaría*) pancratid, sea daffodil 3. (Galantheae; genera *Acis*, *Galanthus*, *Leucojum*) snowflake, snowdrop
- LSTR**- ‘AMARYLLIDACEAE’ IV 1. (Hippeastreae; several genera) copperlily, pink fairy lily / pink rain lily, Barbados snowdrop, lily-of-the-palace, “amaryllis”, Aztec lily / Jacobean lily, rainflower, zephyr lily, rain lily, Atamasco lily / wild Easter lily, traubiine 2. (Eustephieae; four genera) eustephid, fire lily / flame lily 3. (Eucharideae; several genera) eucharid, Amazon lily, giant Peruvian daffodil
- STY**- ‘AGAPANTHOIDEAE & OTHER AMARYLLIDACEAE’ 1. (Agapanthoideae; genus *Agapanthus*) lily of the Nile, African lily, African tulip, African bluebell / African blue lily, agapanthus 2. (Hymenocallideae; three genera) spider lily, cahaba lily, Peruvian daffodil, amancay 3. (Clinantheae; three genera) clinanthus, clinanthid

Tracheophytes > Spermatophytes > Angiosperms > monocots > lilioid monocots > Asparagales > Asphodelaceae

- RSTW**- ‘ASPHODELOIDEAE’ I 1. (genus *Aloe*) true aloe, aloe vera 2. (genus *Aristaloe*) guinea-fowl aloe / lace aloe 3. (genus *Aloiampelos*) climbing-aloe
- RSTY**- ‘ASPHODELOIDEAE’ II 1. (genus *Eremurus*) foxtail lily / desert candle 2. (genus *Gonialoe*) partridge aloe 3. (genus *Asphodelus*) asphodel
- RSTL**- ‘ASPHODELOIDEAE’ III 1. (genus *Haworthia*) haworthia 2. (genus *Haworthiopsis*) haworthiopsis 3. (genus *Gasteria*) gasteria
- RSTR**- ‘ASPHODELOIDEAE’ IV 1. (genus *Kniphofia*) tritoma, red hot poker, torch lily, poker plant, “Bees’ Sunset”, “Brimstone Bloom”, “Buttercup” 2. (genus *Kumara*) fan-aloe, kumara 3. (Asphodeloideae other than previously named genera) other asphodeloid plant
- ŘSTW**- ‘HEMEROCALLIDOIDEAE’ I 1. (genus *Hemerocallis*) daylily, lemon lily, tiger lily / ditch lily 2. (genus *Simethis*) Kerry lily 3. (genus *Ticoryne*) yellow rush-lilly
- ŘSTY**- ‘HEMEROCALLIDOIDEAE’ II 1. (genus *Caesia*) grass lily 2. (genus *Johnsonia*) pipe lily 3. (genera *Corynotheca*, *Arnocrinum*, *Hensmania*, *Stawellia*) other johnsoniid hemerocallid
- ŘSTL**- ‘HEMEROCALLIDOIDEAE’ III 1. (genus *Phormium*) New Zealand flax 2. (genus *Geitonoplesium*) scrambling lily 3. (genus *Stypandra*) nodding blue lily / blind grass
- ŘSTR**- ‘HEMEROCALLIDOIDEAE’ IV 1. (genus *Dianella*) flax lily, blueberry lily / paroo lily, inkberry lily 2. (genus *Thelionema*) tufted blue-lily 3. (genus *Herpolirion*) sky lily
- ŘSTŘ**- ‘XANTHORRHOEOIDEAE & OTHER HEMEROCALLIDOIDEAE’ 1. (Xanthorrhoeoideae; genus *Xanthorrhoea*) grass tree 2. (genera *Excremis*, *Pasithea*, *Agrostocrinum*) other phormid hemerocallidoid 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > monocots > lilioid monocots > Asparagales > Iridaceae

- RSP-** ‘IRIDEAE’ 1. (genus *Iris*) iris, juno 2. (genus *Moraea*) Cape tulip, Barbary nut 3. (genera *Dietes*, *Bobartia*, *Ferraria*) wood iris / fortnight iris / butterfly iris / Japanese iris / African iris, other irid
- RSPF-** ‘IRIDOIDEAE’ 1. (Sisyrinchieae; several genera) blue-eyed grass, morning iris, purple-eyed grass / satin flower / grass-widow / olsynium, pretty grass-flag 2. (Tigridieae; numerous genera) peacock flower / tiger-flower / shell flower, peatleaf, propeller flower, lágrimas de la virgen, tigrid 3. (Trimezieae; several genera) walking iris, apostle’s iris, apostle plant, forenoon yellow flag
- RSPL-** ‘CROCEAE’ I 1. (genus *Crocus*) crocus 2. (genus *Babiana*) baboon-root 3. (genus *Ixia*) corn lily
- RSPR-** ‘CROCEAE’ II 1. (genus *Dierama*) hairbells, angel’s fishing rods / grassy bells / fairybell / wedding bell, wandflower 2. (genus *Sparaxis*) harlequin flower, wandflower, sparaxis 3. (genera *Chasmanthe*, *Duthieastrum*, *Geissorhiza*, *Hesperantha*, *Radinosiphon*, *Syringodea*, *Tritonia*, *Tritoniopsis*) other crocid
- RSPŘ-** ‘CROCOIDEAE’ 1. (Gladiolaeae; genera *Gladiolus*, *Melaspheerula*) gladiolus, cornflag, painted lady, cliff lily, Afrikaner, sword lily, gladiola 2. (Watsonieae; several genera) bugle lily, watsoniid 3. (Freesieae; genera *Freesia*, *Xenoscapa*, *Crocsmia*, *Devia*) freesia, montbretia
- RSPŤ-** ‘IRIDACEAE’ 1. (Aristeioideae; genus *Aristea*) blue flies / blue stars / blue-eyed iris, blue corn-lily 2. (Patersonioideae; genus *Patersonia*) native flag / purple flag / native iris, swamp iris 3. (Isophysidoideae, Geosiridoideae, Nivenioideae; several genera) other crocioid

Tracheophytes > Spermatophytes > Angiosperms > monocots > lilioid monocots > Asparagales > Orchidaceae

- RSPW-** ‘ORCHIDACEAE’ 1. (Orchidoideae; numerous genera) orchidoid orchid 2. (Epidendroideae; numerous genera) epidendroid orchid 3. (Apostasioideae and Cypripendioideae; numerous genera) apostasioid or cypripendioid orchid
- RSPY-** ‘VANILLOIDEAE’ 1. (Vanilleae; *Vanilla planifolia*) flat-leaved vanilla orchid plant [source of vanilla bean extract] 2. (Vanilleae; several genera/species other than *V. planifolia*) vanillid orchid plant 3. (Pogonieae; several genera) pogonia, snakemouth orchid, little five leaves, pogonid orchid

Tracheophytes > Spermatophytes > Angiosperms > monocots > lilioid monocots > Asparagales > remaining families

- RSPH-** ‘OTHER ASPARAGALES’ I 1. (Doryanthaceae; genus *Doryanthes*) gymnea lily, giant spear lily 2. (Tecophilaeaceae; several genera) Chilean blue crocus, Hartweg’s doll’s lily, tecophilaeid 3. (Ixioliriaceae; genus *Ixiolirion*) lavender mountain lily / Siberian lily
- RSPL-** ‘OTHER ASPARAGALES’ II 1. (Asteliaceae; several genera) pineapple grass / perching lily, silver spear, bush flax / bush lily, astelia, asteliid 2. (Hypoxidaceae; several genera) hypoxidiid, weevil-wort, curculigo 3. (Lanariaceae; genus *Lanaria*) lambtails / Cape edelweiss
- RSPÇ-** ‘OTHER ASPARAGALES’ III 1. (Blandfordiaceae; genus *Blandfordia*) Christmas bells 2. (Boryaceae; genera *Boryna*, *Alania*) pincushion, borya, alania 3. (Xeronemataceae; genus *Xeronema*) Poor Knights lily

Tracheophytes > Spermatophytes > Angiosperms > monocots > lilioid monocots > remaining orders

- RSPHW-** ‘OTHER LILLIOID MONOCOT’ 1. (Pandanales; numerous genera) pandan, screw-pine / screw palm / pandanus palm 2. (Petrosaviales; genera *Petrosavia*, *Japonolirion*) petrosaviate 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Commelinales

- NÇPF-** ‘COMMELINACEAE’ 1. (Commelineae; several genera) dayflower, widow’s tears, tropical spiderwort / wandering Jew, scurvy weed, scurvy grass, rat’s ear, marble berry, dewflower 2. (Tradescantieae; numerous genera) spiderwort, Indian paint, boatlily / oyster plant, wild crocus, false dayflower, blue ginger 3. (Cartonemateae; genus *Cartonema*) cartonema, wiridjagu

-NCPH- ‘COMMELINALES’ 1. (Haemodoraceae; numerous genera) bloodwort, kangaroo paw, winter bell, bloodroot, coneflower, redroot 2. (Pontederiaceae; several genera) mud plantain, water hyacinth, water stargrass, ducksalad, pickerel weed, false pickerelweed / oval-leafed pondweed 3. (Philydraceae & Hanguanaceae; genera *Philydrum*, *Philydrella*, *Helmholtzia*, *Hanguana*) stream lily, frogmouth, woolly waterlily, hanguana

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Zingiberales

-NCP- ‘MUSACEAE’ 1. (genus *Musa*) banana, plantain 2. (genus *Ensete*) enset, false banana 3. (genus *Musella*) Chinese dwarf banana / golden lotus banana

-NCPW- ‘ZINGIBERACEAE’ I 1. (genus *Zingiber*) ginger plant, myoga [Japanese ginger] 2. (genus *Curcuma*) turmeric plant, zedoary / white turmeric, Java ginger / Javanese turmeric, Cape York lily, mango ginger, Siam tulip / summer tulip, East Indian arrowroot / narrow-leaved turmeric, mango-ginger 3. (genera *Amomum*, *Elettaria*) cardamom plant

-NCPY- ‘ZINGIBERACEAE’ II 1. (genus *Alpinia*) galangal plant, shellflower / shellplant, alpinia, Chinese ginger, shell ginger, round Chinese cardamom 2. (genus *Aframomum*) false cardamom / Ethiopian cardamom plant, melegueta pepper / alligator pepper / grains of paradise 3. (genera *Etlingera*) torch ginger / torch lily / Philippine wax flower / Indonesian tall ginger / porcelain rose, Malay rose

-NCPL- ‘ZINGIBERACEAE’ III 1. (genus *Hornstedtia*) Scott’s ginger / jiddo / native cardamom 2. (genus *Hedychium*) garland flower / ginger lily / kahili ginger 3. (Zingiberaceae other than already named; numerous genera) other zingiberid

-NCPÇ- ‘ZINGIBERACEAE’ IV 1. (genus *Lanxangia*) cao guo 2. (genus *Kaempferia*) kencur / lesser galangal / aromatic ginger / sand ginger / cutcherry / resurrection lily / cekur, Thai ginseng / Thai black ginger, silver spot 3. (genus *Boesenbergia*) Chinese keys / fingerroot / Chinese ginger / lesser galangal

-NCPR- ‘ZINGIBERALES’ I 1. (Cannaceae; genus *Canna*) canna lily 2. (Heliconiaceae; genus *Heliconia*) lobster-claws / toucan beak / wild plantain / false bird-of-paradise 3. (Lowlaceae; genus *Orchidantha*) orchidantha

-NCPŘ- ‘ZINGIBERALES’ II 1. (Strelitziaceae; three genera) strelitzia, bird of paradise, crane lily, traveller’s tree / traveller’s palm 2. (Costaceae; several genera) costus, orange tulip ginger, spiral ginger, spiralfag ginger / Indian head ginger, yellow trumpet, spiral flag, crêpe ginger, wax ginger 3. (Marantaceae; numerous genera) arrowroot, prayer plant, calathea, myrosma, alligator-flag, thalia, hardy canna, fire-flag

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Arecales

-LBW- ‘COMMON FOOD PALM (ARECACEAE)’ I 1. (genus *Cocos*) coconut tree 2. (genus *Phoenix*) date palm tree 3. (genus *Euterpe*) açai palm tree

-LBY- ‘COMMON FOOD PALM (ARECACEAE)’ II 1. (genus *Butia*) jelly palm, yatay palm, pindo palm 2. (genus *Elaeis*) oil palm, macaw-fat 3. (genus *Bactris*) peach palm

-LBL- ‘ARECEAE’ I 1. (genus *Areca*) areca nut palm [betel nut palm] 2. (genus *Howea*) thatch palm / Kentia palm 3. (genus *Normanbya*) black palm

-LBR- ‘ARECEAE’ II 1. (genus *Nenga*) pinang palm 2. (genus *Heterospatha*) sagisi palm 3. (genus *Hedyscepe*) big mountain palm / umbrella palm

-LBŘ- ‘ARECEAE’ III 1. (genus *Acanthophoenix*) barbel palm / palmiste rouge 2. (genus *Wodyetia*) foxtail palm 3. (genus *Phoenicophorium*) thief palm / latanier palm

-LBV- ‘COCOSEAE’ 1. (genus *Jubaea*) Chilean wine palm 2. (genus *Jubaeopsis*) Pondoland palm 3. (genus *Voanioala*) forest coconut palm

-LBĐ- ‘ARACOIDEAE’ 1. Leopoldinieae; genus *Leopoldinia*) pissava palm / jará palm 2. (Roystoneae; genus *Roystonea*) royal palm, palmiste / imperial palm / cabbabe palm, yagua / cabiche 3. (Geonomeae, Iriarteeae, Manicarieae, Oranieae, Pelagodoxeae, Podococceae, Reinhardtiae, Sclerospermeae, Areceae other than named genera above; numerous genera) other aracoid palm

-LBZ- ‘CALAMOIDEAE’ 1. (Calameae; numerous genera) rattan palm 2. (Eugeissoneae; genus *Eugeissona*) bertam / wild Bornean sago palm 3. (Lepidocaryeae; several genera) raffia palm, butiti, poltamui

-LBŽ- ‘CORYPHOIDEAE’ 1. (Trachycarpeae; numerous genera) needle palm, lady palm, saw palmetto, carnauba wax palm, European fan palm / Mediterranean dwarf palm 2. (Crysophileae; several genera) zombie palm, Key thatch palm, silver pimeto 3. (Sabaleae, Borasseae, Caryoteae; Chuniophoeniceae, Chorypheae; numerous genera) fan-palm, palmetto, sea coconut palm / double coconut palm, fishtail palm, Hainan fan palm, white backed palm, Mazari palm, tahina palm

-LBH- ‘OTHER ARECALES’ 1. (Ceroxyloideae; several genera) ivory palm / ivory-nut palm / tagua palm, chonta palm, mastodon palm / fiber palm 2. (Nypoidae; genus *Nypa*) nipa / mangrove palm 3. (Dasypogonaceae; four genera) pineapple bush, tinsel lily, kingia / bullanock, baxteria

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales (grasses)

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Avenine grasses

-BT- ‘TRITICUM (WHEAT)’ I 1. (*T. aestivum*) common wheat / bread wheat grass 2. (*T. durum*) durum wheat / pasta wheat grass 3. (*T. spelta*) spelt grass / dinkel wheat grass

-BTY- ‘TRITICUM (WHEAT)’ II 1. (*T. monococcum*, *T. boeoticum*) einkorn wheat grass 2. (*T. turgidum dicoccum*, *T. turgidum dicoccoides*) emmer wheat grass 3. (*T. turanicum*) khorasan wheat grass, kamut grass

-BTW- ‘TRITICEAE (WHEAT-RELATED DOMESTICATED CEREAL GRAINS)’ 1. (genus *Hordeum*) barley grass 2. (genus *Secale*) rye grass 3. (*Triticum*+*Secale* hybrid) tritcale grass

-BTL- ‘OTHER TRITICEAE’ I 1. (genus *Agropyron*) wheatgrass 2. (genus *Aegilops*) goatgrass 3. (genus *Elymus*) couch grass, wildrye, bottlebrush grass, lyme grass, dune grass, strand grass / strand-wheat, squirreltail

-BTR- ‘OTHER TRITICEAE’ II 1. (genus *Hordelymus*) wood-barley 2. (genus *Leymus*) wildrye, lyme grass 3. (genus *Thinopyrum*) Eurasian quackgrass, rush wheatgrass, tall wheatgrass

-BTŘ- ‘OTHER TRITICEAE’ III 1. (genus *Triticum* other than already named species) club wheat, Persian wheat, Armenian wild emmer, red wild einkorn wheat, Ethiopian wheat, Zanduri wheat, Polish wheat 2. (Triticeae other than previously named genera) other wild wheatgrass 3. [stem unassigned]

-BTH- ‘AVENA (OAT)’ 1. (*A. sativa*) common oat grass 2. (*A. nuda*) naked oat / hulless oat grass 3. (*A. abyssinica*) Ethiopian oat grass

-BTČ- ‘POOIDEAE’ I 1. (Aveninae-type grasses; numerous genera) oatgrass, junegrass, vernal grass / hornwort, bentgrass, hairgrass, button-grass, plumegrass, hedgehog grass, false mannagrass, swamp wallaby grass, beard grass / rabbitsfoot grass, nit grass, Ozark grass, shining grass, silkybent grass, windgrass 2. (Poinae-type grasses; numerous genera) meadow-grass, bluegrass, tussock, snow-grass, sussock-grass, muttonbird poa, quaking grass, pendant grass, hardgrass, alkali grass, salt grass, saltmarsh-grass, fescue, pinegrass, blue bunchgrass, pseudovina, English bluegrass, fescue tussock, ryegrass, cock’s-foot grass, orchard grass, hair grass, tussock grass, sandgrass, common rivergrass, giant mountain grass, timothy grass, sloughgrass, woodreed, foxtail grass, hooded grass 3. (Bromeae, Littledaleae, Brachypodieae; genera *Bromus*, *Littledalea*, *Brachypodium*) brome, chess grass, cheat grass, quake grass, bull grass, rescue grass / Australian oat, false brome, tor-grass

-BTF- ‘POOIDEAE’ II 1. (Nardeae; genus *Nardus*) matgrass 2. (Lygeae; genus *Lygeum*) esparto grass / cord grass / albardine 3. (Duthieae; several genera) oat speargrass

-BTV- ‘POOIDEAE’ III 1. (Meliceae; several genera) melic grass, semaphore grass, false semaphore grass, false mesic 2. (Stipeae; numerous genera) needle grass, spear grass, silver spike grass, ricegrass, sleepygrass, achnatherum, needle-and-thread grass, feather grass, false needle grass 3. (Ampelodesmeae; genus *Ampelodesmos*) stramma / rope grass / Mauritania grass / dis grass

-BTĽ- ‘POOIDEAE’ IV 1. (Diarrheneae; genera *Diarrhena*, *Neomolinia*) breakgrain / break grass 2. (genus *Ammophila*) beach grass, marram grass 3. (Brachyelytreae, Phaenospermateae, Brylkinieae; genera *Brachyelytrum*, *Phaenosperma*, *Brylkinia*) other pooid grass

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Bambusoideae

-BDD- ‘BAMBUSOIDEAE (BAMBOO)’ 1. (Bambuseae; numerous genera) tropical woody bamboo 2. (Olyreae; numerous genera) tropical herbaceous bamboo 3. (Arundinarieae; numerous genera) temperate woody bamboo, hill cane, switchcane, river cane / giant cane

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Oryzoideae

-BK- ‘ORYZA (RICE)’ 1. (*O. sativa*) Asian rice grass 2. (*O. glaberrima*) African rice grass 3. (*O. rufipogon*) red rice / brownbeard rice grass

-BKW- ‘ORYZEAE’ I 1. (genus *Zizania*) wild rice, Canada rice, Indian rice, water oats 2. (genus *Zizaniopsis*) giant cutgrass / water millet / southern wildrice 3. (genus *Oryza* other than previously named species) wild rice grass

-BKY- ‘ORYZEAE’ II 1. (genus *Leersia*) cutgrass, whitegrass, swamp rice grass 2. (genus *Potamophila*) Hastings River reed 3. (genera *Luziola*, *Hyrgroryza*) watergrass

-BKÇ- ‘ORYZOIDEAE’ 1. (Ehrharteae; four genera) weeping grass / weeping rice grass / weeping meadow grass, veldtgrass, zotovia 2. (Phyllorachideae, Streptogyneae) other oryzoid grass 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Chlororidoideae

-BKL- ‘ERAGROSTIDEAE’ 1. (*Eragrostis tef*) teff grass 2. (genus *Eragrostis* other than *E. tef*) lovegrass, canegrass, cause grass 3. (Eragrostids other than *Eragrostis*; several genera) robies cocksfoot, thimble grass / Zulu fescue, other eragrostid grass

-BKR- ‘ELEUSININAE’ 1. (*Eleusine coracana*) finger millet grass 2. (genus *Eleusine* other than *E. coracana*) goosegrass, wiregrass, crowfootgrass, yard-grass 3. (Eleusininae other than *Eleusine*; numerous genera) caterpillar grass, windmill grass, Mitchell grass, Bermuda grass / dog’s tooth grass

-BKF- ‘CYNODONTEAE’ I 1. (Triodiinae; genus *Triodia*) spinifex, porcupine grass 2. (Dactylocteniiinae; several genera) goose grass, crowfoot grass 3. (Muhlenbergiinae; genus *Muhlenbergia*) muhly, scratchgrass, deergrass, bullgrass, aparejoggrass

-BKȚ- ‘CYNODONTEAE’ II 1. (Scleropogoninae; several genera) eyelashgrass, desertgrass, desert fluff-grass, woollygrass, burrograss, Eureka dunegrass, false buffalograss 2. (Orcuttiinae; genera *Orcuttia*, *Neostapfia*) Colusa grass, Orcutt grass 3. (Cynodonteae other than Stems 1 and 2; numerous genera) fiveminute grass, grama grass, pappusgrass, burr grass, carrot-seed grass, Texasgrass, sandgrass, skeletongrass, curly mesquite, other cynodontid grass

-BKŘ- ‘ZOYSIEAE’ 1. (genus *Zoysia*) zoysia / zoysiagrass, mascarene grass / Korean velvet grass, Korean lawngrass, Manila grass 2. (genus *Sporobolus*) dropseed, sacaton grass, fairy grass / yakka grass, smut grass, giant rat’s-tail grass, poverty grass, salt grass 3. (genera *Psilolemma*, *Urochondra*) other zoysiid grass

-BKM- ‘CHLORIDOIDEAE’ 1. (Centropodieae; two genera) centropodiid grass 2. (Triraphideae; three genera) triraphid grass 3. (genera *Grossweilerochola*, *Indopoa*, *Lepturopetium*, *Myriostachya*, *Pogonochloa*, *Pseudozoysia*, *Silentvalleya*) other chloridoid grass

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Panicoideae > Andropogoneae

-RDL- ‘ANDROPOGONEAE’ I 1. (genus *Zea*) maize / corn plant 2. (genus *Saccharum*) sugarcane plant, ravena grass, elephant grass 3. (genus *Sorghum*) sorghum grass

-RDR- ‘ANDROPOGONEAE’ II 1. (genus *Ischaemum*) murainagrass, duck-beak, paddle grass, lucuntu grass 2. (genus *Tripsacum*) gamagrass 3. (genus *Hemarthria*) jointgrass / limpograss / halt grass / quick grass

-RDŘ- ‘ANDROPOGONEAE’ III 1. (genus *Arthraxon*) carpet grass 2. (genus *Chrysopogon*) vetiver, amorseco / grama-amorosa / lesser spear grass 3. (Andropogoneae other than previously named genera) browntop, other andropogonid grass

-RDM- ‘ANDROPOGONINES & SACCHARINES’ 1. (genus *Cymbopogon*) lemongrass, citronella grass, palmarosa / Indian geranium, barbed wire grass, silky head, oily head, Cochin grass, Malabar grass 2. (Andropogonines other than *Cymbopogon*; numerous genera) broomsedge, whiskygrass, bluestem, Tambuki grass / gamba grass, beard grass, sweetpitted grass, leg grass / red grass / redleg, Flinders grass, tanglehead, scented-top grass 3. (Saccharines other than *Saccharum*) cogongrass / kunai grass / blady grass / satintail / lalang grass / cotton wool grass, crinkleawn grass, silvergrass

-RDŇ- ‘ANDROPOGONOID PANICOIDEAE’ I 1. (Paspaleae; numerous genera) carpet grass, vine mesquite, bedgrass, panicgrass, bahiagrass, paspalum, koda millet / kodra millet, hilo grass / carabao grass, dallis grass, crowngrass, marsh grass 2. (Gynerieae; genus *Gynierium*) wildcane, arrow cane 3. (Arundinelleae, Lecomtelleae; several genera) other andropogonoid panicoid grass

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Danthonioideae

-RDF- ‘DANTHONIOIDEAE’ 1. (genus *Danthonia*) oatgrass / heathgrass / wallaby grass 2. (genus *Schismus*) Mediterranean grass 3. (Danthonioideae other than Stems 1 and 2; numerous genera) danthonioid grass, snowgrass

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Panicoideae > Paniceae

-TXL- ‘MILLET’ I 1. (*Panicum milleaceum*) common millet grass [a.k.a. proso millet, broomcorn millet, hog millet, red millet, white millet] 2. (*Pennisetum glaucum*) pearl millet grass 3. (*Setaria italica*) foxtail millet / Italian millet

-TXR- ‘MILLET’ II 1. (*Digitaria exilis*, *D. iburua*) fonio / hungry rice 2. (*D. compacta*) raishan 3. (genus *Digitaria* [other than *D. exilis*, *D. iburua* and *D. compacta*]) crabgrass, finger-grass, summer grass, witchgrass, cottontop, umbrella grass, blue couch, pangolagrass, sourgrass, Polish millet

-TXM- ‘CENCHRINAE’ 1. (genus *Cenchrus*) buffelgrass, sandbur, sand spur 2. (genus *Pennisetum* [other than *P. glaucum*]) fountaingrass, swamp-foxtail, bristlegrass, feather grass / bedding grass, mission grass, Napier grass, elephant grass / barner grass, feathertop / white foxtail 3. (genus *Setaria* [other than *S. italica*]) pigeon grass, bristle grass, highland pitpit, grama negra, yellow foxtail, bristly foxtail, corn grass / Mary grass

-TXN- ‘PANICEAE’ 1. (other Cenchrinae; numerous genera) mudgrass, false bristlegrass, flat-stem grass, sandhill canegrass 2. (Boivinellinae; numerous genera) basketgrass, barnyard grass / cockspur grass, boivinelline grass 3. (other Paniceae [including *Panicum* other than *P. milleaceum*]; numerous genera) mulga grass, rosette grass, cupscale grass, signalgrass, panicum, tumbleweed, maidencane, switchgrass, panic, Guinea grass / buffalo grass, panic grass

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Panicoideae > Centothecoid clade

-TXW- ‘CENTOTHECOID’ 1. (Chasmanthieae; genera *Chasmanthium*, *Bromuniola*) woodoats 2. (Thysanolaeneae; genus *Thysanolaena*) tiger grass / broom stick / Nepalese broom grass 3. (Zeugiteae, Steyermarkochloae, Tristachyidae, Centotheceae, Cyperochloae; several genera) other centothecoid grass

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Micrairoideae

-TXX- ‘MICRAIROIDEAE’ 1. (genus *Isachne*) bloodgrass 2. (genus *Eriachne*) Wanderrie grass 3. (Micrairoideae other than Stems 1 and 2; several genera) macrairoid grass

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Arundinoideae

-TTL- ‘ARUNDINOIDEAE’ I 1. (genus *Phragmites*) common reed 2. (genus *Arundo*) giant cane / Spanish cane, Pliny’s reed 3. (genus *Amphipogon*) greybeard grass

-**ṬṬṚ**- ‘ARUNDINOIDEAE’ II 1. (genus *Molinia*) moor grass 2. (genus *Monachather*) mulga oats 3. (Arundinoideae other than previously named genera; several genera) other arundinoid grass or reed

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Poaceae > Puelioideae, Pharoideae, and Anomochlooideae

-**ṬṬY**- ‘OTHER POACEAE’ 1. (Puelioideae; genera *Puelia*, *Guaduella*) puelioid grass 2. (Pharoideae; genera *Pharus*, *Leptaspis*) stalkgrass, leptaspis 3. (Anomochlooideae; genera *Anomochloa*, *Streptochoeta*) anomochlooid grass

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Graminids > Ecdeiocolaceae, Joinvilleaceae, and Flagellariaceae

-**ṬṬH**- ‘OTHER GRAMMINID GRASS FAMILY’ 1. (Ecdeiocolaceae; genera *Ecdeiocola*, *Georgeantha*) ecdeiocoloid plant 2. (Joinvilleaceae; genus *Joinvillea*) joinvillea 3. (Flagellariaceae; genus *Flagellaria*) whip vine / hell tail / supplejack / false rattan / bush cane

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Bromeliads > Bromeliaceae and Typhaceae

-**ḐKW**- ‘BROMELIAD’ 1. (genus *Ananas*) pineapple 2. (Bromeliaceae other than *Ananas*; numerous genera) bromeliad, airplant, ball moss, Spanish moss 3. (Typhaceae; genera *Typha*, *Sparganium*) cattail / punk / reed / bulrush / reedmace, bur-reed

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Cyperid clade

-**ḐKY**- ‘CYPERUS’ 1. (*C. esulentus*) chufa flatsedge [tuber used as food] 2. (*C. papyrus*) papyrush sedge 3. (other *Cyperus* species) flatsedge, nutsedge, umbrella-sedge

-**ḐKL**- ‘CYPERACEAE’ I 1. (genus *Carex*) [true] sedge 2. (*Eleocharis dulcis*) Chinese water chestnut 3. (other *Eleocharis* species) spikerush / hairgrass, spikesedge, scallion grass

-**ḐKR**- ‘CYPERACEAE’ II 1. (genus *Scirpus*) club-rush, bulrush, beakrush 2. (genus *Fimbristylis*) fimbry / fringe-rush / fimbristyle 3. (Cyperaceae other than previously named genera; numerous genera) bulrush, hairsedge, twigrush, bogrush, nutrush, sedge

-**ḐKF**- ‘JUNCACEAE’ 1. (genus *Juncus*) rush, blackgrass 2. (genus *Luzula*) woodrush, Good Friday grass / sweep’s brush 3. (Juncaceae other than Stems 1 and 2; several genera) other rush-like plant

-**ḐKT**- ‘OTHER CYPERID’ 1. (Thurniaceae; genera *Thurnia*, *Prionium*) palmiet, thurnia 2. (Rapateaceae; numerous genera) rapateaceous plant 3. (Mayacaceae; genus *Mayaca*) mayaca plant

Tracheophytes > Spermatophytes > Angiosperms > monocots > commelinid monocots > Poales > Restiid and Xyrid clades

-**ḐKṚ**- ‘POALES’ 1. (Restionaceae [including Anarthriaceae, Centrolepidaceae, and Lyginiaceae]; numerous genera) wire rush, bamboo rush, silver reed, Cape thatching reed, rope-rush, buttonrush, cord-rush, tassel rush, plume rush, centrolepis, Manypeaks rush, Australian reed, restiad, restio 2. (Eriocaulaceae; several genera) pipewort, hat pin, bog button 3. (Xyridaceae; several genera) yellow-eyed grass

Tracheophytes > Spermatophytes > Angiosperms > Eudicots

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Buxales

-**KMW**- ‘BUXACEAE’ 1. (genus *Buxus*) box, boxwood 2. (genus *Pachysandra*) Allegheny spurge, carpet box / Japanese spurge, pachysandra 3. (genus *Sarcococca*) sweet box, Christmas box

-**KMY**- ‘OTHER BUXALES’ 1. (Didymelaceae; genus *Didymeles*) didymeles 2. (Haptanthaceae; genus *Haptanthus*) haptanthus 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Proteales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Proteales > Proteaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Proteales > Proteaceae > Proteoideae

-**NDPW**- ‘PROTEOIDEAE’ I 1. (genus *Protea*) sugarbush, protea, honey flower, creeping beauty 2. (genus *Petrophile*) petrophile, conebrush, conesticks, pixie mops 3. (genus *Aulax*) featherbush

-**NDPY**- ‘PROTEOIDEAE’ II 1. (genus *Conospermum*) smokebush, blue brother, blue lace 2. (genus *Synaphea*) synaphea 3. (genus *Stirlingia*) blueboy

-**NDPL**- ‘PROTEOIDEAE’ III 1. (genus *Isopogon*) coneflower, drumsticks, wild Irishman / horny cone bush, pincushion rose bush, isopogon 2. (genus *Adenanthos*) jugflower, glandflower, basket flower, woollybush, flame bush / bridle bush / sweat bush, adenanthos 3. (genus *Cenarrhenes*) Port Arthur plum / native plum

-**NDPR**- ‘PROTEOIDEAE’ IV 1. (genus *Leucadendron*) cone bush 2. (genus *Serruria*) spiderhead, blushing bride / pride of Franschoek 3. (genus *Paranomus*) sceptre, exploding baked apple

-**NDPŘ**- ‘PROTEOIDEAE’ V 1. (genus *Vexatorella*) vexator 2. (genus *Sorocephalus*) powderpuff 3. (genus *Spatalla*) spoon plant

-**NDPF**- ‘PROTEOIDEAE’ VI 1. (genus *Leucospermum*) pincushion plant 2. (genus *Mimetes*) pagoda plant 3. (genus *Diastella*) silkypuff

-**NDPL**- ‘PROTEOIDEAE’ VII 1. (genus *Orothamnus*) marsh rose 2. (Proteoideae other than named genera; several genera) other proteoid plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Proteales > Proteaceae > Grevilleoideae

-**NDKW**- ‘GREVILLEOIDEAE’ I 1. (genus *Grevillea*) spider flower, silky oak, toothbrush plant, grevillea 2. (genus *Opisthiolepis*) blush silky oak / pink silky oak / brown silky oak / drunk rabbit 3. (genus *Buckinghamia*) ivory curl flower

-**NDKY**- ‘GREVILLEOIDEAE’ II 1. (genus *Hakea*) hakea, mulloway needlebush, needlewood, corkbark tree, red pokers, bootlace tree / corkwood, cork tree, needles and corks, dungyn, yandena, walukara, needle tree, woody peach, kerosine bush / two-leaf, pin bush / water tree / booldoobah, emu bush, corkwood oak, honey bush 2. (genus *Stenocarpus*) scrub beefwood, firewheel tree, stenocarpus 3. (genus *Lomatia*) crinkle bush / parsely fern, guitarplant, lomatia, native holly, radial

-**NDKL**- ‘GREVILLEOIDEAE’ III 1. (genus *Embothrium*) Chilean firebush / notro / ciruelillo / foforito 2. (genus *Telopea*) waratah 3. (genus *Alloxylon*) Queensland tree waratah / red silky oak, Dorriga waratah

-**NDKR**- ‘GREVILLEOIDEAE’ IV 1. (genus *Banksia*) banksia, parrot bush, dryandra, kerosene bush, couch honeypot 2. (genus *Musgravea*) crater silky oak, briar silky oak 3. (genus *Austromuelleria*) Mueller’s silky oak

-**NDKŘ**- ‘GREVILLEOIDEAE’ V 1. (genus *Orites*) orites, mountain silky oak / prickly ash / white beefwood, yellow bush 2. (genus *Neorites*) fishtail oak / fishtail silky oak 3. (genus *Triunia*) spice bush, red nut

-**NDKF**- ‘GREVILLEOIDEAE’ VI 1. (genus *Xylomelum*) woody pear 2. (genus *Lambertia*) wild honeysuckle 3. (genus *Hollandaea*) Sayer’s silky oak, hollandaea

-**NDKM**- ‘GREVILLEOIDEAE’ VII 1. (genus *Helicia*) helicia, silky oak, pale oak / brown oak, Austral oak, hairy weiner / rusty oak 2. (genus *Sphalmium*) mystery oak / Mt. Lewis oak / poorman’s fishtail oak / buff silky oak / satin silky oak 3. (genus *Carnarvon*) red oak / red silky oak

-**NDKN**- ‘GREVILLEOIDEAE’ VIII 1. (genus *Macadamia*) macadamia nut tree, bauple nut / Queensland nut / bush nut / Hawaii nut 2. (genus *Brabejum*) wild almond / bitter almond 3. (genus *Catalepidia*) Hey’s nut oak

-**NDKS**- ‘GREVILLEOIDEAE’ IX 1. (genus *Athertonia*) Atherton oak 2. (genus *Cordwellia*) northern silky oak / bull oak / golden spanglewood / lacewood / congaary 3. (genus *Gevuina*) Chilean hazelnut tree

-NDKŠ- ‘GREVILLEOIDEAE’ X 1. (genus *Hicksbeachia*) red bopple nut / monkey nut / red nut / beef nut / rose nut / ivory silky oak 2. (Grevilleoideae other than named genera) other grevilleoid plant/tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Proteales > Proteaceae > remaining sub-families: Bellendonoideae, Persoonioideae, and Symphionematoideae

-NDKH- ‘OTHER PROTEACEAE’ I 1. (genus *Bellendena*) mountain rocket 2. (genus *Placospermum*) rose silky oak / plate-seeded oak 3. (genus *Persoonia*) geebung, snottybobble, persoonia, wild pear

-NDKHW- ‘OTHER PROTEACEAE’ II 1. (genus *Agastachys*) white waratah 2. (Proteaceae other than named genera) other proteaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Proteales > remaining families: Nelumbonaceae, Platanaceae, and Sabiaceae

-NDPH- ‘OTHER PROTEALES’ 1. (Nelumbonaceae; genus *Nelumbo*) lotus flower / sacred lotus / Indian lotus / rose of India / sacred water lily, American lotus 2. (Platanaceae; genus *Platanus*) plane tree, American sycamore / buttonwood / water beech / occidental plane tree, California sycamore / western sycamore / aliso, Arizona sycamore 3. (Sabiaceae; genera *Sabia*, *Ophiocaryon*, *Meliosma*) sabiaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Ranunculales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Ranunculales > Ranunculaceae

-VZMW- ‘RANUNCULACEAE’ I 1. (genus *Ranunculus*) buttercup, spearwort, crowfoot, water-crowfoot 2. (genus *Ceratocephala*) bur buttercup / curvseed butterwort 3. (genus *Ficaria*) fig buttercup / lesser celandine / pilewort

-VZMY- ‘RANUNCULACEAE’ II 1. (genus *Myosurus*) mousetail 2. (genus *Trautvetteria*) Carolina bugbane / false bugbane / tassel-rue 3. (genus *Caltha*) marsh marigold, caltha

-VZML- ‘RANUNCULACEAE’ III 1. (genus *Anemone*) anemone, Spanish marigold / windflower, thimbleweed 2. (genus *Clematis*) clematis, leather flower, pine hyacinth, traveller’s joy, satin curls, virgin’s bower, headache vine, vasevine, curlyheads, bluebill, devil’s darning needles, old man’s beard 3. (genus *Hepatica*) liverleaf / liverwort / hepatica

-VZMR- ‘RANUNCULACEAE’ IV 1. (genus *Pulsatilla*) pasque flower, windflower, prairie crocus / cutleaf anemone 2. (genus *Helleborus*) hellebore, setterwort, Christmas rose, Lenten rose, bear’s foot 3. (genus *Nigella*) love-in-a-mist / ragged lady / devil in the bush

-VZMŘ- ‘RANUNCULACEAE’ V 1. (genus *Actaea*) baneberry, bugbane, cohosh, herb christopher, doll’s eyes 2. (genus *Anemonopsis*) false anemone 3. (genus *Eranthis*) white aconite

-VZVW- ‘RANUNCULACEAE’ VI 1. (genus *Aconitum*) aconite, monkshood, wolfsbane, iron hammer, leopard’s bane, mousebane, devil’s helmet, queen of poisons, blue rocket 2. (genus *Consolida*) larkspur 3. (genus *Delphinium*) larkspur, delphinium

-VZVY- ‘RANUNCULACEAE’ VII 1. (genus *Adonis*) pheasant’s-eye, blooddrops, adonis 2. (genus *Trollius*) globeflower 3. (genus *Glaucidium*) Japanese wood poppy

-VZVL- ‘RANUNCULACEAE’ VIII 1. (genus *Hydrastis*) goldenseal / orangeroot / yellow puccoon 2. (genus *Coptis*) goldthread 3. (genus *Xanthorrhiza*) yellowroot

-VZVR- ‘RANUNCULACEAE’ IX 1. (genus *Thalictrum*) meadow rue, rue-anemone 2. (genus *Isopyrum*) false rue-anemone 3. (genus *Enemion*) false rue-anemone

-VZVŘ- ‘RANUNCULACEAE’ X 1. (genus *Aquilegia*) columbine / granny’s bonnet / granny’s nightcap 2. (genus *Paraquilegia*) spurless columbine 3. (Ranunculaceae other than named genera; several genera) other ranunculaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Ranunculales > Berberidaceae

- VZBW**- 'BERBERIDACEAE' I 1. (genus *Berberis*) barberry 2. (genus *Mahonia*) Oregon grape, Beale's barberry, Cascade barberry, currant-of-Texas / wild currant / chaparral berry, mahonia 3. (genus *Achlys*) vanilla leaf / deer's foot / sweet after death
- VZBY**- 'BERBERIDACEAE' II 1. (genus *Podophyllum*) mayapple / American mandrake / wild mandrake / ground lemon 2. (genus *Sinopodophyllum*) Himalayan may apple / Indian may apple 3. (genus *Diphylleia*) umbrella leaf
- VZBL**- 'BERBERIDACEAE' III 1. (genus *Epimedium*) barrenwort, bishop's hat, fairy wings, horny goat weed 2. (genus *Jeffersonia* [including *Plagiorhegma*]) twinleaf / rheumatism root, Asian twinleaf 3. (genus *Vancouveria*) inside-out flower
- VZBR**- 'BERBERIDACEAE' IV 1. (genus *Nandina*) heavenly bamboo / sacred bamboo / nandina 2. (genus *Caulophyllum*) blue cohosh / squaw root / papoose root 3. (Berberidaceae other than named genera; several genera) other berberidaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Ranunculales > Menispermaceae

- VZGW**- 'MENISPERMACEAE' I 1. (genus *Menispermum*) moonseed, ghost grape, common parilla 2. (genus *Legnephora*) round-leaf vine 3. (genus *Sarcopetalum*) pearl vine
- VZGY**- 'MENISPERMACEAE' II 1. (genus *Cocculus*) red-berried moonseed / Carolina moonseed, correhuela, broom creeper, laurel-leaved snail tree, queen coralbead 2. (genus *Cissampelos*) velvet leaf, abuta 3. (genus *Stephania*) snake vine
- VZGL**- 'MENISPERMACEAE' III 1. (genus *Calycocarpum*) cupseed 2. (genus *Dioscoreophyllum*) serendipity berry 3. (genus *Jateorhiza*) calumba
- VZGR**- 'MENISPERMACEAE' IV 1. (genus *Anamirta*) Indian berry / fishberry / Levant nut 2. (Menispermaceae other than named genera; numerous genera) other menispermaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Ranunculales > Lardizabalaceae

- VZBŘ**- 'LARDIZABALACEAE' I 1. (genus *Lardizabala*) zabala fruit 2. (genus *Boquila*) chameleon vine 3. (genus *Decaisnea*) dead man's fingers
- VZBV**- 'LARDIZABALACEAE' II 1. (genus *Holboellia*) blue china vine 2. (genus *Akebia*) chocolate vine, akebia 3. (Lardizabalaceae other than named genera; several genera) other lardizabalaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Ranunculales > Papaveraceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Ranunculales > Papaveraceae > Papaveroideae

- VZDW**- 'PAPAVEROIDEAE' I 1. (genus *Papaver*) poppy, blindeyes 2. (genus *Arctomecon*) bear poppy / bear-paw poppy 3. (genus *Argemone*) prickly poppy
- VZDY**- 'PAPAVEROIDEAE' II 1. (genus *Canbya*) pygmy poppy 2. (genus *Meconopsis*) blue poppy, autumn poppy, Nepal poppy / satin poppy, Himalayan woodland-poppy 3. (genus *Romneya*) matilija poppy, California tree poppy
- VZDL**- 'PAPAVEROIDEAE' III 1. (genus *Stylomecon*) windpoppy 2. (genus *Meconella*) fairypoppy 3. (genus *Platystemon*) creamcups
- VZDR**- 'PAPAVEROIDEAE' IV 1. (genus *Eschscholzia*) California poppy, tufted poppy / foothill poppy, frying pans, desert gold(en) poppy / Mojave poppy, San Benito poppy, Lemmon's poppy, pygmy poppy, Parish's poppy, Channel Islands poppy 2. (genus *Dendromecon*) bush poppy, Channel Islands tree poppy 3. (genus *Hunnemannia*) Mexican tulip poppy
- VZDŘ**- 'PAPAVEROIDEAE' V 1. (genus *Chelidonium*) celandine / greater celandine / nipplewort / swallowwort / tetterwort 2. (genus *Bocconia*) plume poppy / tree poppy / tree celandine / parrotweed / sea oxeye daisy / John Crow bush 3. (genus *Dicranostigma*) eastern horned poppy
- VZDV**- 'PAPAVEROIDEAE' VI 1. (genus *Eomecon*) snow-poppy / dawn-poppy 2. (genus *Glaucium*) yellow horned poppy, sea poppy 3. (genus *Hylomecum*) forest poppy

-VZZ- ‘PAPAVEROIDEAE’ VII 1. (genus *Macleaya*) plume poppy 2. (genus *Sanguinaria*) bloodroot / bloodwort / redroot / red puccoon / Canada puccoon / pauson 3. (genus *Stylophorum*) celandine-poppy / woods-poppy

-VZJ- ‘PAPAVEROIDEAE’ VIII 1. (genus *Hesperomecon*) narrow-leaved meconella 2. (*Roemeria*) spotted Asian poppy 3. (Papaveroideae other than named genera) other papaveroid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Ranunculales > Papaveraceae > Fumarioideae

-VZGV- ‘FUMARIOIDEAE’ I 1. (genus *Fumaria*) fumitory, ramping-fumitory, earth smoke 2. (genus *Pseudofumaria*) pale corydalis / white coridaly 3. (genus *Corydalis*) fumewort, corydalis, scrambled eggs / golden smoke

-VZGZ- ‘FUMARIOIDEAE’ II 1. (genus *Capnoides*) harlequin corydalis / pale corydalis / pink corydalis 2. (genus *Dicentra*) bleeding-heart, steer’s-head, turkey-corn, squirrel-corn, Dutchman’s-breeches 3. (genus *Ichtyoselmis*) large-flowered dicentra

-VZGŽ- ‘FUMARIOIDEAE’ III 1. (genus *Ehrendorferia*) eardrops, yellow bleeding-heart 2. (genus *Lamprocapnos*) Asian bleeding-heart 3. (Fumarioideae other than named genera; several genera) other fumarioid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Ranunculales > remaining families: Eupteleaceae and Circaeasteraceae

-VZGŘ- ‘EUPTELEACEAE & CIRCAEASTERACEAE’ 1. (Eupteleaceae; genus *Euptelea*) euptelia 2. (Circaeasteraceae; genera *Circaeaster*, *Kingdonia*) circaeasteraceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Trochodendrales

-VZD- ‘TROCHODENDRACEAE’ 1. (genus *Trochodendron*) wheel tree 2. (genus *Tetracentron*) tetracentron 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Gunnerales

-VZNW- ‘GUNNERALES’ 1. (Gunneraceae; genus *Gunnera*) giant rhubarb / Chilean rhubarb, gunnera, poor man’s umbrella 2. (Myrothamnaceae; genus *Myrothamnus*) resurrection plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > Dilleniales

-VZNY- ‘DILLENACEAE’ 1. (genus *Hibbertia*) guinea flower, yellow buttercups, hibbertia 2. (genus *Dillenia*) red beech / golden guinea tree, elephant apple tree 3. (Dilleniaceae other than Stems 1 and 2; several genera) other dilleniaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids

-FTL- ‘AQUIFOLIALES’ 1. (Aquifoliaceae; genus *Ilex*) holly 2. (Cardiopteridaceae, Helwingiaceae, Phylonomaceae, Stemonuraceae; several genera) other aquifoliaceous plant

-FTÇ- ‘ESCALLONIACEAE’ 1. (genus *Escallonia*) cloven gum box, redclaws, escallonia 2. (genus *Anopterus*) native laurel / Tasmanian laurel, queensland laurel / Macleay laurel 3. (Escalloniaceae other than *Escallonia* and *Anopterus*) other escalloniaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids > Dipsacales

-**FMW**- ‘**ADOXACEAE**’ 1. (genus *Adoxa*) moschatel / hollowroot / muskroot / five-faced bishop / townhall clock / tuberous crowfoot 2. (genus *Sambucus*) elderberry 3. (genus *Viburnum* and other several other ADOXACEAE genera) viburnum / arrowwood, wild raisin / Appalachian tea, squashberry / mooseberry / highbush cranberry / lowbush cranberry, blackhaw, stag bush, Guelder-rose, Japanese snowball, nannyberry / sheepberry, hobble-bush, wayfaring tree, hoarwithy, laurustinus / laurustine

-**FMY**- ‘**CAPRIFOLIOIDEAE**’ 1. (genus *Lonicera*) honeysuckle 2. (genus *Symphoricarpos*) snowberry / waxberry / ghostberry / coralberry 3. (genus *Triosteum*) horse-gentian / feverwort

-**FNW**- ‘**VALERIANOIDEAE**’ I 1. (genus *Valeriana*) valerian 2. (genus *Valerianella*) cornsalad 3. (genus *Plectritis*) seablush, plectritis

-**FNY**- ‘**VALERIANOIDEAE**’ II 1. (genus *Nardostachys*) spikenard plant 2. (genus *Centranthus*) narrow-leaved valerian, long-spurred valerian, red valerian 3. (genus *Patrinia*) patrinia

-**FNW**- ‘**CAPRIFOLIACEAE**’ 1. (genus *Diervilla*) bush honeysuckle 2. (genus *Linnaea*) twinflower, beautybush, abelia 3. (Caprifoliaceae other than named genera; several genera) other caprifoliolate plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids > Apiales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids > Apiales > Apiaceae

-**KPW**- ‘**APIEAE**’ I 1. (genus *Apium*) celery plant, marshwort 2. (genus *Foeniculum*) fennel plant 3. (genus *Petroselinum*) parsley plant

-**KPY**- ‘**APIEAE**’ II 1. (genus *Anethum*) dill plant 2. (genus *Ammi*) bishop’s weed / bullwort / lady’s face / laceflower, toothpick-plant / toothpickweed / bisnaga / khella 3. (Apiaceae other than named genera; several genera) other apiid plant

-**KPL**- ‘**SELINEAE**’ I 1. (genus *Selinum*) milk-parsley 2. (genus *Aethusa*) fool’s parsley / fool’s cicely / poison parsley 3. (genus *Tauschia*) umbrellawort

-**KPR**- ‘**SELINEAE**’ II 1. (genus *Angelica*) angelica 2. (genus *Ammoselinum*) sandparsley 3. (genus *Apiastrum*) mock parsley

-**KPŘ**- ‘**SELINEAE**’ III 1. (genus *Arracacia*) arracacha / racacha 2. (genus *Cnidium*) cnidium [source of coumarins] 3. (genus *Cymopterus*) springparsley, Indian parsnip, wavewing

-**KPF**- ‘**SELINEAE**’ IV 1. (genus *Glehnia*) beach silvertop / American silvertop 2. (genus *Lomatium*) buscuitroot / Indian parsley / desert parsley 3. (genus *Oreonana*) mountainparsley

-**KPT**- ‘**SELINEAE**’ V 1. (genus *Orogenia*) Indian potato 2. (genus *Podistera*) podistera, woodroot 3. (genus *Saposhnikovia* [a.k.a. *Ledebouriella*]) siler

-**KPÇ**- ‘**SELINEAE**’ VI 1. (genus *Seseli*) moon carrot, stone-parsley 2. (genus *Sphenosciadium*) button parsley / woollyhead parsnip / ranger’s buttons / button parsley / swamp white heads 3. (genus *Taenidia*) pimpernel

-**KPL**- ‘**SELINEAE**’ VII 1. (genus *Thaspium*) meadow-parsnip 2. (genus *Zizia*) alexanders, zizia 3. (Selineae other than named genera; several genera) other selenid parsley-like plant

-**KPH**- ‘**ACIPHYLLEAE**’ 1. (genus *Aciphylla*) golden speargrass / golden Spaniard, giant speargrass, mountain celery / snow aciphyll 2. (genus *Anisotome*) Campbell Island carrot, mountain celery 3. (Aciphyllae other than Stems 1 and 2; several genera) other acyphill plant

-**KBW**- ‘**SCANDICEAE**’ I 1. (genus *Daucus*) carrot plant 2. (genus *Cuminum*) cumin plant 3. (genus *Anthriscus*) chervil

-**KBY**- ‘**SCANDICEAE**’ II 1. (genus *Ferula*) galbanum plant, asafoetida plant, giant fennel 2. (genus *Chaerophyllum*) hairyfruit chervil / Southern chervil, bulbous chervil / parsnip chervil 3. (genus *Myrrhis*) myrrh / cicely / sweet chervil

-**KBL**- ‘**SCANDICEAE**’ III 1. (genus *Osmorhiza*) sweet cicely / sweetroot 2. (genus *Scandix*) shepherd’s-needle / Stork’s needle / Venus’ comb 3. (Scandiceae other than named genera; several genera) hedge parsley, false carrot

- KBR**- ‘SANICULEAE’ I 1. (genus *Sanicula*) sanicle, black snakeroot, turkey pea 2. (genus *Eryngium*) eryngo, sea holly, rattlesnake master, beethistle, coyote thistle, snakeroot, blue devil, button-celery, prickfoot 3. (genus *Astrantia*) masterwort
- KBŘ**- ‘SANICULEAE’ II 1. (genus *Hacquetia*) hacquetia 2. (Sanculeae other than named genera; several genera) other sanicle-like plant 3. [stem unassigned]
- KDW**- ‘OENANTHEAE’ I 1. (genus *Berula*) water parsnip 2. (genus *Cicuta*) water hemlock 3. (genus *Cryptotaenia*) honewort
- KDY**- ‘OENANTHEAE’ II 1. (genus *Ptilimnium*) harperella, bishopweed, laceflower 2. (genus *Lilaeopsis*) grasswort, mudflat quillplant 3. (genus *Oenanthe*) water dropwort, Chinese celery / Indian pennywort / Japanese parsley / water celery
- KDL**- ‘OENANTHEAE’ III 1. (genus *Perideridia*) yampa / yampah, squaw potato, Sierra Queen Anne’s lace 2. (genus *Sium*) water parsnip 3. (Oenantheae other than named genera) other oenanthid plant
- KDR**- ‘MACKINLAYOIDEAE’ I 1. (genus *Platysace*) platysace, karna, karno, tapeworm plant, Ravensthorpe radish, carrot tops 2. (genus *Actinotus*) flannel flower 3. (genus *Centella*) Asiatic pennywort / Indian pennywort
- KDŘ**- ‘MACKINLAYOIDEAE’ II 1. (genus *Xanthosia*) xanthosia, southern cross 2. (Mackinlayoideae other than named genera) other mackinlayoid plant
- KŠP**- ‘APIOIDEAE’ I 1. (genus *Pastinaca*) parsnip plant 2. (genus *Levisticum*) lovage 3. (genus *Ligusticum*) licorice-root
- KŠPW**- ‘APIOIDEAE’ II 1. (genus *Pimpinella*) anise, short-fruit pimpinella / chamnamul, burnet-saxifrage 2. (genus *Carum*) caraway / meridian fennel / Persian cumin 3. (genus *Coriandrum*) coriander / Chinese parsley / cilantro
- KŠPY**- ‘APIOIDEAE’ III 1. (genus *Bunium*) great pignut / earthnut, black cumin / blackseed / black caraway 2. (genus *Crithmum*) rock samphire / sea fennel 3. (genus *Cyclospermum*) marsh parsley / fir-leafed celery
- KŠPL**- ‘APIOIDEAE’ IV 1. (genus *Heracleum*) hogweed, giant hogweed, cow parsnip 2. (genus *Smyrniun*) alexanders / black-lovage / horse-parsley 3. (genus *Tordylium*) hartwort
- KŠPR**- ‘APIOIDEAE’ V 1. (genus *Bupleurum*) hare’s ear, thorow-wax, thoroughwax 2. (genus *Falcaria*) sickleweed / longleaf 3. (genus *Erigenia*) harbinger of spring, pepper-and-salt
- KŠPŘ**- ‘APIOIDEAE’ VI 1. (genus *Conium*) hemlock 2. (genus *Conioselinum*) hemlock-parsley 3. (genus *Opopanax*) Hercules-all-heal
- KŠPL**- ‘APIOIDEAE’ VII 1. (genus *Silaum*) pepper-saxifrage 2. (genus *Trachyspermum*) adjwain / ajowan / bishop’s weed / carom, radhuni / wild celery 3. (Apioideae other than named genera; numerous genera) other apioid plant
- KŠPH**- ‘OTHER APIACEAE’ 1. (Azorelloideae, numerous genera) azurella, cushion plant, llareta / yareta 2. (Apaiaceae other than named genera; numerous genera) other apaiaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids > Apiales > Araliaceae

- KSBW**- ‘ARALIACEAE’ I 1. (genus *Hedera*) ivy 2. (genus *Panax*) ginseng 3. (genus *Aralia*) spikenard, aralia, sarsaparilla, devil’s walking stick / Hercules’ club / angelica-tree / prickly ash / prickly elder
- KSBY**- ‘ARALIACEAE’ II 1. (genus *Asrotricha*) star-hair, flannel leaf 2. (genus *Kalopanax*) castor aralia / tree aralia / prickly castor oil tree 3. (genus *Oplopanax*) devil’s club / Alaskan ginseng
- KSBL**- ‘ARALIACEAE’ III 1. (genus *Polyscias*) parasol tree, Ming aralia, island pine, elderberry panax / small basswood, shield aralia / plum aralia, pencil cedar, celery wood 2. (genus *Plerandra*) false aralia 3. (genus *Seemannaralia*) wild-maple / mock carrot tree
- KSBR**- ‘ARALIACEAE’ IV 1. (genus *Tetrapanax*) rice-paper plant 2. (genus *Trachymene*) wild parsnip, white parsnip, sponge-fruit, blue lace flower, purple parsnip 3. (genus *Hydrocotyle*) water pennywort, marsh pennywort, waxweed, floating pennyroyal, whorled pennyroyal

-KSBR- 'ARALIACEAE' V 1. (genus *Stilbocarpa*) Macquarie Island cabbage 2. (Araliaceae other than named genera) other araliaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids > Apiales > remaining families

-KSBV- 'OTHER APIALES' 1. (Pittosporaceae; several genera) pittosporum, billardiera, pronaya, Australian bluebell, appleberry, blackthorn, finger-flower, cheesewood, petroleum nut, lemonwood, native frangipani, marianthus, white marianth 2. (Torricelliaceae, Griselinaceae, Myodocarpaceae, Pennantiaceae; numerous genera) other apiales plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids > Asterales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids > Asterales > Asteraceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids > Asterales > Asteraceae > Asteroideae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids > Asterales > Asteraceae > Asteroideae > Asterodae

-RŽB- 'ASTEREAE' I 1. (genus *Bellis*) daisy 2. (genus *Aphanostephus*) lazydaisy 3. (genus *Astranthium*) western-daisy

-RŽBW- 'ASTEREAE' II 1. (genus *Aster*) aster 2. (genus *Bradburia*) goldenaster 3. (genus *Sericocarpus*) white-topped aster

-RŽBY- 'ASTEREAE' III 1. (genus *Boltonia*) doll's-daisy 2. (genus *Egletes*) tropic daisy 3. (genus *Pentachaeta*) pygmydaisy

-RŽBL- 'ASTEREAE' IV 1. (genera *Machaeranthera*, *Psilactis*, *Rayjacksonia*) tansyaster 2. (genus *Arida*) desert tansy-aster 3. (genus *Doelingeria*) tall flat-topped aster

-RŽBR- 'ASTEREAE' V 1. (genus *Xanthisma*) sleepydaisy 2. (genus *Corethrogyne*) sandaster 3. (genus *Xylorhiza*) woody-aster

-RŽBŘ- 'ASTEREAE' VI 1. (genus *Solidago*) goldenrod 2. (genus *Bigelowia*) rayless-goldenrod 3. (genus *Cuniculotinus*) rock goldenrod

-RŽBV- 'ASTEREAE' VII 1. (genus *Petradoria*) rock goldenrod 2. (genus *Xylothamia*) desert goldenrod 3. (genus *Brintonia*) rayless mock goldenrod

-RŽD- 'ASTEREAE' VIII 1. (genus *Almutaster*) alkali marsh aster 2. (genus *Ampelaster*) climbing aster 3. (genus *Callistephus*) China aster, annual aster

-RŽDW- 'ASTEREAE' IX 1. (genus *Brachyscome*) yellow-tongue daisy, variable daisy, grassland daisy, rock daisy, tufted daisy, mountain daisy 2. (genus *Calotis*) burr-daisy 3. (genus *Celmisia*) New Zealand aster, New Zealand daisy, cotton daisy, snow-daisy

-RŽDY- 'ASTEREAE' X 1. (genus *Eastwoodia*) yellow aster, yellow mock aster 2. (genus *Dieteria*) hoary-aster, hoary tansyaster 3. (genus *Eucephalus*) elegant aster, Olympic Mountain aster, Siskiyou aster, Klickitat aster, Cascade aster, rayless aster, wayside aster

-RŽDL- 'ASTEREAE' XI 1. (genus *Euthamia*) goldentop, grass-leaved goldenrod 2. (genus *Gundlachia*) goldenshrub 3. (genus *Pyrrocoma*) goldenweed

-RŽDR- 'ASTEREAE' XII 1. (genus *Herrickia*) Wasatch aster, horrid herrickia, King's serpentweed / King's aster, gray aster 2. (genus *Oclemena*) bog aster / bog nodding aster, whorled wood aster 3. (genus *Eurybia*) mountain aster / mountain wood aster / Applalachian heartleaf aster, slender aster, western showy aster, white-wood aster, thistleleaf aster / coyote-thistle aster, forked aster, southern prairie aster, thickstem aster, bigleaf aster / largeleaf aster, subalpine aster / arctic aster, bouquest aster / dwarf aster, southern swamp aster, rough wood aster / low rough aster, roughleaf aster, nettle-leaved Michaelmas-daisy, Siberian aster, purple wood aster / showy aster, pinewoods aster, creeping aster

-RŽDŘ- 'ASTEREAE' XIII 1. (genus *Stenotus*) goldenweed, mock goldenweed 2. (genus *Nestotus*) goldenweed, mock goldenweed 3. (genus *Oonopsis*) false goldenweed

-RŽDV- 'ASTEREAE' XIV 1. (genus *Oreostemma*) Peirson's aster / Peirson's mountaintop, tundra aster / Anderson's mountain crown, Plumas alpine aster 2. (genus *Ionactis*) ankle-aster 3. (genus *Symphyotrichum*) Pacific aster, meadow aster, western aster / intermountain aster, blue wood aster, serpentine aster, heath aster, alkali aster, smooth aster / glaucous aster, calico aster, aromatic aster, frost aster / hairy aster, sky-blue aster / azure aster, crooked-stem aster, purplestem aster / red-stemmed aster, silky aster, bushy aster / rice-button aster, New England aster, panicled aster / tall white aster

- RŽG**- ‘ASTEREAE’ XV 1. (genus *Olearia*) daisy-bush 2. (genus *Townsendia*) Townsend daisy 3. (genus *Vittadinia*) New Holland daisy
- RŽGW**- ‘ASTEREAE’ XVI 1. (genus *Croptilon*) scratchdaisy 2. (genus *Chaetopappa*) leastdaisy 3. (genus *Chrysopsis*) golden aster
- RŽGY**- ‘ASTEREAE’ XVII 1. (genus *Tonestus*) serpentweed 2. (genus *Toiyabea*) alpine serpentweed 3. (genus *Gutierrezia*) snakeweed, matchweed
- RŽGL**- ‘ASTEREAE’ XVIII 1. (genus *Ericameria*) goldenrush 2. (genus *Neonesomia*) goldenshrub 3. (genus *Isocoma*) jimmyweed, goldenweed
- RŽGR**- ‘ASTEREAE’ XIX 1. (genus *Benitoa*) benitoa 2. (genus *Tracyina*) Indian headdress / beaked tracyina 3. (genus *Amphipappus*) chaffbush, eytelia
- RŽGŘ**- ‘ASTEREAE’ XX 1. (genus *Erigeron*) fleabane 2. (genus *Grindelia*) gum-plant, resin-weed 3. (genus *Heterotheca*) goldenaster, telegraphweed, Mexican arnica, Zion golden aster, camphorweed, false golden aster, monarch golden aster
- RŽGV**- ‘ASTEREAE’ XXI 1. (genus *Chrysothamnus*) rabbitbrush 2. (genus *Lorandersonia*) rabbitbush 3. (genus *Monoptilon*) desertstar
- RŽGD**- ‘ASTEREAE’ XXII 1. (genus *Hazardia*) bristleweed 2. (genus *Rigiopappus*) wireweed 3. (genus *Amphiachyris*) broomweed
- RŽM**- ‘ASTEREAE’ XXIII 1. (genus *Kippistia*) fleshy minuria 2. (genus *Gymnosperma*) gumhead, sticky selloa 3. (genus *Tetramolopium*) pamakani, tetramolopium
- RŽMW**- ‘ASTEREAE’ XXIV 1. (genus *Triniteurybia*) Idaho goldenweed 2. (genus *Laennecia*) horseweed 3. (genus *Lessingia*) lessingia
- RŽMY**- ‘ASTEREAE’ XXV 1. (genus *Miyamayomena*) Korean starwort 2. (genus *Lagenophora*) lagenophora, bottle-daisy 3. (Astereae other than named genera; numerous genera) other aster-like or daisy-like plant
- RŽT**- ‘ANTHEMIDEAE’ I 1. (genus *Chrysanthemum*) chrysanthemum, mum, chrysanth 2. (genus *Chamaemelum*) chamomile, dogfennel 3. (genus *Anthemis*) chamomile, dog-fennel, mayweed
- RŽTW**- ‘ANTHEMIDEAE’ II 1. (genus *Achillea*) yarrow, milfoil / allheal / thousand-leaf / bloodwort / carpenter’s grass / cammock / nosebleed / green adder’s mouth / soldier’s woundwort / dog daisy / old-man’s pepper, sweet Nancy / English mace, sneezewort / sneezeweed 2. (genus *Anacyclus*) anacyclus, white buttons, pellitory, Spanish chamomile / Mount Atlas daisy 3. (genus *Artemisia*) mugwort, wormwood, sagebrush, budsage
- RŽTY**- ‘ANTHEMIDEAE’ III 1. (genus *Nipponanthemum*) Montauk daisy / Nippon daisy 2. (genus *Otanthus*) cottonweed plant 3. (genus *Leucanthemum*) ox-eye daisy / dog daisy, Shasta daisy, creeping daisy / mini marguerite, max chrysanthemum
- RŽTL**- ‘ANTHEMIDEAE’ IV 1. (genus *Cotula*) water buttons / buttonweeds 2. (genus *Heteranthemis*) oxeye, sticky oxeye 3. (genus *Santolina*) cotton lavender / lavender-cotton
- RŽTR**- ‘ANTHEMIDEAE’ V 1. (genus *Tanacetum*) tansy, golden-buttons, dusty-miller / silver-lace, feverfew, pyrethrum, painted daisy / Persian insect-flower, costmary 2. (genus *Soliva*) burr-weed 3. (genus *Tripleurospermum*) mayweed
- RŽTŘ**- ‘ANTHEMIDEAE’ VI 1. (genus *Ismelia*) tricolour chrysanthemum / tricolor daisy / annual chrysanthemum 2. (genus *Rhodanthemum*) Moroccan daisy 3. (Anthemideae other than named genera; numerous genera) other anthemid plant
- RŽTF**- ‘CALENDULEAE’ I 1. (genus *Calendula*) marigold, ruddle 2. (genus *Osteospermum*) daisybush, African daisy, Cape marguerite, Stinking Roger 3. (genus *Dimorphoteka*) Cape marigold / Namaqualand daisy, Cape daisy / rain daisy, rain flower / white bietou
- RŽTÇ**- ‘CALENDULEAE’ II 1. (genus *Chrysantemoides*) bitou bush / bietou / tick berry 2. (Calenduleae other than named genera; several genera) other calendulid plant 3. [stem unassigned]
- RŽTL**- ‘GNAPHALIEAE’ I 1. (genus *Gnaphalium*) cudweed 2. (genus *Gamochaeta*) everlasting, featherweed, cudweed 3. (genus *Antennaria*) catsfoot, pussytoes, everlasting
- RŽČ**- ‘GNAPHALIEAE’ II 1. (genus *Anaphalis*) pearl, pearly everlasting 2. (genus *Craspedia*) billy button / woollyhead 3. (genus *Pycnosorus*) drumstick / billy button
- RŽTH**- ‘GNAPHALIEAE’ III 1. (genus *Rhodanthe*) sunray, pink paper daisy 2. (genus *Cassinia*) cassinia, dogwood / dolly bush, chinese scrub, cough bush / dead finish, bully bush / killmoke 3. (genus *Ozothamnus*) cottonwood / tauhinu, kerosene bush, rice flower / white dogwood / pill flower / sago bush, everlasting

-RŽTHW- ‘GNAPHALIEAE’ IV 1. (genus *Euchiton*) creeping cudweed, star cudweed / commond cudweed 2. (genus *Helichrysum*) curry plant, everlasting, strawflower, Cape gold, helichrysum, gold-and-silver 3. (Gnaphalieae other than named genera; numerous genera) other gnaphaliid plant

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-RZB- ‘SENECIONEAE’ I 1. (genus *Senecio*) ragwort, groundsel, squaw-weed, senecio, marsh fleabane, butterweed, dolphin necklace / flying dolphins / dolphin plant, wax ivy, Cape ivy / German ivy, string of bananas, string of pearls, old-man-in-the-spring 2. (genus *Arnoglossum*) Indian plantain 3. (genus *Barkleyanthus*) willow ragwort / willow groundsel

-RZBW- ‘SENECIONEAE’ II 1. (genus *Blennosperma*) stickyseed 2. (genus *Cacalioposis*) silvercrown 3. (genus *Crassocephalum*) ragleaf, thickhead

-RZBY- ‘SENECIONEAE’ III 1. (genus *Crocidium*) spring gold 2. (genus *Doronicum*) leopard’s bane 3. (genus *Emilia*) tasselflower

-RZBL- ‘SENECIONEAE’ IV 1. (genus *Erechtites*) fireweed, burnweed 2. (genus *Gynura*) purple passion 3. (genus *Lepidospartum*) broomsage, scalebroom

-RZBR- ‘SENECIONEAE’ V 1. (genus *Luina*) silverback 2. (genus *Petasites*) butterbur, coltsfoot 3. (genus *Psacalium*) Indian bush

-RZBŘ- ‘SENECIONEAE’ VI 1. (genus *Roldana*) groundsel 2. (genus *Rugelia*) Rugel’s ragwort / Rugel’s Indian plantain 3. (genus *Sinosenecio*) butterweed

-RZBV- ‘SENECIONEAE’ VII 1. (genus *Tetradymia*) horsebrush 2. (genus *Tussilago*) coltsfoot 3. (genus *Yermo*) desert yellowhead

-RZBD- ‘SENECIONEAE’ VIII 1. (genus *Bedfordia*) blanket leaf 2. (genus *Farfugium*) leopard plant / green leopard plant 3. (Senecioneae other than named genera; numerous genera) other senecionid plant

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-MZB- ‘COREOPSIDEAE’ I 1. (genus *Dahlia*) dahlia 2. (genus *Cosmos*) cosmos 3. (genus *Coreopsis*) calliopsis, tickseed

-MZBW- ‘COREOPSIDEAE’ II 1. (genus *Bidens*) beggarticks, tickseed sunflower, water-marigold, Spanish needles, bur-marigold, devil’s pitchfork / devil’s bootjack / pitchfork weed, sticktight, Meskel flower, black jack 2. (genus *Thelesperma*) green thread, Navajo tea, Hopi tea 3. (Coreopsidae other than named genera; numerous genera) other coreopsid plant

-MZBY- ‘MADIEAE’ I 1. (genus *Madia*) madia, tarweed 2. (genera *Hemizonia*, *Hemizonella*, *Deinandra*, *Centromadia*, *Holcarpha*) tarweed, spikeweed 3. (genus *Blepharizonia*) big tarweed, big tarplant

-MZBL- ‘MADIEAE’ II 1. (genus *Argyroxiphium*) silversword, greensword 2. (genus *Wilkesia*) iliau 3. (genus *Arnica*) arnica, leopardbane, mountain tobacco

-MZBR- ‘MADIEAE’ III 1. (genus *Blepharipappus*) rough eyelash / rough eyelashweed 2. (genus *Calycadenia*) western rosinweed 3. (genus *Constancea*) Nevin’s woolly sunflower

-MZBŘ- ‘MADIEAE’ IV 1. (genus *Eatonella*) white false tickhead 2. (genus *Eriophyllum*) woolly sunflower 3. (genus *Guardiola*) Apache plant

-MZBV- ‘MADIEAE’ V 1. (genus *Harmonia*) harmonia, serpentine tarweed, nodding madia 2. (genus *Holozonia*) whitecrown 3. (genus *Hulsea*) alpinegold

-MZD- ‘MADIEAE’ VI 1. (genus *Kyhosia*) kyhosia, Bolander’s madia 2. (genus *Lagophylla*) hareleaf 3. (genus *Lasthenia*) goldfields

-MZDW- ‘MADIEAE’ VII 1. (genus *Layia*) tidytips 2. (genus *Monolopia*) monolopia, San Joaquin woollythread 3. (genus *Osmadenia*) false rosinweed

-MZDY- ‘MADIEAE’ VIII 1. (genus *Pseudobahia*) sunburst 2. (genus *Raillardella*) raillardella 3. (genus *Syntrichopappus*) Frémont’s-gold, xerasid

-MZDL- ‘MADIEAE’ IX 1. (genus *Venegasia*) canyon sunflower 2. (genus *Achyrrachaena*) blow-wives 3. (Madiaceae other than named genera; several genera) other madiid plant

- MZDR**- ‘INULEAE’ I 1. (genus *Inula*) elecampane / horse-heal / elfdock, golden samphire, ploughman’s-spikenard, yellowhead, inula, Irish fleabane, giant fleabane 2. (genus *Caesulia*) pink node flower 3. (genus *Pallenis*) starwort, golden star, rose of Jericho / dinosaur plant
- MZDR**ř- ‘INULEAE’ II 1. (genus *Pechuel-loeschea*) stinkbush 2. (genus *Pulicaria*) false fleabane 3. (Inuleae other than Stems 1 and 2) other inulid plant
- MZDV**- ‘MILLERIEAE’ I 1. (genus *Sigesbeckia*) St. Paul’s wort 2. (genus *Smallanthus*) leafcup, bear’s foot, yacón 3. (genus *Tetragonotheca*) nerveray
- MZG**- ‘MILLERIEAE’ II 1. (genus *Bebbia*) sweetbush 2. (genus *Galinsoga*) galinsoga, gallant soldier / quickweed / potato weed, shaggy soldier / Peruvian daisy 3. (genus *Guizotia*) inga seed, black seed, ramtil, niger seed
- MZGW**- ‘MILLERIEAE’ III 1. (genus *Melampodium*) blackfoot 2. (genus *Tridax*) tridax daisy / coatbuttons 3. (Millerieae other than named genera; several genera) other milleriid plant
- MZGY**- ‘TAGETEAE’ I 1. (genus *Tagetes*) marigold 2. (genus *Adenophyllum*) dogweed 3. (genus *Dyssodia*) fetid marigold
- MZGL**- ‘TAGETEAE’ II 1. (genus *Dysodiopsis*) false dogfennel 2. (genus *Haploesthes*) false broomweed 3. (genus *Jamesianthus*) Alabama warbonnet
- MZGR**- ‘TAGETEAE’ III 1. (genus *Jaumea*) jaumea 2. (genus *Nicolletia*) hole-in-the-sand plant 3. (genus *Pectis*) cinchweed, chinchweed, donkeyweed
- MZGR**ř- ‘TAGETEAE’ IV 1. (genus *Porophyllum*) poreleaf, pápalo / Bolivian coriander, jarilla 2. (genus *Pseudoclappia*) false clapdaisy 3. (genus *Sartwellia*) glowwort
- MZGV**- ‘TAGETEAE’ V 1. (genus *Thymophylla*) pricklyleaf, Texas dogweed, ashy dogweed 2. (Tageteae other than named genera) other tagetid plant 3. [stem unassigned]
- MŽB**- ‘HELENIEAE’ I 1. (genus *Helenium*) sneezeweed, rosilla, cabezona 2. (genus *Gaillardia*) blanket flower, gaillardia, bandanna daisy, firewheel, perfumeballs 3. (genus *Balduina*) honeycombhead
- MŽBW**- ‘HELENIEAE’ II 1. (genus *Baileya*) desert marigold, laxflower 2. (genus *Hymenoxys*) rubberweed, bitterweed, four-nerve daisy, old-man-of-the-mountain, owl claws, prairie dawn 3. (genus *Marshallia*) Barbara’s buttons
- MŽBY**- ‘HELENIEAE’ III 1. (genus *Psathyrotes*) turtleback, brittlestem, fanleaf, velvet rosette, psathyrotes 2. (genus *Psilostrophe*) paperflower 3. [stem unassigned]
- MŽBL**- ‘HELENIEAE’ IV 1. (genus *Schkuhria*) false threadleaf, canchalagua, dwarf Mexican marigold 2. (Helenieae other than named genera; several genera) other heleniid plant
- MŽBR**- ‘EUPATORIEAE’ I 1. (genus *Eupatorium*) thoroughwort, dog-fennel, Yankeeeweed, false fennel, justiceweed, boneset, hemp-agrimony 2. (genus *Eutrochium*) Joe-Pye weed 3. (genus *Isocarpha*) pearlhead
- MŽBŘ**- ‘EUPATORIEAE’ II 1. (genus *Liatris*) blazing star, Cahaba torch, gayfeather, colicroot, prairie-pine / button snakewort, devil’s bite 2. (genus *Carphephorus*) chaffhead, vanillaleaf 3. (genus *Ageratina*) snakeroot, richweed / white sanicle, mistflower, ageratina, Western eupatorium, Shasta eupatorium, creeping cottonwood
- MŽBV**- ‘EUPATORIEAE’ III 1. (genus *Ageratum*) whiteweed, flossflower / bluemink / blueweed / pussy foot / Mexican paintbrush 2. (genus *Conoclinium*) mistflower, palmleaf thoroughwort 3. (genus *Fleischmannia*) slender-thoroughwort, pink thoroughwort
- MŽD**- ‘EUPATORIEAE’ IV 1. (genus *Brickellia*) brickellbush, Flyr’s nemesis, false boneset 2. (genus *Flyriella*) brickelbush 3. (genus *Asanthus*) Mule Mountain false brickellbush
- MŽDW**- ‘EUPATORIEAE’ V 1. (genus *Trichocoronis*) bugheal 2. (genus *Shinnersia*) Rio Grande bugheal / Mexican oak leaf plant 3. (genus *Carphochaete*) bristlehead
- MŽDY**- ‘EUPATORIEAE’ VI 1. (genus *Stevia*) stevia 2. (genus *Garberia*) garberia, Garber’s scrub start 3. (genus *Hartwrightia*) Florida hartwrightia
- MŽDL**- ‘EUPATORIEAE’ VII 1. (genus *Malperia*) brown turban 2. (genus *Pleurocoronis*) bush arrowleaf 3. (genus *Sclerolepis*) pink bogbutton
- MŽDR**- ‘EUPATORIEAE’ VIII 1. (genus *Carminatia*) plumeweed 2. (Eupatorieae other than named genera; numerous genera) other eupatoriid plant
- MŽDR**ř- ‘BAHIEAE’ I 1. (genus *Bahia*) bahia 2. (genus *Picradeniopsis*) many-flowere bahia, oppositeleaf bahia 3. (genus *Chamaechaenactis*) fullstem

- MŽDV**- ‘BAHIEAE’ II 1. (genus *Palafoxia*) palafox, Spanish needles 2. (genus *Florestina*) florestina, sticky florestina 3. (genus *Hypenopappus*) woollywhite, oldplainsman, collegeflower, hymenopappus
- MŽG**- ‘BAHIEAE’ III 1. (genus *Hymenothrix*) thimblehead 2. (genus *Peucephyllum*) pygmy cedar / desert fir / desert pine 3. (genus *Platyschkuhria*) basindaisy
- MŽGW**- ‘BAHIEAE’ IV 1. (genus *Bartlettia*) Bartlett daisy 2. (genus *Amauriopsis*) ragleaf bahia, yellow ragweed 3. (Bahieae other than named genera) other bahiid plant
- MŽGY**- ‘PERITYLEAE’ 1. (genus *Perityle*) rock daisy 2. (genus *Pericome*) mountain tall-leaf 3. (Perityleae other than Stems 1 and 2; several genera) other peritylid plant
- MŽGL**- ‘PLUCHEAE’ 1. (genus *Pluchea*) camphorweed, pluchea, cure-for-all, sweetscent / saltmarsh fleabane, arrowweed 2. (genus *Pterocaulon*) blackroot, applebush / fruit-salad plant 3. (Plucheeae other than Stems 1 and 2; several genera) other plucheid plant
- MŽGR**- ‘CHAENACTIDEAE’ 1. (genus *Chaenactis*) dustymaiden, pincushion 2. (genus *Dimeresia*) doublet 3. (genus *Orochaenactis*) California mountain pincushion
- MŽGR**- ‘NEUROLAENEAE & POLYMNIEAE’ 1. (genus *Calea*) bitter-grass / Mexican calea / dream herb 2. (Neurolaeneae other than Stem 1; several genera) other neuroleanid plant 3. (Polymnieae; genus *Polymnia*) leafcup
- MŽGV**- ‘ATHROISMEAE & FEDDEAE’ 1. (genus *Centipeda*) old man weed / scent weed 2. (Athroismeae other than Stem 1; several genera) other athroismid plant 3. (Feddeae; genus *Feddea*) feddea

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- ŇZV**- ‘HELIANTHINAE’ I 1. (genus *Helianthus*) sunflower, Jerusalem artichoke / sunchoke / earth-apple 2. (genus *Viguiera*) goldeneye, yellow streamer 3. (genus *Heliomeris*) false goldeneye, showy goldeneye, hairy goldeneye, paria sunflower
- ŇZVW**- ‘HELIANTHINAE’ II 1. (genus *Phoebanthus*) false sunflower 2. (genus *Sclerocarpus*) bonebract 3. (genus *Simsia*) bush sunflower
- ŇZVY**- ‘HELIANTHINAE’ III 1. (genus *Tithonia*) tree marigold / Mexican tournesol / Mexican sunflower / Japanese sunflower / Nitobe chrysanthemum, red sunflower 2. (genus *Bahiopsis*) San Diego County sunflower / San Diego viguiera / tornleaf goldeneye 3. (Helianthinae other than named genera; several genera) other sunflower-like plant
- ŇZB**- ‘ZINNIINAE’ I 1. (genus *Zinnia*) zinnia 2. (genus *Echinacea*) echinacea, coneflower 3. (genus *Heliopsis*) smooth oxeye, mountain oxeye, gold root, pinewoods oxeye, rough oxeye
- ŇZBW**- ‘ZINNIINAE’ II 1. (genus *Sanvitalia*) creeping zinnia 2. (Zinniinae other than named genera; several genera) other zinniid plant
- ŇZBY**- ‘ECLIPTINAE’ I 1. (genus *Melanthera*) squarestem 2. (genus *Eclipta*) false daisy 3. (genus *Lipochaeta*) nehe
- ŇZBL**- ‘ECLIPTINAE’ II 1. (genus *Sphagneticola*) creeping-oxeye 2. (genus *Wedelia*) wedelia, creeping oxeyes 3. (genus *Synedrella*) nodeweed
- ŇZBR**- ‘ECLIPTINAE’ III 1. (genus *Sphagneticola*) creeping-oxeye, Singapore daisy / trailing daisy / wedelia 2. (genus *Jefea*) jefea 3. (genus *Calypocarpus*) straggler daisy / horseherb / lawnflower / creeping Cinderella-weed
- ŇZBR**- ‘SPILANTHINAE’ 1. (genus *Acmella*) paracress / toothache plant / tingflowers / electric daisy / buzz buttons / Sichuan buttons, Spilanthes, spotflower 2. (Spilanthinae other than Stem 1; several genera) other spilanthine plant 3. [stem unassigned]
- ŇZBV**- ‘AMBROSIINAE’ 1. (genus *Ambrosia*) ragweed, bursage, marko, altamisa, Roman wormwood, beach-bur, ambrosia, burrobush, lagoonweed 2. (genus *Parthenium*) feverfew, wild quinine, whitetop weed, guayule 3. (Ambrosiinae other than Stems 1 and 2; several genera) other ambrosiine plant
- ŇZG**- ‘ENCELIINAE’ I 1. (genus *Encelia*) brittlebrush, encelia, noddinglehead / noddingle sunray 2. (genus *Enceliopsis*) sunray, Panamint daisy 3. (genus *Geraea*) desert sunflower, desert gold, geraea
- ŇZGW**- ‘ENCELIINAE’ II 1. (genus *Flourensia*) tarbush, tarwort 2. (genus *Helianthella*) little sunflower 3. (other Enceliinae genera) other enceliine plant

- ŇZGY-** ‘ENGELMANNIINAE’ I 1. (genus *Engelmannia*) Engelmann’s daisy / cutleaf daisy 2. (genus *Berlandiera*) greeneyes 3. (genus *Lindheimera*) Texas yellow star / Texas star
- ŇZGL-** ‘ENGELMANNIINAE’ II 1. (genus *Silphium*) rosinweed 2. (genus *Wyethia*) mule’s ears, black sunflower, California compassplant, wyethia 3. (genus *Balsamorhiza*) balsamroot
- ŇZGR-** ‘ENGELMANNIINAE’ III 1. (genus *Chrysogonum*) golden-knee / green-and-gold / goldenstar 2. (genus *Borrichia*) seaside tansy, sea-oxeye 3. (genus *Vigethia*) Mexican green-eyed sunflower
- ŇZGR-** ‘VERBESININAE’ 1. (genus *Verbesina*) crownbeard, wingstem / yellow ironweed, goldweed / butter daisy / American dogweed, gravelweed, stick weed, frostweed 2. (Verbesininae other than Stem 1; several genera) other verbesinine plant 3. [stem unassigned]
- ŇZGV-** ‘HELIANTHEAE’ 1. (genus *Rudbeckia*) black-eyed-susan 2. (genus *Rojasianthe*) rojasianthe 3. (Heliantheae other than named genera) other helianthid plant

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- RBZ -** ‘LACTUCA SATIVA (LETTUCE CULTIVAR)’ I 1. (loose)leaf lettuce 2. romaine/cos lettuce 3. iceberg/crisphead lettuce
- RBZW -** ‘LACTUCA SATIVA (LETTUCE CULTIVAR)’ II 1. butter(head)/bibb lettuce 2. red leaf lettuce 3. summercrisp lettuce
- RBZY-** ‘LACTUCINAE’ 1. (genus *Lactuca* other than *L. sativa*) wild lettuce, bitter lettuce, pliant lettuce, blue lettuce prickly lettuce / compassplant / scarole / milk thistle, willow lettuce / least lettuce, mountain lettuce, downy lettuce / hairy lettuce, grassleaf lettuce, woodland lettuce, tail lettuce, sow thistle 2. (genus *Cicerbita*) blue sow thistle 3. (genus *Notoseris*) notoseris
- RBZL-** ‘CICHORUM’ 1. (*C. endivia*) endive plant, escarole 2. (*C. intybus*) common chicory, leaf chicory, radicchio, Belgian endive 3. (*C. pumilum* and several other species) wild endive
- RBZR-** ‘CICHORIINAE’ 1. 2. (genus *Tolpis*) European umbrella milkwort 3. (genus *Arnoseris*) dwarf nipplewort / lamb-succory / lamb’s succory 3. (genera *Phalacroseris*, *Erythroseris*, *Rothmaleria*) mock dandelion, other cichoriine plant
- RBZŘ-** ‘MICROSERIDINAE’ I 1. (genera *Microseris*, *Uropappus*) silverpuffs, microseris, sylvan scorzonella 2. (genus *Agoseris*) false dandelion, mountain dandelion, agoseris 3. (genus *Nothocalais*) false dandelion, false agoseris
- RBZV-** ‘MICROSERIDINAE’ II 1. (genus *Malacothrix*) desert dandelion 2. (genus *Atrichoseris*) tobacco weed / parachute plant / gravel ghost 3. (genus *Munzothamnus*) Blair’s wirelettuce / Blair’s munzothamnus
- RBZM-** ‘MICROSERIDINAE’ III 1. (genus *Stephanomeria*) wirelettuce 2. (genus *Rafinesquia*) plumeseed, California chicory, desert chicory 3. (genus *Glyptopleura*) carveseed / keysia / crustleaf, holy dandelion
- RBZN-** ‘MICROSERIDINAE’ IV 1. (genus *Pleiacanthus*) thorn(y) skeletonweed 2. (genus *Prenanthes*) brightwhite 3. (genus *Krigia*) dwarf dandelion
- RBZŇ-** ‘MICROSERIDINAE’ V 1. (genus *Pinaropappus*) rock lettuce 2. (genus *Pyrrhopappus*) desert-chicory 3. (genus *Shinneroseris*) beaked skeletonweed
- RBZH-** ‘MICROSERIDINAE’ VI 1. (genus *Lygodesmia*) skeletonplant, rushpink 2. (genus *Chaetadelpa*) Wheeler’s skeletonweed 3. (Microseridiinae other than named genera; several genera) other microserid(ine) plant
- RBZZ-** ‘HIERACIINAE’ 1. (genus *Hieracium*) hawkweed, Sicilian sparviere 2. (genus *Pilosella*) fox-and-cubs / orange hawk bit / devil’s paintbrush / grim-the-coller, white hawkweed, yellow hawkweed, king devil, yellow devil 3. (Hieraciinae other than Stem 1; several genera) other hieraciine plant
- RZW-** ‘HYOSERIDINAE’ 1. (genus *Sonchus*) sow thistle, hare thistle, hare lettuce, milk thistle 2. (genus *Reichardia*) brighteyes, false sowthistle 3. (Hyoseridinae other than Stems 1 and 2; genera *Hyoseris*, *Aposeris*, *Launaea*) other hyoserid(ine) plant
- RZY-** ‘CREPIDINAE’ I 1. (genus *Crepis*) hawksbeard 2. (genus *Lapsana*) nipplewort 3. (genus *Ascellia*) elegant hawksbeard, dwarf alpine hawksbeard
- RZL-** ‘CREPIDINAE’ II 1. (genus *Teraxum*) dandelion 2. (genus *Ixeris*) creeping lettuce 3. (genus *Youngia*) Japanese hawkweed, Oriental false hawkweed

- RZR-** 'CREPIDINAE' III 1. (genus *Nabalus*) white lettuce, rattlesnakeroot 2. (Crepidinae other than named genera; several genera) other crepid(ine) plant 3. [stem unassigned]
- RŽŘ-** 'HYPOCHAERIDINAE' I 1. (genus *Hypochaeris*) cat's ear, flatweed / false dandelion, chikku-chikku 2. (genus *Scorzoneroidea*) autumn hawbit 3. (genus *Prenanthes*) rattlesnake root
- RŽV-** 'HYPOCHAERIDINAE' II 1. (genus *Urospermum*) goldenfleece 2. (genus *Picris*) ox-tongue 3. (genus *Helminthotheca*) bristly ox-tongue
- RŽM-** 'HYPOCHAERIDINAE' III 1. (genus *Leontodon*) hawkbit 2. (genus *Hedypnois*) scaly hawkbit 3. (Hypochaeridinae other than named genera) other hypochaeridine plant
- RŽN-** 'CHONDRILLINAE' 1. (genus *Chondrilla*) rush skeletonweed, smallflower desert-chicory / Texas false dandelion 2. (genus *Willemetia*) willemetia 3. (genus *Phytosia*) phytosia
- RŽŇ-** 'SCOLYMINAE' 1. (genus *Scolymus*) golden thistle / oyster thistle 2. (genus *Catananche*) Cupid's dart 3. (genera *Gundelia*, *Hymenonema*) tumble thistle, other scolymine plant
- RŽH-** 'SCORZONERINAE' 1. (genus *Tragopogon*) salsify, goatsbeard, oyster plant, jack-go-to-bed-at-noon 2. (genus *Scorzonera*) black salsify / Spanish salsify / black oyster plant / serpent root / viper's herb, viper's grass, scorzonera 3. (genus *Geropogon*) slender salsify / pasture goatsbeard
- RŽHW-** 'OTHER SCORZONERINAE & WARIONIINAE' 1. (Scorzonerinae other than named genera; several genera) oother goatsbeard or salsify-like plant) 2. (Warioniinae; genus *Warionia*) warionia 3. [stem unassigned]

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- RMGW-** 'VERNONIEAE' I 1. (genus *Vernonia*) ironweed 2. (genus *Tarlmounia*) curtain creeper / vernonia creeper 3. (genus *Stokesia*) stokesia / Stokes' aster
- RMGY-** 'VERNONIEAE' II 1. (genus *Piptocarpha*) ashdaisy 2. (genus *Piptocoma*) velvetshrub 3. (genus *Gymnanthemum*) bitterleaf tree
- RMGL-** 'VERNONIEAE' III 1. (genus *Centratherum*) lark daisy, Brazilian button 2. (genus *Elephantopus*) elephant's foot, devil's grandmother 3. (genus *Pseudelephantopus*) dog's-tongue
- RMGR-** 'VERNONIEAE' IV 1. (genus *Hesperomannia*) island-aster 2. (Vernonieae other than named genera; numerous genera) other vernoniine plant 3. [stem unassigned]
- RMĞŘ-** 'GORTERIINAE' 1. (genus *Gorteria*) beetle daisy 2. (genus *Berkheya*) thistle-thorn, yellow thistle, berkheya, Augusta thistle / Hamelin thistle 3. (genus *Gazania*) gazania, treasure flower
- RMGV-** 'ARCTOTIDINAE' 1. (genus *Arctotis*) monarch-of-the-veld, African daisy, arctotis 2. (genus *Arctotheca*) Cape weed / creeping bear's ear, capeweed / cape dandelion / cape marigold / plain treasureflower, beach daisy / beach pumpkin / sea pumpkin / dune cabbage / coast capeweed 3. (genus *Cymbonotus*) bear's ears
- RMGD-** 'CICHORIOIDEAE' 1. (Arctotidinae other than previously named genera; several genera) other arctotidine plant 2. (Gorteriinae other than previously named genera; several genera) other gorteriine plant 3. (Platycarpeae, Moquinieae, Liabeae, plus other unplaced cichorioid genera, e.g., *Distephanus*, *Trichospira*, *Heterolepis*, *Haplophyllum*) other cichorioid plant

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Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids > Asterales > Asteraceae > Carduoideae > Cardueae (a.k.a. Cynareae)

- FSPW-** 'CYNARA (ARTICHOKE)' I 1. (*C. scolymus*) globe/French/green artichoke 2. (*C. cardunculus*) cardoon 3. (*C. cornigera*) white artichoke
- FSPY-** 'CYNARA (ARTICHOKE)' II 1. (*C. humilis*) lesser wild artichoke 2. (*Cynara* species other than already named) various wild artichoke species
- FSPL-** 'CARDUINAE' I 1. (genus *Carduus*) plumeless thistle, curled thistle, weltd thistle, musk thistle, sheep thistle / shore thistle / slender thistle, Italian thistle 2. (genus *Cirsium*) [numerous types of] thistle 3. (genus *Onopordum*) cotton thistle, Scotch thistle, woolly thistle

- FSPR**- ‘CARDUINAE’ II 1. (genus *Arctium*) burdock, beggar’s buttons / thorny burr / happy major, louse-bur / button-bur / cuckoo-button / wild rhubarb 2. (genus *Galactites*) milk thistle 3. (genus *Notobasis*) Syrian thistle
- FSPŘ**- ‘CARDUINAE’ III 1. (genus *Saussurea*) saw-wort, snow lotus 2. (genus *Silybum*) silver milk thistle / elephant thistle / ivory thistle, blessed milk thistle / variegated thistle 3. (Carduinae other than named genera; numerous genera) other carduine thistle
- FSPF**- ‘CARLININAE’ I 1. (genus *Carlina*) carline thistle 2. (genus *Atractylis*) atractylis 3. (Carlininae other than Stems 1 and 2; several genera) other carlinine thistle
- FSPŤ**- ‘CENTAUREINAE’ I 1. (genus *Centaurea*) basketflower, knapweed, centaurea, centaury, starthistle, loggerhead, conrnflower / bachelor’s button / boutonniere flower / hurtsicle / bluebottle, yellow cockspur 2. (genus *Amberboa*) sweetsultan 3. (genus *Rhaponticum*) maral root, Russian knapweed / creeping knapweed / hardheads / bluweed, Austral cornflower / native thistle
- FSPÇ**- ‘CENTAUREINAE’ II 1. (genus *Carthamus*; *C. tinctorius*) safflower 2. (genus *Carthamus*; species other than *C. tinctorius*) distaff thistle, saffron thistle / downy safflower, glaucous starthistle 3. (genus *Cheirolophus*) Maltese rock-centaury, cheirolophus
- FSPĽ**- ‘CENTAUREINAE’ III 1. (genus *Crupina*) crupina, bearded-creeper / false saw-wort / starry scabious 2. (genus *Psephellus*) bachelor’s button 3. (genus *Serratula*) plumeless saw-wort
- FSPH**- ‘CENTAUREINAE’ IV 1. (genus *Mantisalca*) dagger-flower 2. (Centaureinae other than named genera; numerous genera) other centaureine thistle plant 3. [stem unassigned]
- FSPHW**- ‘OTHER CARDUEAE’ 1. (Echinopsinae; genus *Echinops*) globe-thistle 2. (Cardopatiinae; genera *Cardopatum*, *Cousiniopsis*) cardopatiine plant 3. [stem unassigned]

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- ŤBV**- ‘TARCHONANTHEAE & OTHER CARDUOIDEAE’ 1. (genus *Tarchonanthus*) camphor bush 2. (genus *Brachylaena*) silver oak, white alder 3. (Dicomeae, Oldenburgiae; several genera) other carduoid plant

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- ŤBW**- ‘MUTISIOIDEAE’ I 1. (genus *Leibnitzia*) sunbonnet 2. (genus *Chaptalia*) silverpuff, pineland daisy, white sunbonnet 3. (genus *Gerbera*) African daisy, Barberton daisy / Transvaal daisy / gerbera daisy, Hilton daisy
- ŤBY**- ‘MUTISIOIDEAE’ I 1. (genus *Adenocaulon*) trailplant, pathfinder 2. (genus *Acourtia*) desertpeony, sacapellote, desert holly, brownfoot, desert paeonia 3. (genus *Leucheria*) vanilla daisy
- ŤBL**- ‘MUTISIOIDEAE’ III 1. (genus *Trixis*) threefold 2. (genus *Perezia*) perezia 3. (Mutisioideae other than named genera; numerous genera) other mutisioid plant
- ŤBR**- ‘GOCHNATIEAE & HECASTOCLEIDOIDEAE’ 1. (genus *Gochnatia*) shrubby bullseye 2. (Gochnatieae other than Stem 1; several genera) other gochnatiid plant 3. (Hecastocleidoideae; genus *Hecastocleis*) prickleleaf
- ŤBŘ**- ‘CORYMBIOIDEAE & OTHER ASTERACEAE’ 1. (Corymbioideae; genus *Corymbium*) plampers 2. (Famatinanthoideae, Stifftieae, Barnadesieae, Wunderlichioideae, Pertyeae, Gymnarrhenioideae; several genera) other mutisioid plant 3. [stem unassigned]

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- LCPW**- ‘CAMPANULOIDEAE’ I 1. (genus *Campanula*) bellflower 2. (genus *Canarina*) Canary Island bellflower 3. (genus *Adenophora*) ladybell
- LCPY**- ‘CAMPANULOIDEAE’ II 1. (genus *Asyneuma*) harebell 2. (genus *Edraianthus*) rockbell, dwarf harebell 3. (genus *Githopsis*) bluecup
- LCPL**- ‘CAMPANULOIDEAE’ III 1. (genus *Heterocodon*) western pearlflower / rareflower heterocodon 2. (genus *Jasione*) sheep’s-bit / blue bonnet / blue button / blue daisy / iron flower 3. (genus *Triodanis*) Venus’ looking-glass
- LCPR**- ‘CAMPANULOIDEAE’ IV 1. (genus *Legousia*) looking glass 2. (genus *Phyteuma*) rampion 3. (genus *Physoplexis*) tufted horned rampion
- LCPŘ**- ‘CAMPANULOIDEAE’ V 1. (genus *Trachelium*) throatwort 2. (genus *Wahlenbergia*) small bellflower, flat bluebell, Cape bluebell, tufted bluebell, Roxburgh bellflower / dwarf cabbage tree, rock bluebell, fairy bluebell, river bluebell, Australian bluebell, royal bluebell, annual bluebell, austral bluebell, granite bluebell 3. (genus *Hanabusaya*) diamond bluebell
- LCPF**- ‘CAMPANULOIDEAE’ VI 1. (genus *Codonopsis*) lance asiabell, poor man’s ginseng 2. (Campanuloideae other than named genera; numerous genera) other campanuloid plant 3. [stem unassigned]
- LCPT**- ‘LOBELIOIDEAE’ I 1. (genus *Lobelia*) lobelia, cardinal flower, Indian tobacco, wild tobacco, pratia 2. (genera *Brighamia*, *Clermontia*, *Cyanea*, *Delissea*, *Trematolobelia*) Hawaiian lobelioid 3. (genus *Downingia*) calicoflower
- LCPÇ**- ‘LOBELIOIDEAE’ II 1. (genus *Hippobroma*) Star of Bethlehem, madamfate 2. (genus *Hwellia*) water howellia 3. (genus *Isotoma*) isotome, blue star creeper, Woodbridge poison
- LCPL**- ‘LOBELIOIDEAE’ III 1. (genus *Legenere*) false Venus’ looking-glass 2. (genus *Porterella*) fleshy porterella 3. (genus *Pratia*) poison pratia, white root
- LCPH**- ‘LOBELIOIDEAE’ IV 1. (genus *Trimeris*) St. Helena lobelia / milkwood 2. (Lobelioideae other than named genera; numerous genera) other lobelioid plant 3. [stem unassigned]
- LCPHW**- ‘CYPHIOIDEAE’ 1. (genus *Nemacladus*) threadplant, nemacladus 2. (Cyphioideae other than Stem 1; several genera) other cyphiod plant 3. [stem unassigned]

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- LČPW**- ‘ALSEUOSMIACEAE’ 1. (genus *Wittsteinia*) baw baw berry 2. (Alseuosmiaceae other than Stem 1; several genera) other alseuosmiacean plant 3. [stem unassigned]
- LČPY**- ‘ARGOPHYLLACEAE’ 1. (genus *Argophyllum*) silver leaf 2. (genus *Corokia*) corokia 3. [stem unassigned]
- LČPL**- ‘CALYCERACEAE’ 1. (genus *Nastanthus*) false-plantain, nastanthus 2. (Calyceraceae other than Stem 1; several genera) other calyceracean plant
- LČPR**- ‘GOODENIACEAE’ I 1. (genus *Goodenia*) goodenia, native primrose 2. (genus *Brunonia*) blue pincushion / native cornflower 3. (genus *Dampiera*) dampiera
- LČPŘ**- ‘GOODENIACEAE’ II 1. (genus *Lechenaultia*) lechenaultia 2. (genus *Scaevola*) scaevola, fan-flower, half-flower, naupaka 3. (genus *Selliera*) swampweed / bonking grass
- LČPF**- ‘GOODENIACEAE’ III 1. (genus *Velleia*) pee-the-bed, velleia 2. (Goodeniaceae other than named genera; several genera) other goodeniacean plant 3. [stem unassigned]
- LČPT**- ‘MENYANTHACEAE’ I 1. (genus *Menyanthes*) buckbean / bogbean 2. (genus *Liparophyllum*) marshwort 3. (genus *Nymphoides*) floatingheart, banana lily, water snowflake, fringed water lily, marshwort
- LČPÇ**- ‘MENYANTHACEAE’ II 1. (genus *Nephrophyllidium*) deer cabbage 2. (Menyanthaceae other than named genera) other menyanthacean plant 3. [stem unassigned]
- LČPL**- ‘ROUSSEACEAE’ 1. (genus *Cuttsia*) silver-leaved cuttsia / native elderberry / honey bush 2. (genus *Carpodetus*) marbleleaf / bucket-of-water -tree 3. (Rousseaceae other than Stems 1 and 2; several genera) other rousseacean plant
- LČPH**- ‘STYLIDIACEAE’ 1. (genus *Stylidium*) triggerplant 2. (genus *Forstera*) forstera 3. (genus *Levenhookia*) stylewort

-LČPHW- ‘OTHER STYLIDIACEAE & OTHER ASTERALES FAMILIES’ 1. (genera *Phyllachne*, *Donatia*) cushionplant 2. Stylidiaceae other than named genera) other stylidiacean plant 3. (Pentaphragmataceae, Phellinaceae; several genera) other asterales plant

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-RZŇW- ‘OTHER CAMPANULID’ 1. (Paracryphiaceae, three genera) possumwood tree, paracryphiaceous plant 2. (Bruniaceae; several genera) brunia, button bush, redlegs 3. (Columelliaceae; genera *Collumelia*, *Desfontainia*) columelliaceous plant

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Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Lamiales

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-FŠK- ‘MENTHA’ I 1. (*Mentha spicata*) spearmint / common mint / garden mint / lamb mint 2. (*M. requienii*) Corsican mint 3. (*M. longifolia*) horse mint

-FŠKW- ‘MENTHA’ II 1. (*M. aquatica*) water mint / marsh mint 2. (*M. arvensis*) corn mint / field mint / banana mint 3. (*M. canadensis*) Canada mint, American wild mint

-FŠKY- ‘MENTHA’ III 1. (*M. laxiflora*) forest mint 2. (*M. satureioides*) creeping mint / native pennyroyal 3. (*M. suaveolens*) apple mint, pineapple mint

-FŠKL- ‘MENTHA’ IV (hybrids) 1. (*M. piperita*) peppermint 2. (*M. gracilis*) gingermint / redmint / Scotchmint / Scotch spearmint 3. (*M. villosa*) Cuban mint / large apple mint / foxtail mint / hairy mint / woolly mint / mojito mint

-FŠKR- ‘MENTHA’ V 1. (*M. laxiflora*) forest mint 2. (*M. satureioides*) creeping mint / native pennyroyal 3. (*M. suaveolens*) apple mint

-FŠKŘ- ‘MENTHA’ VI 1. (*M. pulegium*) pennyroyal / pennyrile / squaw mint / mosquito lant / pudding grass 2. (*M. australis*, *M. diemenica*) Australian mint / river mint / native mint / native peppermint, slender mint 3. (other *Mentha* species and hybrids) other mint plant

-FŠKF- ‘MENTHEAE’ I 1. (genus *Monarda*) beebalm, bergamot, Oswego tea, fragrantbalm, horse-mint, monarda 2. (genus *Monardella*) wildmint, coyote mint, monardella, mountain pennyroyal 3. (genus *Pycnanthemum*) mountainmint, koellia

-FŠKŤ- ‘MENTHEAE’ II 1. (genus *Poliomintha*) rosemary mint 2. (genus *Pogogyne*) mesa mint 3. (genus *Piloblephis*) wild pennyroyal

-FŠKÇ- ‘MENTHEAE’ III 1. (genus *Stachydeoma*) mock pennyroyal 2. (genus *Hedeoma*) false pennyroyal 3. (genus *Dicerandra*) scrub mint, coastal plain mint, rose balm, Titusville mint, Radford’s balm

-FŠKV- ‘MENTHEAE’ IV 1. (genus *Conradina*) false rosemary, short-leaf rosemary 2. (genus *Blephilia*) pagoda plant, wood mint 3. (genus *Acanthomintha*) thornmint

-FŠKM- ‘MENTHEAE’ V 1. (genus *Hyssopus*) hyssop 2. (genus *Agastache*) giant hyssop, blue giant hyssop, anise hyssop, hummingbird mint 3. (genus *Dracocephalum*) dragonhead, dragonhead mint

-FŠKN- ‘MENTHEAE’ VI 1. (genus *Nepeta*) catnip, catmint 2. (genus *Cedronella*) Canary balm / Balm of Gilead 3. (genus *Lallemantia*) dragon’s head

-FŠKH- ‘MENTHEAE’ VII 1. (genus *Calamintha*) calamint 2. (genus *Prunella*) self-heal, heal-all, allheal 3. (genus *Horminum*) dragonmouth, Pyrenean dead-nettle

-FŠKHW- ‘MENTHEAE’ VIII 1. (genus *Melissa*) lemon balm / common balm / balm mint 2. (genus *Lepechinia*) pitcher sage, woodbalm 3. (genus *Rhododon*) sandmint

-FŠGW- ‘MENTHEAE’ IX 1. (genus *Lycopus*) water-horehound, gypsywort, bugleweed 2. (genus *Acinos*) rock thyme, basil thyme / spring savory 3. (genus *Clinopodium*) lesser calamint, Ozark calamint, Georgia calamint, Florida calamint, limestone calamint, wild basil, serpentine savory, monkeyflower savory, Browne’s savory, yerba buena

-FŠGY- ‘MENTHEAE’ X 1. (genus *Meehania*) Meehan’s mint / creeping mint 2. (genus *Glechoma*) ground-ivy / creeping charlie 3. (Mentheae other than named genera) other menthid plant

- FŠP-** ‘THYMUS’ I 1. (*Thymus vulgaris*) [common] thyme 2. (*T. pulegiodes*) lemon thyme / broad-leaved thyme 3. (*T. citriodorus*) citrus thyme
- FŠPW-** ‘THYMUS’ II 1. (*T. herba-barona*) caraway thyme 2. (*T. serpyllum*) wild thyme / creeping thyme / elfin thyme / Breckland thyme 3. (*T. praecox*) mother of thyme
- FŠPY-** ‘THYMUS’ III 1. (*T. pseudolanuginosus*) woolly thyme 2. (*T. capitatus*) conehead thyme / Persian-hyssop / Spanish oregano 3. (other *Thymus* species) other thyme plant
- FŠPL-** ‘ORIGANUM’ 1. (*Origanum vulgare*) oregano plant 2. (*O. majorana*) marjoram plant 3. (other *Origanum* species) other oregano or marjoram plant
- FŠPR-** ‘SATUREJA’ 1. (*Satureja hortensis*) summer savory 2. (*S. montana*) winter savory / mountain savory 3. (other *Satureja* species) other savory plant
- FŠPŘ-** ‘SALVIA’ 1. (*Salvia officinalis*) sage 2. (*S. rosmarinus*) rosemary 3. (other *Salvia* species) other sage plant
- FŠPF-** ‘OCIMEAE’ I 1. (genus *Ocimum*) basil 2. (genus *Platostoma*, a.k.a. *Mesona*) xiancao / cincau 3. (genus *Condea*) John Charles, desert lavender,
- FŠPT-** ‘OCIMEAE’ II 1. (genus *Lavandula*) lavender 2. (genus *Hyptis*) bushmint, wild hops / false ironwort, Brazilian mint, bayamon 3. (genus *Plectranthus*, a.k.a. *Coleus*) spurflower, lobster bush / fly bush / mosquito bush, cockspur, coleus, scaredy cat plant, country potato / Chinese potato, coleus, Swedish ivy / Swedish begonia, Livingstone potato, Ethiopian potato
- FŠPČ-** ‘LAMIACEAE’ I 1. (genus *Lamia*) dead-nettles 2. (genus *Sideritis*) ironwort / mountain tea / shepherd’s tea 3. (genus *Phlomis*) lampwick plant / Jerusalem sage
- FŠPS-** ‘LAMIACEAE’ II 1. (genus *Holmskioldia*) Chinese hat plant / cup-and-saucer plant / mandarin’s hat 2. (genus *Scutellaria*) skullcaps
- FŠPŠ-** ‘LAMIACEAE’ III 1. (genus *Collinsonia*) richweed, stoneroot / whorled horse-balm 2. (genus *Elsholtzia*) Vietnamese balm 3. (genus *Perilla*) perilla, Japanese basil
- FŠPL-** ‘LAMIACEAE’ IV 1. (genus *Ajuga*) bugleweed, bugle, carpet bugle, ground-pine, carpetweed, St. Lawrence plant 2. (genus *Teucrium*) germander 3. (genus *Clerodendrum*) glorybower, bagflower, bleeding-heart
- FŠPFF-** ‘LAMIACEAE’ V 1. (genus *Tectona*) teak 2. (genus *Callicarpa*) beautyberry 3. (genus *Congea*) shower orchid, woolly congee
- FŠPH-** ‘LAMIACEAE’ VI 1. (genus *Vitex*) chaste tree 2. (genus *Petitia*) bastard stopper 3. (genus *Premna*) firestick tree, fragrant premna
- FŠPHW-** ‘LAMIACEAE’ VII 1. (genus *Prostanthera*) mintbush 2. (genus *Westringia*) westringia, white button bush, coastal rosemary 3. (Lamiaceae other than named genera; numerous genera) other lamiaceous plant

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Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Lamiales > Acanthaceae > Acanthoideae

-LZFW- ‘ACANTHOIDEAE’ I 1. (genus *Acanthus*) acanthus, bear’s breech, sea holly / holly mangrove 2. (genus *Aphelandra*) aphelandra, zebra plant 3. (genus *Andrographis*) creat / green cireta / king-of-bitters, false waterwillow

-LZFY- ‘ACANTHOIDEAE’ II 1. (genus *Barleria*) baleria, snake bush, bush violet, porcupine flower 2. (genus *Asystasia*) Chinese violet / coromandel / creeping foxglove, asystasia 3. (genus *Carlowrightia*) wrightwort

-LZFL- ‘ACANTHOIDEAE’ III 1. (genus *Odontonema*) toothedthread 2. (genus *Dyschoriste*) snakeherb 3. (genus *Hygrophila*) swampweed, temple plant / starhorn / giant hygro, glush weed, water wisteria, dwarf hygro, Indian waterweed

-LZFR- ‘ACANTHOIDEAE’ IV 1. (genus *Petalidium*) petal-bush 2. (genus *Ruellia*) ruellia, wild petunia 3. (Acanthoideae other than named genera; numerous genera) other acanthoid plant

-LZFŘ- ‘ACANTHACEAE’ 1. (Avicennioideae; genus *Avicennia*) api api, black mangrove, grey mangrove / white mangrove, Indian mangrove 2. (Thunbergioideae, Nelsonioideae; several genera) other acanthaceous plant

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-LZM- ‘OLEACEAE’ 1. (*Olea europaea*) olive tree 2. (*O. capensis*) ironwood tree 3. (other *Olea* species) other oleid tree

-LZMW- ‘OLEACEAE’ I 1. (genus *Osmanthus*) osmanthus, sweet olive / tea olive / fragrant olive, holly olive, false holly 2. (genus *Phillyrea*) mock privet, green olive tree 3. (genus *Nestegis*) maire

-LZMY- ‘OLEACEAE’ II 1. (genus *Chionanthus*) fringetree 2. (genus *Forsythia*) forsythia, Easter tree, Korean goldenbell tree 3. (genus *Abeliophyllum*) white forsythia, Korean abelialeaf

-LZML- ‘OLEACEAE’ III 1. (genus *Jasminum*) jasmine 2. (genus *Menodora*) menodora, broom twinberry 3. (genus *Cartrema*) American olive / wild olive / devilwood

-LZMR- ‘OLEACEAE’ IV 1. (genus *Ligustrum*) privet 2. (genus *Forestiera*) swampprivet, stretchberry / desert olive / tanglewood / devil’s elbow / spring herald / spring goldenglow / New Mexico privet / Texas forsythia, southern privet 3. [stem unassigned]

-LZMŘ- ‘OLEACEAE’ III 1. (genus *Syringa*) lilac 2. (genus *Fraxinus*) ash tree 3. (Oleaceae other than named genera) other oleaceous tree

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-ŘŽP- ‘LENTIBULARIACEAE’ 1. (genus *Genlisea*) corkscrew plant 2. (genus *Pinguicula*) butterwort 3. (genus *Utricularia*) bladderwort

-ŘŽPW- ‘LINDERNIACEAE’ 1. (genus *Lindernia*) false pimpernel, moist bank pimpernel 2. (genus *Torenia*) wishbone flower, bluewing, ola’a beauty 3. (Linderniaceae other than Stems 1 and 2; several genera) other linderniaceae flower plant

-ŘŽPY- ‘MARTYNIACEAE’ 1. (genus *Martynia*) cat’s claw / tiger’s claw 2. (genus *Proboscidea*) unicorn-plant, devil’s horn / devil’s claw, ram’s horn, doubleclaw 3. (Martyniaceae other than Stems 1 and 2; several genera) other martyniaceae plant, other unicorn plant

-ŘŽPL- ‘PEDALIACEAE’ 1. (genus *Sesamum*) sesame, benniseed 2. (genus *Harpagophytum*) devil’s claw / grapple plant / wood spider 3. (Pedaliaceae other than Stems 1 and 2; several genera) other pelaliaceous plant

-ŘŽPR- ‘PHRYMACEAE’ 1. (genus *Phryma*) lopseed 2. (genus *Glossostigma*) mudmat 3. (other Phymaceae; genera *Diplacus*, *Eythranthe*, *Mimulus*, *Thrydia*, five others) monkey-flower, musk flower, blood-drop-emlet

-ŘŽPŘ- ‘STILBACEAE’ 1. (genus *Nuxia*) forest elder / wild elder / forest nuxia 2. (genus *Bowkeria*) shell-flower 3. (Stilbaceae other than Stems 1 and 2; several genera) other stilbaceous plant

-ŘŽPF- ‘VERBENACEAE’ I 1. (genus *Verbena*) verbena / vervain 2. (genus *Phyla*) fogfruit / frogfruit 3. (genus *Petrea*) sandpaper vine / purple wreath / queen’s wreath

-ŘŽPČ- ‘VERBENACEAE’ II 1. (genus *Citharexylum*) fiddlewood 2. (genus *Aloysia*) beebrush, whitebrush / whitebush, lemon verbena, almond verbena, mintbush lippia 3. (genus *Duranta*) golden dewdrop / pigeon berry / skyflower, espino

-ŘŽPL- ‘VERBENACEAE’ III 1. (genus *Lantana*) lantana, shrubverbena, tickberry, buttonsage, calico bush 2. (genus *Glandularia*) mock vervain, mock verbena 3. (genus *Stachytarpheta*) porterweed, velvetberry, rat tail, snakeweed, bastard vervain / Brazilian tea

-ŘŽPH- ‘VERBENACEAE’ IV 1. (genus *Lippia*) lippia, Mexican oregano / scented matgrass, licorice verbena, koseret 2. (genus *Nashia*) Bahamas berry / pineapple verbena / Moujean tea 3. (Verbenaceae other than named genera; numerous genera) other verbenaceous plant

-ŘŽF- ‘BIGNONIACEAE’ I 1. (genus *Bignonia*) crossvine 2. (genus *Adenoclymma*) garlic vine 3. (genus *Fridericia*) cricket-vine, chica

-ŘŽFW- ‘BIGNONIACEAE’ II 1. (genus *Jacaranda*) jacaranda tree, Brazilian caroba-tree, fern tree / black poui 2. (genus *Eccremocarpus*) Chilean glory-flower / Chilean glory creeper 3. (genus *Saritaeta*) glowvine

- ŘŽFY**- ‘BIGNONIACEAE’ III 1. (genus *Campsis*) trumpet creeper / trumpet vine 2. (genus *Deplanchea*) golden bouquet tree / wallaby wireless tree / yellow pagoda flower tree 3. (genus *Incarvillea*) Chinese trumpet flower
- ŘŽFL**- ‘BIGNONIACEAE’ IV 1. (genus *Pandorea*) wonga vine, bower of beauty, Pandora’s vine, boat vine 2. (genus *Tecoma*) trumpetbush, Cape honeysuckle 3. (genus *Tecomathe*) pink trumpet vine
- ŘŽFR**- ‘BIGNONIACEAE’ V 1. (genus *Millingtonia*) tree jasmine / Indian cork tree 2. (genus *Oroxylum*) midnight horror / broken bones / tree of Damocles / Indian caper / Indian trumpet flower 3. (genus *Catalpa*) catalpa, catawba
- ŘŽFŘ**- ‘BIGNONIACEAE’ VI 1. (genus *Chilopsis*) desert-willow 2. (genus *Tabebuia*) roble, pink manjack, trumpet tree, pink poui, white ipê 3. (genus *Handroanthus*) epay / ipe / poui
- ŘŽVL**- ‘BIGNONIACEAE’ VII 1. (genus *Spathodea*) African tulip tree / fountain tree / Nandi flame 2. (genus *Kigelia*) sausage tree / cucumber tree 3. (genus *Pajanella*) tender wild jack / pajanella
- ŘŽVR**- ‘BIGNONIACEAE’ VIII 1. (genus *Pithecoctenium*) monkey’s comb 2. (Bignoniaceae other than named genera; numerous genera) other trumpet creeper/vine/bush/tree 3. [stem unassigned]
- ŘŽG**- ‘GESNERIACEAE’ I 1. (genus *Fieldia*) fieldia 2. (genus *Sarmienta*) Chilean pitcher flower 3. (genus *Negria*) pumpkin tree
- ŘŽGW**- ‘GESNERIACEAE’ II 1. (genus *Achimenes*) magic flowers, widow’s tears, Cupid’s bower, hot water plant 2. (genus *Episcia*) flame violet 3. (genus *Kohleria*) kohleria, tree gloxinia
- ŘŽGY**- ‘GESNERIACEAE’ III 1. (genus *Haberlea*) Orpheus flower, resurrection plant 2. (Gesneriaceae other than named genera; numerous genera) other gesnerioid or cyrtandroid plant 3. [stem unassigned]
- ŘŽGL**- ‘OROBANCHACEAE’ I 1. (genus *Orobancha*) boomrape 2. (genus *Castilleja*) Indian paintbrush, prairie-fire 3. (genus *Cistanche*) desert-boomrape
- ŘŽGR**- ‘OROBANCHACEAE’ II 1. (genus *Conopholis*) cancer-root, squawroot 2. (genus *Agalinis*) false foxglove 3. (genus *Aureolaria*) yellow false foxglove, oak-leach, fernleaf false foxglove
- ŘŽGŘ**- ‘OROBANCHACEAE’ III 1. (genus *Orthocarpus*) owl’s-clover 2. (genus *Triphysaria*) owl’s-clover, johnny-tuck / butter-and-eggs 3. (genus *Striga*) witchweed
- ŘŽGV**- ‘OROBANCHACEAE’ IV 1. (genus *Melampyrum*) cow wheat 2. (genus *Lathraea*) toothwort 3. (genus *Rhinanthus*) rattle
- ŘŽGD**- ‘OROBANCHACEAE’ V 1. (genus *Bartsia*) bartsia, velvetbells 2. (genus *Euphrasia*) eyebright 3. (genus *Parentucellia*) glandweed
- ŘŽGM**- ‘OROBANCHACEAE’ VI 1. (genus *Boschniakia*) groundcone 2. (genus *Cordylanthus*) bird’s beak 3. (genus *Epifagus*) beech drops
- ŘŽGN**- ‘OROBANCHACEAE’ VII 1. (genus *Schwalbea*) American chaffseed 2. (Orobanchaceae other than named genera; numerous genera) other orobanchaceous plant 3. [stem unassigned]
- ŘŽV**- ‘ANTIRRHINEAE’ I 1. (genera *Antirrhinum*, *Misopates*, *Mohavea*, *Saiocarpus*) dragon flower, snapdragon 2. (genus *Asarina*) trailing snapdragon 3. (genus *Pseudorontium*) dog’s-mouth, Deep Canyon snapdragon
- ŘŽVW**- ‘ANTIRRHINEAE’ II 1. (genus *Linaria*) Eurasian toadflax 2. (genus *Nuttallanthus*) Canada toadflax, Texas toadflax, Apalachicola toadflax 3. (genus *Cymbalaria*) ivy-leaved toadflax / coliseum ivy / mother of thousands / wandering sailor
- ŘŽVY**- ‘ANTIRRHINEAE’ III 1. (genus *Kickxia*) cancerwort, fluellin 2. (genus *Maurandya*) angels trumpet / Mexican viper, climbing snapdragon / roving sailor 3. (Antirrhinines other than named genera) other antirrhinine snapdragon or toadflax-like plant
- ŘŽM**- ‘CHELONEAE’ I 1. (genus *Chelone*) turtlehead 2. (genus *Collinsia*) blue eyed Mary, Chinese houses 3. (genus *Keckiella*) keckiella, beardtongue, penstemon
- ŘŽMW**- ‘CHELONEAE’ II 1. (genus *Penstemon*) beardtongue 2. (genus *Nothocelone*) woodland beardtongue 3. (Cheloneae other than named genera; several genera) other cheloneid plant
- ŘŽMY**- ‘GRATIOLEAE’ I 1. (genera *Gratiola*, *Sophronanthe*) hedge-hyssops 2. (genus *Bacopa*) waterhyssop 3. (genus *Capraria*) goatweed, Tamaulipan tea

- ŘŽML**- ‘GRATIOLEAE’ II 1. (genus *Leucospora*) cliff conobea / cut-leaf conobea / much-cleft conobea / narrow-leaved paleseed / Obi-Wan conobea 2. (genus *Limnophila*) marshweed 3. (genus *Mecardonia*) axilflower
- ŘŽMR**- ‘GRATIOLEAE’ III 1. (genus *Scoparia*) licorice weed, sweet broom, scoparia-weed 2. (genus *Stemodia*) twintip, stemodia, bluerod, pagurda 3. (Gratioleae other than named genera) other gratiolid plant
- ŘŽMR**- ‘VERONICEAE’ I 1. (genus *Veronica*) speedwell, germander speedwell, bird’s eye, gypsyweed, brooklime 2. (genus *Veronicastrum*) Culver’s-root / Culver’s physic / Bowman’s root / black root, veronicastrum 3. (genus *Hebe*) hebe, New Zealand lilac, bushy veronica, mountain-box, koromiko, showy-speedwell
- ŘŽX**- ‘VERONICEAE’ II 1. (genus *Wulfenia*) wulfenia 2. (Veroniceae other than named genera) other veronicid plant 3. [stem unassigned]
- ŘŽXW**- ‘PLANTAGINACEAE’ I 1. (genus *Plantago*) plantain, fleawort 2. (genus *Digitalis*) foxglove 3. (genus *Erinus*) fairy foxglove / alpine balsam / starflower / liver balsam
- ŘŽXL**- ‘PLANTAGINACEAE’ II 1. (genus *Callitriche*) water-starwort 2. (genus *Hippuris*) mare’s tail 3. (genus *Globularia*) globe daisy, globularia, ball flower
- ŘŽXR**- ‘PLANTAGINACEAE’ III 1. (genus *Russelia*) firecracker plant, coralblow, russelia, fountainbush / coral plant 2. (Plantaginaceae other than named genera; numerous genera) other plantaginaceous plant 3. [stem unassigned]
- ŘŽD**- ‘SCROPHULARIACEAE’ I 1. (genus *Scrophularia*) figwort 2. (genus *Verbascum*) mullein 3. (genus *Buddleja*) butterfly bush
- ŘŽDW**- ‘SCROPHULARIACEAE’ II 1. (genus *Limosella*) mudwort 2. (genus *Diascia*) twinspur 3. (genus *Leucophyllum*) barometer bush, Texas ranger / silverleaf
- ŘŽDY**- ‘SCROPHULARIACEAE’ III 1. (genus *Myoporum*) boobialla, bastard ironwood / popwood, native myrtle, sugarwood, myoporum 2. (genus *Eremophila*) emu bush, turkey bush, poverty bush 3. (genus *Bontia*) wild olive, white alling
- ŘŽDL**- ‘SCROPHULARIACEAE’ IV 1. (genus *Phygelius*) Cape fuchsia / Cape figwort 2. (Scrophulariaceae other than named genera; numerous genera) other scrophulariaceous plant, other figwort-like plant 3. [stem unassigned]
- ŘŽŇ**- ‘LAMIALES’ I 1. (Byblidaceae; genus *Byblis*) rainbow plant 2. (Calceolariaceae; three genera) lady’s purse / slipper flower / pocketbook flower / slipperwort 3. (Mazaceae; two genera) mazus, swamp musk, lancea
- ŘŽŇW**- ‘LAMIALES’ II 1. (Paulowniaceae; genus *Paulownia*) dragontree, empress tree, princess tree, foxglove-tree 2. (Tetrachondraceae; genera *Tetrachondra*, *Polypremum*) juniperleaf / rustweed 3. (Carlemanniaceae, Plocospermataceae, Schlegeliaceae, Thomandersaceae; several genera) other lamiales plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Rubiaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Rubiaceae > Rubioideae

-**ŇCB**- ‘RUBIEAE’ I 1. (genus *Rubia*) madder 2. (genus *Kelloggia*) kelloggia 3. (genus *Gallium*) bedstraw

-**ŇCBW**- ‘RUBIEAE’ II 1. (genus *Crucianella*) crosswort 2. (genus *Asperula*) woodruff 3. (Rubieae other than named genera; several genera) other rubiid plant

-**ŇCBY**- ‘PSYCHOTRIEAE’ (genus *Psychotria*) psychotria, wild coffee 2. (genus *Myrmecodia*) ant-house plant 3. (Psychotrieae other than Stems 1 and 2) other psychotriid plant

-**ŇCBL**- ‘SPERMACOCEAE’ I 1. (genus *Spermacoce*) false buttonweed 2. (genus *Diodella*) poorjoe / rough buttonweed 3. (genus *Diodia*) Virginia buttonweed

-**ŇCBR**- ‘SPERMACOCEAE’ I 1. (genus *Ernodea*) beech creeper / cougbush 2. (genus *Hedyotis*) starviolet 3. (genus *Houstonia*) bluet

-**ŇCBŘ**- ‘SPERMACOCEAE’ I 1. (genus *Mitracarpus*) girdlepod 2. (genus *Richardia*) Mexican-clover 3. (Spermacoceae other than named genera; numerous genera) other spermacoceous plant

-**ŇCBV**- ‘ANTHOSPERMEAE’ 1. (genus *Opercularia*) stinkweed, dogweed 2. (genus *Nertera*) coral bead plant / coral moss / English baby tears 3. (Anthospermeae other than Stems 1 and 2; several genera) other anthosperm

-NÇBD- ‘RUBIOIDEAE’ 1. (Mitchelleae; genus *Mitchella*) partridge berry 2. (Paederieae; several genera) sewer vine, snowrose, tree of a thousand stars, Japanese boxthorn 3. (Palicoureeae, Coussareeae, Argostemmateae Coltoecemateae, Craterispermeae, Cyanoneuroneae, Danaideae, Dunnieae, Gaertnereae, Knoxieae, Lasiantheae, Morindeae, Ophiorrhizeae, Perameae, Prismaticerideae, Putorieae, Schizocoleae, Theligoneae, Urophyllae; numerous genera) other rubioid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Rubiaceae > Ixoroideae

-ÇX- ‘COFFEA’ 1. (*Coffea arabica*) arabica coffee plant 2. (*C. canephora*) robusta coffee plant 3. (all other *Coffea* species) other coffea plant

-ÇXW- ‘GARDENIEAE’ 1. (genus *Gardenia*) gardenia, cape jasmine, turpentine tree 2. (genus *Randia*) indigoberry 3. (Gardenieae other than Stems 1 and 2; numerous genera) other gardeniid plant

-ÇXL- ‘CONDAMINEAE’ 1. (genus *Warszewiczia*) chaconia / wild poinsettia / pride of Trinidad and Tobago 2. (Condamineae other than Stem 1; numerous genera) other condamineid plant 3. [stem unassigned]

-ÇXR- ‘IXOROIDEAE’ 1. (Ixoreae; genus *Ixora*) West Indian jasmine, jungle flame, jungle geranium 2. (Posoquerieae; genera *Posoqueria*, *Molopanthera*) needle flower 3. (Aiospermeae, Alberteae, Aleisanthiae, Augusteae, Bertiereae, Coffeae [other than genus *Coffea*], Cordiereae, Cremasporeae, Crossopterygeae, Greeneae, Henriqueae, Jackiae, Mussaendeae, Octotropideae, Pavetteae, Retiniphyllae, Sabiceae, Scyphiphoreae, Sherbournieae, Sipaneeae, Steenisiae, Trailliaedoxae, Vanguerieae; numerous genera) other ixoroid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Rubiaceae > Cinchonoideae

-RGD- ‘CINCHONEAE’ 1. (genus *Cinchona*) quinine, cinchona, Peruvian bark, Jesuit’s bark 2. (genus *Remijia*) remijia 3. (Cinchoneae other than Stem 1 and 2) other cinchonid plant

-RGDW- ‘CHIOCOCCEAE’ I 1. (genus *Chiococca*) milkberry, West Indian snowberry 2. (genus *Catesbaea*) lilythorn 3. (genus *Portlandia*) bell flower

-RGDY- ‘CHIOCOCCEAE’ II 1. (genus *Scolsanthus*) Puerto Rico devilbrush, maricao 2. (Chiococceae other than named genera; several genera) other chiococcid plant 3. [stem unassigned]

-RGDL- ‘GUETTARDEAE’ 1. (genus *Guettarda*) velvetseed 2. (genus *Bobea*) ‘ahakea 3. (Guettardeae other than Stems 1 and 2; several genera) other guettardid plant

-RGDR- ‘NAUCLEEAE’ 1. (genus *Cephalanthus*) buttonbrush 2. (genus *Uncaria*) gambier, cat’s claw 3. (Naucleae other than Stems 1 and 2; numerous genera) other naucleid plant

-RGDR- ‘CINCHONOIDEAE’ 1. (Rondeletiae; numerous genera) rondeletia, Cleveland sunrise, Panama-rose, other rondeletioid plant 2. (Strumpfieae; genus *Strumpfia*) Pride of Big Pine 3. (Hamelieae, Hymenodictyeae, Hillieae, Isertieae; several genera) other cichonoid plant

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-RGDV- ‘RUBIACEAE’ 1. (Coptosapelteae; genera *Coptosapelta*, *Acranthera*) coptosapelta, acranthera, coptosapeltid plant 2. (Luculieae; genus *Luculia*) luculia 3. (Rubiaceae other than named genera) other rubiaceoid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Gentianaceae

-GZVW- ‘GENTIANACEAE’ I 1. (genera *Gentiana*, *Gentianella*, *Gentianopsis*) gentia, agueweed 2. (genus *Frasera*) fraseria, American columbo, yellow gentian, green gentian, elkweed, deer’s ears / monument plant 3. (genus *Eustoma*) lisianthus, prairie gentian

-GZVY- ‘GENTIANACEAE’ II 1. (genus *Centaureum*, *Sebaea*, *Zeltnera*) centaury, sebaea, quinine weed 2. (genus *Cicendia*) slender cidendia / yellow centaury 3. (genus *Exacum*) Persian violet

-GZVL- ‘GENTIANACEAE’ III 1. (genus *Swertia*) felwort, swertia 2. (genus *Sabatia*) slender marsh-pink, rose gentian, prairie sabatia, meadow pink 3. (genus *Obolaria*) Virginia pennywort

-GZVR- ‘GENTIANACEAE’ IV 1. (genus *Voyria*) ghostplant 2. (genus *Bartonia*) screwstem 3. (genus *Fagraea*) kingwood, tembesu, perfume flower tree

-GZVŘ- ‘GENTIANACEAE’ V 1. (genus *Orphium*) sea rose 2. (Gentianaceae other than named genera; numerous genera) other gentianaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Apocynaceae

-RTPW- ‘APOCYNODEAE’ I 1. (genus *Apocynum*) dogbane, Indian hemp 2. (genus *Trachelospermum*) star jasmine, Confederate jasmine 3. (genus *Echites*) devil’s potato

-RTPY- ‘APOCYNODEAE’ II 1. (genus *Nerium*) oleander, nerium 2. (genus *Mandevilla*) rocktrumpet, mandevilla, dipladenia, Brazilian jasmine, Chilean jasmine 3. (genus *Cycladenia*) Sacramento waxydogbane

-RTPŁ- ‘APOCYNODEAE’ III 1. (genus *Angadenia*) pineland golden trumpet 2. (genus *Pentalinon*) hammock viper’s-tail / licebush / wild allamanda / wild wist yellow mandevilla / yellow dipladenia 3. (Apocynodeae other than named genera) other apocynoid plant

-RTPR- ‘ASCLEPIADOIDEAE’ I 1. (genus *Asclepias*) milkweed, spider antelope horns, cow-cabbage, blood flower / cotton bush / Mexican / redhead, milkplant, milkflower, silkweed, solanoa, swallow-wort, butterfly flower, butterfly weed / pleurisy root, green antelopehorn 2. (genus *Cynanchum*) dog-strangling vine, climbing milkweed, caustic bush 3. (genus *Funastrum*) twinevine

-RTPŘ- ‘ASCLEPIADOIDEAE’ II 1. (genus *Matelea*) milkvine 2. (genus *Marsdenia*) jungle netvine, waxflower / Madagascar jasmine / Hawaiian wedding flower / bridal wreath 3. (genus *Hoodia*) Bushman’s hat

-RTPF- ‘ASCLEPIADOIDEAE’ III 1. (genus *Orbea*) star flower 2. (Stapeliads; numerous genera) stapeliad 3. (Asclepiadoideae other than named genera; numerous genera) other asclepiadoid plant, other milkweed-like plant

-RTPŤ- ‘PERIPLOCOIDEAE’ I 1. (genus *Periploca*) silkvine 2. (genus *Petopentia*) propeller vine 3. (genus *Cryptolepis*) milk rope

-RTPÇ- ‘PERIPLOCOIDEAE’ II 1. (genus *Hemidesmus*) Indian sarsaparilla 2. (genus *Decalepis*) swallowroot 3. (Periplocoideae other than named genera; numerous genera) other periplocoid plant

-RTPH- ‘RAUVOLFIOIDEAE’ I 1. (genera *Catharanthus*, *Vinca*) periwinkle 2. (genus *Rauvolfia*) devil pepper 3. (genus *Ochrosia*) yellowwood, bloodhorn / kopsia, ochrosia

-RTPV- ‘RAUVOLFIOIDEAE’ II 1. (genus *Vallesia*) pearl bery / tearshrub, vallesia 2. (genus *Haplophyton*) cockroach plant 3. (genus *Aspidosperma*) wheel tree, quebracho

-RTPS- ‘RAUVOLFIOIDEAE’ III 1. (genus *Alyxia*) chainfruit, sea box / dysentery bush, alyxia 2. (genus *Plumeria*) plumeria, frangipani, Singapore graveyard flower 3. (genus *Pteralyxia*) pteralyxia

-RTPŠ- ‘RAUVOLFIOIDEAE’ IV 1. (genus *Cerbera*) cassowary plum / grey milkwood, sea mango, suicide plant 2. (genus *Carissa*) Bengal currant / Christ’s thorn, carandas plum, Natal plum, num-num, conkerberry / bush plum 3. (genus *Hancornia*) mangabeira / mangaba plant

-RTPŁ- ‘RAUVOLFIOIDEAE’ V 1. (genus *Allamanda*) allamanda, trumpetvine, golden-trumpet 2. (genus *Melodinus*) melodinus 3. (Rauvolfioideae other than named genera; numerous genera) other rauvolfioid plant

-RTPHW- ‘SECAMONOIDEAE’ 1. (genus *Secamone*) secamone, cork vine / corky milkvine 2. (Secamonoideae other than Stem 1; several genera) other secamonid plant 3. [stem unassigned]

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-LZN- ‘GELSEMIACEAE’ 1. (genus *Gelsemium*) heartbreak grass, swamp jessamine / Rankin’s trumpetflower, yellow jessamine / Carolina jessamine / evening trumpetflower 2. (genera *Mostuea* and *Pteleocarpa*) other gelsemiid plant 3. [stem unassigned]

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-LZNW- ‘LOGANIACEAE’ I 1. (genus *Logania*) logania 2. (genus *Labordia*) labordia 3. (genus *Mitreola*) hornpod

-LZNY- ‘LOGANIACEAE’ II 1. (genus *Strychnos*) strychnine tree / nux vomica / poison nut / quaker buttons, clearing-nut tree, threaded boxwood, black monkey orange 2. (genus *Spigelia*) pinkroot, Indian pink 3. (Loganiaceae other than named genera; several genera) other loganiaceous tree

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Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Boraginales > Boraginaceae

-FSTW- ‘BORAGINOIDEAE’ I 1. (genus *Borago*) borage 2. (genus *Pulmonaria*) lungwort 3. (genus *Symphytum*) comfrey

-FSTY- ‘BORAGINOIDEAE’ II 1. (genus *Echium*) viper’s bugloss, Salvation Jane, Lady Campbell weed / Paterson’s curse, echium 2. (genus *Brunnera*) Siberian bugloss 3. [stem unassigned]

-FSTL- ‘BORAGINOIDEAE’ III 1. (genus *Anchusa*) bugloss / true alkanet / corn bugloss, Cape bugloss / Cape forget-me-not 2. (genus *Alkanna*) alkanet / dyer’s alkanet / dyer’s bugloss / orchanet / Spanish bugloss / Languedoc bugloss 3. (genus *Pentaglottis*) green alkanet, evergreen bugloss

-FSTR- ‘BORAGINOIDEAE’ IV 1. (genus *Nonea*) monkwort 2. (genus *Asperugo*) madwort 3. (genus *Cerinthe*) honeywort

-FSTR- ‘BORAGINOIDEAE’ V 1. (genus *Buglossoides*) gromwell, bastard alkanet 2. (genus *Lithodora*) purple gromwell, olive-leaved gromwell 3. (genus *Lithosperma*) gromwell, marbleseed, stoneseed, puccoon, Indian-paint, whiteseed

-FSTF- ‘BORAGINOIDEAE’ VI 1. (genus *Myosotis*) forget-me-not, scorpion grass 2. (genus *Eritrichium*) alpine forget-me-not 3. (genus *Myosotidium*) giant forget-me-not, chatham Islands forget-me-not

-FSTV- ‘BORAGINOIDEAE’ VII 1. (genus *Amsinckia*) fiddleneck 2. (genus *Carmona*) scorpionbush 3. (genus *Mertensia*) oysterplant, bluebells, mountain bell

-FSTÇ- ‘BORAGINOIDEAE’ VIII 1. (genus *Plagiobothrys*) popcorn flowers 2. (genus *Cryptantha*) cat’s eyes / popcorn flowers 3. (genus *Amebia*) Prophet’s flower

-FSTL- ‘BORAGINOIDEAE’ IX 1. (genus *Cynoglossum*) hounds’ tongue, wild comfrey 2. (genus *Hackelia*) stickseed, sticktight, beggar’s lice 3. (genus *Lappula*) stickseed, bluebur / bristly sheepbur / bur forget-me-not

-FSTH- ‘BORAGINOIDEAE’ X 1. (genus *Heliotropium*) heliotrope 2. (genus *Omphalodes*) navelwort 3. (genus *Pectocarya*) combseed

-FSTHW- ‘BORAGINOIDEAE’ XI 1. (genus *Cordia*) geigertree 2. (genus *Trichodesma*) camel bush / cattle bush 3. (Boraginoideae other than named genera; numerous genera) other boraginoid plant

-FSMW- ‘HYDROPHYLLOIDEAE’ I 1. (genus *Hydrophyllum*) waterleaf 2. (genus *Nemophila*) baby-blue-eyes, five-spot nemophila 3. (genus *Nama*) fiddleleaf

-FSMY- ‘HYDROPHYLLOIDEAE’ II 1. (genus *Eriodictyon*) yerba santa, Indian Knob mountainbalm, poodle-dog bush 2. (genus *Ellisia*) waterpod / false baby-blue-eyes / Aunt Lucy 3. (genus *Phacelia*) phacelia, scorpionweed, Whitlavia / wild Canterbury bells, Miami mist, lavender windows, wild heliotrope, California bluebell / desertbells

-FSML- ‘HYDROPHYLLOIDEAE’ III 1. (genus *Emmenanthe*) whispering bells 2. (genus *Romanzoffia*) mistmaid / mistmaiden 3. (genus *Pholistoma*) fiesta flower

-FSMR- ‘HYDROPHYLLOIDEAE’ IV 1. (genus *Draperia*) violet draperia 2. (genus *Eucrypta*) hideseed 3. (genus *Tricardia*) threeheart

-FSMR- ‘HYDROPHYLLOIDEAE’ V 1. (genus *Hesperochiron*) hesperochiron 2. (Hydrophyllodeae other than named genera) other hydrophylloid plant 3. [stem unassigned]

- FSNW-** ‘EHRETIOIDEAE’ I 1. (genus *Ehretia*) peace bush / native willow / peachwood, anacua, koda 2. (genus *Bourreria*) strongbark / strongback 3. (genus *Halgania*) halgania, blue bush
- FSNY-** ‘EHRETIOIDEAE’ II 1. (genus *Rochefortia*) greenheart ebony 2. (genus *Tiquilia*) crinklemat, Peruvian sand flower 3. (Ehretioideae other than named genera; several genera) other ehretioid plant
- FSÑW-** ‘BORAGINACEAE’ 1. (Lennooideae; three genera) desert Christmas tree / scaly-stemmed sandplant, sandfood 2. (Cordioidiae; three genera) manjack, cordioid plant 3. (Boraginaceae other than named genera) other boraginaceous plant

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Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae

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-ZP- ‘SOLANUM’ I 1. (*S. tuberosum*) potato plant 2. (*S. lycopersicum*) tomato plant 3. (*S. melongena*) eggplant plant / aubergine

-ZPL- ‘SOLANUM’ II 1. (tomato-producing *Solanum* species other than *S. lycopersicum*; *S. pimpinellifolium*, *S. peruvianum*, *S. cheesmanii*, *S. galapagense*, *S. chilense*, etc.) wild tomato, currant tomato 2. (*S. aethiopicum*) Ethiopian eggplant / gilo 3. (*S. quitoense*) naranjilla / lulo

-ZPR- ‘SOLANUM’ III 1. (*S. torvum*) Turkey berry / wild eggplant / pea eggplant / shoo-shoo bush / prickly nightshade / susumber 2. (*S. muricatum*) pepino melon / melon pear 3. (*S. betaceum*) tamarillo / tree tomato / blood fruit

-ZPŘ- ‘SOLANUM’ IV 1. (*S. lycocarpum*) wolf apple 2. (*S. sessiliflorum*) cocona 3. (edible Australian wild tomato species, including *S. aviculare*, *S. centrale*, *S. chippendalei*, *S. diversiflorum*, *S. ellipticum*, *S. laciniatum*, *S. orbiculatum*, *S. phlomoides*) kangaroo apple, desert raisin / bush raisin / bush saltana, bush tomato, potato bush, round-leaved solanum, wild tomato

-ZPF- ‘SOLANUM’ V 1. (*S. retroflexum*) wonderberry / sunberry 2. (*S. scabrum*) garden huckleberry 3. (*S. ferox*, a.k.a. *S. lasiocarpum*) hiary-fruited eggplant / Indian nightshade

-ZPT- ‘SOLANUM’ VI 1. (*S. sisymbriifolium*) vila-vila / sticky nightshade / red buffalo-bur / fire-and-ice plant, litchi tomato 2. (*S. mauritanium*) earleaf nightshade / flannel weed / bugweed / tobacco weed / kerosene plant / wild tobacco 3. (*S. dulcamara*) bittersweet / bittersweet nightshade / blue bindweed / Amara Dulcis / climbing nightshade / fellenwort / felonwood / poisonberry / poisonflower / scarlet berry / trailing bittersweet / violet bloom / woody nightshade

-ZPL- ‘SOLANUM’ VII 1. (*S. mammosum*) nipplefruit / cow’s udder / fox head / apple of Sodom 2. (ornamental *Solanum* species, e.g., *S. capsicastrum*, *S. crispum*, *S. laxum*, *S. pseudocapsicum*, *S. rantonnetii*, *S. seaforthianum*, *S. wendlandii*) winter cherry, Jerusalem cherry, Chilean potato tree, potato vine, Christmas cherry, blue potato bush, Italian jasmine / St. Vincent lilac, paradise flower 3. (*Solanum* species not previously named) nightshade, soda apple, popolo, horsenettle, devil’s apple, porcupine tomato, devil’s-fig, wolfpeach, wild potato

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae > Solanoideae > Capsiceae

-ZPW- ‘CAPSICUM ANUUM (BELL/SWEET PEPPER)’ 1. bell pepper plant 2. sweet/Italian pepper, pepperoncino plant 3. paprika plant

-ZPY- ‘CAPSICUM ANUUM (HOT PEPPER)’ 1. serrano pepper plant 2. cayenne pepper plant 3. jalapeño pepper plant

-ZPH- ‘OTHER CULTIVATED CAPSICUM SPECIES’ 1. (*C. chinense*) habanero pepper plant [includes 7-pot, ají dulce, datil, Scotch bonnet, Trinidad scorpion varieties] 2. (*C. baccatum*) ají chili pepper plant 3. (other domesticated/cultivated *Capsicum* species; *C. frutescens*, *C. pubescens*) tabasco chili pepper / piri piri / Hawaiian pepper / xiaomila pepper, manzano pepper / rocoto pepper / locoto pepper

-ZPHW- ‘CAPSICEAE’ 1. (non-cultivated *Capsicum* species; numerous species) non-domesticated/ non-cultivated capsicum species 2. (genus *Lycianthes*) blue potato bush / Paraguay nightshade, various lycianthes nightshades 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae > Solanoideae > Physaleae

-**ZPÇ**- ‘PHYSALIS’ 1. (*P. philadelphica* a.k.a. *P. ixocarpa*) tomatillo / Mexican husk tomato plant 2. (*P. alkekengi*) Chinese/Japanese lantern, winter-cherry plant 3. (other *Physalis* species) groundcherry, strawberry-tomato plant, Inca berry plant, golden strawberry plant

-**ZPS**- ‘PHYSALEAE’ I 1. (genus *Quincula*) lobed groundcherry, purple groundcherry 2. (genus *Chamaesaracha*) five eyes, chamaesaracha 3. (genus *Mellissia*) Saint Helena boxwood

-**ZPŠ**- ‘PHYSALEAE’ II 1. (genus *Nothocestrum*) ‘aiea 2. (genus *Withania*) Indian rennet / vegetable rennet, Indian ginseng / winter cherry 3. (Physaleae other than named genera; numerous genera) other physalid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae > Solanoideae remaining families

-**ŇTW**- ‘HYOSCYAMEAE’ 1. (genus *Hyoscyamus*) henbane 2. (genus *Atropa*) belladonna, deadly nightshade 3. (Hyoscyameae other than Stems 1 and 2; several genera) scopolia, other hyoscyamid plant

-**ŇTY**- ‘LYCIEAE & MANDRAGOREAE’ 1. (genus *Lycium*) box-thorn, desert-thorn, honey thorn, water-jacket, matrimony-vine / goji / goji-berry / Duke of Argyll’s teaplane, wolfberry, Christmas berry, peachthorn, squawthorn 2. (other Lycieae; genus *Grabowskia*) grabowskia, other lyciid plant 3. (Mandragoreae; genus *Mandragora*) mandrake

-**ŇTL**- ‘DATUREAE’ 1. (genus *Datura*) devil’s trumpet 2. (genus *Brugmansia*) angel’s trumpet 3. (other Datureae; genus *Trompettia*) trompettia, other daturid plant

-**ŇTR**- ‘SOLANDREAE’ 1. (genus *Solandra*) chalice vine, Hawaiian lily 2. (genus *Juanulloa*) goldfinger 3. (Solandreae other than Stems 1 and 2; several genera) other solandrian plant

-**ŇTR**- ‘OTHER SOLANOIDEAE’ 1. (Nicandreae; genus *Nicandra*) apple-of-Peru / shoo-fly plant 2. (Nolaneae; genus *Nolana*) Chilean bell flower 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae > Cestroideae

-**ŇTM**- ‘CESTROIDEAE’ I 1. (genus *Cestrum*) cestrum, jessamine, lady of the night, green poisonberry 2. (genus *Vestia*) Chilean box thorn 3. (genus *Salpiglossis*) painted tongue / scalloped tube tongue / velvet trumpet flower

-**ŇTN**- ‘CESTROIDEAE’ II 1. (genus *Browallia*) bush-violet, amethyst flower 2. (genus *Streptosolen*) marmalade bush / firebush 3. (Cestroideae other than named genera; several genera) other cestroid flower

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae > Petunioideae

-**ČVW**- ‘PETUNIOIDEAE’ I 1. (genus *Petunia*) petunia 2. (genus *Brunfelsia*) raintree, brunfelsia, lady-of-the-night 3. (genus *Fabiana*) false heath

-**ČVY**- ‘PETUNIOIDEAE’ II 1. (genus *Nierembergia*) cupflower, whitecup, nierembergia 2. (genus *Plowmania*) Chiapas red trumpet 3. (Petunioideae other than named genera; several genera) other petunioid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae remaining families

-**ČVL**- ‘NICOTIANOIDEAE’ I 1. (genus *Nicotiana*) tobacco plant 2. (genus *Anthocercis*) tailflower 3. (genus *Duboisia*) corkwood tree

-**ČVR**- ‘NICOTIANOIDEAE’ II 1. (genus *Symonanthus*) symonanthus, Bailey’s symonanthus 2. (Nicotianoideae other than named genera; several genera) other nicotianoid plant 3. [stem unassigned]

-ČVŘ- ‘OTHER SOLANACEAE’ 1. (Schizanthaceae; genus *Schizanthus*) butterfly flower / fringe flower / poor-man’s orchid 2. (Schwenckioideae, Goetzeoideae; several genera) other solanaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Convolvulaceae

-PSVW- ‘CONVOLVULACEAE’ I 1. (genus *Convolvulus*) morning glory, bindweed, convolvulus, rhodium / rhodium-wood, scammony, silverbush 2. (genus *Calystegia*) false bindweed, heartbind / hedgebell / hedge bindweed / large bindweed, plateau morning glory, beach morning glory 3. (genus *Evolvulus*) dwarf morning glory, Australian baby blue / sapphire blue, evovulus

-PSVY- ‘CONVOLVULACEAE’ II 1. (genus *Bonamia*) lady’s nightcap 2. (genus *Cressa*) alkaliweed 3. (genus *Stylisma*) dawnflower

-PSVL- ‘CONVOLVULACEAE’ III 1. (*Ipomoea batatas*) sweet potato 2. (genus *Ipomoea* other than *I. batatas*) morning glory, moonflower, cypress vine / cardinal creeper / cardinal vine / star glory, man-of-the-earth / manroot / wild potato vine, moon vine, water spinach, railway creeper, spiderleaf, lilacbell, firevine / Spanish flag, whitestar / whitestar potato / pitted morning-glory 3. (genus *Argyreia*) Hawaiian baby woodrose

-PSVR- ‘CONVOLVULACEAE’ IV 1. (genus *Dichondra*) ponysfoot, dichondra 2. (genus *Jacquemontia*) clustervine, jacquemontia 3. (genus *Cuscuta*) dodder

-PSVŘ- ‘CONVOLVULACEAE’ V 1. (genus *Merremia*) woodrose, rock rosemary, Spanish arborvine, hogvine 2. (genus *Operculina*) turpeth / St. Thomas lidpod 3. (Convolvulaceae other than named genera; numerous genera) other convolvulaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales remaining families

-ŇŤŇ- ‘OTHER SOLONALES FAMILY’ 1. (Hydroleaceae; genus *Hydrolea*) false fiddleleaf 2. (Montiniaceae; genera *Montinia*, *Grevea*, *Kaliphora*) montiniid plant 3. (Sphenocleaceae; genus *Sphenoclea*) sphenoclea

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids remaining orders: Vahliales, Garryales, Metteniusales, Icaciniales

-ŇŤMW- ‘GARRYALES’ 1. (genus *Garrya*) silk tassel / tassel bush 2. (genus *Acuba*) spotted laurel / Japanese laurel / gold dust plant, acuba 3. (genus *Eucommia*) eucommia

-ŇŤMY- ‘OTHER LAMIID ORDER’ 1. (Icaciniales; several genera) icacinaceous plant, oncotheca plant 2. (Vahliales; genus *Vahlia*) vahlia 3. (Metteniusales; several genera) metteniusaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Ericales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Ericales > Ericaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Ericales > Ericaceae > Vaccinoideae

-ŇĐ- ‘VACCINIUM SHRUB’ I 1. (*V.* subgenus *Vaccinium*) blueberry, sparkleberry 2. (*V.* subgenus *Oxycoccus*) cranberry 3. (*V.* subgenus *Oxycoccus*, section *Myrtillus*) huckleberry, bilberry, whortleberry, grouseberry, blaeberry / fraughan / hurtleberry, Alaska blueberry

-ŇĐR- ‘VACCINIUM SHRUB’ II 1. (*V.* subgenus *Oxycoccus*, section *Vitis-idaea*) partridge berry / cowberry / redberry / lingonberry / foxberry / quailberry / bearberry / beaverberry / cougarberry 2. (*V.* subgenus *Oxycoccus*, section *Polycodium*) deerberry 3. (other *Vaccinium* species) other blueberry or whortleberry

-ŇĐL- ‘GAULTHERIA’ 1. (*Gaultheria procumbens*) eastern teaberry [source of wintergreen flavoring] 2. (*G. shallon*) salal / shallon 3. (other *Gaultheria* species) gaultheria

-ŇĐĐ- ‘VACCINIOIDEAE’ 1. (other Vaccinieae; numerous genera) other vacciniid plant 2. (Oxydendreae; genus *Oxydendrum*) sourwood / sorrel tree 3. (Andromedae, Gaultherieae [other than genus *Gaultheria*], Lyonieae; several genera) other vaccinioid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Ericales > Ericaceae > Ericoideae

-**ÑDM-** ‘RHODODENDRON’ (genus *Rhododendron*) 1. evergreen or vireya rhododendron plant 2. evergreen azalea plant 3. deciduous azalea plant

-**ÑDMW-** ‘ERICOIDEAE’ I 1. (genus *Erica*) heath, heather 2. (genus *Phylloduce*) mountainheath, mountain heather 3. (genus *Ceratiola*) sand heath, sandhill-rosemary, Florida-rosemary

-**ÑDMY-** ‘ERICOIDEAE’ II 1. (genus *Kalmia*) sheep-laurel, lambkill, calf-kill, kill-kid, sandmyrtle, whitewicky, mountain-laurel, bog-laurel / bob kalmia 2. (genus *Daboecia*) St. Dabeoc’s heath 3. (Ericoideae other than named genera; several genera) other ericoid (heath-like) plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Ericales > Ericaceae > Arbutoideae

-**ÑDNW-** ‘ARBUTOIDEAE’ I 1. (genus *Arbutus*) madrone, strawberry tree, cane apple tree 2. (genus *Arctostaphylos*) manzanita 3. (genus *Xylococcus*) mission manzanita

-**ÑDNY-** ‘ARBUTOIDEAE’ II 1. (genus *Ornithostaphylos*) Baja birdbush 2. (genus *Comarostaphylis*) summer holly 3. (genus *Arctous*) bearberry

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Ericales > Ericaceae > Pyroloideae, Monotropeoideae, Cassiopoideae, and Harrimanelloideae

-**ÑDN-** ‘ERICACEAE’ 1. (Pyroloideae; several genera) wintergreen, shinleaf, shineleaf, prince’s pine / pipsissewa, rheumatism root 2. (Monotropeoideae; several genera) monotrope, gnome plant / cone plant, Indian pipe / ghost plant / corpse plant, Dutchman’s pipe / pinesap / yellow bird’s-nest, pygmy pipes, pinefoot, pinedrops / beechdrops / giant bird’s nest, snow plant / snow flower 3. (Cassiopoideae and Harrimanelloideae; genera *Cassiope*, *Harrimanella*) moss bell heather, other ericaceous heather

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Ericales > Actinidiaceae

-**ÑDW-** ‘ACTINIDIACEAE’ 1. (*Actinidia deliciosa*) kiwi vine / Chinese gooseberry 2. (*A. arguta*, *A. kolomikta*, *A. polygama*, *A. chinensis*) kiwi berry / grape kiwi / dessert kiwi / cocktail kiwi vine, golden kiwi vine 3. (other Actinidiaceae; genera *Clematoclethra*, *Saurauia*, plus other *Actinidia* species) actinidia, actinidiaceous plant

-**ÑDV-** ‘CLETHRACEAE & CYRILLACEAE’ 1. (Clethraceae; genera *Clethra*, *Purdiaea*) sweet pepper bush / summersweet, mountain pepper bush, lily of the valley tree, Japanese sweet shrub 2. (Cyrillaceae; genus *Cliftonia*) buck-wheat tree 3. (Cyrillaceae; genus *Cyrilla*) swamp cyrilla / swamp titi / leatherwood / ironwood

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Ericales > Ebenaceae

-**ÑDY-** ‘DIOSPYROS (PERSIMMON)’ I 1. (*D. kaki*) Japanese persimmon tree 2. (*D. lotus*) date-plum tree 3. (*D. virginiana*) American persimmon

-**ÑDÑ-** ‘DIOSPYROS (EBONY WOOD)’ 1. (black-wooded species of *Diospyros*, e.g., *D. ebenum*) ebony tree 2. (other timber species of *Diospyros*, e.g., *D. celebica*, *D. mun*, *D. marmorata*, etc.) calamander wood tree, Makassar ebony tree, marblewood tree 3. (other *Diospyros* species) other ebony/persimmon tree

-**ÑDNW-** ‘EBENACEAE’ 1. (genus *Euclea*) guarri 2. (other Ebenaceae; several genera) other ebenaceous tree/plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Ericales > remaining families

-**CK-** ‘THEACEAE’ I 1. (genus *Camellia*: *C. sinensis*) tea plant 2. (genus *Camellia* other than *C. sinensis*) camellia 3. (genus *Stewartia*) stewartia

-**CKY-** ‘THEACEAE’ II 1. (genus *Franklinia*) Franklin tree 2. (genus *Schima*) needlewood tree 3. (Theaceae other than named genera; several genera) other

- ÑZK-** 'POLEMONIACEAE' 1. (genus *Phlox*) phlox 2. (genus *Linanthus*) linanthus, desert snow, desertbeauty, evening snow, sandblossom, granite prickly-phlox 3. (Polemoniaceae other than *Phlox* and *Linanthus*) Jacob's -ladder, gilyflower, gillia, trumpet flower, woollystars, gymnosteris, Arizona firecracker, ipomopsis, skyrocket, standing cypress, calico
- ÑZKW-** 'PRIMULACEAE' I 1. (genus *Primula*) primrose, cowslip, auricula / bear's ear, oxlip, glory-of-the-marsh, shootingstar / mosquito-bill / sailor caps Samolus) brookweed, water pimpernel, water cabbage, water rose 2. (genus *Ardisia*) ardisia, marlberry, coral bush / coralberry / spiceberry, duck's eye 3. (genus *Anagallis*) pimpernel, weather-glass, shepherd's clock
- ÑZKY-** 'PRIMULACEAE' II 1. (genus *Trientalis*) starflower, chickweed-wintergreen 2. (genus *Androsace*) rock-jasmine, Northern fairy candelabra, androsace 3. (genus *Cyclamen*) sowbread, swinebread
- ÑZKL-** 'PRIMULACEAE' III 1. (genus *Myrsine*) colicwood, red matipo, Cape myrtle / African boxwood 2. (genus *Lysimachia*) loosestrife, swamp candle 3. (Primulaceae other than previously named genera; numerous genera) snowbell, featherfoil, Joewood, other primulaceous plant
- ÑZKR-** 'SAPOTACEAE' I 1. (genus *Manilkara*) bulletwood / balatá / ausubo / massaranduba / cow-tree, chicle, bully tree, nispero, sapotilla, sapota / sapodilla / naseberry, wild dilly 2. (genus *Pouteria*) pouteria, eggfruit, abiu, lúcuma, mamey sapote, canistel, green sapote, shiny-leaved condoo / black plum 3. (genus *Vitellaria*) shea tree
- ÑZKŘ-** 'SAPOTACEAE' II 1. (genus *Synsepalum*) miracle berry / sweet berry plant 2. (genus *Chrysophyllum*) tar apple / star apple / golden leaf tree / milk fruit / cainito, Damson plum / wild star-apple / caimitillo, milkwood 3. (genus *Tieghemella*) makore wood tree
- ÑZKF-** 'SAPOTACEAE' III 1. (genus *Palaquium*) gutta-percha tree 2. (genus *Sideroxylon*) bully tree 3. (Spotaceae other than named genera) other sapotaceous tree/plant
- ÑZKT-** 'SARRACENIACEAE' 1. (genus *Sarracenia*) trumpet pitcher plant 2. (genus *Darlingtonia*) California pitcher plant / cobra lily / cobra plant 3. (genus *Heliamphora*) sun pitcher plant
- ÑZKV-** 'STYRACACEAE' 1. (genus *Halesia*) silverbell / snowdrop tree 2. (genus *Pterostyrax*) epaullete tree 3. (genus *Styrax* and several other genera) storax, snowbell, other styaracaceous plant
- theaceous plant/tree
- ÑZKH-** 'LECYTHIDACEAE' 1. (genus *Bertholletia*) brazil nut tree 2. (genus *Lecythis*) paradise nut tree / monkey pot tree / sapucaia 3. (genus *Barringtonia*) freshwater mangrove, mango-pine, itchytree, powder-puff tree
- ÑZKS-** 'ERICALES' I 1. (Balsaminaceae; genera *Impatiens*, *Hydrocera*) balsam, jewelweed, touch-me-not, parrot flower, Congo cockatoo, impatiens, policeman's helmet, poor man's rhododendron, busy lizzie, patience, snapweed 2. (Diapensiaceae; several genera) wandplant / wandflower / beetleweed, pixiemoss, Oconee bells / acony bell, pincushion plant 3. (Fouquieriaceae; genus *Fouquieria*) ocotillo plant, boojum tree / cirio
- ÑZKŠ-** 'ERICALES' II 1. (Roridulaceae; genus *Roridula*) dewstick / fly bush 2. (Symplocaceae; genus *Symplocos*) sweetleaf, sapphireberry 3. (Tetrameristaceae; three genera) tea mangrove
- ÑZKHW-** 'ERICALES' III 1. (other Lecythidaceae genera) other lecythidaceous tree 2. (Sladeniaceae, Marcgraviaceae, Mitrastemonaceae, Pentaphylacaceae; numerous genera) other ericales plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Cornales

- GZG-** 'HYDRANGEACEAE' I 1. (genus *Hydrangea*) hydrangea / hortensia 2. (genus *Decumaria*) woodvamp 3. (genus *Broussaisia*) kanawao
- GZGW-** 'HYDRANGEACEAE' II 1. (genus *Philadelphus*) mock-orange 2. (genus *Whipplea*) whipplea / modesty 3. (genus *Carpenteria*) tree anemone / bush anemone
- GZGY-** 'HYDRANGEACEAE' III 1. (genus *Fendlerella*) Utah fendlerbush 2. (genus *Deutzia*) deutzia 3. (genus *Kirengeshoma*) yellow waxbell, Korean kirengeshoma

- GZGL-** ‘HYDRANGEACEAE’ IV 1. (genus *Fendlera*) fendlerbush 2. (genus *Jamesia*) jamesia / cliffbush / waxflower 3. (Hydrangeaceae other than named genera; several genera) other hydrangeaceous plant
- GZGR-** ‘CORNACEAE’ 1. (genus *Cornus*, subgenera *Yinquania*, *Kraniopsis*, *Mesomora*) blue- or white-fruited dogwood 2. (genus *Cornus*, all other subgenera) other dogwood tree or shrub 3. (genus *Alangium*) alangium
- GZGR-** ‘LOASACEAE’ I 1. (genus *Mentzelia*) blazingstar, stickleaf, yellowcomet, mentzelia 2. (genus *Petalonyx*) sandpaper plant 3. (genus *Eucnide*) stingbush, rock nettle
- GZGV-** ‘LOASACEAE’ II 1. (genus *Blumenbachia*) electric shock plant 2. (genus *Caiophora*) carnation nettle / ortiga / ortiguilla 3. (Loasaceae other than named genera; several genera) other loasaceous plant
- GZGD-** ‘NYSSACEAE’ 1. (genus *Nyssa*) tupelo tree, black-gum tree 2. (genus *Davidia*) dove-tree / handkerchief tree / ghost tree 3. (genus *Camptotheca*) happy tree / cancer tree / tree of life
- GZGZ-** ‘CORNALES’ 1. (Grubbiaceae; genera *Grubbia*, *Strobilocarpus*) sillyberry 2. (Curtisiaceae; genus *Curtisia*) assegai tree / Cape lancewood 3. (Hydrostachyaceae and Mastixiaceae; genera *Hydrostachys*, *Mastixia*, *Diplopanax*) other cornales plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Caryophyllaceae

- ÑZP-** ‘CARYOPHYLLEAE’ I 1. (genus *Dianthus*) carnation, pink, sweet william 2. (genus *Acanthophyllum*) chickweed baby’s breath 3. (genus *Gypsophila*) baby’s-breath, gypsophila
- ÑZPW-** ‘CARYOPHYLLEAE’ II 1. (genus *Petrorhagia*) tunica, tunic-flower / coat flower, pink 2. (genus *Psammophiliella*) cushion baby’s-breath / low baby’s-breath / annual gypsophila 3. (genus *Saponaria*) soapwort, bouncingbet / sweetie Betty, pygmy pink, tumbling-Ted
- ÑZPY-** ‘CARYOPHYLLEAE’ III 1. (genus *Vaccaria*) cowherb / cowcockle / cow basil / cow soapwort / prairie carnation 2. (Caryophylleae other than named genera; several genera) other caryophyllid plant 3. [stem unassigned]
- ÑZPL-** ‘ALSINEAE’ I 1. (genus *Cerastium*) mouse-ear chickweed, chickweed, snow in summer 2. (genus *Holosteum*) jagged chickweed 3. (genus *Moenchia*) upright chickweed, erect chickweed
- ÑZPR-** ‘ALSINEAE’ II 1. (genus *Stellaria*) starwort, chickweed, stitchwort 2. (genus *Pseudostellaria*) false starwort, tuber starwort, robust starwort, Sierra starwort 3. (Alsineae other than Stems 1 and 2; several genera) other alsinid plant
- ÑZPŘ-** ‘PARONYCHIEAE’ 1. (genus *Paronychia*) nailwort, whitlow-wort, paronychia, chickweed 2. (genus *Herniaria*) rupturewort 3. (Paronychieae other than Stems 1 and 2; several genera) other paronychiid plant
- ÑZPF-** ‘POLYCARPEAE’ I 1. (genus *Achyronychia*) onyxflower / frost-mat 2. (genus *Pollichia*) waxberry / barley sugar bush 3. (genus *Polycarpon*) manyseed
- ÑZPT-** ‘POLYCARPEAE’ II 1. (genus *Scopulophila*) rockwort 2. (genus *Cardionema*) sandcarpet 3. (Polycarpeae other than named genera; several genera) other polycarpeid plant
- ÑZPÇ-** ‘SAGINEAE’ 1. (genera *Colobanthus*, *Sagina*) pearlwort 2. (genus *Minuartia*) sandwort 3. (Sagineae other than Stems 1 and 2; several genera) other saginid plant
- ÑZPL-** ‘SCLERANTHEAE’ I 1. (genus *Schiedea*) schiedea, alsinidendron, Nihoa carnation 2. (genus *Scleranthus*) knawel, cushion-bush, German-knotweed 3. (genus *Geocarpon*, a.k.a. *Mononeuria*) tinytim, earth-fruit
- ÑZPH-** ‘SCLERANTHEAE’ II 1. (genus *Honckenya*) sea sandwort / seaside sandplant / sea chickweed / sea pimpernel / sea-beach sandwort / sea purslane 2. (genus *Alsinidendron*) alsinidendron 3. (Scleranthae other than Stems 1 and 2; several genera) other scleranthis plant

- ÑZF-** ‘SPERGULEAE’ 1. (genus *Spergula*) spurry / spurrey, stickwort 2. (genus *Spergularia*) sea-spurrey / sandspurry 3. (genera *Rhodalsine*, *Sanctambrosia*) other spergulid plant
- ÑZFW-** ‘SILENEAE’ I 1. (genus *Silene*) catchfly, campion, gunpowder plant, silene, fire pink, Indian pink 2. (genus *Lychnis*) catchfly, white cockle, Maltese cross, ragged robin, flower-of-Jove, campion 3. (genus *Agrostemma*) corncockle, corn-pink
- ÑZFY-** ‘SILENEAE’ II 1. (genus *Petrocoptis*) falguera 2. (genus *Eudianthe*) rose catchfly, rose of heaven 3. (Sileneae other than named genera; several genera) other sileneid plant
- ÑZPHW-** ‘CAROPHYLLACEAE’ 1. (genus *Arenaria*) sandwort, golden moss / Irish moss 2. (genus *Corrigiola*) strapwort 3. (Carophyllaceae other than named genera; numerous genera) other carophyllaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Polygonaceae

- RNTW-** ‘POLYGONOIDEAE’ I 1. (genus *Rheum*) rhubarb plant 2. (genus *Fagopyrum*) buckwheat plant 3. (genus *Rumex*) sorrel plant, dock
- RNTY-** ‘POLYGONOIDEAE’ II 1. (genus *Polygonum*) knotweed, knotgrass, bindweed, birdweed / pigweed / lowgrass, wireweed, jointweed, tree hogweed, sandlace 2. (genus *Fallopia*) silver lace vine, russian vine / mile-a-minute vine / fleece vine / fleece flower, black-bindweed, copse bindweed / small-flower knotweed, climbing false buckwheat, Korean knotweed 3. (genus *Bistorta*) bistort, fleece flower, knotweed, mountain fleece
- RNTL-** ‘POLYGONOIDEAE’ III 1. (genus *Muehlenbeckia*) maidenhair vine, lignum, wirevine, wire weed, shrubby tororaro / wiggy-wig bush, muehlenbeckia 2. (genus *Duma*) lignum 3. (genus *Koenigia*) knotweed, wild-rhubarb
- RNTR-** ‘POLYGONOIDEAE’ IV 1. (genus *Oxyria*) mountain sorrel / wood sorrel / alpine sorrel 2. (genus *Persicaria*) smartweed, knotweed, willow-weed, tearthumb, amphibious bistort, water-pepper, kiss-me-over-the-garden-gate / prince’s feather / princess-feather, arrowvine, Jesusplant / redshank, lady’s thumb, jumpseed, Chinese indigo / polygonum-indigo, persicaria 3. (Polygonoidae other than named genera; several genera) other polygonoid plant
- RNTŘ-** ‘ERIOGONOIDEAE’ I 1. (genus *Eriogonum*) wild buckwheat 2. (genus *Antigonon*) lovechain, Mexican coral vine / Mexican creeper . queen’s wreath / queen’s jewels / chain-of-love / coralvine / beebush / San Miguelito vine 3. (genus *Aristocapsa*) Indian Valley spineflower / Indian Valley spinecape
- RNTF-** ‘ERIOGONOIDEAE’ II 1. (genus *Brunnichia*) redvine, Ladies’ eardrops, buckwheat vine 2. (genus *Centrostegia*) Thurber’s spineflower / red triangles 3. (genus *Chorizanthe*) spineflower, Turkish rugging
- RNTM-** ‘ERIOGONOIDEAE’ III 1. (genus *Coccoloba*) pigeonplum, seagrape, false chiggergrape 2. (genus *Dedeckera*) July gold 3. (genus *Dodecahema*) slender-horned spineflower
- RNTN-** ‘ERIOGONOIDEAE’ IV 1. (genus *Gilmania*) golden carpet 2. (genus *Goodmania*) yellow spinecap 3. (genus *Harfordia*) rabbit’s purse
- RNTÇ-** ‘ERIOGONOIDEAE’ V 1. (genus *Hollisteria*) false spikeflower 2. (genus *Lastarriaea*) leather spineflower 3. (genus *Mucronea*) spineflower
- RNTH-** ‘ERIOGONOIDEAE’ VI 1. (genus *Nemacaulis*) woollyheads / cottonheads 2. (genus *Oxytheca*) oxytheca, round-leaf puncturebract 3. (genus *Pterostegia*) woodland threadstem / woodland pterostegia / fairy mist / fairy bowties
- RNTHW-** ‘ERIOGONOIDEAE’ VII 1. (genus *Systemotheca*) Vortriede’s spineflower 2. (genus *Triplaris*) ant tree, devil tree 3. (Eregionoideae other than named genera, plus Symmerioideae; genus *Symmeria*) other polygonaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Amaranthaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Amaranthaceae > Amaranthoideae

- RND-** ‘AMARANTHOIDEAE’ I 1. (genus *Amaranthus*) amaranth, greenstripe, pigweed, careless weed, Prince-of-Wales feather / prince’s feather, Joseph’s-coat, love-lies-bleeding / tassel flower 2. (genus *Celosia*) woolflower, cockscomb, Lagos spinach, quail grass, celosia 3. (genus *Chamissoa*) false chaff flower

-RNDW- ‘AMARANTHOIDEAE’ II 1. (genus *Aerva*) kapok bush / desert cotton, mountain knotgrass 2. (genus *Ptilotus*) foxtail, pussy tail, lamb’s tail, mulla mulla 3. (genus *Achyranthes*) chaff flower

-RNDY- ‘AMARANTHOIDEAE’ III 1. (genus *Nototrichium*) rockwort 2. (Amaranthoideae other than named genera; numerous genera) other amaranthoid plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Amaranthaceae > Chenopodioideae

-RMD- ‘CHENOPODIOIDEAE’ I 1. (genus *Spinacia*) spinach plant 2. (edible species of genus *Chenopodium*; *C. album*, *C. pallidicaule*, *C. quinoa*, *C. giganteum*) quinoa, kañiwa, fat hen / white goosefoot plant, tree spinach 3. (genus *Chenopodium*; species other than Stem 2) goosefoot, bluebush, chualar, lambsquarters, huauzontle

-RMDW- ‘CHENOPODIOIDEAE’ II 1. (genus *Atriplex*) saltbush / orache plant 2. (genus *Extriplex*) California saltbush / California orache plant, San Joaquin saltbush / San Joaquin orache 3. (genus *Halimione*) sea purslane

-RMDY- ‘CHENOPODIOIDEAE’ III 1. (genus *Blitum*) goosefoot, blite, Good-King-Henry / poor-man’s asparagus / Lincolnshire spinach / markery / English mercur, stawberry blite / strawberry spinach, poverty weed, Indian lettuce 2. (genus *Chenopodiastrum*) salt-green / sowbane / Australian-spinach 3. (genus *Oxybasis*) red goosefoot / saltmarsh goosefoot, upright goosefoot, coastblite goosefoot, oak-leaved goosefoot

-RMDL- ‘CHENOPODIOIDEAE’ IV 1. (genus *Stutzia*) Coville’s orach, Suckley’s orach 2. (genus *Grayia*) hop sage, siltbush 3. (genus *Lipandra*) manyseed goosefoot

-RMDR- ‘CHENOPODIOIDEAE’ V 1. (genus *Micromonolepis*) small povertyweed / red povertyweed 2. (genus *Proatriplex*) four-corners orach / Mancos shadscale 3. (genus *Krascheninnikovia*) winterfat

-RMDŘ- ‘CHENOPODIOIDEAE’ VI 1. (genus *Dysphania*; *D. ambrosioides*) epazote 2. (genus *Dysphania*; *D. botrys*) Jerusalem oak / sticky goosefoot / feathered geranium 3. (genus *Dysphania*; species other than Stems 1 and 2) wormseed, crumbwee, goosefoot

-RMDV- ‘CHENOPODIOIDEAE’ VII 1. (genus *Axyris*) axyris, Russian pigweed 2. (genus *Cycloloma*) winged pigweed / tumble ringwing / plains tumbleweed 3. (Chenopodioideae other than named genera; several genera) other chenopodioid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Amaranthaceae > Betoideae

-RMV- ‘BETA VULGARIS (BEET)’ 1. (*B. v. vulgaris* ‘*Conditiva*’) beetroot plant (red beet) 2. (*B. v. vulgaris* ‘*Altissima*’) sugar beet plant 3. (*B. v. vulgaris* ‘*Cicla/Flavescens*’) [Swiss] chard plant

-RMVW- ‘BETA VULGARIS (BEET)’ 1. (*B. v. vulgaris* ‘*Crassa*’) mangelwurzel / mangold wurzel / mangold / mangel beet / fodder beet 2. (*B. v. maritima*) sea beet / wild spinach 3. (genus *Beta* other than *vulgaris* species) other beet species

-RMVY- ‘BETOIDEAE’ 1. (genus *Hablitzia*) Caucasian spinach 2. (genus *Aphanisma*) aphanisma, San Diego coastalcreeper 3. (other Betoideae genera; *Oreobliton*, *Patellifolia*, *Acroglochlin*) other betoid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Amaranthaceae > Camphorosmoideae

-RMVL- ‘CAMPHOROSMOIDEAE’ I 1. (genus *Bassia*) burningbush / belvedere / Mexican fireweed / Mexican firebush, kochia, prostrate summer-cypress, five-horn smotherweed / thorn orache, bassia 2. (genus *Neokochia*) molly 3. (genus *Spirobassia*) contorted smotherweed

-RMVR- ‘CAMPHOROSMOIDEAE’ II 1. (genus *Enchylaena*) barrier saltbush 2. (genus *Maireana*) bluebush 3. (genus *Sclerolaena*) goathead burr, galvanized burr, tall bindii

-RMVŘ- ‘CAMPHOROSMOIDEAE’ III 1. (genus *Threkeldia*) coast bonefruit 2. (Camphorosmoideae other than named genera; several genera) other camphorosmoid plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Amaranthaceae > Gomphrenoideae

-RMF- ‘GOMPHRENOIDEAE’ I 1. (genus *Gomphrena*) globe amaranth 2. (genus *Blutaparon*) silverhead / silverweed / saltweed / samphire, Galapagos amaranth 3. (genus *Froelichia*) snakecotton

-RMFW- ‘GOMPHRENOIDEAE’ II 1. (genus *Iresine*) bloodleaf, white snowplant, Texas shrub, Juba’s bush 2. (genus *Alternanthera*) joyweed, ruby leaf, little ruby, calico-plant, chaff-flower, washerwoman, sanguinaria, alligatorweed, rabbit-meat, Joseph’s coat 3. (genus *Tidestromia*) honeysweet, tidestromia

-RMFY- ‘GOMPHRENOIDEAE’ III 1. (genus *Guilleminia*) matweed 2. (genus *Pfaffia*) suma root / Brazilian ginseng 3. (Gomphrenoideae other than named genera; several genera) other gomphrenoid plant

-RMFL- ‘POLYCNEMOIDEAE’ 1. (genus *Polycnemum*) needleleaf 2. (genus *Nitrophila*) niterwort, boraxweed 3. (genera *Hemichroa* and *Surreya*) trailing saltstar / trailing jointweed / trailing hemichroa, surreya

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Amaranthaceae > Salicornioideae

-RMFR- ‘SALICORNOIDEAE’ I 1. (genus *Salicornia*) glasswort, saltwort, marsh samphire, samphire greens / sea asparagus / sea beans 2. (genus *Sarcocornia*) thick-headed glasswort, Australian samphire, Pacific swampfire / Pacific glasswort, Utah swampfire, chickenclaws / perennial glasswort 3. (genus *Tecticornia*) shrubby glasswort, shrubby samphire / grey glasswort, large-articled samphire, bead glasswort / bead samphire, blackseed glasswort / blackseed samphire, mat samphire

-RMFR- ‘SALICORNOIDEAE’ II 1. (genus *Allenrolfea*) iodine bush 2. (genus *Arthrocnemum*) Parish’s glasswort 3. (Salicornioideae other than named genera) other salcornoid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Amaranthaceae > Salsoloideae

-RMFM- ‘SALSOLOIDEAE’ I 1. (genus *Salsola*) saltwort, barilla plant 2. (genus *Kali*) Russian thistle, Tartar thistle, windwitch, tumbleweed, prickly saltwort / prickly glasswort 3. (genus *Halogeton*) saltlover, Aral barilla, halogeton

-RMFN- ‘SALSOLOIDEAE’ II 1. (genus *Haloxylon*) saxaul 2. (Salsoloideae other than named genera; several genera) other salsoloid plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Amaranthaceae remaining families

-RMFN- ‘AMARANTHACEAE’ 1. (Corispermioideae; genera *Corispermum*, *Agriophyllum*, *Anthochlamys*) bugseed, tickseed, tumbleweed, other corispermoid plant 2. (Suaedoideae; genera *Suaeda*, *Bienertia*) seepweed, seablite, iodine weed, bienertia 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Aizoaceae

-RNX- ‘AIZOACEAE’ I 1. (genus *Tetragonia*, edible species; *T. tetragonoides*, *T. decumbens*) New Zealand spinach, dune spinach 2. (genus *Tetragonia*; species other than Stem 1) bower spinach, tetragonia 3. (genus *Sceletium*) kanna / channa

-RNXW- ‘AIZOACEAE’ II 1. (genus *Conicosia*) narrow-leafed ice plant 2. (genus *Cleretum*) Livingstone daisy / Buck Bay vygie 3. (genus *Aloiopsis*) giant jewel plant

-RNXL- ‘AIZOACEAE’ III 1. (genus *Carpobrotus*) pigface, ice plant, sour fig, sea fig, beach banana 2. (genus *Delosperma*) pickle plant, ice plant 3. (genus *Disphyma*) round-leaved pigface / New Zealand iceplant / purple dewplant

-RNXR- ‘AIZOACEAE’ IV 1. (genus *Drosanthemum*) dew-flower, redondo creeper 2. (genus *Lapidaria*) Karoo rose 3. (genus *Malephora*) mesemb

-RNXM- ‘AIZOACEAE’ V 1. (genus *Muiria*) mouse-head 2. (genus *Pleiospilos*) split rock, mimicry plant 3. (genus *Zaleya*) African purslane

-RNXN- 'AIZOACEAE' VI 1. (genus *Sesuvium*) sea-purslane 2. (genus *Trianthema*) desert horse purslane / black pigweed / giant pigweed 3. (Aizoaceae other than named genera; numerous genera) other Aizoaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Molluginaceae

-RNZV- 'MOLLUGINACEAE' 1. (genus *Mollugo*) carpetweed 2. (genus *Glinus*) sweetjuice 3. (Molluginaceae other than Stems 1 and 2; several genera) other molluginaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Cactaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Cactaceae > Cactoideae

-FSK- 'CACTEAE' I 1. (genus *Lophophora*) peyote, false peyote 2. (genus *Escobaria*) pincushion cactus / foxtail cactus 3. (genus *Epithelantha*) button cactus

-FSKW- 'CACTEAE' II 1. (genus *Echinocactus*) golden barrel cactus, devil's head / silverbell cactus / Turk's head cactus, horsecripler / devil's pincushion, giant barrel cactus, cottontop cactus 2. (genus *Echinomastus*) redspine fishhook cactus / redspine butterfly cactus / needlespine pineapple cactus / red pineapple cactus / purple-spine viznagita / acuña cactus, Johnson's beehive cactus / Johnson's fishhook cactus, Lloyd's fishhook cactus / golfball cactus / silver column cactus / Mariposa cactus 3. (genus *Astrophytum*) sand dollar cactus / sea urchin cactus / star peyote, goat's horn cactus, bishop's ca cactus / bishop's hat / bishop's mitre cactus, monk's hood cactus

-FSKY- 'CACTEAE' III 1. (genus *Coryphantha*) beehive cactus, sea urchin cactus / hedgehog cory cactus / rhinoceros cactus, nipple beehive cactus, Pima pineapple, bunched cory cactus / whiskerbush 2. (genus *Leuchtenbergia*) agave cactus / prism cactus 3. (genus *Mammillaria*) pincushion, finger cactus, powder-puff pincushion, green fishhook cactus, owl's eyes, mother of hundreds, strawberry cactus / California fishhook cactus, ladyfinger cactus, twin-spined cactus, crested twin-spined cactus, Arizona fishhook cactus, nipple cactus, rattail cactus, feather cactus, red headed Irishman, bristle brush cactus, old lady cactus, mammillaria

-FSKL- 'CACTEAE' IV 1. (genus *Mammilloidia*) snowball cactus 2. (genus *Obregonia*) artichoke cactus 3. (genus *Pediocactus*) Brady's pincushion cactus / Brady's hedgehog cactus / Marble Canyon cactus, Despain's cactus / San Rafael cactus, Knowlton's miniature cactus / Knowlton's minute cactus, Navajo pincushion cactus, Winkler's cactus, gypsum cactus

-FSKR- 'CACTEAE' V 1. (genus *Sclerocactus*) little barrel cactus 2. (genus *Stenocactus*) brain cactus 3. (Cactaceae other than named genera; several genera) other cactid plant

-FSKŘ- 'PHYLLOCACTEAE' I 1. (genus *Carnegiea*) saguaro cactus 2. (genus *Cephalocereus*) old man cactus 3. (genus *Echinocereus*) hedgehog cactus, rainbow cactus, king cup cactus / claret cup cactus, green pitaya, Mojave mound cactus, ladyfinger cactus, dahlia cactus

-FSKF- 'PHYLLOCACTEAE' II 1. (genus *Bergerocactus*) snake cactus 2. (genus *Escontria*) chiotilla / jiotilla 3. (genus *Stenocereus*) octopus cactus, creeping devil caterpillar cactus, dagger cactus, sour pitaya, organ pipe cactus

-FSKŤ- 'PHYLLOCACTEAE' III 1. (genus *Myrtillocactus*) bilberry cactus / whortleberry cactus / blue candle, candelabra cactus 2. (genus *Pachycereus*) Indian comb, totem cactus / senita cactus 3. (genus *Peniocereus*) desert nightblooming cereus, gearstem cactus

-FSKV- 'PHYLLOCACTEAE' IV 1. (genus *Acanthocereus*) barbed-wire cactus 2. (genus *Brachycereus*) lava cactus 3. (genus *Jasminocereus*) candelabra cactus

-FSKÇ- 'PHYLLOCACTEAE' V 1. (genus *Epiphyllum*) climbing cactus, orchid cactus, leaf cactus 2. (genus *Selenicereus*) moonlight cactus 3. (Phyllocactae other than named genera) other phyllocactid plant

-FSKM- 'CEREEAE' I 1. (genus *Cereus*) lady of the night cactus, giant club cactus / hedge cactus 2. (genus *Stetsonia*) toothpick cactus 3. (genus *Gymnocalycium*) chin cactus

-FSKN- 'CEREEAE' II 1. (genus *Melocactus*) Turk's cap cactus 2. (genus *Pilosocereus*) tree cactus, pipe organ cactus 3. (genus *Espeotoa*) old Peruvian man

-FSKH- 'CEREEAE' III 1. (genus *Echinopsis*) hedgehog cactus, torch cactus, golden torch / golden column, Argentine saguaro, cardón, San Pedro cactus, sea-urchin cactus, Easter lily cactus, peanut cactus 2. (genus *Hylocereus*) dragon fruit 3. (Cereae other than named genera) other cereid cactus

-FSKHW- ‘RHIPSALIDEAE’ 1. (genus *Rhipsalis*) mistletoe cactus 2. (genus *Schlumbergera*) Christmas cactus, Thanksgiving cactus, crab cactus, holiday cactus, Easter cactus / Whitsun cactus, claw cactus 3. (Rhipsalideae other than named genera; several genera) other rhipsalid cactus

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Cactaceae > Opuntioideae

-FSGW- ‘OPUNTIEAE’ 1. (genus *Opuntia*) prickly pear, old man’s whiskers / cowboy’s red whiskers, calico cactus, brittle cactus, Aaron’s beard cactus / semaphore cactus, bunny ears cactus / polka-dot cactus, creeping cactus, red buttons opuntia 2. (genus *Consolea*) Florida semaphore cactus / semaphore pricklypear 3. (Opuntieae other than Stems 1 and 2; several genera) other opuntioid cactus

-FSGY- ‘CYLINDROPUNTIEAE’ 1. (genus *Cylindropuntia*) cholla bush 2. (genus *Grusonia*) matted cholla / Parish club cholla, sagebrush cholla 3. (Cylindropuntieae other than Stems 1 and 2; several genera) other cylindropuntioid cactus

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Cactaceae remaining sub-families

-FSLG- ‘CACTACEAE’ 1. (Pereskioideae; genus *Pereskia*) lemon vine, rose cactus, leaf cactus 2. (Notocactaceae, Maihuenioideae, and Cactaceae of uncertain sub-family or tribe; several genera) other cactus 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Basellaceae

-BVK- ‘BASELLACEAE’ 1. (genus *Basella*) Malabar spinach / vine spinach / Ceylon spinach 2. (genus *Ullucus*) ulluco 3. (genera *Anredera*, *Tourmonia*) Madeira vine, other basellaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Didiereaceae

-BVKW- ‘DIDIREEACEAE’ 1. (genus *Didierea*) octopus tree 2. (genus *Alluaudia*) Madagascar ocotillo 3. (Didiereaceae other than Stems 1 and 2) other didiereaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Droseraceae, Drosophyllaceae, Nepenthaceae

-BVKY- ‘DROSERACEAE’ 1. (genus *Drosera*) sundew 2. (genus *Dionaea*) Venus flytrap 3. (genus *Aldrovanda*) waterwheel plant

-BVKL- ‘DROSOPHYLLACEAE & NEPENTHACEAE’ 1. (Drosophyllaceae; genus *Drosophyllum*) Portuguese sundew / dewy pine 2. (Nepenthaceae; genus *Nepenthes*) tropical pitcher plant / monkey cup 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Montiaceae

-BVKR- ‘MONTIACEAE’ I 1. (genus *Montia*) miner’s lettuce, tatlily, water-blinks, montia 2. (genus *Calandrinia*) purslane, redmaid, parakeelya 3. (genus *Cistanthe*) pussypaws, sandcress

-BVKŘ- ‘MONTIACEAE’ II 1. (genus *Claytonia*) spring beauty, winter purslane, Indian lettuce, grass-flower / fairy spud, claytonia 2. (genus *Lewisia*) lewisia, cliff maids, bitter-root 3. (genus *Lewisiopsis*) Tweedy’s pussypaws / Tweedy’s lewisia / Tweedy’s bitterroot

-BVKŤ- ‘MONTIACEAE’ III 1. (genus *Lyallia*) lyallia cushion 2. (genus *Phemeranthus*) fameflower, rock rose, rock pink, sand pink, sunbright 3. (Montiaceae other than named genera; several genera) other montioid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Nyctaginaceae

-BVKF- ‘NYCTAGINACEAE’ I 1. (genus *Bougainvillea*) bougainvillea, paperflower 2. (genus *Phaeoptilum*) brittle thorn 3. (genus *Tripterocalyx*) sandpuff, sand-verbena

-BVKV- ‘NYCTAGINACEAE’ II 1. (genus *Mirabilis*) four-o’clock, marvel of Peru, desert wishbone-bush, umbrella wort, maravilla 2. (genus *Abronia*) abronia, sand-verbena, heart’s delight, prairie snowball / fragrant verbena, coastal 3. (genus *Acleisanthes*) trumpets, desert moonpod

-BVKÇ- ‘NYCTAGINACEAE’ III 1. (genus *Allionia*) windmills, trailing four o’clock 2. (genus *Anulocaulis*) ringstem 3. (genus *Boerhavia*) spiderling, alena, windflower, climbing wartclub / wishbone vine, alena, boerhavia

-BVKH- ‘NYCTAGINACEAE’ IV 1. (genus *Pisonia*) catchbirtree, pullback, devil’s-claws, water mampoo, birdcatcher tree, birlime tree 2. (genus *Neea*) nia, neea, saltwood 3. (Nyctaginaceae other than named genera; several genera) other nyctaginaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Petiveriaceae

-BVKM- ‘PETIVERIACEAE’ 1. (genus *Rivina*) pigeonberry / rougeplant / baby peppers / bloodberry / coralito 2. (genus *Trichostigma*) hoopvine / black basket wythe / cooper’s wythe / basket wiss / basket with / hoop with 3. (Petiveriaceae other than Stems 1 and 2; several genera) other petiveriaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Phytolaccaceae

-BVKN- ‘PHYTOLACCACEAE’ 1. (genus *Phytolacca*) pokeweed, poke, pokebush, pokeberry, pokeroor, poke sallet, red inkplant, inkberry 2. (genus *Agdestis*) rockroot 3. (Phytolaccaceae other than Stems 1 and 2; several genera) other phytolaccid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Plumbaginaceae

-BVM- ‘PLUMBAGINACEAE’ I 1. (genus *Plumbago*) leadwort, plumbago, doctorbush, whorled plantain 2. (genus *Ceratostigma*) leadwort, plumbago 3. (genus *Armeria*) thrift, lady’s cushion / sea pink

-BVMW- ‘PLUMBAGINACEAE’ II 1. (genus *Limonium*) sea-lavender, tree limonium, statice, caspia, marsh-rosemary 2. (Plumbaginaceae other than named genera; several genera) other plumbaginaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales remaining families

-BVN- ‘CARYOPHYLLALES’ I 1. (Frankeniaceae; genus *Frankenia*) sea heath, alkali heath, Saint Helena tea, frankenia 2. (Microteaceae; genus *Microtea*) jumby pepper 2.(Portulacaceae; genus *Portulaca*) purslane, pigweed, ‘ihi 3. (Sarcobataceae; genus *Sarcobatus*) greasewood / seepwood / saltbush

-BVNW- ‘CARYOPHYLLALES’ II 1. (Simmondsiaceae; genus *Simmondsia*) jojoba / goat nut / deer nut / pignut / wild hazel / quinine nut / coffeeberry / gray box bush 2. (Achatocarpaceae, Anacampserotaceae, Ancistrociadaceae, Asteropeiaceae, Barbeulaceae, Dioncophyllaceae, Gisekiaceae, Halophytaceae, Kewaceae, Limeaceae, Lophiocarpaceae, Macarthuraceae, Physenaeeae, Rhabdodendron, Stegnospermataceae, Talinaceae, Tamaricaceae; numerous genera) other caryophyllales plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Berberidopsidales

-CXN- ‘BERBERIDOPSIDALES’ 1. (Berberidopsidaceae; genera *Berberidopsis*, *Streptothamnus*) montane tape vine, Chilean coral plant, streptothamnus 2. (Aextoxicaceae; genus *Aextoxicon*) olivillo / aceitunillo tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Santalales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Santalales > Santalaceae

-**LFW**- ‘SANTALACEAE’ I 1. (genus *Santalum*) sandalwood, quandong, native peach, ‘iliahi 2. (genus *Comandra*) bastard toadflax, comandra 3. (genus *Geocaulon*) false toadflax / northern comandra

-**LFY**- ‘SANTALACEAE’ II 1. (genus *Viscum*) mistletoe 2. (genus *Phoradendron*) mistletoe 3. (genus *Arceuthobium*) dwarf mistletoe

-**LFL**- ‘SANTALACEAE’ III 1. (genus *Buckleya*) piratebush 2. (genus *Choretrum*) sour bush 3. (genus *Exocarpos*) ballart, grass tree, dwarf cherry, slender cherry, broad-leaved cherry, cypress cherry, jointed cherry

-**LFR**- ‘SANTALACEAE’ IV 1. (genus *Korthalsella*) korthal mistletoe 2. (genus *Leptomeria*) currant bush 3. (genus *Nestronia*) leechbrush / conjurer’s-nut / Indian olive / nestronia

-**LFŘ**- ‘SANTALACEAE’ V 1. (genus *Osyris*) osyris, Cape sumach, wild tea plant, African sandalwood 2. (genus *Thesium*) meadowflax 3. (Santalaceae other than named genera; numerous genera) other santalid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Santalales > Loranthaceae

-**LFS**- ‘LORANTHACEAE’ I 1. (genus *Loranthus*) showy mistletoe 2. (genus *Muellerina*) Banksia mistletoe / coast mistletoe, Cypress-pine mistletoe, creeping mistletoe, hoop pine mistletoe myrtle-leaved mistletoe 3. (genus *Anyema*) pincushion mistletoe, stalked mistletoe, wireleaf mistletoe, drooping mistletoe

-**LFŠ**- ‘LORANTHACEAE’ II 1. (genus *Nuytsia*) moodjar, Australian Christmas tree 2. (genus *Atkinsonia*) Louisa’s mistletoe 3. (genus *Psittacanthus*) parrot-flower

-**LFT**- ‘LORANTHACEAE’ III 1. (genus *Lysiana*) harlequin mistletoe, Mulga mistletoe, Northern mistletoe 2. (genus *Peraxilla*) red mistletoe 3. (genus *Macrosolen*) parasite honeysuckle

-**LFX**- ‘LORANTHACEAE’ IV 1. (genus *Dendrophthoe*) long-flowered mistletoe / apostle mistletoe, orang mistletoe 2. (genus *Agelanthus*) African mistletoe 3. (Loranthaceae other than named genera) other showy mistletoe

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Santalales > Balanophoraceae

-**LFM**- ‘BALANOPHORACEAE’ I 1. (genus *Balanophora*) coral plant, fungus root 2. (genus *Dactylanthus*) wood rose 3. (genus *Thonningia*) ground pineapple

-**LFN**- ‘BALANOPHORACEAE’ II 1. (genus *Hechettea*) hechettea 2. (Balanophoraceae other than named genera; several genera) other balanophorid plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Santalales remaining families

-**LFÑ**- ‘SANTALALES’ 1. (Misodendraceae; genus *Misodendrum*) feathery mistletoe 2. (Schoepfiaceae; genus *Schoepfia*) arana, schoepfia 3. (Olacaceae, Opiliaceae; several genera) other santalales plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > Saxifragales

-**LŠW**- ‘SAXIFRAGACEAE’ I 1. (genus *Saxifraga*) saxifrage, rockfoil, Dovedale moss, Madeira breakstone, fair maids of France, spider plant, Saint Patrick’s cabbage, strawberry geranium, London pride 2. (genus *Micranthes*) saxifrage, brook lettuce 3. (genus *Heuchera*) alumroot, jill-of-the-rocks, jack-o’the-rocks, coral bells

-**LŠY**- ‘SAXIFRAGACEAE’ II 1. (genus *Chrysosplenium*) golden saxifrage 2. (genus *Astilbe*) false goat’s beard, false spirea 3. (genus *Saxifragopsis*) strawberry saxifrage

- LŠL**- ‘SAXIFRAGACEAE’ III 1. (genus *Tiarella*) foamflower 2. (genus *Tolmiea*) youth on age / pick-a-back-plant / piggyback plant / thousand mothers 3. (genus *Boykinia*) brookfoam, boykinia
- LŠR**- ‘SAXIFRAGACEAE’ IV 1. (genus *Sullivantia*) coolwort 2. (genus *Bolandra*) false coolwort 3. (genus *Jepsonia*) jepsonia
- LŠŘ**- ‘SAXIFRAGACEAE’ V 1. (genus *Lithophragma*) woodland star 2. (genus *Mitella*) miterwort, bishop’s cap 3. (genus *Tellima*) fringecups
- LŠF**- ‘SAXIFRAGACEAE’ VI 1. (genus *Bergenia*) elephant’s ears / elephant-eared saxifrage, gergenia, pigsqueak / Siberian tea / Mongolian tea 2. (genus *Darmera*) Indian rhubarb / umbrella plant 3. (genus *Bensoniella*) Oregon bensoniella
- LŠT**- ‘SAXIFRAGACEAE’ VII 1. (genus *Tankakaea*) Japanese foam flower 2. (Saxifragaceae other than named genera; several genera) other saxifragaceous plant 3. [stem unassigned]
- LŠM**- ‘GROSSULARIACEAE [genus RIBES]’ I 1. (*Ribes rubrum*) redcurrant 2. (cultivar of *R. rubrum*) white currant 3. (*R. nigrum*) blackcurrant
- LŠN**- ‘GROSSULARIACEAE [genus RIBES]’ II 1. (*R. uva-crispa* / *grossularia*) gooseberry 2. (*R. nidigrolaria*) jostaberry 3. (*R. aureum*) golden currant / clove currant / pruterberry / buffalo currant
- LŠŇ**- ‘GROSSULARIACEAE [genus RIBES]’ III 1. (*Ribes* species cultivated as ornamental plants; several species) ornamental currant/gooseberry plant 2. (wild/non-cultivated *Ribes* species; numerous species) wild currant/gooseberry plant 3. [stem unassigned]
- LŠV**- ‘CRASSULACEAE’ I 1. (genus *Crassula*) jade plant, pygmyweed, silver dollar plant, rattlesnake tail, stonecrop, silver beads, crassula, tailor’s patch, watch chain / lizard’s tail / zipper plant, string of buttons, red carpet, rosary plant / kebab bush / concertina plant 2. (genus *Sedum*) stonecrop, orpine, wallpepper, prick-madam / trip-madam 3. (genus *Sedella*) mock stonecrop
- LŠX**- ‘CRASSULACEAE’ II 1. (genus *Kalanchoe*) velvet leaf / felt plant / felt bush, flaming katy / Madagascar widow’s-thrill, devil’s backbone / Mexican-hat plant, donkey ears / life plant, penwiper, paddle plant, silver teaspoons, pies from heaven, flapjacks / desert cabbage / white lady, chandelier plant / mother of millions 2. (genus *Andromischus*) andromischus, calico hearts 3. (genus *Cotyledon*) silver crown / silver ruffles, pig’s ear / rounded-leafed navel-wort, bear’s paw
- LŠFW**- ‘CRASSULACEAE’ III 1. (genus *Hylotelephium*) stonecrop, live-forever, livelong / frog’s-stomach / life-everlasting / midsummer-men / harping Johnny / orphan John / witch’s moneybags 2. (genus *Rhodiola*) redpod stonecrop / queen’s crown, golden root / rose root / Aaron’s rod / Arctic root / king’s crown / orpin rose, western roseroot / ledge stonecrop 3. (genus *Umbilicus*) Venus’ navel, navelwort, gold drop, umbilicus
- LŠFY**- ‘CRASSULACEAE’ IV 1. (genus *Sempervivum*) houseleek, liveforever, hen and chicks, Jupiter’s beard 2. (genus *Jovibarba*) hen-and-chickens, rolling hen-and-chicks 3. (genus *Aeonium*) tree houseleek
- LŠTW**- ‘CRASSULACEAE’ V 1. (genus *Dudleya*) dudleya, live-forever, sea lettuce, fingertips, alabaster plant 2. (genus *Echeveria*) echeveria, Mexican hens-and-chicks, Mexican firecracker, desert savior, painted lady, Mexican snowball / Mexican gem / white Mexican rose 3. (genus *Graptopetalum*) leatherpetal, lavender pebbles / jewel-leaf plant, mother of pearl plant / ghost plant
- LŠTY**- ‘CRASSULACEAE’ V 1. (genus *Pachyphytum*) sugar-almond plant, moonstone, pachyphytum 2. (Crassulaceae other than named genera; numerous genera) other crassulaceous plant 3. [stem unassigned]
- LŠŠ**- ‘HALORAGACEAE’ I 1. (genus *Haloragis*) seaberry, haloragis 2. (genus *Gonocarpus*) raspwort 3. (genus *Glischrocaryon*) golden pennants, popflower
- LŠXW**- ‘HALORAGACEAE’ II 1. (genus *Myriophyllum*) water-milfoil, parrot’s-feather 2. (genus *Proserpinaca*) mermaid-weed 3. (Haloragaceae other than Stems 1 and 2; several genera) other haloragid plant
- LŠVW**- ‘HAMAMELIDACEAE’ I 1. (genus *Hamamelis*) witch-hazel, winterbloom 2. (genus *Fothergilla*) witch alder, fothergilla 3. (genus *Parrotia*) Persian ironwood, Chinese ironwood
- LŠVY**- ‘HAMAMELIDACEAE’ II 1. (genus *Corylopsis*) winter-hazel 2. (genus *Rhodoleia*) Hong Kong rose 3. (Hamamelidaceae other than named genera) other hamamelid plant

-**LŠMW**- ‘SAXIFRAGALES’ I 1. (Iteaceae; genera *Itea*, *Pterostemon*) sweetspire, pterostemon 2. (Aphanopetalaceae; genus *Aphanopetalum*) gum vine 3. (Paeoniaceae; genus *Paeonia*) peony

-**LŠMY**- ‘SAXIFRAGALES’ II 1. (Altingiaceae; genus *Liquidambar*) sweetgum / stargum, redgum, satin-walnut, amerien storax 2. (Cercidiphyllaceae; genus *Cercidiphyllum*) katsura 3. (Tetracarpaceae, Penthoraceae, Daphniphyllaceae, Peridiscaceae; several genera) other saxifragales plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > rosids

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > rosids > Vitales

-**TN**- ‘VITUS [GRAPE]’ 1. (*Vitis vinifera*) European grapevine 2. (culinary/cultivated *Vitis* species other than *V. vinifera*; several species, e.g., *V. labrusca*, *V. riparia*, *V. aestivalis*, *V. rotundifolia*) other grapevine [used for wine-making, table grapes, or preserve-making] 3. (wild or ornamental *Vitis* species; numerous species) wild grapevine, ornamental grapevine

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > rosids > eurosids

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > rosids > eurosids > malvids

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > rosids > eurosids > malvids > Brassicales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > rosids > eurosids > malvids > Brassicales > Brassicaceae [a.k.a., Cruciferae]

-**ŽK**- ‘BRASSICA OLERACEA (BROCCOLI & RELATED SPECIES)’ I 1. (*B.o. Italica* group) broccoli plant 2. (*B.o. Bortrytis* group) cauliflower plant, romanesco plant, broccoflower hybrid plant 3. (*B.o. Alboglabra* group) Chinese broccoli plant / gai lan, broccolini hybrid

-**ŽKW**- ‘BRASSICA OLERACEA (BROCCOLI & RELATED SPECIES)’ II 1. (*B.o. Capitata* group) cabbage plant 2. (*B.o. Gemmifera* group) brussel sprout plant 3. (*B.o. Gongylodes* group) kohlrabi plant

-**ŽKY**- ‘BRASSICA OLERACEA (BROCCOLI & RELATED SPECIES)’ III 1. (*B.o. Acephala* group 1) kale plant 2. (*B.o. Acephala* group 2) collard plant 3. (*B.o. Acephala* group 3) spring greens

-**ŽKL**- ‘BRASSICA OLERACEA (BROCCOLI & RELATED SPECIES)’ IV 1. (*B.o. sabauda*) savoy cabbage plant 2. (*B.o.* hybrid with *B. rapa rapa*) rutabaga plant 3. (*B.o.* non-edible varieties) ornamental kale

-**ŽKR**- ‘BRASSICA RAPA’ I 1. (*B.r. rapa*) turnip plant 2. (*B.r. pekinensis*) Napa cabbage plant 3. (*B.r. chinensis*) bok choy

-**ŽKŘ**- ‘BRASSICA RAPA’ II 1. (*B.r. oleifera*) (field) mustard plant 2. (*B.r. rapifera*) rapini / broccoli rabe plant 3. (*B.r. perviridis*) komatsuna plant / Japanese mustard spinach

-**ŽKT**- ‘BRASSICA RAPA’ III 1. (*B.r. nipposinica*) mizuna 2. (*B.r. parachinensis*) choy sum / flowering cabbage 3. (*B.r. oleifera*) canola

-**ŽKH**- ‘BRASSICA (OTHER SPECIES)’ I 1. (*B. juncea*) brown mustard, wrapped heart mustard cabbage 2. (*B. hirta*) white mustard 3. (*B. nigra*) black mustard

-**ŽKÇ**- ‘BRASSICA (OTHER SPECIES)’ II 1. (*B. napus*) Siberian kale 2. (*B. rosularis*) tatsoi 3. [stem unassigned]

-**ŽKF**- ‘BRASSICEAE’ I 1. (genus *Raphanus*) radish plant, daikon 2. (genus *Nasturtium*) watercress plant 3. (genus *Eruca*) arugula/rocket plant

-**ŽKV**- ‘BRASSICEAE’ II 1. (genus *Wasabia/Eutremia*) wasabi plant 2. (genus *Lepidum*) garden cress, field cress / field pepperweed / field pepperwort, maca / Peruvian ginseng 3. (genus *Diplotaxis*) wild arugula / perennial wall-rocket

-**ŽKM**- ‘BRASSICEAE’ III 1. (genus *Erucastrum*) dogmustard 2. (genus *Coincya*) star mustard, Isle of Man cabbage, wallflower cabbage, Lundy cabbage 3. (genus *Hirschfeldia*) shortpod mustard / burchanweed / hoary mustard / Mediterranean mustard

- ŽKN-** 'BRASSICEAE' IV 1. (genus *Rapistrum*) bastard cabbage 2. (genus *Cakile*) searocket 3. (Brassiceae other than named species; numerous genera) other brassicean plant
- ŽGW-** 'THELYPODIEAE' I 1. (genus *Thelypodium*) thelypody 2. (genus *Sibara*) winged rockcress 3. (genus *Sibaropsis*) Hammitt's clay-cress
- ŽGY-** 'THELYPODIEAE' II 1. (genus *Streptanthus*) twistflower, jewelflower, shieldplant 2. (genus *Streptanthella*) longbeack streptanthella 3. (genus *Glaucocarpum*) waxfruit mustard / toad-flax cress / shrubby reed-mustard / Uinta Basin waxfruit
- ŽGL-** 'THELYPODIEAE' III 1. (genus *Caulostramina*) cliffdweller 2. (genus *Caulanthus*) jewelflower, wild cabbage 3. (genus *Thysanocarpus*) fringedpod, lacepod
- ŽGR-** 'THELYPODIEAE' IV 1. (genus *Stanleya*) prince's plume 2. (genus *Phlebotobium*) Falkland rock-cress 3. (Thelypodieae other than named genera; numerous genera) other thelypodiid plant
- ŽGR-** 'CARDAMINEAE' I 1. (genus *Barbarea*) winter cress / yellow rocket, land cress / American cress / bank cress / black wood cress / Bermuda cress / scurvy cress / upland cress / creasy greens, bittercress / herb barbara / rocketcress / winter rocket / wound rocket 2. (genus *Armoracia*) horseradish 3. (genus *Cardamine*) toothwort, bittercress
- ŽGV-** 'CARDAMINEAE' II 1. (genus *Leavenworthia*) glade-cress 2. (genus *Iodanthus*) purplerocket 3. (genus *Rorippa*) yellowcress
- ŽGD-** 'CARDAMINEAE' III 1. (genus *Selenia*) selenia 2. (genus *Planodes*) planodes 3. (Cardamineae other than named genera; several genera) other cardamineid plant
- ŽFW-** 'BRASSICACEAE' I 1. (genus *Isatis*) woad / dyer's woad / glastum / Asp of Jerusalem 2. (genus *Hugueninia*) tansy-leaved rocket 3. (genus *Thlaspi*) penny-cress
- ŽFY-** 'BRASSICACEAE' II 1. (genus *Conringia*) hare's ear mustards 2. (genus *Lunaria*) honesty 3. (genus *Arabis*) rockcress
- ŽFL-** 'BRASSICACEAE' III 1. (genus *Athysanis*) sandweed 2. (genus *Draba*) whitlow-grass 3. (genus *Heterodraba*) ladiestongue mustard
- ŽFR-** 'BRASSICACEAE' IV 1. (genus *Cochlearia*) scurvy-grass, spoonwort 2. (genus *Hesperis*) dame's rocket / damask-violet / dame's-violet / dames-wort / gilliflower / summer lilac / mother-of-the-evening, hesperis 3. (genus *Erysimum*) wallflower
- ŽFR-** 'BRASSICACEAE' V 1. (genus *Iberis*) candytuft 2. (genus *Teesdalia*) shepherds-cress 3. (genus *Idahoia*) scalepod / oldstem idahoia
- ŽVW-** 'BRASSICACEAE' VI 1. (genus *Coronopus*) swinecress, wartcress 2. (genus *Descurainia*) tansymustard 3. (genus *Subularia*) awlwort
- ŽVY-** 'BRASSICACEAE' VII 1. (genus *Arabidopsis*) rockcress 2. (genus *Boechera*) rockcress 3. (genus *Cusickiella*) cusickiella
- ŽVL-** 'BRASSICACEAE' VIII 1. (genus *Phoenicaulis*) daggerpod, phoenicaulis 2. (genus *Anelsonia*) daggerpod 3. (genus *Halimolobos*) fissurewort
- ŽVR-** 'BRASSICACEAE' IX 1. (genus *Physaria*) twindpod, bladderpod 2. (genus *Dithyrea*) shieldpod 3. (genus *Paysonia*) bladderpod
- ŽVR-** 'BRASSICACEAE' X 1. (genus *Aethionema*) stonecress 2. (genus *Berteroa*) false madwort 3. (Brassicaceae other than named genera; numerous genera) other brassicaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Brassicales > remaining families

- ŽŽP-** 'CAPPARACEAE' I 1. (genus *Capparis*) caper bush / caper shrub, karir / kirir, wild orange, devil's guts, wild passionfruit, mabinlang 2. (genus *Boscia*) shepherd tree, hanza 3. (genus *Cadaba*) swartstorm, cadaba
- ŽŽPW-** 'CAPPARACEAE' II 1. (genus *Apophyllum*) warrior bush / broom bush 2. (genus *Cladostemon*) three-finger bush 3. (genus *Crateva*) sacred barna, sacred garlic pear / temple plant
- ŽŽPY-** 'CAPPARACEAE' II 1. (genus *Maerua*) rough-skinned bush cherry 2. (Capparaceae other than named genera; numerous genera) other capparaceous plant 3. [stem unassigned]

- ŽŽPL-** ‘CLEOMACEAE’ I 1. (genus *Cleome*) spider flower, spider plant, spiderwisp / cat’s whiskers / African cabbage, justago, cleome, mouse whiskers, bladderpod / burro-fat, bee plant, Navajo spinach / stinking-clover / skunk weed / beeweed / guaco, tick weed 2. (genus *Cleomella*) cleomella, stinkweed 3. (genus *Oxystylis*) spiny caper
- ŽŽPR-** ‘CLEOMACEAE’ II 1. (genus *Polanisia*) clammyweed 2. (genus *Wislizenia*) spactacle fruit, jackass clover 3. (Cleomaceae other than named genera; several genera) other cleomaceous plant
- ŽŽPŘ-** ‘RESEDACEAE’ 1. (genus *Reseda*) mignonette, weld, dyer’s rocket, bastard rocket 2. (Resedaceae other than Stem 1; several genera) other resedaceous plant 3. [stem unassigned]
- ŽŽPF-** ‘GYROSTEMONACEAE’ 1. (genus *Gyrostemon*) camel poison, corkybark 2. (genus *Codonocarpus*) bell-fruit tree, camel poison 3. (Gyrostemonaceae other than Stems 1 and 2; several genera) button creeper, other gyrostemonaceous plant
- ŽŽPT-** ‘CARICACEAE’ 1. (genus *Carica*) papaya / pawpaw 2. (genus *Vasconcellea* [other than *V. pubescens*]) babaco tree 3. (*V. pubescens*) mountain papaya / mountain pawpaw
- ŽŽPČ-** ‘LIMNANTHACEAE’ 1. (*Limnanthes alba*) white meadowfoam 2. (*Limnanthes* other than *L. alba*; several genera) meadowfoam 3. (genus *Floerkea*) false mermaid, floerkea
- ŽŽPL-** ‘SALVADORACEAE’ 1. (genus *Salvadora*) toothbrush tree, mustard tree 2. (genus *Azima*) azima, bee sting bush 3. (genus *Dobera*) dobera
- ŽŽPS-** ‘BRASSICALES’ I 1. (Akaniaceae; genera *Akania*, *Bretschneidera*) turnipwood, bretschnidera 2. (Bataceae; genus *Batis*) turtleweed / saltwort / beachwort / pickleweed 3. (Koeberliniaceae; genus *Koeberlinia*) crown of thorns / allthorn / crucifixion thorn
- ŽŽPŠ-** ‘BRASSICALES’ II 1. (Moringaceae; genus *Moringa*) drumstick tree / horseradish tree / ben oil tree / benzolive tree, bottle tree, moringa 2. (Tropaeolaceae; genus *Tropaeolum*) nasturtium / nasturtian, canary creeper, flame flower, three-coloured Indian cress, mashua 3. (Tovariaceae, Pentadiplandraceae, Emblingiaceae, Setchellanthaceae; several genera) other brassicales plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Malvales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Malvales > Malvaceae

- LCK-** ‘MALVOIDEAE’ I 1. (genus *Malva*) mallow, cheeseweed / cheeseplant 2. (genus *Alcea*) hollyhock, alcea 3. (genus *Althaea*) marshmallow, hemp-leaved hollyhock
- LCKW-** ‘MALVOIDEAE’ II 1. (genus *Lavatera*) tree-mallow 2. (genus *Iliamna*) globe-mallow, wild hollyhock, Peter’s mountain mallow 3. (genus *Malacothamnus*) bush-mallow, chaparral mallow
- LCKY-** ‘MALVOIDEAE’ III 1. (genus *Abutilon*) Indian mallow, room maple / parlor maple / flowering maple, abutilon, Indian lantern-flower / monkeybush, desert Chinese-lantern, butterprint / abutilon- hemp / China-jute / velvetleaf 2. (genus *Wissadula*) velvetleaf 3. (genus *Allowissadula*) false Indianmallow
- LCKL-** ‘MALVOIDEAE’ IV 1. (genus *Herissantia*) bladder mallow, curly abutilon 2. (genus *Akrosida*) bigleaf akrosida 3. (genus *Malvella*) scurfy mallow, alkali mallow, arrowleaf mallow
- LCKR-** ‘MALVOIDEAE’ V 1. (genus *Sphaeralcea*) globemallow, desertmallow, false mallow 2. (genus *Eremalche*) white mallow, Parry’s mallow, desert five-spot 3. (genus *Napaea*) glade mallow
- LCKŘ-** ‘MALVOIDEAE’ VI 1. (genus *Callirhoe*) poppy mallow, winecup 2. (genus *Sidalcea*) checkerbloom, checkermallow, prairie mallow, miniature hollyhock, sidalcea 3. (genus *Anoda*) anoda, violetta
- LCKF-** ‘MALVOIDEAE’ VII 1. (genus *Hoheria*) houhere, lacebark, ribbonwood, New Zealand mallow 2. (genus *Lawrencia*) lawrencia, dunna dunna 3. (genus *Malope*) mallow-wort / purple Spanish mallow, malope
- LCKT-** ‘MALVOIDEAE’ VIII 1. (genus *Modiola*) bristly-fruited mallow / Carolina bristlemallow / babosilla / redflower mallow 2. (genus *Gynatrix*) hemp bush, aboriginal hemp 3. (genus *Horsfordia*) velvetmallow

- LCKÇ**- ‘MALVOIDEAE’ IX 1. (genus *Gossypium*) cotton plant 2. (genus *Kokia*) treecotton 3. (genus *Thespesia*) portia tree / Pacific rosewood / milo, maga
- LCKM**- ‘MALVOIDEAE’ X 1. (genus *Abelmoschus*) okra, musk mallow, abelmosk / ambrette / musk okra / rose mallow 2. (genus *Hibiscus*) hibiscus, rosemallow, rosella, comfortroot, roselle, fousapate marron, mahoe, mandrinette, pale face, flower-of-an-hour, rose of sharon 3. (genus *Kosteletzkya*) seashore mallow / sweat weed / saltmarsh mallow
- LCKN**- ‘MALVOIDEAE’ XI 1. (genus *Malvaviscus*) wax mallow / Turkcap / Turk’s turban / ladies teardrop / Scotchman’s purse, Turk’s cap mallow, sleeping hibiscus, mazapan 2. (genus *Pavonia*) swampmallow, gingerbush, pavonia 3. (genus *Lagunaria*) pyramid tree / Norfolk Island hibiscus / Queensland white oak / sally wood / itchy bomb tree / cow itch tree
- LCKH**- ‘MALVOIDEAE’ XII 1. (genus *Radyera*) desert rose mallow / bush hibiscus 2. (genus *Hibiscadelphus*) hau kuahiwi 3. [stem unassigned]
- LCKHW**- ‘MALVOIDEAE’ XIII 1. (genus *Alyogyne*) coastal hibiscus, lilac hibiscus, sand hibiscus 2. (Malvoideae other than named genera; numerous genera) other malvoid plant 3. [stem unassigned]
- LČK**- ‘BOMBACOIDEAE’ I 1. (genus *Bombax*) silk cotton tree, red cotton tree, kapok-tree, bombax 2. (genus *Chirantodendron*) devil’s hand tree / monkey’s hand tree / Mexican hand tree / hand-flower 3. (genus *Fremontodendron*) flannel bush, fremontia
- LČKW**- ‘BOMBACOIDEAE’ II 1. (genus *Ochroma*) balsa tree / balsa wood tree 2. (genus *Pachira*) Malabar chestnut tree / French peanut tree / Provision tree, saba nut, pochote 3. (genus *Pseudobombax*) soroche, shaving brush tree
- LČKY**- ‘BOMBACOIDEAE’ III 1. (genus *Quararibea*) south American sapote / chupa-chupa, wild palm, swizzlestick tree 2. (Bombacoideae other than named genera; several genera) other bombacoid plant 3. [stem unassigned]
- LČKL**- ‘HELICTEROIDEAE’ I 1. (genus *Durio*) durian tree 2. (genus *Helicteres*) Indian screw tree 3. (genus *Kostermansia*) krepal, durian tuang
- LČKR**- ‘HELICTEROIDEAE’ II 1. (genus *Triplochiton*) African whitewood tree 2. (Helicteroideae other than named genera) other helicteroid tree 3. [stem unassigned]
- LČKŘ**- ‘BROWNLOWIOIDEAE’ 1. (genus *Berrya*) trincomalee wood tree 2. (Brownlowioideae other than Stem 1; several genera) other brownlowioid plant/tree 3. [stem unassigned]
- LČKF**- ‘DOMBEYOIDEAE’ 1. (genus *Dombeya*) dombeya, pinkball / tropical hydrangea, dikba / South African wild pear, bois bete 2. (genus *Pentapetes*) noon flower 3. (Dombeyoideae other than Stems 1 and 2; several genera) other dombeyoid plant
- LČKT**- ‘STERCULIOIDEAE’ I 1. (genus *Sterculia*) tropical chestnut, sterculia, Panama tree / manduvi tree, mopopaja tree, bastard poon tree / wild almond tree, China chestnut / seven sister’s fruit, lowveld chestnut, gorarbar, ulumbu tree, gulu, broad-leaved bottle tree 2. (genus *Cola*) kola tree / kola nut, hairy cola / Zulu coshwood 3. (genus *Brachychiton*) kurrajong, couramyn, illawarra flame tree, lacebark tree, bottletree
- LČKÇ**- ‘STERCULIOIDEAE’ II 1. (genus *Franciscodendron*) tulip sterculia / tulip kurrajong / cabbage crowfoot 2. (genus *Argyrodendron*) booyong, tulip oak, crowfoot, blackjack 3. (genus *Pterygota*) buddha coconut, koto
- LČKM**- ‘STERCULIOIDEAE’ III 1. (genus *Heritiera*) looking-glass mangrove, dungon 2. (genus *Scaphium*) malva nut tree / Taiwan sweet gum tree 3. (Sterculioideae other than named genera; several genera) other sterculioid plant/tree
- LČKN**- ‘GREWIOIDEAE’ 1. (genus *Grewia*) falsa / phalsa, crossberry, emu-berry / dog’s balls / turkey bush / diddle diddle / dysentery bush 2. (genus *Triumfetta*) burbark, Chinese bur 3. (Grewioideae other than Stems 1 and 2; several genera) other grewioid plant
- LČKH**- ‘TILIOIDEAE’ 1. (genus *Tilia*) linden / lime tree / limebush / basswood 2. (genera *Craigia*, *Mortonioidendron*) other tillioid plant/tree 3. [stem unassigned]
- LČKHW**- ‘BYTTNERIOIDEAE’ I 1. (genus *Theobroma*) cacao tree / cocoa tree 2. (genus *Commersonia*) kerrawang 3. (genus *Abroma*) devil’s cotton
- LČKS**- ‘BYTTNERIOIDEAE’ II 1. (genus *Waltheria*) sleepy morning 2. (genus *Hannafordia*) grey felt-bush 3. (genus *Seringia*) crinkle-leaved firebush
- LČKŠ**- ‘BYTTNERIOIDEAE’ III 1. (genus *Lasiopetalum*) velvet bush, lasiopetalum 2. (genus *Ayenia*) ayenia 3. (Byttnerioideae other than named genera) other byttnerioid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Malvales > remaining families

-LCT- ‘CISTACEAE’ I 1. (genus *Cistus*) rockrose, cistus 2. (genus *Halimium*) basil-leaved rock rose, woolly rock rose / false sun-rose, halimium 3. (genus *Fumana*) needle sunrose

-LCTW- ‘CISTACEAE’ II 1. (genus *Helianthemum*) rock rose / sunrose / rushrose / frostweed 2. (genus *Crocanthemum*) peak rockrose / peak rushrose, low rockrose / low frostweed, island rush-rose, bushy rockrose / bushy frostweed, rock frost / frostplant / frostwort / Canada frost weed / longbranch frostweed 3. (genus *Hudsonia*) goldenheather / povertygrass

-LCTY- ‘CISTACEAE’ III 1. (genus *Tuberaria*) spotted rock-rose / annual rock-rose 2. (genus *Lechea*) pinweed 3. [stem unassigned]

-LCTL- ‘THYMELAEACEAE’ I 1. (genus *Thymelaea*) sparrow-wort, spurge flax 2. (genus *Daphne*) daphne, garland flower, Nepalese paper plant, spurge-laurel, spurge olive / mezereum / mezereon 3. (genus *Lagetta*) lacebark tree / gauze tree

-LCTR- ‘THYMELAEACEAE’ II 1. (genus *Dirca*) leatherwood / moosewood / ropebark / wicopy 2. (genus *Wikstroemia*) false ohelo 3. (genus *Pimelea*) rice flower, bootlace bush, taranga, scrub kurrajong, pinatoro, New Zealand daphne / Strathmore weed, bunjong, banjine, Flinders poppy, pimelea

-LCTŘ- ‘THYMELAEACEAE’ III 1. (genus *Gonystylus*) ramin, melawis 2. (genus *Aetoxylon*) crocodile eaglewood / gaharu buaya 3. (genera *Aquilaria*, *Gyrinops*) lign-aloe tree

-LCTF- ‘THYMELAEACEAE’ IV 1. (genus *Phaleria*) God’s crown / pau 2. (Thymelaeaceae other than named genera; numerous genera) other thymelaeaceous plant/tree 3. [stem unassigned]

-LCTÇ- ‘DIPTEROCARPACEAE’ I 1. (genus *Dipterocarpus*) keruing, gurjan 2. (genus *Neobalanocarpus*) chengal 3. (genus *Shorea*) lauan, Philippine mahogany

-LCTİ- ‘DIPTEROCARPACEAE’ II 1. (genus *Parashorea*) white seraya / white lauan 2. (genus *Vateria*) white dammar 3. (Dipterocarpaceae other than named genera; several genera) other dipterocarpaceous plant/tree

-LCTH- ‘BIXACEAE’ 1. (genus *Bixa*) achiote, lipstick tree 2. (genus *Amoreuxia*) yellowshow, Santa Rita throwup weed 3. (genera *Cochlospermum*, *Diegodendron*) yellow cotton tree, kapok, diegodendron

-LCTHW- ‘MALVALES’ 1. (Muntingiaceae; genera *Muntingia*, *Neotessmannia*, *Dicraspidia*) calabur tree / capulin / Jamaica cherry / Panama berry / Singapore cherry / West Indian cherry / ornamental cherry / jamfruit tree, neotessmannia, dicraspidia 2. (Cytinaceae, Neuradaceae, Sarcolaenaceae, Sphaerosepalaceae; several genera) other malvales plant/tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Sapindaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Sapindaceae > Hippocastanoideae

-VST- ‘HIPPOCASTANOIDEAE’ 1. (genus *Acer*) maple tree, box elder tree, moosewood, sycamore 2. (genus *Aesculus*) horse chestnut, buckeye 3. (genera *Billia*, *Dipteronia*, *Handeliodendron*) other hippocastanoid plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Sapindaceae > Sapindoideae

VSTW- ‘SAPINDOIDEAE’ I 1. (genus *Litchi*) lychee tree 2. (genus *Dimocarpus*) longan, alupag 3. (genus *Nephelium*) rambutan, korlan, pulasan

VSTY- ‘SAPINDOIDEAE’ II 1. (genus *Blighia*) blighia tree, ackee fruit tree 2. (genus *Allphylus*) titberry, bastard taaibos, dune false crowberry / dune false currant 3. (genus *Diploglottis*) native tamarind, small-leaved tamarind

VSTL- ‘SAPINDOIDEAE’ III 1. (genus *Melicoccus*) mamoncillo / Spanish lime / genip / quenette / limoncillo 2. (genus *Talisia*) pitomba tree 3. (genus *Alectryon*) hairy bird’s eye / hairy alectryon, boonaree, titoki, beach bird’s eye

VSTR- ‘SAPINDOIDEAE’ IV 1. (genus *Guioa*) glossy tamarind 2. (genus *Castanospora*) brown tamarind 3. (genus *Pappea*) jacket plum / indaba tree / bushveld cherry

VSTR- 'SAPINDOIDEAE' V 1. (genus *Sapindus*) soapberry / soapnut 2. (genus *Jagera*) foambark / ferntree / pink foambark / ferntop / pink tamarind, daintree foambark 3. (genus *Mischocarpus*) woolly bush apple

VSTF- 'SAPINDOIDEAE' VI 1. (genus *Sarcopteryx*) steelwood tree / corduroy 2. (genus *Toeckima*) blunt-leaved steelwood, cape tamarind 3. (genus *Ungnadia*) Mexican buckeye

VSTÇ- 'SAPINDOIDEAE' VII 1. (genus *Arytera*) coogera 2. (Sapindoideae other than named genera; numerous genera) other sapindoid plant/tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Sapindaceae > Dodonaeoideae & Xanthoceroideae

-PSXW- 'DODONAEOIDEAE' I 1. (genus *Dodonaea*) hop-bush 2. (genus *Diplopeltis*) pepperflower 3. (genus *Harpulia*) tulipwood

-PSXL- 'DODONAEOIDEAE' II 1. (genus *Felicium*) ferntree / fern leaf tree 2. (genus *Ganophyllum*) scaly ash / scaly bark ash / Daintree hickory / honeywood 3. (genus *Hypelate*) inkwood / white ironwood

-PSXR- 'XANTHOCEROIDEAE & OTHER DODONAEOIDEAE' 1. (genus *Zanha*) velvet-fruited zanha 2. (Dodonaeoideae other than named genera; several genera) other dodonaeoid plant/tree 3. (Xanthoceroideae; genus *Xanthoceras*) yellowhorn / shiny leaf yellowhorn / goldenhorn / Chinse flowering chestnut

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Rutaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Rutaceae > Rutoideae

-MFKW- 'RUTOIDEAE' I 1. (genus *Ruta*) rue 2. (genus *Cneoridium*) bushrue 3. (genus *Thamnosma*) desert rue, turpentinebroom, sandboegoe

-MFKY- 'RUTOIDEAE' II 1. (genus *Dictamnus*) burning bush / dittany / gas plant / fraxinella 2. (genus *Corymborkis*, a.k.a. *Macrostylis*) cinnamon orchid 3. (genus *Calodendrum*) Cape chestnut

-MFKL- 'RUTOIDEAE' III 1. (genus *Diosma*, a.k.a. *Coleonema*) diosma, confetti bush, buchu, boegoe, Cape May 2. (genus *Adenandra*) buchu, China flower 3. (genus *Agathosma*) buchu / boegoe / bucco / bookoo / diosma

-MFKR- 'RUTOIDEAE' IV 1. (genus *Angostura*, a.k.a. *Cusparia*) angostura 2. (genus *Esenbeckia*) esenbeckia, jopoy, limoncillo, crucequilla, coya / cuala-cuala, hueso de tigre, gasparillo 3. (genus *Pilocarpus*) jaborandi

-MFKŘ- 'RUTOIDEAE' V 1. (genus *Boronia*) boronia, native rose, granite rose 2. (genus *Acradenia*) whitey wood / wirewood, yellow satinheart / bonewood 3. (genus *Asterolasia*) starbush

-MFKF- 'RUTOIDEAE' VI 1. (genus *Chorilaena*) karri oak / chorilaena 2. (genus *Correa*) correa, Dunally correct, native fuschia 3. (genus *Crowea*) crowea, waxflower

-MFKT- 'RUTOIDEAE' VII 1. (genus *Diplolaena*) Yanchep rose, wild rose, diplolaena 2. (genus *Eriostemon*) pink wax flower 3. (genus *Microcybe*) microcybe

-MFKÇ- 'RUTOIDEAE' VIII 1. (genus *Nematolepis*) nematolepis, satinwood / lancewood / bobie bobie / satin box 2. (genus *Phebalium*) phebalium, St. Helens wax flower 3. (genus *Zieria*) zieria, twiggy midge bush, stinkbush

-MFKM- 'RUTOIDEAE' IX 1. (genus *Zanthoxylum*, including genus *Fagara*) prickly ash, toothache, yellowwood, Chinese pepper / Sichuan pepper, Hercules' club / pepperbark, coco / cochucho / smelly sauco, forest knobwood, West Indian satinwood, yellow prickly, Japanese pepper / Korean pepper / chopi, Indian pepper / Indian ivy-rue, niaragato, zanthoxylum 2. (genus *Tetradium*) euodia / evodia / bee bee tree 3. (genus *Platydesma*) Hawai'i pilo kea

-MFKN- 'RUTOIDEAE' X 1. (genus *Pitavia*) pitao / pitran 2. (genus *Pentaceras*) penta ash / bastard crows ash / black teak 3. (genus *Orixa*) Japanese orixa / East Asian orixa

-MFKS- 'RUTOIDEAE' XI 1. (genus *Melicope*) doughwood / corkwood, melicope, pelea, wharangi, poataniwha, Maui ruta, catafaille, 'alani, mokihana 2. (genus *Bosistoa*) bosistoa / bonewood 3. (genus *Choisya*) Mexican orange

-MFKS- 'RUTOIDEAE' XII 1. (genus *Geijera*) Australian willow / native willow / wilga, axebreaker 2. (genus *Medicosma*) pinkheart / bonewood 3. (Rutaceae other than named genera; numerous genera) other rutoid plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Rutaceae > Aurantioideae

- NL-** 'GENUS *CITRUS* HYBRID' I 1. (*C. sinensis*) sweet orange 2. (*C. aurantium*) bitter orange / Seville orange 3. (*C. aurantiifolia*) key lime
- NLN-** 'GENUS *CITRUS* HYBRID' II 1. (*C. limon*) lemon 2. (*C. meyeri*) Meyer lemon 3. (*C. paradisi*) grapefruit
- NLNY-** 'GENUS *CITRUS* HYBRID' III 1. (*C. clementina*) clementine 2. (*C. tangelo*) tangelo 3. (*Citrus* hybrid other than previously named) other citrus hybrid
- NLÑ-** 'GENUS *CITRUS*' I 1. (*C. hystrix*) Kaffir lime / makrut 2. (*C. reticulata*) mandarin orange 3. (*C. medica*) citron
- NLNW-** 'GENUS *CITRUS*' II 1. (*C. glauca*, *C. australasica*, *C. australis*, *C. garrawayae*, *C. inodora*, *C. gracilis*, *C. warburgiana*, *C. wintersii*) Australian lime, finger lime, round lime, desert lime, wild lime 2. (*C. trifoliata*) trifoliate orange 3. (*C. platymamma*) byeonggyul
- NLÑW-** 'GENUS *CITRUS*' III 1. (*C. japonica*) kumquat 2. (*C. maxima*) pomelo / shaddock 3. (*Citrus* plant other than named species; numerous species) other citrus plant/tree
- NLMW-** 'AURANTIOIDEAE' I 1. (genus *Citropsis*) African cherry orange 2. (genus *Burkillanthus*) Malay ghostlime 3. (genus *Clymenia*) clymenia, a-mulis
- NLMY-** 'AURANTIOIDEAE' II 1. (genus *Pleiospermium*) Banguet Island orangeaster 2. (genus *Triphasia*) limeberry / sweet lime 3. (genus *Oxanthera*) oxanthera / false orange
- NLML-** 'AURANTIOIDEAE' III 1. (genus *Aegle*) bael / Bengal quince / golden apple / Japanese bitter orange / stone apple / wood apple 2. (genus *Limonia*) curd fruit / wood-apple / elephant-apple 3. (genus *Feroniella*) feroniella / ka sang / cra san / kawista-krikil / krasang / mak sang / canthan
- NLMR-** 'AURANTIOIDEAE' IV 1. (genus *Monanthocitrus*) monanthocitrus / spotseed-lime 2. (genus *Merrillia*) flowering merrillia / katinga / Malay lemon 3. (genus *Murraya*) curry tree / curry leaf, orange jessamine / Hawaiian mock orange / bartree / cosmetic-bark-tree / Chinese box / Burmese-boxwood, murraya
- NLMR-** 'AURANTIOIDEAE' V 1. (genus *Glycosmis*) orangeberry / gin berry, glycosmis, red-tangerine 2. (genus *Clausena*) horsewood, wampi / wampee, clausena 3. (Aurantioideae other than named genera; numerous genera) other aurantioideid plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Rutaceae > Spathelioideae

-DVR- 'SPATHELIOIDEAE' 1. (genus *Ptaeroxylon*) sneezewood tree 2. (genus *Cneorum*) spurge olive 3. (Spathelioideae other than named genera; several genera) other spathelioid plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Rutaceae > Toddalioideae

- PSMW-** 'TODDALIOIDEAE' I 1. (genus *Toddalia*) orange climber 2. (genus *Acronychia*) achronychia, silver aspen, hairy aspen, white aspen, doughwood, acid berry / plasticine tree, lemon aspen, hard aspen 3. (genus *Sarcomelicope*) yellowwood / yellow aspen / sarcomelicope
- PSMY-** 'TODDALIOIDEAE' II 1. (genus *Ptelea*) hoptree 2. (genus *Phellodendron*) cork-tree 3. (genus *Skimmia*) skimmia
- PSML-** 'TODDALIOIDEAE' III 1. (genus *Hortia*) bush orange 2. (genus *Casimiroa*) sapote, matasano 3. (genus *Amyris*) torchwood, chapotillo
- PSMR-** 'TODDALIOIDEAE' IV 1. (genus *Vepris*) white ironwood 2. (Toddalioideae other than named genera; numerous genera) other toddalioideid plant/tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Rutaceae > [remaining sub-families: Flindersioideae & Dictyolomatoideae]

-PSMR- ‘FLINDERSIOIDEAE & DICTYOLOMATOIDEAE’ 1. (Flindersioideae, genus *Flindersia*) silver silkwood / silver maple, Australian teak / crows ash, scented maple / rose ash, leopardwood / leopard tree, mountain silkwood, maple silkwood / rose silkwood, silver ash / cudgerie / bumpy ash, yellowwood / long Jack, hickory ash / Cairns hickory, Queensland maple / maple silkwood, scented maple, Bennett’s ash 2. (Flindersioideae, genus *Chloroxylon*) East Indian satinwood / Sri Lanka satinwood, Madagascar satinwood 3. (Dictyolomatoideae, genus *Dictyoloma*) dictyoloma

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Anacardiaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Anacardiaceae > Anacardioideae

-NLK- ‘ANACARDIOIDEAE’ I 1. (genus *Pistacia*) pistachio, American pistachio / Mexican pistache, mastic, Chinese pistache, betoum / wild pistachio / Persian turpentine tree / Mount Atlas mastic tree 2. (genus *Anacardium*) cashew, wild cashew 3. (genus *Mangifera*) mango tree

-NLKW- ‘ANACARDIOIDEAE’ II 1. (genus *Rhus*) sumac 2. (genus *Malosma*) laurel sumac 3. (genus *Protorhus*) red beech

-NLKY- ‘ANACARDIOIDEAE’ III 1. (genus *Comocladia*) maidenplum, poison ash / hogwood / thumbtack, guao 2. (genus *Cotinus*) smoketree / smokebush, chittamwood, Venetian sumach / dyer’s sumach 3. (genus *Schinus*) pepper tree

-NLKL- ‘ANACARDIOIDEAE’ IV 1. (genus *Amphipterygium*) cuachalalate 2. (genus *Toxicodendron*) poison oak, poison ivy, poison sumac, lacquer tree / varnish tree, wax tree 3. (genus *Metopium*) poisonwood / Florida poison tree

-NLKR- ‘ANACARDIOIDEAE’ V 1. (genus *Astronium*) kingwood / locustwood / tigerwood / zebrawood, glassywood, urunday 2. (genus *Blepharocarya*) bollygum / rose butternut 3. (genus *Euroschinus*) pink poplar / ribbonwood / maiden’s blush / blush cudgerie

-NLKR- ‘ANACARDIOIDEAE’ VI 1. (genus *Buchanania*) chirauli-nut, green plum, satinwood / lightwood 2. (genus *Gluta*) rengas, ringas / Burmese lacquer / theetsee / thitsi 3. (genus *Pachycormus*) Baja elephant tree / torote blanco / copalquín

-NLKF- ‘ANACARDIOIDEAE’ VII 1. (genus *Rhodosphaera*) deep yellowwood / yellow cedar / tulip satinwood 2. (genus *Schinopsis*) red quebracho 3. (genus *Searsia*) African sumac / willow rhus / karee

-NLKT- ‘ANACARDIOIDEAE’ VIII 1. (genus *Semecarpus*) Australian cashew nut, marking nut tree / phobi nut tree / varnish tree, Chuuk poison tree, velvet badulla 2. (genus *Smodingium*) African poison ivy 3. (genus *Ozoroa*) ozoroa, resin tree

-NLKC- ‘ANACARDIOIDEAE’ IX 1. (genus *Bouea*) plum mango / mango plum / gandaria 2. (Anacardioideae other than named genera; numerous genera) other anacardioid plant/tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Anacardiaceae > Spondiidoideae

-NLKM- ‘SPONDIIDOIDEAE’ I 1. (genus *Spondias*) hog plum / Spanish plum / golden apple, mombin, Tahitian apple, gully plum / ashanti plum / Java plum, Brazil plum 2. (genus *Choerospondias*) Nepali hog plum / lapsi 3. (Spondiidoideae other than Stems 1 and 2; numerous genera) other spondioid plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Nitrariaceae

-FXN- ‘NITRARIACEAE’ 1. (genus *Nitraria*) nitre bush / dillon bush 2. (genus *Peganum*) wild rue / Syrian rue / African rue / esfand / harmel 3. (genus *Tetradiclis*) tetradiclis

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Simaroubaceae

-NZXM- ‘SIMAROUBACEAE’ I 1. (genus *Simarouba*) paradise-tree / dysentery-bark / bitterwood / Lakshmi Taru 2. (genus *Quassia*) quassia, amargo / bitter-ash / bitter-wood 3. (genus *Ailanthus*) ailanthus, tree of heaven

-NZXN- 'SIMAROUBACEAE' II 1. (genus *Leitneria*) corkwood 2. (genus *Eurycoma*) Malaysian ginseng / tongkat ali / pasak bumi 3. (Simaroubaceae other than named genera: numerous genera) other simaroubaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Meliaceae

-MSFW- 'MELIOIDEAE' I 1. (genus *Melia*) chinaberry tree / Persian lilac / white cedar / Pride of India / bread-tree / syringa berri tree 2. (genus *Azadirachta*) neem tree / nimtree / Indian lilac 3. (genus *Sandoricum*) santol tree / sentul / cotton tree

-MSFY- 'MELIOIDEAE' II 1. (genus *Guarea*) bossé, guarea, pink mahogany, cramantee, American muskwood 2. (genus *Turraeanthus*) African satinwood / African white mahogany 3. (genus *Aphanamixis*) pithraj tree

-MSFL- 'MELIOIDEAE' II 1. (genus *Aglaia*) aglaia, Pacific maple, droopy leaf / priyangu 2. (genus *Lansium*) langsung / lanzones / duku / dokong 3. (genus *Dysoxylum*) rosewood, ivory mahogany, pink mahogany, spicy mahogany, yellow mahogany, hairy rosewood, New Zealand mahogany

-MSFR- 'MELIOIDEAE' IV 1. (genus *Nymania*) Chinese lantern 2. (genus *Owenia*) emu apple, onion cedar / bog onion 3. (genus *Trichilia*) Natal-mahogany, bariaco

-MSFR- 'MELIOIDEAE' V 1. (genus *Synoum*) scentless rosewood 2. (Melioidae other than named genera; numerous genera) other melioid plant/tree 3. [stem unassigned]

-MSXW- 'CEDRELOIDEAE' I 1. (genus *Swietenia*) mahogany tree 2. (genus *Cedrela*) Argentine cedar, Spanish cedar / Cuban cedar 3. (genus *Toona*) redcedar / toon / toona

-MSXL- 'CEDRELOIDEAE' II 1. (genus *Carapa*) crabwood / andiroba, tangare 2. (genus *Khaya*) African mahogany 3. (genus *Chukasia*) Indian mahogany / bastard cedar / white cedar / Indian redwood / Burma almond wood / chickrassy / chittagong wood

-MSXR- 'CEDRELOIDEAE' III 1. (genus *Entandrophragma*) sapele mahogany / sapelli, sipo / utile, kosipo, tiana 2. (genus *Lovoa*) brown mahogany / Kilimanjaro mahogany 3. (Cedreloideae other than named genera; several genera) other cedreloid plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales > Burseraceae and remaining Sapindales sub-families [i.e., Biebersteiniaceae & Kirkiaceae]

-NSXW- 'BURSERACEAE' I 1. (genus *Boswellia*) frankincense tree, luban / Yigaar tree, Indian oli-banum / Salai gugul 2. (genus *Commiphora*) myrrh plant, opopanax plant, bdellium plant, commiphora, rock corkwood, gugal / guggul / Mukul myrrh tree 3. (genus *Bursera*) torchwood copal / fragrant bursera, gumbo-limbo / copperwood / chaca / turpentine tree, elephant tree, palo santo

-NSXL- 'BURSERACEAE' II 1. (genus *Aucoumea*) gaboon / angouma / okoumé 2. (genus *Canarium*) Chinese white olive, mango bark / brown cudgerie / parsnip wood, scrub turpentine / carrot wood / Melville Island white beech, Chinese black olive, African canarium, black dhup / Raal dhup / black dammar 3. (genus *Dacryodes*) African pear / bush pear / bush plum / bush butter tree / butterfruit tree

-NSXR- 'BURSERACEAE' III & REMAINING SAPINDALES 1. (genus *Protium*) copal tree 2. (Burseraceae other than named genera; several genera) other burseraceous plant/tree 3. (Biebersteiniaceae and Kirkiaceae; several genera) other Sapindales plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Huerteales

-NSXM- 'HUERTEALES' 1. (Dipentodontaceae; genera *Dipentodon*, *Perrottetia*) 2. (Tapisciaceae; genera *Tapiscia*, *Huertia*) 3. (Gerrardinaceae and Petenaeaceae; genera *Gerrardina*, *Peteneae*)

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Picramniales

-NSXN- 'PICRAMNACEAE' 1. (genus *Picramnia*) bitterbush 2. (genus *Alvaradoa*) Mexican alvaradoa, alvaradoa 3. (genus *Nothotalisia*) nothotalisia

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Crossosomatales

-RTLM- 'CROSSOSOMATALES' I 1. (genus *Crossosoma*) California rockflower, ragged rockflower 2. (genus *Glosspetalon*, a.k.a., *Forsellesia*) greasebush 3. (genus *Apacheria*) Chiricahua rock flower / cliff brittlebush / Apache bush

-RTLMW- 'CROSSOSOMATALES' II 1. (genus *Staphylea*) bladdernut 2. (genus *Geissoloma*) guayalone 3. (genus *Ixerba*) tawari / whakou

-RTLMY- 'CROSSOSOMATALES' III 1. (genus *Stachyurus*) stachyurus 2. (genera *Velascoa*, *Guamatela*, *Aphloia*, *Dalrympelea*, *Strasburgia*) other crossosomatales plant/tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Geraniales

-TÇMW- 'GERANIACEAE' I 1. (genus *Geranium*) geranium, cranesbill, giant herb robert 2. (genus *Erodium*) filaree / heron's bill, storksbill / pinweed 3. (genus *California*) roundleaf stork's bill

-TÇMY- 'GERANIACEAE' II 1. (genus *Pelargonium*) geranium, pelargonium, storksbill 2. (genus *Monsonia*) monsonia, sarcocaulon 3. (genus *Hypseocharis*) hypseocharis

-TÇNW- 'FRANCOACEAE' I 1. (genus *Francoa*) bridalwreath 2. (genus *Melianthus*) honey flower 3. (genus *Greyia*) Kei bottlebrush, Natal bottlebrush, woolly bottlebrush

-TÇNY- 'FRANCOACEAE' II 1. (genus *Viviana*, a.k.a. *Cissarobryon*) té de burro / oreganillo 2. (Francoaceae other than named genera; several genera) other francoaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Myrtales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Myrtales > Myrtaceae

-ŘDK- 'MYRTEAE' I 1. (genus *Psidium*) guava / yellow guava / lemon guava, Costa Rican guava / cas, Jamaican guava, Cattley guava / strawberry guava / cherry guava, mountain guava, Galápagos guava, little guava, purple guava, araçá 2. (genus *Pimenta*) allspice / myrtle pepper / pimenta / pimento, West Indian bay tree / bay rum tree / ciliment 3. (genus *Rhodomyrtus*) finger cherry / Cooktown loquat, native guava, rose myrtle

-ŘDKW- 'MYRTEAE' II 1. (genus *Acca*) feijoa / pineapple guava / guavasteen 2. (genus *Hexachlamys*) ubajay 3. (genus *Plinia*) Brazilian grapetree / jaboticaba

-ŘDKY- 'MYRTEAE' III 1. (genus *Myrtus*) myrtle 2. (genus *Archirhodomyrtus*) rose myrtle 3. (genus *Eugenia*) needle-leaf cherry, rainforest plum, dune myrtle, mountain cherry, cherry of the Rio Grande, cerrado pear, pitomba, guayabilla, bush cherry, pitanga, bush orange, mountain stopper / Cedar Bay cherry / beach cherry, agatelang

-ŘDKL- 'MYRTEAE' IV 1. (genus *Luma*) Chilean myrtle / arrayán, chequén / huillipeta 2. (genus *Pilidiostigma*) plum myrtle 3. (genus *Myrcianthes*) twinberry / twinberry stopper, arrayán, guabiyu, lucumillo

-ŘDKR- 'MYRTEAE' V 1. (genus *Austromyrtis*) midgen berry / midyim / silky myrtle, narrow-leaf myrtle 2. (genus *Calypttranthes*) lidflower, spicewood, mountainbay 3. (genus *Gossia*) scrub ironwood, python tree, Cape ironwood, sweet myrtle / small-leaved myrtle

-ŘDKŘ- 'MYRTEAE' VI 1. (genus *Lithomyrtus*) beach myrtella 2. (genus *Lophomyrtus*) ramarama, rohutu 3. (genus *Rhodamnia*) smooth scrub turpentine, brush turpentine, cliff malletwood

-ŘDKF- 'MYRTEAE' VII 1. (genus *Myrcia*) red rodwood, pedro hume de caá 2. (genus *Myrciaria*) rumberry / guavaberry, camu-camu, cabeludinha, blue grape 3. (Myrteae other than named genera; numerous genera) other myrtean plant / tree

-ŘDKT- 'MYRTACEAE' I 1. (genus *Syzygium*) clove tree, satinish, riberry, Malay apple / Malacca apple / Malay rose apple / Otaheite cashew / water apple, coolamon / durobby, lilly pilly, magenta cherry, onionwood, bellfruit, water cherry, hute / waterbessie, sour cherry, purple cherry / black water gum, jambul / jambolan / black plum

Damson plum / Duhat plum / Portuguese plum, Indian bay leaf / Indonesian bay leaf / Salam leaf / Indonesian laurel, java apple / makopa / Samarang rose apple / wax jambu / wax apple, lady apple, Malabar plum / plum rose, sea apple 2. (genus *Waterhousea*) weeping lilli pilli 3. (genus *Syncarpia*) turpentine tree, satinay, yanderra

-ŘDKČ- 'MYRTACEAE' II 1. (genus *Allosyncarpia*) an-binik 2. (genus *Eucalyptus*) eucalyptus, wattle-leaved peppermint, Badgingarra box, mallee, white mahogany, Lakefield coolibah, gum, stringybark, whitebark, blackbutt, apple-box, soak yate, mallet, ironbark 3. (genus *Angophora*) rough-barked apple, dwarf apple, Charmhaven apple, rusty gum, Coolabah apple, sandstone apple, broad-leaved apple, smudgee, red gum / smooth-barked apple, narrow-leaved apple

-ŘDKS- 'MYRTACEAE' III 1. (genus *Corymbia*) bloodwood tree, ghost gum tree, spotted gum tree, yellow jack / yellowjacket, range gum, snappy gum, apple gum / cabbage gum, mountain marri, Gilbert River box, rustyjacket, carbeen / Moreton Bay ash, cadaga / cadaghi 2. (genus *Stockwellia*) stockwellia, Vic Stockwell's puzzle 3. (genus *Backhousia*) curry myrtle, Johnstone river hardwood, lemon scented myrtle / sweet berbera tree / lemon scented verberna / lemon ironwood, stonewood / limewood / greay teak / stony backhousia, grey myrtle / carrol / neverbreak / iron myrtle / cinnamon myrtle / ironwood, shatterwood / boomerang tree, giant ironwood / scrub ironwood / lancewood / ironwood box

-ŘDKŠ- 'MYRTACEAE' IV 1. (genus *Tristania*) water gum 2. (genus *Xanthostemon*) golden penda, bridal tree / northern penda, Philippine ironwood, crimson penda / red penda 3. (genus *Metrosideros*) rātā, lehua, mountain rose, tepual

-ŘDKM- 'MYRTACEAE' V 1. (genus *Astartea*) astartea 2. (genus *Babingtonia*) camphor myrtle, broom baeckea, babingtonia 3. (genus *Baeckea*) heath-myrtle, baeckea

-ŘDKN- 'MYRTACEAE' VI 1. (genus *Balaustion*) native pomegranate 2. (genus *Calytrix*) starflower, snow myrtle, fringe-myrtle, Kimberley heather, calytrix 3. (genus *Chamelaucium*) waxflower

-ŘDKV- 'MYRTACEAE' VII 1. (genus *Cheyniana*) bush pomegranate 2. (genus *Darwinia*) darwinia, bell 3. (genus *Homoranthus*) homoranthus, fairy bells, mouse bush, eastern feather flower

-ŘDKH- 'MYRTACEAE' VIII 1. (genus *Hypocalymma*) white myrtle, large myrtle, Swan River myrtle 2. (genus *Micromyrtus*) heath-myrtle 3. (genus *Pileanthus*) coppercups

-ŘDGG- 'MYRTACEAE' IX 1. (genus *Rinzia*) rinzia, desert rock myrtle 2. (genus *Sannantha*) tall baeckia, fern-leaf baeckia, sannantha 3. (genus *Scholtzia*) scholtzia

-ŘDGW- 'MYRTACEAE' X 1. (genus *Thryptomene*) thryptomene 2. (genus *Verticordia*) verticordia, feather flower, pixie ears, pink brownii / pink cauliflower, cauliflower bush, little chrysantha, landu, lambswool / native cauliflower / wild cauliflower, native tea, china cups, Morrison / Morrison-flower / Christmas Morrison, little grandiflora, Eurardy magenta 3. (genus *Lophostemon*) brush box / Queensland box / Brisbane box, Northern swamp box, milky box, swamp mahogany / swamp turpentine / swamp box

-ŘDGY- 'MYRTACEAE' XI 1. (genus *Agonis*) Western Australian peppermint / Swan River peppermint / willow myrtle, summer snowflakes 2. (genus *Asteromyrtus*) liniment-tree 3. (genus *Kunzea*) tick bush, rawiritoa, kunzea, spearwood / pondil, kanuka, manuka, muntries

-ŘDGL- 'MYRTACEAE' XII 1. (genus *Leptospermum*) tea-tree, tantoon / jellybush, turkey bush, manuka, wurunuru 2. (genus *Texandria*) wattie / native cedar / juniper myrtle, teatree, swamp peppermint 3. (genus *Melaleuca*) paperbark, honey-myrtle, teatree, mock olive, cajuput / white samet, umbrella bush, bottlebrush, karnbor, totem poles, hillock bush, moonah, gorada, robin redbreast bush, snow-in-summer / budjur, broom bush, banbar, boree, claw flower, mindiyed, melaleuca

-ŘDGR- 'MYRTACEAE' XIII 1. (genus *Callistemon*) bottlebrush 2. (genus *Calothamnus*) bottlebrush, claw flower, blood-flower 3. (genus *Beaufortia*) beaufortia, bottlebrush

-ŘDGR- 'MYRTACEAE' XIV 1. (genus *Lysicarpus*) brown hazelwood / budgeroo 2. (genus *Regelia*) regelia 3. (Myrtaceae other than named genera; numerous genera) other myrtaceous plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > rosids > eurosids > malvids > Myrtales > Melastomataceae

-MFX- 'MELASTOMATACEAE' I 1. (genus *Melastoma*) blue tongue / native lasiandra, Asian melastome, Singapore rhododendron / Malabar melastome, Straits rhododendron, fox-gongued melastoma / blood-red melastoma / red melastome 2. (genus *Dissotis*) pink lady / Spanish shawl / rockrose 3. (genus *Medinilla*) medinilla, rose grape, tagimaucia, chandelier tree

-**MFXL**- ‘MELASTOMATACEAE’ II 1. (genus *Henriettea*) camasey 2. (genus *Rhexia*) meadow-beauty, handsome Harry 3. (genus *Tetrazygia*) clover ash, West Indian lilac

-**MFXR**- ‘MELASTOMATACEAE’ III 1. (genus *Clidemia*) soapbush / Koster’s curse 2. (Melastomataceae other than named genera; numerous genera) other melastomataceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Myrtales > Lythraceae

-**ÑÑP**- ‘LYTHRACEAE’ I 1. (genus *Punica*) pomegranate 2. (genus *Trapa*) water caltrop / buffalo nut / bat nut / devil pod / ling nut / mustache nut 3. (genus *Sonneratia*) mangrove apple, sonneratia, apple mangrove

-**ÑÑPW**- ‘LYTHRACEAE’ II 1. (genus *Lythrum*) loosestrife, lythrum, grass-poly, water purslane 2. (genus *Rotala*) Indian toothcup, rotala 3. (genus *Lawsonia*) henna tree / hina / mignonette tree / Egyptian privet

-**ÑÑPY**- ‘LYTHRACEAE’ III 1. (genus *Lagerstroemia*) crape myrtle / crêpe myrtle 2. (genus *Heimia*) sun opener / shrubby yellowcrest 3. (genus *Decodon*) swamp loosestrife / waterwillow

-**ÑÑPL**- ‘LYTHRACEAE’ IV 1. (genus *Cuphea*) cuphea, cigar plant, tarweed / blue waxweed, waxweed, false heather / Mexican heather 2. (genus *Ammannia*) redstem, ammannia 3. (Lythraceae other than named genera; numerous genera) other lythraceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Myrtales > Combretaceae

-**ÑÑPL**- ‘COMBRETACEAE’ I 1. (genus *Combretum*) bushwillow, leadwood tree, orange flame vine / chameleon vine, combretum 2. (genus *Conocarpus*) buttonwood / button mangrove 3. (genus *Terminalia*) white afara, white olive, crocodile tree, white arudah / arjuna / koha, palo amarillo / tanimbú, silver greywood, jalool, Indian almond / tropical almond / umbrella tree, myrobalan / inknut, pindang quondong, billygoat plum / kakadu plum / gubinge, idigbo / black afara /; blackbark / brimstone wood / shingle wood, okari nut, Madagascar almond tree, rosewood, marool, damson, limba, terminalia

-**ÑÑPR**- ‘COMBRETACEAE’ II 1. (genus *Laguncularia*) white mangrove 2. (genus *Lumnitzera*) black mangrove, Tonga mangrove 3. (genus *Bucida*) bullet tree, spiny black olive

-**ÑÑPŘ**- ‘COMBRETACEAE’ III 1. (genus *Buchenavia*) buchenavia, granadillo 2. (Combretaceae other than named genera; several genera) other combretaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Myrtales > Onagraceae

-**ÑÑPF**- ‘ONAGRACEAE’ I 1. (genus *Fuchsia*) fuchsia 2. (genus *Circaea*) enchanter’s nightshade 3. (genus *Ludwigia*) primrose-willow, water-purslane, water-primrose, ludwigia, bushy seedbox / rattlebox, marsh seedbox, mosaic flower / false loosestrife

-**ÑÑPT**- ‘ONAGRACEAE’ II 1. (genus *Epilobium*) willowherb, spike-primrose, boisduvalia, hummingbird flower / hummingbird trumpet / California-fuchsia 2. (genus *Chamaenerion*) willowherb, fireweed, Saint Anthony’s laurel 3. (genus *Taraxia*) goldeneggs / sun cup

-**ÑÑPÇ**- ‘ONAGRACEAE’ III 1. (genus *Camissonia*) suncup, evening primrose 2. (genus *Calylophus*) sundrops, evening-primrose 3. (genus *Camissoniopsis*) suncup, evening primrose

-**ÑÑPS**- ‘ONAGRACEAE’ IV 1. (genus *Chylisma*) browneyes / brown-eyed primrose, yellow cups, suncup, evening primrose 2. (genus *Chylismiella*) wingfruit suncup 3. (genus *Oenothera* [including previous genus *Gaura*) suncup, sundrop, evening primrose, gaura, beeblossum

-**ÑÑPŠ**- ‘ONAGRACEAE’ V 1. (genus *Clarkia*) clarkia, godetia, mountain garland, farewell-to-spring, fairyfan, red ribbons, pink fairies / ragged robin 2. (genus *Gayophytum*) groundsmoke 3. (Onagraceae other than named genera; several genera) other onagraceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Myrtales > Vochysiaceae

-ÑÑPH- ‘VOCHYSIACEAE’ 1. (genus *Qualea*) jacaré, pau-terra 2. (Vochysiaceae other than Stem 1; several genera) other vochysiaceous plant/tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Myrtales > remaining families: Alzateaceae, Crypteroniaceae & Penaeaceae [including Oliniaceae and Rhynchocalycaceae]

-ÑÑPHW- ‘OTHER MYRTALES’ 1. (Alzateaceae; genus *Alzatea*) alzatea 2. (Crypteroniaceae; 3 genera) crypteroniaceae plant/tree 3. (Penaeaceae:several genera) penaeaceae plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fabales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fabales > Fabaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fabales > Fabaceae > Faboideae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fabales > Fabaceae > Faboideae > Phaseoleae

-JPW- ‘PHASEOLUS VULGARIS (COMMON BEAN)’ I 1. kidney/red bean plant 2. white/navy bean plant 3. cannellini bean plant

-JPY- ‘PHASEOLUS VULGARIS (COMMON BEAN)’ II 1. pinto bean plant 2. black turtle bean plant 3. flageolet bean plant

-JPL- ‘OTHER PHASEOLUS SPECIES’ I 1. (*P. coccineus*) runner bean plant 2. (*P. acutifolius*) tepary bean plant 3. (*P. dumosus*) year bean plant

-JPR- ‘OTHER PHASEOLUS SPECIES’ II 1. (*P. lunatus*) lima/butter bean plant 2. (*P. maculatus*) spotted bean plant 3. (*Phaseolus* other than named species) slimjim bean plant, other *Phaseolus* bean plant

-JPR- ‘VIGNA SPECIES’ I 1. (*V. unguiculata*) cowpea, black-eyed pea, crowderpea, Chinese long-bean / pea-bean 2. (*V. angularis*) adzuki bean 3. (*V. radiata*) mung bean / green gram / golden gram / mash bean / green soybean / celera-bean / Jerusalem-pea

-JPF- ‘VIGNA SPECIES’ II 1. (*V. mungo*) black gram / black lentil / white lentil / urd-bean / urad bean 2. (*V. umbellata*) rice bean / red bean / climbing mountain bean / mambi bean / Oriental-bean 3. (*Vigna* other than named species; numerous species) moth bean / mat bean / Turkish gram, creole-bean, jungle mat bean / jungli-bean / African gram / three-lobe-leaved cowpea, zombi pea / wild cowpea, sarawak-bean, Dalrymple vigna, Bambara groundnut / Congo goober /hog-peanut / jugo bean, pencil yam / Malaga-bean / parsnip-bean, dune-bean / notched cowpea / sea-bean, Oahu cowpea, creeping vigna, other *Vigna* bean

-JPC- ‘PHASEOLINAE’ I 1. (genus *Cochliasanthus*) corkscrew vine / snail vine / snail creeper / snailflower / snail bean 2. (genus *Dipogon*) okie bean / Cape sweet-pea / dolichos pea / mile-a-minute vine 3. (genus *Lablab*) lablab-bean / hyacinth bean, bonavist bean / bonavist pea / Egyptian kidney bean / Indian bean / Australian pea / bataw

-JPT- ‘PHASEOLINAE’ II 1. (genus *Macroptilium*) purple bush-bean, supine bean 2. (genus *Macrotyloma*) ground bean / Kersting’s groundnut, horse gram / kulthi 3. (genus *Psophocarpus*) winged bean / goa bean / four-angled bean / four-cornered bean / manila bean / princess bean / asparagus bean / dragon bean / cigarrillas

-JPL- ‘PHASEOLINAE’ III 1. (genus *Sphenostylis*) wild sweet-pea, African yam bean 2. (genus *Strophostyles*) wild bean, fuzzybean, amberique-bean / annual sand bean 3. (*Phaseolinae* other than named genera/species [including *Phaseolus* other than named species]; numerous genera/species) other phaseoline bean

-JFW- ‘PHASEOLEAE’ I 1. (genus *Glycine*) soybean / soya bean, wild soybean, glycine, love creeper 2. (genus *Pachyrhizus*) jicama plant / yam bean, ahipa / Andean yam bean, goiteño / nupe / jacatupe / Amazonian yam bean 3. (genus *Pueraria*) kudzu / Japanese arrowroot, puero, East Asian arrowroot

-JFY- ‘PHASEOLEAE’ II 1. (genus *Clitoria*) pigeon wings, blue pea / butterfly pea / cordofan pea / Darwin bea / bluebellvine 2. (genus *Centrosema*) butterfly pea / wild blue vine / blue bell, centro 3. (genus *Amphicarpea*) hogpeanut

- JFL**- 'PHASEOLEAE' III 1. (genus *Cajanus*) pigeon pea / Congo pea 2. (genus *Rhynchosia*) snout-bean, jumby-bean / burn-mouth-vine 3. (genus *Flemingia*, a.k.a. *Thunbergia*) Bengal clockvine / Bengal trumpet / blue skyflower / blue thunbergia / blue trumpetvine / skyvine, luck plant / wild hops, sohphlang
- JFR**- 'PHASEOLEAE' IV 1. (genus *Dioclea*) clusterpea 2. (genus *Canavalia*) jack-bean, barbicou-bean, giant stock-bean / gotani-bean / horse-bean / seaside-bean / wonder-bean, sword bean / scimitar-bean, Cathie's bean, bay bean / beach-bean / fire-bean / Mackenzie-bean 3. (genus *Galactia*) milk pea / beach pea / wild pea
- JŘ**- 'PHASEOLEAE' V 1. (genus *Kennedia*) kennedia, coral vine, black coral pea, purple running pea, running postman, dusky coral pea 2. (genus *Hardenbergia*) native lilac / wild sarsaparilla / wisteria climber, false sarsaparilla / purple coral pea / happy wanderer / waraburra 3. (genus *Butea*) flame-of-the-forest / bastard teak
- JFM**- 'PHASEOLEAE' VI 1. (genus *Erythrina*) coral tree, flame tree, cock's spur, coral bean / Cherokee bean / red cardinal / cardinal spear, lucky bean tree, mulungu, mandara, tiger's claw / sunshine tree / roluos tree, ploughbreaker, erythrina 2. (genus *Mucuna*) deer-eye bean / donkey-eye bean / ox-eye bean / hamburger seed 3. (genus *Strongylodon*) jade vine / emerald vine
- JFN**- 'PHASEOLEAE' VII 1. (genus *Apios*) potato bean / Indian potato / American groundnut / cinnamon vine / America-hoidomo / groundnut 2. (Phaseoleae other than named genera/species; numerous genera/species) other phaseolean bean 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > rosids > eurosids > fabids > Fabales > Fabaceae > Faboideae > tribes other than Phaseoleae

- ŘPP**- 'PISUM SATIVUM (PEA)' 1. (*P. sativum*) common pea plant 2. (*P. s. macrocarpon*) snap pea plant 3. (*P. s. saccharatum*) snow pea plant
- ŘPPW**- 'FABOIDEAE' I 1. (*Vicia faba*) fava bean plant 2. (*Vicia* species other than *V. faba*; numerous species) vetch 3. (genus *Lens*) lentil
- ŘPPY**- 'FABOIDEAE' II 1. (genus *Lathyrus*) peavine, vetchling, Indian pea, red pea, tuberous pea 2. (genus *Cicer*) chickpea/garbanzo bean plant 3. (genus *Sesbania*) riverhemp, poisonbean, rattlebox / rattlebush, vegetable hummingbird, sesbania
- ŘPPL**- 'FABOIDEAE' III 1. (genus *Arachis*) peanut plant 2. (genus *Inocarpus*) Tahitian chestnut 3. (genus *Stylosanthes*) pencilflower
- ŘPPR**- 'FABOIDEAE' IV 1. (genus *Tipuana*) tipa / rosewood / pride of Bolivia 2. (genus *Centrolobium*) canarywood, amarillo de Guayaquil 3. (genus *Pterocarpus*) padauk, klat, muninga / barwood, Indian kino / Malabar kino, mututi, red sandalwood / red sanders, African coralwood
- ŘPPŘ**- 'FABOIDEAE' V 1. (genus *Dalbergia*) Madagascar rosewood, Brazilian tulipwood, Hluhluwe creeper, Bahia rosewood, climbing flat bean, fragrant rosewood, coin vine, kingwood, tracwood, Bombay blackwood / East Indian rosewood / Indian palisandre / Java palisandre, palisander, Siamese rosewood, Amazon rosewood, Honduras rosewood, Guatemalan rosewood, African blackwood / African ebony / African grenadio; zebrawood, moneybush 2. (genus *Aeschynomene*) jointvetch, sola / sola pith plant, shyleaf, ambatch 3. (genus *Nissolia*) yellowhood
- ŘPPF**- 'FABOIDEAE' VI 1. (genus *Andira*) angelin / cabbagebark / cabbage tree, St. Martin rouge 2. (genus *Hovea*) purple pea, hovea, rusty pods, mountain beauty, devil's pins 3. (genus *Templetonia*) cookies tongues, centipede bush, templetonia
- ŘPPÇ**- 'FABOIDEAE' VII 1. (genus *Calpurnia*) wild laburnum 2. (genus *Liparia*) orange nodding-head / mountain dahlia 3. (genus *Virgilia*) tree-in-a-hurry / cape lilack / blossom tree / pink blossom tree
- ŘPPT**- 'FABOIDEAE' VIII 1. (genus *Ammodendron*) sand acacia 2. (genus *Baphia*) African sandalwood 3. (genus *Castanospermum*) blackbean / Moreton Bay chestnut
- ŘPPL**- 'FABOIDEAE' IX 1. (genus *Cladrastis*) yellowwood 2. (genus *Dermatophyllum*) mescal bean 3. (genus *Haplormosia*) Liberian black grum
- ŘPPS**- 'FABOIDEAE' X 1. (genus *Luetzelburgia*) sucupira / angelim 2. (genus *Ormosia*) horse-eye bean, ormosia 3. (genus *Pericopsis*) African teak, nandu wood
- ŘPPŠ**- 'FABOIDEAE' XI 1. (genus *Sophora*) kohwhai, ku shen, mamane, sophora root, necklace pod, toromiro, mayo / mayú, pelú, lignum vitae 2. (genus *Styphnolobium*) necklacepod, coralbean / Eve's necklace 3. (genus *Xanthocercis*) Mashatu tree / Nyala tree
- ŘPPH**- 'FABOIDEAE' XII 1. (genus *Genista*) broom, petty whin / needle furze, aulaga, talavera, greenweed, woodwaxen 2. (genus *Argyrocystis*) pineapple broom / Moroccan broom 3. (genus *Calicotome*) thorny broom, spiny broom
- ŘPPHW**- 'FABOIDEAE' XIII 1. (genus *Cytisus*) broom, Scotch broom, Spanish broom / French broom / Portuguese broom / hairy-fruited broom 2. (genus *Chamaecytisus*) Portuguese broom / white broom, big-flower broom / clustered broom, tagasaste, purple broom 3. (genus *Lembotropis*) black broom

- ŘPK-** 'FABOIDEAE' XIV 1. (genus *Laburnum*) golden chain / golden rain / laburnum 2. (genus *Laburnocytisus*) groom laburnum / Adam's laburnum 3. (genus *Petteria*) Dalmatian laburnum
- ŘPKW-** 'FABOIDEAE' XV 1. (genus *Lupinus*) lupin, lupine 2. (genus *Retama*) bridal broom 3. (genus *Spartium*) Spanish broom / rush broom / weaver's broom
- ŘPKY-** 'FABOIDEAE' XVI 1. (genus *Ulex*) gorse, furze, whin 2. (genus *Crotalaria*) rattlepod / rattlebox, chipilin, devil-bean / rattleweed / shack-shack, harebells / rabbit-bells, giant striata / chique chique, brown hemp / Indian hemp / Madras hemp / sunn hemp, green birdflower / regal birdflower 3. (genus *Cyclopia*) honeybush / honeybush tea plant
- ŘPKL-** 'FABOIDEAE' XVII 1. (genus *Amorpha*) false indigo 2. (genus *Dalea*) prairie clover, purpletassels, summer farewell, dalea, white tassel-flower, whitetassels, Gentry's indigobush 3. (genus *Eysenhardtia*) kidneywood tree
- ŘPKR-** 'FABOIDEAE' XIX 1. (genus *Thermopsis*) goldenbanners / false-lupines 2. (genus *Baptisia*) wild indigo, galse indigo, catbells, scareweed, rattleweed, gopherweed, horseflyweed / indigo-broom / yellow broom 3. (genus *Wisteria*) wisteria
- ŘPKŘ-** 'FABOIDEAE' XXI 1. (genus *Indigofera*) indigo plant 2. (genus *Cyamopsis*) guar / Lond bean 3. (genus *Lonchocarpus*) lancepod, philenoptera / apple leaf / rain tree -
- ŘPKF-** 'FABOIDEAE' XXII 1. (genus *Millettia*) millettia, panga panga, Indian beech / Pongam oiltree / pongamia 2. (genus *Piscidia*) fishpoison tree, Jamaican dogwood / fishfuddle 3. (genus *Tephrosia*) hoarypea, tephrosia, Flinders River poison, sandhill tippitoes, goat-rue / catgut / rabbit pea, fish-poison-bean
- ŘPKÇ-** 'FABOIDEAE' XXIII 1. (genus *Alysicarpus*) moneywort, alys, alyce clover, buffalo clover / one-leaf clover 2. (genus *Desmodium*) tick-trefoil, tick clover, beggarweed, Kaimi clover, dollar leaf, silverleaf, hitchhikers, beggar lice 3. (genus *Pseudarthria*) pink velvet bean
- ŘPKŤ-** 'FABOIDEAE' XXIV 1. (genus *Kummerowia*) Korean bushclover, Japanese bushclover 2. (genus *Lespedeza*) lespedeza, bush clover, Japanese clover 3. (genus *Abrus*) jequirity bean / rosary pea
- ŘPKS-** 'FABOIDEAE' XXV 1. (genus *Bituminaria*) Arabian pea / pitch trefoil 2. (genus *Hoita*) scurfpea / leather-root 3. (genus *Orbexilum*) leather-root, French-grass / lanceleaf scurfpea, Sampson's snakeroot
- ŘPKŠ-** 'FABOIDEAE' XXVI 1. (genus *Pedimelum*) Indian breadroot, skunktop, turniproot, buckroot, buffalo pea / tall-bread scurf-pea 2. (genus *Psoralea*) white tumbleweed, prairie turnip / timpsula 3. (genus *Psoralidium*) lemon scurfpea / wild lemonweed / dune scurfpea, slimflower scurfpea
- ŘPKV-** 'FABOIDEAE' XXVII 1. (genus *Rupertia*) California tea / rupertia, forest scurfpea 2. (genus *Syrmatium*) Bentham's broom / Bentham's deerweed, bird's-foot trefoil, Haydon's lotus / pygmy lotus, rush broom / rush deervetch, beach lotus / Nuttall's lotus, island broom 3. (genus *Dipteryx*) tonka bean, almendro, baru, almendrillo
- ŘPKH-** 'FABOIDEAE' XXVIII 1. (genus *Swartzia*) Brazilian ebony / panococo 2. (genus *Cordyla*) wild mango 3. (genus *Pickeringia*) chaparral pea
- ŘPKHW-** 'FABOIDEAE' XXIX 1. (genus *Astragalus*) milkvetch, locoweed, goat's-thorn, cock's-head, woollypod 2. (genus *Carmichaelia*) North Island broom, South Island broom, leafy broom, coral broom, dwarf broom, scented broom, large-flowered broom, pink broom, whip broom, wheeping broom / tree broom, giant-flowered broom 3. (genus *Galega*) goat's rue
- ŘPT-** 'FABOIDEAE' XXX 1. (genus *Clianthus*) kakabeak / parrot's beak / parrot's bill / lobster claw 2. (genus *Colutea*) bladder senna 3. (genus *Montigena*) scree pea
- ŘPTW-** 'FABOIDEAE' XXXI 1. (genus *Glycyrrhiza*) licorice / American licorice 2. (genus *Oxytropis*) locoweed, oxytrope, oxytropis 3. (genus *Sphaerophysa*) alkali swainsonpea / Austrian peaewad / red bladdervetch
- ŘPTY-** 'FABOIDEAE' XXXII 1. (genus *Sutherlandia*) cancer bush / balloon pea / sutherlandia 2. (genus *Swainsona*) swainson-pea, desert pea, darling pea 3. (genus *Sphinctospermum*) hourglass peaseed
- ŘPTL-** 'FABOIDEAE' XXXIII 1. (genus *Lotus*) bird's-foot trefol / bacon-and-eggs, deervetch, trefoil 2. (genus *Acmispon*) bird's-foot trefoil, silver lotus, Spanish clover, deervetch, silky deerweed, Heermann's lotus, Chile lotus 3. (genus *Ornithopus*) bird's foot, yellow serradella
- ŘPTR-** 'FABOIDEAE' XXXIV 1. (genus *Ottleya*) shrubby deervetch / desert rock-pea, stiff-haired lotus / strigose bird's foot trefoil, Wright's deervetch 2. (genus *Anthyllis*) kidneyvetch / woundwort 3. (genus *Coronilla* [including genus *Securigera*) crown vetch, scorpion vetch

- ŘPTŘ-** 'FABOIDEAE' XXXV 1. (genus *Hippocrepis*) horseshoe vetch, scorpion senna 2. (genus *Hosackia*) big deervetch / broad-leafed lotus, bird's-foot trefoil, meadow lotus, thicket trefoil 3. (genus *Scorpiurus*) scorpion's-tail / caterpillar-plant
- ŘPTÇ-** 'FABOIDEAE' XXXVI 1. (genus *Coursetia*) babybonnets 2. (genus *Genistidium*) brushpea 3. (genus *Gliricidia*) quickstick
- ŘPTĹ-** 'FABOIDEAE' XXXVII 1. (genus *Olneya*) ironwood / desert ironwood / palo fierro 2. (genus *Peteria*) spine-noded milkvetch / Thompson's peteria 3. (genus *Robinia*) locust, false acacia
- ŘPTH-** 'FABOIDEAE' XXXVIII 1. (genus *Hedysarum*) sweetvetch, sweet-broom, alpine sainfoin 2. (genus *Alhagi*) camelthorn / camelthorn-bush, manna tree / mannaplant 3. (genus *Caragana*) Siberian peashrub / Siberian pea-tree / caragana
- ŘPTHW-** 'FABOIDEAE' XXXIX 1. (genus *Ebenus*) Cretan ebony 2. (genus *Halimodendron*) common salt tree / Russian salt tree 3. (genus *Onobrychis*) sainfoin
- ŘTP-** 'FABOIDEAE' XXXIX 1. (genus *Ebenus*) Cretan ebony 2. (genus *Halimodendron*) common salt tree / Russian salt tree 3. (genus *Onobrychis*) sainfoin
- ŘTPW-** 'FABOIDEAE' XL 1. (genus *Trifolium*) clover, trefoil 2. (genus *Melilotus*) melilot, sweet clover 3. (genus *Medicago*) alfalfa plant, medick, burclover, button clover, nonesuch, hop clover, moon trefoil, alfalfa arborea
- ŘTPY-** 'FABOIDEAE' XLI 1. (genus *Ononis*) restharrow 2. (genus *Parochetus*) shamrock pea / blue oxalis 3. (genus *Trigonella*) blue fenugreek / blue melilot
- ŘTPL-** 'FABOIDEAE' XLII 1. (genus *Aotus*) aotus, golden pea 2. (genus *Gompholobium*) glory pea / wedge-pea 3. (genus *Daviesia*) bitter-pea, bookleaf, marno
- ŘTPR-** 'FABOIDEAE' XLIII 1. (genus *Oxylobium*) shaggy pea 2. (genus *Podolobium*) shaggy pea 3. (genus *Pultenaea*) bush-pea
- ŘTPŘ-** 'FABOIDEAE' XLIV 1. (genus *Chorizema*) heart-leaf flame pea / Australian flame pea, holly flame pea 2. (genus *Dillwynia*) parrot-pea 3. (genus *Stonesiella*) clubmoss bush-pea
- ŘTPÇ-** 'FABOIDEAE' XLV 1. (genus *Sphaerolobium*) globe-pea 2. (genus *Isotropis*) poison sage, granny bonnets, lamb poison 3. (genus *Gastrolobium*) poison plant, brother-brother, breeleya, Swan River pea, mountain pea, cranbrook pea
- ŘTPF-** 'FABOIDEAE' XLVI 1. (genus *Callistachys*) wonnich / native willow 2. (genus *Jacksonia*) stinkwood, dogwood, waldjumi 3. (genus *Viminaria*) native broom
- ŘTPĴ-** 'FABOIDEAE' XLVII 1. (genus *Bossiaea*) bossiaea, water bush, cactus pea 2. (genus *Goodia*) golden-tip 3. (genus *Platylobium*) flat-pea, eggs-and-bacon pea
- ŘTPL-** 'FABOIDEAE' XLVIII 1. (genus *Eutaxia*) eutaxia 2. (genus *Mirbelia*) mirbelia 3. (Faboideae other than named genera; numerous genera) other faboid plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > rosids > eurosids > fabids > Fabales > Fabaceae > Cercidoideae

- ŘTPS-** 'CERCIDOIDEAE' I 1. (genus *Cercis*) redbud, Judas tree 2. (genus *Barklya*) leather jacket / crown of gold tree 3. (genus *Piliostigma*) camel's foot tree / monkey bread / monkey biscuit tree, purple orchid tree
- ŘTPŠ-** 'CERCIDOIDEAE' II 1. (genus *Bauhinia*) orchid tree, bauhinia, bidi leaf tree 2. (genus *Lysiphyllum*) bauhinia / jigal tree, mountain ebony / Queensland ebony, northern beantree 3. (genus *Schnella*) granny backbone, monkey ladder vine
- ŘTPH-** 'CERCIDOIDEAE' III 1. (genus *Phanera* [including genus *Cheniella*]) bauhinia, butterfly tree, orchid tree / mountain ebony 2. (genus *Tylosema*) marama bean / gemsbok bean 3. (Cercidoideae other than named genera; several genera) other cercidoid plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > rosids > eurosids > fabids > Fabales > Fabaceae > Caesalpinoideae

- ŘPT-** 'CAESALPINEAE' I 1. (genus *Caesalpinia*) peacock flower / poinciana / red bird of paradise / Mexican bird of paradise / pride of Barbados / flos pavonis, nicker 2. (genus *Biancaea*) shoofly / Mauritius thorn / Mysore thorn / cat's claw, sappanwood / Indian redwood 3. (genus *Cordeauxia*) yeheb bush
- ŘPTW-** 'CAESALPINEAE' II 1. (genus *Denisophytum*) fewflower holdback 2. (genus *Erythrostemon*) tailed nicker, bird of paradise, Mexican holdback 3. (genus *Guilandina*) nicker, nicker nut
- ŘPTY-** 'CAESALPINEAE' III 1. (genus *Haematoxylum*) logwood, peachwood / brazilette 2. (genus *Hoffmannseggia*) rushpea, holdback, nicker, pig-nut / hog potato 3. (genus *Libidibia*) Brazilian ironwood / leopard tree, divi-divi, Argentinian brown ebony, quebrahacha
- ŘPTL-** 'CAESALPINEAE' IV 1. (genus *Moullava*) teri pod 2. (genus *Paubrasilia*) brazilwood / pernambuco wood 3. (genus *Pomaria*) holdback, nicker
- ŘPTR-** 'CAESALPINEAE' V 1. (genus *Pterolobium*) redwing, camp siege / bhoca 2. (genus *Tara*) tara 3. (Caesalpineae other than named genera; several genera) other caesalpine plant/vine
- ŘTT-** 'CAESALPINOIDEAE' I 1. (genus *Cassia*) cassia, wishing-tree, gold medallion tree, sjambok pod, native laburnum, golden shower, Palawan cherry, drumstick tree 2. (genus *Senna*) senna, candlebush / Christmas candle / empress candle plant / ringworm shrub / candelabra bush, cassia, false sicklepod, avaram / Matara-tea, West Indian showertree, Christmas bush / money bush / yellow candlewood, coffee-weed / java-bean / American sicklepod, anthbush / coffee-senna / septicweed / stinkingweed, monkey pod, Argentine wild sensitive plant, kassodtree / Thailand shower, arsenic-bush / Dooleyweed, New Mexico wild sensitive plant 3. (genus *Chamaecrista*) sensitive pea
- ŘTTW-** 'CAESALPINOIDEAE' II 1. (genus *Burkea*) wild syringa tree 2. (genus *Erythrophleum*) Cooktown ironwood, ordeal tree 3. (genus *Melanoxylum*) brauna wood tree
- ŘTTY-** 'CAESALPINOIDEAE' III 1. (genus *Delonix*) poinciana 2. (genus *Parkinsonia*, a.k.a. *Cercidium*) palo verde, brea 3. (genus *Schizolobium*) Brazilian firetree / Brazilian fern tree
- ŘTL-** 'CAESALPINOIDEAE' IV 1. (genus *Ceratonia*) carob tree 2. (genus *Tachigali*) suicide tree 3. (genus *Acrocarpus*) pink cedar
- ŘTTR-** 'CAESALPINOIDEAE' V 1. (genus *Gleditsia*) honey locust, water locust / swamp locust, Caspian locust 2. (genus *Gymnocladus*) coffee tree, dekan tree, soap tree / Chinese coffee tree 3. (Caesalpinoideae other than named genera) other caesalpinoid plant/tree
- ŘKT-** 'MIMOSOIDEAE' I 1. (genus *Mimosa*) mimosa, sensitive plant, sensitive tree, sensitive-briar, catclaw briar 2. (genus *Anadenanthera*) calcium tree, yopo 3. (genus *Parkia*) African locust bean
- ŘKTW-** 'MIMOSOIDEAE' II 1. (genus *Acacia*) wattle, acacia, jam, raspberry jam / fine leaf jam, gidgee, mulga, salwood, ashburton willow / moon dyne tree, creekline miniritchi, boobialla / native willow, yalgoo, prickly Moses, currawang, lancewood, Minni Ritchie, needlewood, myall, false bowgada, pin bush, bendee, motherumbah, soap bush, old man wadjil, brown spearwood / ringy rosewood, wantan / milhan, sugar brother, curracabah, granite bush, mountain hickory / broad-leaved hickory, scrub ironbark, New England hickory, dead finish / kurara / curara, wirilda, alumaru / nyalanyalara, gundabluey, waddy-wood / waddy, kangaroo thorn, kanji bush, broombush, camel bush / corky canji, bluebush, two-veined hickory, burchan blue, motherumbung, Broughton willow / cooba / Doolan, billy blue, umbrella bush wirra, wait-a-while / Bohemia, mamoose tree, gidyea, bowyakka, dwarf nealie, lightwood, yarran, brigalow / brigalow spearwood / orkor, boree / balaar / nilyah, bank catclaw, spine bush, desert oak / wirewood / dogwood, womel, eumong / dunthy / belalei / munumula / balkura / gurley / gooralee, catbush 2. (genus *Vachellia*) acacia, wattle, thorn tree 3. (genus *Senegalia*) acacia, catclaw, monkey thorn, cutch tree, visco / viscote / arca, catechu tree
- ŘKTY-** 'MIMOSOIDEAE' III 1. (genus *Ebenopsis*) Texas ebony, ebano 2. (genus *Pitecellobium*) blackbead, everfresh 3. (genus *Havardia*) chucum / cuisache, huajillo
- ŘKTŁ-** 'MIMOSOIDEAE' IV 1. (genus *Acaciella*) acacia, wattle, yellow tamarind 2. (genus *Albizia*) silk plant, silk tree, siris, acle / akle, albizia, musase, kalkora mimosa, lebbeck / lebbek tree / frywood / koko / woman's-tongue tree, monkey's earring, rain tree / saman / monkey pod 3. (genus *Archidendron*) lace flower, tulip siris, djenkol / jengkol / jering, bacon wood
- ŘKTR-** 'MIMOSOIDEAE' V 1. (genus *Calliandra*) powder-puff plant, fairy duster, soldierwood 2. (genus *Enterolobium*) monkey-ear tree / elephant-ear tree / guanacaste, pacara earpod tree 3. (genus *Faidherbia*) apple-ring acacia / winter thorn / ana tree

- ŘKF-** 'MIMOSOIDEAE' VI 1. (genus *Lysiloma*) false tamarind, sabicu / horseflesh 2. (genus *Pararchidendron*) snow-wood / tulip siris / monkey's earrings 3. (genus *Samanea*) rain tree
- ŘKFW-** 'MIMOSOIDEAE' VII 1. (genus *Abarema*) abarema, shadbark, crabwood / jumbie head / soapy-soapy / wild tamarind 2. (genus *Entada*) sea bean / seaheart / monkey-ladder, St. Thomas bean, snuff box bean 3. (genus *Elephantorrhiza*) elephant root / sumach bean, eland's wattle
- ŘKFY-** 'MIMOSOIDEAE' VIII 1. (genus *Adenantha*) red lucky seed / acacia coral / bead tree / Circassian seed, curly bean / jumbi-bead / red bead tree, peacock flower fence 2. (genus *Prosopis*) mesquite tree, algarrobo, alpataco, tamarugo, Argentine screwbean, American carob, tornillo 3. (genus *Desmanthus*) bundleflower, wild tantan, donkey bean
- ŘKFL-** 'MIMOSOIDEAE' IX 1. (genus *Leucaena*) leadtree, leucania 2. (genus *Schleinitzia*) strand tangantangan 3. (genus *Dichrostachys*) sicklebush / Bell mimosa / Chinese lantern tree / Kalahari Christmas tree
- ŘKFR-** 'MIMOSOIDEAE' X 1. (genus *Neptunia*) sensitive plant, yellow puff, water mimosa, neptunia 2. (Mimosoideae other than named genera; numerous genera) other mimosoid plant/tre 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fabales > Fabaceae > Detarioideae

- ŘTK-** 'DETARIOIDEAE' I 1. (genus *Detarium*) tallow tree, sweet detar / sweet dattock 2. (genus *Guibourtia*) Rhodesian teak, African rosewood, Rhodesian copalwood / false mopane, black hyedua, tiete rosewood / Patagonian cherry / sirari 3. (genus *Peltogyne*) purpleheart, violet wood
- ŘTKW-** 'DETARIOIDEAE' II 1. (genus *Baikiaea*) African teak / Rhodesian teak / Zambian teak / Zambesi redwood 2. (genus *Colophospermum*) mopane / balsam tree / butterfly tree / turpentine tree 3. (genus *Daniellia*) West African copal tree / African copaiba balsam tree
- ŘTKY-** 'DETARIOIDEAE' III 1. (genus *Copaifera*) diesel tree / kerosene tree, cabimo 2. (genus *Eperua*) wallaba tree 3. (genus *Hardwickia*) anjan tree
- ŘTKL-** 'DETARIOIDEAE' IV 1. (genus *Saraca*) ashoka tree, saraca tree, sorrowless tree, asoca, ashok 2. (genus *Intsia*) Johnstone River teak / Pacific teak / scrub mahogany, Borneo teak / Malacca teak / Moluccan ironwood / merbau 3. (genus *Brachystegia*) miombo, mountain acacia, zebrawood
- ŘTKR-** 'DETARIOIDEAE' V 1. (genus *Brownea*) mountain rose / scarlet flame bean / rose of Venezuela / copper hoop 2. (genus *Cynometra*) Uganda iron wood / muhimbi 3. (genus *Gilbertiodendron*) Liberian red oak
- ŘTKŘ-** 'DETARIOIDEAE' VI 1. (genus *Tamarindus*) tamarind 2. (genus *Maniltoa*) handkerchief tree / pokok sapu tangan, cascading bean 3. (genus *Julbernardia*) congo zebrawood, mnondo, muchesa
- ŘTKF-** 'DETARIOIDEAE' VII 1. (genus *Schotia*) weeping boerbean 2. (genus *Barnebydendron*) monkey-flower tree / fire of Pakistan 3. (Detarioideae other than named generap; numerous genera) other detarioid plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fabales > Fabaceae > remaining sub-families: Dialioideae and Duparquetia

- ŘTKÇ-** 'DIALIOIDEAE & DUPARQUETIOIDEAE' 1. (genus *Dialium*) velvet tamarind, tamarind-plum 2. (Dialioideae other than Stem 1; numerous genera) other dialioid plant 3. (Duparquetioideae; genus *Duparquetia*) duparquetia

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fabales > Polygalaceae

- ŘTF-** 'POLYGALACEAE' I 1. (genus *Polygala*) milkwort, snakeroot, butterfly-bush / parrotbush / cascade curse, senega, senega-root 2. (genus *Comesperma*) pyramid flower, comesperma, love creeper, milkwort 3. (genus *Polygaloides*) gaywings / fringed polygala, shrubby milkwort

-ŘTFW- ‘POLYGALACEAE’ II 1. (genus *Habecarpa*) glandleaf milkwort, New Mexico milkwort, habecarpa 2. (genus *Rhinotropis*) desert polygala / thorn milkwort, California milkwort, Sierra milkwort, beaked spiny polygala / notch-beaked milkwort, intermountain milkwort, spiny milkwort 3. (Polygalaceae other than named genera) other polygalaceous plant, other milkwort

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fabales > Surianaceae

-ŘTFY- ‘SURIANACEAE’ 1. (genus *Cadellia*) ooline 2. (genus *Suriana*) bay cedar 3. (Surianaceae other than Stems 1 and 2; genera *Recchia*, *Guilfoylia*, *Stylobasium*) other surianaceous plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fabales > Quillajaceae

-ŘTFL- ‘QUILLAJACEAE’ 1. (*Quillaja saponaria*) soap bark tree 2. (*Quillaja brasiliensis*) Brazilian quillaja tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Celastrales

-ÇFW- ‘CELASTRALES’ I 1. (genus *Celastrus*) staff vine / staff tree, bittersweet, orange boxwood 2. (genus *Canotia*) crucifixion thorn, canotia 3. (genus *Cassine*) Cape saffron / bastard saffron / forest spoonwood, Bermuda olivewood

-ÇFY- ‘CELASTRALES’ II 1. (genus *Elaeodendron*) olive berry / red fruited olive plum / cassine 2. (genus *Catha*) khat / qat 3. (genus *Crossopetalum*) Christmas-berry, maiden berry

-ÇFL- ‘CELASTRALES’ III 1. (genus *Euonymus*) spindle, spindle tree, burning-bush, strawberry-bush, dingle-dangle tree, wahoo, wintercreeper, euonymus 2. (genus *Gymnosporia*) common spike-thorn 3. (genus *Hartogiella*) spoonwood

-ÇFR- ‘CELASTRALES’ IV 1. (genus *Lydenburgia*) bushman’s tea 2. (genus *Maurocenia*) Khoi cherry / vulture-berry 3. (genus *Maytenus*) mayten, orangebark, koonkara, white cinnamon, orange bush, Indian’s salt, maytenus, rock false candlewood, orange boxwood

-ÇFŘ- ‘CELASTRALES’ V 1. (genus *Mortonia*) saddlebush, sand paper bush, mortonia 2. (genus *Lepuropetalum*) petiteplant 3. (genus *Parnassia*) grass of Parnassus, bog-star

-ÇFM- ‘CELASTRALES’ VI 1. (genus *Paxistima*) Canby’s mountain-lover / rat-stripper / cliff green, Oregon boxleaf / hedge / box / false box / myrtle box leaf 2. (genus *Pterocelastrus*) candlewood / cherrywood 3. (genus *Putterlickia*) spikethorn, false spikethorn, mock spike thorn, bastard spikethorn

-ÇFN- ‘CELASTRALES’ VII 1. (genus *Robsonodendron*) white silky bark 2. (genus *Salacia*) salacia, lolly berry 3. (genus *Schaefferia*) Florida boxwood, desert yaupon

-ÇFÑ- ‘CELASTRALES’ VIII 1. (genus *Stackhousia*) stackhousia, creamy candles, Gunn’s mignonette / grasslands candles 2. (genus *Tripterygium*) threewingnut, thunder god vine 3. (Celestrales other than named genera; numerous genera) other celestrales plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Malpighiaceae

-BZX- ‘MALPIGHIACEAE’ I 1. (genus *Malpighia*) Singapore holly, Barbados cherry / acerola, bristly stingingbush, cowhage 2. (genus *Acridocarpus*) moth fruit 3. (genus *Banisteriopsis*) ayahuasca plant

-BZXW- ‘MALPIGHIACEAE’ II 1. (genus *Bunchosia*) peanut butter fruit, friar’s plum, usama / bush tomato paste, yellow usama / yellow coffee of the bush 2. (genus *Brysonima*) locustberry, serret, nance / golden spoon, clam cherry / gooseberry 3. (genus *Galphimia*) gold shower / shower-of-gold / slender goldshower / thryallis

-BZX- 'MALPIGHIACEAE' III 1. (genus *Stigmaphyllon*) amazonvine 2. (Malpigiaceae other than named genera; numerous genera) other malpighiaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Elatinaceae & Centroplacaceae

-BZX- 'ELATINACEAE & CENTROPLACACEAE' 1. (Elatinaceae; genus *Elatina*) waterwort 2. (Elatinaceae; genus *Bergia*) bergia 3. (Centroplacaceae; genera *Bhesa*, *Centroplacus*) centroplacaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Euphorbioideae

-LMÇ- 'EUPHORBIACEAE' I 1. (genus *Euphorbia*) spurge, rattlesnake weed / white-margined sandmat, candelilla, sweet tabaiba, Hercules club, Medusa's head, copper tree, fire-on-the-mountain, African milk bush, desert poinsettia / fireplant / paint leaf, asthma-plant, African milk barrel, candelabra tree, frilled fan / elkhorn, gopher plant / mole plant, Madagascar jewel, snow on the mountain, crown-of-thorns / Christ plant, donkey tail, bonfire, Mexican flame leaf / Christmas star / winter rose, milk bush / pencil tree / firestick, devil's backbone / redbird cactus, African milk tree / cathedral cactus, poison tree, euphorbia 2. (genus *Homalanthus*) bleeding heart / native poplar / Queensland poplar 3. (genus *Ditrysinia*) Gulf Sebastian-bush

-LMÇW- 'EUPHORBIACEAE' II 1. (genus *Neoshirakia*) milktree, tallow tree 2. (genus *Triadica*) Chinese tallowtree / Florida aspen ; chicken tree / gray popcorn tree / candleberry tree 3. (genus *Sapium*) milktree / gumtree

-LMÇL- 'EUPHORBIACEAE' III 1. (genus *Sclerocroton*) duiker berry 2. (genus *Sebastiana*) "Mexican jumping bean" tree, sebastiana 3. (genus *Stillingia*) toothleaf, queen's-root, corkwood, queen's delight

-LMÇR- 'EUPHORBIACEAE' IV 1. (genus *Mercurialis*) mercury 2. (genus *Ricinus*) castor bean plant / castor oil plant 3. (genus *Argythamnia*) silverbush

-LMÇF- 'EUPHORBIACEAE' V 1. (genus *Chrosophora*) turnsole plant / dyer's croton / giradol 2. (genus *Omphalea*) Jamaican cobnut / popnut 3. (genus *Codiaeum*) fire croton / variegated croton

-LMÇV- 'EUPHORBIACEAE' VI 1. (genus *Croton*) croton, rushfoil, hogwort / goatweed, cascarilla, encinilla, grannybush, prairie-tea, dove weed / turkey mullein, forest fever-berry 2. (genus *Elateriospermum*) perah tree 3. (genus *Cnidoscolus*) tree spinach / chaya, mala mujer, bull nettle / spurge nettle / tread-softly / finger rot

-LMÇN- 'EUPHORBIACEAE' VII 1. (genus *Hevea*) rubber plant / rubber tree 2. (genus *Schinziophyton*) maongongo tree / mongongo nut tree / manketti tree 3. (genus *Ricinodendron*) njangsa / munguella / djansang

-LMÇN- 'EUPHORBIACEAE' VII 1. (genus *Ricinocarpus*) wedding bush 2. (genus *Beyeria*) turpentine bush, wallaby bush, pinkwood 3. (Euphorbiaceae other than named genera; numerous genera) other euphorbiaceous plant/tree

-RMÇ- 'PERACEAE' 1. (genus *Clutia*) lightning bush 2. (genus *Chaetocarpus*) hedoke 3. (Peraceae other than Stems 1 and 2) other peraceous plant

-RMÇW- 'PICRODENDRACEAE' I 1. (genus *Androstachys*) lebombo ironwood 2. (genus *Austrobuxus*) pink cherry / hairybark 3. (genus *Micrantheum*) box micrantheum, western tridentbush

-RMÇL- 'PICRODENDRACEAE' II (genus *Oldfieldia*) African oak 2. (genus *Petalostigma*) quinine berry / quinine bush / quinine tree, long-leaved bitter bark 3. (genus *Piranhea*) three-leaf piranhea

-RMÇR- 'PICRODENDRACEAE' III 1. (genus *Oldfieldia*) African oak 2. (genus *Tetracoccus*) scrubby-spurge, tetracoccus, hollybush 3. (Picrodendraceae other than named genera; numerous genera) other picrodendraceous plant

-RMÇŘ- 'PHYLLANTHACEAE' I 1. (genus *Phyllanthus*) gooseberry, leafflower, red root floater, scrubby spurge, gale of the wind / stonebreaker / seed-under-leaf, mousetail plant, brush sauropus, chamberbitter, sand riverchonia, gripweed / shatterstone 2. (genus *Flueggea*) bushweed, mehamame 3. (genus *Margaritaria*) pheasant-berry / egossa red pear / bushveld peacock-berry, bastard hogberry

- RMÇF-** 'PHYLLANTHACEAE' II 1. (genus *Baccaurea*) Burmese grape, rambi / rambai, tampoi 2. (genus *Bridelia*) coastal golden-leaf / mitzeeri, brush ironbark / scrub ironbark 3. (genus *Pseudolachnostylis*) kudu berry
- RMÇV-** 'PHYLLANTHACEAE' III 1. (genus *Leptopus*) maidenbush 2. (genus *Poranthera*) poranthera 3. (Phyllanthaceae other than named genera; numerous genera) other phyllantaceous plant
- RMÇM-** 'LINACEAE' 1. (genus *Linum*) flax 2. (genus *Hesperolinon*) dwarf-flax / western flax 3. (genus *Reinwardtia*) yellow flax / pyoli
- RMÇN-** 'RAFFLESACEAE' 1. (genus *Rafflesia*) corpse lilly, rafflesia 2. (genus *Rhizanthus*) rhizanthus 3. (genus *Sapria*) sapria
- RMÇÑ-** 'OTHER LINACEAE & IXONANTHACEAE' 1. (genus *Scerolinon*) northwestern yellowflax 2. (Linaceae other than named genera; several genera) other linaceous plant 3. (Ixonanthaceae; four genera) ixonanthaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Salicaceae (including Samydaceae)

- BZF-** 'GENUS *POPULUS*' 1. poplar tree 2. cottonwood tree 3. aspen tree
- BZFW-** 'SALICACEAE' I 1. (genus *Salix*) willow tree, osier, sallow 2. (genus *Xylosma*) brushholly, logwood, xylosma 3. (genus *Oncoba*) snuff-box tree / fried egg tree / fried-egg flower
- BZFY-** 'SALICACEAE' II 1. (genus *Azara*) azara 2. (genus *Dovyalis*) kei apple / kai apple / kau apple 3. (genus *Flacourtia*) Batoko plum, Indian coffee plum, rukam
- BZFL-** 'SALICACEAE' III 1. (genus *Scolopia*) flintwood / mountain cherry / brown birch / scolopia, mountain saffron / red pear 2. (genus *Casaria*) sword-leaf 3. (Salicaceae other than named genera; numerous genera) other salicaceous plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Passifloraceae (including Turneraceae and Malesherbiaceae)

- BZFR-** 'PASSIFLORACEAE' I 1. (genus *Passiflora*) passion flower, passion vine, grenadilla, passionfruit, maypop, water lemon / Jamaican honeysuckle, sweet calabash, bell apple, tumbo, goatsfoot 2. (genus *Adenia*) monkey rope / snake climber / wild granadilla, hondala, adenia 3. (genus *Turnera*) damiana, white buttercup sulphur alder / politician's flower / dark-eyed turnera / white alder, turnera, ramgoat dashalong / yellow alder
- BZFŘ-** 'PASSIFLORACEAE' II 1. (genus *Barteria*) ant tree 2. (Passifloraceae other than named genera; numerous genera) other passifloraceous plant/tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Violaceae

- BZFM-** 'VIOLACEAE' 1. (genus *Viola*) violet, pansy, heartsease 2. (genus *Melicytus*, a.k.a. *Hymenanthera*) porcupine shrub, mahoe, whitey-wood, tree violet 3. (Violaceae other than Stems 1 and 2; numerous genera) other violaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Achariaceae and Humiriaceae

- BZFN-** 'ACHARIACEAE' 1. (genus *Hydnocarpus*) chaulmoogra 2. (genus *Pangium*) keluak / keluak / kepayang / payang 3. (genus *Kiggelaria*) wild peach
- BZFÑ-** 'OTHER ACHARIACEAE & HUMIRIACEAE' 1. (genus *Capotroche*) pau de Lepra 2. (other Achariaceae; numerous genera) other achariaceae plant/tree 3. (Humiriaceae; several genera) humiriaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Clusiaceae

-GZFW- ‘CLUSIACEAE’ I 1. (genus *Clusia*) autograph tree / copey / cupey / balsam apple / pitch-apple / Scotch attorney 2. (genus *Allanblackia*) tallow tree 3. (genus *Garcinia*) saptree, mangosteen, gambooge / brindleberry / brindall berry / Malabar tamarind, garcinia

-GZFY- ‘CLUSIACEAE’ II 1. (genus *Platonia*) bacuri / pakuri / maniballi / naranjillo 2. (genus *Symphonia*) chewstick / chestick / manni 3. (Clusiaceae other than named genera; several genera) other clusiaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Calophyllaceae

-GZFL- ‘CALOPHYLLACEAE’ I 1. (genus *Calophyllum*) mastwood / Alexandrian laurel / beauty leaf, Nicobar canoetree, pink touriga, poonspar / sirpoontree 2. (genus *Mammea*) mamee apple / mamey apple / Santo Domingo apricot / tropical apricot / South American apricot 3. (genus *Mesua*) Ceylon ironwood / Indian rose chestnut / cobra saffron

-GZFR- ‘CALOPHYLLACEAE’ II 1. (genus *Kielmeyera*) malva-do-campo, pau santo 2. (Calophyllaceae other than named genera; several genera) other calcophyllaceous plant/tree 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Hypericaceae & Podostemaceae

-GZFR- ‘HYPERICACEAE’ I 1. (genus *Hypericum*) St. John’s wort, goatweed, goldwire, sweet-amber, tutsan, pineweed / orangegrass, curry bush, sangrenaria, sanguinaria 2. (genus *Triadenum*) marsh St. John’s wort / bog St. John’s wort 3. (genus *Harungana*) dragon’s blood tree / orange-milk tree / haronga

-GZFM- ‘HYPERICACEAE’ II & PODOSTEMACEAE 1. (Hypericaceae other than genera named in Hypericaceae I; several genera) other hypericaceous plant 2. (Podostemaceae; numerous genera) riverweed, podostemaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Ochnaceae (including Quiinaceae & Medusagynaceae)

-GZFN- ‘OCHNACEAE (including QUIINACEAE & MEDUSAGYNACEAE)’ I 1. (genus *Ochna*) ochna, plane, yellow mai flower, Mickey Mouse bush, bird’s-eye bush 2. (genus *Lophira*) red ironwood tree 3. (genus *Brackenridgea*) yellow peeling plane

-GZFN- ‘OCHNACEAE (including QUIINACEAE & MEDUSAGYNACEAE)’ II 1. (genus *Medusagyne*) jellyfish tree 2. (Ochnaceae other than named genera; several genera) other ochnaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Irvingiaceae and Pandaceae

-MZVW- ‘IRVINGIACEAE & PANDACEAE’ 1. (genus *Irvingia*) wild mango / African mango / bush mango, wild almond / barking deer’s mango 2. (Irvingiaceae other than Stem 1; genera *Allantospermum*, *Klainedoxa*) other irvingiaceous plant 3. (Pandaceae; genera *Panda*, *Microdesmis*, *Galearia*) pandaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Erythroxylaceae, Ctenolophonaceae, and Rhizophoraceae

-MZVY- ‘ERYTHROXYLACEAE & CTENOLOPHONACEAE’ 1. (genus *Erythroxylum*) coca plant, catuaba plant, brown plum, kerosene wood / turpentine tree 2. (Erythroxylaceae other than Stem 1; other erythroxylaceous plant 3. (Ctenolophonaceae; genus *Ctenolophon*) ctenolophon)

-MZVL- ‘RHIZOPHORACEAE’ I 1. (genus *Rhizophora*) true mangrove, red mangrove 2. (genus *Ceriops*) yellow mangrove, spurred mangrove / Indian mangrove 3. (genus *Bruguiera*) orange mangrove, oriental mangrove / black mangrove / mangrove bean

-MZVR- ‘RHIZOPHORACEAE’ II 1. (genus *Carallia*) corkwood / butterfly plant 2. (Rhizophoraceae other than named genera; numerous genera) other rhizophoraceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Dichapetalaceae

-MŽVŘ- ‘DICHAPETALACEAE’ 1. (genus *Dichapetalum*) poison-leaf 2. (genus *Tapura*) tapura 3. (genus *Stephanopodium*) stephanopodium

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Chrysobalanaceae

-MŽVW- ‘CHRYSOBALANACEAE’ I 1. (genus *Chrysobalanus*) coco plum / paradise plum 2. (genus *Couepia*) sweet angelim, pajurá 3. (genus *Licania*) gopher apple / ground oak, merecure, sansapote

-MŽVY- ‘CHRYSOBALANACEAE’ II 1. (genus *Parinari*) Annamese burada, mobola plum, nonda plum, guinea plum 2. (genus *Atuna*) tabon-tabon 3. (Chrysobalanaceae other than named genera) other chrysobalanaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > Caryocaraceae, Putranjivaceae, Lophopyxidaceae, Balanopaceae

-MŽVL- ‘CARYOCARACEAE & LOPHOPYXIDACEAE’ 1. (genus *Caryocar*) souari tree, butter-nut of Guiana / pekea-nut tree 2. (genus *Anthodiscus*) anthodiscus 3. (Lophopyxidaceae; genus *Lophopyxis*) lophopyxis

-MŽVR- ‘PUTRANJIVACEAE & BALANOPACEAE’ 1. (Putranjivaceae: genus *Drypetes*) ironplum, forest ironwood/ bastard white ironwood, yellow tulipwood / grey boxwood / white myrtle / grey bark 2. (Putranjivaceae: genus *Putranjiva*) putranjiva 3. (Balanopaceae; genus *Balanops*) balanops

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales > remaining families

-MŽVŘ- ‘OTHER MALPIGHIALES’ 1. (Scyphostegiaceae, Lacistemataceae, Goupiaceae; several genera) scyphostegiaceous, lacistemataceous, or goupiaceous plant 2. (Bonnetiaceae; four genera) bonnetiaceous plant 3. (Trigoniaceae, Euphroniaceae; several genera) trigoniaceous or euphroniaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Oxilidales

-LMSKW- ‘OXALIDACEAE’ 1. (genus *Oxalis*) wood sorrel, yellow sorrel, pink sorrel, false shamrock, sourgrass, stabwort, Cape shamrock, lavender sorrel, alpine sorrel, sleeping beauty, finger-leaf, Mexican shamrock, redwood sorrel / Oregon sorrel, love plant, spiral sorrel, coamo, oca/ oka / New Zealand yam, volcanic sorrel, oxalis 2. (genus *Averrhoa*) starfruit tree / carambola / five-corner tree, bilimbi 3. (Oxalidaceae other than Stems 1 and 2; several genera) other oxalidaceous plant/tree

-LMSKY- ‘CONNARACEAE & HUACEAE’ 1. (genus *Connarus*) Indian zebrawood 2. (Connaraceae other than Stem 1; numerous genera) other connaraceous plant 3. (Huaceae; genera *Hua*, *Afrostryax*) huaceous plant

-LMSKL- ‘CUNONIACEAE’ I 1. (genus *Cunonia*) butterspoon tree / butterknife tree / African red alder, cunonia 2. (genus *Vesselowskyia*) marara 3. (genus *Weinmannia*) tawhero / towai, kamahi, encenillo, tineo

-LMSKR- ‘CUNONIACEAE’ II 1. (genus *Anodopetalum*) horizontal scrub 2. (genus *Ceratopetalum*) coachwood / scented satinwood / tarwood, New South Wales Christmas bush 3. (genus *Schizomeria*) Australian white birch / crab apple / white cherry / snowberry / humbug / squeaker

-LMSKŘ- ‘CUNONIACEAE’ III 1. (genus *Karrabina*) red carabeen / leather jacket / brush mahogany / red bean / pink marara / bush marara 2. (genus *Pseudoweinmannia*) rose marara / mararie / scrub rosewood / red carabeen 3. (genus *Caldcluvia*) soft corkwood / rose-leaf marara / brown alder / sugarbark, tiaca

-LMSKF- ‘CUNONIACEAE’ IV 1. (genus *Callicoma*) black wattle / butterwood / silver leaf / wild quince / callicoma 2. (genus *Pullea*) hard alder 3. (genus *Bauera*) bauera, dog rose / river rose

-LMSKÇ- ‘CUNONIACEAE’ V 1. (genus *Davidsonia*) Davidson plum, mullumbimby plum, ooray 2. (genus *Eucryphia*) leatherwood, pinkwood / plumwood 3. (Cunoniaceae other than named genera; several genera) other cunoniaceous plant

- LMSKT-** 'ELAEOCARPACEAE' I 1. (genus *Elaeocarpus*) quandong, whitewood / pigeonberry ash, grey carabeen / freckled oliveberry, blueberry ash, yoga tree, blue marble tree / blue fig, kalia, rudraksha tree 2. (genus *Aceratium*) carabeen 3. (genus *Aristotelia*) mountain wineberry, Chilean wineberry / maqui, wineberry
- LMSKS-** 'ELAEOCARPACEAE' II 1. (genus *Peripentadenia*) grey quandong / buff quandong 2. (genus *Sloanea*) maiden's blush, bullwood / montillo, acomat boucan, yellow carabeen 3. (genus *Tetratheca*) pink-bells, black-eyed susan, shy susan
- LMSKŠ-** 'ELAEOCARPACEAE' III 1. (genus *Tremandra*) tremandra 2. (Elaeocarpaceae other than named genera; several genera) other elaeocarpaceous plant 3. [stem unassigned]
- LMSKH-** 'BRUNELLIACEAE & CEPHALOTACEAE' 1. (genus *Brunellia*) West Indian sumac 2. (genus *Cephalotus*) Albany pitcher plant / Australian pitcher plant / fly-catcher plant 3. [stem unassigned]
- Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales
- Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > Rosaceae
- Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > Rosaceae > Rosoideae
- RṬM-** 'ROSOIDEAE' I 1. (genus *Rosa*) rose 2. (genus *Agrimonia*) agrimony 3. (genus *Aremonia*) bastard-agrimony
- RṬMW-** 'ROSOIDEAE' II 1. (genus *Hagenia*) African redwood / East African rosewood, hagenia 2. (genus *Leucosidea*) oldwood 3. (genus *Filipendula*) meadowsweet, mead wort, dropwort, queen-of-the-prairie
- RṬMY-** 'ROSOIDEAE' III 1. (genus *Acaena*) bidibid, biddy-biddy, pirri-pirri-bur, sheep's burr, New Zealand-bur, burnet, liliwai 2. (genus *Cliffortia*) caperose 3. (genus *Margyricarpus*) pearl-fruit
- RṬML-** 'ROSOIDEAE' IV 1. (genus *Polylepis*) queñoa 2. (genus *Sanguisorba*) burnet, burnet bloodwort 3. (genus *Sarcopoterium*) prickly burnet / spiny burnet / thorny burnet
- RṬMR-** 'ROSOIDEAE' V 1. (genus *Fallugia*) Apache plume / ponil 2. (genus *Geum*) avens, herb bennet, prairie smoke, Tasmanian snowrose 3. (genus *Waldsteinia*) barren strawberry
- RṬMŘ-** 'ROSOIDEAE' VI 1. (genus *Alchemilla*) lady's mantle 2. (genus *Aphanes*) parsley-piert, parsley breakstone, Australian piert, dew cup / lady's mantle 3. (genus *Chamaerhodos*) little-rose
- RṬNW-** 'ROSOIDEAE' VII 1. (genus *Comarum*) purple marshlocks / swamp cinquefoil / marsh cinquefoil 2. (genus *Dasiphora*) woody cinquefoil 3. (genus *Drymocallis*) sticky cinquefoil, tall cinquefoil / cream cinquefoil, rock cinquefoil
- RṬNY-** 'ROSOIDEAE' VIII 1. (genus *Argentina*) silverweed 2. (genus *Horkelia*) horkelia 3. (genus *Ivesia*) mousetail, rock whitefeather, ivesia
- RṬÑ-** 'ROSOIDEAE' IX 1. (genus *Sibbaldia*) sibbaldia, creeping sibbaldia 2. (genus *Potentilla*) cinquefoil, barren strawberry, tormentil, fan-foil, old-field five-fingers 3. (genus *Sibbaldiopsis*) three-toothed cinquefoil / shrubby fivefingers, wineleaf
- RṬÑW-** 'ROSOIDEAE' X 1. (genus *Duchesnea*) mock strawberry / Indian-strawberry / false strawberry 2. (Rosoideae other than named genera or *Fragaria* or *Rubus* below) other rosoid plant 3. [stem unassigned]
- ŘŽ-** 'STRAWBERRY (genus *Fragaria*)' 1. (wild) strawberry plant 2. strawberry cultivar 3. strawberry hybrid
- ŘT-** 'BERRY (genus *Rubus*)' I 1. raspberry plant 2. blackberry plant 3. dewberry plant
- ŘTW-** 'BERRY (genus *Rubus*)' II 1. cloudberry plant 2. salmonberry plant 3. thimbleberry plant
- ŘTY-** 'BERRY (genus *Rubus* [HYBRID])' I 1. loganberry plant 2. boysenberry plant 3. tayberry plant
- ŘTL-** 'BERRY (genus *Rubus* [HYBRID])' II 1. marionberry plant 2. youngberry plant 3. olallieberry plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > Rosaceae > Amygdaloideae

-NŽ- ‘MALEAE’ I 1. (*Malus domestica*) apple 2. (genus *Malus* except *M. domestica*) crabapple 3. (genus *Pyrus*) pear

-NŽW- ‘MALEAE’ II 1. (genus *Cydonia*) quince 2. (genus *Pseudocydonia*) Chinese quince 3. (genus *Chaenomeles*) Japanese quince, Chinese flowering quince, Tibetan quince

-NŽY- ‘MALEAE’ III 1. (genus *Sorbus*) rowan / mountain-ash 2. (genus *Chamaemespilus*) false medlar / dwarf whitebeam 3. (genus *Amelanchier*) serviceberry, juneberry, shadbush, snowy mespilus, saskatoon berry, shadbush, shadwood, shadblow, sarvisberry, sugarplum / wild-plum, chuckley pear

-NŽL- ‘MALEAE’ IV 1. (genus *Aria* [including *Micromeles*]) whitebeam 2. (genus *Cornus*) [true] service-tree / sorb tree 3. (genus *Torminalis*) wild service-tree, chequers / checker tree

-NŽR- ‘MALEAE’ V 1. (genus *Crataegus*) hawthorn, quickthorn, thornapple, May-tree, whitethorn, hawberry 2. (genus *Raphiolepis*) India hawthorn / Hong Kong hawthorn 3. (genus *Eriobotrya*) loquat

-NŽŘ- ‘MALEAE’ VI 1. (genus *Mespilus*) medlar 2. (genus *Malacomeles*) false serviceberry 3. (genus *Peraphyllum*) squaw apple / wild crab apple

-NŽV- ‘MALEAE’ VII 1. (genus *Aronia*) chokeberry 2. (genus *Heteromeles*) toyon / Christmas berry / California holly 3. (genus *Cotoneaster*) cotoneaster

-NŽT- ‘GENUS PRUNUS’ I (subgenus *P. Amygdalus*) 1. almond tree 2. peach tree 3. peach tree bearing nectarine fruit / “nectarine tree”

-NŽTW- ‘GENUS PRUNUS’ II (subgenus *P. Prunus*) 1. plum tree 2. apricot tree 3. plum-apricot hybrid (pluot, plumcot, apriplum)

-NŽTY- ‘GENUS PRUNUS’ III 1. (subgenus *P. Cerasus*) cherry tree 2. (subgenus *P. Lithocerasus*) sand cherry shrub 3. (subgenera *P. Padus* and *P. Laurocerasus*) bird cherry, cherry-laurel, bitter-berry, chokeberry

-NŽTL- ‘AMYGDALOIDEAE’ I 1. (genus *Kerria*) Japanese marigold bush / miracle marigold bush / kerria 2. (genus *Rhodotypos*) jetbead, rhodotypos 3. (genus *Coleogyne*) blackbrush

-NŽTR- ‘AMYGDALOIDEAE’ II 1. (genus *Neviusia*) snow-wreath 2. (genus *Osteomeles*) Hawaiian rose / Hawaiian hawthorn 3. (genus *Pyracantha*) firethorn, pyracantha

-NŽTŘ- ‘AMYGDALOIDEAE’ III 1. (genus *Photinia*) photinia 2. (genus *Stranvaesia*) Chinese photinia 3. (genus *Vauquelinia*) Arizona rosewood, slimleaf rosewood

-NŽTÇ- ‘AMYGDALOIDEAE’ IV 1. (genus *Neillia*) lace shrub 2. (genus *Physocarpus*) ninebark 3. (genus *Gillenia*) Indian physic, Bowman’s root

-NŽTL- ‘AMYGDALOIDEAE’ V 1. (genus *Lyonothamnus*) Catalina ironwood 2. (genus *Exochorda*) pearlbush 3. (genus *Oemleria*) osoberry / Indian plum

-NŽD- ‘AMYGDALOIDEAE’ VI 1. (genus *Sorbaria*) false spiraea / false goat’s beard 2. (genus *Chamaebatiaria*) fern bush / desert sweet 3. (genus *Adenostoma*) chamise, redshanks / ribbonwood / ribbon bush

-NŽDW- ‘AMYGDALOIDEAE’ VII 1. (genus *Spiraea*) spiraea, bridewort, meadowsweet, hardhack / steeplebush 2. (genus *Petrophytum*) rockmat, mat rock spiraea 3. (genus *Luetkea*) partridgefoot / luetkea

-NŽDY- ‘AMYGDALOIDEAE’ VIII 1. (genus *Holodiscus*) ocean spray / creambush, mountain spray / rock-spiraea 2. (genus *Aruncus*) goatsbeard 3. (Amygdaloideae other than named genera or genus *Prunus* below; numerous genera) other amygdaloid plant/tree/shrub

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > Rosaceae > Dryadoideae

-NŽMW- ‘DRYADOIDEAE’ 1. (genus *Dryas*) avens 2. (genus *Chamaebatia*) mountain misery, bearclover / kit-kit-dizze 3. (genus *Cercocarpus*) mountain mahogany

-NŽMY- ‘DRYADOIDEAE’ 1. (genus *Purshia*) cliffrose, bitterbrush 2. (genus *Cowanina*) evergreen cliffrose 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > Moraceae

- ŘČ-** ‘MORACEAE’ I 1. (genus *Ficus*) fig tree 2. (genus *Morus*) mulberry tree 3. (genus *Treculia*) African breadfruit tree
- ŘČW-** ‘MORACEAE’ II – (genus *Artocarpus*) 1. (*A. altilis*) breadfruit 2. (*A. heterophyllus*) jackfruit 3. (*A. lacucha*) monkey fruit / lakoocha
- ŘČL-** ‘MORACEAE’ III 1. (genus *Milicia*) iroko / African teak 2. (genus *Bagassa*) cow wood 3. (genus *Streblus*) milk tree, Siamese rough bush
- ŘČR-** ‘MORACEAE’ IV 1. (genus *Antiaris*) bark cloth tree, antiaris, false iroko, upas tree 2. (genus *Trilepisium*) urnfig / false-fig 3. (genus *Maclura*, a.k.a. *Cudrania*) Osage orange, old fustic / dyer’s mulberry, cudrang / mandarin melon berry / silkworm thorn / Chinese mulberry, cockspur thorn
- ŘČŘ-** ‘MORACEAE’ V 1. (genus *Brosimum*) snakewood, breadnut / Maya nut, satine bloodwood, mama-cadela 2. (genus *Broussonetia*) paper mulberry 3. (genus *Fatoua*) mulberry weed / crabweed
- ŘČČ-** ‘MORACEAE’ VI 1. (genus *Dorstenia*) dorstenia 2. (Moraceae other than named genera; numerous genera) other moraceous plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > Urticaceae

- NŽK-** ‘URTICACEAE’ I 1. (genus *Urtica*) nettle, stinging nettle, creeping nettle, swamp nettle 2. (genus *Dendrocnide*) nettle tree, stinging tree, bympie-bympie, lip tree 3. (genus *Hesperocnide*) Hawaii nettle, western nettle
- NŽKW-** ‘URTICACEAE’ II 1. (genus *Laportea*) woodnettle 2. (genus *Urera*) flameberry, hopue, scratchbush, climbing-nettle 3. (genus *Elatostema*) New Zealand begonia / parataniwha
- NŽKY-** ‘URTICACEAE’ III 1. (genus *Soleirolia*) baby’s tears / angel’s tears / bits and pieces / bread and cheese / Corsican creeper / Corsican curse / friendship plant ; mind-your-own-business / mother of thousands / Paddy’s wig / Pollyanna vine 2. (genus *Parietaria*) pellitory, lichwort, asthma 3. (genus *Pilea*) silver springkles , friendship plant, artillery plant / gunpowder plant, Moon Valley plant / creeping Charlie , chinese money plant / missionary plant, Canadian clearweed, black-leaf panamiga
- NŽKL-** ‘URTICACEAE’ IV 1. (genus *Pourouma*) Amazon grape / Amazon tree-grape / uvilla 2. (genus *Myrianthus*) giant yellow mulberry / monkey fruit 3. (genus *Cecropia*) pumpwood, cecropia, trumpet tree, guarumo
- NŽKR-** ‘URTICACEAE’ V 1. (genus *Pipturis*) mamaki, Waimea pipturus 2. (genus *Neraudia*) ma’oloa 3. (Urticaceae other than named genera) other urticaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > Cannabaceae

- NŽKŘ-** ‘CANNABACEAE’ I 1. (genus *Cannabis*) cannabis, hemp, marijuana plant 2. (genus *Humulus*) hop plant 3. (genus *Celtis*) hackberry, nettle tree, lote tree, white stinkwood, cottonwood, tala, almex
- NŽKF-** ‘CANNABACEAE’ II 1. (genus *Pteroceltis*) blue sandalwood / Tara wingceltis 2. (genus *Chaetachme*) thorny elm 3. Cannabaceae other than named genera; several genera) other cannabaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > Ulmaceae

- NŽKČ-** ‘ULMACEAE’ I 1. (genus *Ulmus*) elm 2. (genus *Zelkova*) zelkova 3. (genus *Hemiptelea*) thorn-elm
- NŽKŤ-** ‘ULMACEAE’ II 1. (genus *Holoptelea*) Indian elm / jungle cork tree 2. (genus *Planera*) planertree / water elm 3. (Ulmaceae other than named genera; genera *Ampelocera* and *Phyllostylon*) other ulmaceous tree

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > Rhamnaceae

- NŽP-** ‘RHAMNACEAE’ I 1. (genus *Rhamnus*) buckthorn, redberry, Avignon berry, staddo 2. (genus *Frangula*) buckthorn, coffeeberry, Indian cherry, black dogwood 3. (genus *Berchemia*) bird plum, supplejack, rattan vine, pink ivory

- NŽPW**- ‘RHAMNACEAE’ II 1. (genus *Condalia*) bluewood, snakewood, purple haw, logwood, yana yana, condalia 2. (genus *Karwinskia*) coyotillo / cacachila 3. (genus *Krugiodendron*) black ironwood / leadwood
- NŽPY**- ‘RHAMNACEAE’ III 1. (genus *Reynosa*) darlingplum 2. (genus *Sageretia*) mock buckthorn, sageretia 3. (genus *Scutia*) cat-thorn
- NŽPL**- ‘RHAMNACEAE’ IV 1. (genus *Ventilago*) vine tree, whip vine, supplejack 2. (genus *Maesopsis*) umbrella tree 3. (genus *Gouania*) chewstick, toothbrush tree
- NŽPR**- ‘RHAMNACEAE’ V 1. (genus *Adolphia*) California prickbush / California pineshrub, junco 2. (genus *Colletia*) crucifixion thorn, thorn of the creoss / anchor plant 3. (genus *Discaria*) hairy anchor plant / Australian anchor plant, matagouri
- NŽPŘ**- ‘RHAMNACEAE’ VI 1. (genus *Hovenia*) Japanese raisin tree / oriental raisin tree 2. (genus *Pailurus*) Jerusalem thorn / garland thorn / Christ’s thorn / crown of thorns 3. (genus *Ziziphus*) jujube, buffalo thorn, lotebush, hinap, red date / Chinese date, Chinese apple / Indian plum / dunks, mistol, graythorn / gumdrop tree / Texas buckthorn, zunna berry, ziziphus
- NŽPF**- ‘RHAMNACEAE’ VII 1. (genus *Noltea*) soapbush / soap dogwood 2. (genus *Phylica*) Saint Helena rosemary 3. (genus *Cryptandra*) cryptandra
- NŽPÇ**- ‘RHAMNACEAE’ VIII 1. (genus *Pomaderris*) pomaderris, kumarahou / gum-digger’s soap, dogwood 2. (genus *Spyridium*) basket bush, dusty miller, spyridium 3. (genus *Trymalium*) karri hazel
- NŽPT**- ‘RHAMNACEAE’ IX 1. (genus *Alphitonia*) soap bush / red ash, pink ash / white ash, kauila, sarsaparilla tree 2. (genus *Ceanothus*) ceanothus, Jersey tea, New Jersey tea / red root, buckbrush, pinemat, blueblossom, chaparral whitethorn, Barranca brush, coast whitethorn, California lilac 3. (genus *Colubrina*) nakedwood, snakewood, greenheart, Texan hogplum, mabi / soldierwood, Pondo weeping thorn
- NŽPL**- ‘RHAMNACEAE’ IX 1. (genus *Lasiodiscus*) red-hair bush 2. (genus *Emmenosperma*) yellow ash / bonewood 3. (Rhamnaceae other than named genera; numerous genera) other rhamnaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > Elaeagnaceae

- NŽPS**- ‘ELAEAGNACEAE’ 1. (genus *Elaeagnus*) silverberry, oleaster, wolf-willow, Russian olive, lingaro berry, silverthorn, autumn olive 2. (genus *Shepherdia*) buffaloberry / bullberry 3. (genus *Hippophae*) sea-buckthorn / seaberry / sallowthorn / sandthorn

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales > remaining families: Barbeyaceae & Dirachmaceae

- NŽPŠ**- ‘BARBEYACEAE & DIRACHMACEAE’ 1. (Barbeyaceae; genus *Barbeya*) barbeya 2. (Dirachmaceae; genus *Dirachma*) dirachma 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fagales

- ŘNTW**- ‘FAGACEAE’ I 1. (genus *Fagus*) beech tree 2. (genus *Quercus*) oak tree 3. (genus *Castanea*) chestnut tree
- ŘNTY**- ‘FAGACEAE’ II 1. (genus *Castanopsis*) chinquapin / chinkapin 2. (genus *Chrysolepis*) golden chinquapin 3. (genus *Trigonobalanus*) trigonobalanus
- ŘNTL**- ‘FAGACEAE’ III 1. (genus *Lithocarpus*) stone oak 2. (genus *Notholithocarpus*) tanoak / tanbark oak 3. [stem unassigned]
- ŘNTR**- ‘NOTHOFAGACEAE’ 1. (genus *Nothofagus*, subgenera *Nothofagus* and *Brassospora*) Antarctic beech, Magellan’s beech, Dombey’s beech, lenga beech, New Guinea beech, New Caledonian beech 2. (genus *Nothofagus*, subgenus *Fuscospora*) ruil, mountain beech, red beech, tanglefoot-beech, black beech, hard beech 3. (genus *Nothofagus*, subgenus *Lophozonia*) rauli, myrtle beech, hualo, Santiago’s oak, silver beech, Antarctic beech, Patagonian oak / roble beech
- ŘNTR**- ‘MYRICACEAE’ 1. (genus *Myrica* [including *Morella*]) bayberry / bay-rum tree, wax-myrtle, sweet gale / bog-myrtle, yumberry, candleberry 2. (genus *Comptonia*) sweet-fern 3. (genus *Canacomyrica*) canacomyrica

- ŘNTF-** ‘JUGLANDACEAE’ I 1. (genus *Juglans*) walnut tree, butternut tree 2. (genus *Pterocarya*) wingnut tree 3. (genus *Cyclocarya*) wheel wingnut tree
- ŘNTČ-** ‘JUGLANDACEAE’ II 1. (genus *Carya* other than section *Apocarya*) hickory tree, pignut, kingnut, shellbark 2. (genus *Carya*, section *Apocarya*) pecan tree, bitternut hickory, bitter pecan / water hickory, Mexican hickory 3. (genus *Annamocarya*) Chinese hickory / beaked hickory
- ŘNTL-** ‘JUGLANDACEAE’ III 1. (genus *Oreomunnea*) gavián, guayaba amarillo 2. (genus *Rhoiptelea*) horsetail tree 3. (Juglandaceae other than named genera; several genera) other juglandaceous tree
- ŘNTM-** ‘CASUARINACEAE’ 1. (genus *Casuarina*) she-oak, swamp oak, grey oak / river oak, common ironwood / Australian pine tree / whistling pine tree, belah 2. (genus *Allocasuarina*) she-oak, bull-oak, tamma, desert oak, karri oak, hairy oak 3. (Casuarinaceae other than Stems 1 and 2: genera *Gymnostoma*, *Ceuthostoma*) other casuarinaceous tree
- ŘNTN-** ‘BETULACEAE’ I 1. (genus *Betula*) birch tree 2. (genus *Alnus*) alder tree 3. (genus *Corylus*) hazel tree, filbert tree
- ŘNTŇ-** ‘BETULACEAE’ II 1. (genus *Carpinus*) hornbeam tree 2. (genus *Ostrya*) hop-hornbeam, ironwood 3. (genus *Ostryopsis* and Ticodendraceae; genus *Ticodendron*) hazel-hornbeam, ticodendron

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Cucurbitales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Cucurbitales > Cucurbitaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Cucurbitales > Cucurbitaceae > Benincaseae

-BĐ- ‘GENUS CUCUMIS’ I – MUSKMELON & ASSOCIATED CULTIVARS 1. European cantaloupe plant 2. North American cantaloupe plant 3. muskmelon plant

-BĐW- ‘GENUS CUCUMIS’ II – MUSKMELON & ASSOCIATED CULTIVARS 1. honeydew melon plant 2. Crenshaw melon plant 3. casaba melon plant

-BĐY- ‘GENUS CUCUMIS’ III 1. cucumber vine 2. cackrey / West Indian gherkin vine 3. aardvark cucumber / aardvark pumpkin

-BĐN- ‘BENINCASEAE’ I 1. (genus *Citrullus*) watermelon 2. (genus *Benincasa*) winter melon / wax gourd / ash gourd / white gourd / tallow gourd / Chinese preserving melon 3. (genus *Praecitrullus*) tinda / Indian squash / round melon

-BĐM- ‘BENINCASEAE’ II 1. (genus *Acanthosicyos*) nara melon, gemsbok cucumber 2. (genus *Coccinia*) scarlet gourd, ivy gourd / tindora / kowai fruit 3. (genus *Ctenolepis*) Garcin’s bur cucumber

-BĐŇ- ‘BENINCASEAE’ III 1. (genus *Diplocyclos*) native bryony / striped cucumber 2. (genus *Lagenaria*) calabash / bottle gourd / long melon / New Guinea bean / Tasmania bean / white-flowered gourd 3. (genus *Zehneria*) native cucumber / giant cucumber

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Cucurbitales > Cucurbitaceae > Cucurbiteae

-GĐM- ‘CUCURBITA (SQUASH) – Species *C. Pepo*’ I 1. zucchini squash vine 2. scallop summer squash 3. crookneck squash vine

-GĐN- ‘CUCURBITA (SQUASH) – Species *C. Pepo*’ II 1. pumpkin vine 2. acorn squash vine 3. spaghetti squash vine

-GĐŇ- ‘CUCURBITEAE’ 1. (genus *Abobra*) cranberry gourd 2. (genus *Cayaponia*) melonleaf, São Caetano melon, tayuya 3. (genus *Sicana*) cassabanana / casbanan / sikana / puttiigel / musk cucumber

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Cucurbitales > Cucurbitaceae > remaining tribes

-GĐG- ‘CUCURBITACEAE’ I 1. (genus *Dendrosicyos*) Socatran cucumber tree 2. (genus *Tumamoca*) tumamoc globeberry 3. (genus *Sicyos*) burr cucumber

-GĐGW- ‘CUCURBITACEAE’ II 1. (genus *Luffa*) luffa / loofah 2. (genus *Trichosantes*) serpent gourd, snake gourd 3. (genus *Cyclanthera*) exploding cucumber, stuffing cucumber / slipper gourd / caigua

- GDGY-** ‘CUCURBITACEAE’ III 1. (genus *Sechium*) chayote / mirliton / choko / christophine 2. (genus *Marah*) manroot / wild cucumber / cucumber gourd / old man in the ground 3. (genus *Echinocystis*) wild cucumber / prickly cucumber / bur cucumber
- GDGL-** ‘CUCURBITACEAE’ IV 1. (genus *Bryonia*) bryony 2. (genus *Ecballium*) squirting cucumber / exploding cucumber 3. (genus *Telfairia*) fluted pumpkin, oyster nut, queen’s nut / Zanzibar oilvine
- GDGR-** ‘CUCURBITACEAE’ V 1. (genus *Momordica*) bitter melon / bitter apple / bitter gourd / bitter squash / balsam-pear, gac, spiny gourd / spine gourd / teasle gourd / kantola 2. (genus *Siraitia*) monk fruit / Buddha fruit 3. (genus *Thladiantha*) Manchu tubergourd / goldencreeper / wild potato
- GDGR-** ‘CUCURBITACEAE’ VI 1. (genus *Gerrardanthus*) bigfoot 2. (genus *Fevillea*) antidote vine 3. (genus *Momordica*) African cucumber / balsam apple / balsam pear
- GDGV-** ‘CUCURBITACEAE’ VII 1. (genus *Alsomitra*) Javan cucumber 2. (genus *Gynostemma*) jiaogulan / five-leaf ginseng / poor man’s ginseng / miracle grass / fairy herb / sweet tea vine / gospel herb / southern ginseng 3. (Cucurbitaceae other than named genera, including unnamed Benincaseae and Cucurbitaceae) other cucurbitaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Cucurbitales > remaining families: Begoniaceae, Datisceae, Tetramelaceae, Corynocarpaceae, Coriariaceae, Apodanthaceae, and Anisophylleaceae

- GDMW-** 1. (Begoniaceae; genera *Begonia*, *Hellebrandia*) begonia, aka ‘aka’awa 2. (Datisceae; genus *Datisca*) Durango root 3. (Tetramelaceae; genera *Tetrameles*, *Octomeles*) tetrameles tree, octomeles tree
- GDNW-** 1. (Corynocarpaceae; genus *Corynocarpus*) New Zealand laurel, Glenugie karaka 2. (Coriariaceae; genus *Coriaria*) redoul, tutu, deu / huique 3. [stem unassigned]
- GDÑW-** 1. (Apodanthaceae; genera *Apodanthes*, *Pilstyles*) stemsucker, apodanthes 2. (Anisophylleaceae; several genera) anisophylleaceous plant 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Zygophyllales

- BDBW-** ‘ZYGOPHYLLACEAE’ I 1. (genus *Zygophyllum*) Syrian bean-caper 2. (genus *Fagonia*) fagonbush 3. (genus *Roepora*) coast twin-leaf 3. (genus *Tetraena*) simple-leaved bean caper / hureim
- BDBY-** ‘ZYGOPHYLLACEAE’ II 1. (genus *Kallstroemia*) California caltrop, Arizona poppy, hairy caltrop, big caltrop, warty caltrop, perennial caltrip, Caribbean caltrop 2. (genus *Tribulus*) Jamaican feverplant / puncture vine, cork hophbush, goat’s-head / bullhead, cat’s-head / devil’s eyelashes / tackweed 3. (genus *Balanites*) Egyptian balsam, Angolan greenhorn, small torchwood
- BDBL-** ‘ZYGOPHYLLACEAE’ III 1. (genus *Guaiaacum*) lignum-vitae 2. (genus *Porlieria*) Texas gualacum / Texas lignum-vitae / soapbush / huayacán 3. (genus *Bulnesia*) maracaibo lignum-vitae, verawood, Argentine lignum-vitae / Paraguay lignum-vitae
- BDBR-** ‘OTHER ZYGOPHYLLACEAE & KRAMERIACEAE’ 1. (genus *Larrea*) chaparral, creosote bush / greasewood 2. (Zygophyllaceae other than named genera; several genera) other zygophyllaceous plant 3. (Krameriaceae; genus *Krameria*) rhatany / rattany, krameria, abrojo colorado

Tracheophytes > Spermatophytes > Angiosperms > Magnolids

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Magnoliales

- CFW-** ‘MAGNOLIACEAE’ 1. (genus *Magnolia*) magnolia, sweetbay, bull bay 2. (genus *Liriodendron*) tulip tree / tulipwood / tulip poplar / whitewood / fiddletree / yellow-poplar 3. (Magnoliaceae other than Stems 1 and 2; genera *Pachylarnax*, *Kmeria*, *Elmerillia*, *Michelia*) champak, champaca, banana shrub, other magnoliaceous plant/tree
- CFY-** ‘MYRISTICACEAE’ 1. (genus *Myristica*) nutmeg tree 2. (genus *Virola*) baboonwood / ucuhuba / ucuuba 3. (Myristicaceae other than Stems 1 and 2; numerous genera) other myristicaceous plant/tree

- CFL**- ‘ANNONACEAE’ I 1. (genus *Annona*) custard apple, soursop / graviola, pond apple / alligator apple, sugar apple / sweetsop, cherimoya, guanabana 2. (genus *Anonidium*) junglesop 3. (genus *Asimina*) pawpaw
- CFR**- ‘ANNONACEAE’ II 1. (genus *Cananga*) cananga tree, ylang-ylang 2. (genus *Artabotrys*) climbing lang-lang / ylang ylang vine 3. (genus *Uvaria*) finger-root / bush banana
- CFŘ**- ‘OTHER ANNONACEAE’ 1. (genus *Monodora*) calabash nutmeg 2. (genus *Xylopia*) xylopia, grains of Selim tree / Kani pepper tree / Senegal pepper tree / Ethiopian pepper tree 3. (Annonaceae other than named genera; numerous genera) other annonaceous plant
- CFF**- ‘HIMANTANDRACEAE & DEGENERIACEAE & EUPOMATIACEAE’ 1. (Himantandraceae; genus *Galbulimima*) northern pigeonberry ash, white magnolia 2. (Degeneriaceae; genus *Degeneria*) karawa, masiratu 3. (Eupomatiaceae; genus *Eupomatia*) bolwarra, copper laurel

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Laurales

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Laurales > Lauraceae

- CVW**- ‘LAURACEAE’ I 1. (genus *Laurus*) laurel / bay laurel / sweet bay 2. (genus *Umbellularia*) Oregon myrtle / California bay laurel / California bay / cinnamon bush / peppernut tree / headache tree / mountain lurel / balm of heaven 3. (genus *Cassytha*) dodder laurel / laurel dodder, devil’s twine, love vine
- CVY**- ‘LAURACEAE’ II 1. (genus *Cinnamomum*) cinnamon tree, camphor laurel / camphorwood, Selasian wood / Martaban camphor wood / saffrol laurel, kalingag tree, Indian bay leaf, malabathrum, red barked sassafras, stout camphor tree, false camphor tree / Nepal camphor tree 2. (genus *Sassafras*) sassafras 3. (genus *Lindera*) spicebush, spicewood, Benjamin bush
- CVL**- ‘LAURACEAE’ III 1. (genus *Litsea*) bollywood / bollygum, brown beech, bolly beech, Mexican bay leaf, litsea, may chang, mangeao 2. (genus *Neolitsea*) green bolly gum, hairy bolly gum 3. (genus *Beilschmiedia*) blush walnut / hard bolly gum / nut wood, yellow walnut / yellow nut / canary ash, northern acorn tree, tawa tree, taraire tree
- CVR**- ‘LAURACEAE’ IV 1. (genus *Persea*; subgenus *Persea*; *P. american* and *P. schiedeana*) avocado tree, coyo 2. (genus *Persea*, subgenera *Eriodaphne* and *Machilus*; numerous species) redbay, swampbay, lingue, large-flowered bay tree 3. (genus *Nectandra*) sweetwood
- CVŘ**- ‘LAURACEAE’ V 1. (genus *Ocotea*) stinkwood, Brazilian sassafras, cape laurel, sword laurel 2. (genus *Chlorocardium*) greenheart 3. (Lauraceae other than named genera; numerous genera) other lauraceous plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Laurales > Monimiaceae

- ŠTW**- ‘MONIMIACEAE’ I 1. (genus *Hedycarya*) Australian mulberry, pigeonwood / porokaiwhiri 2. (genus *Xymalos*) lemonwood 3. (genus *Tambourissa*) bois tambour
- ŠTY**- ‘MONIMIACEAE’ II 1. (genus *Peumus*) boldo 2. (genus *Wilkiea*) tetra beech, wilkiea 3. (Monimiaceae other than named genera: numerous genera) other monimiaceous plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Laurales > Hernandiaceae

- ŠTL**- ‘HERNANDIACEAE’ 1. (genus *Hernandia*) lantern tree 2. (genus *Gyrocarpus*) helicopter tree / propeller tree / whirly whirly tree / stinkwood / shitwood 3. (Hernandiaceae other than Stems 1 and 2: several genera) other hernandiaceous plant/tree

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Laurales > Atherospermataceae

- ŠTR**- ‘ATHEROSPERMATACEAE’ I 1. (genus *Atherosperma*) southern sassafras / blackheart sassafras 2. (genus *Daphnandra*) socketwood, light yellowwood 3. (genus *Doryphora*) yellow sassafras / canary sassafras / golden sassafras / golden deal

-**ŠTŘ**- ‘ATHEROSPERMATACEAE’ II 1. (genus *Laurelia*) Peruvian nutmeg / Chilean laurel / Chilean sassafras, pukatea 2. (genus *Laureliopsis*) tepa 3. (Atherospermataceae other than named genera; genera *Dryadodaphne*, *Nemuaron*) other atherospermataceous plant

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Laurales > Calycanthaceae

-**ŠTM**- ‘CALYCANTHACEAE’ 1. (genus *Calycanthus* [including *Sinocalycanthus*]) sweetshrub, spicebush 2. (genus *Chimonanthes*) wintersweet, Japanese allspice 3. (genus *Idiospermum*) ribbonwood / idiot fruit

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Laurales > remaining families: Siparunaceae & Gomortegaceae

-**ŠTN**- ‘SIPARUNACEAE & GOMORTEGACEAE’ 1. (Siparunaceae; genere *Siparuna*, *Glossocalyx*) siparunaceous plant 2. (Gomortegaceae; genus *Gomortega*) gomortega, keule / queule 3. [stem unassigned]

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Piperales

-**SSW**- ‘PIPERACEAE’ 1. (genus *Piper*) pepper, pepper vine, pepperleaf, peppercorn, root bear plant, yerba santa, betel leaf vine, long pepper, ant plant / ant piper, kawakawa, cubeb, kava, pariparoba 2. (genus *Peperomia*) radiator plant, peperomia, watermelon begonia, baby rubberplant / pepper face, jade necklace / trailing jade / creeping buttons 3. (Piperaceae other than Stems 1 and 2; genera *Verhuellia*, *Zippelia*, *Manekia*) other piperales plant

-**SSY**- ‘SAURURACEAE’ 1. (genus *Saururus*) lizard’s tail / water-dragon / dragon’s tail / swamp root 2. (genus *Anemopsis*) yerba mansa / lizard tail 3. (genera *Houttuynia* and *Gymnotheca*) fish mint / fish leaf / rainbow plant / chameleon plant / fish wort / bishop’s weed / Chinese lizard tail

-**SSL**- ‘ARISTOLOCHIACEAE’ I 1. (genus *Aristolochia*) birthwort, Dutchman’s pipe, fox’s ears, work killer, pipevine, swanflower, pelican flower, rooster flower, calico flower, sarrasine, smearwort, snakeroot, aristolochia 2. (genus *Isotrema*) large-leaved Dutchman’s pipe 3. (genus *Hydnora*) jackal food

-**SSR**- ‘ARISTOLOCHIACEAE’ II 1. (genus *Asarum*) wild ginger, hazelwort / wild spikenard / asarabacca, Sichuan ginger 2. (genus *Hexastylis*) heartleaf, little brown jug 3. (Aristolochiaceae other than named genera) other aristolochiaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Canellales

-**SSŘ**- ‘CANELLACEAE’ 1. (genus *Canella*) wild cinnamon / white cinnamon / cinnamon bark 2. (genus *Pleodendron*) chupacallos 3. (Canellaceae other than Stems 1 and 2; genera *Cinnamodendron*, *Cinnamosma*, *Warburgia*) other canellaceous plant/tree

-**SSM**- ‘WINTERACEAE’ I 1. (genus *Drymis*) winter’s bark / canelo 2. (genus *Pseudowintera*) horopito, pepperwood 3. (genus *Tasmannia*) pepperbush, pepper tree

-**SSN**- ‘WINTERACEAE’ II 1. (genus *Zygogynum*) hotbark 2. (genus *Takhtajania*) takhtajania 3. [stem unassigned]

7.3.3 Holomycota (Fungi, Yeast, and Cristidiscoidea)

Holomycota > Cristidiscoidea

-RJX- ‘CRISTIDISCOIDEA’ 1. (Fonticulaceae; genus *Fonticula*) fonticula slime mold 2. (Nucleariidae; genus *Nuclearia*) nuclearia amoeba 3. (Nucleariidae; genus *Parvularia*) parvularia amoeba

Holomycota > Opisthosporidia (a.k.a. Fungi) other than Dikarya

-RJG- ‘ROZELLOMYCETA [a.k.a. CRYPTOMYCOTA]’ 1. (Microsporidea; numerous genera) microsporidian fungus 2. (Metchnikovellida; numerous genera) metchnikovellid fungus 3. (Rozellidea; genera *Rozella*, *Nucleophaga*, *Paramicrosporidium*) rozellid fungus

-RJGW- ‘CHYTRIDIOMYCETA’ 1. (Chytridiomycota; numerous genera) chytridiomycote fungus 2. (Monoblepharomycota; several genera) monoblepharid fungus 3. (Neocallimastigomycota; several genera) neocallimastigaceous fungus

-RJGY- ‘BLASTOCLADIOMYCOTA’ 1. (Physodermataceae; genera *Physoderma*, *Paraphysoderma*, *Urophlyctis*) physodermataceous fungus 2. (Blastocladiaceae; several genera) blastocladiaceous fungus 3. (Blastocladales other than blastocladiaceae, i.e., Coelomonycetaceae, Sorochytriaceae, Catenariaceae; several genera) other blastocladales fungus

-RJGL- ‘ENTOMOPHTHOROMYCOTA’ 1. Basidiobolales; three genera) basidiobolaceous fungus 2. (Neozygitales; genera *Apterivorax*, *Neozygites*) neozygitaceous fungus 3. (Entomophthorales; numerous genera) entomophthorales fungus

-RJGR- ‘MUCOROMYCOTINA’ 1. (Mucorales genera *Mucor*, *Rhizopus*, *Absidia*, *Cunninghamella*) mucormycosis-causing fungus 2. (Mucorales genera other than Stem 1; numerous genera) other mucormycetes/mucorales fungus 3. (Endogonomycetes & Umbelopsidomycetes) other mucoromycotina fungus

-RJGR- ‘MUCOROMYCETA’ 1. (Mucoromycota other than previous root; several genera) other mucoromycetian fungus 2. (Calcarisporiellomycota; several genera) calcarisporiellaceous fungus 3. (Mortierellomycota; several genera) mortierellaceous fungus

-RJGV- ‘KICKXELLOMYCOTA, ENTORRHIZOMYCOTA & GLOMEROMYCOTA’ 1. (Kickxellomycotina; numerous genera) kickxellomycotina fungus 2. (Entorrhizomycotina; 3 genera) entorrhizomycotina fungus 3. (Glomeromycotina; numerous genera) glomeromycotina fungus

-RJGD- ‘OTHER NON-DIKARYA FUNGI’ 1. (Aphelidomyceta; several genera) aphelidiaceous fungus 2. (Basidiobolomyceta; genera *Basidiobolus*, *Schizangiella*) basidiobolaceous fungus 3. (Blastocladiomyceta; numerous genera) blastocladiomycotid fungus

Holomycota > Opisthosporidia > Dikarya

Holomycota > Opisthosporidia > Dikarya > Ascomycota

Holomycota > Opisthosporidia > Dikarya > Ascomycota > Pezizomycotina

-RJT- ‘LICHENIZED ASCOMYCETE FUNGUS’ 1. (Lecanoromycetes; numerous genera) lecanoromycetes fungus 2. (Lichinales; numerous genera) lichinales fungus 3. (Arthoniomycetes; numerous genera) arthoniomycetes fungus

-RJTW- ‘PATHOGENIC DOTHIDEOMYCETES SPECIES’ 1. (*Hortea wernecki*) hortea wernecki 2. (genus *Pyrenochaeta*) pyrenochaeta 3. (genus *Alternaria*) alternaria

-RJTY- ‘DOTHIDEOMYCETES’ 1. (Dothideomycetidae; numerous genera) capnodiales, dothideales, or myriangiales fungus/mold 2. (Pleosporomycetidae including Pleosporales other than genera named in previous root; numerous genera) jahnulales, hysteriales, mytilinidiales, or pleosporales fungus/mold 3. (remaining Dothideomycetes families; numerous genera) botryosphaeriales, microthyriales, patellariales, or trypetheliales fungus/mold

-RJTL- ‘EUROTIOMYCETES’ I 1. (genus *Cladophialophora*) cladophialophora 2. (genus *Rhinochlamydia*) rhinochlamydia [both are causes of phaeohyphomycosis] 3. (genus *Exophiala*) exophiala [a cause of phaeohyphomycosis]

-RJTR- ‘EUROTIOMYCETES’ II 1. (genus *Coccidioides*) coccidioides 2. (genus *Aspergillus*) aspergillus 3. (genus *Talaromyces*) talaromyces

-RJTR- ‘EUROTIOMYCETES’ III 1. (genus *Trichophyton*) trichophyton 2. (genus *Microsporum*) microsporum 3. (genus *Epidermophyton*) epidermophyton [all 3 are causes of ringworm/athlete’s foot]

- RJTČ**- ‘EUROTIOMYCETES’ IV 1. (genus *Histoplasma*) histoplasma 2. (genus *Blastomyces*) blastomyces 3. (genus *Paracoccidioides*) paracoccidioides
- RJTF**- ‘EUROTIOMYCETES’ V 1. (Mycocaliciomycetidae; several genera) mycocaliciomycetid fungus 2. (Chaetothyriomycetidae other than *Exophiala*) other chaetothyriomycetid fungus 3. (Eurotimycetidae other than named genera; numerous genera) other eurotimycetid fungus
- RJTH**- ‘SORDARIOMYCETES’ I 1. (genus *Fusarium*) fusarium 2. (genus *Acremonium*) acremonium [cause of hyalohyphomycosis] 3. (genus *Madurella*) madurella
- RJTL**- ‘SORDARIOMYCETES’ II 1. (genus *Pseudallescheria*) pseudallescheria 2. (genus *Sporothrix*) sporothrix [cause of rose handler’s disease] 3. (Sordariomycetes other than named genera; numerous genera) other sordariomycetes fungus
- RJD**- ‘LEOTIOMYCETES’ I 1. (Cyttariales; genera *Cyttaria*, *Cyttariella*) cyttariales fungus 2. (Erysiphales; numerous genera) erysiphaceous fungus, powdery mildew 3. (Helotiales; numerous genera) helotiales fungus
- RJDV**- ‘LEOTIOMYCETES’ II 1. (Leotiales; several genera) leotiales fungus 2. (Rhytismatales; numerous genera) rhytismatales fungus 3. (Thelebolales; numerous genera) thelebolales fungus
- RJB**- ‘PEZIZOMYCETES’ I 1. (Pezizaceae; numerous genera) cup fungus, peizaceous fungus 2. (Pyronemataceae; numerous genera) cup fungus, orange peel fungus, pyronemataceous fungus 3. (Sarcoscyphaceae; several genera) cup fungus, sarcoscyphaceous fungus
- RJBW**- ‘PEZIZOMYCETES’ II 1. (genus *Morchella*) morel 2. (Morchellaceae other than Stem 1; several genera) other morchellaceous fungus 3. (Chorioactidaceae; several genera) cup fungus, chorioactidaceous fungus
- RJBY**- ‘PEZIZOMYCETES’ III 1. (Discinaceae; genus *Gyromitra*) false morel 2. (Discinaceae other than Stem 1; several genera) other discinaceous fungus 3. (Helvellaceae; several genera) elfin saddle, helvellaceous fungus
- RJBL**- ‘PEZIZOMYCETES’ IV 1. (Tuberaceae; genus *Tuber*) truffle 2. (Tuberaceae other than Stem 1; several genera) other tuberaceous fungus 3. (remaining Pezizomycetes families: Sarcosomataceae, Ascobolaceae, Ascodesmidaceae, Rhizinaceae, Glaziellaceae, Carbomycetaceae, Caloscyphaceae; several genera) other peizizomycetes fungus
- RJBR**- ‘PEZIZOMYCOTINA’ I 1. (Coniocybomycetes; three genera) coniocybaceous fungus 2. (Xylonomycetes; three genera) xylonaceous or symbiotaphrinaceous fungus 3. (Geoglossomycetes; several genera) geoglossaceous fungus
- RJBŘ**- ‘PEZIZOMYCOTINA’ II 1. (Laboulbeniomycetes; numerous genera) laboulbeniomycetes fungus 2. (Orbiliomycetes; several genera) orbiliaceous fungus 3. (other Pezizomycotinae fungus; several genera) lahmia, medeolaria, triblidiaceous fungus

Holomycota > Opisthospordia > Dikarya > Ascomycota > Saccharomycotina

- RJXM**- ‘SACCHAROMYCOTINE YEAST’ 1. (genus *Saccharomyces*) baker’s yeast 2. (genus *Candida*) candida yeast 3. (Saccharomycotina other than Stems 1 and 2) other saccharomycotina yeast

Dikarya > Ascomycota > Taphrinomycotina

- RJXN**- ‘TAPHRINOMYCOTINE YEAST’ 1. (Schizosaccharomycetes;) fission yeast 2. (genus *Pneumocystis*) pneumocystis yeast 3. (Taphrinomycotina other than Stems 1 and 2) other taphrinomycotina yeast

Holomycota > Opisthospordia > Dikarya > Ascomycota > remaining families

- RJXW**- ‘OTHER ASCOMYCETES’ 1. (Thelocarpaceae; 3 genera) thelocarpaceous fungus 2. (Vezdaaceae; genus *Vezdaea*) vezdaea fungus 3. (Acomycetes other than from above-named orders or classes; numerous genera) other ascomycete fungus

Holomycota > Opisthospordia > Dikarya > Basidiomycota

Holomycota > Opisthosporidia > Dikarya > Basidiomycota > Agaricomycotina

Holomycota > Opisthosporidia > Dikarya > Basidiomycota > Agaricomycotina > Agaricomycetes

-RṬK- ‘CANTHARELLALES’ I 1. (genus *Cantherellus*) chanterelle / yellow chanterelle, 2. (genus *Craterellus*) tube chanterelle / yellowfoot chanterelle / yellow-leg, trompette de la mort / horn of plenty 3. (Cantharellaceae; several genera) other cantharellaceous mushroom

-RṬKW- ‘CANTHARELLALES’ II 1. (Hydnaceae; genus *Hydnum*) sweet tooth fungus / hedgehog mushroom / urchin of the woods, pied de mouton 2. (Hydnaceae other than Stem 1; several genera) hydroid fungus / tooth fungus 3. (Botryobasidiaceae; several genera) corticioid fungus / patch fungus / crust fungus

-RṬKY- ‘CANTHARELLALES’ III 1. (Clavulnaceae; several genera) clavarioid fungus 2. (Aphelariaceae; several genera) club fungus / coral fungus 3. (Ceratobasidiaceae and Tullasnellaceae; several genera) other cantharellales fungus

-RṬKL- ‘POLYPORACEAE’ 1. (genus *Laetiporus*) sulphur shelf / sulphur polypore / chicken-of-the-woods / crab-of-the-woods / lobster-of-the-woods 2. (genus *Laccoccephalum*, a.k.a. *Polyporus*) native bread / blackfellow’s bread 3. (Polyporaceae; genus *Cerioporus*) dryad’s saddle / pheasant’s back mushroom

-RṬKR- ‘POLYPORALES’ 1. (Meriplilaceae; genus *Grifola*) maitake mushroom / ram’s head mushroom / sheep’s head mushroom 2. (Sparassidaceae; genus *Sparassis*) cauliflower fungus / cauliflower mushroom 3. (Polyporales other than named genera, including remaining Polyporaceae; numerous genera) other polyporales fungus

-RṬKŘ- ‘AGARICOMYCETES’ I 1. (Auriculariales; genus *Auricularia*) wood ear / Judas’ ear / jelly ear, cloud ear 2. (other Auriculariales; numerous genera other than *Auricularia*) other auriculariales fungus 3. (Sebacinales; several genera) sebacinaceous fungus, jelly fungus

-RṬKF- ‘AGARICOMYCETES’ II 1. (Stereopsidales; genera *Stereopsis*, *Clavulicium*) stereopsidales fungus 2. (Geastraceae; several genera) earthstar fungus 3. (Hysterangiales; numerous genera) hysterangiales fungus

-RṬKT- ‘AGARICOMYCETES’ III 1. (Gomphaceae; genus *Chroogomphus*) pine-spike / spike-cap 2. (genus *Ramaria*) coral fungus, ramaria, 3. (Gomphaceae other than Stem 1; numerous genera) pig’s ear fungus, gomphaceous fungus

-RṬKÇ- ‘AGARICOMYCETES’ IV 1. (Trechisporales/Hydodontaceae; numerous genera) hydodontaceous fungus 2. (Hymenochaetales; numerous genera) hymenochaetales fungus 3. (Phallaceae; numerous genera) stinkhorn fungus

-RṬKS- ‘AGARICOMYCETES’ V 1. (Bankeraceae; genus *Sarcodon*) shingled hedgehog fungus / scaly hedgehog fungus 2. (Bankeraceae other than Stem 1; several genera) bankeraceous fungus 3. (Thelephoraceae; several genera) leathery earthfan fungus

-RṬKŠ- ‘AGARICOMYCETES’ VI 1. (Corticiales; numerous genera) corticiales fungus 2. (Jaapiales; genus *Jaapia*) jaapia fungus 3. (Gloeophyllales; several genera) gloeophyllaceous fungus

-RṬKM- ‘RUSSULACEAE’ 1. (genus *Russula*) russula, brittlegill, the Charcoal Burner, the Sickener, erupting mushroom, shrimp mushroom, the Flirt 2. (genus *Lactarius*) milk-cap 3. (genus *Lactifluus*) milky, milk-cap

-RṬKN- ‘RUSSULALES’ 1. (Hericiaceae; genus *Hericium*) lion’s mane / monkey head / bearded tooth / satyr’s bear / bearded hedgehog / pom pom mushroom 2. (Bondarzewiaceae; genus *Bondarzewia*) Berkeley’s polypore / stum blossom 3. (Russulales including remaining Russulaceae; numerous genera) other russulales fungus

-RṬKH- ‘AGARICOMYCETIDAE’ 1. (Lepidostromataceae; several genera) lepidostromataceous fungus 2. (Atheliaceae; numerous genera) atheliaceous fungus 3. (Amylocorticiaceae; numerous genera) amylocorticiaceous fungus

-RṬX- ‘BOLETALES’ I 1. (Boletaceae; genus *Boletus*) cep mushroom / penny bun / porcini mushroom / bolete, old man of the woods 2. (Boletaceae; genus *Leccinum*) red-capped scaber stalk, northern roughstem, birch bolete, Aspen bolete, slate bolete, manzanita bolete 3. (Suillaceae; genus *Suillus*) weeping bolete / granulated bolete, Slippery Jack, woolly-capped suillus, Jersey cow mushroom / bovine bolete

-RṬXW- ‘BOLETALES’ II 1. (Rhizopogonaceae; genus *Rhizopogon*) shoro 2. (Sclerodermataceae; several genera) earthball fungus, hard-skinned puffball, prettymouth, dyemaker’s puffball 3. (Boletales remaining families; numerous genera) other boletales fungus

Holomycota > Opisthosporidia > Dikarya > Basidiomycota > Agaricomycotina > Agaricomycetes > Agaricomycetidae > Agaricales

Holomycota > Opisthosporidia > Dikarya > Basidiomycota > Agaricomycotina > Agaricomycetes > Agaricomycetidae > Agaricales > Agaricineae

-PŤP- ‘AGARICACEAE’ I 1. (genus *Agaricus*) common mushroom, agaricus mushroom, button mushroom, crimini mushroom, champignon, baby bella, portabella 2. (genus *Coprinus*) shaggy ink cap / shaggy mane / lawyer’s wig 3. (genus *Leucocoprinus*) yellow pot-plant mushroom

-PŤPW- ‘AGARICACEAE’ II 1. (genus *Bovista*) true puffball 2. (genus *Calbovista*) sculptured puffball / sculptured giant puffball / warted giant puffball 3. (genus *Calvatia*) puffball, giant puffball

-PŤPY- ‘AGARICACEAE’ III 1. (genus *Lycoperdon*) common puffball / warted puffball / gem-studded puffball / wolf farts / devil’s snuff-box, pear-shaped puffball, meadow puffball, grassland puffball / spring puffball, peeling puffball, smooth puffball / soft puffball, dusky puffball, umber-brown puffball 2. (genus *Tulostoma*) stalkball / stalked puffball 3. [stem unassigned]

-PŤPL- ‘AGARICACEAE’ IV 1. (genus *Macrolepiota*) parasol mushroom 2. (genus *Chlorophyllum*) shaggy parasol mushroom 3. (remaining Agaricaceae; numerous genera) other agaricaceous mushroom

-PŤPR- ‘HYMENOGASTRACEAE’ I 1. (genus *Psilocybe*) magic mushroom, psychedelic mushroom 2. (genus *Deconica*) dung-loving Psilocybe, mountain moss Psilocybe 3. (genus *Gymnopilus*) magic blue gym, laughing gym / spectacular rustgill, common rustgill, scaly restgill, western jumbo gym, gymnopilus

-PŤPŘ- ‘HYMENOGASTRACEAE’ II 1. (genus *Galerina*) autumn skullcap, turf bell 2. (genus *Hebeloma*) poison pie / fairy cake, ghoulish fungus 3. remaining Hymenogastreae; several genera) other hymenogastraceous mushroom

-PŤPF- ‘STROPHARIACEAE’ I 1. (genus *Stropharia*) winecap / burgundy / garden giant / king stropharia mushroom, roundhead mushroom 2. (Strophariaceae; genus *Agrocybe*, a.k.a., *Cyclocybe*) pioppino / velvet pioppino / poplar mushroom / black poplar mushroom 3. (Strophariaceae; genus *Pholiota*) nameko mushroom

-PŤPÇ- ‘STROPHARIACEAE’ II 1. (genus *Hypholoma*) sulphur tuft / clustered woodlover, brick cap / chestnut mushroom / cinnamon cap / brick top / red woodlover / kuritake 2. (genus *Kuehneromyces*) sheathed woodtuft 3. (remaining Strophariaceae; several genera) other strophariaceous mushroom

-PŤPL- ‘AGARICINEAE’ I 1. (Nidulariaceae; several genera) nidulariaceous fungus / bird’s nest fungus 2. (Cystodermateae, a.k.a., Squamanitaceae; several genera) cystodermateous fungus 3. (Crassisporiaceae; genera *Crassisporium*, *Romagnesiella*) crassisporiaceous mushroom

-PŤPS- ‘AGARICINEAE’ II 1. (Cortinariaceae; genus *Cortinarius*) cortinar / webcap, Gypsy mushroom 2. (remaining Cortinariaceae; several genera) other cortinariaceous mushroom 3. (Bolbitiaceae; numerous genera) bolbitiaceous mushroom

-PŤPŠ- ‘AGARICINEAE’ III 1. (Hydnangiaceae; genus *Laccaria*) laccaria, the deceiver mushroom 2. (remaining Hydnangiaceae; several genera) other hydnangiaceous mushroom 3. (Psathyrellaceae; several genera) psathyrellaceous mushroom

-PŤPH- ‘AGARICINEAE’ IV 1. (Crepidotaceae; several genera) crepidotaceous fungus 2. (Inocybaceae; several genera) inocybaceous fungus 3. (Tubariaceae; several genera) tubariaceous fungus

-PŤPHW- ‘AGARICINEAE’ V 1. (Mythicomycetaceae; 2 genera) mythicomycetaceous fungus 2. (Gimnopileae; several genera) gimnopilean fungus 3. (remaining Agaricineae; several genera) other agaricine fungus

Holomycota > Opisthosporidia > Dikarya > Basidiomycota > Agaricomycotina > Agaricomycetes > Agaricomycetidae > Agaricales > Tricholamatineae

-PŠXW- ‘TRICHOLAMATINEAE’ I 1. (Mycenaceae; numerous genera) mycenaceous mushroom 2. (Catathelasmataceae/Biannulariaceae; numerous genera) catathelasmataceous mushroom 3. (Entolomataceae; several genera) entolomataceous mushroom

-PŠXL- ‘TRICHOLAMATINEAE’ II 1. (Lyophyllaceae; genus *Hypsizygus*) beech mushroom, bunapi-shimeji, buna-shimeji 2. (Lyophyllaceae; genus *Calocybe*) St. George’s mushroom / marzolino 3. (remaining Lyophyllaceae; several genera) other lyophyllaceous mushroom

-PŠXR- ‘TRICHOLAMATINEAE’ III 1. (Tricholomataceae; genus *Clitocybe*) wood blewit / blewitt mushroom 2. (Tricholomataceae; genus *Tricholoma*) matsutake mushroom, ponderosa mushroom / pine mushroom / American matsutake mushroom, grey knight / dirty tricholoma 3. (remaining Tricholamatineae; several genera) other tricholamatine mushroom

Holomycota > Opisthosporidia > Dikarya > Basidiomycota > Agaricomycotina > Agaricomycetes > Agaricomycetidae > Agaricales > Marasmiineae

-LVM- ‘MARASMIACEAE’ 1. (genus *Merasmius*) parachute mushroom, fairy ring mushroom, pinwheel mushroom 2. (genus *Clitocybula*) coincap mushroom 3. (remaining Marasmiaceae; numerous genera) other marasmiaceous mushroom

-LVMW- ‘OMPHALOTACEAE’ 1. (genus *Lentinula*) shiitake mushroom 2. (genus *Gymnopus*) wood woolly-foot mushroom, spindle-shank mushroom 3. (remaining Omphalotaceae; several genera) other omphalotaceous mushroom

-LVMY- ‘PHYSALACRIACEAE’ I 1. (genus *Flammulina*) enoki / golden needle / seafood mushroom / lily mushroom / winter mushroom / velvet foot / velvet shank / velvet stem / winter fungus 2. (genus *Amillaria*) honey mushroom / honey fungus 3. (remaining Physalacriaceae; numerous genera) other physalacriaceous mushroom

-LVMR- ‘MARASMIINEAE’ 1. (Cyphellaceae; numerous genera) cyphellaceous mushroom 2. (Niaceae/Lachnellaceae; several genera) niaceous/lachnellaceous fungus 3. (remaining Marasmiineae; numerous genera) other marasmiine mushroom

Holomycota > Opisthosporidia > Dikarya > Basidiomycota > Agaricomycotina > Agaricomycetes > Agaricomycetidae > Agaricales > remaining classes/families

-BZVW- ‘SCHIZOPHYLLINEAE’ 1. (Schizophyllaceae; two genera) schizophyllaceous mushroom 2. (Fistulinaceae; genus *Fistulina*) beefsteak mushroom / ox tongue mushroom 3. (remaining Fistulinaceae; several genera) other fistulinaceous mushroom

-BZVY- ‘HYGROPHORACEAE’ 1. (genus *Hygrophorus*) woodwax / waxy cap, herald of winter 2. (genus *Hygrocybe*) waxcap mushroom 3. (remaining Hygrophoraceae; numerous genera) other hygrophoraceous mushroom

-BZVL- ‘HYGROPHORIINEAE’ 1. (Clavariaceae; several genera) clavariaceous fungus, coral fungus / antler fungus / finger fungus / worm mold / spaghetti mushroom 2. (Typhulaceae; several genera) typhulaceous mushroom 3. (remaining Hygrophoriineae; numerous genera) other hygrophoriine fungus or mushroom

-NZGW- ‘AMANITACEAE’ 1. (genus *Amanita caesaria*) Caesar’s mushroom 2. (genus *Amanita* other than *A. caesaria*) fly agaric, blusher mushroom, panther cap, death cap, orange spring amanita, destroying angel 3. (remaining Amanitaceae; several genera) other amanitaceous mushroom

-NZGY- ‘PLUTEACEAE’ 1. (genus *Pluteus*; *P. cervinus*) deer mushroom / deer shield / fawn mushroom 2. (*P. salicinus*) knackers crumpet 3. (genus *Volvariella*) straw mushroom

-NZGL- ‘PLUTEINEAE’ 1. (remaining Pluteaceae; several genera) other pluteaceous mushroom 2. (Pterulaceae; numerous genera) pterulaceous mushroom 3. (Radulomyetaceae; several genera) radulomyetaceous mushroom

-NZGR- ‘PLEUROTINEAE’ 1. (Pleurotaceae; genus *Pleurotus*) oyster mushroom, abalone mushroom, king tuber mushroom 2. (remaining Pleurotaceae; several genera) other pleurotaceous mushroom 3. (remaining Agaricales fungi; several genera) other agaricales fungus

Holomycota > Opisthosporidia > Dikarya > Basidiomycota > Agaricomycotina > Tremellomycetes

-ZBV- ‘TREMELLOMYCETES’ I 1. (Tremellaceae; genus *Tremella*) snow fungus / snow ear / silver ear fungus / white jelly mushroom 2. (genus *Cryptococcus*) cryptococcus 3. (genus *Trichosporon*) trichosporon

-ZDV- ‘TREMELLOMYCETES’ II 1. (remaining Tremellales families; remaining Tremellaceae species; Carcinomycetaceae, Cuniculitremaeae, Phragmoxenidaceae, Rhynchogastremataceae, Sirobasidiaceae, Tetragoniomycetaceae, Trichosporonaceae; numerous genera) other tremellales fungus/yeast 2. (Filobasidiales; genus *Filobasidium*) filobasidium 3. (Cystofilobasidiales; several genera) cystofilobasidiaceous fungus

Holomycota > Opisthosporidia > Dikarya > Basidiomycota > Agaricomycotina > remaining classes: Dacrymycetes and Bartheletiomycetes

-ZGV- ‘DACRYMYCETES & BARTHELETIOMYCETES’ 1. (Dacrymycetaceae; several genera) dacrymycetaceous fungus 2. (Bartheletiaceae; genus *Bartheletia*) bartheletia fungus 3. [stem unassigned]

Holomycota > Opisthosporidia > Dikarya > Basidiomycota > remaining subdivisions and classes: Pucciniomycotina, Ustilaginomycotina, Wallemiomycetes

-BZDV- ‘OTHER BASIDIOMYCOTA’ 1. (Pucciniomycotina; numerous genera) pucciniomycotine fungus / rust fungus 2. (Ustilaginomycotina; numerous genera) ustilaginomycotine fungus / smut fungus fungus 3. (Wallemiaceae; genus *Wallemia*) wallemia fungus

7.3.4 Unicellular Eukaryotes & Multicellular Algae

-MLM- ‘HAPTISTA & OTHER PRIMITIVE UNICELLULAR EUKARYOTE’ I 1. (Glaucophyta; several genera) glaucophyte alga / glaucocystid alga 2. (Alveidea; genus *Ancoracysta*) ancoracysta 3. (Hemimastigophora; several genera) spironemid

-MLMW- ‘HAPTISTA & OTHER PRIMITIVE UNICELLULAR EUKARYOTE’ II 1. (Pavlovophyceae; several genera) pavlovophyceous alga 2. (Prymnesiophyceae; numerous genera) prymnesiophyceous alga 3. (Rappephyceae; genera unknown) rappephyceous alga / rappemonid alga

-MLMY- ‘CENTROHELIOZOA’ 1. (Pterocystida; several genera) pterocystid heliozoan 2. (Acanthocystida; several genera) acanthocystid heliozoan 2. (genus *Spiculophrys*) spiculophrys

-MLML- ‘CORBIHELIA’ 1. (Endohelea; genera *Microheliella*, *Heliomorpha*) microhelid or heliomorphid alga 2. (Picomonadea; genus *Picomonas*) picozoan / Picomonas 3. (Telonemea; genera *Telonema*, *Lateronema*) telonemid alga

-MLMR- ‘CRYPTISTA’ 1. (Cryptophyta; numerous genera) cryptophytic alga 2. (Leucocrypta, a.k.a. Katablepharidophyta, several genera) leucocryptid or katablepharid alga 3. (Palpitophyta; genus *Palpitomonas*) palpitomonad alga

Unicellular Rhodophyta (Red Alga)

-BZGV- ‘UNICELLULAR RED ALGA’ 1. (Cyanidiales; several genera) cyanidiales alga 2. (Rhodellales; several genera) rhodellales alga 3. (Porphyridiophyceae; several genera) porphyridiales alga

Multicellular Rhodophyta (Red Alga)

-BZGW- ‘NEMALIOPHYCIDAE’ 1. (genus *Palmaria*) dulce / dillisk / dilsk / red dulce / sea lettuce flakes 2. (genus *Audouinella*) black algae , black brush algae / black beard algae 3. (remaining Nemaliophycidae; numerous genera) other nemaliophycid alga/seaweed

- BZGY-** ‘GIGARTINACEAE’ 1. (genus *Chondrus*) Irish moss 2. (genus *Chondracanthus*) Turkish towel seaweed 3. (remaining Gigartinaceae; several genera) other gigartinaceous alga/seaweed
- BZGL-** ‘PHYLLOPHORACEAE’ 1. (genus *Mastocarpus*) carrageen / false Irish moss, Turkish washcloth / black tar spot / grapestone 2. (genus *Phyllophora*) leaf bearer 3. (remaining Phyllophoraceae; numerous genera) other phyllophoraceous alga/seaweed
- BZGR-** ‘SOLIERIACEAE’ 1. (genus *Euchuma*) guso 2. (genus *Meristotheca*) tosaka-nori 3. (genus *Kappaphycus*) elkhorn sea moss
- BZGR-** ‘GIGARTINALES’ 1. (genus *Callophyllis*) carola seaweed 2. (genus *Dilsea*) sea belt, poor man’s weather glass 3. (remaining Gigartinales including remaining Solieriaceae; numerous genera) other gigartinales seaweed
- BZGM-** ‘RHODYMENIOPHYCIDAE’ 1. (genus *Polysiphonia*) banded siphon weed, lobster horns 2. (genus *Gracilaria*) ogo / ogonori / sea moss 3. (genus *Gelidium*) umutgasari, tengusa, makusa, genso
- BZGN-** ‘FLORIDEOPHYCEAE (REMAINING FAMILIES)’ 1. (Corallinophycidae; numerous genera) coralline alga 2. (remaining Rhodymeniophycidae; numerous genera) other rhodymeniophycid alga/seaweed 3. (Hildenbrandiophycidae & Ahnfeltiophycidae; several genera) other florideophyceous alga
- BZGZ-** ‘BANGIACIEAE’ 1. (genus *Porphyra*) nori / purple laver seaweed 2. (genus *Pyropia*) southern laver, gim / nori, karengo 3. (Bangiaceae other than Stems 1 and 2; numerous genera) other bangiacieous alga/seaweed
- BZGD-** ‘METARHODOPHYTINA’ 1. (Compsopogonophyceae; several genera) compsopogonophyceous alga/seaweed 2. (Stylonemataceae; numerous genera) stylonemataceous alga/seaweed 3. (Rufusiaceae; genus *Rufusia*) rufusia alga

Stramenopiles

- LMDM-** ‘HETEROPTROPHIC STRAMENOPILES/HETEROKONT’ I 1. (Oomycetes, a.k.a., Peronosporomycetes; numerous genera) water mold, downy mildew 2. (Hyphochytridiomycota; several genera) hyphochytrid 3. (Bigyromonadea; genus *Developyella*) developyella
- LMDN-** ‘HETEROPTROPHIC STRAMENOPILES/HETEROKONT’ II 1. (Bicosocia, including Cyathobodoninae; several genera) bicosocid 2. (Labyrinthulmycetes, a.k.a., Sagenista, including Thraustochytrida, Eogytrea, and Amphitremida; several genera) slime net, thraustochytrid, amphitrematid 3. (Placidozoa, including Nanomonadea, Proteromonadida; several genera) placidian protist
- LMDÑ-** ‘HETEROPTROPHIC STRAMENOPILES/HETEROKONT’ III 1. (Opalinata; several genera) opaline protist 2. (Nucleohelea; genera Actinophrys, Actinosphaerium) actinophryid protist 3. (Opalozoa other than Stems 1 and 2) other opalozoon protist
- LMDD-** ‘HETEROPTROPHIC STRAMENOPILES/HETEROKONT’ IV 1. (Pirsoniaceae; genus *Pirsonia*) pirsonia 2. (Platysulcida; genus *Platysulcus*) platysulcus 3. (Blastocystea; genus *Blastocystis*) blastocystis

Ochrophyta/Stamenochromes

- GDD-** ‘BACILLARIOPHYTA (DIATOM)’ 1. (Bacillariophyceae; numerous genera) raphid diatom 2. (Fragilariophyceae; numerous genera) araphid diatom 3. (Coscinodiscophyceae; numerous genera) centric diatom
- GDDW-** ‘HYPOGYRISTA’ 1. (Bolidophyceae; several genera) bolidophyte, bolidophyceous plankton 2. (Dictyochophyceae; numerous genera) dictyochophyte, dictyochophyceous alga 3. (Pelagophyceae; numerous genera) pelagophyte, pelagophyceous alga
- GDDY-** ‘CHRYLISTA’ I 1. (Pinguiphyceae; several genera) pinguiphyte, pinguiphyceous alga 2. (Eustigmatophyceae; numerous genera) eustigmatophyte, eustigmatophyceous alga 3. (Picophages; genus *Picophagus*) picophagus
- GDDL-** ‘CHRYLISTA’ II 1. (Synchromophyceae; two genera) synchromophyte / synchromophyceous alga 2. (Chrysophyceae, including Synurophyceae; numerous genera) desmid / golden alga / golden-brown alga / chrysophyte / chrysomonad, synurid 3. (genus *Leukarachnion*) leukarachnion
- GDDR-** ‘CHRYLISTA’ III 1. (Raphidophyceae; several genera) raphidophyte alga 2. (Chrysomerophyceae; several genera) chrysomerphyte / chrysomerophyceous alga 3. (Phaeothamniophyceae; several genera) phaeothamniophyte, phaeothamniophyceous alga

-GDDŘ- 'CHRYSTISTA' IV 1. (Xanthophyceae; numerous genera) yellow-green algae 2. (Chrysista algae other than named genera) other chrysista alga 3. [stem unassigned]

-ŇŽG- 'EDIBLE BROWN ALGA (KELP)' I 1. (genus *Laminaria*) kombu, haidai seaweed, oarweed 2. (genus *Saccharina*) kombu 3. (genus *Undaria*) wakame, hiromi

-ŇŽGW- 'EDIBLE BROWN ALGA (KELP)' II 1. (genus *Eisenia*) arame / sea oak 2. (genus *Alaria*) winged kelp, badderlocks 3. (genus *Ecklonia*) paddle weed / kajime / noro-kajime

-ŇŽGY- 'EDIBLE BROWN ALGA (KELP)' III 1. (genus *Durvillaea*) rimurapa / cochayuyo 2. (genus *Postelsia*) sea palm / palm seaweed 3. (genus *Nereocystis*) bull kelp / bullwhip kelp / ribbon kelp

-ŇŽGL- 'EDIBLE BROWN ALGA (KELP)' IV 1. (genus *Kjellmaniella*) sugar kelp / sea belt / Devil's apron 2. (genus *Fucus*) bladderwrack, spiral wrack 3. (genus *Pelvetia*) channelled wrack

-ŇŽGR- 'EDIBLE BROWN ALGA (KELP)' V 1. (genus *Himanthalia*) thongweed 2. (genus *Hizikia*) hiziki 3. (genus *Cladosiphon*) mozuku

-ŇŽGR- 'EDIBLE BROWN ALGA (KELP)' VI 1. (genus *Nemacystus*) ito-mozuku 2. (genus *Tinocladia*) futo mozuku 3. (genus *Sphaerotrichia*) ishi-mozuku

-ŇŽGV- 'OTHER BROWN ALGA (KELP)' 1. (genus *Sargassum*) sargassum, sargasso kelp 2. (Chrysoparadoxa; genus *Chrysoparadoxa*) chrysoparadoxa 3. (Phaeophyceae other than previously named genera) brown alga, paephyte

Alveolata

-ŇTK- 'HETEROTRICHEA' I 1. (genus *Blepharisma*) blepharisma 2. (genus *Climacostomum*) climacostomum 3. (genus *Fabrea*) fabrea

-ŇTKW- 'HETEROTRICHEA' II 1. (genus *Phacodinium*) phacodinium 2. (genus *Protocruzia*) protocruzia 3. (genus *Condylostoma*) condylostoma

-ŇTKY- 'HETEROTRICHEA' III 1. (genus *Folliculina*) folliculina 2. (genus *Spirostomum*) spirostomum 3. (genus *Stentor*) stentor

-ŇTKL- 'HETEROTRICHEA' IV 1. (genus *Maristentor*) maristentor 2. (genus *Peritromus*) peritromus 3. (Heterotrichea other than named genera; several genera) other heterotrich ciliate

-ŇTKR- 'KARYORELICTEA' I 1. (genus *Loxodes*) loxodes 2. (genus *Cryptopharynx*) cryptopharynx 3. (genus *Geleia*) geleia

-ŇTKŘ- 'KARYORELICTEA' II 1. (genus *Kentrophorus*) kentrophorus 2. (genus *Tracheloraphis*) tracheloraphis 3. (Karyorelictea other than named genera; several genera) other karyorelict ciliate

-ŇTKF- 'COLPODEA' I 1. (genus *Colpoda*) colpoda 2. (genus *Bresslaua*) bresslaua 3. (genus *Tillina*) tillina

-ŇTKÇ- 'COLPODEA' I 1. (genus *Woodruffia*) woodruffia 2. (genus *Bryophrya*) bryophrya 3. (Colpodea other than named genera; several genera) other colpodid ciliate

-ŇTKS- 'NASSOPHOREA' 1. (genus *Nassula*) nassula 2. (genus *Discotricha*) discotricha 3. (Nassophorea other than Stems 1 and 2; several genera) other nassophorid ciliate

-ŇTKŠ- 'PERITRICHIA' 1. (genus *Vorticella*) vorticella 2. (genus *Cothurnia*) cothurnia 3. (Peritrichia other than Stems 1 and 2; numerous genera) other peritrich ciliate

-ŇTKM- 'OLIGOHYMENOPHOREA' I 1. (genus *Paramecium*) paramecium 2. (genus *Frontonia*) frontonia 3. (genus *Urocentrum*) urocentrum

-ŇTKN- 'OLIGOHYMENOPHOREA' II 1. (genus *Tetrahymena*) tetrahymena 2. (genus *Glaucoma*) glaucoma 3. (genus *Colpidium*) colpidium

-ŇTKH- 'OLIGOHYMENOPHOREA' III 1. (genus *Ichthyophthirius*) ichthyophthirius 2. (genus *Ophryoglena*) ophryoglena 3. (Oligohymenophorea other than named genera; numerous genera) other oligohymenophorean ciliate

-ŇTTW- 'PHYLLOPHARYNGEA' I 1. (Cryptogemmida; several genera) cryptogemmida ciliate 2. (Exogemmida; several genera) exogemmida ciliate 3. (Chlamydomontida; several genera) chlamydomontid ciliate

- NṬTY**- ‘PHYLLOPHARYNGEA’ II 1. (Dysteriida; several genera) dysteriid ciliate 2. (Hypocomatida; several genera) hypocomatid ciliate 3. (Rhynchodida; several genera) rhynchodid ciliate
- NṬTL**- ‘PHYLLOPHARYNGEA’ III [SUCTORIA] 1. (Endogenida; several genera) endogenid suctorian 2. (Exogenida; several genera) exogenid suctorian 3. (Evaginogenida and other Suctoria; several genera) evaginogenid or other suctorian
- NṬTR**- ‘PROSTOMATEA’ I 1. (genus *Coleps*) coleps 2. (genus *Prorodon*) prorodon 3. (genus *Placus*) placus
- NṬTR̃**- ‘PROSTOMATEA’ II 1. (genus *Urotricha*) urotricha 2. (genus *Chilophrya*) chilophrya 3. (genus *Balanion*) balanion
- NṬTÇ**- ‘PROSTOMATEA’ III 1. (genus *Bursella*) bursella 2. (genus *Holophrya*) holophrya 3. (Prostomatea other than named genera; several genera) other prostomate ciliate
- NṬTF**- ‘PLAGIOPYLEA’ I 1. (genus *Plagiopyla*) plagiopyla 2. (genus *Sonderia*) sonderia 3. (genus *Discomorphella*) discomorphella
- NṬTL̃**- ‘PLAGIOPYLEA’ II 1. (genus *Epalxella*) epalxella 2. (genus *Saprodinium*) saprodinium 3. (Plagiopylea other than named genera; several genera) other plagiopylean ciliate
- NṬC**- ‘LITOSTOMATEA’ I 1. (genus *Chaenia*) chaenia 2. (genus *Didinium*) didinium 3. (genus *Homalozoon*) homalozoon
- NṬCW**- ‘LITOSTOMATEA’ II 1. (genus *Lacrymaria*) lachrymaria 2. (genus *Dileptus*) dileptus 3. (genus *Trachelius*) trachelius
- NṬČ**- ‘LITOSTOMATEA’ III 1. (genus *Spathidium*) spathidium 2. (genus *Enchyelys*) enchelys 3. (genus *Mesodinium*) mesodinium
- NṬČW**- ‘LITOSTOMATEA’ IV 1. (genus *Amphileptus*) amphileptus 2. (genus *Loxophyllum*) loxophyllum 3. (genus *Litonotus*) litonotus
- NṬTH**- ‘LITOSTOMATEA’ V 1. (genus *Trachelophyllum*) trachelophyllum 2. (genus *Balantidium*) balantidium 3. (Litostomatea other than named genera; several genera) other litostomate ciliate
- NṬP**- ‘SPIROTRICHEA’ I 1. (genus *Euplotes*) euplotes 2. (genus *Paraeuplotes*) paraeuplotes 3. (genus *Diophrys*) diophrys
- NṬPW**- ‘SPIROTRICHEA’ II 1. (genus *Euplotidium*) euplotidium 2. (genus *Aspidisca*) aspidisca 3. (genus *Uronychia*) uronychia
- NṬPY**- ‘SPIROTRICHEA’ III 1. (genus *Stylonychia*) stylonychia 2. (genus *Steinia*) steinia 3. (genus *Pleurotricha*) pleurotricha
- NṬPL**- ‘SPIROTRICHEA’ IV 1. (genus *Oxytricha*) oxytricha 2. (genus *Urosoma*) urosoma 3. (genus *Kahliella*) kahliella
- NṬPR**- ‘SPIROTRICHEA’ V 1. (genus *Urostyla*) urostyla 2. (genus *Uroleptus*) uroleptus 3. (genus *Tachysoma*) tachysoma
- NṬPR̃**- ‘SPIROTRICHEA’ VI 1. (genus *Amphisiella*) amphisiella 2. (genus *Uroleptus*) uroleptus 3. (genus *Tachysoma*) tachysoma
- NṬPÇ**- ‘SPIROTRICHEA’ VII 1. (genus *Gonostomum*) gonostomum 2. (genus *Holosticha*) holosticha 3. (genus *Epiclintes*) epiclintes
- NṬPF**- ‘SPIROTRICHEA’ VIII 1. (genus *Strongylidium*) strongylidium 2. (genus *Kerona*) keronia 3. (genus *Trachelostyla*) trachelostyla
- NṬPL̃**- ‘SPIROTRICHEA’ VIII 1. (genus *Hypotrichidium*) hypotrichidium 2. (genus *Stichotricha*) stichotricha 3. (Spirotrichea other than named genera; several genera) other spirotrich ciliate
- NṬPS**- ‘OLIGOTRICHEA’ I 1. (genus *Halteria*) halteria 2. (genus *Strombidium*) strombidium 3. (genus *Tontonia*) tontonia
- NṬPŠ**- ‘OLIGOTRICHEA’ II 1. (genus *Tintinnidium*) tintinnidium 2. (genus *Strombidinopsis*) strombidinopsis 3. (Oligotrichea other than named genera; numerous genera) other oligotrich ciliate
- NṬPH**- ‘ARMOPHOREA’ 1. (genus *Metopus*) metopus 2. (genus *Chaenomorpha*) chaenomorpha 3. (Armophorea other than Stems 1 and 2) other armophorean ciliate
- NṬPHW**- ‘OTHER CILIOPHORA’ 1. (genus *Muranothrix*) muranothrix 2. (genus *Cariacothrix*) cariacothrix 3. (remaining Ciliophora; numerous genera) other unicellular ciliate
- NṬFW**- ‘APICOMPLEXA / SPOROZOA’ I 1. (genus *Plasmodium*) plasmodium 2. (genus *Toxoplasma*) toxoplasma 3. (genus *Cryptosporidium*) cryptosporidium
- NṬFY**- ‘APICOMPLEXA / SPOROZOA’ II 1. (genus *Cyclospora*) cyclospora 2. (genus *Cystoisospora*) cystoisospora / isospora 3. (genus *Hepatocystis*) hepatocystis

-**NṬFL**- ‘APICOMPLEXA / SPOROZOA’ III 1. (genus *Babesia*) babesia 2. (genus *Entopolypoides*) entopolypoides 3. (genus *Theileria*) theileria [cause of equine piroplasmiasis]

-**NṬFR**- ‘APICOMPLEXA / SPOROZOA’ IV 1. (genus *Nycteria*) Nycteria 2. (genus *Rayella*) rayella 3. (remaining apicomplexa; numerous genera) other apicomplexan/sporozoan parasite

-**NṬVW**- ‘DINOFLAGELLATA’ I 1. (genus *Tripes*) tripes 2. (genus *Ceratium*) ceratium 3. (genus *Gonyaulax*) gonyaulax

-**NṬVY**- ‘DINOFLAGELLATA’ II 1. (genus *Peridinium*) peridinium 2. (genus *Gymnodinium*) gymnodinium 3. (genus *Oxyrrhis*) oxyrrhis

-**NṬVL**- ‘DINOFLAGELLATA’ III 1. (genus *Amoebophrya*) amoebophrya 2. (genus *Noctiluca*) noctiluca 3. (Dinoflagellata other than named genera) other dinoflagellate

-**NṬVR**- ‘OTHER MYZOOZOA’ 1. (Chromerida; several genera) chromerid myxozoan 2. (Perkinsozoa; several genera) perkinsean parasite 3. (Myxozoa other than named genera, including Protalveolata; numerous genera) other myxozoan

Rhizaria

-**RMT**- ‘MONADOFILOSE CERCOZOAN’ I 1. (genus *Euglypha*) 2. (genus *Trinema*) 3. (Thaumatomonadida; several genera) thamatomonad cercozoan

-**RMTW**- ‘MONADOFILOSE CERCOZOAN’ II 1. (Phaeodarea; numerous genera) phaeodarian cercozoan 2. (Tectofilosida; several genera) tectofilosid cercozoan 3. (Thecofilosea other than Stems 1 and 2; several genera) other thecofilose cercozoan

-**RMTY**- ‘MONADOFILOSE CERCOZOAN’ III 1. (genus *Cercomonas*) cercomonas 2. (genus *Kraken*) kraken [amoebid cercozoan] 3. (Monadofilosa other than named genera; numerous genera) other monadofilose cercozoan

-**RMTL**- ‘RETICULOFILOSE CERCOZOAN’ 1. (genus *Clathrulina*) clathrulina 2. (genus *Hedriocystis*) hedriocystis 3. (Reticulofilosa other than Stems 1 and 2; numerous genera) other reticulose cercozoan

-**RMTR**- ‘ENDOMYXAN CERCOZOAN’ I 1. (genus *Vampyrella*) vampyrella 2. (genus *Pseudospora*) pseudospora 3. (genus *Gromia*) gromia

-**RMTR**- ‘ENDOMYXAN CERCOZOAN’ II 1. (Plasmodiophorida; numerous genera) plasmodiophorid parasite 2. (Phagomyxida; genus *Phagomyxa*) phagomyxa 3. (Endomyxa other than Stems 1 and 2 and previous root; several genera) other endomyxan cercozoan

-**RMTÇ**- ‘MONOTHALAMEAN FORAMINIFERA’ 1. (Allogromiida; numerous genera) allogromiid foraminifera 2. (Astrorhizida; numerous genera) astrorhizid foraminifera 3. (Monothalamea other than Stems 1 and 2, including Xenophyophorea and genus *Reticulomyxa*; several genera) other monothalamean foraminifera

-**RMTF**- ‘TUBOTHALAMEAN FORAMINIFERA’ 1. (Miliolida; numerous genera) miliolid foraminifera 2. (Spirillinida; numerous genera) spirillinid foraminifera 3. (Silicoloculinida; genus *Miliammellus*) miliammellus

-**RMTL**- ‘GLOBOTHALAMEAN FORAMINIFERA’ 1. (Rotaliida; numerous genera) rotaliid foraminifera 2. (Textulariida; numerous genera) textulariid foraminifera 3. (Globothalamea other than Stems 1 and 2) other globothalamean foraminifera

-**RMTH**- ‘OTHER FORAMINIFERA’ 1. (Nodosariidae; numerous genera) nodosariid foraminifera 2. (Lagenidae; numerous genera) lagenid foraminifera 3. (Foraminifera other than named genera, classes, or orders; numerous genera) other foraminifera

-**RMTHW**- ‘RADIOZOAN’ 1. (Polycystina, including Collodaria; numerous genera) polycystine radiolarian 2. (Acantharea; numerous genera) acantharean radiolarian 3. (Taxopodida; genus *Sticholonche*) sticholonche

Discoba (Excavata)

-**RSK**- ‘EUGLENOIDA’ I 1. (genus *Euglena*) euglena 2. (genus *Astasia*) astasia 3. (genus *Khawkinia*) khawkinia

-**RSKW**- ‘EUGLENOIDA’ II 1. (genus *Ascoglena*) ascoglena 2. (genus *Trachelomonas*) trachelomonas 3. (genus *Strombomonas*) strombomonas

- RSKY**- 'EUGLENOIDA' III 1. (genus *Phacus*) phacus 2. (genus *Lepocinclus*) lepocinclus 3. (genus *Eutreptia*) eutreptia
- RSKL**- 'EUGLENOIDA' IV 1. (genus *Peranema*) peranema 2. (genus *Anisonema*) anisonema 3. (genus *Urceolus*) urceolus
- RSKR**- 'EUGLENOIDA' V 1. (genus *Heteronema*) heteronema 2. (genus *Distigma*) distigma 3. (genus *Neometanema*) neometanema
- RSKŘ**- 'EUGLENOIDA' VI 1. (genus *Rhabdomonas*) rhabdomonas 2. (genus *Lentomonas*) lentomonas 3. (genus *Ploetia*) ploetia
- RSKF**- 'EUGLENOIDA' VII 1. (genus *Rapaza*) rapaza 2. (genus *Keelungia*) keelungia 3. (genus *Petalomonas*) petalomonas
- RSKŤ**- 'EUGLENOIDA' VIII 1. (genus *Entosiphon*) entosiphon 2. (genus *Colacium*) colacium 3. (Euglenoida other than named genera) other euglenoid flagellate
- RSKÇ**- 'KINETOPLASTEIA' 1. (genus *Trypanosoma*) trypanosoma 2. (genus *Leishmania*) leishmania 3. (Kinetoplastea other than Stems 1 and 2; several genera) other kinetoplast flagellate
- RSKS**- 'DIPLOMEMEA' 1. (genus *Diplonema*) diplonema 2. (genus *Rhynchopus*) rhynchopus 3. (Diplonemidae other than Stems 1 and 2; several genera) other diplonemid flagellate
- RSKŠ**- 'OTHER EUGLENOZOAN' 1. (genus *Calkinsia*) calkinsia 2. (genus *Postgaardi*) postgaardi 3. (Euglenozoan other than named genera; numerous genera) other euglenozoan flagellate
- RSKM**- 'DISCOBA' I 1. (Jakobea; several genera) jakobid flagellate 2. (Tsukubea; genus *Tsukubamonas*) tsukubamonas 3. (Percolatea; two genera) percolate flagellate
- RSKN**- 'DISCOBA' II 1. (Acrasida; several genera) non-mycetozoon cellular slime mold 2. (Lyromonadida; genus *Lyromonas*) lyromonas 3. (Gruberellidae; several genera) gruberellid flagellate
- RSKH**- 'DISCOBA' III 1. (genus *Naegleria*) naegleria 2. (genus *Vahlkampfia*) vahlkampfia 3. (Vahlkampfiidae other than Stems 1 and 2; several genera) other vahlkampfiid amoeboid

Loukazoza

- SKMW**- 'TRICHOZOA' 1. (genus *Trichomonas*) trichomonas 2. (genus *Dientamoeba*) dientamoeba 3. (genus *Giardia*) giardia
- SKMY**- 'OTHER LOUKAZOA' 1. (Anaeromonadea; three genera) anaeromonad metamonad flagellate 2. (Malawimonadidae; genera *Malawimonas*, *Gefionella*) malawimonad flagellate 3. (Ancyromonadida, a.k.a., Planomonadida, plus remaining Trichozoa; several genera) ancyromonad flagellate, other trichozoan metamonad flagellate
- SKM**- 'DIPHYLLATEA & RIGIFILIDA & MANTAMONADIDA' 1. (Diphyllida, a.k.a. Collodictyonidae; three genera) collodictyonid flagellate 2. (Rigifilida; two genera) rigifilid 3. (Mantamonadida; genus *Mantamonas*) mantamonas

Amoebozoa

- ŇŠK**- 'AMOEBOZOAN' I 1. (genus *Amoeba*) amoeba 2. (genus *Chaos*) chaos 3. (genus *Metachaos*) metachaos
- ŇŠKW**- 'AMOEBOZOAN' II 1. (genus *Polychaos*) polychaos 2. (genus *Parachaos*) parachaos 3. (genus *Metamoeba*) metamoeba
- ŇŠKY**- 'AMOEBOZOAN' III 1. (genus *Flabellula*) flabellula 2. (genus *Harmannella*) harmannella 3. (genus *Echinamoeba*) echinamoeba
- ŇŠKL**- 'AMOEBOZOAN' IV 1. (genus *Arcella*) 2. (genus *Nebela*) 3. (genus *Diffugia*)
- ŇŠKR**- 'AMOEBOZOAN' V 1. (genus *Acanthamoeba*) acanthamoeba 2. (genus *Balamuthia*) balamuthia 3. (genus *Cochliopodium*) cochliopodium
- ŇŠKŘ**- 'AMOEBOZOAN' VI 1. (genus *Thecamoeba*) thecamoeba 2. (genus *Dinamoeba*) dinamoeba 3. (genus *Mayorella*) mayorella
- ŇŠKF**- 'AMOEBOZOAN' VII 1. (genus *Vexillifera*) vexillifera 2. (genus *Oscillosignum*) oscillosignum 3. (genus *Subulamoeba*) subulamoeba

- ŇŠKŤ**- ‘AMOEBZOAN’ VIII 1. (genus *Clydonella*) clydonella 2. (genus *Vanella*) vanella 3. (genus *Pellita*) pellita
- ŇŠKÇ**- ‘AMOEBZOAN’ IX 1. (genus *Discamoeba*) discamoeba 2. (genus *Unda*) unda 3. (genus *Paramoeba*) paramoeba
- ŇŠKM**- ‘AMOEBZOAN’ X 1. (genus *Mastigamoeba*) mastigamoeba 2. (genus *Iodamoeba*) iodamoeba 3. (genus *Endolimax*) endolimax
- ŇŠKN**- ‘AMOEBZOAN’ XI 1. (genus *Entamoeba*) entamoeba 2. (genus *Pelomyxa*) pelomyxa 3. (Amoebzoan other than named genera; numerous genera) other amoeba
- ŇŠKV**- ‘MYCETOZOAN (AMOEBOID SLIME MOLD)’ 1. (Myxogastria/Myxomycetes; numerous genera) syncytial, plasmodial, or acellular slime mold 2. (Dictyosteliida; several genera) cellular slime mold 3. (Protostelida; several genera) protostelid slime mold

Non-Opisthokont Obazoa

- LMVL**- ‘BREVATEA & APUSOMONADIDA (i.e., NON-OPISTHOKONT OBAZOAN)’ 1. (Breviatea; several genera) breviateid amoeboid flagellate 2. (Apusomonadida; several genera) apusomonad flagellate 3. [stem unassigned]

Non-Animalia Holozoa

- LMVR**- ‘ICHTHYOSPOREA, a.k.a., MESOMYCETOZOA’ 1. (Ichthyophonida, including Amoebidiales genus *Amoebidium*; several genera) ichthyophonid mesomycetozoan 2. (Dermocystida; several genera) dermocystid (or rhinosporidiaceous) mesomycetozoan 3. (genus *Rhinosporidium*) rhinosporidium
- LMVW**- ‘NON-CHOANOZOAN UNICELLULAR HOLOZOAN FLAGELLATE’ 1. (Pluriformea; genera *Syssomonas*, *Corallochytrium*) pluriform flagellate 2. (Filasterea; genera *Ministeria*, *Capsaspora*, *Pigoraptor*) filasterean flagellate 3. (genus *Tunicaraptor*) tunicaraptor
- LMVY**- ‘CHOANOFLAGELLATEA’ 1. (Craspedida, a.k.a., Salpingoecidae; numerous genera) craspedid or salpingoecid flagellate 2. (Acanthoecidae; several genera) acanthoecid flagellate 3. (Stephanoecidae; numerous genera) stephanoecid flagellate

7.3.5 Bacteria & Archaea

Terrabacteria

- PFTW**- ‘CYANOBACTERIA’ I 1. (genus *Arthrospira*) spirulina 2. (genus *Aphanizomenon*) aphanizomenon 3. (genus *Nostoc*) nostoc
- **PFTY**- ‘CYANOBACTERIA’ II 1. (genus *Cyanothece*) cyanothece 2. (genus *Synechocystis*) synechocystis 3. (Cyanobacteria other than Stems 1 and 2; numerous genera) other cyanobacterium
- PFTL**- ‘ACTINOBACTERIA’ I 1. (genus *Actinomyces*) actinomyces 2. (genus *Corynebacterium*) corynebacterium 3. (genus *Mycobacterium*) mycobacterium
- PFTR**- ‘ACTINOBACTERIA’ II 1. (genus *Nocardia*) nocardia 2. (genus *Streptomyces*) streptomyces 3. (genus *Gardnerella*) gardnerella
- PFTŘ**- ‘ACTINOBACTERIA’ III 1. (genus *Atopobium*) atopobium 2. (genus *Olsenella*) olsenella 3. (genus *Cryptobacterium*) cryptobacterium
- PFTÇ**- ‘ACTINOBACTERIA’ IV 1. (genus *Eggerthella*) eggerthella 2. (genus *Frankia*) frankia 3. (genus *Bifidobacterium*) bifidobacterium

- PFTL**- 'ACTINOBACTERIA' V 1. (genus *Mobiluncus*) mobiluncus 2. (genus *Actinomadura*) actinomadura 3. (Actinobacteria other than named genera; numerous genera) other actinobacterial bacterium
- PFTH**- 'DEINOCOCCUS-THERMUS' 1. (Deinococcaceae; genera *Deinococcus*, *Denobacterium*) deinococcaceous bacterium 2. (Trueperaceae; genus *Truepera*) truepera 3. (Thermaceae; several genera) thermaceous bacterium
- PFP**- 'FIRMICUTES' I 1. (genus *Bacillus*) bacillus 2. (genus *Listeria*) listeria 3. (genus *Staphylococcus*) staphylococcus
- PFPW**- 'FIRMICUTES' II 1. (genus *Enterococcus*) enterococcus 2. (genus *Streptococcus*) streptococcus 3. (Lactobacillaceae; numerous genera) lactobacillaceous bacterium [formerly all included in genus *Lactobacillus*]
- PFPY**- 'FIRMICUTES' III 1. (genus *Leuconostoc*) leuconostoc 2. (genus *Pediococcus*) pediococcus 3. (genus *Aerococcus*) aerococcus
- PFPL**- 'FIRMICUTES' IV 1. (genus *Clostridium*) clostridium 2. (genus *Clostridioides*) clostridioides 3. (Heliobacteria; several genera) heliobacterial bacterium
- PFPR**- 'FIRMICUTES' V 1. (genus *Acetobacterium*) acetobacterium 2. (genus *Anaerococcus*) anaerococcus 3. (genus *Peptococcus*) peptococcus
- PFPŘ**- 'FIRMICUTES' VI 1. (genus *Peptostreptococcus*) peptostreptococcus 2. (genus *Peptoniphilus*) peptoniphilus 3. (genus *Finegoldia*) finegoldia
- PFPÇ**- 'FIRMICUTES' VII 1. (genus *Veillonella*) veillonella 2. (genus *Erysipelothrix*) erysipelotheix 3. (Firmicutes other than named genera; numerous genera) other firmicutes bacterium
- PFPL**- 'TENERICUTES (MOLLICUTES)' 1. (genus *Mycoplasma*) mycoplasma 2. (genus *Ureaplasma*) ureaplasma 3. (Mollicutes other than Stems 1 and 2, including Haloplasmales) other mollicutes bacterium
- PFPH**- 'OTHER TERRABACTERIUM' 1. (Chloroflexi; numerous genera) chloroflexian bacterium 2. (Armatimonadetes; several genera) armatimonadetes bacterium 3. (Abditibacteriota; several genera) abditibacterial bacterium

Proteobacteria

- KSKW**- 'PROTEOBACTERIA' I 1. (genus *Salmonella*) salmonella 2. (genus *Shigella*) shigella 3. (genus *Escherichia*) escherichia
- KSKY**- 'PROTEOBACTERIA' II 1. (genus *Yersinia*) yersinia 2. (genus *Haemophilus*) haemophilus 3. (genus *Vibrio*) vibrio
- KSKL**- 'PROTEOBACTERIA' III 1. (genus *Pseudomonas*) pseudomonas 2. (genus *Francisella*) francisella 3. (genus *Xanthomonas*) xanthomonas
- KSKR**- 'PROTEOBACTERIA' IV 1. (genus *Legionella*) legionella 2. (genus *Coxiella*) coxiella 3. (genus *Klebsiella*) klebsiella
- KSKŘ**- 'PROTEOBACTERIA' V 1. (genus *Aggregatibacter*) aggregatibacter 2. (genus *Azotobacter*) azotobacter 3. (genus *Acidithiobacillus*) acidithiobacillus
- KSKF**- 'PROTEOBACTERIA' VI 1. (genus *Neisseria*) neisseria 2. (genus *Bordetella*) bordetella 3. (genus *Burkholderia*) burkholderia
- KSKT**- 'PROTEOBACTERIA' VII 1. (genus *Chromobacterium*) chromobacterium 2. (genus *Eikenella*) eikenella 3. (genus *Ralstonia*) ralstonia
- KSKÇ**- 'PROTEOBACTERIA' VIII 1. (genus *Brucella*) brucella 2. (genus *Bartonella*) bartonella 3. (genus *Rhizobium*) rhizobium
- KSKM**- 'PROTEOBACTERIA' IX 1. (genus *Rickettsia*) rickettsia 2. (genus *Orientia*) orientia 3. (genus *Ehrlichia*) ehrlichia
- KSKN**- 'PROTEOBACTERIA' X 1. (genus *Helicobacter*) helicobacter 2. (genus *Campylobacter*) campylobacter 3. (genus *Wolinella*) wolinnella
- KSKH**- 'PROTEOBACTERIA' XI 1. (genus *Myxococcus*) myxococcus 2. (genus *Disulfovibrio*) disulfovibrio 3. (genus *Geobacter*) geobacter
- KSKHW**- 'PROTEOBACTERIA' XII 1. (genus *Cardiobacterium*) cardiobacterium 2. (genus *Stenotrophomonas*) stenotrophomonas 3. (Proteobacteria other than named genera; numerous genera) other proteobacterium

Sphingobacteria / FCB Group

- PFMW**- 'BACTEROIDETES' I 1. (genus *Bacteroides*) bacteroides 2. (genus *Prevotella*) prevotella 3. (genus *Porphyromonas*) porphyromonas

- PFMY**- 'BACTEROIDETES' II 1. (genus *Tannerella*) tannerella 2. (genus *Sphingobacterium*) sphingobacterium 3. (Bacteroidetes other than named genera) other bacteroidetes bacterium
- PFML**- 'CHLOROB' 1. (genus *Chlorobium*) chlorobium 2. (Chlorobiaceae other than Stem 1; several genera) chlorobiaceous bacterium / green sulfur bacterium 3. (Ignavibacteriaceae; several genera) ignavibacterial bacterium
- PFMR**- 'OTHER FCB GROUP BACTERIUM' 1. (Fibrobacteres; several genera) fibrobacterial bacterium 2. (Gemmatimonadetes; several genera) gemmatimonad bacterium 3. (FCB Group Bacteria other than Stems 1 and 2, e.g. Fermentibacteria, Delphibacteria; several genera) other FCB group bacterium

Planctobacteria / PVC Group

- VZXW**- 'CHLAMYDIAE' 1. (genus *Chlamydia*) chlamydia 2. (genus *Chlamydophila*) chlamydophila 3. (Chlamydiae other than Stems 1 and 2) other chlamydian bacterium
- VZXL**- 'PLANCTOBACTERIA' (Lentisphaerae; several genera) lentisphaeran bacterium (Planctomycetes; numerous genera) planctomycetic bacterium (Verrucomicrobia; numerous genera) verrucomicrobial bacterium
- VZXR**- 'OTHER PVC GROUP BACTERIUM' 1. (Poribacteria) poribacterial bacterium 2. (Omnitrophica) omnitrophic bacterium 3. (PVC Group bacteria other than named classes/orders/genera) other PVC group bacterium

Other Bacteria

- LMSW**- 'SPIROCHAETES' I 1. (genus *Borrelia*) borrelia 2. (genus *Leptospira*) leptospira 3. (genus *Treponema*) treponema
- LMSY**- 'SPIROCHAETES' II 1. (genus *Brachyspira*) brachyspira 2. (genus *Brevinema*) brevinema 3. (Spirochaetes other than named genera;) other spirochaete
- LMSL**- 'ACIDOBACTERIA' I 1. (genus *Acidobacterium*) acidobacterium 2. (genus *Holophaga*) holophaga 3. (genus *Geothrix*) geothrix
- LMSR**- 'ACIDOBACTERIA' II 1. (genus *Acanthopleuribacter*) acanthopleuribacter 2. (genus *Bryobacter*) bryobacter 3. (remaining Acidobacteria; several genera) other acidobacterium
- LMŠL**- 'AQUIFICA' 1. (Aquificales; several genera) aquificales bacterium 2. (Desulfurobacteriaceae; three genera) desulfurobacterium 3. (genus *Thermosulfidibacter*) thermosulfidibacter
- LMŠ**- 'FUSOBACTERIA' 1. (genus *Fusobacterium*) fusobacterium 2. (genus *Leptotrichia*) leptotrichia 3. (Fusobacteria other than Stems 1 and 2; several genera) other fusobacterial bacterium
- LMŠM**- 'CALDISERICA' / 'CRYOSERICOTA' 1. (genus *Caldisericum*) caldisericum 2. (genus *Cryosericum*) cryosericum 3. (Caldiserica/Cryosericotia other than stems 1 and 2) other caldiseric/cryoseric bacterium
- LMŠN**- 'THERMOTAGAE' 1. (Thermotogaceae; two genera) thermotogaceous bacterium 2. (Fervidobacteriaceae; two genera) fervidobacteriaceaceous bacterium 3. (Kosmotogaceae and Petrotogaceae; several genera) kosmotogaceous or petrotogaceous bacterium
- LMŠ**- 'OTHER BACTERIUM' I 1. (Calditrichaeota; genus *Calditrix* and other possible genera) calditrichaeotic bacterium 2. (Chrysiogenetes; three genera) chrysiogenaceous bacterium 3. (Coprothermobacteria; genus *Coprothermobacter*) coprothermobacter
- LMŠW**- 'OTHER BACTERIUM' II 1. (Deferribacteres; several genera) deferribacterium 2. (Dictyoglomi; genus *Dictyoglomus*) dictyoglomus 3. (Elusimicrobia; several genera) elusimicrobial bacterium
- LMŠY**- 'OTHER BACTERIUM' III 1. (Nitrospirae; several genera) nitrospiraceous bacterium 2. (Synergistetes; numerous genera) synergistaceous bacterium 3. (Thermodesulfobacteria; several genera) thermodesulfobacteriaceaceous bacterium

Archaea

-**ŠŠPI**- ‘ARCHAEON’ 1. (“DPANN” Archaea; numerous genera) DPANN archaeon 2. (Euryarchaeota; numerous genera) euryarchaeotic archaeon 3. (Proteoarchaeota; numerous genera) proteoarchaeotic archaeon

7.3.6 Viruses & Viroids

Duplodnaviria

-**LFMW**- ‘ALPHAHERPESVIRUS’ 1. (genus *Varicellovirus*) varicella zoster / human alphaherpesvirus 3 / VZV, bovine alphaherpesvirus 1 & 5, bubaline alphaherpesvirus 1, canid alphaherpesvirus 1, caprine alphaherpesvirus 1, cercopithecine alphaherpesvirus 9, cervid alphaherpesvirus 1 & 2, equid alphaherpesvirus 1/3/4/8/9, felid alphaherpesvirus 1, monodontid alphaherpesvirus 1, phocid alphaherpesvirus 1, suid alphaherpesvirus 1 2. (genus *Simplexvirus*) herpes simplex 1 / human alphaherpesvirus 1 / HHV-1, herpes simplex 2 / human alphaherpesvirus 2 / HHV-2, ateline alphaherpesvirus 1, bovine alphaherpesvirus 2, cercopithecine alphaherpesvirus 2, leporid alphaherpesvirus 4, macacine alphaherpesvirus 1, macropodid alphaherpesvirus 1 & 2, panine alphaherpesvirus 2 & 3, pteropodid alphaherpesvirus 1, saimiriine alphaherpesvirus 1 3. (Alphaherpesvirinae other than Stems 1 and 2; genera *Iltovirus*, *Mardivirus*, *Scutavirus*) other alphaherpesvirus

-**LFMY**- ‘BETAHERPESVIRUS’ 1. (genus *Cytomegalovirus*) cytomegalovirus / CMV / human betaherpesvirus 5, aotine betaherpesvirus 1, cebine betaherpesvirus 1, cercopithecine betaherpesvirus 5, macacine betaherpesvirus 3 & 8, mandrilline betaherpesvirus 1, panine betaherpesvirus 2/3/4, saimiriine betaherpesvirus 4 2. (genus *Roseolovirus*) roseolovirus / human betaherpesvirus 6A/6B/7, macacine betaherpesvirus 9, murid betaherpesvirus 3, suid betaherpesvirus 2 3. (Betaherpesvirinae other than Stems 1 and 2; genera *Muromegalovirus*, *Proboscivirus*) other betaherpesvirus

-**LFML**- ‘GAMMAHERPESVIRUS’ 1. (genus *Rhadinovirus*) rhadinovirus / gamma-2 herpesvirus, human gammaherpesvirus 8, ateline gammaherpesvirus 2 & 3, bovine gammaherpesvirus 4, cricetid gammaherpesvirus 2, macacine gammaherpesvirus 5/8/11/12, murid gammaherpesvirus 4 & 7, saimiriine gammaherpesvirus 2 2. (genus *Lymphocryptovirus*) lymphocryptovirus / human gammaherpesvirus 4 / Epstein-Barr virus, callitrichine gammaherpesvirus 3, cercopithecine gammaherpesvirus 14, gorilline gammaherpesvirus 1, macacine gammaherpesvirus 4 & 10, panine gammaherpesvirus 1, papiine gammaherpesvirus 1, pongine gammaherpesvirus 2 3. (Gammaherpesvirinae other than Stems 1 & 2; genera *Macavirus*, *Percavirus*) other gammaherpesvirus

-**LFMR**- ‘OTHER HERPES VIRUS & CAUDOVIRALES’ 1. (Alloherpesviridae; genera *Batrachovirus*, *Cyprinivirus*, *Ictalurivirus*, *Salmonivirus*) alloherpesvirus 2. (Malacoherpesviridae; genera *Aurivirus*, *Ostreavirus*) malacoherpesvirus 3. (Caudovirales; numerous genera) caudovirales virus / tailed bacteriophage

Monodnaviria

-**RŠTW**- ‘PARVOVIRUS’ 1. (Parvovirinae; several genera) parvovirine parvovirus, primate erythroparvovirus 1 2. (Densovirinae; several genera) densovirine parvovirus 3. (Hamaparvovirinae; several genera) hamaparvovirine parvovirus

-**RŠTY**- ‘PAPILLOMAVIRUS’ 1. (Human Papillomaviruses; genera *Alphapapillomavirus*, *Betapapillomavirus*, *Gammapapillomavirus*, *Mupapillomavirus*, *Nupapillomavirus*) human papillomavirus / HPV 2. (genus *Kappapapillomavirus* 2) Shope papilloma virus / SPV / cottontail rabbit papillomavirus / CRPV 3. (Papillomavirus other than Stems 1 and 2; numerous genera) other papillomavirus

-**RŠTL**- ‘HUMAN POLYOMAVIRUS’ I 1. (genus *Betapolyomavirus*; species: human polyomavirus 1) BK polyomavirus 2. (genus *Betapolyomavirus*; species: human polyomavirus 2) JC polyomavirus 3. (genus *Alphapolyomavirus*; species: human polyomavirus 5) Merkel cell polyomavirus

-**RŠTR**- ‘HUMAN POLYOMAVIRUS’ II 1. (genus *Deltapolyomavirus*; species: human polyomavirus 6) human polyomavirus 6 2. (genus *Deltapolyomavirus*; species: human polyomavirus 7) human polyomavirus 7 3. (genus *Alphapolyomavirus*; species: human polyomavirus 8) trichodysplasia spinulosa polyomavirus

-**RŠTŘ**- ‘POLYOMAVIRUS’ I 1. (genus *Alphapolyomavirus* other than named species above [species with non-human hosts or non-symptomatic in humans]) alphapolyomavirus 2. (genus *Betapolyomavirus* other than named species above [species with non-human hosts or non-symptomatic in humans]) betapolyomavirus 3. (genus *Deltapolyomavirus* other than named species above [species with non-human hosts or non-symptomatic in humans]) deltapolyomavirus

-RŠTÇ- ‘POLYOMAVIRUS II & OTHER COSSAVIRICOTA’ 1. (genus *Gammampolyomavirus* other) gammampolyomavirus 2. (Polyomaviridae species as yet unassigned to a genus) other polyomavirus 3. (Mouviricetes; genus *Bidensovirus*) *Bombyx mori* bidensovirus / silkworm bidensovirus

-RŠTF- ‘CRESSDNAVARICOTA’ 1. (genus *Cyclovirus*) cyclovirus 2. (Geminiviridae; several genera) geminivirus 3. (Cressdnaviricota other than Stems 1 & 2; Genomoviridae; several genera and Arfiviricetes; numerous genera) other cressdnaviricote virus

-RŠTL- ‘OTHER MONADNAVIRIA’ 1. (Trapavirae; several genera) pleolipovirid virus 2. (Sangervirae; several genera) microvirid bacteriophage 3. (Loebvirae; numerous genera) tubulavirales bacteriophage

Riboviria

Riboviria > Orthonavirae

Riboviria > Orthonavirae > Pisuviricota

Riboviria > Orthonavirae > Pisuviricota > Pisoniviricetes

Riboviria > Orthonavirae > Pisuviricota > Pisoniviricetes > Nidovirales

-ŠŠT- ‘BETACORONAVIRUS’ I 1. (genus *Merbecovirus*) Middle East respiratory syndrome-related coronavirus (MERS-CoV), hedgehog coronavirus 1, pipistrellus bat coronavirus HKU5, Tylonycteris bat coronavirus HKU4 2. (genus *Sarbecovirus*, species *SARS-CoV*) severe acute respiratory syndrome coronavirus (SARS-CoV) 3. (genus *Sarbecovirus*, species *SARS-CoV-2*) severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

-ŠŠTW- ‘BETACORONAVIRUS’ II 1. (genus *Embecovirus*) human coronavirus OC43, human coronavirus HKU1, murine coronavirus 2. (genus *Nobecovirus*) rousettus bat coronavirus HKU9 3. (genus *Hibecovirus*) bat Hp-betacoronavirus Zhejiang2013

-ŠŠTY- ‘ALPHACORONAVIRUS’ I 1. (genus *Alphacoronavirus* 1) alphacoronavirus 1, feline coronavirus, canine coronavirus, transmissible gastroenteritis virus 2. (genus *Pedacovirus*) porcine epidemic diarrhea virus, scotophilus bat coronavirus 512 3. (genus *Minacovirus*) mink coronavirus 1

-ŠŠTL- ‘ALPHACORONAVIRUS’ II 1. (genus *Duvinacovirus*) human coronavirus 229E 2. (genus *Setracovirus*) human coronavirus NL63 3. (Alphacoronavirus other than named genera; several genera) other alphacoronavirus

-ŠŠTR- ‘GAMMACORONAVIRUS & DELTACORONAVIRUS’ 1. (genus *Igacovirus*) avian coronavirus, duck coronavirus 2. (genus *Cegacovirus*) beluga whale coronavirus SW1 (Gammacoronavirus and Deltacoronavirus other than Stems 1 and 2) other gamma- or delta- coronavirus

-ŠŠTR̃- ‘TOBANIVIRUS’ 1. (genus *Torovirus*) torovirus 2. (genus *Bafinivirus*) bafinivirus 3. (Tobanivirus other than Stems 1 & 2; several genera) other tobanivirus

-ŠŠTH- ‘OTHER NIDOVIRALES’ 1. (genus *Alphaarterivirus*) equine arteritis virus 2. (genus *Okavirus*) okavirus 1, gill-associated virus, yellow head virus 3. (remaining nidovirales viruses; several genera) other nidovirales virus

Riboviria > Orthonavirae > Pisuviricota > Pisoniviricetes > Picornavirales

-MÇP- ‘GENUS ENTEROVIRUS’ I 1. (species *enterovirus C*) poliovirus, enterovirus C 2. (species *enterovirus D*) enterovirus D, enterovirus 68, enterovirus 70, enterovirus 94, enterovirus 111, enterovirus 120 3. (species *enterovirus E*) enterovirus E / bovine enterovirus / BEV / enteric cytopathic bovine orphan virus (ECBO)

-MÇPW- ‘GENUS ENTEROVIRUS’ II 1. (species *enterovirus G*) enterovirus G, porcine enterovirus B 2. (species *enterovirus H*) enterovirus H, simian enterovirus A 3. (other enterovirus species) enterovirus A, enterovirus B, enterovirus F, enterovirus I, enterovirus J, enterovirus K, enterovirus L

-MÇPY- ‘GENUS ENTEROVIRUS’ III 1. (species *rhinovirus A*) rhinovirus A, human rhinovirus A 2. (species *rhinovirus B*) rhinovirus B, human rhinovirus B (species *rhinovirus C*) rhinovirus C, human rhinovirus C

-MÇPL- ‘GENUS CARDIOVIRUS’ 1. (species *cardiovirus B*) cardiovirus B, Saffold virus (SAFV), Theiler’s murine encephalomyelitis virus (TMEV) 2. (species *cardiovirus A*) cardiovirus A, encephalomyocarditis virus 3. (*Cardiovirus* species other than Stems 1 & 2) cardiovirus C/D/E/F

- MÇPR**- ‘GENUS KOBUVIRUS’ 1. (*Kobuvirus*, species *aichivirus A*) aichi virus, canine kobuvirus 2. (*Kobuvirus*, species *aichivirus B*) bovine kobuvirus 3. (*Kobuvirus*, species *aichivirus C*) porcine kobuvirus
- MÇPŘ**- ‘GENUS PARECHOVIRUS’ 1. (species *parechovirus A*) parechovirus A /human parechovirus 1 / HPeV1, human parechovirus 2 2. (species *parechovirus D*) parechovirus D / ferret parechovirus 3. (species other than Stems 1 & 2) other parechovirus
- MÇPÇ**- ‘GENERA HEPATOVIRUS & SALIVIRUS’ 1. (*Hepatovirus*, species *hepatovirus A*) hepatovirus A, hepatitis A virus 2. (*Hepatovirus*, species other than Stem 1) hepatovirus B/C/D/E/F/G/H/I 3. (*Salivirus*, species *salivirus A*) salivirus A
- MÇPF**- ‘GENUS APHTHOVIRUS’ 1. (species *FMDV*) foot-and-mouth disease virus (FMDV) 2. (species *ERAV*) equine rhinitis A virus 3. (species *BRAV* and *BRBV*) bovine rhinitis A virus, bovine rhinitis B virus
- MÇPT**- ‘OTHER PICORNAVIRUS’ 1. (genus *Avihepatovirus*) avihepatovirus A 2. (genus *Erbovirus*) erbovirus A 3. (remaining Picornavirales; numerous genera) other picornavirus
- MÇPL**- ‘CALICIVIRUS’ 1. (genus *Norovirus*) norovirus, winter vomiting bug 2. (genus *Sapovirus*) Sapporo virus 3. (Calicivirus other than Stems 1 & 2; several genera) other calicivirus
- MÇPH**- ‘DICISTROVIRIDAE’ 1. (genus *Aparavirus*) acute bee paralysis virus, Israeli acute paralysis virus, Kashmir bee virus, Taura syndrome virus, mud crab virus 2. (genus *Cripavirus*) aphid lethal paralysis virus, cricket paralysis virus, *Drosophila C* virus, *Rhopalosiphum padi* virus 3. (genus *Triatovirus*) black queen cell virus, *Himetobi P* virus, *Homalodisca coagulata* virus-1, *Plautia stali* intestine virus, triatoma virus
- MÇPHW**- ‘OTHER PICORNAVIRALES’ 1. (genus *Iflavirus*) iflavirus 2. (Secoviridae; several genera) secovirus 3. (remaining Picornavirales; Marnaviridae, Polycipiviridae, Solinviviridae; several genera) other picornovirales virus

Riboviria > Orthonavirae > Pisuviricota > Pisoniviricetes > Sobelivirales

- NŠTW**- ‘SOBELIVIRALES’ 1. (Alvernnaviridae; genus *Dinornavirus*) heterocapsa circularisquama RNA virus 01 2. (Barnaviridae; genus *Barnavirus*) mushroom bacilliform virus 3. (Solemoviridae; genera *Polemovirus*, *Sobemovirus*) poinsettia latent virus, blueberry shoestring virus, cocksfoot mottle virus, lucerne transient streak virus, papaya lethal yellowing virus, rice yellow mottle virus, ryegrass mottle virus, sesbania mosaic virus, solanum nodiflorum mottle virus, southern bean mosaic virus, southern cowpea mosaic virus, sowbane mosaic virus, subterranean clover mottle virus, turnip rosette virus, velvet tobacco mottle virus, imperata yellow mottle virus

Riboviria > Orthonavirae > Pisuviricota > Dupolopiviricetes

- NŠTR**- ‘DURNAVIRALES’ 1. (Picobirnaviridae; genus *Picobirnavirus*) human picobirnavirus, equine picobirnavirus, beihai picobirnavirus 2. (Amalgviridae; genera *Amalgavirus*, *Zybavirus*) *Allium cepa* amalgavirus 1 & 2, blueberry latent virus, rhododendron virus A, southern tomato virus, spinach amalgavirus 1, vicia cryptic virus M, *Zoostera marina* amalgavirus 1 & 2, *Zygosaccharomyces bailii* virus Z 3. (remaining Durnavirales families: Hypoviridae, Partitiviridae; several genera and unassigned species) cryphonectria hypovirus, partitivirus

Riboviria > Orthonavirae > Pisuviricota > Stelpaviricetes

- NŠT**- ‘POTYVIRUS’ I 1. (genus *Potyvirus*; numerous species) [various plant mosaic viruses, mottle viruses, dwarf viruses, shoestring viruses, distortion viruses, ringspot viruses, stunt viruses, break viruses, streak viruses] 2. (genus *Ipomovirus*) sweet potato mild mottle virus 3. (genus *Tritimovirus*) wheat streak mosaic virus
- NŠTW**- ‘POTYVIRUS’ II 1. (genus *Rymovirus*) ryegrass mosaic virus 2. (genus *Poacevirus*) triticum mosaic virus 3. (remaining Potyvirus; several genera) other potyvirus
- NŠTR**- ‘ASTROVIRUS’ 1. (genus *Mamastrovirus*; species HAsV, HAsV-VA, HAsV-MLB) human astrovirus 2. (genus *Mamastrovirus*; species other than Stem 1) ovine astrovirus, bovine astrovirus, feline astrovirus, sea lion astrovirus, murine astrovirus, porcine astrovirus, mink astrovirus 3. (genus *Avastrovirus*) chicken astrovirus, pigeon astrovirus, avian nephritis astrovirus

Riboviria > Orthonavirae > Duplornaviricota

-**MS†**- ‘REOVIRUS’ I 1. (genus *Rotavirus*) rotavirus 2. (genus *Orbivirus*) orbivirus, bluetongue virus, African horse sickness virus, epizootic hemorrhagic disease virus 3. (genus *Seadornavirus*) banna virus (BAV), kadapiro virus, liao ning virus

-**MS†W**- ‘REOVIRUS’ II 1. (genus *Coltivirus*) Colorado tick fever virus, European Eyach virus 2. (genus *Phytoreovirus*) wound tumour virus (WTV), rice dwarf virus (RDV), rice gall dwarf virus (RGDV), tobacco leaf enation virus (TLEF), rice buncy stunt virus (ICTV) sweet potato virus (VIDE) 3. (Reovirus other than named genera) other reovirus

-**MS†R**- ‘CHRYMOTIVIRICETES & VIDAVERVIRICETES’ 1. (Ghabrivirales; Totiviridae; several genera) totivirus 2. (Ghabrivirales other than Stem 1; Chrysoviridae, Megabirnaviridae, Quadriviridae; several genera) ghabrivirales virus other than totivirus 3. (Mindivirales, Cystoviridae; genus *Cystovirus*) pseudomonas virus

Riboviria > Orthonavirae > Kitrinoviricota > Flaviviridae

-**LFSK**- ‘GENUS FLAVIVIRUS’ I 1. (species *yellow fever virus*) yellow fever virus 2. (species *Dengue virus*) dengue virus 3. (species *Zika virus*) zika virus

-**LFST**- ‘GENUS FLAVIVIRUS’ II 1. (species *West Nile virus*) West Nile virus, Kunjin virus 2. (species *Murray Valley encephalitis virus*) Murray Valley encephalitis virus (MVEV) 3. (species *Tick-borne encephalitis virus*) tick-borne encephalitis virus (TBEV)

-**LFSP**- ‘GENUS FLAVIVIRUS’ III 1. (species *Omsk hemorrhagic fever virus*) Omsk hemorrhagic fever virus 2. (species *Kyansur Forest disease virus*) Kyansur Forest disease virus 3. (species *Powassan virus*) Powassan virus (POWV)

-**LFSC**- ‘GENUS FLAVIVIRUS’ IV 1. (species *Louping ill virus*) Louping ill virus 2. (species *Langat virus*) Langat virus 3. (species *Alkhurma virus*) Alkhurma virus

-**LFŠČ**- ‘GENUS FLAVIVIRUS’ V 1. (species *Japanese encephalitis virus*) Japanese encephalitis virus 2. (species *Saint Louis encephalitis virus*) Saint Louis encephalitis virus 3. (species other than named species) other flavivirus

-**LFSW**- ‘GENUS HEPACIVIRUS’ 1. (species *Hepacivirus C*) human hepatitis C virus 2. (species *Hepacivirus A*) canine hepacivirus, equine hepacivirus 3. (*Hepacivirus* species other than stems of previous root above) other hepacivirus

-**LFSY**- ‘OTHER FLAVIVIRIDAE’ 1. (genus *Pegivirus*) pegivirus 2. (genus *Pestivirus*) pestivirus 3. [stem unassigned]

-**LFSL**- ‘HEPELIVIRALES’ 1. (genus *Rubivirus*) rubella virus (RuV) 2. (genus *Orthohepevirus*) orthohepevirus, human hepatitis E virus 3. (Hepelivirales other than Stems 1 & 2; genera *Omegatetravirus*, *Betatetravirus*, *Benyvirus*, *Piscihepevirus*) other hepelivirales virus

-**LFSR**- ‘TYMOVIRALES’ 1. (Tymoviridae; genera *Tymovirus*, *Marafivirus*, *Maculavirus*) tymovirid virus 2. (Betaflexiviridae; numerous genera) betaflexivirus, quinvirine or triverine virus 3. (Alphaflexiviridae, Deltaflexiviridae, Gammaflexiviridae; numerous genera) other tymovirales virus

-**LFSŘ**- ‘GENUS ALPHAVIRUS’ I 1. (species *Chikungunya virus*) Chikungunya virus 2. (species *Mayaro virus*) Mayaro virus, Una virus 3. (species *Ross River virus*) Ross River virus (RRV)

-**LFSM**- ‘GENUS ALPHAVIRUS’ II 1. (species *Eastern equine encephalitis virus*) Eastern equine encephalitis virus (EEEV) 2. (species *Venezuelan equine encephalitis virus*) Venezuelan equine encephalitis virus 3. (species *Western equine encephalitis virus*) Western equine encephalitis virus

-**LFSN**- ‘GENUS ALPHAVIRUS’ III 1. (species *Middelburg virus*) Middelburg virus (MIDV) 2. (species *Barmah Forest virus*) Barmah Forest virus (BFV) 3. (Togaviridae other than Stems 1 & 2 or *Alphavirus* species) other togavirus

-**LFSF**- ‘MARTELLIVIRALES (other than Togaviridae)’ I 1. (Bromoviridae; several genera) bromovirid virus 2. (Closteroviridae; several genera) closterovirid virus 3. (Endornaviridae; numerous genera) endornavirid virus

-**LFSX**- ‘MARTELLIVIRALES (other than Togaviridae)’ II 1. (Kitaraviridae; several genera) kitaravirid virus 2. (Mayoviridae; genera *Idaeovirus*, *Pteridovirus*) mayovirid virus 3. (Virgaviridae; numerous genera) virgavirid virus

-LFSV- ‘OTHER KITRINOVIRICOTA’ 1. (Nodamuvirales; genera *Alphanodavirus*, *Betanodavirus*, *Sinaivirus*) nodavirus, sainaivirus 2. (Tolivirales; several genera) carmotetravirus, luteovirus, umbravirus, procedovirine virus 3. (Kitrinoviricota other than named orders/classes/families/genera) other kitrinoviricote virus

Riboviria > Orthonavirae > Negarnaviricota

-NXP- ‘ORTHOMYXOVIRUS (INFLUENZA VIRUS)’ 1. (genus *Alphainfluenzavirus*) influenza A virus, avian influenza virus / “bird flu” virus 2. (genus *Betainfluenzavirus*) influenza B virus 3. (genera *Gammainfluenzavirus*, *Deltainfluenzavirus*) influenza C virus, influenza D virus

-NXPW- ‘OTHER ORTHOMYXOVIRUS’ 1. (genus *Quaranjavirus*) quaranjavirus 2. (genus *Thogotovirus*) thogotovirus (THOV), dhori virus (DHOV) 3. (genus *Isavirus*) salmon isavirus

-NXPY- ‘BUNYAVIRALES’ I 1. (genus *Orthohantavirus*) hantavirus 2. (genus *Orthobunyavirus*) California encephalitis virus, La Crosse virus (LACV), Jamestown Canyon virus, Cache Valley orthobunyavirus (CVV) 3. (genus *Orthonairovirus*) Crimean-congo hemorrhagic fever orthonairovirus (CCHF)

-NXPL- ‘BUNYAVIRALES’ II 1. (genus *Mammarenavirus-Old World Complex*) Lassa virus (LASV), lymphocytic choriomeningitis virus (LCMV), Lujo virus (LUJV) 2. (genus *Mammarenavirus-New World Complex*) Whitewater Arroyo virus (WWAV), Machupo virus (MACV), Sabiá virus (SBAV), Chapare virus (CHAPV), Guanarito virus (GTOV), Junín virus (JUNV) 3. (genus *Phlebovirus*) Rift Valley fever phlebovirus, Punta Toro phlebovirus, Sicilian phlebovirus

-NXPR- ‘BUNYAVIRALES’ III 1. (genus *Orthospovirus*) tomato spottel wilt orthospovirus, soybean vein necrosis orthospovirus, impatiens necrotic spot orthospovirus 2. (genus *Emaravirus*) High Plains wheat mosaic emaravirus, fig mosaic emaravirus, blackberry leaf mottle associated emaravirus, raspberry leaf blotch emaravirus 3. (Bunyavirales other than named genera; several genera) other bunyavirales virus

-NXPŘ- ‘FILOVIRIDAE’ 1. (genus *Ebolavirus*) ebolavirus 2. (genus *Marburgvirus*) Marburg virus, Ravn virus 3. (Filoviridae other than Stems 1 & 2; several genera) other filovirus

-NXPC- ‘RHABDOVIRIDAE’ I 1. (genus *Lyssavirus*; species *rabies lyssavirus*) rabies virus (RABV) 2. (genus *Lyssavirus*; species other than Stem 1) other lyssavirus 3. (genus *Vesiculovirus*) Chandipura virus (CHPV), vesicular stomatitis virus

-NXPL- ‘RHABDOVIRIDAE’ II 1. (genus *Tibrovirus*) tibrovirus, Bas-Congo virus, Ekpoma virus 1 & 2 2. (genus *Novirhabdovirus*) novirhabdovirus 3. (Rhabdoviridae other than named genera; numerous genera) other rhabdovirus

-NXPT- ‘PARAMYXOVIRIDAE’ I 1. (genus *Morbillivirus*; species *Measles morbillivirus*) measles virus (MeV) 2. (genus *Morbillivirus*; species other than Stem 1) canine distemper virus, feline morbillivirus, cetacean morbillivirus, rinderpest virus, phocine distemper virus 3. (genus *Respirovirus*) human respirovirus 1 & 3, bovine respirovirus 3, caprine respirovirus 3, porcine respirovirus 1, squirrel respirovirus, murine respirovirus

-NXPH- ‘PARAMYXOVIRIDAE’ II 1. (genus *Aquaparamyxovirus*) aquaparamyxovirus 2. (genus *Ferlavirus*) reptilian ferlavirus / Fer-de-Lance virus 3. (Paramyxoviridae other than Stems 1 & 2; several genera) other paramyxovirus

-NXFW- ‘OTHER NEGARNAVIRICOTA’ I 1. (Rubulavirinae genus *Orthorubulavirus*) mumps virus (MuV) 2. (Rubulavirinae other than Stem 1) other rubulavirus 3. (Pneumoviridae; genera *Orthopneumovirus*, *Metapneumovirus*) human respiratory syncytial virus A2 & B1 (HRSV), human metapneumovirus (HMPV), avian metapneumovirus (AMPV), bovine respiratory syncytial virus (BRSV), murine pneumonia virus (MPV)

-NXFY- ‘OTHER NEGARNAVIRICOTA’ II 1. (Avulavirinae; several genera) avulavirus, Newcastle disease virus 2. (Bornaviridae; genus *Orthobornavirus*) Borna disease virus 1 & 2, bornavirus 3. (Bornaviridae other than Stem 1; genera *Carbovirus*, *Cultervirus*) python virus, carbovirus, cultervirus

-NXFL- ‘OTHER NEGARNAVIRICOTA’ III 1. (Qinviridae; genus *Yingvirus*) yingvirus 2. (Aspiviridae; genus *Ophiovirus*) ophiovirus 3. (Yueviridae; genus *Yuyuevirus*) yuyuevirus

-NXFR- ‘OTHER NEGARNAVIRICOTA’ IV 1. (Sunviridae; genus *Sunshinevirus*) reptile sunshinevirus 1 2. (Nyamviridae; several genera) Midway virus, Nyamanini virus, Sierra Nevada virus, soybean cyst nematode virus 1 3. (Articulavirales and Negarnaviricota other than named families/genera; several genera) other negarnaviricote virus

Riboviria > Orthonavirae > Lenarviricota

-TÇB- ‘LENARVIRICOTA’ 1. (Botourmiaviridae; genus *Ourmiavirus*) ourmia melon virus, epiros cherry virus, cassava virus C 2. (Levivirales; genera *Levivirus*, *Allolevivirus*) levivirales virus 3. (Narnaviridae & Mitoviridae; genera *Narnavirus*, *Mitovirus*) narnavirus, mitovirus

Riboviria > Orthonavirae > other orthonavirid viruses

-TÇG- ‘BIRNAVIRIDAE’ 1. (genus *Avibirnavirus*) infectious bursal disease virus 2. (genus *Aquabirnavirus*) infectious pancreatic necrosis virus, Tellina virus, yellowtail ascites virus 3. (genus *Blosnavirus*) blotched snakehead virus

-TÇD- ‘OTHER ORTHONAVIRUS’ 1. (Birnaviridae other than stems of previous root above; several genera) other birnavirus 2. (Permutotetraviridae; genus *Alphapermutotetravirus*) alphapermutotetravirus 3. (genus *Botybirnavirus*) botybirnavirus

Riboviria > Pararnavirae

-RTÇP- ‘HEPADNAVIRUS’ 1. (genus *Orthohepadnavirus*) hepatitis B virus 2. (genus *Avihepadnavirus*) duck hepatitis B virus, heron hepatitis B virus, parrot hepatitis B virus 3. (Hepadnavirus other than Stems 1 & 2; several genera) other hepadnavirus

-RTÇT- ‘GENUS LENTIVIRUS’ I 1. (species *Human immunodeficiency virus 1*) human immunodeficiency virus 1 / HIV-1 2. (species *Human immunodeficiency virus 2*) human immunodeficiency virus 2 / HIV-2 3. (species *Simian immunodeficiency virus*) simian immunodeficiency virus

-RTÇK- ‘GENUS LENTIVIRUS’ II 1. (species *Feline immunodeficiency virus*) feline immunodeficiency virus 2. (species *Bovine immunodeficiency virus*) bovine immunodeficiency virus 3. (species *Equine infectious anemia virus*) equine infectious anemia virus

-RTÇW- ‘GENUS LENTIVIRUS’ III 1. (species *Visna-maedi virus*) visna-maedi virus 2. (species *Jembrana disease virus*) jembrana disease virus 3. (Lentivirus species other than named) caprine arthritis encephalitis virus, puma lentivirus

-RTÇL- ‘GENUS DELTARETROVIRUS’ 1. (species *Human T-cell lymphotropic virus*) human T-cell lymphotropic virus (HTLV-1, HTLV-2, HTLV-3, HTLV-4) 2. (species *Simian T-cell lymphotropic virus*) simian T-cell lymphotropic virus (STLV-1, STLV-2, STLV-3, STLV-4) 3. (species *Bovine leukemia virus*) bovine leukemia virus (BLV)

-RTÇR- ‘OTHER RETROVIRIDAE’ I 1. (genus *Alpharetrovirus*) avian leukosis virus, Rous sarcoma virus 2. (genus *Betaretrovirus*) mouse mammary tumour virus 3. (genus *Gammaretrovirus*) murine leukemia virus, feline leukemia virus

-RTÇM- ‘OTHER RETROVIRIDAE’ II 1. (genus *Deltaretrovirus*) bovine leukemia virus 2. (genus *Epsilonretrovirus*) walleye dermal sarcoma virus 3. (Spumaretrovirinae; several genera) bovine foamy virus, feline foamy virus, equine foamy virus, eastern chimpanzee simian foamy virus, brown greater galago prosimian foamy virus

-RTÇN- ‘OTHER RETROVIRUS’ 1. (Caulimoviridae; numerous genera) cauliflower mosaic virus, commelina yellow mottle virus, cassava vein mosaic virus, petunia vein clearing virus, tobacco vein clearing virus, soybean chlorotic mottle virus, rice tungro bacilliform virus 2. (Belpaoviridae; genus *Semotivirus*) *Anopheles gambiae* mosquito virus, *Ascaris lumbricoides* Tas virus, *Bombyx mori* Pao virus, *Caenorhabditis elegans* Cer13 virus, *Drosophila melanogaster* Bel virus, *Drosophila melanogaster* Roo virus 3. (Metaviridae, Pseudoviridae; several genera) other retrovirus

Varidnaviria

Varidnaviria > Bamfordvirae

Varidnaviria > Bamfordvirae > Nucleocytoviricota

-PSF- ‘GENUS ORTHOPOXVIRUS’ I 1. (species *Variola virus*) smallpox virus / variola virus 2. (species *vaccinia virus*) vaccinia virus 3. (species *cowpox virus*) cowpox virus

- PSFW**- ‘GENUS ORTHOPOXVIRUS’ II 1. (species *monkeypox virus*) monkeypox virus 2. (species *camelpox virus*) camelpox virus 3. (species *raccoonpox virus*) raccoonpox virus
- PSFY**- ‘GENUS ORTHOPOXVIRUS’ III 1. (species *skunkpox virus*) skunkpox virus 2. (species *volepox virus*) volepox virus 3. (species other than named) other orthopox virus
- PSFL**- ‘GENUS PARAPOXVIRUS’ 1. (species *orf virus*) orf virus 2. (species *bovine papular stomatitis virus*) bovine papular stomatitis virus 3. (species other than Stems 1 & 2) other parapox virus
- PSFR**- ‘OTHER POXVIRUS’ I 1. (genus *Yatapox virus*) tanapox virus, monkey tumor virus 2. (genus *Molluscipox virus*) molluscum contagiosum virus (MCV) 3. (genus *Avipoxvirus*) avian pox virus
- PSFR**- ‘OTHER POXVIRUS’ II 1. (genus *Suipoxvirus*) swinepox virus 2. (genus *Leporipoxvirus*) myxoma virus, hare fibroma virus, rabbit fibroma virus, squirrel fibroma virus 3. (remaining poxvirus genera; several genera) other poxvirus
- PSFM**- ‘OTHER NUCLEOCYTOVIRICOTA’ I 1. (Asfarviridae; genus *Asfivirus*) African swine fever virus (ASFV) 2. (Ascoviridae; genera *Ascovirus*, *Toursvirus*) ascovirid virus 3. (Iridoviridae; several genera) iridovirid virus
- PSFN**- ‘OTHER NUCLEOCYTOVIRICOTA’ II 1. (Mimiviridae; several genera) mimivirid virus 2. (Phycodnaviridae; several genera) phycodnavirid virus 3. (Nucleocytoviricota other than named families/genera; several genera) other nucleocytovirus

Varidnaviria > Bamfordvirae > Preplasmiviricota

Varidnaviria > Bamfordvirae > Preplasmiviricota > Tectiliviricetes

- GZXL**- ‘GENUS MASTADENOVIRUS’ I 1. (species *human mastadenovirus A/B/C/D/E/F/G*) human mastadenovirus A/B/C/D/E/F/G 2. (species *simian mastadenovirus A/B/C/D/E/F/G/H/I*) simian mastadenovirus A/B/C/D/E/F/G/H/I 3. (species *canine mastadenovirus A*) canine mastadenovirus A
- GZXR**- ‘GENUS MASTADENOVIRUS’ II 1. (species *bovine mastadenovirus A/B/C*) bovine mastadenovirus A/B/C 2. (species *porcine mastadenovirus A/B/C*) porcine mastadenovirus A/B/C 3. (species other than named; numerous species) other mastadenovirus
- GZXW**- ‘OTHER ADENOVIRIDAE’ 1. (genus *Siadenovirus*) frog siadenovirus 2. (genus *Aviadenovirus*) avian adenovirus 3. (Adenoviridae other than named genera; genera *Atadenovirus*, *Ichtadenovirus*) other adenovirus
- GZXM**- ‘OTHER TECTILIVIRICETES’ 1. (Corticoviridae; genus *Corticovirus*) corticovirus / psedoalteromonas phage PM2 2. (Turriviridae; genus *Alphaturrivirus*) Alphaturrivirus / sulfolobus turreted icosahedral virus 1 & 2 3. (Tectiviridae; several genera) tectivirus

Varidnaviria > Bamfordvirae > Preplasmiviricota > Maveriviricetes

- LCXW**- ‘LAVIDAVIRIDAE (VIROPHAGE)’ 1. (genus *Mavirus*, species *Cafeteriavirus-dependent mavirus*) Cafeteriavirus-dependent mavirus 2. (genus *Sputnikvirus*, species *Mimivirus-dependent virus Sputnik*) Mimivirus-dependent virus Sputnik 3. (genus *Sputnikvirus*, species *Mimivirus-dependent virus Zamilon*) Mimivirus-dependent virus Zamilon

Varidnaviria > Helvetiavirae > Dividoviricota

- RCXW**- ‘SPHAEROLIPOVIRIDAE’ 1. (genus *Alphasphaerolipovirus*) Haloarcula hispanica icosahedral virus 2/PH2/SH2, Haloarcula virus HCIV1 2. (genus *Betasphaerolipovirus*) Natrinema virus SNJ1 3. (genus *Gammasphaerolipovirus*) Thermus aquaticus virus IN93, Thermus thermophilus virus P23-65H/P23-72/P23-77

Miscellaneous Viruses, Viroids, Satellites

- FŠT**- ‘AVSUNVIROIDAE’ 1. (genus *Avsunviroid*) avocado sunblotch viroid 2. (genus *Elaviroid*) eggplant latent viroid 3. (genus *Pelamoviroid*) peach latent mosaic viroid, appler hammerhead viroid, chrysanthemum chlorotic mottle viroid
- FŠTW**- ‘VIROID SATELLITE’ 1. (Alphasatellitidae; several genera) alphasatellite 2. (Tolecusatellitidae; genera *Betasatellite*, *Deltasatellite*) Ageratum yellow vein betasatellite, tomato leaf curl deltasatellite 3. viroid satellite other than Stems 1 & 2
- FŠTY**- ‘OTHER VIRUS’ I 1. (Ligamenvirales; several genera) lipothrixvirus, rudivirus 2. (Baculoviridae; several genera) baculovirus 3. (Nudiviridae; genera *Alphanudivirus*, *Betanudivirus*) *Oryctes rhinoceros* nudivirus, *Gryllus bimaculatus* nudivirus, *Heliothis zea* nudivirus
- FŠTL**- ‘OTHER VIRUS’ II 1. (Ampullaviridae; genus *Ampullavirus*) Acidianus bottle-shaped virus 2. (Bicaudaviridae; genus *Bicaudavirus*) Acidianus two-tailed virus 3. (Clavaviridae; genus *Clavavirus*) *Aeropyrum pernix* bacilliform virus 1
- FŠTR**- ‘OTHER VIRUS’ III 1. (Fuselloviridae; genera *Alphafusellovirus*, *Betafusellovirus*) *Sulfolobus* spindle-shaped virus 1 & 6, acidianus spindle-shaped virus 1 2. (Globuloviridae; genus *Globulovirus*) *Pyrobaculum* spherical virus, *Thermoproteus tenax* spherical virus 1 3. (Guttaviridae; genera *Alphaguttavirus*, *Betaguttavirus*) *Sulfolobus newzealandicus* droplet-shaped virus, *Aeropyrum pernix* ovoid virus 1
- FŠTR**- ‘OTHER VIRUS’ IV 1. (Ovaliviridae; genus *Alphaovalivirus*) *Sulfolobus* ellipsoid virus 1 2. (Plasmaviridae; genus *Plasmavirus*) *Archaeoleplasma* phage L2 3. (Portogloboviridae; genus *Alphaportoglobovirus*) *Sulfolobus* alphaportoglobovirus 1
- FŠTÇ**- ‘OTHER VIRUS’ V 1. (Hytrosaviridae; genera *Glossinavirus*, *Muscavirus*) *Glossina* hytrosavirus, *Musca* hytrosavirus 2. (Nimaviridae; genus *Whispovirus*) white spot syndrome virus 3. (Polydnaviridae; genera *Ichnovirus*, *Bracovirus*) ichnovirus, bracovirus
- FŠTF**- ‘OTHER VIRUS’ VI 1. (Anelloviridae; numerous genera) anellovirus, torque teno virus (TTV) 2. (Spiraviridae; genus *Alphaspiravirus*) *Aeropyrum* coil-shaped virus (ACV) 3. (Pospiviroidae; several genera) potato spindle tuber viroid, hop stunt viroid, coconut cadang-cadang viroid, apple scar skin viroid, *Coleus blumei* viroid 1
- FŠTV**- ‘OTHER VIRUS’ VII 1. (Halspiviridae; genus *Salterprovirus*) salterprovirus His1 2. (Tristromaviridae; genus *Alphatristromavirus*) *Pyrobaculum* filamentous virus 1 3. (Finnlakeviridae; genus *Finnlakevirus*) *Flavobacterium* virus FLiP
- FŠTL**- ‘OTHER VIRUS’ VIII 1. (genus *Pithovirus*) pithovirus 2. (genus *Dinodnavirus*) dinodnavirus 3. (genus *Rhizidiovirus*) rhizidiovirus
- FŠTH**- ‘OTHER VIRUS’ IX 1. (genus *Deltavirus*) deltavirus 2. (genus *Pandoravirus*) pandoravirus 3. (genus *Papanivirus*) panicum papanivirus 1
- FŠTM**- ‘OTHER VIRUS’ X 1. (genus *Albetovirus*) tobacco albetovirus 1/2/3 2. (genus *Vertovirus*) tobacco virtovirus 1 3. (virus other than named order/class/family/genus) other virus