Key to Grasses of the Serpentine Prairie, Redwood Regional Park

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DIRECTIONS: The following dichotomous key is intended for use for grasses found at Redwood Regional Park’s Serpentine Prairie, but can be used elsewhere in the Berkeley Hills in similar open grassland habitats. This key asks questions in pairs (or couplets) which are labeled #A & #B. Select the most fitting answer (e.g. either 1A or 1B) using all the clues and then proceed to the next couplet directly beneath your answer. Continue until a final species identification is noted in italic (Scientific name) and bold (common name) (e.g. see legal line 14). Non-native taxa are listed in red while native grasses are in green. Ruler and grass anatomy drawings are provided on the last page. Taxonomy follows the printed edition (2nd) of the Jepson Manual (2012). Legal line numbering (on far left) is added for ease of instruction and location of couplets. Please send questions and corrections to lech@goldenhour.org.

Key adapted in part from Toni Corelli’s Flowering Plants of Edgewood Natural Preserve: 2nd Edition (2004).

A. Grass inflorescence a panicle. note: couplet 1B is located on page 3 and is highlighted

1A. 2-3m tall bunchgrass w/ leaf edges sharply serrated, glabrous leaf sheath, leaf blades that are 30-100cm in length, inflorescence as large, dense plume with many seeds ... Cortaderia selloana Pampas grass *(if leaf sheath is densely hairy plant is Cortaderia jubata Jubata grass)*

1B. Plant with inflorescence not as in 1A

2A. Awns present and obvious (>1mm) on lemmas or glumes

3A. Both glumes and lemmas with awns (or low tapering to an elongated point)

4A. Annual, inflorescence (Inflor.) compact and dense with spikelets

5A. Inflo. ovoid in general shape, but markedly asymmetric in shape with one side having longer awns, plants of woodlands or fields, plants with male and female florets on different spikelets, non-symmetric inflorescence with spikelets condensed to one side of main infl. Axis, leaf blades as asymmetric near collar with open sheath ... Cynosurus echinatus hedgehog dogtail

5B. Inflo. gen more or less symmetric, plant of wetter areas (seeps)... Polypogon monspeliensis rabbit’s foot grass

4B. Perennial bunchgrass, inflorescence open and airy, awns usu. bent and twisted at maturity (once dried)

6A. Grass of open grasslands, lemma awn 3.8-11 cm in length, >0.2 mm thick ... Stipa pulchra purple needle grass *(Although not surveyed S. cernua nodding needle grass may be present, identified by having a glabrous area on the achenes (seeds) that are only present on seed ridges – vs. S. pulchra with hairs generally continuous around achene)*

6B. Usu. grass of understory of other plants, former woodland/scrub habitat, lemma awn 1.2-5.5 cm, about 0.1 mm thick, comparatively much smaller achenes and shorter awns than two other Stipa ... Stipa lepida foothill needle grass

3B. Only lemmas awned, glumes not tapering to sharp point over 5mm

7A. Lemma awns >1.5 cm
8A. One or both glumes > first lemma (but awn exceeds glume), encloses at least the lowest floret, inflorescence very open/airy, tall annual grass (usu. 1-2 m) with tall inflorescence (>10 cm), stem glabrous ... *Avena barbata* slender wild oats [*A. fatua* wild oats may also be present with lemma tip that’s ragged or forked with none or very short awns (<1.5 mm), 9-11 lemma veins vs. *A. barbata* with obvious, longer forked lemma awn 2-6 mm, 5-9 lemma veins]

8B. Florets visibly longer than glumes, not fully enclosed, lower sheaths hairy

9A. Straight lemma awns very obvious from a distance (3-7 cm), awn scabrous (or minutely barbed) obvious to touch ... *Bromus diandrus* ripgut brome

9B. Lemma awns < 3 cm ... *Bromus madritensis* [*B. m. ssp. rubens* red brome has a shorter, rounder, denser inflorescence with florets overlapping at maturity while *B. m. ssp. madritensis* foxtail chess has a more oval overall inflorescence shape with more space between florets so as they are generally not overlapping at maturity.] Can be dif. To discern these 2 taxa.

7B. Lemma awns < 1.5 cm

10A. Annual

11A. Lemma awn minute (< 0.2 mm), grass usu. 15 cm in height, airy, open panicle with small round seeds at ends of inflorescence branches ... *Aira caryophyllea* silver hair grass

11B. Lemma awn longer than 0.2 mm, inflorescence spreading or packed densely on inflorescence stem, not airy.

12A. Stem, leaves generally glabrous, or sparsely hairy, bottom inflorescence pedicles reflexed at about 90 degree angle to rachis (main axis) when mature ... *Festuca microstachys* (formerly *Vulpia microstachys*) Pacific fescue

12B. Stem, leaves densely hairy, pubescent, inflorescence branches upright or appressed ... *Bromus hordaeceus* soft chess

10B. Perennial

13A. Glumes >= florets, enclosing them, dense clumping perennial with inflorescences nodding if not touching the ground, lemma awn curved, ligule ciliate, typical of open cooler areas, coastal prairie ... *Danthonia californica* California oat grass

13B. Glumes only = to lower florets, otherwise smaller than floret, perennials with mostly upright inflorescences

14A. Lower leaf sheaths pubescent or hairy (scabrous), inflorescence may be nodding in anthesis, lemmas awn > 7 mm ... *Bromus carinatus* California brome [A very similar bromus taxon – *B. catharticus* var. elatus – is found in disturbed areas and around the parking lot. This grass looks very similar but spikelets are extremely fattened (planar), lemmas are prominently veined]

14B. Upper leaf sheaths glabrous to sparsely hairy, large perennial bunchgrass, lemma awn usually < 5 mm

15A. Leaf blade with prominent clasping basal auricles, leaf blade flat and wide (to 1 cm), awn may be absent ... *Festuca arundinacea* tall fescue

15B. Auricles not obvious, leaf blade rolled and often needle-like, often “rubber-like to touch”, lemma awn typically ½ length of lemma

16A. Leaf sheath closed (open < 5 mm), leaves generally red at base, can be slightly rhizomatous, sheath hairs downward pointing, ... *Festuca rubra* red fescue

16B. Leaf sheath open, leaves generally not red at base, leaf sheath open at least ½ of its length, not rhizomatous, sheath hairs many-directional (if present) ... *Festuca idahoensis* Idaho fescue

2B. Awns absent from lemmas and glumes

17A. Annual, small diminutive grass (< 8 cm), lemma hirsute (cobwebby near attachment point) ... *Poa annua* annual bluegrass

17B. Perennial
18A. Spreading rhizomatous plant, flowering late (July), spreading over large area in cooler areas and in shade, lower glume with one vein... *Agrostis pallens* dune bentgrass [A. hallii Hall's bent grass may also be present, which is difficult to discern - A. hallii has a larger ligule (>4mm) and obvious lemma hairs to about 1/2 length of the lemma visible once the lemma is extracted from spikelet (A. pallens lemma hairs are minute, sparse or 0)]

18B. Not as in 18A, obvious bunchgrass, or weakly rhizomatous plant

19A. Glume encloses <1/2 of spikelet, lemma base usually cobwebby/hairy, with caryopsis (seed) maturity inflorescence branches tend to (may reflex with age to one side) ... *Poa secunda* ssp. secunda one-sided bluegrass

19B. Glumes enclose at least 1/2, & often 3/4 of spikelet, No cob-webby hairs on lemmas (lemma may be scabrous)

20A. Glumes unequal (~2 mm difference in length), ligule 0-2mm, upper glume +/- 5mm, inflorescence usually dense with many overlapping spikelets, bottom of inflorescence stalk often with sets of spikelets all condensed to one side of axis... *Koeleria macrantha* Junegrass

20B. Glumes equal, ligule 1-5mm, inflorescence with open space between spikelets, glumes papery and translucent with age, lemma base glabrous

21A. Spikelet usually >10 mm, large plant of open areas with weak clumping, lowest internodes +/- swollen, base of plant may look bulbous... *Melica californica* California melic

21B. Spikelet 3-7 mm, plant in shade or around rock outcrops in open areas, obviously ceaspitose (clumped), lemma back and margin hairy... *Melica toreyana* Torrey's melic

B. Grass inflorescence a spike with spikelets attaching directly or a simple raceme

22A. Spikelets without awns, usually only 1 glume on a spikelet, annual, inflorescence two-ranked (planar), auricles often overlapping, at least clasping stem, 3-8 florets/spikelet... *Festuca perennis* Italian rye grass

22B. Awns present on spikelets/lemmas/glumes

23A. Both glumes and lemmas awned

24A. Annual

25A. Glumes narrow and acute like awns

26A. Glumes with hairs, auricles of upper leaves well developed... *Hordeum murinum* foxtail

26B. Glumes not with obvious hairs, auricles of upper leaves not obvious... *Hordeum marinus* ssp. gussoneanum Mediterranean barley

25B. Glumes are not awn-like, reduced to needle-like structures

27A. Inflorescence with many spikelets (>10 usually) with dense obvious awns and soft hair, often in wet locations, individual spikelets with both male and female parts... *Polypogon monspeliensis* rabbit's foot grass

27B. Inflorescence more or less flattened usually with 2-5 (up to 7) spikelets per inflorescence, stem nodes conspicuously pubescent... *Brachypodium distachyon* false brome

24B. Perennial

28A. Glumes awn-like, plant typically <0.7 m

29A. Lemma awn <3 cm... *Hordeum brachyantherum* meadow barley

29B. Lemma awn >3 cm, inflorescence resembles bottlebrush when seeds mature, plant leaves and stem often hairy... *Elymus multisetus* big squirreltail

28B. Glumes not awn-like, inflorescences stalks tall (>1m), plant large in maturity, plant stem usu. glaucous... *Elymus glaucus* blue wild rye
23B. Only glumes or only lemmas awned (not both)

30A. Perennial

31A. Spreading rhizomatous plant, often forming large interconnected stands with few inflorescence spikes… Elymus triticoides creeping wild rye

31B. Plant with basal leaves, often in dense clump – plant not rhizomatous

32A. Plant with one glume subtending spikelet, typically one spikelet per node, leaves shiny, bright green, ligule to 1mm, auricles clasping… Festuca perennis Italian rye grass (note this plant is listed as both annual and perennial based on growth conditions)

32B. Plant usually with 2 glumes, leaves glabrous or dull, maybe glaucous, ligule 1-3mm… Elymus glaucus blue wild rye

30B. Annual

33A. Awns < 1 cm, tightly packed spikelets of 2 or more seeds (usu. 4-7), one glume subtending spikelet, forming dense annual stands sometimes with notable bunchgrass-like base, auricles usu. present, lemma glabrous… Festuca perennis Italian rye grass

33B. Awns > 1 cm, shorter annuals usually < 30 cm in height

34A. Spikelets attach directly to rachis (main inflor. stalk), stem nodes pubescent on an otherwise glabrous stem… Brachypodium distachyon false brome

34B. Inflorescence usually a raceme with spikelets on appendages/pedicles

35A. Lower glume ½ or less of length of upper glume… Festuca myuros rat-tail fescue

35B. Lower glume >½ of length of upper (often nearly equal)… Festuca bromoides six-week fescue