

LEXICAL ROOTS FOR THE ITHKUIL REVISION — v.0.3.2 (May 17, 2020)

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This document updates the previous version 0.2 of February 25, 2020. There are now approximately 3050 roots. **New or revised/amended material is marked in blue**, while roots with associated Bias Affixes are **marked in green**.

Note that there is a new section of roots signifying various kinds of “complementary interpersonal relationship/interaction” (new Sec. 5.3). The creation of these new roots has resulted in the elimination or revision of several older roots (e.g., ‘GOD/DEITY’, ‘INTIMIDATION/THREAT/MENACE’)

1.0 THE CARRIER ROOT: -S-

-S- [the “carrier” root]

	STEM 1	STEM 2	STEM 3	STEM ZERO
BSC	[carrier stem representing animate being named by the succeeding foreign or proper name/phrase]	[stem representing inanimate physical / tangible object or entity named by the succeeding foreign or proper name/phrase]	[stem representing abstract referent named by the succeeding foreign or proper name/phrase]	Used to create a formative concept from the first $V_x C_S$ affix found in Formative Slot VII.
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 entity named by the succeeding foreign or proper name/phrase]	[stem representing the essential idea(s) of the abstract referent 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/body of the inanimate entity named by the succeeding foreign or proper name/phrase]	[stem representing the physical/tangible praxes and/or tangible infrastructure of the abstract referent 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 entity named by the succeeding foreign or proper name/phrase	that which is impacted/targeted or a patient of the abstract referent named by the succeeding foreign or proper name/phrase	

FORMAL STEM 1: [carrier stem representing a mixed animate/inanimate, concrete/abstract entity, e.g., a football team, a culture, a nation, a people, a language with its speakers, etc.)

FORMAL STEM 2: [carrier stem representing a place name in reference to its geography, inhabitants, circumstances/events within, etc.]

FORMAL STEM 3: [carrier stem representing a complex abstract concept(ual system), including its theoretical basis, structure, practitioners/adherents/believers, etc., e.g., a religion, a philosophy, a system of government, etc.]

FORMAL STEM ZERO: Functions as the full-stem counterpart of a Concatenative Adjunct, to provide grammatical information for the subsequent quasi-lexicalized phrase (see Sec. 4.6 of the Design Document)..

2.0 THE TWO PERSONAL REFERENCE ROOTS: -N- .and -D- .

There are two personal-reference roots, for use when it is necessary to express the concept of a particular personal referent as a full formative. Because the meaning of each stem changes based on what Perspective it carries, the meanings listed below are grouped by Stem and Perspective:

-N- ‘ANIMATE PERSONAL REFERENT’			
	STEM 1	STEM 2	STEM 3
MONADIC	1m — “I” = monadic speaker	2m — “you (sg.)” = monadic addressee	ma — “he/she/‘they(sg.)’ = monadic animate 3rd party
POLYADIC	1p — “we” = polyadic speaker (i.e., party speaking for oneself and others -- whether inclusive or exclusive of addressee)	2p — “you (pl.)” = polyadic addressee	pa — “they(pl.)” = polyadic animate 3rd party
NOMIC	“I” as a timeless manifestation, i.e., speaking of oneself in a hypothetical or timeless context	“you” as a timeless manifestation, i.e., speaking of the addressee in a hypothetical or timeless context [whether monadic or polyadic]	IPa — “one” = impersonal animate (e.g., French <i>on</i> , German <i>man</i>)
ABSTRACT	“all that I am”, “all that makes me <i>me</i> ”, “everything about me”	“all that you are”, “all that makes you <i>you</i> ”, “everything about you” [whether monadic or polyadic]	“all that (s)he/they are”, “everything about him/her/them” [whether monadic or polyadic]

-D- ‘INANIMATE or MIXED ANIMATE + INANIMATE PERSONAL REFERENT’			
	STEM 1	STEM 2	STEM 3
MONADIC	mi — “it” = monadic inanimate 3rd party	mObv — Obviative/monadic, referring to a previously mentioned monadic party (use SWR affix to specify if necessary)	mMx — mixed monadic animate+ monadic inanimate , e.g., “I and it”, “you(sg.) and it”, “s/he and it”,
POLYADIC	pi — “them/those” = polyadic inanimate 3rd party	pObv — Obviative/polyadic, referring to a previously mentioned polyadic party (use SWR affix to specify if necessary)	pMx — mixed polyadic animate+inanimate, e.g., “we+it”, “I+those”, “you(sg.)+those”, “you(pl.)+it”, “they+those”, “it+they”, “those+s/he”, etc.
NOMIC	IPi — “something”, “a thing”, “things” = impersonal inanimate referent	Nai — “it” as a nomic referent, e.g., a referent as a generic concept; all examples of X throughout time	IPx — impersonal animate+inanimate “one+something”, “people and things”
ABSTRACT	“all that it/they are”, “everything about it/them” [inanimate, whether monadic or polyadic]	Aai — “it” as an abstract referent, e.g., an idea, a concept, a situation	“everything and everyone”, “all that is”, “everything about the world”

The Specifications of the two roots above are illustrated below for Stem 1 of -N-:

-N- INFORMAL: [generic personal referent]; FORMAL: '[the personal referent's] identity'		
	STEM 1 Nominal meaning	STEM 1 Verbal meaning
BSC	'I (myself)'	'to be me/to be myself', 'to do/act what/how I do [because it's me]'
CTE	'I (myself)' (as being my personality, mind, psyche, sentient thoughts, psychological sense of individuality, or "essence"; irrespective of my physical body)'	[same as above applied to Content meaning at left]
CSV	'I (myself)' (as my physical body/embodiment/person, irrespective of personality, mind, psyche, sentient thoughts, psychological sense of individuality, or "essence")'	[same as above applied to Constitutive meaning at left]
OBJ	'entity with/on which I act or with which I associate (i.e., place, thing, person, etc. with/in/on which/whom I [inter-]act)'; 'something/someone from/in my life/niche/environment'	'to be an entity in my life/niche/environment; to be something/someone that/who is in my life/niche/environment'

The INFORMAL designation of the above stems refers to the referent in a temporary, incidental, or "situation-at-hand" context. The FORMAL counterparts refer to the party in an iconic, archetypal, quasi-permanent context; for the above stem this would translate as '*my identity*'.

3.0 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
CTE	(to be) that which is the essence or essential point or meaning of this/what is at-hand	STEM 2: that (one), near, at, by or associated w/ addressee
CSV	(to be) that which is the form/structure or physical manifestation of this/what is at-hand	STEM 3: that (one yonder), not near, at, by or associated with either speaker or addressee
OBJ	(to be) the object/entity/situation/idea, etc. being referred to by this/what is under discussion or at-hand	

INFORMAL stems: circumstantial/context-of-the-moment

FORMAL stems: official, (quasi-)permanent, inherent, or conventionalized context

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

4.0 THE COPULAR ROOT: -Ā-

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")

IFL Stems: the copular relation/equivalence is circumstantial/contextual; **FML** Stems: the copular relation/equivalence is inherent/inalienable/permanent

-Ā- 'BE (i.e., copular identification only) / EQUIVALENCE'			
	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)	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.	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

5.0 ROOTS FOR VARIOUS COMMON STATES AND ACTS

-J- ‘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
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]	STEM 3: an act of receiving; to receive
CSV	the process/act of transferring an item between one party and another [irrespective of what is given]	
OBJ	an item transferred by one to another / the thing given or received; to be an item transferred from one party to another	
FML stems:		
<ol style="list-style-type: none"> 1. (to be) an act of transferring possession of something by formal means of conveyance (i.e., via a third-party messenger or formal means such as post, shipping, etc.) 2. (to be) an act of sending something formally (e.g., by post, messenger, shipping, etc.) 3. (to be) an act of receiving something sent formally (e.g., by post, messenger, shipping, etc.) 		

-G- ‘AMBULATION’		
BSC	STEM 1: (to be) and 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 2: (to be) an instance of rapid ambulation; to run, gallop, scamper, scurry, etc.
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	STEM 3: (to be) an instance of unnatural/affected ambulation, e.g., limp, stagger
OBJ	(to be) the surface upon which one ambulates (e.g., the ground, the floor, the firmament, the ramp, the stairs, etc.)	
FML stems:		
<ol style="list-style-type: none"> 1. (to be) an instance of pre-planned “formal” ambulation, e.g., march, prance, etc. 2. (to be) an instance of pre-planned/deliberate rapid ambulation, e.g., to race 3. (to be) an instance of deliberately unnatural/affected ambulation, e.g., swagger, saunter, etc. 		

-M- ‘LINGUISTIC COMMUNICATION / SPEAK / SAY / TELL’		
	STEM 1	<p>STEM2: (to be) an instance/utterance of linguistic communication for rhetorical, inspirational, socially effective, or psychologically manipulative purposes</p> <p>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)</p>
BSC	(to be) a spoken/written/signed/signaled utterance for communicating linguistically	
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	
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	

-Ñ- ‘WRITE / INSCRIBE / DOCUMENT’		
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]	<p>STEM 2: (to be) something authored in writing, written composition; to “write” = to author, to compose in writing</p> <p>STEM 3: (to be) a written/visual character/symbol/glyph/letter/emoji/ideogram, etc. used for written/visual communication</p>
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	
<p>FML Stems:</p> <ol style="list-style-type: none"> (to be) something documented, a document, a written record; to document, record/transcribe for official/archival purposes (to be) a “page” of writing, a “page” of a written work [“page” = visible formal interface for static written communication] (to be) a written symbol/character/letter, etc. used in a language’s [official] writing system; to write (down) letters/characters/symbols from/in a language’s writing system 		

-MY- 'GRATITUDE / THANKFULNESS / PRAISE'		
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	
FML Stems:		
<ol style="list-style-type: none"> 1. praise 2. gratefulness; manifestation of being beholden to someone or something [feeling is justified and an honor to be feeling] 3. manifestation of being beholden or obliged to someone or something [feeling is resented and unwanted] 		

-MZ- 'REMEMBER / RECALL / MEMORY / RECORD'		
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	
FML Stems:		
<ol style="list-style-type: none"> 1. trace/track/vestige 2. memorial (object/action formally recognizing or acknowledging something/someone past) 3. to record / a record 		

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

-ND- ‘QUESTION / INQUIRY / 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	
FML Stem 1: inquire/inquiry/investigation + answer or resulting discovery FML Stem 1: inquire/inquiry/investigate FML Stem 1: discovery/finding (via act of investigation/inquiry); to discover or find out (via an act of investigation/inquiry)		

-NY- ‘CHOICE / ALTERNATIVE’		
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) a preference; to prefer 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	
FML Stems: 1. select/pick [from limited options/alternatives] 2. an alternative, an available option 3. to vote		

-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	
FML Stems: 1. step / act / action 2. phenomenon 3. incident		

-GŠ- ‘LOSE / MISPLACE / SQUANDER / DEPRIVATION / FORFEITURE’		
BSC	STEM 1: (to be) a state/act of something being lost (i.e., misplaced); to lose something (i.e., to misplace)	STEM 2: (to be) a state/act of losing something/someone; to lose (i.e., to have something taken away or for something to go away and not be accessible or potentially recoverable) 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)
CTE	(to be) a state of being lost/misplaced	
CSV	(to be) an act of misplacing/losing something; to do something which causes an entity to be(come) lost/misplaced	
OBJ	(to be) that which is/has been misplaced/lost	
FML Stem 1: (to be) a state of deprivation; to be deprived of, to (have to) do without something		
FML Stem 2: (to be) a state/act of bereavement; to be bereft/bereaved		
FML Stem 3: (to be) a state/act of forfeiture; to forfeit		

-PT- ‘SEEK / SEARCH’		
BSC	STEM 1: (to be) an act of searching/seeking/looking for something unknown; a search for something; 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] STEM 3: quest / seek to accomplish/achieve something
CTE	(to be in) the psychological state of searching/seeking; to be driven by the need/desire to search/seek	
CSV	(to be) the process or physical act itself of searching/seeking	
OBJ	(to be) what one is seeking or searching/looking for	
FML Stem 1: (to be) a state/act of exploring; to explore		
FML Stem 2: (to be) a state/act of pursuit; to pursue, to track down [i.e., existence certain, location surmised]		
FML Stem 3: (to be) a state/act of hunting; to hunt for		

Morphological Derivations: find, scan, reconnoiter, ransack, pry, ferret out, winnow through, fulfill a quest, achieve

-ZD- ‘COMPARISON / CONTRAST / MEASUREMENT / DISTINGUISH’		
BSC	STEM 1: (to be) a[n act of] comparison/contrasting; to compare/contrast	STEM 2: (to be) an act of discrimination/distinguishing; to distinguish/discriminate (= process of careful selection from among various alternatives) STEM 3: (to be) an act of “weighing”/pondering of a choice; conduct a pro-vs.-con analysis
CTE	(to be) a process of comparison/contrasting as a concept	
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	
FML Stems: 1. measure 2. discern 3. relate/collate/determine relationships between		

-DV- ‘EXCHANGE / PURCHASE / BUY / SELL’		
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	STEM 2: (to be) an act of taking something offered in exchange for something; to take something offered in exchange for something
CTE	(to be) that which leaves one's possession in an act of exchange	
CSV	(to be) the physical (trans-)action of exchanging/swapping	STEM 3: (to be) an act of giving away something in exchange for something desired; to give something away in exchange for something desired
OBJ	(to be) that which one receives in an act of exchange	
FML Stems:		
1. (to be) a commercial (quasi-)monetary exchange / buying and selling		
2. (to be) an act of purchasing/buying; buy, to acquire via purchase		
3. (to be) an act of selling/vending; to sell, to give away in exchange for (quasi-)monetary value		

-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
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	Stem 3: (to be) an industrial enterprise; to engage in an industrial-level business; provide/sell an industrial-level product or service
OBJ	(to be) the product/service being manufactured/produced/sold as the basis for a business establishment	

-ṬT- ‘FACT / KNOW / STUDY / LEARN’		
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	
FML stems		
1. (to be) an act of observing and remembering an ontological fact (e.g., I know my grandmother's house is blue).		
2. (to be) an act of studying/learning knowledge; to study/learn *		
3. (to be) an act of practicing; to practice CPT = be proficient at; have proficiency in		

* This stem signifies learning from books and/or personal research; for learning from a teacher, see **-DDY-** ‘TEACHING ↔ BEING A STUDENT’

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

-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]
CTE	(to be) the ability/capacity to realize something	
CSV	(to be) the physical/mental process of (an act of) realizing something	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]
OBJ	(to be) what one realizes	

-ŠT- ‘WAIT / AWAIT / VIGIL / FORESEE / FORECAST’		
BSC	STEM 1: (to be) a state of waiting (for), waiting, a wait; to wait for, to await	STEM 2: (to be) a state of expectation; expect; to be impending
CTE	(to be) the mental/psychological state of a process of waiting; be in a state of waiting	
CSV	(to be) the physical manifestation of a process of waiting; what one does while waiting; to do while waiting	STEM 3: (to be) a state/act of prediction; predict
OBJ	(to be) that which one awaits, what/whom one is waiting for	
FML Stems 1. vigil/a watch; be vigilant/watchful 2. foresee; foresight; prospective/foreseeable 3. prognosticate, forecast		

-ŠČ- ‘MONEY / FINANCIAL TRANSACTION / BANKING’		
BSC	Stem 1: (to be) an amount of money; to exchange an amount of money in return for something	Stem 2: (to be) one’s personal funds or monetary assets Stem 3: (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)
CTE	(to be) a state of monetary accumulation (via earning wages, investments, etc.); earn/raise money	
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	
OBJ	(to be) a monetary token, a piece of money (e.g., coin, bill, etc.); to exchange a particular piece of money	
FML Stem 1: (to be) one’s fungible assets [CTE = formal financial operation, CSV = capitalize, use assets as capital, OBJ = monetary value of one’s assets]		
FML Stem 2: a financial institution/bank		
FML Stem 3: one’s financial class/status		

-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) STEM 3: (to be) an act of supplanting/replacement/change-out (= refresh/renew)
CTE	(to be) the concept being able to continue providing an expected value underlying that underlies an act of substitution	
CSV	(to be) the physical (trans-)action of substitution	
OBJ	(to be) that which is substituted	

-ČV- ‘TRANSPORT STOP / STATION / PORT / HARBOR / TRANSPORTATION HUB’		
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)
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	STEM 3: (to be) harbor, place of anchorage
OBJ	(to be) a particular stop on a transport route/line	
FML Stems:		
<ol style="list-style-type: none"> 1. (to be) a location served by a commercial sea line or airline 2. (to be) a transport terminal 3. (to be) a port (e.g., airport, seaport, heliport, etc.) or transportation hub 		

-ÇL- ‘PREPARATION / PRELIMINARY MEASURE / PRECAUTIONARY 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”
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	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 pallete, a surgeon’s operating room, etc.)
OBJ	(to be) what one is preparing for (or against)	
FML Stems:		
<ol style="list-style-type: none"> 1. (to be) a state/act of having precaution; take precautionary measure 2. (to be) a state/act of equipping, providing resources for the establishment or carrying out of something; to equip, provide resources/equipment for 3. (to be) a state/act of instruction/training; to instruct/train (a party to be able to perform some function or duty or skill) 		

-CX- ‘MANNER / BEHAVIOR / METHOD / POLICY’		
BSC	STEM 1: (to be) the manner 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	
CSV	(to be) the outward physical manifestation or discernible praxes of one’s manner	
OBJ	(to be) that which has or manifests a particular manner	
FML Stems:	1. (to be) the method by which a party/entity performs/accomplishes something 2. (to be) the practice/policy used by a party/entity in operating/manifesting itself 3. (to be) one’s bearing/carriage/demeanor	Derivations: process, procedure, regimen, strategy

-SN- ‘CHANGE / VARIATION / DEVIATION / ALTERATION’		
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; to vary STEM 3: (to be) an act of deviation; to deviate
CTE	(to be) the nature 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 endures while changing)	
OBJ	(to be) that which changes; a changeling	
FML Stems	1. alter, modify; alteration, modification 2. diversify, permutate; permutation, diversification 3. modulate, control variance in the state of; modulation	

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

-RK- ‘POSSESSION / OWNERSHIP’		
BSC	STEM 1: (to be) an act of physical possession; to have/possess (temporary/circumstantial and alienable – e.g., a library book in one’s hand)	STEM 2: (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 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)
CTE	(to be) the state of possession; possessing something	
CSV	(to be) the physical means by which a state of 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)	
FML Stems	1. (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) 2. (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) 3. (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)	

-ḌX- ‘VOICE / VOCAL UTTERANCE’		
	STEM 1	STEM2: (to be) the usual, common, represent-ative vocalization made by an entity (e.g., a meow, bark, whinny, chirp, roar, speaking, etc.) STEM 3: (to be) an alternate, less-common vocalization made by an entity (e.g., cry, yowl, murmur, hum, purr, mumble)
BSC	(to be) the sound 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]	
CTE	(to be) the sound made by, or [communicative] content 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 entity/party which hears/notices a vocal utterance	

-ŠV- ‘PLAY / RECREATION / SPORT’		
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 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.)	
FML Stem 1: (to be) an act/instance of play/recreate (activity + feeling of amusement/enjoyment derived) = formal rule-oriented activity, e.g., a board game, a sport, etc.		
FML Stem 2: (to be) an act/instance of relaxing/relaxation; to relax, do something relaxing, engage in relaxation		
FML Stem 3: (to be) an act/instance of engaging in (a) sport activity (activity + feeling of competitive spirit) for motive of formal competition, e.g., victory-oriented		

-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] STEM 3: (to be) something good [= advantageous or effective]
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	
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”	

-TK- ‘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, etc. STEM 3: (to be) an instance/act of bringing something into being via organizing disparate parts into a coherent whole
CTE	(to be) the existential state of creating/making/constructing	
CSV	(to be) the method/steps employed/manifested in making/creating/constructing something	
OBJ	(to be) that which is made/created/constructed; the product of an act of making/creating/constructing	

-XV- ‘EFFORT / WORK / POWER / OPERATE / FUNCTION’		
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; to act, to perform, to do STEM 3: (to be) an effort, a coordinated/coherent expenditure of energy towards achievement of a specific goal; make effort to accomplish something
CTE	(to be) the state of (there being) energy manifested/exerted	
CSV	(to be) the particular form/manner of energy being manifested/exerted	
OBJ	(to be) that to/for which energy is being used/exerted	
FML Stems: 1: operate / function / “work” (i.e., proper/expected functioning of a device/machine/process as in “Does the washing machine work?”) 2: work / labor (i.e., organized/planned effort over time associated with a commercial or community endeavor) 3: job task; employment-related task; do one’s job		

Derivations: demonstrate, flourish, show off, display, spectacle, parade, promenade, procession, ostentation, gaudy, garish, pomp, pompous

-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 instance/act of exposing something; to expose something STEM 3: (to be) an instance of bringing/calling attention to something (= make others aware of the appearance/showing of something)
CTE	(to be) the state of appearing/manifesting/showing; being observable	
CSV	(to be) the method/manner of making something appear/manifest/show	
OBJ	(to be) that which appears/manifests or is shown	
FML Stems: 1: exhibit; display 2: show off, flaunt Stem 3: announce; advertise		

-ÇD- ‘IMPRESSION / APPEARANCE / “LOOK” / SEMBLANCE / ASPECT / GUISE’		
BSC	STEM 1: (to be) an impression; to give another an impression (i.e., to incite a subjective 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 / REPSONSIBILITY / SUPERVISION / REGULATION		
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) the carrying out of a specific act as part of one’s oversight of something or someone	
CSV	(to be) a rule/procedure/custom/praxis associated with the process of overseeing	
OBJ	(to be) a party who is subject to oversight	
Formal Stem 1: (to be) a state/act/process of being in charge of something; to be in charge, to take charge of something/someone		
Formal Stem 2: (to be) a state/act/process of supervision; to supervise, have supervisory responsibility for something/someone		
Formal 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)		

-DF- 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) 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”
CTE	(to be) the carrying out of an act as part of the process of governance	
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	

-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	
The INFORMAL stems above refer to coincidences that are unplanned and truly coincidental. The FORMAL stems refer to deliberate/planned coincidences.		

-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
CTE	(be (in)) the state of having secreted	
CSV	(be) the physical process of secreting	Stem 3: (be) an act/instance of secretion of a resin
OBJ	(be) an amount of a secreted substance	

-PP- 'PICK UP / TAKE (IN) / GATHER / COLLECTION / ACCUMULATION'		
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 instance of gathering something (i.e., bringing separate entities together to form a grouping thereof) Stem 3: (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
CTE	(to be) an act/instance of taking (temporary) possession, oversight or guardianship of something/someone	
CSV	(to be) a physical act of picking up or taking in for the purpose of (temporary/circumstantial) possession, guardianship, oversight, use, transport, etc.	
OBJ	(to be) that which is picked up or taken (in) or obtained	
Formal Stem 1: (to be) an act/instance of procurement or acquiring; to procure/acquire something Formal Stem 2: (to be) an act/process of collection; to collect Formal Stem 3: (to be) an act/process of accumulation/accretion		

-ÑF- '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	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
OBJ	(to be) the entity/party affected by or experiencing /perceiving the issue/problem caused/created by another entity/party/situation	

-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
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)	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]
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
CTE	(to be) the state of being a mirror-image	
CSV	(to be) an act of physically causing/making a mirror-image	Stem 3: (to be) a state/act of being a mirror-image both laterally and vertically (i.e., mirror-image plus upside-down)
OBJ	(to be) the entity which is mirror-imaged	

-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)
CTE	(to be) the state of being fostered/raised by someone	
CSV	(to be) a physical act of raising/fostering	Stem 3: (to be) an act of cultivation; to cultivate, to garden
OBJ	(to be) the person/entity raised/fostered	

-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	

-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 liquify Stem 3: (to be) a gas, something gaseous; to be/make into a gas, to render into a gaseous state
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.)	
OBJ	(to be) that which is solid	
FML Stem 1: (to be) something in a semi-solid, semi-liquid, viscous, state (e.g., mud, something gelatinous, slime, etc.)		
FML Stem 2: (to be) a Bose-Einstein condensate; to be/make into a Bose-Einstein condensate		
FML Stem 3: (to be) a plasma; to be/make into a plasma		

-TM- ‘ENERGY EXPENDITURE / EFFORT / WORK / OPERATION / FUNCTIONING / ACTION’		
BSC	Stem 1: (to be) an instance of exertion or energy expenditure; to exert/spend energy	Stem 2: (to be) an effort; make an effort (i.e., energy expenditure focused on a specific task) Stem 3: (to be) a job task / employment-related task; perform job 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)	
OBJ	(to be) the energy expended	
FML Stem 1: (to be) an instance of operating/functioning/performing/acting; to operate/function/perform/act (i.e. for an entity to go about doing what it is does or is supposed/expected to do in an operational/functional sense)		
FML Stem 2: (to be) an instance of work/labor; to work, to labor		
FML Stem 3: (to be) an act of producing a tangible product via labor/effort		

-DK- ‘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 three 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

-ŠKL- ‘PSYCHIATRIC TREATMENT / THERAPY’	
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

-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
CTE	(to be) the experience of suffering from poisoning; to be poisoned	
CSV	(to be) the act of poisoning; to poison, to utilize poison	Stem 3: (to be) a radioactive substance; to expose to a radioactive substance
OBJ	(to be) the entity/party which is poisoned	
FML Stem 1: (to be) a chemical agent or poison used as a weapon; to attack using a chemical agent or poison		
FML Stem 2: (to be) a venom used as a weapon; to attack using venom as a weapon		
FML Stem 3: (to be) a radioactive substance used as a weapon; to attack using a radioactive substance		

-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	

-DN- ‘NAME/DESIGNATION/TITLE’		
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
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	
FML Stem 1: (to be) a title [plus the entity so titled]		
FML Stem 2: (to be) a formal designation [plus the entity so designated]		
FML Stem 3: (to be) a role [plus the entity carrying out the role]		

-CT- ‘INSPECT / EXAMINE / OBSERVE / SCRUTINIZE / INVESTIGATE’		
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 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)
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)	
OBJ	(to be) that which is looked over	
FML 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.		
FML Stem 2: (to be) an act of scrutiny; to scrutinize		
FML Stem 3: (to be) an act of investigation/reconnaissance; to investigate/reconnoiter		

-BČ- ‘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
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	Stem 3: (to be) a state/act of miscalculation or misjudgement; to misjudge or miscalculate something
OBJ	(to be) that which one is mistaken about; that which one makes/has made an error concerning	

-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)
CTE	(to be) the specific content/nature of a puzzle	
CSV	(to be) the form/type/structure of a puzzle	Stem 3: (to be) charade (i.e., a recreational puzzle acted out in real-time)
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’

-SW- ‘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	Stem 3: (to be) a large (spherical) asteroid or micro-planet
OBJ	(to be) the orbit(al path) of a planetary body; to orbit	
FML Stem 1: (to be) the Earth/Terra		
FML Stem 2: (to be) the Moon/Luna		
FML Stem 3: (to be) one of the named asteroids or micro-planet of the solar system (e.g., Pluto, Ceres, Juno, Eros, etc.)		

-LX- ‘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)	
FML Stem 1: (to be) the Sun / Sol FML Stem 2: (to be) a named comet FML Stem 3: (to be) a named small asteroid (e.g., Eros)		

-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	

-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
CTE	(to be) the physical process of pounding with one’s fist	
CSV	(to be) a closed fist used in pounding	Stem 3: (to be) a closed fist for knocking; use knuckles of fist for knocking
OBJ	(to be) the blow/impact delivered from a pounding fist	

-ZR- ‘TENDENCY / INCLINATION / APTNESS / TREND / PREDISPOSITION / BIAS’

BSC	Stem 1: (to be) a tendency/proclivity/propensity towards something; to tend to, to have a propensity to	Stem 2: (to be) an inclination; to lean toward , be inclined to
CTE	(to be) the psychological state of having a tendency/proclivity/propensity toward something	
CSV	(to be) the physical manifestation of one’s tendency or proclivity; to physically manifest one’s tendency/proclivity/propensity	Stem 3: (to be) an aptness for / a proneness to; to be apt to, to be prone to
OBJ	(to be) that toward which one has a tendency/proclivity/propensity	
FML Stem 1: (to be) a trend; to trend toward something		
FML Stem 2: (to be) a bias toward something; to be biased toward something [i.e., theoretically having a choice]		
FML Stem 3: (to be) a predisposition toward something; to be predisposed to [i.e., having no choice]		

-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	

-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	

-RHW- 'OCCUPANCY / TENANCY / RESIDENCY'

BSC	Stem 1: (to be) a state/act of occupancy within a delineated/demarcated place and time., an occupant; 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) in a state of occupancy somewhere; to have somewhere to occupy	
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.	

-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	

-RDW- 'BUILDING CONSTRUCTION'

BSC	Stem 1: (to be) a state/act of constructing a building (i.e., a constructed space with enclosed rooms for residential and/or commercial occupancy or storage); to be in 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 building construction	
CSV	(to be) a physical act of building/constructing a building; to perform the work of building/constructing a building	
OBJ	(to be) the building under construction [CPT version = finished building]	

-SR- 'ROOM / CHAMBER / COMPARTMENT'		
BSC	Stem 1: (to be) a room/chamber	Stem 2: (to be) a compartment
CTE	(to be) the state of a room/chamber being a partitioned off quasi-autonomous (sub-)section of a larger building interior space	Stem 3: (to be) a cubicle, partially partitioned-off section of a larger room
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	

-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
CTE	(to be) a state of malleability, flexibility, plasticity; to be malleable, flexible	Stem 3: (to be) a particular degree of elasticity
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
CTE	(to be) a state of springiness; to be springy	Stem 3: (to be) a particular degree of recoil; to have/display a particular degree of recoil
CSV	(to be) an act of determining the degree of springiness	
OBJ	(to be) that which has a particular degree of springiness	

-ZMW- 'FRAGILITY / BRITTLENESS / 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
CTE	(to be) a state of fragility; to be fragile	Stem 3: (to be) a particular degree of crumbliness
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	

-CPL- ‘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) Stem 3: (to be) a particular degree of structural integrity/stability
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	

-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) 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
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	
		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

- ZTL- ‘CRIMINAL ADJUDICATION’		
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’]
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	
		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’]

- 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.)
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	
		Stem 3: (to be) a state of material corruption (e.g., of data, records, process flow, etc.)

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

-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.
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	
		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.)

-LY- ‘VISUAL DESIGN / ARTISTIC REPRESENTATION’		
BSC	Stem 1: (be) an act/instance of manually-manipulated creating a visual design (via manually-manipulated means)	Stem 2: (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
CTE	(be) a state of there being a visual design; be a visual design	
CSV	(be) the physical act of creating a visual design; to create a visual design	Stem 3: (be) an instance of crafting a 3-dimensional visual representation/model of something
OBJ	(be) the medium utilized to create a visual design	
<p>Formal Stem 1: (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.)</p> <p>Formal Stem 2: (be) an act/instance of creating a work of visual art (e.g., a painting, a watercolor, a fine drawing, an etching, etc.)</p> <p>Formal Stem 3: (be) an act/instance of creating a work of sculpture</p>		

-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
CTE	(to be) a state of extension / being extended unidimensionally	
CSV	(to be) an act of spatio-temporal extension unidimensionally	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
OBJ	(to be) that which spatio-temporally extends or “reaches” unidimensionally to a particular point/level/height, etc.	

-ŇŽ- ‘ARRANGEMENT / ORDER / SYMMETRY / REGULARITY / CLASSIFICATION’ 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, order	Stem 2: (to be) a an act/instance of hierarchical ranking; to rank
CTE	(to be) a particular arrangement or pattern	
CSV	(to be) an act/process of physically placing entities into an arrangement or pattern	Stem 3: (to be) an act/instance of symmetrical arrangement; to arrange symmetrically
OBJ	(to be) an entity in or part of a particular arrangement or pattern	
<p>FML Stem 1: a state/act/instance of being/making regular or displaying regularity (i.e., having an expected/conventionalized pattern); be/make regular, regularize</p> <p>FML Stem 2: a state/act/instance of being in or making a classification (i.e., an arranged scheme for storage-and-retrieval); to classify</p> <p>FML Stem 3: a state/act/instance of being in or making an assortment (i.e., an arranged selection of members/components; to sort</p>		

MORPHOLOGICAL DERIVATIVES: array, setting, hierarchy, symmetry, regularity, regulate, systematize, method, methodize, disarray, scatter, mess, chaos

-NDK- '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) a 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	

-MK- 'IMITATION / MIMICRY / IMPERSONATION / DRAMATIC ACTING'		
BSC	Stem 1: (to be) an act/state of imitation; imitate	Stem 2: (to be) an act of mimicry; to mimic, to feign Stem 3: (to be) an act of pretending to be (a state or role) / act of makebelieve; to pretend (to be) / to make-believe
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	
OBJ	(to be) the party/entity one is imitating	
FML Stem 1: a state/act/instance of simulation; to simulate FML Stem 2: a state/act/instance of impersonation; to impersonate FML Stem 3: a state/act/instance of dramatic performance / an acting performance; act / enact / enact a (dramatic) role		

-ŠG- 'CAPTURE / CATCH / APPREHENSION / SEIZURE / DETENTION / USURPATION'		
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 or)	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; to take over, 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	
FML Stem 1: an act/instance of confiscating, an act of confiscation or appropriation; to confiscate, appropriate FML Stem 2: 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) FML Stem 3: an act of usurping something, an act of usurpation; to usurp		

-NF- ‘PARTNERSHIP / UNION / BETHROTHAL / MARRIAGE’		
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) state/act of being engaged/betrothed/promised to another as a mate
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	
FML Stem 1: (to be) a state/act of being a colleague to another, be one’s colleague FML Stem 2: (to be) a state/act of union, being united FML Stem 3: (to be) a state/act of being married/wedded; to marry, to wed, to be the spouse of another		

-JV- ‘COOPERATION / TEAM / COLLABORATION / ALLIANCE / COLLUSION / CONSPIRACY’		
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) state/act of collusion; to collude
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	
FML Stem 1: (to be) a state/act of collaboration FML Stem 2: (to be) a state/act of alliance; to ally with FML Stem 3: (to be) a state/act of conspiracy; to conspire		

-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 new SYM affix to specify the nature of an interrelationship:

-šv	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

-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]
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	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
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)
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	Stem 3: (to be) an act of shirking, deserting, abandoning something/someone
OBJ	(to be) what one is fleeing or escaping from	

-NT- '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 / AWARD / PRIZE'		
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	
FORMAL Stems have an identical Stem and Specification pattern to INFORMAL stems but refer to the conferring/acceptance of a prize or award		

-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	

-FX- ‘AVOID / SHUN / REJECT / 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 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	
FML Stem 1: a state/act of boycotting or embargo; to boycott, to establish an embargo against FML Stem 2: a state/act of ostracization; to ostracize FML Stem 3: a state/act of rejection; to reject		

-FČ- ‘EXCLUDE / BANISHMENT / OSTRACIZATION’		
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 banishment; to banish
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	
FML Stem 1: a state/act of sequestering/segregation/segregation; to sequester, to segregate FML Stem 2: a state/act of deportation/expatriation; to deport/expatriate FML Stem 3: an act of exiling; to exile		

-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/medicine	

-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 rot **-ND-**.

-ML- ‘OBSCURITY / AMBIGUITY / STEALTH / SURRPETITIOUSNESS’		
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> ”)
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	Stem 3: (to be) a furrow

-GN- ‘SOURCE / ORIGIN / BEGINNING / INITIATION / CAUSE’		
(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) a state of being the source or point of origin	
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) a source, place and/or point in time where/when something originates	

-NN- ‘HELP / AID / ASSISTANCE / SUPPORT / ADVOCACY’		
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/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	
FML Stem 1: a state/act of serving, ministering to, tending to; to serve, to minister to, to tend to		
FML Stem 2: a state/act of patronage; to grant one’s patronage		
FML Stem 3: a state/act of sustenance or subsidization; to subsidize		

-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 / DULLNESS / FADEDNESS’		
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	
FML Stem 1: a state/act of being/making something dull/lackluster in appearance; be/make dull/lackluster in appearance (i.e., decreased reflectivity)		
FML Stem 2: 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)		
FML Stem 3: a state/act of being something murky/gloomy; be/make murky/gloomy		

-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	

-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)	

-FÇ- ‘DESCRIPTION / ACCOUNT / NARRATION / 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 giving an account of/relating/recounting an event/occurrence to another 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 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	
FML Stem 1: (to be) an act of delineating, giving specific/organized details; to delineate, to specify, describe in clinical detail		
FML Stem 2: (to be) an act of telling a story or narrative; to narrate, tell a narrative, tell a story		
FML Stem 3: (to be) an act of reporting something; to report		

-LN- ‘VALUE / OPPORTUNITY / ADVANTAGE / CONVENIENCE / SUITABILITY / EXPEDIENCE’		
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	
CSV	(to be) a physical act of doing/pursuing something worthwhile/of value	
OBJ	(to be) something worthwhile; (be) something of value	
FML Stem 1: a state of something being advantageous/favorable; to be advantageous, be to one’s advantage, be in favorable or advantageous circumstances		
FML Stem 2: 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		
FML Stem 3: a state of something being a convenience / something convenient; to be convenient / do something convenient		

-KN- ‘DESERVE / WORTHINESS / MERIT / REWARD / ENTITLEMENT’		
BSC	Stem 1: (to be) a state of being deserving of something; to deserve something	Stem 2: (to be) a state worthiness/merit; to be worthy, to merit (i.e. demonstrate that one has the necessary attributes/character/skill to be granted some privilege or status or recognition or reward)
CTE	(to be) a state of deserving	
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 their deserving something	
FML Stem 1: a state of entitlement/legally warranting the granting of something to a party/entity; to be entitled to something, to warrant something		
FML Stem 2: a state of being loyal; to be loyal, act in a loyal manner		
FML Stem 3: a state/act of rewarding/confering/ordaining the reward, formal recognition/acknowledgement, position, status, or privilege one has merited		

-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.)
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	
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.)		

-RB- ‘MEANING / SIGNIFICATION / EXPLANATION / INTERPRETATION / ELUCIDATION / TRANSLATION’		
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) an act of explanation; to explain
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	
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) *		
FML Stem 1: an act/instance of defining something; to define		
FML Stem 2: an act/instance of expounding upon or elucidating something		
FML Stem 3: a state/act/instance of translating; to create a translation of something		

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

-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 Stem 3: (to be) a state of something being stylish/decorative/ornamental/fine (as in a “finely”-made, “finely”-crafted); to be/make something stylish/decorative, etc.
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	
FML Stem 1: a state of something being perfect; be/make perfect (i.e., cannot possibly be better)		
FML Stem 2: a state of something being exquisite/superb/sublime; to be/make something exquisite/superb/sublime		
FML Stem 3: a state of something being ornate/splendid; be/make something ornate/splendid		

-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’

-ŘŘ- ‘INTENSIFICATION / AGGRAVATION / WORSENING / HEIGHTENING’		
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; to ameliorate/better (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	

-TJ- ‘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	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) 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)
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	

-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	

-LR- ‘BALANCE / EQUILIBRIUM / SYMMETRY / HOMEOSTASIS’		
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	
FML Stem 1: a state/act of being symmetrical, or having/displaying symmetry; to be/make symmetrical, to have/display symmetry FML Stem 2: a state/act of being in parity; to be/place in parity FML Stem 3: a state/act of homeostasis; to be/make homeostatic, have/display homeostasis		

-ČŇ- ‘CURL / TWIST / TANGLE / KNOT’		
BSC	Stem 1: (to be) a state/act of curling; to curl, to form into a curl (both the shape/form and the entity so shaped/formed)	Stem 2: (to be) a state/act of twisting; to twist, be twosted. form into a twist [i.e., curled in more than one planar dimension] 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 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	
FML Stem 1: (be) curled in a precise manner (e.g., for a commercial/industrial/precision purpose) FML Stem 2: (be) twisted in a precise manner (e.g., for a commercial/industrial/precision purpose) FML Stem 3: (be) an act/state of being knotted, tied in a knot; to knot, tie in a knot		

-ŤČ- ‘SIGN/MARK/SYMBOL/VISUAL MEANS OF INDICATION/REPRESENTATION’		
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 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 mark/token (i.e., a visual/tactile indication designed to communicate one’s presence or status or number, etc.)
CTE	(to be) a state of indication	
CSV	(to be) an act of indicating; do something that indicates	
OBJ	(to be) a sign/signal/indication/indicator	
FML Stem 1: a state/act of being a formal sign/signal (e.g., road sign, traffic signal, marquee, written name/information on a dedicated placard-like surface, etc.) FML Stem 2: a state/act of being a a state/act of being a symbol, emblem, device, insignia, logo FML Stem 3: a state/act of being a linguistically representational mark/symbol/character; be/write a written character (of a language, e.g., letter of an alphabet/syllabary/abugida/abjad,etc., logogram, ideogram, emoji, etc.)		

-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	

-MČ- 'POWER / FORCE / EFFICACY / POTENCY / EFFECTIVENESS'		
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	
FML Stem 1: a state/act of force; be a force, act forcefully/with force (i.e., delineated/directed application/utilization of energy) FML Stem 2: a state/act of productivity; be/make productive FML Stem 3: a state of effectiveness; be/make effective		

-JŇ- 'OPPOSITION / FIGHTING / DEFIANCE / ENMITY'		
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 against something or someone, acting inimically toward something or someone; to work against something or someone, be inimical toward something or someone, working to undermine something or someone Stem 3: (to be) state/act of fighting, acting with violence toward 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	
FML Stem 1: (be) a state of being antithetical toward something or someone FML Stem 2: (be) a state/act of defiance/disobedience toward something or someone FML Stem 3: (be) an act/state of enmity/war; to be at war with someone or someone [OBJ = to be one's enemy]		

-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/prevalance; 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	
FML Stem 1: a state/act of stimulation/rousing/inciting/instigating; to stimulate/rouse/incite/instigate		
FML Stem 2: a state/act of encouragement; to encourage,		
FML Stem 3: a state/act of advocacy; to advocate for		

-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) 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.)
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	

-JR- ‘RIDE / DRIVE / TRANSPORT’		
[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	

-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	

-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) Stem 3: (to be) a state of melting/liquefaction; to melt, to liquefy via heat
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	
OBJ	(to be) a flame [Derivatives: a fire, a blaze, a conflagration, etc.]	

-LXW- '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	

-TÑ- '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 of a building (e.g., be on the fifth floor of a hotel); be on a particular floor 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	

-JBW- 'RENTAL / LEASING'

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 Stem 3: (to be) an act/state of offering/providing a service/entity for rent
CTE	(to be) a state of two parties having a rental agreement or contract	
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	

FORMAL stems have the same Stem & Specification structure as informal stems, but apply to a more formal leasing arrangement; to lease

-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-aired 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	

-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	

The above two roots readily lend themselves to be used with Degrees 3 and 5 of the **MEA** and **CVY** affixes to designate motorized versus non-motorized vehicles/vessels.

5.1 Roots Relating To Living States/Processes

-NŦ- ‘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	

-ŽF- ‘HEALTHINESS / PHYSICAL CONDITION / FITNESS / SANITY’		
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.)	

-ÇK- ‘ILLNESS / SICKNESS / DISEASE / MALADY / AILMENT’		
BSC	Stem 1: (to be) a state of having infectious illness/disease/ailment; to be/fall ill/come down/get sick with an infectious illness/disease [the disease itself plus its symptoms]	Stem 2: (to be) a long-term/chronic physical malady/disorder/disease/ailment [ideopathic or iatrogenic in origin due to poor personal habits (e.g., diet, chemical/drug abuse, lack of exercise, etc.), accident, improper treatment, toxic exposure, environmental cause, etc.] Stem 3: (to be) a [long-term/chronic] physical malady/disorder/disease/ailment [neoplastic, genetic, or unknown in origin rather than infectious]
CTE	(to be) a disease/illness/ailment	
CSV	(to be) the physical manifestation/symptoms of a disease/illness; to feel/experience the symptoms of a illness/disease	
OBJ	(to be) a living being infected/suffering from an infectious illness/disease; entity/party that is sick	

-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)	

-DD- ‘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	

-LF- ‘WAKEFULNESS’		
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	
CSV	(to be) a state/act of doing something that demonstrates one is awake	
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	

-RY- ‘FREEDOM / SELF-DETERMINATION / INDEPENDENCE / AUTONOMY / NATURAL RIGHT’		
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)	Stem 2: a state of self-determination; 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 psychical act taken to (attempt to) be free; to get free (from), to free	
OBJ	(to be) what one is (attempting to become) free from	

-ŠL- ‘HUMOR / WIT / JEST / PRANK / JOKE’		
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 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
CTE	(to be) the state of funniness/humor induced	
CSV	(to be) the actual manifestation (act(s), word(s), circumstance(s), situation(s), object(s), etc.) of whatever is funny	
OBJ	(to be) the audience who finds something to be funny/humorous/comical	
FML Stem 1: (to be) a joke; make a joke (i.e., a communicated story or message designed to evoke humor)		
FML Stem 2: (to be) a pun; make a pun		
FML Stem 3: (to be) a jest or prank; make a jest or pull a prank (i.e., an act or situation designed to evoke humor through embarrassment)		

-ŇP- ‘COMMON HUMAN BODILY POSITIONS’		
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 prone, lying down; to lie prone, 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	

-ŠJ- ‘BEING BUSY / OCCUPY ONESELF / ACTIVITY / DUTY / JOB / 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/job/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	

-ŃPW- ‘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	

-LÇ- ‘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	
FML Stem 1: a state/act of postulating/making a conjecture; to postulate, make a conjecture FML Stem 2: a state/act of theorizing; to theorize, create a theorem FML Stem 3: a state/act of hypothesizing; to hypothesize		

-TX- ‘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 / HARRASSMENT’		
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/harrassment; 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	

5.2 Roots Relating To Character Traits & Socio-Psychological States

-TP- ‘FACULTY / ATTRIBUTE / QUALITY / TRAIT / PROPERTY / CHARACTERISTIC’		
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 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/abilty itself	

-NS- ‘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 Stem 3: (to be) a state/act of enforceable governmental authority (e.g., police, court ruling, codified law/ordinance) and obedience/adherence thereto
CTE	(to be) a state/act of obedience to authority	
CSV	(to be) a state/act of enforceable authority; to wield authority	
OBJ	(to be) a particular rule/edict/moral/law, etc. which is to be obeyed	
FML Stem 1: (to be) a state/act of contractual occupational authority (i.e., employer/supervisor/boss) and employee compliance thereto		
FML Stem 2: (to be) a state/act of slavery and subjugation thereto as a slave		
FML Stem 3: (to be) a state/act of military authority and obedience to/following of orders		

-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	

-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 Stem 3: (to be) a feeling of admiration for someone/something; admire 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	
OBJ	(to be) the entity/party/event/situation/state one is proud of	

-NZ- ‘GOODWILL / FRIENDLINESS / BEING NICE’		
BSC	Stem 1: (to be) an instance of being nice to another party; to be nice [i.e., emotional/spiritual/physical support of another’s interests]	Stem 2: (to be) a feeling and display of goodwill, benevolent intent, kindness
CTE	(to be) the feeling/experience of being nice to another	
CSV	(to be) the specific act(s)/word(s) which constitute an act/instance of being nice	Stem 3: (to be) a feeling and display of amicability / friendliness
OBJ	(to be) the party to whom one is nice	
FML Stem 1: (to be) an instance of good samaritanship, go out of one’s way to help another party		
FML Stem 2: (to be) a state of peace / fellowship; to be/live in peace/fellowship		
FML Stem 3: (to be) a state of friendship (unidirectional); to be someone’s friend		

-TT- ‘SALUTATION / GREETING / INTRODUCTION / FAREWELL’		
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
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	Stem 3: (to be) an act of leavetaking; to take one’s leave, say goodbye
OBJ	(to be) the party/entity who is greeted	
FML Stem 1: (to be) a formal welcome; to bid one welcome		
FML Stem 2: (to be) a social introduction; to socially introduce, present a party to another party		
FML Stem 3: (to be) a formal farewell; to bid farewell, to bid adieu		

-LL- ‘VISIT’		
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 visit [a place to see what’s there], to sight-see
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	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.]
OBJ	(to be) the party/entity visited	

-B- 'BELIEF / 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
CTE	(to be) a state of belief	
CSV	(to be) an act or physical manifestation of one's belief	Stem 3: (to be) dogma; to believe dogmatically (i.e., to intractably hold as an unquestionable belief which, to doubt such, constitutes an act of apostasy/heresy)
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

-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
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	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)
OBJ	(to be) the tenet(s)/beliefs/doctrine the apostate no longer believes in	

-KŠ- ‘BUFFOONERY / ABSURDITY / SURREALISM / ECCENTRICITY		
BSC	Stem 1: (to be) an act/state/instance of bufoonish/silly behavior; to behave in a silly/bufoonish manner, do something silly/bufoonish [i.e., with the (intended) effect of causing derisive humor in an audience toward the bufoonish 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/bufoonish as a behavioral motivation/trait	
CSV	(to be) a particular act/behavior considered silly/bufoonish	
OBJ	(to be) a bufoon, a person whose silliness is looked at derisively by others	
Formal Stem 1: (to be) an act/state/instance of performing as a clown Formal Stem 2: (to be) an act/state/instance of absurdist/dada-esque art Formal Stem 3: (to be) an act/state/instance of surrealist art		

-TP- ‘MINDFULNESS / ALERTNESS / WARINESS / CAUTION’		
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; be alert (i.e., mindfulness/awareness of one’s surroundings as a precautionary measure against potential threats) Stem 3: (to be) a state of caution/wariness; be cautious/wary, exercise caution (i.e., alertness as preparatory measure due to a perceived or assumed threat)
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	

-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 to or sense of responsibility about controlling or overseeing something/someone where it 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	
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	

-ŃZ- ‘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 / PURPOSE / JUDGEMENT / RESOLUTION’		
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 intension; 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	
FML Stem 1: a state/act of having a purpose; to have a purpose		
FML Stem 2: 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]		
FML Stem 3: 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]		

-TB- ‘AUDACITY / “NERVE” ’ / CONFRONTATION / DEFIANCE		
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 defiance; to be defiant, to defy
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- ‘NAIVETE / 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 naiveté or foolishness	
CSV	(to be) a physical act/manifestation of naiveté or foolishness; to do/say something that is naive or foolish	
OBJ	(to be) the situation or circumstances one is (being) foolish/naive 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, prohibitive 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.
CTE	(to be) a state of magnanimity, forgivingness	
CSV	(to be) a physical act/manifestation of magnanimity or forgivingness	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)
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)
CTE	(to be) a state of generosity as a character trait	
CSV	(to be) a physical act of being generous; to do something generous	Stem 3: (to be) an act of self-abasement, self-abnegation, self-denial
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
CTE	(to be) a state of friendliness/amiability/suniness as a character trait	
CSV	(to be) a physical act/manifestation of friendliness/amiability/suniness	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
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
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	Stem 3: (to be) a state/act of veneration or reverence for someone/something; venerate or revere someone/something
OBJ	(to be) the entity/party/event/situation/state one appreciates	

-ČR- ‘HOSTILITY / AGGRESSION’		
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
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	Stem 3: (to be) an act of physical hostility/aggression toward another party; to deliberately physically abuse or harm someone, to assault, to attack physically
OBJ	(to be) the entity/party which is the target of verbal hostility/abuse/aggression	

-RW- ‘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, judgment, 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 qualia (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 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	

-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	
CSV	(to be) an act/process of forming/holding a mental image	
OBJ	(to be) the mental image itself that one holds/forms in one’s mind	

-ŃL- ‘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. 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)
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 *	
OBJ	(to be) the entity that ontologically exists	

*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’.

-LČ- ‘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 surfacing psycho-social identity is changing or that a suppressed psycho-social STEM 3: (to be/manifest) a process of transition / change to a particular psychological identity; to change/transition to a different psychological identity
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	
OBJ	(to be) the particular psycho-social identity one has/seeks	

-NŠ- ‘WELL-MANNERED BEHAVIOR / DECORUM / CIVILITY / DIGNITY / POLITENESS / COURTESY’		
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 Stem 3: (to be) a state of manifesting decorum/civility; have/display a sense of decorum, politeness and civility
CTE	(to be) the psychological state which allows/causes one to behave well	
CSV	(to be) a physical act/manifestation of good behavior	
OBJ	(to be) the party/entity thought of as / observed to be behaving well	
FML Stem 1: (to be) a state/act of having/displaying dignity; have dignity, be dignified		
FML Stem 2: (to be) a state/act of being polite/courteous; show politeness/courtesy, be polite/courteous		
FML Stem 3: (to be) a state of being well-bred, noble, distinguished, cultivated; have/display a noble, distinguished or cultivated air		

-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 Stem 3: (to be) an act/state of hypnosis; to hypnotize
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	
OBJ	(to be) the entity/party fooled	

-ZK- ‘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 Stem 3: (to be) a state/act of hypocrisy; to behave/act hypocritically or as a hypocrite
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	
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	

-ṪV- ‘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 / GULELESSNESS’		
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
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	Stem 3: (to be) a degree of personal prejudice/bigotry
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)
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	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)
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)
CTE	(to be) a state of humility/modesty	
CSV	(to be) an act of modesty/humility; to do something modest/humble	Stem 3: (to be) a state of being unassuming/unobtrusive; be/act unassuming(ly)/unob-trusive(ly)
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	

-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 STEM 3: (be) an act/instance of pusillanimity/cowardice/faint-heartedness
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	
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, being smug; to be smug, act smugly Stem 3: (to be) a state/act of being prim, foppish, priggish; be/act prim(ly), foppish(ly), priggish(ly)
CTE	(to be) a state of conceit	
CSV	(to be) an act of conceited behavior; do/say something conceited	
OBJ	[inapplicable]	

-FL- ‘POMPOSITIVITY / PRETENSION / OSTENTATIOUSNESS / BRAGGADOCCIO / BOASTING’		
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	
FML Stem 1: a state of vaingloriousness; be/act vainglorious(ly)		
FML Stem 2: a state megalomania; be/act megalomaniacal(ly)		
FML Stem 3: a state self-aggrandizement; to self-aggrandize		

-ZČ- ‘SELF-CONERN / 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	

-TG- ‘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 -ZČ- “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	

-ZM- ‘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/indiscretely (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	

-ŠX- ‘ARROGANCE / HAUGHTINESS / INSOLENT’	
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]
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

-ŃZ- ‘EMOTIONALISM / WHIM-WORSHIPPING / 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
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
CTE	(to be) the actual emotional/intellectual feeling of experiencing a particular degree of emotional/intellectual engagement or interest
CSV	(to be) their 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)

FML Stem 1: (to be) a degree of emotional/intellectual fulfillment vs. emotional emptiness/hollowness
FML Stem 2: (to be) a degree of emotional/intellectual stability vs. instability
FML Stem 3: (to be) a degree of emotional openness or “being in touch” with one’s emotion vs. degree of emotional repression

-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	

-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 o(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/mqanifests vacillation/wishy-washiness/indecisiveness	
OBJ	(to be) that which one is vacillating over or indecisive/wishy-washy about	

-ŠR- ‘MOOD / TEMPERAMENT / COUNTENANCE / BEHAVIOR’

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/speciic situation or context] Stem 3: (to be) one’s (emotional) temperament/countenance [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 / COMPROMISE’		
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]
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*’.

-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 Stem 3: (to be) an act/instance of something/someone being ghastly to another; to cause another to be aghast
CTE	(to be) an instance of feeling effronted; to be subject to someone’s effrontery	
CSV	(to be) a physical act/instance of effrontery	
OBJ	(to be) something/someone who effronts or commits an act of effrontery	

-DM- ‘BLUFF / TRICK / DELUDE / DISGUISE / DECEIVE / CHEAT / SWINDLE’	
BSC	Stem 1: (to be) a state/act of bluffing, misleading, feinting; to bluff, mislead, feint
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
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	
FML Stem 1: a state/act of deception/deceit or duplicity; to deceive	
FML Stem 2: a state/act of cheating,; to cheat	
FML Stem 3: a state/act of chicanery, swindling; to swindle	

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

-RF- ‘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
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 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’	
Stem 3: (be) an act of “magic”; a magic trick [i.e., a formally created illusion for the purposes of entertainment]	

-XČ- ‘MURDER / HOMICIDE / MANSLAUGHTER / ASSASSINATION / EXECUTION’	
BSC	Stem 1: (be) an act of murder/homicide; to [commit] murder/homicide [both the act of commission and the death of the victim]
CTE	(be) the state/act of being/having been murdered
CSV	(be) a physical act of murdering
OBJ	(be) a murder 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)	
FML Stem 1: (be) an act of killing another in self-defense or war-time battle	
FML Stem 2: (be) a state/act of assassination	
FML 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 HARRASMENT / SEXUAL ASSAULT / RAPE’		
BSC	Stem 1: (be) state/act of sexual harrassment against another; to sexually harrass another [both the act and the state undergone by the victim]	Stem 2: (be) a state/act of sexual aassault/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 harrassment	
CSV	(be) a physical act of sexually harrassing; to sexually harrass	
OBJ	(be) a victim of sexual harrassment	

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

-DPR- 'KIDNAPPING / FALSE IMPRISONMENT / SLAVERY'		
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 slavery; to enslave 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] 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]
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	
FORMAL stems follow the same Stem & Specification pattern as INFORMAL stems but refer to a bribe, act of bribery.		

-DPR- ‘TRADE IN STOLEN GOODS / SMUGGLING’		
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	
FORMAL stems follow the same Stem & Specification pattern as INFORMAL stems but refer to smuggling, to smuggle (i.e., the transportation and offering of contraband for sale or use)		

-DPC- ‘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	

-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	

-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.

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

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

-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.

-ŽŘ- ‘TEASE / RIDICULE / DERISION / MOCKERY / PARODY / SATIRE’		
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 parody or caricature; to parody, to make a caricature of
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	
FML Stem 1: a state/act of snickering/sniggering/scoffing at; to snigger/snicker/scoff at		
FML Stem 2: a state/act derision/mockery; to deride, be derisive of, to mock		
FML Stem 3: a state/act of satire/lamprooning; to satirize, lampoon		

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

-ṬŠ- ‘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
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	Stem 3: (be) a state/act of witnessing something inappropriate or taboo; to witness something one shouldn't or isn't supposed to witness

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

-LPH- '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 **-ÇŘ-** 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
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
<p>STEM 2: (to be) the outlook-on-life described above as the basis for one’s public face, 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>	

5.3 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 get accomplished without the presence/participation/submission/receipt, etc. of the secondary party).

-LCL- ‘COMPLEMENTARY INTERPERSONAL RELATIONSHIP OR INTERACTION’	
BSC	<p>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)</p> <p>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</p>
CTE	<p>(be) a state of a complementary interpersonal relationship or interaction taking place or having taken place</p> <p>Stem 3: (be) the state/act/situation received, submitted to, dealt with, or undergone by the “beta” or “secondary” party of a complementary interpersonal relationship or interaction</p>
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 --. 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

- DDW- 'BEING A SAGE/GURU ↔ BEING A DISCIPLE'
- DDY- 'TEACHING ↔ BEING A STUDENT/PUPIL'
- JBV- 'LENDING ↔ BORROWING'
- JBŘ- 'OFFERING OR GRANTING OF CREDIT ↔ BEING IN & PAYING OFF DEBT'
- SXW- 'COMMISSION/PERPETRATION OF A CRIME ↔ BEING CRIMINALLY VICTIMIZED'
- TNW- 'PROCESS OF JAILING ↔ BEING IMPRISONED'
- TNY- 'ENSLAVEMENT ↔ BEING ENSLAVED'
- BŠT- 'BEING A PRIEST/MINISTER/IMAM/RABBI, ETC. ↔ BEING A RELIGIOUS FOLLOWER/ACOLYTE/RELIGIOUS DISCIPLE'
- VSW- 'PERFORMING ARTS PERFORMANCE ↔ ATTENDING AN ARTISTIC PERFORMANCE'
- VSY- 'VISUAL ARTS EXHIBITION ↔ ATTENDING/VIEWING A VISUAL ARTS EXHIBITION'
- VSM- 'AUTHORSHIP OF A WRITTEN WORK ↔ BEING A READER THEREOF'
- VSN- 'COMPOSORSHIP 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'
- ZXW- 'HARRASSMENT (NON-SEXUAL) ↔ BEING HARRASSED'
- ZXL- 'MENACE ↔ FACING A MENACE'
- ZXR- 'BULLYING ↔ BEING BULLIED'
- ŇTR- 'NAGGING/BROWBEATING ↔ BEING NAGGED/BROWBEATEN'
- KŠY- 'CLAIRVOYANCE/BEING PSYCHIC ↔ SEEKING/RECEIVING THE SERVICES THEREOF'
- RXN- 'BEING A MAGE/WIZARD/WITCH ↔ SEEKING/RECEIVING THE SERVICES THEREOF'
- LXM- 'BEING A SUPERVISOR/BOSS ↔ BEING AN UNDERLING'
- LXN- 'BEING AN EMPLOYER ↔ BEING AN EMPLOYEE'
- DDY- 'BEING A COMMISSIONING PATRON ↔ BEING A COMMISSIONED ARTIST OR ARTISAN'
- LT- 'BEING AUTARCH/AUTOCRAT/RULER ↔ BEING A SUBJECT'
- BŠK- 'BEING AN ORATOR ↔ 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’
 -PPR- ‘CRITICISM ↔ RECEIVING CRITICISM’
 -STM- ‘PSYCHOLOGICAL/RHETORICAL MANIPULATION ↔ BEING PSYCHOLOGICALLY/RHETORICALLY MANIPULATED’
 -LKR- ‘CONSIDERATION OF FORGIVENESS ↔ SEEKING FORGIVENESS/PENANCE’

5.4 Geographical/Topographic/Terrestrial Concepts

-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 / LAND FEATURE / ARABILITY’		
BSC	Stem 1: (to be) a terrestrial land feature	Stem 2: (to be) an area of arable land Stem 3: (to be) an area of non-arable land
CTE	(to be) the state of being a terrestrial land feature	
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 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	

-TR- ‘WATER’		
BSC	Stem 1: (to be) an amount of water; to water, pour/draw/procure some water	Stem 2: (to be) a source of fresh water (e.g., a well, river, spring, etc.) Stem 3: (to be) a state/act of utilizing water, irrigation, watering; to water / irrigate
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	

-MTR- 'WATER-BASED WEATHER PHENOMENON'		
BSC	Stem 1: (to be) an amount of rainfall; to rain	Stem 2: (to be) an amount of snow; to snow Stem 3: (to be) an amount of fog; to be foggy
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.)	

-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	

-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.	

5.5 Roots Relating To The Seasons

-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
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	
		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

-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
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	Stem 3: (to be) the Spring equinox
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
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	Stem 3: (to be) the Summer solstice
OBJ	(to be) an activity one does/performs during/because it is summertime	

-ŃŠ- '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
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	Stem 3: (to be) the Autumn equinox
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)	

-ZL- ‘WEATHER / CLIMATE’		
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	
FML Stem 1: (to be) the climate, clime FML Stem 2: (to be) a cold climate FML Stem 3: (to be) a warm climate		

5.6 Roots Relating To The 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)	
FML Stem 1: a piece/article of clothing being worn as a uniform (i.e., to indicate one’s job/position/organizational membership, etc.)		
FML Stem 2: a piece/article of clothing being worn as a costume		
FML 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.)		

-MTR- ‘HEAD COVERING / HAT / HELMET’		
BSC	Stem 1: (to be) a hat or head covering being worn as protection; to wear a hat or head covering	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)	
FORMAL stems of this root refer to the wearing of a ‘helmet’.		

The following roots follow the same Stem and Specification pattern as the above root:

-LTL- ‘jacket / coat’	-PTR- ‘tights / leggings’	-VDL- ‘scarf’
-RTL- ‘robe(s)’ [i.e., dress robes]	-KTR- ‘stocking / hose’	-VDR- ‘belt’
-CTL- ‘shirt / blouse’	-ŽTR- ‘shoe / mocassin’	-VDŘ- ‘tie / cravat’
-TTL- ‘dress’	-NTL- ‘sandal’	-VZW- ‘over-the-shoulder sash’
-PTL- ‘skirt / kilt’	-ŽTL- ‘boot’	-VZD- ‘ornamental/costume mask’
-XTR- ‘pants / trousers’	-ÇTL- ‘slipper’	-VJW- ‘waist sash / cummerbund’
-CTR- ‘tunic’	-ZTR- ‘glove’	-ŠTR- ‘necklace / neck-chain’
-ZTL- ‘sari / sari-like article of clothing’	-NĹT- ‘undergarment (for the groin area)’	-ŠTL- ‘brooch / pendant’

-ŃTR-	‘vest’	-NĹP-	‘undergarment (for the torso)’	-ŠTW-	‘earring’
-ŃTL-	‘overcoat / long coat’	-NĹM-	‘brassiere’	-ŠTY-	‘medallion’
-ĹTR-	‘parka / heavy winter coat’	-VDW-	‘apron’	-ŠTF-	‘cuff links’
-TTR-	‘sock’	-VDY-	‘collar’	-ŠTV-	‘tie pin / tie clip’
		-VDV-	‘bandana / handkerchief’	-ŠTR-	‘button / stud’

5.7 Roots Associated with Food/Eating

-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	
FML Stem 1: eat a serving of food/drink; to dine		
FML Stem 2: prepared/cooked food; to eat prepared/cooked food		
FML Stem 3: processed drink/spirits; to drink a processed drink/spirits		

-LKS- ‘FOODSTUFF OR BEVERAGE’ Associated affix: DFB			
	Stem 1	Stem 2	Stem 3
BSC	(to be) a state their 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:

- LKSW**- ‘DISH/RECIPE MADE FROM/WITH FISH/SEAFOOD’
- LKSL**- ‘DISH/RECIPE MADE FROM/WITH MAMMALIAN FLESH’
- LKSM**- ‘DISH/RECIPE MADE FROM/WITH EGGS’
- LKSR**- ‘DISH/RECIPE MADE FROM/WITH CEREAL GRAINS’
- LKT**- ‘DISH/RECIPE MADE FROM/WITH A MIXTURE OF ANIMAL/PLANT PRODUCTS/PARTS’
- 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’
- LKTRĚ**- ‘DISH/RECIPE MADE FROM/WITH PLANT LEAVES/SHOOTS’

-**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’

- ČKW**- ‘CEREAL GRAIN’
- ČKY**- ‘BAKED GOOD’
- ČPW**- ‘BREAD’
- ČPY**- ‘FLATBREAD’
- ČKL**- ‘CAKE’
- ČKR**- ‘PASTRY’
- ČPL**- ‘PIE’

- ḌNY**- ‘MILK FROM MAMMAL’
- ḌNW**- ‘(LAIN) EGG FROM ANIMAL’
- ḌMW**- ‘ICE CREAM / SHERBET/GELATO’
- ḌMY**- ‘SORBET’
- ḌŇ**- ‘CHEESE’

-DŃW- ‘BUTTER’

-BVL- ‘BROTH-BASED SOUP’

-BVR- ‘PUREE-BASED SOUP’

-BVW- ‘STEW’

-BVY- ‘GRUEL/PORRIDGE’

-LTY- ‘FRUIT PUNCH’

-LTW- ‘PROCESSED COMMERCIAL CARBONATED BEVERAGE / SODA’

5.7.1 Some Common Food Plants

The stems listed beginning on the next page are excerpted from the listings of lexical roots for plants in Sec. 17.2 of this document. Each stem refers to the plant 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 new 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 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
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

To indicate food preparation methods use the TRF affix or one of the two new affixes below:

-xč	CK1 Cooking Methods 1
1	uncooked, raw; serve X raw/uncooked
2	smoked; cook by smoking
3	sautéed; cook by sautéing
4	stir-fried; cook by stir-frying
5	pan-fry; cook by pan-frying
6	deep-fried; cook by deep-frying X
7	grilled; cook by grilling
8	barbecued; cook by barbecuing
9	roasted; cook by roasting X

-xc	CK2 Cooking Methods 2
1	steamed; cook by steaming X
2	blanched; heated/cooked by blanching
3	poaching; cook by poaching X
4	boiled; cook by boiling X
5	braised; cook by braising X
6	stewed; cook by stewing X
7	pressure-cooked / pressure-steamed; cook by pressure-cooking X
8	slow-cooked; cook by slow-cooking (e.g., underground or in crockpot)
9	baking; cook by baking X

NOTE: To express parboiling, parbaking, or parcooking, use the PTT_{3/4} affix with one of the CK1 or CK2 affixes above.

Fruit plants:

- DKW- Stem 1: pineapple
- FMW- Stem 2: elderberry
- LČKL- Stem 1: durian
- LŠM- Stem 1: redcurrant
- LŠM- Stem 2: white currant
- LŠM- Stem 3: blackcurrant
- LŠN- Stem 1: gooseberry
- LŠN- Stem 2: jostaberry
- LŠN- Stem 3: golden currant / clove currant / pruterberry / buffalo currant
- TŇ- Stem 1: (European, i.e., *Vitis vinifera*) grape
- TŇ- Stem 2: culinary/cultivated grape (other than *Vitis vinifera*)
- NČP- Stem 1: banana, plantain
- NČP- Stem 2: enset
- NČP- Stem 3: Chinese dwarf banana / golden lotus banana
- ŇD- Stem 1: blueberry
- ŇD- Stem 2: cranberry
- ŇD- Stem 3: huckleberry, whortleberry
- ŇDL- Stem 1: eastern teaberry [source of wintergreen flavoring]
- ŇDL- Stem 2: salal / shallon

- ÑDR- **Stem 1:** lingonberry / partridge berry / cowberry / foxberry / redberry
- ÑDR- **Stem 2:** deerberry
- ÑDW- **Stem 1:** kiwi
- ÑDW- **Stem 2:** kiwi berry / grape kiwi / dessert kiwi / cocktail kiwi / golden kiwi
- ÑDY- **Stem 1:** Japanese persimmon
- ÑDY- **Stem 2:** date-plum
- ÑDY- **Stem 3:** American persimmon
- ÑZKR- **Stem 1:** chicle, ausubo / massaranduba / balatá, sapotilla, apota / sapodilla / naseberry
- ÑZKR- **Stem 2:** eggfruit, abiu, lúcuma, mamey sapote, green sapote, black plum
- ÑZKR- **Stem 1:** miracle berry / sweet berry
- ÑZKR- **Stem 2:** tar apple / star apple / milk fruit / cainito / Damson plum / wild star-apple / caimitillo
- ÑZKR- **Stem 3:** shea
- PŠMY- **Stem 1:** starfruit / thrumwort
- RMV- **Stem 1:** red beet / beetroot
- RMV- **Stem 2:** sugar beet
- ZP- **Stem 2:** tomato
- ZP- **Stem 3:** eggplant / aubergine
- ZPÇ- **Stem 1:** tomatillo
- ZPÇ- **Stem 2:** winter-cherry, Chinese/Japanese lantern
- ZPÇ- **Stem 3:** groundcherry, Inca berry, golden strawberry, strawberry-tomato
- ZPH- **Stem 1:** habanero pepper
- ZPH- **Stem 2:** aji chili pepper
- ZPH- **Stem 3:** tabasco pepper / piri piri / Hawaiian pepper / xiaomila pepper, manzano pepper / rocoto pepper / locoto pepper
- ZPL- **Stem 1:** wild tomato, currant tomato
- ZPL- **Stem 2:** Ethiopian eggplant
- ZPL- **Stem 3:** naranjilla / lulo
- ZPR- **Stem 1:** Turkey berry / wild eggplant / pea eggplant / susumber
- ZPR- **Stem 2:** pepino melon / melon pear
- ZPR- **Stem 3:** tamarillo / tree tomato / blood fruit
- ZPŘ- **Stem 1:** wolf apple
- ZPŘ- **Stem 2:** cocona
- ZPŘ- **Stem 3:** kangaroo apple, desert raisin / bush raisn / bush saltana, bush tomato, potato bush, Australian wild tomato
- ZPW- **Stem 1:** bell pepper
- ZPW- **Stem 2:** sweet Italian pepper, pepperoncino
- ZPW- **Stem 3:** paprika
- ZPY- **Stem 1:** serrano pepper
- ZPY- **Stem 2:** cayenne pepper
- ZPY- **Stem 3:** jalapeño pepper

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
- TXW- **Stem 2:** batflower, Polynesian arrowroot / pia
- ZP- **Stem 1:** potato

Spice/condiment plants:

- KBW- **Stem 2:** cumin
- KPW- **Stem 2:** fennel
- KPW- **Stem 3:** parsley
- KPY- **Stem 1:** dill
- KŠPW- **Stem 1:** anise, short-fruit pimpinella
- KŠPW- **Stem 2:** caraway, meridian fennel, Persian cumin
- KŠPW- **Stem 3:** coriander, cilantro / Chinese parsley
- LMZ- **Stem 1:** common mint / spearmint
- LMZ- **Stem 2:** corsican mint
- LMZB- **Stem 1:** common thyme
- LMZB- **Stem 2:** lemon thyme
- LMZB- **Stem 3:** citrus thyme
- LMZBL- **Stem 1:** oregano
- LMZBL- **Stem 2:** marjoram
- LMZBŘ- **Stem 1:** sage
- LMZBR- **Stem 1:** summer savory
- LMZBŘ- **Stem 2:** rosemary
- LMZBR- **Stem 2:** winter savory / mountain savory
- LMZBW- **Stem 1:** caraway thyme
- LMZL- **Stem 1:** peppermint
- LMZL- **Stem 2:** gingermint / redmint / Scotch spearmint
- LMZL- **Stem 3:** Cuban mint / mojito mint / large apple mint
- MŽDY- **Stem 1:** stevia
- NČPW- **Stem 1:** ginger
- NČPW- **Stem 2:** turmeric
- NČPW- **Stem 3:** cardamon
- NČPY- **Stem 1:** galangal

- NÇPY- **Stem 2:** Ethiopian cardamom plant, melegueta pepper / alligator pepper / grains of paradise
- NÇPY- **Stem 3:** torch ginger
- RDL- **Stem 2:** sugarcane
- RSPY- **Stem 1:** vanilla bean

Palms:

- LBL- **Stem 1:** areca nut palm [i.e., betel nut palm]
- LBV- **Stem 2:** forest coconut palm
- LBW- **Stem 1:** coconut palm
- LBW- **Stem 2:** date palm
- LBW- **Stem 3:** açai palm
- LBY- **Stem 1:** jelly palm, yatay palm, pindo palm
- LBY- **Stem 2:** oil palm, macaw-fat
- LBY- **Stem 3:** peach palm
- LBZ- **Stem 2:** bertam / wild Bornean sago palm
- LBZ- **Stem 3:** raffia palm

Grains/cereals/pseudo-cereals:

- BK- **Stem 1:** Asian rice
- BK- **Stem 2:** African rice
- BK- **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
- BT- **Stem 2:** durum wheat / pasta wheat
- BT- **Stem 3:** spelt / dinkel wheat
- BTH- **Stem 1:** oat
- BTH- **Stem 2:** naked oat / hullless oat
- BTH- **Stem 3:** Ethiopian oat
- BTW- **Stem 1:** barley
- BTW- **Stem 2:** rye
- BTW- **Stem 3:** triticale
- BTY- **Stem 1:** einkorn wheat
- BTY- **Stem 2:** emmer wheat
- BTY- **Stem 3:** khorasan wheat / kamut wheat

- RDL- **Stem 1:** corn / maize
- RDL- **Stem 3:** sorghum
- RMD- **Stem 2:** quinoa
- RNTM- **Stem 1:** amaranth
- RNTW- **Stem 2:** buckwheat
- TXL- **Stem 1:** common millet
- TXL- **Stem 2:** pearl millet
- TXL- **Stem 3:** foxtail millet / Italian millet
- TXR- **Stem 1:** fonio / hungry rice
- TXR- **Stem 2:** raishan

Leafy vegetables:

- BVK- **Stem 1:** Malabar spinach / vine spinach / Ceylon spinach
- RBZ- **Stem 1:** (loose)leaf lettuce
- RBZ- **Stem 2:** romaine/cos lettuce
- RBZ- **Stem 3:** iceberg/cripshead lettuce
- RBZL- **Stem 1:** endive / escarole
- RBZL- **Stem 2:** common chicory, radicchio, Belgian endive
- RBZW- **Stem 1:** butter(head) lettuce
- RBZW- **Stem 2:** red leaf lettuce
- RBZW- **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
- RMDY- **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
- RNTM- **Stem 2:** Lagos spinach
- RNTW- **Stem 1:** rhubarb
- RNTW- **Stem 3:** sorrel, dock
- RNX- **Stem 1:** New Zealand spinach, dune spinach
- RZH- **Stem 1:** salsify / oyster plant

Vegetables:

- ÇX- **Stem 1:** arabica coffee
- ÇX- **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
- FSPW- **Stem 1:** lesser wild artichoke
- FSPW- **Stem 2:** cardoon
- FSPW- **Stem 3:** white artichoke
- KBL- **Stem 2:** shepherd's-needle / Stork's needle / Venus' comb
- KBW- **Stem 1:** carrot
- KBW- **Stem 3:** chervil
- KPR- **Stem 1:** arracacha / racacha
- KPW- **Stem 1:** celery
- KŠP- **Stem 1:** parsnip
- KŠP- **Stem 2:** lovage
- KŠP- **Stem 3:** licorice
- LCKL- **Stem 1:** okra
- LZM- **Stem 1:** olive
- ŃZKÇ- **Stem 1:** tea
- ŃZKH- **Stem 1:** brazil nut
- ŃZKH- **Stem 2:** paradise nut
- ŘŽBL- **Stem 1:** sesame
- SFW- **Stem 1:** asparagus
- SFW- **Stem 3:** agave
- SṬL- **Stem 1:** garlic
- SṬL- **Stem 2:** chive
- SṬL- **Stem 3:** scallion
- SṬR- **Stem 1:** onion
- SṬR- **Stem 2:** shallot
- SṬR- **Stem 3:** leek
- ŽGR- **Stem 1:** winter cress / yellow rocket, land cress / American cress / bank cress / Burmuda cress / herb barbara / rocketcress / winter rocket
- ŽGR- **Stem 2:** horseradish
- ŽK- **Stem 1:** broccoli
- ŽK- **Stem 2:** cauliflower, romanesco, broccoflower
- ŽK- **Stem 3:** Chinese broccoli / gai lan, broccolini
- ŽKÇ- **Stem 1:** Siberian kale
- ŽKÇ- **Stem 2:** tatsoi

- ŽKF- **Stem 1:** radish, daikon
- ŽKF- **Stem 2:** watercress
- ŽKF- **Stem 3:** arugula / rocket
- ŽKH- **Stem 1:** brown mustard, wrapped heart mustard cabbage
- ŽKH- **Stem 2:** white mustard
- ŽKH- **Stem 3:** black mustard
- ŽKL- **Stem 1:** savoy cabbage
- ŽKL- **Stem 2:** rutabaga
- ŽKŘ- **Stem 1:** (field) mustard
- ŽKR- **Stem 1:** turnip
- ŽKR- **Stem 2:** Napa cabbage
- ŽKŘ- **Stem 2:** rapini / broccoli rabe
- ŽKR- **Stem 3:** bok choy
- ŽKŘ- **Stem 3:** komatsuna / Japanese mustard spinach
- ŽKT- **Stem 1:** mizuna
- ŽKT- **Stem 2:** choy sum / flowering cabbage
- ŽKT- **Stem 3:** canola
- ŽKV- **Stem 1:** wasabi
- ŽKV- **Stem 2:** garden cress, field cress
- ŽKV- **Stem 3:** wild arugula / perennial wall-rocket
- ŽKW- **Stem 1:** cabbage
- ŽKW- **Stem 2:** brussel sprout
- ŽKW- **Stem 3:** kohlrabi
- ŽKY- **Stem 1:** kale
- ŽKY- **Stem 2:** collard
- ŽKY- **Stem 3:** spring greens
- ŽŽP- **Stem 1:** caper, karir
- ŽŽP- **Stem 2:** shepherd tree, hanza
- ŽŽP- **Stem 3:** swarstorm, cadaba

The following roots are excerpted from unfinished sub-sections of Sec. 17 and are therefore potentially subject to change in future iterations of this document:

- NĹ- ‘CITRUS HYBRID’ I 1. sweet orange 2. bitter orange 3. key lime
- NĹN- ‘CITRUS HYBRID’ II 1. lemon 2. Meyer lemon 3. grapefruit
- NĹNY- ‘CITRUS HYBRID’ III 1. clementine 2. tangelo 3. other citrus hybrid
- NĹŇ- ‘CITRUS FRUIT’ I 1. lime 2. mandarin orange 3. citron
- NĹŇW- ‘CITRUS FRUIT’ II 1. kumquat 2. pomelo/shaddock 3. other citrus fruit
- NĹK- ‘ANACARDIACEAE’ 1. (genus *Pistacia*) pistachio plant 2. (genus *Anacardium*) cashew tree 3. (genus *Mangifera*) mango tree

- NŽ- ‘MALINE FRUIT PLANT/TREE’ I 1. (*Malus domestica*) apple 2. (genus *Malus* except *M. domestica*) crabapple 3. (genus *Pyrus*) pear

- NŽW**- ‘MALINE FRUIT PLANT/TREE’ II 1. (genus *Cydonia*) quince 2. (genus *Pseudocydonia*) Chinese quince 3. (genus *Chaenomeles*) Japanese quince
- NŽT**- ‘PRUNUS TREE/SHRUB’ I (subgenus *P. Amygdalus*) 1. almond tree 2. peach tree 3. peach tree bearing nectarine fruit / “nectarine tree”
- NŽTW**- ‘PRUNUS TREE/SHRUB’ II (subgenus *P. Prunus*) 1. plum tree 2. apricot tree 3. plum-apricot hybrid (pluot, plumcot, apriplum)
- NŽTY**- ‘PRUNUS TREE/SHRUB’ III 1. (subgenus *P. Cerasus*) cherry tree 2. (subgenus *P. Lethocerasus*) sand cherry shrub 3. (subgenera *P. Padus* and *P. Laurocerasus*) bird cherry, cherry-laurel
- ŘŽ**- ‘STRAWBERRY (genus *Fragaria*)’ 1. (wild) strawberry plant 2. strawberry cultivar 3. strawberry hybrid
- ŘT**- ‘RUBUS PLANT’ I 1. raspberry plant 2. blackberry plant 3. dewberry plant
- ŘTW**- ‘RUBUS PLANT’ II 1. cloudberry plant 2. salmonberry plant 3. thimbleberry plant
- ŘTY**- ‘RUBUS PLANT HYBRID’ I 1. loganberry plant 2. boysenberry plant 3. tayberry plant
- ŘTL**- ‘RUBUS PLANT HYBRID’ II 1. marionberry plant 2. youngberry plant 3. olallieberry plant
- ŘÇ**- ‘MORACEAE’ I 1. (genus *Ficus*) fig tree 2. (genus *Morus*) mulberry tree 3. (genus *Treculia*) African breadfruit tree
- ŘÇW**- ‘MORACEAE’ II – (genus *Artocarpus*) 1. (*A. altilis*) breadfruit 2. (*A. heterophyllus*) jackfruit 3. (*A. lacucha*) monkey fruit / lakoocha
- BD**- ‘CUCUMIS’ I – MUSKMELON & ASSOCIATED CULTIVARS 1. European cantaloupe plant 2. North American cantaloupe plant 3. muskmelon plant
- BDW**- ‘CUCUMIS’ II – MUSKMELON & ASSOCIATED CULTIVARS 1. honeydew melon plant 2. Crenshaw melon plant 3. casaba melon plant
- BDY**- ‘CUCUMIS’ III 1. cucumber vine 2. cackrey / West Indian gherkin vine 3. aardvark cucumber / aardvark pumpkin
- BDN**- ‘BENINCASEAE’ 1. (genus *Citrullus*) watermelon 2. (genus *Benincasa*) winter melon / wax gourd / ash gourd 3. (genus *Praecitrullus*) tinda / Indian squash / round melon
- GDM**- ‘CUCURBITA (SQUASH) – Species *C. Pepo*’ I 1. zucchini squash vine 2. scallop summer squash 3. crookneck squash vine
- GDN**- ‘CUCURBITA (SQUASH) – Species *C. Pepo*’ II 1. pumpkin vine 2. acorn squash vine 3. spaghetti squash vine
- NDK**- ‘MYRTACEAE (MYRTLE FAMILY)’ II 1. (genus *Psidium*) guava tree 2. (genus *Acca*) acca / feijoa 3. (genus *Syzygium*) clove tree
- ŇŇP**- ‘LYTHRACEAE’ 1. (genus *Punica*) pomegranate tree 2. (genus *Trapa*) water caltrop 3. (genus *Lawsonia*) henna plant
- MMV**- ‘CARICACEAE’ 1. (genus *Carica*) papaya tree 2. (genus *Vasconcellea*) babaco tree 3. (*V. pubescens*) mountain papaya
- JP**- ‘PHASEOLUS VULGARIS (COMMON BEAN)’ I 1. kidney/red bean plant 2. white/navy bean plant 3. cannellini bean plant
- JPW**- ‘PHASEOLUS VULGARIS (COMMON BEAN)’ II 1. pinto bean plant 2. black turtle bean plant 3. flageolet bean plant
- JPY**- ‘OTHER PHASEOLUS SPECIES’ 1. (*P. coccineus*) runner bean plant 2. (*P. acutifolius*) tepary bean plant 3. (*P. dumosus*) year bean plant
- JPL**- ‘OTHER PHASEOLUS SPECIES’ 1. (*P. lunatus*) lima/butter bean plant 2. (*P. maculatus*) spotted bean plant 3. (*P. filiformis*) slimjim bean plant
- RJP**- ‘PISUM SATIVUM (PEA)’ 1. (*P. sativum*) pea plant 2. (*P. s. macrocarpon*) snap pea plant 3. (*P. s. saccharatum*) snow pea plant
- RJK**- ‘VIGNA SPECIES’ 1. (*V. unguiculata*) cowpea, black-eyed pea 2. (*V. angularis*) adzuki bean 3. (*V. radiata*) mung bean
- JKW**- ‘FABACEAE’ I 1. (genus *Vicia*) fava bean plant 2. (genus *Glycine*) soybean plant 3. (genus *Lens*) lentil
- JKY**- ‘FABACEAE’ II 1. (genus *Arachis*) peanut plant 2. (genus *Cicer*) chickpea/garbanzo bean plant 3. (genus *Medicago*) alfalfa plant
- CVY**- ‘LAURACEAE’ 1. (genus *Cinnamomum*) cinnamon laurel tree 2. (genus *Laurus*) bay laurel tree 3. (genus *Persea*) avocado tree

-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

-PŠW- ‘PLANT PARTS III’
1. leaf 2. flower 3. bud

6.0 ROOTS RELATED TO TOOL USE

Rather than have specific roots/stems for the names of tools (e.g., ‘hammer’, ‘saw’, ‘awl’, ‘pliers’, ‘scissors’, etc.), the language will instead simply apply a set of affixes (‘hand-held tool used for...’, ‘device/apparatus used for...’, etc.) to formatives which indicate the action performed/desired. The specific affixes available for such constructions are the TDM, UTE, MEC, MDF, and MAK affixes. The new MNS affix is also important for use with such roots/stems. So rather than have a formative meaning ‘plane’, instead the concept will be signified by the formative for ‘flattening/smoothing/make even’ plus the tool/implement/device affix, i.e., ‘hand-held tool used for flattening/smoothing’.

At the same time, a distinction must be made between the implement used to perform an action which creates a resulting state (e.g., a hammer used for hammering) and the corollary “go-between” object which conveys and maintains the resulting state (e.g., a nail). For example, an act of hammering results in a nail being left behind to maintain the connection/juncture between two entities (e.g., a wooden post and the sign nailed to it). The nail is a separate implement from the hammer, and a nail certainly is not the primary tool used to conduct the act of hammering. This principle of the nail as a corollary object associated with a tool-using act likewise applies to entities such as screws, bolts, nuts, clasps, ties, wires, rope, paste, glue, cement, braces, girders, seals, lids, covers, posts, frames, shackles, reins, muzzles, etc. Notice that, in English at least, such objects are generally considered “tools” only in a secondary or corollary, non-prototypical sense, if at all (a native English speaker does not usually consider the idea of cement, lids, or muzzles as being “tools”). In most cases, this corollary object can be signified by the OBJECTIVE Specification for each stem. In some cases, a dedicated root will be needed.

6.1 Roots for 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:

-CŘ- ‘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
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	Stem 3: (be) an act of severance; to sever
OBJ	(be) an implement, procedure, process, command, situation, etc. which effectuates an act of separation	

-ZŘ- ‘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)	

-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
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)	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)

-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 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 scrape, 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’.

-ZF- ‘PIERCE / PUNCTURE / BREACH / HOLE / TUNNEL’		
BSC	Stem 1: (be) an act of piercing through, puncturing through, punching through, breaching, breaking through, tunnelling (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’]
CTE	(be) the material removed via an act of piercing, puncturing	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’]
CSV	(be) an act of piercing, puncturing	
OBJ	(be) the appendage/implement/tool used for piercing, puncturing	

-ZD- ‘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	

-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	

-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

-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.

-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)
CTE	(be) a state of being in another's grasp	
CSV	(be) the physical act of grabbing/grasping	Stem 3: (be) an act/instance of handling/manipulating something with one's hands or manipulative appendage(s)
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
CTE	(be) a state of being broken apart or broken open	Stem 3: (be) an act/instance of crumbling something into non-discreet pieces (i.e., powder, dust, gravel, crumbs, etc.)
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
CTE	(be) a state of being split/dividing in half	Stem 3: (be) an act/instance of splitting/dividing off a smaller piece of something from the larger whole
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 manipulating something (e.g., manually touching, turning, twisting, squeezing, stroking it, etc.)
CTE	(be) a state of being incidentally or temporarily held together	Stem 3: (be) an act/instance of incidentally or temporarily holding something still; restrain (i.e., keeping it from moving from one place to another; keeping it in one place)
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/command used to effectuate an act of moving apart	

-MC- ‘JUNCTION / CONNECTION/ FASTENING / LINKAGE / UNIFICATION / MERGING / COALESCENCE’		
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	
Formal 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)		
Formal 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)		
Formal 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.		

-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	

-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.) 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).
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	

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

NOTE: This root refers to expansion in size **without** an entity’s individual component molecules/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	
CSV	(be) the physical act of	
OBJ	(be) the means/implement/procedure used to	

The FORMAL stems of this root are identical to the INFORMAL stems 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.

-CḐ- ‘**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 / ROTATION / SPIN’		
BSC	Stem 1: (be) an act/instance of turning/rotating something; to turn, rotate (i.e., cause an object to move in a circular motion so that its orientation relative to the surrounding space//surface/medium/substrate changes)	Stem 2: (be) an act/instance of revolving; to revolve (i.e., to follow a (quasi-)circular motion around another entity/object Stem 3: (be) an act/instance of spinning (i.e., revolving in place on one’s own rotational axis)
CTE	(be) a state of being turned	
CSV	(be) the physical act of turning	
OBJ	(be) an entity/object used to make something turn/rotate	

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

-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)
CTE	(be) a state of being pushed	
CSV	(be) the physical act of pushing	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
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)
CTE	(be) a state of being pulled or drawn	
CSV	(be) the physical act of pulling or drawing	Stem 3: (be) an act/instance of hauling, trawling, raking (i.e., using pulling/drawing force to carry/convey/transport a load/object/entity)
OBJ	(be) an entity/object used to pull or draw, e.g., rope, reins, chain, etc.	

Morphological derivative: hoist

-FJ- ‘IMPEDE / HINDER / PLUG / BLOCK / STOP / INTERFERE / INTERRUPTION / PREVENTION’		
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 placing an obstacle or impediment; to clog
CTE	(be) a state of being impeded/hindered	
CSV	(be) the physical act of impeding/hindering	Stem 3: (be) an act/instance of interfering, interrupting or obstructing some entity or activity or state, with the intent to disrupt it and make it ineffectual; to hinder, to interfere, to interrupt, to obstruct [CPT version = to disrupt]
OBJ	(be) an entity/object used to impede/hinder	
Formal Stem 1: (be) an act of constricting or choking something; a constriction; to constrict, to choke [CPT = to cut off the flow of something]		
Formal Stem 2: (be) an act/instance of sealing or plugging ; to seal, to plug		
Formal Stem 3: (be) an act/instance of prevention; to prevent something from happening [CPT version = to thwart]		

-ŦS- ‘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
CTE	(be) a state of being covered	
CSV	(be) the physical act of covering	Stem 3: (be) an act/instance of sheathing; to sheathe (i.e., to place something into its associated/customized encasing cover/holder/container)
OBJ	(be) an entity/object used to cover (e.g., lid, blanket, tarp, screen, etc.)	
Formal Stem 1: (be) an act/instance of placing a roof(-like covering); to roof, to tent, to		
Formal Stem 2: (be) an act/instance of placing a veneer, facing, coating, crust, or protective layer (of a substance/material) onto something		
Formal 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)		

-ŃM- ‘SURFACE APPLICATION / OVERLAY / PAINT’		
BSC	Stem 1: (be) an act/instance of applying a (quasi-)liquid or viscous substance or material to the surface of something; to apply a substance/material to something	Stem 2: (be) an act/instance of spreading/overlying a substance or medium onto another so that it is flush with, in complete contact with, or adheres to the underlying entity; to spread on(to), to overlay, to coat, to smear (e.g., frosting, plaster, stucco, peanut butter, etc.)
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	Stem 3: (be) an instance of painting a surface; to paint (NOTE: signifies application of paint to a surface only; does not signify the creation of an image/design using paint)
OBJ	(be) the material or substance (to be) applied	

-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
CTE	(be) a state of being leveraged	
CSV	(be) the physical act of leveraging	Stem 3: (be) an instance of being the force/pressure/power applied to move/hoist something by means of leverage
OBJ	(be) a lever	

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

-ŤN- ‘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)
CTE	(be) a state of being filled	
CSV	(be) the physical act of filling	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)
OBJ	(be) the substance/entity with which a contained space is filled	

-ŠŃ- ‘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	

-ZṬ- ‘ABSORPTION / IMBUEMENT / INFILTRATION / SOAK / DIFUSSION / PERMEATION / OSMOSIS’		
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 imbue/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 which absorbs	
Formal Stem 1: (be) an act/instance of soaking/sousing Formal Stem 2: (be) an act/instance of diffusion/suffusion; to diffuse, to suffuse [CPT version = to permeate] Formal Stem 3: (be) an act/instance of osmosis		

-SJ- ‘COMBINE / (INTER-)MINGLE / MIX / BLEND / SYNTHESIS / SYNERGY’		
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	(be) that which is used to combine two or more entities	
Formal Stem 1: (be) an act/instance of mixing/blending two or more entities together (i.e., same as Informal Stem 1 except that the two entities coalesce/merge/dissolve into a new gestalt entity); to blend, to amalgamate Formal Stem 2: (be) an act/instance of synergy Formal 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]
CTE	(be) a state of being (or having been) physically damaged	
CSV	(be) the physical act of damaging	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]
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)
CTE	(be) a state of being (or having been)	
CSV	(be) the physical act of	Stem 3: (be) an act/instance of aiming; aim for, take aim at
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
CTE	(be) the state of being safe	
CSV	(be) the physical act of making something/someone 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
OBJ	(be) the object/entity/procedure/rule/law, etc. by which one effectuates a state of safety	

-ÇMY- ‘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	

--> metal washer, spinal disc, etc.

-ŽW- ‘CLEANLINESS / PURITY / 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 (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.

-ṬB- ‘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- 'ABSORPTION / SUCTION'		
BSC	Stem 1: (be) a state/act of absorption; to absorb	Stem 2: (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.)
CTE	(be) a state of being absorbed	
CSV	(be) an act of absorption; to physically absorb something	
OBJ	(be) that into which something is absorbed	Stem 3: (be) a state/act/process of suction; to suction, create suction

6.2 Roots for 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	
OBJ	(be) what a pin is holding together	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

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

-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

-ŘBZ- 1. soaking agent/medium 2. hydration agent/medium 3. lubricant/lubricating agent/medium

-ŽBY- '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

7.0 ROOTS RELATED TO SPATIO-TEMPORAL DIMENSIONS

-JG- ‘DIMENSIONAL ATTRIBUTE’ (use with the SUF, EXD, FLC, PTW, ITY, etc. affixes)	
	STEM 1
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

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

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

- CK**- ‘PROXIMITY/DISTANCE’
- 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/SLENDERNESS’
- ZD**- ‘GIRTH/CIRCUMFERENCE’
- JN**- ‘LENGTH’
- 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’
- 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’

8.0 ROOTS RELATED TO THE QUALITY OR PROPERTY OF MATTER’ (NOTE: For tactile sensations/textures, see Sec. 10.1.5)

-ŘB- ‘QUALITY, ATTRIBUTE OR PROPERTY OF MATTER’ (use with the SUF, EXD, FLC, PTW, ITY, etc. affixes)	
	STEM 1
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
OBJ	(to be) the object/entity having the particular quality of matter

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

The Stems and Specifications of the following roots are modeled on the ‘QUALITY OR PROPERTY OF MATTER’ root above:

- | | |
|---|---------------------------------------|
| - BG - ‘FULLNESS/EMPTINESS’ | - MB - ‘ABSORBATIVITY’ |
| - DB - ‘SOLIDITY/HOLLOWNESS (= PERMEABILITY)’ | - MD - ‘REFLECTIVITY’ |
| - DG - ‘WEIGHT/MASS’ | - MG - ‘TRANSPARENCY/OPACITY’ |
| - XB - ‘TENSENESS/TENSION (= STRAIN)’ | - BD - ‘CONCAVITY / DEPRESSED’ |
| - XD - ‘TIGHTNESS/SLACK’ (= TAUTNESS) | - GD - ‘CONVEXITY / ROTUNDITY’ |
| | - GB - ‘COMPRESSED / SQUEEZED’ |
| - ÑB - ‘RESILIENCE/DELICATENESS’ (= CAPACITY FOR | |
| - ÑD - ‘DURABILITY/FRAGILITY’ (= CAPACITY FOR BEING DAMAGED)RECOVERY) | |
| - 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 / UPGRIGHT’ (relative to gravity) | |
| - GG - ‘STRAIGHTNESS/LINEARITY RELATIVE TO OBJECT ITSELF’ | |

9.0 ROOTS FOR 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 perulative 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 perulative 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 perulative degree, the other object/entity does not define/prescribe/determine the course of the moving object/entity)
9	exterior perulative 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.).

IMPORTANT NOTE: Suffixes based on Translative Motion and Spatial Position roots have a particular semantic feature: **Type 1 suffixes correspond to Stem 2** of the root, whereas **Type 2 suffixes correspond to Stem 3** of the root.

9.1 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 translative 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	

INFORMAL stems refer to a circumstantial, context-of-the-moment movement; FORMAL stems refer to planned travel, a formal traversal, a dedicated journey, a pre-planned route, etc. 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; Stem 3 = oblique descent
- 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 PRABOLIC/ARC-LIKE TRAJECTORY RELATIVE TO GRAVITY’

- BL- ‘MOTION IN A CURVE’
- FL- ‘MOTION IN A PLANAR CIRCULAR PATH’
- TL- ‘GENERIC/OBLIQUE 3-DIMENSIONAL RANGE OF MOTION’, i.e., 3-D pervasive movement throughout or within a volume of space

9.2 Spatial Position/Location Roots

-T-	‘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		
CTE	The act of physically occupying a/the position/location in space; to physically occupy a/the position in space		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
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		

INFORMAL stems refer to a circumstantial, context-of-the-moment position/location; FORMAL stems refer to a dedicated, fixed, (quasi-)permanent, “official” position/location, e.g. marrow’s location inside of bone.

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

- D- ‘POSITION/LOCATION AT 0 / 0 / 0’, i.e., “right here”; at the center point of the observer’s 3-dimensional spatial frame of reference.
- TY- ‘POSITION/LOCATION AT 0 / 0 / +Z’, ‘above the observer’
- TW- ‘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 (-TY- and -TW- 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
- KK**- '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

9.3 Roots Designating 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	

INFORMAL stems indicate a circumstantial, contextual position/location; FML stems refer to a dedicated/fixed/(quasi-)permanent/“official” position/location.

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]’
- DY-** ‘UPPER PART/“HALF” OF AN ENTITY [RELATIVE TO ITS TYPICAL ORIENTATION UNDER GRAVITY]’
- DW-** ‘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
- TT-** ‘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.

9.4 Additional Roots Related to Spatio-Temporal Motion

- ÇP - ‘ACTION IN SITU / MOVEMENT IN SITU’		Associated Affix: BDM
Informal Stems		Formal Stems
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]	FML STEM 1: (to be/manifest a) bodily in-situ movement FML STEM 2: (to be/manifest an) in-situ movement of one’s limb(s)/appendage(s) FML STEM 3: (to be a) act of dancing; to dance
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	
	INF STEM 2: (to be/manifest) a movement of a part of a larger whole; move (in-situ) a part of an entity INF STEM 3: (to be an) cyclic/oscillating/back-and-forth/up-and-down in-situ movement	

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

9.5 Roots Relating to 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 FML stems of the **-RV-** 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	INF Stems	FML Stems
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 1: a second
CTE	(be) the event(s) occurring during a particular amount of elapsed time		STEM 2: a “while”	STEM 2: a minute
CSV	(be) the duration of elapsed time [regardless of what may occur/exist during that period]		STEM 3: a portion of a day	STEM 3: an hour
OBJ	(be) the “volume” of spacetime during/in which something occurs/exists			

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

-RD- CONVENTIONALIZED TIME PERIODS		Associated Affix: TD2
INFORMAL	FORMAL	
STEM 1: (to be a) day (= 24-hour period)	STEM 1: (to be a) calendrical day, designated day (for planning/scheduling purposes)	
STEM 2: (to be a) week	STEM 2: (to be a) calendrical week, designated week (for planning/scheduling purposes)	
STEM 3: (to be a) lunar period / month	STEM 3: (to be a) calendrical month, designated month (for planning/scheduling purposes)	

-RN- LONGER TIME PERIODS		Associated Affix: LTD
INFORMAL	FORMAL	
STEM 1: (to be) approx. a year / most of or up to a year	STEM 1: (to be a) calendrical year, designated year (for planning/scheduling purposes)	
STEM 2: (to be) approx. a decade/ most of or up to a decade	STEM 2: (to be a) calendrical decade, designated decade (for planning/scheduling purposes)	
STEM 3: (to be) approx. a lifetime	STEM 3: (to be a) designated lifetime of an individual (for planning/scheduling purposes)	

-ŘŤ- LONG-TERM TIME PERIODS		Associated Affix: LGD
INFORMAL	FORMAL	
STEM 1: (to be) approx. a century	STEM 1: (to be) calendrical century	
STEM 2: (to be) approx. a millennium	STEM 2: (to be) calendrical millennium	
STEM 3: (to be) approx. a ten-thousand year period	STEM 3: (to be) calendrical ten-thousand year period	

-ŘŇ- EPOCH-LENGTH TIME PERIODS		Associated Affix: EPC
INFORMAL	FORMAL	
STEM 1: (to be) approx. an age (approx. or up to a million years)	STEM 1: (to be) a geologic age	
STEM 2: (to be) approx. an epoch (approx. or up to 10 million years)	STEM 2: (to be) a geologic epoch	
STEM 3: (to be) approx. an era (approx. or up to 100 million years)	STEM 3: (to be) a geologic era	

-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	

-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; to be spatially located/situated at 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	

10.0 ROOTS RELATING TO SENSORY PHENOMENA

10.1 Roots Related to the Body's External Senses

-ŠK- 'EXTERNAL SENSATION / EXTERNAL SENSORY PERCEPTION' *		Associated affix: SNX
Informal Stems		Formal Stems
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]	FML STEM 1: (to be) a willful/deliberate sensory examination of something; an act of examining/detecting something via one's senses FML STEM 2: (to be) an act of utilizing a sensory device/implement/instrument; utilize a sensor, detect via a sensor FML STEM 3: (to be) an induced sensory experience; to create/induce a sensory experience
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	
	INF STEM 2: (to be) a sensory organ INF STEM 3: (to be a) a sensory faculty; a bodily sense	

* Does not include proprioceptive, interoceptive, or vestibular senses

10.1.1 Auditory/Aural Sense

-C- 'HEAR(ING) / SOUND'		
Informal Stems		Formal Stems
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]	FML STEM 1: (to be) a willful/deliberate act of hearing something, i.e. to listen to something; an act of listening to something FML STEM 2: (to be) an act of utilizing a listening device/instrument; utilize a listening device (e.g., stethoscope, microphone, glass held up to a wall, ear-horn, etc.); detect via a listening device FML STEM 3: (to be) an induced hearing experience; to create/induce a sound
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	
	INF STEM 2: (to be) an inner ear (i.e., the organ(s)/tissue(s) responsible for generating aural signals to the brain) INF STEM 3: (to be) one's aural faculty; one's sense of hearing	

Roots for 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
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
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 a boom (i.e., a low-pitched bang/explosive 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)

	-ČG- ‘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

	-ḶT- ‘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)

	-ČŤ- ‘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 (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 fizz(ing) (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.)

-PĎ- ‘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 oral sound (e.g., clucking of tongue, smacking of lips, sound of swallowing/gulping, etc.)

Roots/Stems For 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		
BSC	(be) a state/instance of a sound having a discernible/audible pattern; to hear a pattern within a sound	STEM 2: (be) a state/act/instance of emitting a patterned sound; to emit a sound containing an audible pattern
CTE	(be) the pattern heard within a sound	
CSV	(be) an act/state of hearing or listening to the pattern within a sound	STEM 3: (be) a state/instance of a sound being rhythmic; [for a sound] to have a rhythm(ic pulse) or “beat”
OBJ	(be) the entity or circumstances creating a patterned sound	

-DVW- ‘ECHO / REVERBERATION’

STEM 1		
BSC	(be) a state/instance of a sound echoing; to (make an) echo [both the making of the echo and hearing it]	STEM 2: (be) a state/act/instance of emitting an echo; to emit an echo
CTE	(be) the pattern of sonic repetition constituting an echo	
CSV	(be) an act/state of hearing or listening to an echo	STEM 3: (be) a state/instance of a sound reverberating; [for a sound] to have a reverberation
OBJ	(be) the entity or circumstances creating an echo	

-RĀX- ‘ANNOYING/SHRILL/IRRITATING SOUND’

STEM 1		
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]	STEM 2: (be) a state/act/instance of emitting an annoying/shrill sound; to emit an annoying/shrill sound
CTE	(be) an annoying/irritating/shrill sound	
CSV	(be) an act/state of hearing or listening to an annoying/irritating/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]
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 **-RĀX-**:

-**ČXW**- 'RAUCOUS SOUND / NOISE'
 -**ŠFY**- 'MUFFLED/UNCLEAR SOUND'
 -**MŽV**- 'SONOROUS/RESONANT SOUND'
 -**LČW**- 'PLAINTIVE / WISTFUL SOUND'

-**MSY**- 'PLEASANT/MELLIFLUOUS SOUND'
 -**LCL**- 'MELLOW/DULCET SOUND'
 -**RČW**- 'LILTING VOCAL SOUND'

-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

10.1.2 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]	FML STEM 1: (to be) a willful/deliberate act of smelling/sniffing something; to smell/sniff something; an act of smelling/sniffing something (deliberately) FML STEM 2: (to be) an act of utilizing an odor-detection device/instrument; use an olfactory(-like) sensor, detect via such a sensor (e.g., a smoke detector) FML STEM 3: (to be) an induced olfactory experience; to create/induce an odor
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	
	INF STEM 2: (to be) one’s nose [as olfactory organ, not one’s nasal proboscis] INF STEM 3: (to be) one’s olfactory faculty; one’s sense of smell	

MORPHOLOGICAL DERIVATIONS: sniff, aroma, “bouquet”, perfume, stench

Roots for Specific Odors (Specification pattern modeled after **-ŽG-** above:

	-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.)

The above four odor roots 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”)

In addition to the above four roots, the OLF affix is available to identify the odor associated with any applicable formative.

10.1.3 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]	FML STEM 1: (to be) a willful/deliberate tasting of something; an act of examining/detecting a flavor via one’s gustatory sense FML STEM 2: (to be) an act of utilizing a gustatory device/instrument; utilize a gustatory sensor, detect via a gustatory sensor FML STEM 3: (to be) an induced gustatory experience; to create/induce a specific flavor
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	
	INF STEM 2: (to be) a taste bud (i.e., the gustatory organ) INF STEM 3: (to be) one’s gustatory faculty; one’s sense of taste	

Roots for Specific Flavors: 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

	-SFR- ‘SOUR FLAVOR’
Stem 1	sour flavor
Stem 2	sour + rancid flavor
Stem 3	sweet + sour flavor

	-LK- ‘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

	-NN- ‘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

10.1.4 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
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
	INF STEM 2: (to be) an eye (as organ of vision) INF STEM 3: (to be a) the visual faculty/sense; one’s vision
	FML STEM 1: (to be) a willful/deliberate act of seeing something; an act of looking at something; to look (at) FML STEM 2: (to be) an act of utilizing a visual-sensory device//instrument; utilize a visual sensor, detect via a visual sensor (e.g., camera, telescope, binoculars, microscope, etc.) FML STEM 3: (to be) an induced visual experience; to create/induce a visual experience; create/project an image

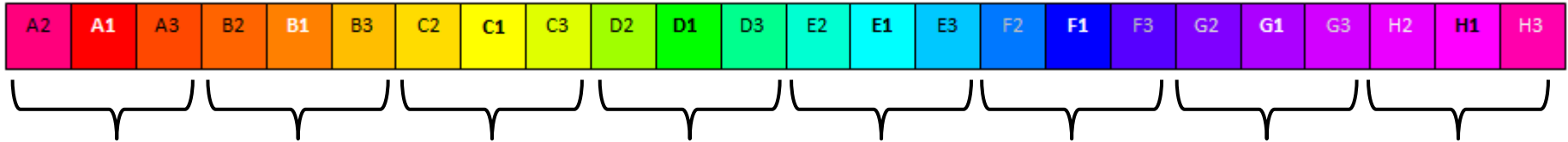
DERIVATIONS: view, glimpse, glance, ogle, gawk, stare, spy, espy, peep, voyeur, panorama, scrutinize (visually), camera, telescope, microscope, binoculars, magnifying glass, lens, glasses

-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

FORMAL Stems refer to (presumably) artificially tinted, painted, stained contexts

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.

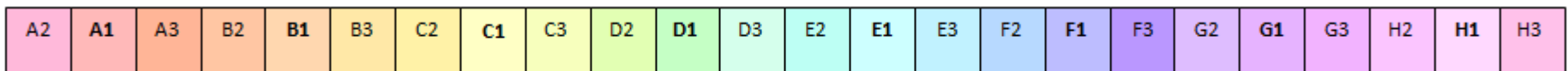


	-GY- 'RED'	-ŇR- 'ORANGE'	-ML- 'YELLOW'	-ČW- 'GREEN'	-DR- 'CYAN'	-LW- 'BLUE'	-ŽL- 'VIOLET'	-VM- 'MAGENTA'
Stem 1	red	orange	yellow	green	cyan	blue	violet, purple	magenta
Stem 2	pinkish-red, rose	reddish orange	orangy-yellow, gold(en yellow)	yellowish-green, chartreuse	greenish blue, teale blue	lighter blue, royal blue	blue-violet	violet-magenta, purple-magenta
Stem 3	orangy-red	yellowish orange, ochre	greenish-yellow	light-bluish green, teale green	azure blue	violet-blue	magenta-violet, magenta-purple	dark rose, rose-magenta

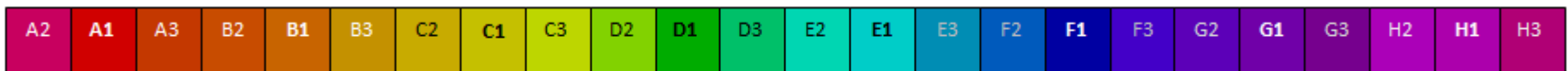
The CLD and COL affixes may be utilized with all color stems (as well as non-color stems where semantically productive). For dichroic (2-colored) descriptions, incorporate one color stem into another using COMITATIVE format.

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

10.1.5 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	FML STEM 1: (to be) a willful/deliberate tactile examination of something; an act of feeling something (e.g., with one’s hands, skin, lips, tongue, etc.) FML STEM 2: (to be) an act of utilizing a tactile-like sensory device/instrument; utilize a tactile-like sensor, detect via a tactile-like sensor FML STEM 3: (to be) an induced tactile sensory experience; to create/induce a tactile sensory experience
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	
	INF STEM 2: (to be) one’s tactile organ(s) (i.e., the epidermal layer of the body as tactile sensor) INF STEM 3: (to be a) the tactile faculty; sense of touch	

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

	-VṬ- ‘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

	-BṬ- ‘WET / MOIST TEXTURE’
Stem 1	wet / liquidy
Stem 2	moist / damp
Stem 3	soggy / waterlogged / liquid-saturated

	-PZ- ‘VISCIOUS / 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 TEXTURE’
Stem 1	bouncy texture
Stem 2	elastic / stretchy texture
Stem 3	sponge-like recoiling texture

	-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 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

	-K VW- ‘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

10.2 Roots Related To Affective Sensory States (i.e., Proprioceptive, Interoceptive, and Vestibular-Sensory States)

-MGṚ- ‘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]	FML STEM 1: (to be) a willful/deliberate act of interoception; an act of examining/detecting one’s bodily state via one’s interoceptive sense FML STEM 2: (to be) an act of utilizing a sensory device/instrument for interoceptive purposes; utilize a diagnostic device to determine one’s bodily state FML STEM 3: (to be) an induced interoceptive experience; to create/induce an interoceptive sensory experience
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	
	INF STEM 2: (to be) one of the body’s potentially interoceptive organs/structures/tissues INF STEM 3: (to be) the interoceptive faculty; the sense of interoception	

-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]	FML STEM 1: (to be) a willful/deliberate act of proprioception; an act of examining/detecting one’s bodily movement/position via one’s proprioceptive sense FML STEM 2: (to be) an act of utilizing a sensory device/instrument for proprioceptive purposes; utilize a diagnostic device to determine one’s bodily state of movement/position FML STEM 3: (to be) an induced proprioceptive experience; to create/induce a sense of a particular bodily movement or position
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.	
	INF STEM 2: (to be) one of the body’s proprioceptive organs/structures/tissues, i.e., muscle, joint, tendon. INF STEM 3: (to be) the proprioceptive/kinaesthetic faculty; the sense of proprioception/kinaesthesia	

-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]
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).
	INF STEM 2: (to be) one of the body’s vestibular organs/structures/tissues INF STEM 3: (to be) the vestibular faculty; the sense of balance and spatial orientation
	FML STEM 1: (to be) a willful/deliberate act of vestibular; an act of assessing one’s balance and spatial orientation via one’s vestibular sense FML STEM 2: (to be) an act of utilizing a sensory device/instrument for vestibular purposes; utilize a diagnostic device to determine one’s bodily state of balance and spatial orientation FML STEM 3: (to be) an induced vestibular experience; to create/induce a sense of a particular state/sensation of bodily balance and spatial orientation

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 [act of sensing + sensation itself]; to experience the particular affective state [both the sensing and the sensation itself]
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) an organ/bodily system/process which gives rise to a particular affective state

-DM - ‘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”

	-LṬN- ‘PHYSICAL “HIGH” / EUPHORIA / 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
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]

	-JŘ- ‘GASTRO-INTESTINAL PAROXYSMS’
Stem 1	feel need to belch/burp [CPT = to belch/burp]
Stem 2	feel need to vomit [CPT = to vomit]
Stem 3	feel need to fart [CPT = to fart]

	-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 hungry
Stem 2	feel thirsty
Stem 3	feel undernourished

	-ḶM- ‘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	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 shock, illness, 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)

	-ŘŘX- ‘PHYSICAL PAIN’
Stem 1	feel external tactile pain
Stem 2	feel interoceptive/proprrioceptive pain
Stem 3	feel muscular strain

	-VZW- ‘SOCIALY-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”

	-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’
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 physical relief (from previous state of pain/strain/fatigue, etc.)
Stem 3	feel physical satisfaction/satiety

	-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

	-JBY- ‘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’]

	-ḌĀ- ‘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

	-ŇH- ‘FEEL FLUSHED / PERSPIRATION / FATIGUE’
Stem 1	feel sweaty, be in a sweat; perspire
Stem 2	feel fatigue from physical exertion
Stem 3	feel flushed; have flushed feeling

10.3 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

	-LDŘ- ‘ILLUSION / SYNAESTHESIA / HALLUCINATION’
Stem 1	sensory illusion (i.e., misinterpretation of a real sensory experience)
Stem 2	synaesthetic experience
Stem 3	hallucination; apparition

	-ZKŘ- ‘PARANORMAL EXPERIENCE’
Stem 1	paranormal experience
Stem 2	telepathathic experience
Stem 3	state/act of clairvoyance

	-DGW- ‘PREMONITION / PRESCIENCE’
Stem 1	premonition / a vision
Stem 2	state of prescience / precognition
Stem 3	interpret/read “signs” (e.g., haruspex, fortune-telling, divination, aeromancy, etc.)

	-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 and one’s place in the world

	-FTW- ‘DECEPTION / BEGUIEMENT/ 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 déjà vu
Stem 2	state of jamais vu
Stem 3	state of disbelief in one’s circumstance / sense of unreality regarding the present moment

	-STW- ‘DISSOCIATIVE STATE’
Stem 1	state of daydreaming
Stem 2	state of being mesmerized (inattentive to surroundings)
Stem 3	state of sleepwalking

	-ŽDW- ‘INDUCED DISSOCIATIVE STATES’
Stem 1	meditative state
Stem 2	hypnotic state
Stem 3	out-of-body experience

	-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

	-FF- ‘PSYCHOLOGICAL PLEASURE’ Associated Affix: PLE
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

10.4 Roots Related To Affective Unconscious/Semi-Conscious Autonomic States/Acts

Similar to the interoceptive/proprioceptive/vestibular roots above, the roots below designate various affective bodily states or acts. 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 PROCESSES’
Stem 1	blink eyelids
Stem 2	digest stomach contents
Stem 3	sweat

	-ŽBŘ- ‘OSCILLATIVE AFFECTIVE BODILY STATE’
Stem 1	shiver
Stem 2	fidget (unconscious)
Stem 3	shake leg or foot (unconscious)

	-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 SOUNDS/ACTIONS’
Stem 1	grunt
Stem 2	clear throat
Stem 3	sniffle / snort (to clear nasal mucus)

10.5 Roots Related To 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 ACTIONS’
Stem 1	purse lips
Stem 2	make smacking or other oral clicking sound
Stem 3	trill lips

	-ÇÇP- ‘NEGATIVE FACIAL EXPRESSION’
Stem 1	frown
Stem 2	scowl
Stem 3	have crestfallen/dejected look

	-DBŘ- ‘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

	-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

10.6 Roots For 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	

INFORMAL stems refer to the state as affective (unwilled, involuntary, spontaneous, autonomic), while **FORMAL** stems refer to the emotion as consciously/deliberately willed, its verbal meaning being ‘to work oneself up deliberately into a [particular] emotional state’. Note that this use of FORMAL designation for many roots renders concepts that will often have little semantic utility in a real-world sense (e.g., the notion of ‘*deliberately/consciously willing oneself into a state of emotional shock*’); nevertheless, such forms are available in the language for the sake of lexico-morphological uniformity and easier memorization.

Roots for more than one hundred emotional states are listed below. They all follow the same Stem & Specification pattern as the root above:

10.6.1 Desirable/Positive Emotions

green = will also be a bias category

-ÑV-	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 joi-de-vivre
-TKY-	1. feel(ing of) gleefulness/fun/amusement 2. feel(ing of) free-spiritedness/frivolity 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, determined against odds 2. feel(ing of) audacity; feel audacious 3. feel(ing of) tenacity/perseverance; feel tenacious/perseverant
-NLP-	1. feel(ing of) tolerance 2. feel(ing of being) accepting 3. feel(ing of being) trusting
-NTR-	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 centered on one’s social/familial/romantic connections

-SMW-	1. feel(ing of) calm and rationality 2. feel(ing of) serenity, feel(ing of being) 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. kindness, warm-heartedness 2. benevolent, helpful, beneficent 3. kindness, 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
-MCW-	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

10.6.2 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, comraderie 3. feel(ing of) friendship 	-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
-KVY-	<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 	-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)
-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 	-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
-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 	-RPR-	<ol style="list-style-type: none"> 1. feel(ing of) devotion 2. feel(ing of) personal loyalty 3. feel(ing of) allegiance/fealty
-VPL-	<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. 	-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, worshipped 	-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
-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 	-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

-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.
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-MML-	<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
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10.6.3 Ambivalent Emotions

-CG-	<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 2. feel(ing of) interest 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/indifferenc /incuriosity/lack of interest 2. feel(ing of) disdain/dismissiveness 3. feel(ing of) apathy
-GŽT-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 1. feel(ing of) passion 2. feel(ing of) infatuation/obsessiveness 3. feel(ing of) worship/adoration

-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
-VZK-	<ol style="list-style-type: none"> 1. craving (i.e., a greedy hunger for food, adventure, power, money, salacious or forbidden experiences, etc.) 2. sexual lust 3. greed / avarice
-KSG-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 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

-DK-	<ol style="list-style-type: none"> 1. feel(ing of) contemplation; feel contemplative 2. feel(ing of) pensiveness; feel pensive 3. feel(ing of) brooding; feel in brooding mood
-KLL-	<ol style="list-style-type: none"> 1. feel(ing of) surprise 2. feel(ing of) amazement, astonishment 3. feel(ing of) awe, wonder
-JK-	<ol style="list-style-type: none"> 1. feel(ing of) willingness to take a risk, steeling one's nerves against 2. brave, fearless 3. feel(ing of) intrepidity, courageousness
-PSG-	<ol style="list-style-type: none"> 1. feel(ing of) smugness 2. feel(ing of) conceit, feel(ing of being) full of oneself 3. feel(ing of) narcissism, self-aggrandizement

-GZT-	<ol style="list-style-type: none"> 1. feel(ing of) impulsiveness; feel impulsive 2. feel(ing of) inspiration; feel inspired 3. feel(ing of) compulsion; feel compelled
-LĹĀ-	<ol style="list-style-type: none"> 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
-BZK-	<ol style="list-style-type: none"> 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
-ĀB-	<ol style="list-style-type: none"> 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

10.6.4 Undesirable/Negative Emotions

-KSK-	<ol style="list-style-type: none"> 1. annoyance/irritation (caused by external event/state/situation/person) 2. anger, ire 3. rage, fury; feel furious
-JGR-	<ol style="list-style-type: none"> 1. feel(ing of) disappointment, feel let down 2. feel(ing of) disillusionment 3. feel(ing of being) jaded, cynical
-MRĀ-	<ol style="list-style-type: none"> 1. sadness/grief 2. sorrow/lamentation 3. woefulness/despair/desolation /misery
-PŠĀ-	<ol style="list-style-type: none"> 1. feel(ing of being) misunderstood 2. feel(ing of) indignation/being offended/feel insulted 3. feel(ing of) resentment, bitterness, being treated unfairly
-KĀĀ-	<ol style="list-style-type: none"> 1. feel(ing of) frustration 2. feel(ing of being) disconcerted, defeated 3. feel(ing of) exasperation

-ŠĀTL-	<ol style="list-style-type: none"> 1. repugnance/repellant 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-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 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

-MDR-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 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
-RKŠ-	<ol style="list-style-type: none"> 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 Version = loss of emotional control; nervous breakdown]
-FKŤ-	<ol style="list-style-type: none"> 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) guilt/shame over playing the fool
-GVV-	<ol style="list-style-type: none"> 1. feel(ing of) puzzlement, perplexity 2. feel(ing of) confusion, feel one doesn't understand a situation 3. feel(ing of) bewilderment
-KŤP-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 1. feel(ing of being) cheated 2. feel(ing of being) victimized/used/violated 3. feel(ing of being) traumatized

-ZGR-	<ol style="list-style-type: none"> 1. feel(ing of) apprehension, foreboding 2. feel(ing of) anxiety/nervousness/unease 3. feel(ing of) /trepidation /fright
-BZG-	<ol style="list-style-type: none"> 1. feel(ing of) melancholy/emotional malaise 2. feel(ing of being) glum / gloomy / discontented 3. feel(ing of) depression/unhappiness
-ŘŘN-	<ol style="list-style-type: none"> 1. feel(ing of) envy 2. feel(ing of) jealousy 3. feel(ing of) covetousness
-RMZ-	<ol style="list-style-type: none"> 1. feel(ing of being) sullen/moody/morose 2. feel(ing of being) churlish, antisocial, irascible 3. feel(ing of being) rebellious
-VVZ-	<ol style="list-style-type: none"> 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
-ZDR-	<ol style="list-style-type: none"> 1. feel(ing of) emotional emptiness/hollowness/shalowness 2. feel(ing of being) unemotional / lacking emotion / feel nothing 3. feel(ing of) cavaliness/lack of empathy
-RGZ-	<ol style="list-style-type: none"> 1. feel(ing of being) flustered due to conflicting sensory/emotional input 2. feel(ing of) emotional overload/feel need to "take a break" emotionally 3. feel(ing of being) emotionally overwhelmed / swooning
-VXW-	<ol style="list-style-type: none"> 1. feel(ing of) shame 2. feel(ing of) guilt 3. feel(ing of) self-hate/self-loathing over one's own failings/wrongdoings

-JD-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 1. feel(ing of) bashfulness, timidity 2. feel(ing of) shyness 3. feel(ing of) stagefright
-LLČ-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 1. feel(ing of) awkwardness 2. feel(ing of) embarrassment 3. feel(ing of) humiliation
-JGL-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 1. feel(ing of) stinginess, feel stingy 2. feel(ing of) selfishness 3. feel(ing of) uncharitableness, uncompassionate, miserliness
-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
-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
-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

-RNŽ-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 1. feel(ing of) dejection, downheartedness, crestfallenness 2. feel(ing of) rejection 3. feel(ing of) heartbreak, heartache
-KSP-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 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-	<ol style="list-style-type: none"> 1. feel(ing of) stubbornness, obstinacy 2. feel(ing of) unyielding, steadfast 3. feel(ing of) intransigence/implacability
-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
-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
-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
-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
-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
-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

-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)
-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”
-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
-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.

10.7 Additional Roots Associated With Bias Categories (See Sec. 3.14 of the Morpho-Phonology Design Document)

Besides those emotion and sensory roots previously indicated as having associated Bias categories, the following new roots have associated Bias categories:

-MCT- ‘EXAMPLE / EXEMPLAR / PRECEDENT / ARCHETYPE’		
BSC	STEM 1: (be) a state/instance of being an exemple 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	

ACH ARCHETYPAL BIAS Affix: what (a) ...!; how . . . ! ; Boy! Did (does) X ever ...

-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	

ACC ACCIDENTAL BIAS Affix: ‘As luck would have it...’ ‘Fate has decided that...’ ‘What luck!’

-VLL- IMPLICATION / INFERENCE / 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) an object/entity/party/situation which gives rise to, or is the basis for, an implication (and subsequent inference)	

IPL — Implicative Bias affix: = ‘of course,’ ‘after all,’ or ‘needless to say.’

-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	

ASV — Assertive Bias affix: = ‘I’m telling you...’, ‘I told you so!’, ‘You see?!’

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

OPT — Optimal Bias affix: = prolonged ‘so’ or ‘totally’ as in ‘*I so don’t care!*’ or ‘*That is totally what I wanted.*’

-DRR- ‘APPEAR / MANIFEST / SHOW / EXHIBIT / DISPLAY / EXPOSE / ANNOUNCE’	
BSC	(be) a manifestation, a showing, an appearance, i.e., be/make observable/discernible to others; to show, to manifest, to appear
CTE	(be) the state of appearing, being shown, being manifest
CSV	(be) the physical act/process of making something appear, or be shown, or be manifest
OBJ	(be) the object/entity/party being shown/manifested or appearing to others
Stem 2: (be) an act/process of exposure, i.e., letting others observe/discern something they otherwise would not observe/discern	
Stem 3: (be) an act of bringing/calling attention to something, i.e., make others aware of the appearance/showing of something	
Formal Stem 1: (be) an act/process of displaying or exhibiting something; display, exhibition; to display, to exhibit	
Formal Stem 2: (be) an act/process of showing off, flaunting; to show off, to flaunt	
Formal Stem 3: (be) an announcement, an advertisement; to announce, to advertise (i.e., utilize means of mass communication to make others aware of something)	

ANN — ANNUNCIATIVE Bias Affix: = ‘*Guess what!*’ or ‘*Wait till you hear this!*’

-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.
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.
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).	

FOR — Fortuitous 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)
CTE	(be) the psychological impact of perceiving a coincidence	Stem 3: (be) a coincidence, spatially-speaking (i.e., occurring in the same approximate place)
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

COI — Coincidental Bias affix: = “What a coincidence!”

-ŇŇS- ‘SOLICITATION / SUPPLICATION / IMPLORE / BESEECH / ENTREATY / APPEAL’

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 begging/imploring/beseeching/entreating, i.e., an emotionally earnest/intense form of solicitation; to beseech, entreat, beg
CTE	(be) the psycho-social aspects of an act of solicitation	Stem 3: (be) an act of prayer; to pray (i.e., to a deity or supernatural entity)
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	
Formal Stem 1: (be) a process of claiming; to make a claim (i.e., to seek relief from some injustice done)		
Formal Stem 2: (be) an act/process of suing; to sue, file a (law)suit		
Formal Stem 3: (be) an act/process of appealing; to appeal (i.e., to seek reversal of some punishment meted)		

SOL SOLICITATIVE Bias Affix: *‘please’* ŇŇss

-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 wonder and awe at the power/formidableness of something awful/sad/horrible/devastating/terrible, etc.)

PPT PROPITIOUS 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, disquating 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.

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

-FF- ‘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

SAT SATIATIVE Bias Affix: ‘How satisfying...!’ ‘At last, the pleasue of knowing/being/seeing/doing...’ [psychological/emotional pleasure/satiety only]

-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
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
	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

PSM PRESUMPTIVE 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
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

IRO: Ironic Bias affix: “Oh, nice!” “Just great!” “Well, now, isn’t this lovely!”

-ŘS- ‘DEGREE OF ACCEPTANCE/TOLERANCE/CONSENT/PERMISSION/APPROVAL/AGREEMENT’		Affix: CNS
BSC	INF STEM 1: (to be/manifest a) degree of acceptance/tolerance, “being okay with something” [both the state of acceptance and that which is accepted]	FML STEM 1: (to be/manifest a) degree of permission; granting license to; to permit
CTE	(to be) a state of acceptability/being accepted	FML STEM 2: (to be) a state/act of affirming/confirming or formally recognizing something; an affirmation/confirmation/formal recognition; to affirm, confirm, formally recognize
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	
INF STEM 2: (to be/manifest a) degree of assent/consent (= granting of informal permission) INF STEM 3: (to be/manifest a) degree of agreement/concurrence/accordance with		

APB APPROBATIVE Bias Affix: ‘(That’s) OK’ ‘(That’s) alright’ ‘(That’s) good’ ‘(That’s) fine’ ‘Very well’ ‘Sure’

-ŇŤ- ‘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)
CTE	(to be) a state of being correct/accurate to a certain degree	STEM 3: (to be/manifest a) degree of legitimacy/orthodoxy (= adherence to legal / ritualistic / societal conventions)
CSV	(to be) a degree of correctness/accuracy; to manifest a certain degree of correctness/accuracy	
OBJ	(to be) something with a degree of correctness/accuracy	

CRR CORRECTIVE Bias Affix: ‘that is to say...’ ‘What I mean(t) to say is...’ ‘I mean...’

-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)	

EUP EUPHEMISTIC Bias Affix: ‘Let’s just say that...’ or ‘Well, let me put it this way....’

-LLM- ‘SELF / IDENTITY / OPINION / PERSONAL BELIEF / 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 STEM 3: (be) a one’s personality
CTE	(be) one’s sense of self-awareness, one’s sentience, 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	

RFL RELECTIVE 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	

DFD DIFFIDENT Bias Affix: ‘sorry, but...’ ‘It’s nothing. It’s just...’

-LTC- ‘SUGGESTION / ADVICE / PROFFER / RECOMMENDATION / PROPOSITION’		
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	
FRM Stem 1: (be) a proposal; to propose FRM Stem 2: (be) an instance of counselling; to counsel FRM Stem 3: (be) an act of advocating; to advocate		

SGS SUGGESTIVE Bias Affix: ‘*How about...*’ ‘*We could...*’ ‘*Might I suggest...*’

-SL- ‘THOUGHT / IDEA / CONTEMPLATION / CONCEPT / REASON / ANALYZE’		
BSC	STEM 1: (to be) an act of thinking/cogitating; to think/cogitate	STEM 2: (to be) an idea one is considering/mulling/contemplating; to consider, mull, contemplate, take into account STEM 3: (to be) an act of reasoning; to reason [= employ a strict process of logic 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	
FML Stems: 1. (to be) an act of thinking up/of an idea; to brainstorm; to come up with an idea CSV = an idea 2. (to be) an act of analysis; to analyze 3. (to be) an act of abstraction/; to abstract CPT = conceptualization/conceptualize CSV = a concept		

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

PPV PROPOSITIVE The intensive form shifts this to a sense of a formal suggestion or proposition, as in ‘*what if...*’ ‘*It could be that...*’ ‘*Consider this: ...*’ ‘*Posit the following: ...*’ ‘*Assume for the sake of argument that...*’

-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)

PSC PROSAIC Bias Affix: — ‘*Meh... (said in disappointment)*’ ‘*How ordinary!*’

-PŁŁ- HUMOR / WIT / JEST

BSC	Stem 1: (be) something funny or humorous, i.e., comical	Stem 2: (be) something witty, i.e., subtly and cleverly humorous Stem 3: (be) something sardonic, i.e., double-edged humor based in sarcasm
CTE	(be) a state of experiencing humor, funniness, i.e., the psychological, emotional state associated with laughter caused by something comical	
CSV	(be) physical/tangible aspects/characteristics of a party/entity/object/event/situation that is humorous	
OBJ	(be) what is funny, i.e., the party/entity/object/event/situation that is the focus of the humor	
<p>Formal Stem 1: (be) a joke; tell a joke (i.e., a stylized/formulaic narrative statement designed to be humorous)</p> <p>Formal Stem 2: (be) a jest; make a jest (i.e., a phrase and/or seemingly innocuous act deliberately made to elicit humor)</p> <p>Formal Stem 3: (be) a prank; pull a prank (i.e., instigate an act/event or series of events designed to embarrass/humiliate another party sufficiently to elicit humor from all parties)</p>		

CMD COMEDIC Bias Affix: — -płł ‘Funny!’ ‘LOL’

-LÇP- 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	

ISP INSIPID Bias Affix: — ‘Meh... (said due to lack of interest)’ ‘How boring/tedious/dull!’

-RRS- URGENCY / EXIGENCY / EMERGENCY

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

EXG EXIGENT Bias Affix: — ‘It’s now or never!’

-MSK- REQUIREMENT / DEMAND / ORDER / MANDATE / ULTIMATUM		
BSC	Stem 1: (be) a requirement, something 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 required of someone	
CSV	(be) the physical/tangible aspects/characteristics of an event/situation requiring something of someone	
OBJ	(be) what is required	
Formal Stem 1: (be) an imperative, something essential; to state an imperative Formal Stem 2: (be) a mandate or injunction or precept; to mandate Formal Stem 3: (be) an ultimatum; to issue an ultimatum		

MND MANDATORY Bias Affix: — ‘take it or leave it,’ ‘this is your last chance,’

-MZT- ABANDONMENT / GIVING UP ON / RENUNCIATION / 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	
Formal Stem 1: (be) an act of renunciation; to renounce Formal Stem 2: (be) an act of desertion Formal Stem 3: (be) an act/instance of abdication; to abdicate, to abjure		

RNC RENUNCIATIVE Bias Affix: — ‘So much for...!’ ‘There goes...!’

-ÑJ- ‘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	

ATE ATTENTIVE Bias Affix: ‘Well, whaddya know...’ ‘Well, will you look at that...!’ ‘Well, go figure...’ ‘Who would’ve thought...?’ ‘Well I’ll be!’

-LL- ACKNOWLEDGEMENT / ADMISSION / CONCESSION / ASSENT / ACQUIESCENCE / CONFESSION	
BSC	Stem 1: (be) an act/instance of acknowledgement of something (i.e., demonstrating to another one's awareness of something)
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.)
OBJ	(be) that which is acknowledged
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)	
Stem 3: (be) a act/instance of admission/conceding something; to admit, concede, grant that something is so (i.e., acquiesce to allowing others to know of one's awareness of, association with, or involvement in something)	
Formal Stem 1: (be) an act of assent/acquiescence	
Formal 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)	
Formal Stem 3: (be) an act of confessing something, owning up to something; to confess or own up to something	

ADM ADMISSIVE Bias Affix: 'mm-hmm' 'uh-huh'

11.0 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-	-LŽ-	-ŠŠ-	-GZ-	-PC-	-KZ-	-ČG-

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 indivisible, inseparable, unified, unitary	(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 aspect/facet; to be a single unit with no sub-parts	(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 aspect/facet; to determine that an entity is an 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 aspect/facet; to be an entity which is single unit with no sub-parts	(to be) the entity/party whose numerical place in a sequence/group/pattern is first

11.1 Additional Number Roots Used With Non-Decimal Number Bases

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-	-LJ-	-BC-	-TZ-

-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 via iteration or via division	(to be) the party/entity whose number is multiplied	(to be) the party/entity whose number is divided

12.0 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.

-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- ‘PARTS 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)

-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

-TR- '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]

-GR- '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.)

-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

-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	finger nail/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.)

-LDL- 'MUSCLE / LIGAMENT / TENDON'	
STEM 1	muscle
STEM 2	ligament
STEM 3	tendon

-GZG- 'SMALL INTESTINE'	
STEM 1	duodenum
STEM 2	jejunum
STEM 3	ileum

-RGD- 'LARGE INTESTINE / COLON'	
STEM 1	ascending colon
STEM 2	transverse colon
STEM 3	descending and sigmoid colon

-DŘ- ‘TOOTH’	
STEM 1	tooth
STEM 2	fang
STEM 3	tusk

-ŇW- ‘NECK’	
STEM 1	neck
STEM 2	neck (as bodily support/swivel point for head)
STEM 3	neck (as narrowest, most vulnerable body part)

-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.

-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)

-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	

-LDN- 'GUM TISSUE / HARD PALATE'	
STEM 1	gum tissue
STEM 2	alveolar ridge
STEM 3	hard palate

-LPF- 'INTERIOR SURFACE TISSUES OF MOUTH'	
STEM 1	soft area between jaws underneath the front half of the tongue
STEM 2	soft palate
STEM 3	uvula

-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- '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- 'TISSUES ASSOCIATED WITH FEMALE REPRODUCTIVE ORGANS'	
STEM 1	clitoris
STEM 2	inner labium
STEM 3	outer labium

13.0 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

-CC- 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

-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.

14.0 ROOTS ASSOCIATED WITH V_xC_s AFFIXES

-ŘD- '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	

FML Stems elevate the **IFL** meanings to the level of formal analysis/measurement in comparison to a formal/established standard.

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		

FML Stems elevate the **IFL** meanings to the level of formal analysis/measurement in comparison to a formal/established standard.

-NT- ‘SEQUENTIAL ENUMERATION’		Associated Affix: SEQ
BSC	STEM 1: (to be) a sequential numerical count(ing) of entities by positive integer 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 positive integer] for purpose of identification, individuation, arrangement, etc. STEM 3: (to be) a numerical(ly-based) pattern/arrangement; to enumerate
CTE	(to be) the [integer] number of entities counted; the count; to count (up)/tally [= 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	

-RF- PORTION / AMOUNT / RATION / ALLOTMENT		Associated Affix: PTW
BSC	INF STEM 1: (to be an) amount/quantity of a non-countable substance/entity [both the entity/substance and its amount]	FML STEM 1: (to be a) measure of, dose of, a formally pre-determined amount of a substance/entity FML STEM 2: (to be) an official/authorized share/ration, doled-out amount FML STEM 3: (to be) an official/authorized allotment/allocation/quota
CTE	(to be) the entity/substance contained in or comprising an amount/quantity	
CSV	(to be) an amount/quantity	
OBJ	(to be) the object/entity made of/consisting of an amount/quantity of something	
	INF STEM 2: (to be) a share, a portion (to be) distributed INF STEM 3: (to be) an allotment/allocation, set distribution	

Derivations: to share, distribute, allocate, allot

-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]	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)	
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		

-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/fixeness (= [in]ability to be removed/erased/eliminated)		

-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) STEM 3: (to be/manifest a) degree of temporal “size” (= an “amount” of time)
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)	
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.

-Ā- ‘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]	STEM 2: (to be/manifest a) degree of elegance, loveliness, grace STEM 3: (to be/manifest a) degree of endearment, cuteness
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	

-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 artisanry, artistry, artistic craftsmanship) STEM 3: (to be/manifest a) degree of durability / lastingness / permanence / persistence
CTE	(to be) something with a degree of reliability/infallibility/quality	
CSV	(to be) a degree of reliability/infallibility/quality	
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	
OBJ	(to be) an entity/party impacted/affected by one’s degree of specialness, extraordinariness	STEM 3: (to be/manifest a) degree of marvelousness/wonder/awesomeness

-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 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	

-GV- ‘DESIRE / WANT’ 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	

FORMAL stems: 1) request + entity requested 2) a preference; to prefer something 3) a demand; to demand

-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) something with a degree of luck/fortune	
CSV	(to be) a degree of luck/fortune	
OBJ	(to be) an entity/party impacted/affected by one’s degree of luck/fortune	

-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	

-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	

-ZŇ- ‘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	

-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	

-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	

-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	

-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	

-NT- ‘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 entity manifesting such]	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) something with a degree of correctness/accuracy	
CSV	(to be) a degree of correctness/accuracy	
OBJ	(to be) an entity/party impacted/affected by one’s degree of correctness/accuracy	

-KṬ- ‘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 STEM 3: (to be/manifest) the declining stage(s) of a life-cycle; decline, fade, age; CPT Version = die
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	

-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) STEM 3: (to be/manifest a) degree of stealth/insidiousness (= attempt to manipulate/act in an unseen/hidden/discreet manner for (quasi-)nefarious purposes)
CTE	(to be) something with a degree of subtlety/nuance	
CSV	(to be) a degree of subtlety/nuance	
OBJ	(to be) an entity/party impacted/affected by one’s degree of subtlety/nuance	

-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	

-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) STEM 3: (to be/manifest a) degree of scrutiny / attention / scrupulousness (= thoroughness/exactitude in procedure / task / activity)
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	

-XT- ‘DEGREE OF CONCERN / EMPATHY / CARE / INDIFFERENCE / NEGLECT’ Affix: CNC (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of concern for, worry over — [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 STEM 3: (to be/manifest a) degree of vigilance, watchfulness, surveillance
CTE	(to be) something with a degree of concern for, worry over	
CSV	(to be) a degree of concern for, worry over	
OBJ	(to be) an entity/party impacted/affected by one’s degree of concern for, worry over	
FML Stem 1: (to be/have a) degree of empathy for FML Stem 2: (to be/have a) degree to which one nurses / nurtures / provides for / has responsibility for the health and well-being of FML Stem 3: (to be/have a) degree to which one guards something (= protection via watchfulness/vigilance)		

-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/artisanry) — [both the quality and the entity manifesting such]	STEM 2: (to be/manifest a) degree of evolvment (vs. primitiveness, i.e., temporal, evolutionary perspective over time) STEM 3: (to be/manifest a) degree of cultural refinement/sophistication/finesse (vs. cultural primitiveness/savagery/simplicity)
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	

-NX- ‘DEGREE OF FURTIVENESS / COVERTNESS’ Affix: CVT (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of furtiveness/covertness (= 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
CTE	(to be) something with a degree of furtiveness/covertness	
CSV	(to be) a degree of physical/technical furtiveness/covertness	STEM 3: (to be/manifest a) degree of sneakiness / stealth / surreptitiousness
OBJ	(to be) an entity/party impacted/affected by one’s degree of furtiveness/covertness	

-MŤ- ‘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 <i>vs.</i> 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 <i>vs.</i> secrecy, confidentiality	
CSV	(to be) a degree of physical/technical publicity, notoriety <i>vs.</i> 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 <i>vs.</i> secrecy, confidentiality	

-ŇŘ- ‘IMPEDIMENT / BLOCKAGE / RESTRICTION / RESTRAINT / 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 being under restraint or held back/kept from moving/acting/escaping, etc.
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	STEM 3. (to be) a state/process of preventing something from happening; the prevention of something; to prevent
OBJ	(to be) an entity/party/state being restricted/blocked/impeded	

-ČM- ‘DEGREE OF EASE <i>vs.</i> DIFFICULTY’ Affix: DFP (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be/manifest a) degree of ease <i>vs.</i> 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 <i>vs.</i> difficulty (= effort in terms of practicality, return/value-for-energy expended, likelihood of desired outcome)
CTE	(to be) something with a degree of ease <i>vs.</i> difficulty	
CSV	(to be) a degree of ease <i>vs.</i> difficulty	STEM 3: (to be/manifest a) degree of ease <i>vs.</i> difficulty (= effort in terms of being faced with a quandary / dilemma / predicament)
OBJ	(to be) an entity/party impacted/affected by one’s degree of ease <i>vs.</i> 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 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 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	

-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 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
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)	

-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	

-ŠF- ‘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., have the or 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	

INF stems: The capability/strength/stamina/prowess/finesse needed is circumstantial, i.e., the party inherently does or does not happen to have such qualities

FML stems: The capability/strength/stamina/prowess/finesse needed is consciously acquired by specialized training or experience, etc.

-FS- ‘WAITING / ANTICIPATION / EXPECTATION / READINESS / PREPAREDNESS’ Affix: ATI (use SUF/EXN/EXD, etc.)		
BSC	STEM 1: (to be in) a state of anticipating/expectating/awaiting something (not the emotion thereof but rather the status of one’s circumstances) — [both the state and the entity manifesting such]; to wait for, to await/expect/anticipate	STEM 2: (to be in a) state of readiness / preparedness for an anticipated / expected occurrence / phenomenon
CTE	(to be) something in a state of anticipating/expectating/awaiting something	STEM 3: (to be in a) state of readiness / preparedness in case of an unexpected / unpredictable occurrence / phenomenon
CSV	(to be) a state of anticipating/expecting/awaiting something	
OBJ	(to be) an entity/party impacted/affected by one’s a state of anticipating / expectating / awaiting something	

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

-ŘS- ‘DEGREE OF ACCEPTANCE/TOLERANCE/CONSENT/PERMISSION/APPROVAL/AGREEMENT’ Affix: CNS		
BSC	INF STEM 1: (to be/manifest a) degree of acceptance/tolerance, “being okay with something” [both the state of acceptance and that which is accepted]	FML STEM 1: (to be/manifest a) degree of permission; granting license to; to permit
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	
INF STEM 2: (to be/manifest a) degree of assent/consent (= granting of informal permission) INF STEM 3: (to be/manifest a) degree of agreement/concurrence/accordance with		
		FML STEM 3: (to be) a state/act of approval/endorsement; to approve, endorse

-CB- ‘MOTIVE / INTENTION’ Affix: RSN		
BSC	STEM 1: (to be/manifest) a motive / reason why / basis for one’s intention — [both the psychological/epistemological state of having a motive and its content]	FML STEM 1: (to be/manifest a) principle (moral or ontological) / grounds / basis; be/have a principle / be/have grounds / be/have basis
CTE	(to be) a motive / reason why	
CSV	(to be) the psychological/epistemological state of having a motive/reason	
OBJ	(to be) the party/entity having a motive/reason	
INF STEM 2: (to be/manifest) a purpose/intention/goal/aim; to aim to/for INF STEM 3: (to be/manifest) an incentive/stimulus		
		FML STEM 3: (to be) one’s (free) will; to follow one’s will

-SS- ‘TOOL / INSTRUMENT’ Affix: TDM		
BSC	STEM 1: (to be) a tool, instrument, implement as extension of bodily appendage(s); 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]	FML STEM 1: (to be a) utensil, specialized implement for assisting in refined task FML STEM 2: (to be a) mechanical / motorized / electric / electronic implement/device FML STEM 3: (to be a) supply-like resource/implement used as fuel or input for a mechanical / electrical / electronic implement/device
CTE	(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	
CSV	(to be) a tool, instrument or implement; use a tool	
OBJ	(to be) the party/entity using a tool or implement	
	INF STEM 2: (to be) a tool, instrument, implement 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] INF STEM 3: (to be a) supply-like resource/implement 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.)	

-ÇN- ‘SOURCE / ORIGIN’ Affix: OAU		
BSC	STEM 1: (to be the) origin / source of something — [both the point in spacetime and the fact of being the initial manifestation of something]	FML STEM 1: (to be/manifest a) basic element / fundamental starting point or principle FML STEM 2: (to be/manifest a) fundamental reason for something; fundamental reason why; a basis for something FML STEM 3: (to be a) first principle / foundational principle / axiom / underlying
CTE	(to be) an act/process of origin(ating) or functioning as a/the source	
CSV	(to be) the physical spacetime point/location that is the source of something; where something originates	
OBJ	(to be) that whose source/origin is being identified	
	INF STEM 2: (to be) a beginning / start / point of initiation; begin, start, commence, initiate INF STEM 3: (to be a) (primary or direct) cause	

-PŘ- ‘ACCESS / PASSAGE(WAY) / ENTRY(WAY) / EXIT’ Affix: ACS		
BSC	STEM 1: (to be/manifest) a 2-way access point or passage way; 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, 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*	
OBJ	(to be) the party passing through an access point or doorway*	

* NOTE: The word for a “door” itself would be the BSC stem for ‘access/passageway’ plus the new MDF_{2/3} 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.”

-R- ‘NEGATION / NULLIFICATION / ABSENCE / DENIAL / REMOVAL’ 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]	FML STEM 1: (to be) an instance/act of nullification or abrogation; to nullify, render null, abrogate, render as having no effect FML STEM 2: (to be) an instance/act of contradiction or contravention; to contradict or contravene FML STEM 3: (to be) an instance/act of elimination/removal; to eliminate, remove
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	
INF STEM 2: (to be) an instance/act of denial; to deny -- to act as if something is not true or non-existent or inapplicable INF STEM 3: (to be) an instance of being absent; an absence; to be absent		

-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 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	

-TD- ‘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	

-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	

-FR- 'SHAPE / FORM / MOLD / CAST'Associated Affix: **SHP**

BSC	INF STEM 1: (to be/manifest a) two-dimensional shape or outline form — [both the shape and the entity manifesting that shape]	FML STEM 1: (to be/manifest a) two-dimensional contour, pattern, or outline as a representation/model for something FML STEM 2: (to be/manifest a) three-dimensional contour, pattern, or outline as a representation/model for something FML STEM 3: (to be a) mold/pattern/cast (of/for something)
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	
	INF STEM 2: (to be/manifest a) three-dimensional shape/form INF STEM 3: (to be a) figure (reminiscent of something) based on shape/form	

-JB- 'TWO-DIMENSIONAL DECORATIVE PATTERN/TEXTURE' Affix: **PAT**

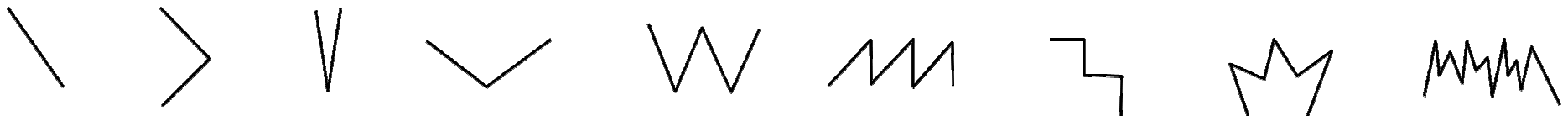
BSC	STEM 1: (to be/manifest a) two-dimensional (quasi-)overlying simple visual surface design/pattern (= repetitive visual design)— [both the design/pattern and the entity manifesting such]	STEM 2: (to be/manifest a) two-dimensional (quasi-) overlying complex/multi-faced visual surface pattern (= complex repetitive visual design) STEM 3: (to be/manifest a) two-dimensional (quasi-) overlying visual surface texture (= repetitive visual-tactile 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	

-SK- ‘CONTAIN / HOLD / CONTENTS’		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 enclosing medium or surrounding conveyance STEM 3: (to be) an instance of containment via imbuement (i.e., as an ingredient/component)
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)	








15.0 Roots/Stems for Open-Ended Linear Outline Shapes

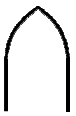






-CKL- OPEN-ENDED LINEAR OUTLINE SHAPE	
BSC	Stem 1: (be) an open-ended (quasi-)linear outline shape (i.e. for describing the outline shape of any visual or tactile object/entity), e.g., an arc, a straight line, an S-shape, a V-shape, a squiggly line, etc. Stem 2: (be) the (quasi-)planar extension (in 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-shaped or wedge-shaped indentation based on the Stem-1 linear shape of a V-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.
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
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 above root. 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:



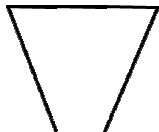













-VŘ- STRAIGHT LINE	-PLW- RIGHT- ANGLE	-PLY- ACUTE- ANGLE	-FTY- OBTUSE-ANGLE	-JKL- W-SHAPED	-JKR- SAWTOOTH- SHAPED	-JKH- STAIRCASE- SHAPED	-VTÇ- 3-POINTED SHAPE	-VPC- IRREGULAR POINTS
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-DGL- ARC	-DGR- SEMI-CIRCLE	-RZW- CIRCULAR	-GBL- HUMPED-SHAPE	-ŇL- U-SHAPED	-GBR- DOUBLE-HUMPED	-GZB- S-SHAPED

						
-KŤM- BULLET-SHAPED	-KŤK- ARISTATE*	-KŤḶ- MUCRONATE*	-KŤN- FLATTENED ARISTATE	-JBL- FLATTENED BULLET-SHAPED	-DDL- SCALLOP-SHELL-SHAPED	-DDW- TRUNCATE*

* Term borrowed from biology/botany for a particular leaf shape.

						
-VGL- SPADE-SHAPED	-ŽTY- POINTED SPADE-SHAPED	-XPY- WEDGE-SHAPED	-XPR- CONCAVE WEDGE	-ZGL- Y-SHAPED	-MNY- TRIPLE-LOBE	-SSKR- IRREGULAR LINEAR

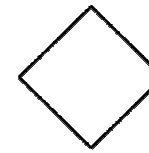
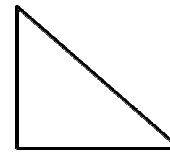
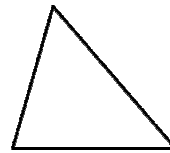
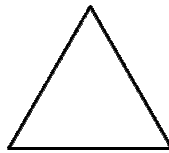
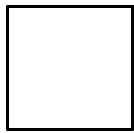
						
-PFW- TOOTH-SHAPED	-PFY- AURICULATE*	-PFČ- OBCORDATE *	-PFR- PAIRED LOBES	-ŘFL- ROUNDED Y-SHAPED	-ŘFY- HASTATE *	-ŘŤŘ- MIXED ROUNDED & POINTED

* Term borrowed from biology/botany for a particular leaf shape.

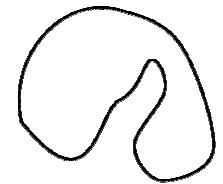
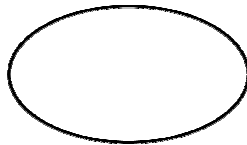
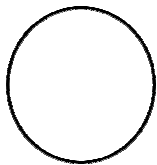
15.1 Roots/Stems for Closed Linear Outline Shapes

-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)
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
	Stem 2: (be) the (quasi-)planar extension (in 3-dimensional space) of the Stem 1 closed linear shape, e.g., a cube based on the outline shape of a square or diamond or hexagon.
	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.

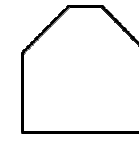
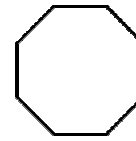
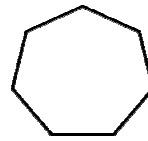
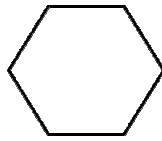
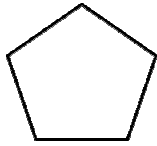
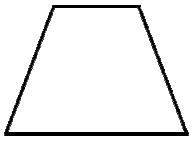
The following roots all have a Stem & Specification pattern based on the above root.



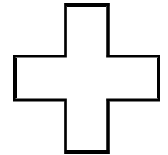
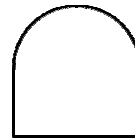
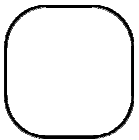
-TLW - SQUARE	- TLY- RECTANGLE	-FTR- ISOSCELES TRIANGLE	-LFTR- TRIANGLE	-RFTR- RIGHT TRIANGLE	-RTLW- DIAMOND SHAPED	-RTLY- RHOMBOID
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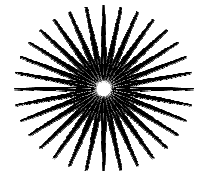
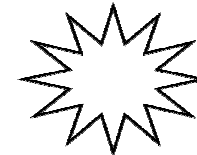
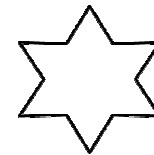
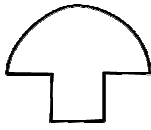
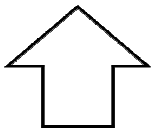
-ZW- CIRCLE	-RZY- ELLIPSE	-ṬTL- SLIVER-MOON SHAPED	-ṬTR- HALF-MOON SHAPED	-ṬTW- GIBBOUS-MOON SHAPED	-VBZ - TEARDROP- SHAPED	-SSTR - IRREGULAR ROUNDED SHAPE
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-XPL- TRAPEZOID	-STR- PENTAGON	-CPŘ- HEXAGON	-NSŘ- HEPTAGON	-ČKŘ- OCTOGON	-XČW- DOUBLY- TRUNCATED SQUARE	-SSPR- IRREGULAR POLYGONOID
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-NLW- ROUNDED SQUARE	-NLY- ROUNDED RECTANGLE	-MZW- OVAL	-ŇLW- HALF- ROUNDED SQUARE	-RDGR- THICK ARCH SHAPED	-PFN- VALENTINE SHAPED	-STR- CROSS- or X= SHAPED
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-STL- ARROW-SHAPED	-LKL- MUSHROOM-SHAPED	-RPŠ - 4-POINTED STAR	-RST - 5-POINTED STAR	-RCP- SIX-POINTED STAR	-RPW- MULTI-POINTED STAR	-ŘZW- SPIKED CIRCLE
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16.0 ROOTS RELATING TO CHEMICAL ELEMENTS

-RZ- 'CHEMICAL ELEMENT'		
BSC	Stem 1: (to be) a chemical element	Stem 2: (to be) a positive ion of a chemical element
CTE	(to be) an elemental state; at a level involving individual chemical elements	Stem 3: (to be) a negative ion of a chemical element
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	-ŠKR- Chromium	-XDW- Nickel	-ŠPŘ- Thallium	-ÑZDL- Polonium
-PÇKŘ- Caesium	-ŠKW- Molybdenum	-XDY- Palladium	-ŠPŠ- Nihonium	-ÑZDR- Livermorium
-PÇKF- Francium	-ŠKY- Tungsten	-XDL- Platinum	-ŽPL- Carbon	-BZTW- Fluorine
-LVG- Beryllium	-ŠKŘ- Seaborgium	-XDR- Darmstadtium	-ŽPW- Silicon	-BZTY- Chlorine
-LVGW- Magnesium	-TŁN- Manganese	-MZ- Copper	-ŽPY- Geranium	-BZTL- Bromine
-LVGY- Calcium	-TŁNW- Technetium	-RŁ- Silver	-ŽPR- Tin	-BZTR- Iodine
-LVGL- Strontium	-TŁÑ- Rhenium	-LJ- Gold	-ŽPŘ- Lead	-BZTR- Astatine
-LVGR- Barium	-TŁÑW- Bohrium	-LJÑW- Roentgenium	-ŽPF- Flerovium	-BZTL- Tennessine
-LVGŘ- Radium			-LXT- Nitrogen	-GZPW- Helium
-LVGV- Scandium	-SGL- Iron	-ĐBW- Zinc	-LXTW- Phosphorus	-GZPY- Neon
-LVGZ- Yttrium	-SGW- Ruthenium	-ĐBY- Cadmium	-LXTY- Arsenic	-GZPL- Argon
-PŁW- Titanium	-SGY- Osmium	-ĐBL- Mercury	-LXTL- Antimony	-GZPR- Krypton
-PŁM- Zirconium	-SGV- Hassium	-ĐBR- Copernicium	-LXTR- Bismuth	-GZPŘ- Xenon
-PŁN- Hafnium			-LXTR- Moscovium	-GZPF- Radon
-PŁÑ- Rutherfordium				-GZPL- Oganesson

-ŘCP-	Lanthanum	-ŘPST-	Actinium
-ŘCPW-	Cerium	-ŘPSTW-	Thorium
-ŘCPY-	Praseodymium	-ŘPSTY-	Protactinium
-ŘCPÇ-	Neodymium	-ŘPSTL-	Uranium
-ŘCPL-	Promethium	-ŘPSTR-	Neptunium
-ŘCPF-	Samarium	-ŘPSTRĚ-	Plutonium
-ŘCPL-	Europium	-ŘPSTF-	Americium
-ŘCPŘ-	Gadolinium	-ŘPSTĽ-	Curium
-ŘCPR-	Terbium	-ŘPSC-	Berkelium
-ŘCPS-	Dysprosium	-ŘPSCĚ-	Californium
-ŘCPŠ-	Holmium	-ŘPSCW-	Einsteinium
-ŘCC-	Erbium	-ŘPSCĚW-	Fermium
-ŘCCW-	Thulium	-ŘPSS-	Mendelevium
-ŘCCĚ-	Ytterbium	-ŘPSSW-	Nobelium
-ŘCCĚW-	Lutetium	-ŘPSSY-	Lawrencium

A series of $V_x C_s$ affixes and stem-incorporation rules are under development by which one will be able to use these elemental roots/stems to form transparent names (i.e., chemical formulas) for chemical compounds.

-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, flume, glob) of the substance comprising a chemical compound	
CSV	(to be) a chemical reaction resulting in the formation of a chemical compound; the 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	
Formal Stem 1: (to be) a chemical compound held together by covalent molecular bonds		
Formal Stem 2: (to be) a chemical compound held together by ionic bonds		
Formal Stem 3: (to be) an intermetallic chemical compound or complex held together by metallic or coordinate covalent bonds		

The following roots for common chemical compounds follow the same Specification pattern as the INFORMAL stems of the above root - **RZ** - :

-FD-	table salt / rock salt (sodium chloride)	-ZTC-	dynamite / TNT
-CPF-	baking soda	-XBW-	aspirin / ASA
-TPF-	plaster of Paris (calcium sulfate hemi-hydrate)		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
-LPF-	slaked lime / caustic lime (calcium hydroxide)	-VMW-	wood alcohol
-JPF-	calcium oxychloride (i.e., bleaching powder)	-VMY-	grain alcohol (ethyl alcohol)
-ŠPF-	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
-NLPF-	caustic potash (potassium hydroxide)	-LCMY-	dextrose
-KTPF-	silica		
-DMY-	bleach (sodium hypochlorite)	-ZDŘ-	asbestos
-PMY-	zinc white / zinc oxide	-XBŘ-	milk of magnesia
-ZDW-	fluorspar / fluorite		
-DNW-	carbolic acid (phenol)	-KFTW-	acetone
-ZDY-	copper sulphate (i.e., blue vitriol)	-KFTY-	ammonia
		-KFTL-	rubbing alcohol / isopropyl alcohol
-CBL-	carbon dioxide	-KFTR-	vinegar (acetic acid)
-GVBL-	laughing gas (nitrous oxide)	-KFTR-	glycerin (trihydroxy propanol)
-GVBR-	methane / marsh gas	-KFTČ-	oil of vitriol (sulfuric acid)
		-KFTH-	formalin / aqueous formaldehyde solution
		-KFTHW-	muriatic acid (hydrochloric acid)

-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
CTE	(to be) the material substance of which something consists or is made; something material	STEM 3: (to be/manifest a) material consistency, i.e., a discernible (quasi-)tactile or (quasi-)visual or other (quasi-)sensory attribute/quality/characteristic
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	-TPY-	rubber	-ŇŽKY-	polyethylene
-NTÇ-	tar/pitch	-XTW-	ceramic	-ŇŽKL-	polypropylene
-NTW-	oil (plant-derived)	-XTY-	porcelain	-ŇŽKR-	polycarbonate
-NTY-	petroleum	-XMW-	plaster	-ŇŽKŘ-	fiberglas
-NTR̂-	latex (natural)	-XMY-	mortar	-ŇŽKF-	linoleum
-NDR-	wood	-XNW-	adobe	-ŇŽKŤ-	polyurethane
-MNW-	honey	-XNY-	cement/concrete	-ŇŽKÇ-	plexiglass (polymethyl methacrylate)
-MTÇ-	wax	-BXW-	brick	-ŇŽKH-	epoxy (i.e., polyepoxide)
-LTV-	silk	-TTW-	glass	-NTV-	latex (synthetic)
-LTH-	ivory	-TTY-	enamel	-NZX-	polymer
-PNW-	starch (amylose/amylopectin)	-TTR̂-	tile	-NZXW-	cyanoacrylate
-PNY-	cork	-ŽTÇ-	asphalt	-NZXL-	polyfluoroalkyl substance (PFAS)
-NDG-	resin	-SNW-	vinyl (i.e., polyvinyl chloride)		
-NZD-	brine	-SNY-	nylon	-LTN-	ink
-NZB-	shellac	-ĐGW-	paper	-LTNW-	artist’s paint/pigment
		-ĐGY-	cardboard	-LTNY-	housepaint / industrial paint
		-VNW-	leather		
		-VNY-	cloth/fabric/textile		

Roots relating to common rocks, minerals, rock-forms, gemstones, and non-mineral materials treated as gemstones:

-GGŘ-	mineral	-GVY-	diamond
-GGW-	stone (material substance)	-GVM-	sapphire
-GGY-	marble	-GVN-	ruby
-GGL-	limestone	-GVW-	emerald
-GGR-	chalk	-GVL-	opal
-GDŘ-	granite	-STL-	jade
-GBŘ-	basalt	-ŘTL-	topaz
-GBW-	serpentine	-ŇTL-	aquamarine
-GBY-	syenite	-FTL-	amethyst
-GDL-	quartz	-ĐTL-	alexandrite
-GDR-	quartzite	-LTL-	turquoise
-GNW-	slate	-MTL-	spinel
-GNY-	coal	-RTL-	malachite
-GFL-	gneiss	-PTL-	garnet
-GFR-	calcite	-KTL-	zircon
-GFR̂-	gypsum (calcium sulfate dihydrate)	-JTL-	lapis lazuli
-GVŘ-	obsidian	-GTL-	ammolite
-GZF-	feldspar	-NTL-	agate
-GŽG-	pyroxene	-CTL-	alabaster
-GFW-	mica	-ṬDW-	amber
-GFY-	amphibole	-ṬDY-	jet
-GZL-	schist	-ṬDL-	pearl
-GZR-	shale	-ṬDŘ-	petrified wood
-GZM-	tuff / volcanic tuff		
-GZN-	pumice		

17.0 ROOTS RELATING TO BIOLOGICAL LIFE-FORMS

In addition to roots and stems associated with formalized, hierarchically arranged biological taxonomies (which are listed later), 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
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	STEM 3: (to be) something reproduced or brought to life; to reproduce [biologically], bring to life
OBJ	(to be) an entity/party impacted/affected by the presence of, or interaction with a living being	

As will be seen beginning on **Page XX** in the quasi-taxonomic listings of animals, numerous animal classes are divided up into several roots due to the diversity of similar taxonomic/phylogenic 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’
<ol style="list-style-type: none"> 1. bacterium 2. archaeon 3. virus

-SV- ‘EUKARYOTIC LIFE FORM’
<ol style="list-style-type: none"> 1. plant 2. animal 3. non-plant / non-animal eukaryote, i.e., protist, fungus, or chromist)

-KST- ‘NON-PLANT & NON-ANIMAL EUKARYOTIC LIFE-FORM’
<ol style="list-style-type: none"> 1. protist (i.e., protozoa, amoeboids, protophytic algae, slime molds) 2. fungus 3. chromist (brown algae, diatoms, water molds)

-LD- ‘TREE / SHRUB / BUSH’
<ol style="list-style-type: none"> 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.)

-ZTC- 'FERN-LIKE PLANT'

1. fern
2. eusporangiate fern (e.g., whisk fern, grapefern, horsetail, adder's tongue)
3. lycophod (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'

1. placental mammal
2. marsupial
3. monotreme (egg-laying mammal)

-L- 'HUMAN BEING'

1. adult human being
2. human child
3. adolescent human being

-TL- 'ANIMALS OF THE AIR' (i.e., capable of self-powered flight)

1. bird
2. flying insect
3. bat

-ZZ- '(SMALLER) REPTILE'

1. lizard-like reptile (e.g., lizard, skink, gecko, monitor)
2. snake or legless lizard
3. turtle/tortoise

-NXW- ‘AMPHIBIAN’

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’

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’

1. skate / ray
2. shark
3. [lobe-finned or ray-finned] fish

-NGL- ‘MOLLUSC [other than cephalopod]’

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’

1. worm (i.e., annelid worm or nematode worm)
2. flatworm or tapeworm
3. fluke or leech

-NGŘ- ‘OTHER INVERTBRATE’

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

-ĐP- ‘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

-ŽŇ- ‘NON-MAMMALIAN LIFE STAGE’

	STEM 1: (to be) a newborn, newly hatched, newly sprouted, first-stage life-form (e.g., sprout, larva, tadpole, caterpillar, 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.
BSC	(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

17.0.2 Preliminary Note on Quasi-Taxonomic Roots/Stems Denoting Biological Life-form

Beginning in Section 17.1 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_xC_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_xC_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.)

17.0.3 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.)

-čč	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

-jj	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	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/pedice/connecting medium)
7	attached to a substrate via a stalk/stipe/pedice/connecting medium
8	motile in reaction to heat
9	motile in reaction to light

-řč	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)

-vř	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 than average

-řj	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.

-šv	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

17.0.4 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)

17.0.5 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 on the previous page), 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).

-rc-	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

17.1 Roots For 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 the majority of 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, bacteria, archaea) remain to be worked on.

17.1.1 Mammals

17.1.1.1 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. (species *rufus*) bobcat 2. (species *lynx*, *pardinus*) Eurasian or Iberian lynx 3. (species *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

17.1.1.2 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 FOXES/DOGS/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

17.1.1.3 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*) bharaal, 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*, *Antilope*, *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

17.1.1.4 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 athabascae*) 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, k  wel, 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)

17.1.1.5 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

17.1.1.6 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 3. spectacled bear (genus *Tremarctos*)

17.1.1.7 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*)
- ČTRĚ- 'BADGER' 1. (genus *Taxidea*) American badger 2. (genus *Meles*) European/Asian/Japanese badger 3. (genus *Arctonyx*) hog badger
- ČTM- 'SKUNK' 1. (genera *Mephitis*, *Spilogale*) skunk 2. (genus *Conepatus*) hognose skunk 3. (genus *Mydaus*) stink badger
- ČTF- 'OTHER MUSTELOID' 1. (genus *Ailurus*) red panda 2. (genera *Melogale*, *Mellivora*) ferret-badger, honey badger 3. (Ictonychines; genera *Galictis*, *Ictonyx*, *Lyncodon*, *Poecilogale*, *Vormela*) grison, polecat (various)

17.1.1.8 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 *Babyrousa*) babirusa
- PXL- 'SUID-LIKE ANIMAL' 1. (genus *Phacochoerus*) warthog 2. (genus *Hylochoerus*) giant forest hog 3. (genus *Tayassu*) peccary/javelina/skunk pig

17.1.1.9 Hippopotamus

- VĐ- HIPPOPOTAMUS 1. (genus *Hippopotamus*) hippopotamus 2. (genus *Choeropsis*) pygmy hippo

17.1.1.10 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*) small beaked whales
- 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

17.1.1.11 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

17.1.1.12 Rhinoceros

- PŽ- RHINOCEROS 1. (genus *Rhinoceros*) Indian & Javan rhinoceros 2. (genus *Dicerorhinus*) Sumatran rhinoceros 3. (genera *Ceratotherium*, *Diceros*) African white and black rhinoceros

17.1.1.13 Tapirs

- XJ- TAPIR (genus *Tapirus*) 1. Central American tapir 2. South American and Mountain tapir 3. Asian tapir

17.1.1.14 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”)

17.1.1.15 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 *Crocuta*) 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

17.1.1.16 Eulipotyphla (Hedgehogs, Gymnures, Shrews, Moles, Shrew-Moles, Desmans, Solenodons)

- DX**- ‘HEDGEHOG’ 1. (genus *Erinaceus*) common hedgehog 2. (genus *Aterlix*) 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. (Crocicurines; genera *Crocidura*, *Diplomesodon*, *Feroculus*, *Palawanosorex*, *Paracrocidura*, *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*, *Scaptochirus*, *Talpa*, *Scaptonyx*, *Dymecodon*, *Urotrichus*, *Neurotrichus*) mole, shrew-mole 2. (genera *Desmana*, *Galemys*) desman 3. (genus *Solenodon*) solenodon

17.1.1.17 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*, *Urocitellus*, *Notocitellus*, *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*, *Hylometes*, *Iomys*, *Petaurillus*, *Petinomys*, *Aeretes*, *Aeromys*, *Belomys*, *Biswamoyopterus*, *Eupetaurus*, *Petaurista*, *Pteromys*, *Pteromyscus*, *Trogopterus*) flying squirrel
- BZR**- ‘VOLE/LEMMING/MUSKRAT’ 1. (genera *Arvicola*, *Blanfordimys*, *Chionomys*, *Lasiopodomys*, *Lemmiscus*, *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
- BZĚ**- ‘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, conyrat, 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, hocihudo, 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
- BZV-** ‘DORMOUSE’ 1. (genera *Glirulus*, *Glis*) dormouse 2. (genus *Graphiurus*) African dormouse 3. (genera *Chaetocauda*, *Dryomys*, *Eliomys*, *Muscardinus*, *Myomimus*, *Selevinia*) Asian dormouse
- BZMW-** ‘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
- BZMY-** ‘GOPHER’ 1. (genera *Cratogeomys*, *Pappogeomys*, *Thomomys*, *Zygogeomys*) western & Mexican pocket gopher 2. (genus *Geomys*) eastern pocket gopher 3. (genus *Orthogeomys*) giant pocket gopher, taltuza
- BZML-** ‘HETEROMYID’ 1. (genus *Heteromys*) spiny pocket mouse 2. (genera *Dipodomys*, *Mirodipodops*) kangaroo rat, kangaroo mouse 3. (genera *Perognathus*, *Chaetodipus*) pocket mouse
- BZMR-** ‘DIPODID’ 1. (genus *Sicista*) birch mouse 2. (genera *Eozapus*, *Napaeozepus*, *Zapus*) jumping mouse 3. (genera *Allactaga*, *Allactodipus*, *Pygeretmus*, *Cardiocranium*, *Salpingotulus*, *Salpingotus*, *Dipus*, *Eremodipus*, *Jaculus*, *Stylodipus*, *Paradipus*, *Euchoreutes*) jerboa
- BZMŘ-** ‘PLATACANTHOMYID’ 1. (genus *Platacanthomys*) spiny dormouse 2. (genus *Typhlomys*) Chinese pygmy dormouse
- BZVW-** ‘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
- BZVL-** ‘OTHER RODENT’ 1. (genus *Calmyscus*) mouse-like hamster 2. (genus *Pedetes*) springhare 3. (genus *Petromus*) dassie rat
- BZVR-** ‘GERBIL / JIRDS / TATERIL’ 1. (genera *Dipodillus*, *Pachyuromys*, *Desmodilliscus*, *Ammodillus*, *Gerbillus*, *Microdillus*, *Desmodillus*, *Gerbilliscus*, *Gerbillurus*) gerbil, pygmy gerbil 2. (genera *Brachionis*, *Merionis*, *Psammomys*, *Rhombomys*, *Sekeetamys*) jird, sand rat 3. (genus *Taterillus*) tateril
- BZVŘ-** ‘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
- BZVY-** ‘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, guiara 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

17.1.1.18 Bats

- BH-** ‘BATS’ 1. (Microchiroptera; numerous genera) [micro]bat 2. (Megachiroptera; numerous genera) [mega]bat / fruit-bat [other than flying foxes] 3. (genera *Pteropus*, *Acerodon*) flying fox

17.1.1.19 Treeshrews

-**JŃW**- ‘TREESHREW’ 1. (genus *Anathana*) Indian treeshrew 2. (genera *Dendrogale*, *Tupaia*, *Urogale*) Asian treeshrew 3. (genus *Ptilocercus*) pen-tailed treeshrew

17.1.1.20 Apes and Monkeys [for genus *Homo*, use the root **-L-** given earlier]

-**LGW**- ‘APE’ 1. (genus *Pan*) chimpanzee 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/MANGAGEY’ 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

-**LGŽŘ**- ‘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**- ‘MARMOSSET/TAMARIN’ 1. (genera *Cebuella*, *Callibella*, *Mico*, *Callithrix*, *Callimico*) marmoset 2. (genus *Saguinus*) tamarin 3. (genus *Leontopithecus*) lion tamarin

17.1.1.21 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

17.1.1.22 Pangolins

-**ZĐW**- ‘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

17.1.1.23 Elephant Shrews, Sengis

-**ZKTJ**- ‘ELEPHANT SHREW / SENGI’ 1. (genus *Elephantulus*) ‘elephant shrew’ 2. (genera *Macroscelides*, *Petrodomus*, *Petrosaltator*) sengi 3. (genus *Rhynchocyon*) checkered elephant shrew / giant sengi

17.1.1.24 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

17.1.1.25 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

17.1.1.26 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

17.1.1.27 (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

17.1.1.28 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)

17.1.1.29 Marsupials

-**RDK**- ‘DASYURINE MARSUPIALS’ 1. (genus *Dasyurus*) quoll 2. (genus *Myoictis*) dasyure 3. (genus *Neophascogale*) speckled dasyure

-**RDKW**- ‘OTHER DASYURINE MARSUPIALS’ 1. (genus *Dasyercus*) mulgara 2. (genus *Dasykaluta*) kaluta 3. (genus *Dasyuroides*) kowari

-RDKY- ‘MORE DASYURINE MARSUPIALS’ 1. (genus *Pseudantechinus*) false antechinus 2. (genus *Phascosorex*) marsupial shrew 3. (genus *Parantechinus*) dibbler

-RDKL- ‘PHASCOGALINE MARSUPIALS’ 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 MARSUPIALS’ 1. (genus *Sminthopsis*) dunnart 2. (genus *Planigale*) planigale 3. (genera *Antechinomys*, *Ningau*) kultarr, ningau

-RDKŘ- ‘OTHER DASYUROMORPHS’ 1. (genus *Sarcophilus*) Tasmanian devil 2. (genus *Myrmecobius*) numbat 3. (genus *Thylacinus*) thylacine [Tasmanian tiger]

-RDKF- ‘PHALANGERIFORM POSSUMS’ 1. (Phalangerides; numerous genera) cuscus 2. (Trichosurines; genera *Trichosurus*, *Wyulda*) brushtail possum, scaly-tailed possum 3. (Burramyides; genera *Burramys*, *Cercartetus*) pygmy possum

-RDKT- ‘PETAUROID POSSUMS’ 1. (Pseudocheirides; numerous genera) ring-tailed possum 2. (Petaurides; genera *Dactylopsila*, *Gymnobelideus*, *Petaurus*) triok, glider 3. (Tarsipedides and Acrobatides; genera *Tarsipes*, *Acrobates*, *Distoechurus*) honey possum, feathertail glider, feather-tailed possum

17.1.1.30 Bandicoots and Bilbies

-KTXW- ‘PERAMELEMORPHS & NOTORYCTEMORPHS’ 1. (Peramelines; numerous genera) bandicoot 2. (genus *Macrotis*) bilby 3. (genus *Notoryctes*) marsupial mole

17.1.1.31 Wombats and Koalas

-LJXW- ‘WOMBAT/KOALA’ 1. (genus *Vombatus*) common wombat 2. (genus *Lasiorhinus*) hairy-nosed wombat 3. (genus *Phascolarctos*) koala

17.1.1.32 Kangaroos, Wallaroos, Wallabies

-LMKW- ‘KANGAROO/WALLAROO/WALLABY (genera *Macropus*, *Onychogalea*, *Wallabia*)’ 1. kangaroo 2. wallaroo 3. wallaby

-LMKY- ‘POTOROIFORMS’ 1. (genera *Aepyprymnus*, *Hypsiprymnodon*) rat-kangaroo, musky rat-kangaroo 2. (genus *Bettongia*) bettong 3. (genus *Potorous*) potoroo

-LMKL- ‘OTHER MACROPODIDS’ 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 MACROPODINES’ 1. (Genus *Petrogale*) rock-wallaby, monjon, nabarlek 2. (Genus *Setonix*) quokka 3. (Genus *Thylogale*) pademelon

17.1.1.33 Monotremes

-LCXW- ‘MONOTREMES’ 1. (genus *Ornithorhynchus*) platypus 2. (genus *Tachyglossus*) short-beaked echidna 3. (genus *Zaglossus*) long-beaked echidna

17.1.2 Reptiles

17.1.2.1 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

17.1.2.2 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. 17.0 above.]

- ZZW-** ‘PLEURODONTINE LIZARD’ 1. (iguanae, liolaemids, 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. (tropidurids; numerous genera) neotropical ground lizard, lava lizard, Pacific iguana, whorltail iguana, thornytail iguana
- ZZY-** ‘DISTINCTIVE PLEURODONTINE LIZARD’ 1. (corytophanids; genera *Basiliscus*, *Corytophanes*, *Laemanctus*) basilisk, helmeted iguana, casquehead iguana 2. (dactyloids and polychrotids; numerous genera) anole 3. (genus *Leiocephalus*) curly tailed lizard
- ZZL-** ‘AGAMIDE LIZARD’ 1. (agamids and uromastix 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. (leiolopidines; numerous genera) butterfly lizards
- ZZR-** ‘OTHER IGUANA-LIKE ANIMALS’- 1. (chamaeleonids lizards; numerous genera) chameleon 2. (genus *Sphenodon*) tuatara 3.
- 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. (Teiids 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

17.1.2.3 Skinks

- ZZŇ-** ‘SCINCIFORM LIZARD’ 1. (Scincids; numerous genera) skink 2. (Gerrhosaurids and Cordylids; several genera) plated lizard, girdled lizards/spinytail lizards 3. (Xantusiids; genera *Cricosaura*, *Lepidophyma*, *Xantusia*) night lizard

17.1.2.4 Geckos & Close Relatives

- ZZH-** ‘GECKO (and genetically-related creatures)’ 1. (carphodactylids; numerous genera) gecko 2. (pygopodids; several genera) legless lizard, snake-lizard, flap-footed lizard 3. (dibamids; genera *Dibamus*, *Anelytropsis*) blind skink

17.1.2.5 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 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 SNAKES’ 1. (genus *Acrochordus*) wart snake/ file snake/ elephant trunk snake/ dogface snake 2. (Xenodermids; several genera) xenodermid snake) 3. (Pareids; several genera) pareid snake

-ZZK- ‘ELAPID SNAKE’* 1. (genera *Aspidelaps, Boulengerina, Dendroaspis, Hemachatus, Naja, Ophiophagus, Pseudohaje, Walterinnesia*) cobra, mamba, rinkhal, asp 2. (genera *Calliophis, Hemibungaris, Micruroides, Micrurus, Salomonelaps, Simoselaps*) coral snake 3. (numerous genera) other elapid snake (e.g., krait, sea snake, mudsnake, black snake, king brown snake, taipan, bola, tiger snake, harlequin snake, swamp snake, African garter snake, grass snake, bardick, whipsnake, copperhead, adder)

* Note that the tripartite division of stems for this root is based on traditional morphological/behavioral criteria rather than contemporary scientific (i.e., genetic) criteria, as recent genetic analyses do not support such divisions among elapid snakes.

-ZZD- ‘NON CAENOPHID and NON-CONSTRICTING BOOIDE SNAKE’ 1. (Scolophorids and Anomalepidids; numerous genera) blind snake, thread snake, dawn blind snake 2. (Cylindrophids, Anomochiids, and Aniliids; numerous genera) pipe snake 3. (Uropeltids; several genera) shield-tailed snake

17.1.2.6 Crocodylians

-GZW- ‘CROCODYLIAN’ 1. (genera *Crocodylus, Osteolaemus, Mecistops*) crocodile 2. (genera *Alligator, Caiman, Paleosuchus*) alligator, caiman 3. (genera *Gavialis, Tomistoma*) gharial, false gharial

17.1.2.7 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)

17.1.3 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, Pseudobranchus*) siren, dwarf siren

17.1.4 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 Ortalidines; 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*, *Ophryisia*, *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*, *Haematoryx*, *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 *Syrmaticus*) 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
- NSPÇ**- ‘TETRAONINE (GROUSE)’ 1. (genera *Falcapennis*, *Dendragapus*, *Tetrao*, *Tetrastes*, *Bonasa*, *Centrocercus*) 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
- NSBL**- ‘GRUIFORM’ 1. (Gruides; 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*, *Rallicula*, *Dryolimnas*, *Gymnocrex*, *Hypotaenidia*, *Pardirallus*, *Aramides*, *Himantornis*, *Megacrex*, *Coturnicops*) rail, weka 2. (genus *Crex*, *Anurolimnas*, *Mustelirallus*, *Amaurolimnas*, *Porzana*, *Aenigmatolimnus*, *Amaurornis*, *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
- ÑSDV**- ‘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 *Aegothales*) owl-nightjar
- ÑSGV**- ‘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. (Hemiprocnids; genus *Hemiproctus*) treeswift / crested swift
- NSDV**- ‘TROCHILID (HUMMINGBIRD)’ 1. (Trochilines; numerous genera) hummingbird 2. (Phaethornithines; several genera) hermit, sicklebill, barbthroat
- ÑŠT**- ‘CHARADRIIFORM’ I 1. (Charadriids; genera *Pluvialis*, *Pluvianus*, *Charadrius*, *Thinornis*, *Phegornis*) plover 2. (Ibidorhynchids; genus *Ibidorhyncha*) ibisbill 3. (Charadriines, Anarhynchines, and Vanellines; genera *Oreopholus*, *Eurodromias*, *Peltohyas*, *Erythrogonus*, *Anarhynchus*, *Vanellus*) dotterel, wrybill, lapwing
- ÑŠTW**- ‘CHARADRIIFORM’ II 1. (Haematopodids; genus *Haematopus*) oystercatcher 2. (Recurvirostrids; genus *Recurvirostra*) avocet 3. (Recurvirostrids; genera *Cladorhynchus*, *Himantopus*) stilt
- ÑŠTY**- ‘CHIONIDIFORM’ 1. (Burhinids; genera *Burhinus*, *Esacus*) stone-curlew, thick-knee 2. (Chionids; genus *Chionis*) sheathbill / paddy 3. (Pluvianellids; genus *Pluvianellus*) Magellanic plover
- ÑŠTÇ**- ‘JACANID’ 1. (several genera except *Irediparra*) jacana 2. (genus *Irediparra*) lotusbird / lilytrotter / comb-crested jacana
- ÑŠTF**- ‘THINOCOROID’ 1. (Rostratulids; genera *Rostratula*, *Nycticryphes*) painted-snipe 2. (Thinocorids; genera *Attagis*, *Thinocorus*) seedsnipe 3. (Pedionomids; genus *Pedionomus*) plains-wanderer
- ÑŠTL**- ‘SCOLOPACIDS (SANDPIPER)’ I 1. (genera *Calidris*/*Eriola*/*Ereunetes*, *Limicola*, *Bartramia*, *Actitis*, *Xenus*, *Prosobonia*,) sandpiper, stint / peep, knot, sanderling, dunlin, ruff, surfbird 2. (genus *Numenius*) curlew, whimbrel 3. (genus *Limosa*) godwit
- ÑŠTR**- ‘SCOLOPACIDS (SANDPIPER)’ II 1. (genus *Arenaria*) turnstone 2. (genus *Phalaropus*) phalarope 3. (genus *Tringa*) tattler, yellowlegs, shank
- ÑŠTŘ**- ‘SCOLOPACINE (SNIPE)’ 1. (genera *Gallinago*, *Coenocorypha*, *Lymnocyrtus*) snipe, jacksnipe 2. (genus *Limnodromus*) dowitcher 3. (genus *Scolopax*) woodcock
- ÑŠTV**- ‘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

- ŇSTM**- ‘ALCOID (SKUA / PUFFIN / AUKLET)’ 1. (Stercorariids; genus *Stercorarius*) skua, jaeger 2. (Fratrculines; genera *Fratrcula*, *Cerorhinca*) puffin, rhinoceros puffin 3. (Fratrculines; genera *Aethia*, *Ptychoramphus*) auklet
- ŇSTN**- ‘ALCINE (MURRE / GUILLEMOT / AUK)’ 1. (genera *Brachyramphus*, *Synthliboramphus*) murrelet 2. (genera *Cepphus*, *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 & PEDIONOMID’ 1. (Phoenicopterids; several genera) flamingo 2. (Podicipedids; several genera) grebe
- ŇŠKW**- ‘EURYPYGIMORPH’ 1. (Phaetontids; genus *Phaethon*) tropicbird 2. (Eurypygidids; genus *Eurypyga*) sunbittern 3. (Rhynochetids; genus *Rhynochetos*) kagu
- ŇŠKY**- ‘PROCELLARIFORM (TUBENOSE)’ 1. (Gaviids; genus *Gavia*) loon / diver 2. (Diomedeids; 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 3. (genera *Spheniscus*, *Pygoscelis*, *Megadyptes*, *Eudytula*) penguin, banded penguin, fairy 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*, *Papasula*) 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
- ŇŠKV**- ‘THRESKORNITHID (IBIS / SPOONBILL)’ 1. (Threskornithines; numerous genera) ibis 2. (Plataleines; genus *Platalea*) spoonbill
- ŇSD**- ‘VULTURE / CONDOR’ 1. (Catharids; genera *Cathartes*, *Coragyps*, *Sarcoramphus*) [New World] vulture 2. (Catharids; genera *Gymnogyps*, *Vultur*) condor 3. (Aegyptiines 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. (Acciptrines 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
- ŃSP**- ‘PICIDS (WOODPECKER)’ 1. (Picines; numerous genera) woodpecker 2. (Picumnines and Nesocitines; genera *Picumnus*, *Sasia*, *Nesocites*) piculet 3. (Jyngines; genus *Jynx*) wryneck
- ŃSPW**- ‘PICIFORM’ I 1. (Indicatorids; several genera) honeyguide, honeybird 2. (Megalaimids, Lybiids, Captonids, Semnornithids; numerous genera) barbet, toucan-barbet 3. (Rampastids; several genera) toucan, toucanet, araçari
- ŃSPY**- ‘PICIFORM’ II 1. (Galbulids; several genera) jacamar 2. (Bucconids; genera *Notharchus*, *Bucco*, *Nystalus*, *Hypnelus*, *Malacoptila*, *Chelidoptera*) puffbird 3. (Bucconids; genera *Monasa*, *Hapaloptila*, *Nonnulla*, *Micromonacha*) nunbird, nunlet, monklet
- ŃSPL**- ‘CORACIFORM’ I 1. (Coraciids; genera *Coracias*, *Eurystomus*) roller, dollarbird 2. (Brachyteraciids; several genera) ground roller 3. (Meropids; genera *Merops*, *Meropogon*, *Nyctyornis*) bee-eater
- ŃSPR**- ‘CORACIFORM’ II 1. (Alcedinids; numerous genera) kingfisher, kookaburra 2. (Todids; genus *Todus*) tody 3. (Momotids; several genera) motmot
- ŃSPŘ**- ‘FALCONIFORM & CARIAMIFORM’ 1. (Falconines; several genera) falcon, falconet, kestrel, hobby, gyrfalcon 2. (Polyborines; several genera) caracara 3. (Cariamids; genera *Cariama*, *Chunga*) seriema
- ŃSPF**- ‘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
- ŃSPV**- ‘CACATUID (COCKATOO)’ 1. (Cacatuines; several genera) cockatoo, corella, galah 2. (Calyptorhynchines; genus *Calyptorhynchus*) black cockatoo 3. (Nymphicines; genus *Nymphicus*) cockatiel / weiro / quarrion
- ŃSPÇ**- ‘STRIGOPOID (NEW ZEALAND PARROT)’ 1. (genus *Nestor*) kaka 2. (*N. notabilis*) kea 3. (genus *Strigops*) kakapo
- ŃSGW**- ‘SAPAYOID & ACANTHISITTID BIRD’ 1. (Sapayoids; genus *Sapayoa*) sapayoa 2. (Acanthisittids; genus *Acanthisitta*) rifleman 3. (Acanthisittids; genus *Xenicus*) New Zealand rock wren
- ŃSGY**- ‘EURYLAIMOID BIRD’ 1. (Eurylaimids and Calyptomenids; several genera) broadbill 2. (Pittids; genera *Pitta*, *Hydrornis*, *Erythropitta*) pitta 3. (Philepittids; genera *Philepitta*, *Neodrepanis*) asity, sunbird-asity
- ŃSGL**- ‘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
- ŃSGR**- ‘TYRANNIOID BIRD’ II 1. (Tyrannids; numerous genera) flycatcher, tyrant, tyrannulet, kiskadee 2. (Platyrrinchids; genus *Platyrrinchus*) spadebill 3. (Rhynchocyclids; genera *Rhynchocyclus*, *Tolmomyias*.) flatbill
- ŃSBW**- ‘FORMICAROID BIRD’ I 1. (Melanopareids; genus *Malanopareia*) crescentchest 2. (Thamnophilids; numerous genera) antbird, antshrike, antwren, antvireo 3. (Conopophagids; genera *Conopophaga*, *Pittasoma*) gnateater, antpitta

- ÑSBY**- 'FORMICAROID BIRD' II 1. (Grallariids; several genera) antpitta 2. (Rhynocryptids; numerous genera) tapaculo, huet-huet, turca, gallito, bamboowren, bristlefront 3. (Formicariids; genera *Formicarius*, *Chamaeza*) antthrush
- ÑSBL**- '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
- ÑSBR**- 'FURNARIID (NEOTROPICAL OVENBIRD)' II 1. (Synallaxini; numerous genera) spintail, treerunner, rayadito, wiretail, tit-spinetail, thornbird, firwood-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
- ÑST**- 'MENUROID BIRD' 1. 2. (Menurids; genus *Menura*) lyrebird 3. (Atrichornithids; genus *Atrichornis*) scrubbird
- ÑSTW**- '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
- ÑSTY**- 'MALURID (AUSTRALIAN WREN)' 1. (Malurini; several genera) fairywren 2. (Stipiturini; genus *Stipiturus*) emu-wren 3. (Amytornithines; genus *Amytornis*) grasswren
- ÑSTL**- 'ACANTHIZID (AUSTRALIAN WARBLER)' I 1. (genera *Sericornis*, *Aethomyias*, *Neosericornis*) scrubwren 2. (genus *Orescopus*) fernwren 3. (genera, *Hylacola*, *Calamanthus*) fieldwren, heathwren
- ÑSTR**- 'ACANTHIZID (AUSTRALIAN WARBLER)' II 1. (genus *Acanthiza*) thornbill 2. (genus *Aphelocephala*) whiteface 3. (genus *Pachycare*) goldenface
- ÑSTRĚ**- 'ACANTHIZID (AUSTRALIAN WARBLER)' III 1. (genus *Gerygone*) gerygone 2. (genus *Acanthornis*) scrubtit 3. (genus *Smicornis*) weebill
- ÑSTÇ**- 'ACANTHIZID (AUSTRALIAN WARBLER)' IV 1. (genus *Pyncoptilus*) pilotbird 2. (genus *Pyrrholaemus*) redthroat, speckled warbler 3. (genus *Origma*) rockwarbler, mouse-warbler
- ÑSTM**- 'MELIPHAGOID BIRD' 1. (Dasyornithids; genus *Dasyornis*) bristlebird 2. (Pardalotes; genus *Pardalotes*) pardalote / peep-wren 3. (Meliphagids; numerous genera) honeyeater, myzomela, chat, friarbird, kikau, straightbill, wattlebird, melidectes, myza
- ÑSTN**- 'ORTHOYCHOID BIRD' 1. (Orthonychids; Genus *Orthonyx*) logrunner 2. (*O. spaldingii*) chowchilla 3. (Pomatostomids; genus *Pomatostomus*) Australasian babbler / pseudo-babbler
- ÑSTF**- 'CORVIFORM BIRD' 1. (Cinclosomatids; genera *Cinclosoma*, *Ptilorrhoa*) quail-thrush, jewel-babbler 2. (Campephagids; numerous genera) cuckooshrike, triller, minivet 3. (Neosittids; genus *Daphoenositta*) sitella
- ÑSTV**- 'MOHOUID (genus *Mohoua*)' 1. (*M. albicilla*) whitehead 2. (*M. novaeseelandiae*) pipipi / brown creeper 3. (*M. ochrocephala*) yellowhead
- ÑSK**- 'ORIOOLID' 1. (genus *Oriolus*) oriole 2. (genus *Sphecotheses*) figbird 3. (genus *Pitohui*) pitohui
- ÑSKW**- 'ORIOLOID BIRD' I 1. (Pachycephalids; several genera) whistler, strike-thrush 2. (Oreocids; several genera) Australo-Papuan bellbird 3. (Falcunculids; genus *Falcunculus*) crested shriketit
- ÑSKY**- 'ORIOLOID BIRD' II 1. (Psophodids; genera *Psophodes*, *Androphobus*) whipbird, wedgebill 2. (Paramythyids; genera *Paramythia*, *Oreocharis*) painted berrypicker 3. (Eulacestomids; genus *Eulacestoma*) wattled ploughbill
- ÑSKL**- 'VIREONID' I 1. (genus *Vireo*) vireo 2. (genus *Vireolanius*) shrike-vireo 3. (genera *Hylophilus*, *Tunchiornis*, *Pachysylvia*) greenlet
- ÑSKR**- '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 *Nilaus*, *Dryoscopus*, *Bocagia*, *Tchagra*) brubru, puffback, tchagra
- ŇSKÇ**- ‘PLATYSTEIRID’ 1. (genus *Platysteira*) wattle-eye 2. (genus *Batis*) batis 3. (genus *Lanioturdus*) white-tailed shrike
- ŇSKF**- ‘VANGID’ I 1. (genera *Vanga*, *Calicalicus*, *Schetba*, *Xenopirostris*, *Falcula*, *Artamella*, *Leptopterus*, *Cyanolanius*, *Oriolia*, *Tylas*, *Hypositta*) vanga 2. (genus *Newtonia*) newtonia 3. (genus *Tephrornis*) 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. (Crypsirinines; 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 *Pyrrhocorax*) chough
- NSTM**- ‘CORVOID’ 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**- ‘CORVOID’ II 1. (Dicrurids; genus *Dicrurus*) drongo, balicassiao 2. (Ifritids; genus *Ifrita*) blue-caped ifrit 3. (Melampittids; genus *Melampitta*) melampitta
- NSTR**- ‘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
- 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*, *Phonygamus*) manucode 2. (genus *Astrapia*) astrapia 3. (genus *Parotia*) parotia
- NSTV**- ‘PARADISAEID (BIRD-OF-PARADISE)’ III 1. (genus *Lycocorax*) paradise-crow 2. (genus *Paradigalla*) paradigalla
- 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. (Hylotiids; 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 *Lophophanus*) crested tit
- MSTR̂-** ‘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. (Hyltiids; 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*) wrentit
- 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-** ‘HIRUNDIDS (SWALLOW / MARTIN)’ 1. (genera *Hirundo*, *Cecropsis*, *Alopocheledon*, *Neochelidon*, *Atticora*, *Haplocheledon*, *Notiochelidon*, *Tachycineta*, *Cheramoeca*, *Petrochelidon*) swallow, cliff swallow 2. (genera *Delichon*, *Progne*, *Ptyonoprogne*, *Riparia*, *Phedina*, *Pseudocheledon*) 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*, *Sceopycter*, *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**- ‘SAXICOLINES’ I 1. (genus *Luscinia*) nightingale, thrush 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**- ‘SAXICOLINES’ 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**- ‘SAXICOLINES’ III 1. (genus *Calliope*) rubythroat, firethroat, blackthroat 2. (genus *Enicurus*) forktail 3. (genera *Ficedula*, *Muscicapella*, *Humblotia*) flycatcher, pygmy flycatcher
- NSKF**- ‘SAXICOLINES’ 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. (Poliotilids; genera *Polioptila*, *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, hawfinch, bullfinch, rosefinch, drepanid / honeycreeper, greenfinch, twite, linnets, 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, twin-spot, firefinch, quailfinch, antpecker, nigrity, 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
- ŇŠTRĚ**- ‘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

- ŇŠŤÇ**- ‘ICTERID’ I 1. (genera *Agelaius*, *Xanthspar*, *Agelasticus*, *Chrysomus*, *Nesopsar*, *Xanthocephalus*, *Dives*, *Euphagus*, *Gymnomystax*, *Amblyramphus*, *Curaeus*, *Anumara*, *Gnorimopsar*, *Oreopsar*) [New World] blackbird 2. (genera *Quiscalus*, *Hypopyrrhus*, *Lampropsar*, *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. 1. (Phaenicophilids; genera *Phaenicophilus*, *Xenoligea*, *Microligea*) tanager, white-winged warbler, green-tailed warbler 2. (Zeledoniids; genus *Zeledonia*) wrenthrush 3. (Teretistrids; genus *Teretistris*) Cuban warbler
- ŇŠPY**- ‘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
- ŇŠPL**- ‘EMBERIZOID BIRD’ IV 1. (Microspingids; genera *Mitrospingus*, *Orthogonys*, *Lamprospiza*) microspingid tanager 2. (Calyptophilids; genus *Calyptophilus*) chat-tanager 3. (Nesospingids; genus *Nesospingus*) Puerto Rican tanager
- ŇŠPR**- ‘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
- ŇŠPŘ**- ‘THRAUPID (TANAGER)’ II 1. (genera *Tersina*, *Cyanerpes*, *Chlorophanes*, *Iridophanes*) honeycreeper 2. (genus *Dacnis*) dacnis 3. (genera *Sporophila*, *Dolospingus*, *Oryzoburus*) seedeater, seed-finch
- ŇŠPF**- ‘THRAUPID (TANAGER)’ III 1. (genera *Emberizoides*, *Embernagra*) grass-finch, pampa-finch 2. (genus *Hemispingus*) hemispingus 3. (genus *Nephelornis*) pardusco
- ŇŠPV**- ‘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

17.1.5 Fish, Tunicates & Lancelets

17.1.5.1 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
- PSGR**- '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

17.1.5.2 Sharks and Chimaeras [To signify a 'shark' in general, use the appropriate stem from the general 'TYPES OF FISH' root -PFT- shown in Sec. 17.0 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
- PSDR**- 'GROUND SHARK' 1. (Carcharhinids; numerous genera) requiem shark 2. (Hemigaleids; several genera) weasel shark 3. (genera *Eusphyra*, *Sphyrna*) hammerhead shark, winghead shark, bonnethead, scoophead
- PSDW**- '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
- PSDY**- '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. (Odontaspids; genera *Charcharias*, *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 *Chyloscyllium*, *Hemiscyllium*) bamboo shark
- PSBR**- 'CARPET SHARK' II 1. (genus *Rhincodon*) whale shark 2. (genus *Stegostoma*) zebra shark 3. (genera *Cirrhoscyllium*, *Parascyllium*) collared carpet shark
- PSBR**- '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*, *Planonasmus*, *Gollum*) false catshark, gollumshark
- PSDV**- 'CHIMAERA' 1. (Chimaerids; genera *Chimaera*, *Hydrolagus*) chimaera, rabbitfish, ghostshark, ratfish 2. (Callorhinchids; genus *Callorhinchus*) ploughnose chimaera, Cape elephantfish, Australian ghost shark 3. (Rhinochimaerids; genera *Harriotta*, *Neoharriotta*, *Rhinochimaera*) spookfish, sicklefin chimaera, paddle-nose chimaera, longnose chimaera

17.1.5.3 Lobe-Finned and Ray-Finned Fishes

- PSGW**- '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
- PSTRĚ-** ‘LEUCISCINE FISH’ III 1. (genus *Tica*) tench, doctor fish 2. (genus *Campostoma*) stoneroller 3. (genus *Acrocheilus*) chiselmouth
- PSTÇ-** ‘LEUCISCINE FISH’ IV 1. (genus *Mylopharadon*) 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
- RPSTL-** ‘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 gudeons, steeds)
- RPSTR-** ‘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)
- RPSTRĚ-** ‘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)

- RPSTÇ-** ‘CYPRINOID FISH (Other than Cyprinids)’ 1. (Catastomids; numerous genera) sucker fish 2. (genus *Psylorhynchus*) psylorhynchus 3. (Cobitoids and Gyrinocheilids; numerous genera) loach, algae-eater
- RPST-** ‘CHARACIFORM FISH’ 1. (Distichodontids; numerous genera) distichodontid fish 2. (Citharinids; genera *Citharidium*, *Citharinops*, *Citharinus*) lutefish 3. (Crenuchids; numerous genera) South American darter, sailfin tetra
- RPSTW-** ‘ALESTIOID FISH’ 1. (Hepsetids; genus *Hepsetus*) African pike characin 2. (Alestiids; numerous genera) African tetra
- RPSTY-** ‘SERRASALMID FISH’ 1. (genera *Catoprion*, *Pristobrycon*, *Pygocentrus*, *Pygopristis*, *Serrasalmus*) piranha 2. (numerous genera) pacu 3. (numerous genera) silver dollar
- RPSST-** ‘ERYTHINOID FISH’ I 1. (Tarumaniids; genus *Tarumania*) tarumania 2. (Erythrinids; genera *Erythrinus*, *Hoplerythrinus*, *Hoplias*) trahira/ tararira 3. (Cynodontids; several genera) dogtooth characin / vampire tetra / sabretooth tetra
- RPSSTW-** ‘ERYTHINOID FISH’ II 1. (Hemiodontids; several genera) hemiodontid fish 2. (Paradontids; several genera) pardontid fish 3. (Prochilodontids; several genera) flannel-mouthed characin
- RPSSTY-** ‘ERYTHINOID FISH’ III 1. (Chilodontids; genera *Caenotropus*, *Chilodus*) headstander 2. (Curimatids; several genera) toothless characin 3. (Anostomids; numerous genera) anostomid fish
- RPSSTL-** ‘CHARACID FISH’ I (including TETRA) 1. (Characins; several genera) characin fish 2. (Stevardiins and Characines other than Characins) characin-like fish 3. (Spintherobolines and Stethaprionines; numerous genera) other characin-like fish
- RPSSTR-** ‘CHARACID FISH’ II 1. (Ctenoluciids; genera *Boulengerella*, *Ctenolucius*) pike-characin 2. (Lebiasinids; several genera) pencil fish (including valadora) 3. (genus *Salminus*) dorado
- PSTH-** ‘CATFISH’ I 1. (Silurids; numerous genera) catfish 2. (Loricaroids; numerous genera) armored catfish, pencil catfish, parasitic catfish 3. (Diplomystids; numerous genera) velvet catfish
- PSTHW-** ‘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
- RPSTH-** ‘KNIFEFISH’ 1. (Gymnotoids; numerous genera) banded knifefish 2. (Rhamphichthyoids; numerous genera) sand knifefish, bluntnose/grass/leaf knifefish 3. (Apteronotoids; numerous genera) glass knifefish, rattail knifefish, ghost knifefish
- RPSTHW-** ‘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. (Maurolicines 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
- RPSKÇ**- ‘MYCTOPHIFORM FISH & ATELEOPOD FISH’ 1. (Myctophids; numerous genera) lanternfish 2. (Neoscopelids; several genera) blackchin 3. (Ateleopodids; several genera) jellynose fish / tadpole fish
- RPSKF**- ‘LAMPRIFORM FISH’ I 1. (Veliferids; genera *Velifer*, *Metavelifer*) sailfin moonfish 2. (genus *Lampris*) opah / moonfish / sunfish / kingfish 3. (genus *Radiicephalus*) tapertail
- RPSKH**- ‘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. (genus *Eleginus/Trisopterus*) other cod 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. (Melamphaidids; 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

Percomorphic Fish:

- 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 (Ptereleotrids; numerous genera) dartfish 2. (Kraemeriids; genera *Kraemeria*, *Gobitrichinotus*) sand darter 3. (Microdesmines; several genera) wormfish
- LPŠTRĚ**- ‘GOBIOID FISH’ III 1. (Thalasseleotridids; 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
- LPŠTF**- ‘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
- LPŠŠTL**- ‘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
- LPŠŠTR**- ‘SCOMBRIFORM FISH’ II 1. (Scombrilabracids; genus *Scombrilabrax*) longfin escolar / black mackerel 2. (Amarsipids; genus *Amarsipus*) amarsipa 3. (Tetragonurids; genus *Tetragonurus*) squaretail

- LPŠŠTR**- ‘SCOMBRIFORM FISH’ III 1. (Centrolophids; several genera) medusafish, ruff, rudderfish, blackfish, barrelfish, butterfish, warehou / trevalla 2. (Icosteids; genus *Icosteus*) ragfish 3. (Scombroptids; genus *Scombroptis*) gnomefish
- LPŠŠTČ**- ‘SCOMBRIFORM FISH’ IV 1. (genus *Sphyraena*) barracuda 2. (genus *Xiphias*) swordfish / broadbill 3. (Istiophorids; several genera) marlin / billfish
- LPŠŠTH**- ‘TRICHIURID FISH (CUTLASSFISH)’ 1. (genera *Aphanopus*, *Assurger*, *Evoxymetopon*, *Lepidopus*) scabbardfish 2. (genus *Benthodesmus*) frostfish 3. (genera *Eupleurogrammus*, *Demissolinea*, *Lepturacanthus*, *Tentoriceps*, *Thrichiurus*) hairtail
- LPŠŠT**- ‘SYNGNATHIFORM FISH’ I 1. (genus *Hippocampus*) seahorse 2. (Syngnathines; numerous genera) pipefish, pipehorse, seadragon 3. (Solenostomids; genus *Solenostomus*) ghost pipefish
- LPŠŠTW**- ‘SYNGNATHIFORM FISH’ II 1. (Pegasids; genus *Pegasus*, *Euypegus*) seamoth 2. (genus *Aulostomus*) trumpetfish 3. (genus *Fistularia*) cornetfish / flutemouth
- LPŠŠTY**- ‘SYNGNATHIFORM FISH’ III 1. (Mullids; several genera) goatfish / red mullet 2. (Callionymids; numerous genera) dragonet 3. (Draconettids; genera *Draconetta*, *Centrodraco*) slope dragonet
- LPŠŠTF**- ‘SYNGNATHIFORM FISH’ IV 1. (Macroramphosids; genus *Macroramphosus*) snipefish / bellowfish 2. (Centriscids; genera *Aeoliscus*, *Centriscus*) shrimpfish 3. (Dactylopterids; genera *Dactyloptena*, *Dactylopterus*) flying gurnard / helmet gurnard
- LPŠŠTL**- ‘SYNBRANCHIFORM FISH’ 1. (Synbranchids; numerous genera) swamp eel 2. (Chaudhuriids; several genera) earthworm eel 3. (Mastacembelids; numerous - genera) spiny eel, fire eel
- LPŠŠTHW**- ‘ANABANTOID FISH (GOURAMI)’ 1. (Osphronemids; numerous genera) gourami 2. (Helostomids; genus *Helostoma*) kissing gourami, kisser 3. (Anabantids; several genera) climbing gourami / climbing perch
- LPŠŠTH**- ‘ANABANTIFORM FISH’ 1. (Channids; several genera) snakefish 2. (Badids; genera *Badis*, *Dario*) chameleonfish 3. (Nandids and Pristolepidids; several genera) Asian leaffish
- LPSP**- ‘CARANGID FISH’ I 1. (genus *Lichia*) leerfish / garrick 2. (genus *Trachinotus*) pompano 3. (genus *Scomberoides*) queenfish
- LPSPW**- ‘CARANGID FISH’ II 1. (genera *Oligoplites*, *Parona*) leatherjacket 2. (genus *Campogramma*) vadigo 3. (genus *Elagatis*) rainbow runner / rainbow yellowtail, Spanish jack / Hawaiian salmon
- LPSPY**- ‘CARANGID FISH’ III 1. (genus *Naucrates*) pilot fish 2. (genus *Seriola*) amberjack 3. (genus *Seriolina*) black-banded trevally
- LPSPPL**- ‘CARANGID FISH’ IV 1. (genus *Alectis*) threadfish, diamond trevally 2. (genus *Alepes*) scad 3. (genus *Atropus*) cleftbelly trevally
- LPSPR**- ‘CARANGID FISH’ V 1. (genera *Caranx*, *Carangoides*, *Hemicaranx*) jack, trevally, bludger 2. (genus *Atule*) yellowtail scad 3. (genus *Chloroscombrus*) bumper / bumperfish
- LPSPR**- ‘CARANGID FISH’ VI 1. (genus *Decapterus*) mackerel scad, round scad, roughear scad, Indian scad, redbill 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
- LPSPC**- ‘CARANGID FISH’ VII 1. (genus *Pantolebus*) fringefin trevally / round-finned trevally / reef herring 2. (genus *Parastromateus*) black pomfret 3. (genus *Pseudocaranx*) white trevally, skipjack trevally
- LPSPF**- ‘CARANGID FISH’ VIII 1. (genus *Selar*) oxeye scad, bigeye scad 2. (genus *Selaroides*) yellowstripe scad / yellowstripe treally / yellow-banded trevally / smooth-tailed trevally / slender-scaled trevally 3. (genus *Selene*) lookdown, moonfish
- LPSPH**- ‘CARANGID FISH’ IX 1. (genus *Trachurus*) saurel / jack mackerel 2. (genus *Ulua*) silvermouth trevally, longrakered trevally 3. (genus *Uraspis*) whitetongue jack, cottonmouth jack, whitemouth jack
- LPSPIL**- ‘CARANGIFORM FISH’ I 1. (genus *Nematistius*) roosterfish 2. (genus *Coryphaena*) dolphinfish 3. (genus *Rachycentron*) cobia / black kingfish / black bonito / lemonfish

- LPSPHW-** ‘CARANGIFORM FISH’ II 1. (Echeneids; several genera) remora / suckerfish, lousefish 2. (Menids; genus *Mene*) moonfish 3. (Centropomids; genus *Centropomus*) snook
- LPSPT-** ‘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, yellowfin 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*) willow 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
- RPŠKL-** ‘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 *Oncopterus*) Remo flounder
- RPŠKR-** ‘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
- RPŠKŘ-** ‘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

- LPSKW-** ‘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 dwarf 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
- LPSKY-** ‘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
- LPSKL-** ‘BOTHID FISH (LEFTEYE FLOUNDER)’ IV 1. (genus *Lophonectes*) crested flounder 2. (genus *Perissias*) stiped-fin flounder 3. (genera *Asterorhombus*, *Chascanopsetta*, *Japonolaeops*, *Neolaeops*, *Parabothus*, *Psettina*, *Taeniopsetta*, *Tosarhombus*, *Tricopsetta*) other lefteye flounder
- LPSKR-** ‘PARALYCHTHYID FISH (LARGE-TOOTH FLOUNDER)’ I 1. (genus *Ancylopsetta*) Cyclope founder, 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
- LPSKŘ-** ‘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
- LPSKÇ-** ‘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
- LPSKF-** ‘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
- LPSKH-** ‘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
- LPSKL-** ‘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
- LPSKHW-** ‘ACHIROPSETTID FISH (SOUTHERN FLOUNDER)’ 1. (genera *Achirosetta*, *Neoarchirosetta*) finless flounder / prickly flounder, armless flounder 2. (genus *Mancopsetta*) Antarctic armless flounder 3. (genus *Pseudomancopsetta*) pygmy flounder
- LPSKŤ-** ‘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*, *Pnictes*) 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
- PŠTRĚ-** ‘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
- 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
- PSSKÇ-** ‘ANABLEPID FISH’ 1. (genus *Anableps*) four-eyed fish 2. (genus *Jenynsia*) onesided livebearer 3. (genus *Oxyzygonectes*) white-eye
- PSSKF-** ‘POECILIID FISH’ 1. (Procatopodines; numerous genera) lampeye 2. (Aplocheilichthines; genus *Aplocheilichthys*) banded lampeye 3. (Poeciliines; numerous genera) livebearer
- PSSKH-** ‘ATHERINOPSID FISH (NEOTROPICAL SILVERSIDE)’ 1. (genus *Atherinops*) topsmelt, topsmelt silverside 2. (genus *Atherinopsis*) jacksmelt, jack silverside 3. (genus *Leuresthes*) grunion
- PSSKĽ-** ‘ATHERINIFORM 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
- PSSKŤ-** ‘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
- LPSTR-** ‘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
- RPSK-** ‘PSEUDOCROMID FISH (DOTTYBACK)’ 1. (Congrogadines; numerous genera) eel-blenny 2. (Pseudochromines and Anisochromines; numerous genera) dottyback 3. (Pseudoplesiopines; several genera) dottyback
- RPSKL-** ‘POMACENTRID FISH’ 1. (Amphiprionines; genera *Amphiprion*, *Premnas*) clownfish / anemonefish 2. (Chromines [other than *Dascyllus*] and Lepidozygines; several genera) damsselfish 3. (genus *Dascyllus*) dascyllus, humbug
- RPSKHW-** ‘POMACENTRINE FISH’ I 1. (genus *Abudefduf*) sergeant, sergeant-major, nightsergeant 2. (genus *Hypsypops*) garibaldi 3. (genus *Neopomacentrus*) demoiselle / lyretail damsselfish
- RPSKT-** ‘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
- PSSPL-** ‘LABRID FISH (WRASSE)’ I 1. (genus *Halichoeres* and numerous other genera) wrasse 2. (genera *Bodianus*, *Lachnolaimus*) hogfish 3. (Scarine labrids; numerous genera) parrotfish
- 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 *Labroides*) cleaner wrasse
- PSSPÇ-** ‘LABRID FISH (WRASSE)’ IV 1. (genus *Labrichthys*) tubelip wrasse 2. (genus *Diproctacanthus*) yellowtail tubelip 3. (genus *Achoerodus*) blue groper
- PSSPF-** ‘LABRIFORM FISH’ 1. (Odacids; several genera) cale, weed whiting
- PSSPH-** ‘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

- PSSPI-** ‘TRACHINIFORM FISH’ II 1. (Chiasmodontids; several genera) snaketooth fish / swallower 2. (Champsodontid; genus *Champsodon*) crocodile toothfish, sabre-gill, gaper 3. (Cheimarrichthyids; genus *Cheimarrichthys*) torrentfish
- PSSPHW-** ‘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
- PSSPT-** ‘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
- RPSPY-** ‘CENTRARCHID FISH’ III 1. (genus *Ambloplites*) rock bass, shadow bass, Roanoke bass, Ozark bass 2. (genus *Acantharchus*) mud sunfish
- 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. (Cirrhitids; 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
- RPSSTRĚ-** ‘CENTRARCHIFORM FISH’ IV: 1. (Kyphosines; several genera) sea chub 2. (Microcantines; several genera) footballer, moonlighter 3. (Scorpidines; several genera) halfmoon, grey knifefish, blue knifefish, sweep
- RPSSTÇ-** ‘CENTRARCHIFORM FISH’ V: 1. (Oplegnathids; genus *Oplegnatus*) knifejaw 2. (Percichthyids, Percalatids, Perciliids, and Sinipercids; 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, scrapper
- PŠŠČ-** ‘TETRADONTIFORM FISH’ III: 1. (Molids; genera *Mola*, *Mastrurus*, *Ranzania*) sunfish / mola 2. (Ostraciids and Aracanids; several genera) boxfish, cowfish, trunkfish, turretfish, basketfish
- 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 *Ebosia*) lionfish 3. (genus *Pterois*) lionfish, zebrafish, firefish, turkeyfish / tastyfish / butterfly-cod
- PSSTY-** ‘SCORPAENIFORM FISH’ III: 1. (Apistids and Tetrarogids; 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 / pogue / armed bullhead 3. (Anoplagonines; several genera) alligatorfish
- PSSTRĚ-** ‘SCORPAENIFORM FISH’ VI: 1. (Anoplopomatids; genera *Anoplopoma*, *Erelepsis*) 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*, *Maxillicosta*) 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
- PSSTĽ-** ‘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. (Hemitripterids; 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
- PSSDRĚ-** ‘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
- PSPTĚ-** ‘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. (Neoceratids; genus *Neoceratias*) toothed seadevil / spiny seadevil / netbeard seadevil
- PSSBRĚ-** ‘LOPHIIFORM FISH (ANGLERFISH)’ V 1. (Caulophrynids; genera *Caulophryne*, *Robia*) fanfin / hairy anglerfish / fanfin seadevil 2. (Melanocetids; genus *Melanocetus*) black seadevil 3. (Thaumatichthyids; genera *Thaumatichthys*, *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, oblade, 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. (Epinephelines; 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
- PSKL-** ‘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
- PŠKL-** ‘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

- PŠTHW**- ‘PEMPHERIFORM FISH’ I 1. (Pemptherids; genera *Pemptheris*, *Parapriacanthus*) sweeper, bullseye 2. (Symphsanodontids; genus *Symphysanodon*) slopefish 3. (Banjosids; genus *Banjos*) banjofish
- PŠKHV**- ‘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. (Dinoperoids; 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
- RPŠKÇ**- ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ IV 1. (Caristiids; several genera) manefish 2. (Polycentrids; genera *Monocirrhus*, *Polycentrus*) leafish 3. (Pomacanthids; several genera) marine angelfish
- RPŠKF**- ‘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
- RPŠKH**- ‘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
- RPŠKL**- ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ VII 1. (Sciaenids; numerous genera) drum, croaker, sheephead, wuss fish, shepherd’s pie, gou, Gasper goo, grinder, meagre, kob, mullovely, 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
- RPŠKT**- ‘MISCELLANEOUS PERCOMORPHARIAN FISH’ VIII 1. (Pomatoids; genus *Pomatomus*) bluefish, tailor, elf 2. (Lactariids; genus *Lactarius*) false trevally

17.1.6 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, Dendrochirotidids, and Elaspodids) sea cucumber 2. (Molpadiids; several genera) molpadiid sea cucumber 3. (Dendrochirotidids and Elaspodids; 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

17.1.7 Protostomes (other than Arthropods)

17.1.7.1 Annelids & Related Animals

-**LTPW**- ‘ANNELID’ 1. earthworm 2. leech 3. other annelid / ringed worm / segmented worm

-**LTPY**- ‘NEMATODE(-LIKE ANIMAL)’ 1. (Nematoda; numerous genera) nematode/roundworm 2. (Nematomorphs; numerous genera) horsehair worm / Gordian worm 3. (Onychophora; numerous genera) velvet worm

-**LTPL**- ‘MICROSCOPIC ECDYSOZOAN’ 1. (Tardigrada; numerous genera) tardigrade / “water bear” 2. (Loricifera; numerous genera) loriferan 3. (Kinorhyncha; numerous genera) mud dragon / spiny crown worm

-**LTPR**- ‘PRIAPULID WORM’ 1. (Priapulids; genera *Priapulid*, *Priapulosis*) priapulid worm (a.k.a. penis worm) 2. (genus *Tubiluchus*) tubiluchid penis worm 3. (genus *Halicryptus*) giant penis worm

-**LTPŘ**- ‘ROTIFER’ 1. (Eurotatoria; numerous genera) rotifer 2. (Monogonanta; numerous genera) monogonant rotifer 3. (Seisonids; genera *Seison*, *Paraseison*) seisonid rotifer

-**LTPÇ**- ‘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

-**LTPL**- ‘OTHER SPIRALIA’ 1. (Gnathostomulids; numerous genera) jaw worm 2. (Micrognathozoa; genus *Limnognathia*) limnognathia 3. (Gastroticha; numerous genera) gastrotich / hairyback

-**LTPF**- ‘FLATWORM’ 1. (cestodes; numerous genera) tapeworm 2. (trematodes; numerous genera) fluke 3. (non-cestoid, non trematoid platyhelminths; numerous genera) flatworm, planarian

-**LTPĪ**- ‘BRYOZOAN / ENTOPROCT’ 1. (Bryozoa/Ectoprocta; numerous genera) moss animal 2. (Entoprocta/Kamptozoa; numerous genera) entoproct / kamptozoan

-**LTPS**- ‘ANNELID-RELATED ANIMAL I’ 1. (Phoronida; genera *Phoronis*, *Actinotrocha*) horseshoe worm 2. (Brachiopoda; numerous genera) brachiopod 3. (Sipuncula; numerous genera) peanut worm

-**LTPŠ**- ‘ANNELID-RELATED ANIMAL II’ 1. (Nemertea; numerous genera) ribbon worm / proboscis worm 2. (Myzostomida; numerous genera) myzostomid 3. (Dicyemida/Rhombozoa; several genera) dicyemid/rhombozoan

17.1.7.2 Molluscs

17.1.7.2.1 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]

-**TPW**- ‘SNAIL’ 1. terrestrial snail 2. sea snail / whelk 3. limpet

-**TPY**- ‘DISTINCTIVE SEA SNAIL’ 1. abalone 2. conch [i.e., sea snail with pointed/spired/horned shell] 3. (Thecosomes; numerous genera) sea butterfly

-**TPL**- ‘SLUG’ 1. slug 2. sea slug / nudibranch 3. (Anaspids; several genera) sea hare

17.1.7.2.2 Bivalves

-**TPR**- ‘CLAM’ 1. clam 2. cockle 3. (Limids; several genera) file shell

-**TPŘ**- ‘MYID / HIATELLID’ 1. (Myids; several genera) soft-shell clam 2. (Hiatellids; several genera) geoduck 3. (genus *Teredo*) shipworm

-**TPC**- ‘OYSTER’ 1. (Ostreoids; numerous genera) [true] oyster, foam oyster / honeycomb oyster 2. (Pterioids; numerous genera) hammer oyster, pearl oyster, tree oyster, winged oyster, feather oyster, pulvinitid 3. (Dimyids; several genera) dimyarian oyster

-**TPF**- ‘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

-**TPS**- ‘PTERIOMORPH’ I 1. (Anomiids; several genera) jingle shell / saddle oyster 2. (Placunids; windowpane shell / windowpane oyster 3. (Pinnids; several genera) pen shell

-**TPŠ**- ‘PTERIOMORPH’ II 1. (Arcids; numerous genera) ark shell / ark clam / bittersweet 2. (genus *Plicatula*) kittenpaw 3. (genus *Spondylus*) spiny oyster / thorny oyster

17.1.7.2.3 Cephalopods

-**TPT**- ‘OCTOPOD’ 1. (Octopoda; numerous genera) octopus 2. (genus *Vampyroteuthis*) vampire squid 3. (genus *Argonauta*) argonaut / paper nautilus

-**TPL**- ‘SQUID / CUTTLEFISH’ 1. (Myopsida, Oegopsida; numerous genera) squid 2. (Sepiolida, Spirulida; numerous genera) bobtail squid, ram’s horn squid 3. (Sepiadariids; numerous genera) cuttlefish

17.1.7.2.4 Other Molluscs

-**TPSS**- ‘CHITON / NAUTILUS / SCAPHOPOD’ 1. (genera *Allonautilus*, *Nautilus*) [chambered] nautilus 2. (Polyplacophorans; numerous genera) chiton / sea cradle 3. (Scaphopods; several genera) tusk shell / tooth shell

-**TPŠŠ**- ‘OTHER MOLLUSC’ 1. (Solenogastres/Neomeniomorphs; numerous genera) solenogaster 2. (Caudofoveata/Chaetodermomorpha; numerous genera) caudofoveate 3. (Monoplacophorans; several genera) monoplacophoran

17.1.8 Porifera, Ctenophora, Placozoa, and Cnidaria

17.1.8.1 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

17.1.8.2 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

17.1.8.3 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
- KFR̂-** ‘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

17.1.9 Arthropods (including Arachnids, Crustaceans, Myriapods, and Insects)

17.1.9.1 Chelicerates > Euchelicerata > Arachnida > Araneae

Chelicerates > Euchelicerata > Arachnida > Araneae > Mesothelae (containing single family Liphistiidae)

- ZÑW-** ‘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. (Cyrtoucheniids; 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. (Therephosids; 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

- ZPW**- ‘PRIMITIVE ARANEOMORPHIC SPIDER’ I 1. (Hypochilids; genera *Ectatosticta*, *Hypochilus*) lampshade spider 2. (Filistatids; numerous genera) crevice weaver spider 3. (Austrochilids; genera *Austrochilus*, *Thaيدا*) austrochilid spider
- ZPY**- ‘PRIMITIVE ARANEOMORPHIC SPIDER’ II 1. (Gradungulids; several genera) large-clawed spider 2. (genus *Hickmania*) Tasmanian cave spider 3. (Leptonetids; numerous genera) leptonetid spider
- ZPL**- ‘SYNSPERMIATIC (HAPLOGYNE) SPIDER’ I 1. (Diguetiids; genera *Diguetia*, *Segestrioides*) coneweb spider 2. (Plectreurids; genera *Kibramoa*, *Plectreurys*) plectreurid spider 3. (Paculiids; several genera) paculiid spider
- ZPR**- ‘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.
- ZPŘ**- ‘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
- ZPF**- ‘SYNSPERMIATIC (HAPLOGYNE) SPIDER’ IV 1. (Oonopids; numerous genera) goblin spider / dwarf hunting spider 2. (Ochyroceratids; numerous genera) midget ground weaver spider 3. (Caponiids; numerous genera) caponiid spider
- ZPL**- ‘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
- ZPÇ**- ‘SYNSPERMIATIC (HAPLOGYNE) SPIDER’ VI 1. (Scytodids; several genera) spitting spider 2. (Telemids; numerous genera) long-legged cave spider 3. (Trogloraptorids; genus *Trogloraptor*) trogloraptor spider

Chelicerates > Euchelicerata > Arachnida > Araneae > Mygalomorphae > Araneomorphae > Palpimanoidea

- ZPH**- ‘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
- ZPHW**- ‘PALPIMANOID SPIDER’ II 1. (Mecysmaucheniids; several genera) mecysmaucheniid spider 2. (genus *Huttonia*) huttonia spider

Chelicerates > Euchelicerata > Arachnida > Araneae > Mygalomorphae > Araneomorphae > Entelegynae

- SPW**- ‘ENTELEGYNE 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**- ‘ENTELEGYNE 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**- ‘ENTELEGYNE 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-** ‘ENTELEGYNE SPIDER’ IV 1. (Theridiosomatids; numerous genera) ray spider 2. (Cyatholipids; numerous genera) cyatholipid spider 3. (Pimoids; several genera) pimoid spider
- SPT-** ‘ENTELEGYNE SPIDER’ V 1. (Synaphrids; several genera) synaphrid spider 2. (Synotaxids; genus *Synotaxus*) synotaxus spider 3. (Physoglenids; numerous genera) physoglenid spider
- SPV-** ‘ENTELEGYNE SPIDER’ VI 1. (Agelenids; numerous genera) funnel weaver spider 2. (Toxopids; numerous genera) toxopid spider 3. (Amaurobiids; numerous genera) tangled nest spider
- SPL-** ‘ENTELEGYNE 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-** ‘ENTELEGYNE 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-** ‘ENTELEGYNE SPIDER’ IX 1. (Ammonoaxenids; several genera) termite hunter spider 2. (Cithaeronids; genera *Cithaeron*, *Inthaeron*) cithaeronid spider 3. (Gallieniellids; several genera) gallieniellid spider
- SPFW-** ‘ENTELEGYNE 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-** ‘ENTELEGYNE 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-** ‘ENTELEGYNE SPIDER’ XII 1. (Desids; numerous genera) intertidal spider 2. (Phrurolithids; numerous genera) phrurolithid spider 3. (Trachelids; numerous genera) trachelid spider
- SPFR-** ‘ENTELEGYNE SPIDER’ XIII 1. (Dictynids; numerous genera) dictynid spider 2. (Cybaeids; numerous genera) cybaeid spider 3. (Hahniids; numerous genera) dwarf sheet spider
- SPFŘ-** ‘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. (Nicodamid; several genera) nicodamid spider
- SPTL-** ‘ENTELEGYNE SPIDER’ XX 1. (Phyxelidids; numerous genera) lace web spider 2. (Titanocids; several genera) titanocid spider 3. (Megadictynids; genera *Forstertyna*, *Megadictyna*) megadictynid spider
- SPTŘ-** ‘ENTELEGYNE SPIDER’ XXI 1. (Uloborids; numerous genera) hackled orb weaver 2. (Deinopids; genera *Deinopsis*, *Menneus*) net-casting spider 3. (Zodariids; numerous genera) ant spider
- SPTŘ-** ‘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

Chelicerates > Euchelicerata > Arachnida > remaining families

-ZFW- 'METASTIGMA (TICK)' 1. (Ixodids; numerous genera) hard tick 2. (Argasids; numerous genera) soft tick 3. (Nuttalliellids; genus *Nuttalliella*) nuttalliella tick

-ZFY- 'MITE' 1. (Sarcoptiformes; numerous genera) sarcoptiform mite (i.e., astigmatine or oribatid mite) 2. (Trombidiformes; numerous genera) trombidiform mite (i.e., prostigmatid or sphaerolichid mite) 3. (Holothyrids and Mesostigma; numerous genera) parasitiform mite

-ZFL- '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

-ZFR- 'OTHER ARACHNID' II 1. (Amblypygids; numerous genera) whip spider / tailless whip scorpion 2. (Shizomids; numerous genera) shorttailed whipscorpion 3. (Thelyphonids; numerous genera) whip scorpion / vinegaroon

-ZFR' 'OTHER ARACHNID' III 1. (Palpigradids; numerous genera) palpigrade / microwhip scorpion 2. (Ricinuleids; genera *Cryptocellus*, *Pseudocellus*, *Ricinoides*) hooded tickspider

Chelicerates > non-arachnids

-SPLL- 'NON-ARACHNID CHELICERATE' 1. (Xiphosura; genera *Tachypleus*, *Limulus*, *Carcinoscorpius*) horseshoe crab 2. (Pycnogonid; numerous genera) sea spider

17.1.9.2 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. (Laevidaudata; genera *Lynceiopsis*, *Lynceus*, *Paralimnetes*) [laevidaudate] 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, Monstrilloids, Mormonillids, Platycopiids, Siphonostomatoids; numerous genera) [primarily] planktonic marine or freshwater copepod 2. (Harpacticoids, Speleophriids; numerous genera, plus Gellyellids; genus *Gelyella*) sea-floor -dwelling or cave-dwelling copepod 3. (Mystacocarids; 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

-KTKR̄- ‘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

-KTMW- ‘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

-KTTY- ‘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

-KTNW- ‘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

-KTTY- ‘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

-KTPW- ‘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

-KTPY- ‘DENDROBRANCHIATE (PRAWN)’ 1. (Aristeids; several genera) gamba prawn / deep-sea shrimp 2. (Penaeoids other than Aristeids; numerous genera) [benthescymid, penaeid, sicyonid, or solenocerid] prawn 3. (Sergestoids; several genera) [luciferid or sergestid] prawn

Crustaceans > Malacostraca > Eumalacostraca > Eucarida > Decapoda > Caridea

-KTPL- ‘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

17.1.9.3 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)

-BDR- ‘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

-BĐŘ- ‘OTHER MYRIAPOD’ 1. (Pauropod; numerous genera) pauropod 2. (Symphyla; several genera) symphylan / garden centipede / pseudocentipede

17.1.9.4 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 / hawkler / darner dragonfly, petaltail dragonfly, clubtail dragonfly, Himalayan relict dragonfly 2. (Cordulegastrids; 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

> 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

-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

-**XFR**- '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

> Mantodea (mantises)

-**XTL**- '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

> 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**- 'PARANEOPTERAN BUG' I 1. (Phthiraptera; numerous genera) louse 2. (Liposcelidids; numerous genera) booklouse 3. (Thysanoptera; numerous genera) thrip

-**CXR**- 'PARANEOPTERAN BUG' II 1. (Fulgoroids; numerous genera) planthopper 2. (Psocoptera [except Liposcelidids]; numerous genera) barklouse / barkfly / psocid

> Hemiptera (true bug)

-**NIṬ**- 'CICADOMORPHIC BUG' 1. (Cicadoids; numerous genera) cicada 2. (Cercopoids; numerous genera) froghopper / spittlebug 3. (Membracoids; numerous genera) treehopper / thorn bug

-**NIṬW**- '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

-**NIṬY**- 'REDUVIID (ASSASSIN BUG)' II 1. (Phymatines; numerous genera) ambush bug 2. (Emesines; numerous genera) three-legged bug 3. (Holoptilines; several genera) feather-legged bug / ant wolf

-**NIṬŘ**- 'STERNORRHYNCHAN BUG' 1. (Psylloids; numerous genera) jumping plant lice 2. (Aleyrodids; numerous genera) whitefly 3. (Coccoids; numerous genera) scale insect, mealybug, cochineal, ground pearl

- NŁTF**- ‘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
- NŁTL**- ‘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
- NŁTR**- ‘PENTATOMOMORPHIC BUG’ II 1. (Hyocephalids; genera *Hyocephalus*, *Maevius*) hyocephalid bug 2. (Stenocephalids; genus *Dicranocephalus*) dicranocephalus 3. (Termitaphidid; Termitaphis, Termitaradus) termite bug
- NŁC**- ‘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
- NŁCW**- ‘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
- NŁČ**- ‘CIMICOMORPHIC BUG’ III 1. (Tingids; numerous genera) lace bug 2. (Thaumastocorids; several genera) royal palm bug 3. (Polycytenid; several genera) Old World bat bug / polycytenid bat bug
- NŁČW**- ‘CIMICOMORPHIC BUG’ IV 1. (Velocipedids; several genera) velocipedid bug 2. (Joppeicids; genus *Joppeicus*) joppeicus bug 3. (Curaliids; genus *Curalium*) curalium bug
- NŁTV**- ‘CIMICOMORPHIC BUG’ V 1. (Plokiophilids; several genera) plokiophilid bug 2. (Medocostids; genus *Medocostes*) medocostes bug 3. (Pachynomids; several genera) pachynomid bug
- NŁF**- ‘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. (Herमतobatids; genus *Herमतobates*) coral-treader
- NŁFW**- ‘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
- NŁFY**- ‘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
- NŁFL**- ‘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
- NŁFR**- ‘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
- NŁFŘ**- ‘NEPOMORPHIC BUG’ III 1. (Notonectids and Pleoids; numerous genera) backswimmer, pygmy backswimmer 2. (Aphelocheirids; genus *Aphelocheirus*) aphelocheirus bug 3. (Potamocorids; genera *Potamocoris*, *Coleopterocoris*) potamocorid bug
- NŁV**- ‘HETEROPTERAN BUG’ 1. (Peloridiids; numerous genera) moss bug / beetle bug 2. (Enicocephalomorphs; numerous genera) gnat bug, unique-headed bug, aenictophecheid 3. (Leptopodomorphs; numerous genera) shore bug, spiny shore bug

> Hymenoptera

> 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

Hymenoptera > Vespoidea & Chrysoidea

- 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 *Vespa*) 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., Bethylids, 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. (Vespooids other than Mutillids, Pompilids, and Vespids [i.e., Bradynobaenids, Rhopalosomatids, Sapygids, Scoliids, Sierolomorphids, Tiphiids]; numerous genera) vespooid wasp

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, Ibalids, 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. (Mymaromatids; 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

Hymenoptera > Formicidae (ants)

- MZK**- '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
- MZKW**- 'FORMICINE ANT' II 1. (genus *Camponotus*) carpenter ant 2. (genus *Oecophylla*) weaver ant 3. (genus *Polyergus*) Amazon ant
- MZKY**- 'FORMICINE ANT' III 1. (genus *Brachymyrmex*) rover ant 2. (genus *Gigantiops*) Gigantiops jumping ant 3. (all other Formicine genera) formicine ant
- MZKL**- '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
- MZKR**- 'MYRMICINE ANT' II 1. (genus *Cremtogaster*) Saint Valentine ant / cocktail ant / acrobat ant 2. (genus *Cephalotes*) turtle ant 3. (all other Myrmicine genera) myrmicine ant
- MZKŘ**- 'MYRMECIINE ANT' 1. (genus *Myrmecia*) jack jumper ant / bulldog ant / bull ant 2. (genus *Nothomyrmecia*) dinosaur ant / dawn ant 3. (Pseudomyrmecines; genera *Pseudomyrmex*, *Myrcridis*, *Tetraponera*) pseudomyrmecine ant, slender ant
- MZKF**- 'DOLICHODERINE ANT' I 1. (genus *Linepithema*) Argentine ant 2. (genus *Iridomyrmex*) rainbow ant 3. (genus *Dorymyrex*) cone ant
- MZKT**- '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
- MZKV**- 'OTHER ANT' 1. (Ectatommines, Heteroponerines, Amblyoponines, Paraponerines, Ponerines, Proceratiines); numerous genera) poneromorph ant 2. (Aneuretines, Martialines, Agroecomyrmecines; several genera) other non-poneromorph ant

Hymenoptera > Symphyta (sawflies)

- ZZMW**- '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
- ZZMY**- '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
- ZZML**- 'SYMPHYTE (SAWFLY)' III 1. (Cephooids; numerous genera) stem sawfly 2. (Siricids; several genera) horntail 3. (Anaxyelids; genus *Syntexis*) cedar wood wasp
- ZZMR**- 'WOOD WASP' 1. (Xyphidiids; numerous genera) wood wasp 2. (Orussids; numerous genera) parasitic wood wasp

> Neuropterids (net-winged insects: lacewings, mantidflies, antlions, etc.)

- ZGW**- 'PRIMITIVE FLY' 1. (Plecoptera; numerous genera) stonefly 2. (Raphidoptera; numerous genera) snakefly 3. (Nevrorthids; genera *Nevrorthus*, *Austroneurorthus*, *Nipponeurorthus*) nevrorthid lacewing
- ZGY**- 'MEGALOPTERA' 1. (Sialids; numerous genera) alderfly 2. (Chauliodines; numerous genera) fishfly 3. (Corydalines; several genera) dobsonfly
- ZBW**- 'NEUROPTERID (LACEWING)' I 1. (Osmylids; numerous genera) giant lacewing 2. (Ithonids;) moth lacewing 3. (Chrysopids;) green lacewing, stinkfly
- ZBY**- 'NEUROPTERID (LACEWING)' II 1. (Hemerobiids;) brown lacewing 2. (Coniopterygids;) dustywing 3. (Dilarids; several genera) pleasing lacewing
- ZBL**- 'NEUROPTERID (LACEWING)' III 1. (Mantispids;) mantidfly 2. (Rhachiberothids;) thorny lacewing 3. (Berothids;) beaded lacewing
- ZBR**- 'NEUROPTERID (LACEWING)' IV 1. (Nymphids;) split-footed lacewing 2. (Nemopterids;) spoonwing, thread-winged 3. (Sisyrids;) spongillafly
- ZBŘ**- 'NEUROPTERID (LACEWING)' V 1. (Psychopsids;) silky lacewing 2. (Myrmeleontids;) antlion 3. (Ascalaphids;) owlfly

Coleoptera (beetles)

Coleoptera > Adephaga

- FBW**- ‘ADEGPHAGAN 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. (Haliplids; several genera) crawling water beetle, haliplid 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

Coleoptera > Polyphaga

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 cleroid beetle

- RÇKL-** ‘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, Tricentenotomids, Ulodids; numerous genera) other tenebrionoid beetle

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. (Euchirinae; several genera) long-armed scarab 2. (Aclopininae, Aegialiinae, Allidiostomatinae, Chironinae, Dynamopodinae, Aulonocneminae, Eremazinae, Phaenomeridinae, Orphninae, Temitotroginae; numerous genera) other scarab beetle
- RBKL-** ‘SCARABAEID BEETLE’ I 1. (Hybosorids; 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. (Diphyllostomatids; genus *Diphyllostoma*) false stage beetle 3. (Passalids; numerous genera) bess beetle / bessbug / betsy beetle / horned passalus beetle
- RBKŘ-** ‘SCARABAEID BEETLE’ III 1. (Pleocomids; genus *Pleocoma*) 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. (Beloninae; genus *Belonina*) belonina beetle

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

-**RBKT**- ‘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

Coleoptera > Polyphaga > Elateriformia

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. (Cerophytids; 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. (Brachypsectrids; genus *Brachypsectra*) Texas beetle 2. (Artematopodids; several genera) soft-bodied plant beetle 3. (Jurasids, Podabrocephalids, Rhinorhipids; several genera) other elateriform beetle

Coleoptera > Polyphaga > Elateriformia>Buprestoidea

-**RDDR**- ‘BUPRESTOID BEETLE’ 1. (Buprestids; numerous genera) jewel beetle / metallic wood-boring beetle 2. (Schizopodids; several genera) false jewel beetle

Coleoptera > Polyphaga > Elateriformia>Dascilloidea

-**RBDV**- ‘DASCILLOID BEETLE’ 1. (Dascillids; several genera) soft-bodied plant beetle 2. (Rhipicerids; several genera) cicada parasite beetle

Coleoptera > Polyphaga > Elateriformia>Scirtoidea

-**RBDŘ**- ‘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

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

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

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

> Amphiesmenoptera (butterflies, moths, and caddisflies)

> 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

> Amphiesmenoptera > Lepidoptera > Monotrysiia (monotrysiic moths)

-LSPL- ‘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. (Opostegids; 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

> 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
- > 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 licker 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 licker, 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
- LFPS**- ‘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
- 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, Syringopaidis; numerous genera) other gelechioid moth
- LFPSW**- ‘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. (Douglasiids; genera *Tinagma*, *Klimeschia*, *Protonyctia*) Douglas moth

> 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. (Pyrigines; 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

- LKŘ-** ‘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) poritiine, zulu, pentila, buff, glasswing / white mimic, tiger mimic, acraea mimic, harlequin, dot, acraea blue, epitola
- 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
- LKL-** ‘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
- LKHV-** ‘BUTTERFLY- MOTH / MOTH-BUTTERFLY’ 1. (Callidulids; several genera) Old World butterfly-moth 2. (Hedyliids; genus *Macrosoma*) American moth-butterfly
- 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
- LKSJ-** ‘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. (Pyralsids; 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

> 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. (Apateleodids; numerous genera) American silkworm moth, shag-carpet caterpillar moth

-**ŘZBY-** ‘BOMBYCOID MOTH’ II 1. (Eupterotids, Phiditiids, Endromids, Carthaeids; numerous genera) bombycid 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. (Epiptemines; numerous genera) scoopwing moth 3. (Auzeines, Microniines; several genera) auzeine moth, microniine moth

>Noctuid moths

-**ŘZBŘ-** ‘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

-**ŘZBV-** ‘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

-**ŘZBZ-** ‘EREBID MOTH’ III 1. (Aganaines; several genera) aganaine, tiger moth 2. (Scolecocampines; several genera) scolecocampine, algibelle, sigela, dead-wood borer moth 3. (Anobines, Boletobiines, Eulepidotines, Hycalines, Pangraptines, Rivulines, Tinoliines, Toxocampines; numerous genera) other erebid moth

-**ŘZBŽ-** ‘NOCTUID (OWLET) MOTH’ 1. (Noctuines; numerous genera) owlet moth, cutworm moth, dart, clay, square-spot, Hebrew character, rustic 2. (Acronictines, Agaristines, Amphipyridines, Bagisarids, Bryophilines, Condicines; 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, Heliolithines, 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

-**ŘZBD-** ‘NOCTUID (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

> Amphiesmenoptera > Trichoptera

-**ŘZŽ-** ‘TRICHOPTERAN (CADDISFLY / SEDGE-FLY / RAIL-FLY)’ 1. (Annulipalpans; numerous genera) net-spinning caddisfly, tube-making caddisfly, trumpet-net caddisfly, finger-net caddisfly 2. (Integrilpalpans; numerous genera) portable case-maker caddisfly, snail-case caddisfly, stonecase caddisfly, tubecase caddisfly 3. (Spicipalpans; numerous genera) spicipalpian, purse-case caddisfly / microcaddisfly

> Antliophora

> Antliophora > Siphonaptera (flea)

-**ŘZŇW**- ‘SIPHONAPTERAN (FLEA)’ I 1. (Pulicids; numerous genera) common flea / cat flea 2. (Pulcioids other than Pulicids; numerous genera) pulcioid flea 3. (Hectopsyllids; genera *Tunga*, *Hectopsylla*) jigger / chigoe flea, hectopsyllid flea

> Antliophora > Mecoptera (scorpionflies)

-**ŘJŇ**- ‘MECOPTERAN (SCORPIONFLY)’ I 1. (Panorpids; several genera) common scorpionfly 2. (Panorpidids; 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 / forcepfly 3. (Eomeropids, Apteropanorpids, Choristids, Nannochoristids; several genera) notiothauma scorpionfly, apteropanorpa scorpionfly, choristid scorpionfly, nannochoristid scorpionfly

> Antliophora > Diptera (true fly)

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 cranefly 3. (Pediicids; several genera) hairy-eyed cranefly

> 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

> 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

> 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. (Cedidomyiids; 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. (Keroplastids; numerous genera) predatory fungus gnat 3. (Ditomyids, Diadocidiids, Bolitophilids, Hesperinids; several genera) sciaroid gnat, bibionomorph gnat

-LZGŽ- ‘OTHER NEMATOCERAN FLY’ 1. (Pachyneurids; several genera) pachyneurid gnat, pachyneurid fly, pachyneurid midge 2. (Axymyiids; three genera) axymyiid fly

> Antliophora > Diptera > Nematocera > Psychodomorpha

-LZBD- ‘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

> 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, Pelecorhychids, 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

> 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

> 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

> 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

> Antliophora > Diptera > Brachycera > Muscomorpha

> 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

> Antliophora > Diptera > Brachycera > Muscomorpha > Schizophora

> 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**- ‘NERIROID 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

-**LZKĹ**- ‘SPHAEROCEROID FLY’ 1. (Sphaerocerids; numerous genera) small dung fly / lesser dung fly / lesser corpse fly 2. (Chyromyids, Heleomyzids, Nannodastiids; numerous genera) other sphaeroceroid fly

-**LZKÇ**- ‘LAUXANOID 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. (Ephydrids; numerous genera) shore fly, brine fly 2. (Diatatids; 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

-LZKŦ- ‘OTHER ACALYPTRATE FLY’ I 1. (Conopids; numerous genera) thick-headed fly 2. (Lonchaeids; several genera) lance fly 3. (Cryptochetids; several genera) scale parasite fly

-LZKŦW- ‘OTHER ACALYPTRATE FLY’ II 1. (Paraleucophids; several genera) paraleucophid fly 2. (Mormotomyiids; genus *Mormotomyia*) frightful hairy fly / terrible hairy fly

> 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- ‘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

17.2 Roots For 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.)

17.2.1 Bryophytes (non-vascular land plants)

- FXW**- ‘GREEN ALGAE’ 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
- 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. (Spagnoposida; numerous genera) peat moss 2. (Bryopsida; numerous genera) bryopsid moss 3. (Takakiopsids, Andreaeopsids, Andreaeobryopsids, Oedipodiopsids, Polytrichopsids, Tetrarhizopsids; numerous genera) other moss

17.2.2 Tracheophytes (Vascular Plants)

- CÑW**- ‘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, brakenfern / 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. (Ginkgophyta; genus *Gingko*) 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) lodgpole, 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**- ‘PINOPSISID’ 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, 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
- LSKŦ**- ‘SEQUOIOID’ 1. (genus *Sequoia*) coast redwood 2. (genus *Sequoiadendron*) giant sequoia 3. (genus *Metasequoia*) dawn redwood
- LSKĹ**- ‘CUPRESSACEAE’ 1. (Callitroids; several genera) cypress-pine, alerce / Patagonian cypress, callitroid 2. (Taxodioids; several genera) bald cypress, swamp cypress, sugi 3. (Athrotaxioids, Taiwanioids, Cunninghamioids; several genera) Tasmanian cedar, taiwania, cunninghamia
- LSKF**- ‘TAXACEAE (YEW)’ I 1. (genus *Taxus*) common yew 2. (genus *Pseudotaxus*) whiteberry yew 3. (genus *Austrotaxus*) southern yew / New Caledonia yew
- LSKV**- ‘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

Tracheophytes > Spermatophytes > Angiosperms > Monocots

Tracheophytes > Spermatophytes > Angiosperms > Monocots > alismatid monocots

- PŠM**- ‘ARACEAE (ARUM)’ I 1. (Orontioids; three genera) skunk cabbage, golden club 2. (Gymnostachydoideae; 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, 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*] starfruit / thrumwort 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. (Ruppiceae; 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 *Aletris*) colicroot / colicweed / crow corn / unicorn root 2. (genus *Lophiola*) goldencrest 3. (genus *Narthecium*) 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*, *Metanarthecium*) other nartheciacean

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 *Streptopus*) 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
- 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 / crisped 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 snakeroot / crow poison, pinebarren deathcamas
- LST**- ‘MELANTHIDS’ III 1. (genus *Veratrum*) false hellebore / corn-lily 2. (genus *Schoenocaulon*) feathershank, sabadilla
- 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, liriopse 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*, *Dasylyrion*, *Disporopsis*, *Eriospermum*, *Hereopolygonatum*, *Peliosantes*, *Pleomele*, *Reineckea*, *Semele*, *Speirantha*, *Theropogon*, *Tupistra*) other nolinoid
- 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
- 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

Tracheophytes > Spermatophytes > Angiosperms > Monocots > lilioid monocots > Asparagales > Amaryllidaceae

- 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) amaryllid, 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, ungeria 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. (Pancractiaeae; genera *Pancretium*, *Vagaria*) 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 *Asphodelus*) asphodel

-RSTY- ‘ASPHODELOIDEAE’ II 1. (genus *Eremurus*) foxtail lily / desert candle 2. 3. (genus *Gonialoe*) partridge aloe

-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

-RSTW- ‘HEMEROCALLIDOIDEAE’ I 1. (genus *Hemerocallis*) daylily, lemon lily, tiger lily / ditch lily 2. (genus *Simethis*) Kerry lily 3. (genus *Ticoryne*) yellow rush-lilly

-RSTY- ‘HEMEROCALLIDOIDEAE’ II 1. (genus *Caesia*) grass lily 2. (genus *Johnsonia*) pipe lily 3. (genera *Corynotheca*, *Arnocrinum*, *Hensmania*, *Stawellia*) other johnsoniid hemerocallid

-RSTL- ‘HEMEROCALLIDOIDEAE’ III 1. (genus *Phormium*) New Zealand flax 2. (genus *Geitonoplesium*) scrambling lily 3. (genus *Stypandra*) nodding blue lily / blind grass

-RSTR- ‘HEMEROCALLIDOIDEAE’ IV 1. (genus *Dianella*) flax lily, blueberry lily / paroo lily, inkberry lily 2. (genus *Thelionema*) tufted blue-lily 3. (genus *Herpolirion*) sky lily

-RSTŘ- ‘XANTHORRHOEOIDEAE & OTHER HEMEROCALLIDOIDEAE’ 1. (Xanthorrhoeoideae; genus *Xanthorrhoea*) grass tree 2. (genera *Excremis*, *Pasithea*, *Agrostocrinum*) other phormid hemerocallidoid

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. (Tigridiae; numerous genera) peacock flower / tiger-flower / shell flower, peatleaf, propeller flower, lágrimas de la virgen, tigris 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*, *Radinosisiphon*, *Syringodea*, *Tritonia*, *Tritoniopsis*) other crocid

-RSPŘ- ‘CROCOIDEAE’ 1. (Gladiolaeae; genera *Gladiolus*, *Melasphaerula*) gladiolus, cornflag, painted lady, cliff lily, Afrikaner, sword lily, gladiola 2. (Watsonieae; several genera) bugle lily, watsoniid 3. (Freesieae; genera *Freesia*, *Xenoscapa*, *Crocospia*, *Devia*) freesia, montbretia

-RSPŤ- ‘IRIDACEAE’ 1. (Aristeioideae; genus *Aristea*) blue flies / blue stars / blue-eyed iris, blue corn-lily 2. (Pateronioideae; genus *Paterosonia*) 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 Cyripedioideae; numerous genera) apostasioid or cyripediooid 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 ASPERGALES’ 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 ASPERGALES’ 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 ASPERGALES’ 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

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

-**NÇPH**- ‘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

-**NÇP**- ‘MUSACEAE’ 1. (genus *Musa*) banana, plantain 2. (genus *Ensete*) enset, false banana 3. (genus *Musella*) Chinese dwarf banana / golden lotus banana

-**NÇPW**- ‘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

-**NÇPY**- ‘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 *Elingera*) torch ginger / torch lily / Philippine wax flower / Indonesian tall ginger / porcelain rose, Malay rose

- ŇPŘ**- ‘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
- ŇPL**- ‘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
- ŇPR**- ‘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
- LBD**- ‘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. (Nypoideae; 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) triticale 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
- BTH-** ‘AVENA (OAT)’ 1. (*A. sativa*) common oat grass 2. (*A. nuda*) naked oat / hulless oat grass 3. (*A. abyssinica*) Ethiopian oat grass
- BTÇ-** ‘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
- BTL-** ‘POOIDEAE’ IV 1. (Diarrheneae; genera *Diarrhena*, *Neomolinia*) breakgrain / break grass 2. (genus *Ammophila*) beach grass, marram grass 3. (Brachyelytreae, Phaenospemateae, Brylkiniae; genera *Brachyelytrum*, *Phaenosperma*, *Brylkinia*) other pooid grass

Tracheophytes > Spermatophytes > Angiosperms > Monocots > commelinid monocots > Poales > Graminids > Poaceae > Bambusoideae

- BTHW-** ‘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-** ‘ORYZAE’ 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-** ‘ORYZAE’ II 1. (genus *Leersia*) cutgrass, whitegrass, swamp rice grass 2. (genus *Potamophila*) Hastings River reed 3. (genera *Luziola*, *Hygroriza*) watergrass
- BKÇ-** ‘ORYZOIDEAE’ 1. (Ehrharteae; four genera) weeping grass / weeping rice grass / weeping meadow grass, veldtgrass, zotovia 2. (Phyllorachideae, Streptogyneae) other oryzoid grass

Tracheophytes > Spermatophytes > Angiosperms > Monocots > commelinid monocots > Poales > Graminids > Poaceae > Chloridoideae

-**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, aparejogress

-**BKT**- ‘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) five-minute grass, grama grass, pappusgrass, burr grass, carrot-seed grass, Texasgrass, sandgrass, skeletongrass, curly mesquite, other cynodontid grass

-**BKR**- ‘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

-**BKL**- ‘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, ravenna 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 / limpgrass / 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

-**RDV**- ‘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

-**RDF**- ‘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 *Gynerium*) wildcane, arrow cane 3. (Arundinelleae, Lecomtelleae; several genera) other andropogonoid panicoid grass

Tracheophytes > Spermatophytes > Angiosperms > Monocots > commelinid monocots > Poales > Graminids > Poaceae > Danthonioideae

-**RDH**- ‘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, Tristachyideae, 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

-**TTR**- '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

-**TTY**- 'OTHER POACEAE' 1. (Puelioideae; genera *Puelia*, *Guaduella*) puelioid grass 2. (Pharoideae; genera *Pharus*, *Leptaspis*) stalkgrass, leptaspis 3. (Anomochlooideae; genera *Anomochloa*, *Streptochaeta*) anomochloid grass

Tracheophytes > Spermatophytes > Angiosperms > Monocots > commelinid monocots > Poales > Graminids > Ecdeiocolaceae, Joinvilleaceae, and Flagellariaceae

-**TTH**- 'OTHER GRAMMINID GRASS FAMILY' 1. (Ecdeiocolaceae; genera *Ecdeiocola*, *Georgantha*) 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

-**DKW**- '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

-**DKY**- 'CYPERUS' 1. (*C. esulentus*) chufa flatsedge [tuber used as food] 2. (*C. papyrus*) papyrush sedge 3. (other *Cyperus* species) flatsedge, nutsedge, umbrella-sedge

- DKL**- ‘CYPERACEAE’ I 1. (genus *Carex*) [true] sedge 2. (*Eleocharis dulcis*) Chinese water chestnut 3. (other *Eleocharis* species) spikerush / hairgrass, spikesedge, scallion grass
- DKR**- ‘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
- DKF**- ‘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
- DKT**- ‘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

- DKŘ**- ‘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 > superasterids > asterids

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids

- FTL**- ‘AQUIFOLIALES’ 1. (Aquifoliaceae; genus *Ilex*) holly 2. (Cardiopteridaceae, Helwingiaceae, Phylonomaceae, Stemonuraceae; several genera) other aquifoliolate 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 Axodoceae 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**- ‘CAPRIFOLIACEAE [CAPRIFOLIOIDEAE]’ 1. (genus *Lonicera*) honeysuckle 2. (genus *Symphoricarpos*) snowberry / waxberry / ghostberry / coralberry 3. (genus *Triosteum*) horse-gentian / feverwort
- FNW**- ‘CAPRIFOLIACEAE [VALERIANOIDEAE]’ 1. (genus *Valeriana*) valerian 2. (genus *Valerianella*) cornsalad 3. (genus *Plectritis*) seablush, plectritis
- FNY**- ‘OTHER CAPRIFOLIACEAE’ 1. (genus *Diervilla*) bush honeysuckle 2. (genus *Linnaea*) twinflower, beautybush, abelia 3. (Caprifoliaceae other than named genera; several genera) other caprifoliolate plant

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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. (Aciphylleae 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. (Saniculeae other than named genera; several genera) other sanicle-like plant
- 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 *Smyrniium*) alexanders / black-lovage / horse-parsley 3. (genus *Tordylium*) hartwort

- KŠPR**- ‘APIOIDEAE’ V 1. (genus *Bupleurum*) hare’s ear, thorrow-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. (Apioideae other than named genera; numerous genera) other apioid plant
- KŠPH**- ‘OTHER APIACEAE’ 1. (Azorelloideae, numerous genera) azorella, cushion plant, llareta / yareta 2. (Apaiaceae other than named genera; numerous genera) other apaiaceous plant

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- 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 arala / 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
- KSBŘ**- ‘ARALIACEAE’ V 1. (genus *Stilbocarpa*) Macquarie Island cabbage 2. (Araliaceae other than named genera) other araliaceous plant

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- 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

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- 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 *Pyrracoma*) 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 / Appalachian 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, bouquet 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 mountaincrown, 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
- RŽGV**- ‘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
- RŽTR-** ‘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 *Dimorphoteca*) Cape marigold / Namaqualand daisy, Cape daisy / rain daisy, rain flower / white bietou
- RŽTC-** ‘CALENDULEAE’ II 1. (genus *Chrysantemoides*) bitou bush / bietou / tick berry 2. (Calenduleae other than named genera; several genera) other calendulid plant
- RŽTL-** ‘GNAPHALIEAE’ I 1. (genus *Gnaphalium*) cudweed 2. (genus *Gamochaeta*) everlasting, featherweed, cudweed 3. (genus *Antennaria*) catsfoot, pussytoes, everlasting
- RŽTH-** ‘GNAPHALIEAE’ II 1. (genus *Anaphalis*) pearl, pearly everlasting 2. (genus *Craspedia*) billy button / woollyhead 3. (genus *Pycnosorus*) drumstick / billy button
- RŽTHW-** ‘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. (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*) stickseed 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*) greenthread, Navajo tea, Hopi tea 3. (Coreopsideae 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
- MZBR̂**- ‘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. (Madieae 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
- MZDR̂**- ‘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
- MZGR̂**- ‘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
- MŽB**- ‘HELENIEAE’ I 1. (genus *Helenium*) sneezeweed, rosilla, cabazona 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
- 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, Yankeeweed, false fennel, justiceweed, boneset, hemp-agrimony 2. (genus *Eutrochium*) Joe-Pye weed 3. (genus *Isocarpha*) pearlhead
- MŽBR̂**- ‘EUPATORIEAE’ II 1. (genus *Liatrix*) blazing star, Cahaba torch, gayfeather, colicroot, prairie-pine / button snakeroot, 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
- MŽDŘ**- ‘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**- ‘PLUCHEEAE’ 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
- MŽGRĚ**- ‘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 & FEDDEEAE’ 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*) 2. (genus *Jefea*) jefea 3. (genus *Calyptocarpus*) straggler daisy / horseherb / lawnflower / creeping Cinderella-weed

- ŇZBŘ**- ‘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
- 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, noddinghead / nodding 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
- 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 *Arnosseris*) 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 *Prenanthea*) 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-collier, white hawkweed, yellow hawkweed, king devil, yellow devil 3. (Hieraciinae other than Stem I; 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 *Askellia*) 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
- RZŘ-** ‘HYPOCHAERIDINAE’ I 1. (genus *Hypochaeris*) cat’s ear, flatweed / false dandelion, chikku-chikku 2. (genus *Scorzoneroides*) autumn hawbit 3. (genus *Prenanthes*) rattlesnake root
- RZV-** ‘HYPOCHAERIDINAE’ II 1. (genus *Urospermum*) goldenfleece 2. (genus *Picris*) ox-tongue 3. (genus *Helminthotheca*) bristly ox-tongue
- RZM-** ‘HYPOCHAERIDINAE’ III 1. (genus *Leontodon*) hawkbit 2. (genus *Hedypnois*) scaly hawkbit 3. (Hypochaeridinae other than named genera) other hypochaeridine plant
- RZN-** ‘CHONDRILLINAE’ 1. (genus *Chondrilla*) rush skeletonweed, smallflower desert-chicory / Texas false dandelion 2. (genus *Willemetia*) willemetia 3. (genus *Phitosia*) phitosia
- RZŇ-** ‘SCOLYMINAE’ 1. (genus *Scolymus*) golden thistle / oyster thistle 2. (genus *Catananche*) Cupid’s dart 3. (genera *Gundelia*, *Hymenonema*) tumble thistle, other scolymine plant
- RZH-** ‘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
- RZHW-** ‘OTHER SCORZONERINAE & WARIONIINAE’ 1. (Scorzonerinae other than named genera; several genera) oother goatsbeard or salsify-like plant) 2. (Warioniinae; genus *Warionia*) warionia

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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 *Hesperomania*) island-aster 2. (Vernonieae other than named genera; numerous genera) other vernoniine plant
- RMGŘ-** ‘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. (Platycarphae, Moquinieae, Liabeae, plus other unplaced cichorioid genera, e.g., *Distephanus*, *Trichospira*, *Heterolepis*, *Haplophyllum*) other cichorioid plant

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-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

-F SPL- 'CARDUINAE' I 1. (genus *Carduus*) plumeless thistle, curled thistle, weted 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

-F SPR- '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

-F SPŘ- '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

-F SPF- 'CARLININAE' I 1. (genus *Carlina*) carline thistle 2. (genus *Atractylis*) atractylis 3. (Carlininae other than Stems 1 and 2; several genera) other carlinine thistle

-F SPŤ- '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

-F SPÇ- '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

-F SPL- '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

-F SPH- 'CENTAUREINAE' IV 1. (genus *Mantisalca*) dagger-flower 2. (Centaureinae other than named genera; numerous genera) other centaureine thistle plant

-F SPHW- 'OTHER CARDUEAE' 1. (Echinopsinae; genus *Echinops*) globe-thistle 2. (Cardopatiinae; genera *Cardopatium*, *Cousiniopsis*) cardopatiine plant

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-T BV- 'TARCHONANTHEAE & OTHER CARDUOIDEAE' 1. (genus *Tarchonanthus*) camphor bush 2. (genus *Brachylaena*) silver oak, white alder 3. (Dicomeae, Oldenburgieae; several genera) other carduoid plant

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-T BW- 'MUTISIOIDEAE' I 1. (genus *Leibnitzia*) sunbonnet 2. (genus *Chaptalia*) silverpuff, pineland daisy, white sunbonnet 3. (genus *Gerbera*) African daisy, Barberton daiy / Transvaal daisy / gerbera daisy, Hilton daisy

-T BY- 'MUTISIOIDEAE' I 1. (genus *Adenocaulon*) trailplant, pathfinder 2. (genus *Acourtia*) desertpeony, sacapellote, desert holly, brownfoot, desert paeonia 3. (genus *Leucheria*) vanilla daisy

-T BL- 'MUTISIOIDEAE' III 1. (genus *Trixis*) threefold 2. (genus *Perezia*) perezia 3. (Mutisioideae other than named genera; numerous genera) other mutisioid plant

-T BR- 'GOCHNATIEAE & HECASTOCLEIDOIDEAE' 1. (genus *Gochnatia*) shrubby bullseye 2. (Gochnatieae other than Stem 1; several genera) other gochnatiid plant 3. (Hecastocleidoideae; genus *Hecastocleis*) prickleleaf

-T BŘ- 'CORYMBIOIDEAE & OTHER ASTERACEAE' 1. (Corymbioideae; genus *Corymbium*) plampers 2. (Famatinanthoideae, Stifftieae, Barnadesieae, Wunderlichioideae, Pertyeae, Gymnarrhenoideae; several genera) other mutisioid plant

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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
- LCPR̂**- ‘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
- LCPT**- ‘LOBELIOIDEAE’ I 1. (genus *Lobelia*) lobelia, cardinal flower, Indian tobacco, wild tobacco, pratia 2. (genera *Brighamia*, *Clermontia*, *Cyanea*, *Delissea*, *Trematobelia*) Hawaiian lobelioid 3. (genus *Downingia*) calicoflower
- LCPC**- ‘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
- LCPHW**- ‘CYPHIOIDEAE’ 1. (genus *Nemacladus*) threadplant, nemacladus 2. (Cypthioideae other than Stem 1; several genera) other cyphiod plant

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- LČPW**- ‘ALSEUOSMIACEAE’ 1. (genus *Wittsteinia*) baw baw berry 2. (Alseuosmiaceae other than Stem 1; several genera) other alseuosmiacean plant
- LČPY**- ‘ARGOPHYLLACEAE’ 1. (genus *Argophyllum*) silver leaf 2. (genus *Corokia*) corokia
- 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
- LČPR̂**- ‘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
- LČPT**- ‘MENYANTHACEAE’ I 1. (genus *Menyanthes*) buckbean / bogbean 2. (genus *Liparophyllum*) marshwort 3. (genus *Nymphoides*) floatingheart, banana lily, water snowflake, fringed water lily, marshwort
- LČPC**- ‘MENYANTHACEAE’ II 1. (genus *Nephrophyllidium*) deer cabbage 2. (Menyanthaceae other than named genera) other menyanthacean plant
- 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

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Campanulids remaining families

-RŽŇW- ‘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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-LMZ- ‘MENTHA’ I 1. (*Mentha spicata*) spearmint / common mint / garden mint / lamb mint 2. (*M. requienii*) Corsican mint 3. (*M. longifolia*) horse mint

-LMZW- ‘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

-LMZY- ‘MENTHA’ III 1. (*M. laxiflora*) forest mint 2. (*M. satureioides*) creeping mint / native pennyroyal 3. (*M. suaveolens*) apple mint, pineapple mint

-LMZL- ‘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

-LMZR- ‘MENTHA’ V 1. (*M. laxiflora*) forest mint 2. (*M. satureioides*) creeping mint / native pennyroyal 3. (*M. suaveolens*) apple mint

-LMSŘ- ‘MENTHA’ VI 1. (*M. pulegium*) pennyroyal / pennyryle / 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

-LMZG- ‘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

-LMZGW- ‘MENTHEAE’ II 1. (genus *Poliomintha*) rosemary mint 2. (genus *Pogogyne*) mesa mint 3. (genus *Piloblephis*) wild pennyroyal

-LMZGY- ‘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

‘MENTHEAE’ IV 1. (genus *Conradina*) false rosemary, short-leaf rosemary 2. (genus *Blephilia*) pagoda plant, wood mint 3. (genus *Acanthomintha*) thornmint

‘MENTHEAE’ V 1. (genus *Hyssopus*) hyssop 2. (genus *Agastache*) giant hyssop, blue giant hyssop, anise hyssop, hummingbird mint 3. (genus *Dracocephalum*) dragonhead, dragonhead mint

-LMZGL- ‘MENTHEAE’ VI 1. (genus *Nepeta*) catnip, catmint 2. (genus *Cedronella*) Canary balm / Balm of Gilead 3. (genus *Lallemantia*) dragon’s head

-LMZGR- ‘MENTHEAE’ VII 1. (genus *Calamintha*) calamint 2. (genus *Prunella*) self-heal, heal-all, allheal 3. (genus *Horminium*) dragonmouth, Pyrenean dead-nettle

-LMZGŘ- ‘MENTHEAE’ VIII 1. (genus *Melissa*) lemon balm / common balm / balm mint 2. (genus *Lepechinia*) pitcher sage, woodbalm 3. (genus *Rhododon*) sandmint

-LMZGV- ‘MENTHEAE’ IX 1. (genus *Lycopus*) water-horehound, gypsywort, bugleweed 2. (genus *Acinos*) rock thyme, basil thyme / spring savory 3. (Mentheae other than named genera) other menthid plant

-LMZB- ‘THYMUS’ I 1. (*Thymus vulgaris*) [common] thyme 2. (*T. pulegiodes*) lemon thyme / broad-leaved thyme 3. (*T. citriodorus*) citrus thyme

-LMZBW- ‘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

-LMZBY- ‘THYMUS’ III 1. (*T. pseudolanuginosus*) woolly thyme 2. (*T. capitatus*) conehead thyme / Persian-hyssop / Spanish oregano 3. (other *Thymus* species) other thyme plant

-LMZBL- ‘ORIGANUM’ 1. (*Origanum vulgare*) oregano plant 2. (*O. majorana*) marjoram plant 3. (other *Origanum* species) other oregano or marjoram plant

-LMZBR- ‘SATUREJA’ 1. (*Satureja hortensis*) summer savory 2. (*S. montana*) winter savory / mountain savory 3. (other *Satureja* species) other savory plant

-LMZBŘ- ‘SALVIA’ 1. (*Salvia officinalis*) sage 2. (*S. rosmarinus*) rosemary 3. (other *Salvia* species) other sage plant

- LMZD**- 'LAMIACEAE' I 1. (genus *Lamia*) dead-nettles 2. (genus *Sideritis*) ironwort / mountain tea / shepherd's tea 3. (genus *Phlomis*) lampwick plant / Jerusalem sage
- LMZDW**- 'LAMIACEAE' II 1. (genus *Holmskioldia*) Chinese hat plant / cup-and-saucer plant / mandarin's hat 2. (genus *Scutellaria*) skullcaps
- LMZDY**- 'LAMIACEAE' III 1. (genus *Lavandula*) lavender 2. (genus *Hyptis*) bushmint 3. (genus *Plectranthus*) spurflower, lobster bush / fly bush / mosquito bush, cockspur, country potato / Chinese potato, coleus, Swedish ivy / Swedish begonia, Livingstone potato, Ethiopian potato
- LMZDL**- '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
- LMZDR**- 'LAMIACEAE' V 1. (genus *Tectona*) teak 2. (genus *Callicarpa*) beautyberry 3. (genus *Congea*) shower orchid, woolly congea
- LMZDRĚ**- 'LAMIACEAE' VI 1. (genus *Vitex*) chaste tree 2. (genus *Petitia*) bastard stopper 3. (genus *Premna*) firestick tree, fragrant premna
- LMZDV**- '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
- LZFRĚ**- 'ACANTHACEAE' 1. (Avicennioideae; genus *Avicennia*) api api, black mangrove, grey mangrove / white mangrove, Indian mangrove 2. (Thungergioideae, Nelsonioideae; several genera) other acanthaceous plant

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- LZM**- 'OLEA' 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
- LZMRĚ**- 'OLEACEAE' III 1. (genus *Syringa*) lilac 2. (genus *Fraxinus*) ash tree 3. (Oleaceae other than named genera) other oleaceous tree

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- ŘŽB**- ‘LENTIBULARIACEAE’ 1. (genus *Genlisea*) corkscrew plant 2. (genus *Pinguicula*) butterwort 3. (genus *Utricularia*) bladderwort
- ŘŽBW**- ‘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
- ŘŽBY**- ‘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
- ŘŽBL**- ‘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 pelaliaceae plant
- ŘŽBR**- ‘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
- ŘŽBŘ**- ‘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 stilbaceae plant
- ŘŽBV**- ‘VERBENACEAE’ I 1. (genus *Verbena*) verbena / vervain 2. (genus *Phyla*) fogfruit / frogfruit 3. (genus *Petrea*) sandpaper vine / purple wreath / queen’s wreath
- ŘŽBD**- ‘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
- ŘŽBZ**- ‘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
- ŘŽBŽ**- ‘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 *Campsis*) trumpet creeper / trumpet vine 2. (genus *Pandorea*) Wonga vine, bower of beauty 3. (genus *Bignonia*) crossvine
- ŘŽFW**- ‘BIGNONIACEAE’ II 1. (genus *Tecoma*) trumpetbush, Cape honeysuckle 2. (genus *Adenoclymma*) garlic vine 3. (genus *Fridericia*) cricket-vine, chica
- ŘŽFY**- ‘BIGNONIACEAE’ III 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 *Incarvillea*) Chinese trumpet flower
- ŘŽFL**- ‘BIGNONIACEAE’ IV 1. (genus *Chilopsis*) desert-willow 2. (genus *Catalpa*) catalpa, catawba
- ŘŽFR**- ‘BIGNONIACEAE’ V 1. (genus *Spathodea*) African tulip tree / fountain tree / Nandi flame 2. (genus *Pajanella*) tender wild jack / pajanella 3. (Bignoniaceae other than named genera; numerous genera) other trumpet creeper/vine/bush/tree
- 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
- ŘŽGL**- ‘OROBANCHACEAE’ I 1. (genus *Orobanche*) 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
- ŘŽGZ**- ‘OROBANCHACEAE’ VI 1. (genus *Boschniakia*) groundcone 2. (genus *Cordylanthus*) bird’s beak 3. (genus *Epifagus*) beech drops
- ŘŽGŽ**- ‘OROBANCHACEAE’ VII 1. (genus *Schwalbea*) American chaffseed 2. (Orobanchaceae other than named genera; numerous genera) other orobanchaceous plant
- ŘŽV**- ‘ANTIRRHINEAE’ I 1. (genera *Antirrhinum*, *Misopates*, *Mohavea*, *Sairocarpus*) 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. (Gratiolae 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
- 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
- ŘŽČ**- ‘SCROPHULARIACEAE’ I 1. (genus *Scrophularia*) figwort 2. (genus *Verbascum*) mullein 3. (genus *Buddleja*) butterfly bush
- ŘŽČW**- ‘SCROPHULARIACEAE’ II 1. (genus *Limosella*) mudwort 2. (genus *Diascia*) twinspur 3. (genus *Leucophyllum*) barometer bush, Texas ranger / silverleaf
- ŘŽJ**- ‘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
- ŘŽJW**- ‘SCROPHULARIACEAE’ IV 1. (genus *Phygелиus*) Cape fuchsia / Cape figwort 2. (Scrophulariaceae other than named genera; numerous genera) other scrophulariaceous plant, other figwort-like plant
- 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

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-**ŃÇB**- ‘RUBIEAE’ I 1. (genus *Rubia*) madder 2. (genus *Kelloggia*) kelloggia 3. (genus *Gallium*) bedstraw

-**ŃÇBW**- ‘RUBIEAE’ II 1. (genus *Crucianella*) crosswort 2. (genus *Asperula*) woodruff 3. (Rubiaceae other than named genera; several genera) other rubiid plant

-**ŃÇBY**- ‘PSYCHOTRIEAE’ (genus *Psychotria*) psychotria, wild coffee 2. (genus *Myrmecodia*) ant-house plant 3. (Psychotrieae other than Stems 1 and 2) other psychotriid plant

-**ŃÇBL**- ‘SPERMACOCEAE’ I 1. (genus *Spermacoce*) false buttonweed 2. (genus *Diodella*) poorjoe / rough buttonweed 3. (genus *Diodia*) Virginia buttonweed

-**ŃÇBR**- ‘SPERMACOCEAE’ I 1. (genus *Ernodea*) beech creeper / cougbush 2. (genus *Hedyotis*) starviolet 3. (genus *Houstonia*) bluet

-**ŃÇBŘ**- ‘SPERMACOCEAE’ I 1. (genus *Mitracarpus*) girdlepod 2. (genus *Richardia*) Mexican-clover 3. (Spermacoceae other than named genera; numerous genera) other spermacocean plant

-**ŃÇBV**- ‘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

-**ŃÇBD**- ‘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 Colletocemateae, Craterispermeae, Cyanoneuroneae, Danaideae, Dunnieae, Gaertnereae, Knoxieae, Lasiantheae, Morindeae, Ophiorrhizeae, Perameae, Prismaticerideae, Putorieae, Schizocoleae, Theligoneae, Urophyllae; numerous genera) other rubioid plant

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-**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

-**ÇXR**- ‘IXOROIDEAE’ 1. (Ixoreae; genus *Ixora*) West Indian jasmine, jungle flame, jungle geranium 2. (Posoquerieae; genera *Posoqueria*, *Molopanthera*) needle flower 3. (Airospermeae, Alberteae, Aleisanthiae, Augusteae, Bertiereae, Coffeae [other than genus *Coffea*], Cordiereae, Cremasporeae, Crossopterygeae, Greeneae, Henriqueae, Jackieae, 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

-**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. (Naucleaeae other than Stems 1 and 2; numerous genera) other naucleid plant

-RGDR- ‘CINCHONOIDEAE’ 1. (Rondeletieae; numerous genera) rondeletia, Cleveland sunrise, Panama-rose, other rondeletiid plant 2. (Strumpfiaceae; genus *Strumpfia*) Pride of Big Pine 3. (Hamelieae, Hymenodictyeae, Hillieae, Isertieae; several genera) other cichonoid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Rubiaceae > remaining sub-families/tribes/genera

-RGDV- ‘RUBIACEAE’ 1. (Coptosapelteae; genera *Coptosapelta*, *Acranthera*) coptosapelta, acranthera, coptosapeltid plant 2. (Luculieae; genus *Luculia*) luculia 3. (Rubiaceae other than named genera) other rubiaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Gentianaceae

-GZMW- ‘GENTIANACEAE’ I 1. (genera *Gentiana*, *Gentianella*, *Gentianopsis*) gentia, agueweed 2. (genus *Frasera*) frasera, American columbo, yellow gentian, green gentian, elkweed, deer’s ears / monument plant 3. (genus *Eustoma*) lisianthus, prairie gentian

-GZMY- ‘GENTIANACEAE’ II 1. (genus *Centaurium*, *Sebaea*, *Zeltnera*) centaury, sebaea, quinineweed 2. (genus *Cicendia*) slender cidendia / yellow centaury 3. (genus *Exacum*) Persian violet

-GZML- ‘GENTIANACEAE’ III 1. (genus *Swertia*) felwort, swertia 2. (genus *Sabatia*) slender marsh-pink, rose gentian, prairie sabatia, meadow pink 3. (genus *Obolaria*) Virginia pennywort

-GZMR- ‘GENTIANACEAE’ IV 1. (genus *Voyria*) ghostplant 2. (genus *Bartonia*) screwstem 3. (genus *Fagraea*) kingwood, tembesu, perfume flower tree

-GZMR- ‘GENTIANACEAE’ V 1. (genus *Orphium*) sea rose 2. (Gentianaceae other than named genera; numerous genera) other gentianaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Apocynaceae

-RTPW- ‘APOCYNOIDEAE’ I 1. (genus *Apocynum*) dogbane, Indian hemp 2. (genus *Trachelospermum*) star jasmine, Confederate jasmine 3. (genus *Echites*) devil’s potato

-RTPY- ‘APOCYNOIDEAE’ II 1. (genus *Nerium*) oleander, nerium 2. (genus *Mandevilla*) rocktrumpet, mandevilla, dipladenia, Brazilian jasmine, Chilean jasmine 3. (genus *Cycladenia*) Sacramento waxydogbane

-RTPPL- ‘APOCYNOIDEAE’ III 1. (genus *Angadenia*) pineland golden trumpet 2. (genus *Pentalinon*) hammock viper’s-tail / licebush / wild allamanda / wild wist yellow mandevilla / yellow dipladenia 3. (Apocynoideae 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

-RTPR- ‘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

-RTPPT- ‘PERIPLOCOIDEAE’ I 1. (genus *Periploca*) silkvine 2. (genus *Petopentia*) propeller vine 3. (genus *Cryptolepis*) milk rope

-RTPC- ‘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 berry / 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
- RTPL**- '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 secamonioid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Gelsemiaceae

- LZN**- 'GELSEMIACEAE' 1. (genus *Gelsemium*) heartbreak grass, swamp jessamine / Rankin's trumpetflower, yellow jessamine / Carolina jessamine / evening trumpetflower 2. (genera *Mostuea* and *Pteleocarpa*) other gelsemioid plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Gentianales > Loganiaceae

- 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

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Boraginales

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
- 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 *Cerinth*) honeywort
- FSTRŠ**- '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
- FSTL̄**- '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**- ‘HYDROPHYLLLOIDEAE’ I 1. (genus *Hydrophyllum*) waterleaf 2. (genus *Nemophila*) baby-blue-eyes, five-spot nemophila 3. (genus *Nama*) fiddleleaf
- FSMY**- ‘HYDROPHYLLLOIDEAE’ 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**- ‘HYDROPHYLLLOIDEAE’ III 1. (genus *Emmenanthe*) whispering bells 2. (genus *Romanzoffia*) mistmaid / mistmaiden 3. (genus *Pholistoma*) fiesta flower
- FSMR**- ‘HYDROPHYLLLOIDEAE’ IV 1. (genus *Draperia*) violet draperia 2. (genus *Eucrypta*) hideseed 3. (genus *Tricardia*) threeheart
- FSMŘ**- ‘HYDROPHYLLLOIDEAE’ V 1. (genus *Hesperochiron*) hesperochiron 2. (Hydrophyllloideae other than named genera) other hydrophyllloid plant
- 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 ehretoid 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

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae > Solanoideae > Solaneae

-**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*) hairy-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. seafortianum*, *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

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae > Solanoideae > Physaleae

-**ZPC**- ‘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

-**ZPS**- ‘PHYSALEAE’ II 1. (genus *Nothoecstrum*) ‘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

-**ÑTW**- ‘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

-**ÑTY**- ‘LYCIEAE & MANDRAGOREAE’ 1. (genus *Lycium*) box-thorn, desert-thorn, honey thorn, water-jacket, matrimony-vine / goji / goji-berry / Duke of Argyll’s teaplant, wolfberry, Christmas berry, peachthorn, squawthorn 2. (other Lyceiae; genus *Grabowskia*) grabowskia, other lyciid plant 3. (Mandrágoreae; genus *Mandragora*) mandrake

-**ÑTL**- ‘DATUREAE’ 1. (genus *Datura*) devil’s trumpet 2. (genus *Brugmansia*) angel’s trumpet 3. (other Datureae; genus *Trompettia*) trompettia, other daturid plant

-**ÑTR**- ‘SOLANDREAE’ 1. (genus *Solandra*) chalice vine, Hawaiian lily 2. (genus *Juanulloa*) goldfinger 3. (Solandreae other than Stems 1 and 2; several genera) other solandran plant

-**ÑTR**- ‘OTHER SOLANOIDEAE’ 1. (Nicandreae; genus *Nicandra*) apple-of-Peru / shoo-fly plant 2. (Nolaneae; genus *Nolana*) Chilean bell flower

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Lamiids > Solanales > Solanaceae > Cestroideae

-**ÑTM**- ‘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

-**ÑTN**- ‘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 pentunioid 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

-**ČVŘ**- ‘OTHER SOLANACEAE’ 1. (Schizanthaceae; genus *Schizanthus*) butterfly flower / fringe-flower / poor-man’s orchid 2. (Schwenckioideae, Goetzeoideae; several genera) other solanaceous plant

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, hearbind / 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. (Icacinales; 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

-**ŇŤD**- ‘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

- ÑDR**- ‘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
- ÑDL**- ‘GAULTHERIA’ 1. (*Gaultheria procumbens*) eastern teaberry [source of wintergreen flavoring] 2. (*G. shallon*) salal / shallon 3. (other *Gaultheria* species) gaultheria
- ÑDP**- ‘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. (Casiopoideae 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

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > asterids > Ericales > remaining families

- ŇZK-** ‘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
- ŇZKW-** ‘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
- ŇZKY-** ‘PRIMULACEAE’ II 1. (genus *Trientalis*) starflower, chickweed-wintergreen 2. (genus *Androsace*) rock-jasmine, Northern fairy candelabra, androsace 3. (genus *Cyclamen*) sowbread, swinebread
- ŇZKL-** ‘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
- ŇZKR-** ‘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
- ŇZKŘ-** ‘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
- ŇZKF-** ‘SAPOTACEAE’ III 1. (genus *Palaquium*) gutta-percha tree 2. (genus *Sideroxylon*) bully tree 3. (Sapotaceae other than named genera) other sapotaceous tree/plant
- ŇZKT-** ‘SARRACENIACEAE’ 1. (genus *Sarracenia*) trumpet pitcher plant 2. (genus *Darlingtonia*) California pitcher plant / cobra lily / cobra plant 3. (genus *Heliamphora*) sun pitcher plant
- ŇZKV-** ‘STYRACACEAE’ 1. (genus *Halesia*) silverbell / snowdrop tree 2. (genus *Pterostyrax*) epaullete tree 3. (genus *Styrax* and several other genera) storax, snowbell, other styracaceous plant
- ŇZKÇ-** ‘THEACEAE’ I 1. (genus *Camellia*: *C. sinensis*) tea plant 2. (genus *Camellia* other than *C. sinensis*) camellia 3. (genus *Stewartia*) stewartia
- ŇZKL-** ‘THEACEAE’ II 1. (genus *Franklinia*) Franklin tree 2. (genus *Schima*) needlewood tree 3. (Theaceae other than named genera; several genera) other theaceous plant/tree
- ŇZKH-** ‘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
- ŇZKS-** ‘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
- ŇZKŠ-** ‘ERICALES’ II 1. (Roridulaceae; genus *Roridula*) dewstick / fly bush 2. (Symplocaceae; genus *Symplocos*) sweetleaf, sapphireberry 3. (Tetrameristaceae; three genera) tea mangrove
- ŇZKHW-** ‘ERICALES’ III 1. (other Lecythidaceae genera) other lecythidaceous tree 2. (Sladeniaceae, Marcgraviaceae, Mitrastemonaceae, Pentaphylacaceae,; numerous genera) other ericales plant

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

- ŇZP**- ‘CARYOPHYLLEAE’ I 1. (genus *Dianthus*) carnation, pink, sweet william 2. (genus *Acanthophyllum*) chickweed baby’s breath 3. (genus *Gypsophila*) baby’s-breath, gypsophila
- ŇZPW**- ‘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
- ŇZPY**- ‘CARYOPHYLLEAE’ III 1. (genus *Vaccaria*) cowherb / cowcockle / cow basil / cow soapwort / prairie carnation 2. (Caryophylleae other than named genera; several genera) other caryophyllid plant
- ŇZPL**- ‘ALSINEAE’ I 1. (genus *Cerastium*) mouse-ear chickweed, chickweed, snow in summer 2. (genus *Holosteum*) jagged chickweed 3. (genus *Moenchia*) upright chickweed, erect chickweed
- ŇZPR**- ‘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
- ŇZPŘ**- ‘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
- ŇZPF**- ‘POLYCARPEAE’ I 1. (genus *Achyronychia*) onyxflower / frost-mat 2. (genus *Pollichia*) waxberry / barley sugar bush 3. (genus *Polycarpon*) manyseed
- ŇZPT**- ‘POLYCARPEAE’ II 1. (genus *Scopulophila*) rockwort 2. (genus *Cardionema*) sandcarpet 3. (Polycarpeae other than named genera; several genera) other polycarpeid plant
- ŇZPV**- ‘SAGINEAE’ 1. (genera *Colobanthus*, *Sagina*) pearlwort 2. (genus *Minuartia*) sandwort 3. (Sagineae other than Stems 1 and 2; several genera) other saginid plant

- ŇZPÇ**- 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
- ŇZPL**- '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
- ŇZPH**- 'SPERGULEAE' 1. (genus *Spergula*) spurry / spurrey, stickwort 2. (genus *Spergularia*) sea-spurrey / sandspurry 3. (genera *Rhodalsine*, *Sanctambrosia*) other spergulid plant
- ŇZPS**- 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
- ŇZPŠ**- '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
- ŇZPHW**- '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 / wiggly-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
- RNTV**- 'ERIOGONOIDEAE' III 1. (genus *Coccoloba*) pigeonplum, seagrape, false chiggergrape 2. (genus *Dedeckera*) July gold 3. (genus *Dodecahema*) slender-horned spineflower
- RNTL**- '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

-**RNTM**- ‘AMARANTHOIDEAE’ I 1. (genus *Amaranthus*) amaranth, greenstripe, pigweed, careless weed, Prince-of-Wales feather / prince’s feather, Joseph’s-coat 2. (genus *Celosia*) woolflower, cockscomb, Lagos spinach, quail grass, celosia 3. (genus *Chamissoa*) false chaff flower

-**RNTN**- ‘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

-**RNTÑ**- ‘AMARANTHOIDEAE’ III 1. (genus *Nototrichium*) rockwort 2. (Amaranthoideae other than named genera; numerous genera) other amaranthoid plant

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 *Chenopodium*) 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*’) mangelwurz / 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 *Hablitia*) Caucasian spinach 2. (genus *Aphanisma*) aphanisma, San Diego coastalcreeper 3. (other Betoideae genera; *Oreobliton*, *Patellifolia*, *Acrogloch*) 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

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 *Guilleminea*) 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

-RMFR̂- ‘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

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Amaranthaceae remaining families

-RMFN̂- ‘AMARANTHACEAE’ 1. (Corispermoideae; genera *Corispermum*, *Agriophyllum*, *Anthochlamys*) bugseed, tickseed, tumbleweed, other corispermoid plant 2. (Suaedoideae; genera *Suaeda*, *Bienertia*) seepweed, seablite, iodine weed, bienertia

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 *Scelletium*) 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. (Aizoaceae other than named genera; numerous genera) other Aizoaceous plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Caryophyllales > Molluginaceae

- RNXN**- '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, horsecrippler / 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 / hedghog 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 hedghog 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. (Cactaeae 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. (Phyllocactaeae other than named genera) other phyllocactid plant
- FSKL**- '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
- FSKM**- 'CEREEAE' II 1. (genus *Melocactus*) Turk's cap cactus 2. (genus *Pilosocereus*) tree cactus, pipe organ cactus 3. (genus *Espetosa*) old Peruvian man

-**FSKN**- ‘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. (Cereae other than named genera) other cereid cactus

-**FSKH**- ‘RHIPALIDEAE’ 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

-**FSKS**- ‘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

-**FSKŠ**- ‘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

-**FSKHW**- ‘CACTACEAE’ 1. (Pereskioideae; genus *Pereskia*) lemon vine, rose cactus, leaf cactus 2. (Notocactae, Maihuenioideae, and Cactaceae of uncertain sub-family or tribe; several genera) other cactus

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

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

-BVKL- ‘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

-BVKH- ‘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

-BVKHW- ‘PHYTOLACCACEAE’ 1. (genus *Phytolacca*) pokeweed, poke, pokebush, pokeberry, pokeroot, 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

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, Physenaeaceae, Rhabdodendron, Stegnospermataceae, Talinaceae, Tamaricaceae; numerous genera) other caryophyllales plant

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

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

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superasterids > Santalales remaining families

- LFŇ- '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 *Chrysosplenum*) 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*) fringe cups

- 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 *Benisoniella*) Oregon benisoniella
- LŠT**- ‘SAXIFRAGACEAE’ VII 1. (genus *Tankakaea*) Japanese foam flower 2. (Saxifragaceae other than named genera; several genera) other saxifragaceous plant
- 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
- 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
- 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

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > supperrosids > Saxifragales remaining families

- 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, american storax 2. (Cercidiphyllaceae; genus *Cercidiphyllum*) katsura 3. (Tetracarpaea, Penthoraceae, Daphniphyllaceae, Peridiscaceae; several genera) other saxifragales plant

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > Vitales

-**ṚN**- '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

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Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Brassicales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > 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. Gongyloides* 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

-**ŽKṚ**- '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

-**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 / buchanweed / hoary mustard / Mediterranean mustard

-**ŽKN**- 'BRASSICEAE' IV 1. (genus *Rapistrum*) bastard cabbage 2. (genus *Cakile*) searocket 3. (Brassicaceae 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*) longbeak 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
- ŽGRŽ-** ‘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. (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*) lady’s-tongue 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
- ŽFRŽ-** ‘BRASSICACEAE’ V 1. (genus *Iberis*) candytuft 2. (genus *Teesdalia*) shepherd’s-cress 3. (genus *Idahoia*) scapellod / 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
- ŽVRŽ-** ‘BRASSICACEAE’ X 1. (genus *Aethionema*) stonecress 2. (genus *Berteroa*) false madwort 3. (Brassicaceae other than named genera; numerous genera) other brassicaceous plant

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- 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
- 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
- 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*) mountain papaya / mountain pawpaw, babaco

- ŽŽPC**- ‘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, bretschnaidera 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, bottle tree, horseradish 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

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- 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
- LCKI**- ‘MALVOIDEAE’ X 1. (genus *Hibiscus*) hibiscus, rosemallow, rosella, comfortroot, roselle, fousapate marron, mahoe, mandrinette, pale face, flower-of-an-hour, rose of sharon 2. (genus *Abelmoschus*) okra, musk mallow, abelmosk / ambrette / musk okra / rose mallow 3. (genus *Kosteletzkya*) seashore mallow / sweat weed / saltmarsh mallow
- LCKV**- ‘MALVOIDEAE’ XI 1. (genus *Malvaviscus*) wax mallow / Turkcap / Turk’s turban / ladies teardrop / Scotchman’s purse, Turk’s cap mallow, sleeping hibiscus, mazapan (genus *Pavonia*) swampmallow, gingerbush, pavonia 2. (genus *Lagunaria*) pyramid tree / Norfolk Island hibiscus / Queensland white oak / sally wood / itchy bomb tree / cow itch tree 3. (genus *Alyogyne*) coastal hibiscus, lilac hibiscus, sand hibiscus
- LCKH**- ‘MALVOIDEAE’ XII 1. (genus *Radyera*) desert rose mallow / bush hibiscus 2. (genus *Hibiscadelphus*) hau kuahiwi 3. (Malvoideae other than named genera; numerous genera) other malvoid plant

- 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
- 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
- LČKŘ**- ‘BROWNLOWIOIDEAE’ 1. (genus *Berrya*) trincomalee wood tree 2. (Brownlowioideae other than Stem 1; several genera) other brownlowioid plant/tree
- 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
- LČKČ**- ‘STERCULIOIDEAE’ II 1. (genus *Franciscodendron*) tulip sterculia / tulip kurrajong / cabbage crowsfoot 2. (genus *Argyrodendron*) booyong, tulip oak, crowsfoot, blackjack 3. (genus *Pterygota*) buddha coconut, koto
- LČKL**- ‘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
- LČKV**- ‘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**- ‘TILLIOIDEAE’ 1. (genus *Tillia*) linden / lime tree / limebush / basswood 2. (genera *Craigia*, *Mortoniendron*) other tillioid plant/tree
- 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

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- 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 *Crocantemum*) peak rocrose / 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
- 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
- LCTÇ**- 'DIPTEROCARPACEAE' I 1. (genus *Dipterocarpus*) keruing, gurjan 2. (genus *Neobalanocarpus*) chengal 3. (genus *Shorea*) lauan, Philippine mahogany
- LCTĽ**- '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

[The following sub-sections remain to be completed:]

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Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Sapindales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Picramniales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Crossosomatales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Geraniales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > malvids > Myrtales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Celastrales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Malpighiales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Oxilidales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fabales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Rosales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Fagales

Tracheophytes > Spermatophytes > Angiosperms > Eudicots > superrosids > rosids > eurosids > fabids > Cucurbitales

Tracheophytes > Spermatophytes > Angiosperms > Magnolids

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Magnoliales

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Canellales

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Laurales

Tracheophytes > Spermatophytes > Angiosperms > Magnolids > Piperales

17.3 Roots For Fungi

[in development]

17.4 Roots For Unicellular Eukaryotes (e.g., Protists, Chromists, etc.)

[in development]

17.5 Roots For Bacteria & Archaea

[in development]