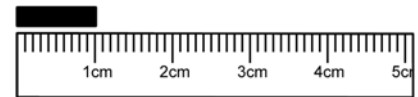


Key to Grasses of the Serpentine Prairie, Redwood Regional Park

By Lech Naumovich, Golden Hour Restoration Institute – www.goldenhour.org – May 2018 Ver 4.1

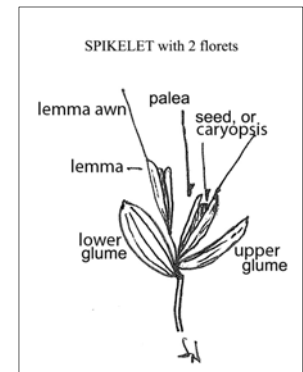
DIRECTIONS: The following dichotomous key is intended for use for grasses found at Redwood Regional Park's Serpentine Prairie, but can be used elsewhere in the Berkeley Hills in similar open grassland habitats. This key asks questions in pairs (or couplets) which are labeled #A & #B. Select the most 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)

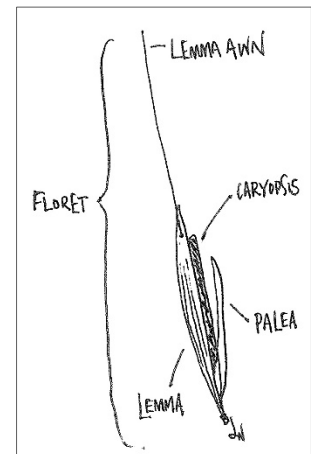
4A. Annual, inflorescence (Inflor.) compact and dense with spikelets

5A. Inflor. 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. Inflor. 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]

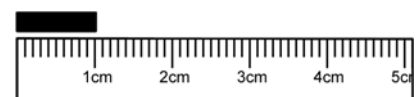
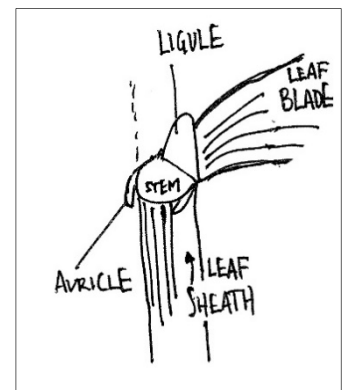


6B. Usu. grass of understory of other plants, former woodland/scrub habitat, lemma awn 1.2-5.5 cm, about 0.1 mm thick, comparatively much smaller achenes and shorter awns than two other *Stipa* ... *Stipa lepida* **foothill needle grass**

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

7A. Lemma awns >1.5 cm

- 43 8A. One or both glumes > first lemma (but awn exceeds glume), encloses at least the lowest
 44 floret, inflorescence very open/airy, tall annual grass (usu. 1-2 m) with tall inflorescence (>10
 45 cm), stem glabrous ... *Avena barbata* **slender wild oats** [*A. fatua* **wild oats** may also be present with
 46 lemma tip that's ragged or forked with none or very short awns (<1.5 mm), 9-11 lemma veins vs. *A. barbata*
 47 with obvious, longer forked lemma awn 2-6 mm, 5-9 lemma veins]
- 48 8B. Florets visibly longer than glumes, not fully enclosed, lower sheaths hairy
- 49 9A. Straight lemma awns very obvious from a distance (3-7 cm), awn scabrous (or minutely barbed) obvious to
 50 touch ... *Bromus diandrus* **ripgut brome**
- 51 9B. Lemma awns < 3 cm ... *Bromus madritensis* [*B. m. ssp. rubens* **red brome** has a shorter, rounder, denser inflorescence
 52 with florets overlapping at maturity while *B. m. ssp. madritensis* **foxtail chess** has a more oval overall inflorescence shape with
 53 more space between florets so as they are generally not overlapping at maturity.] Can be dif. To discern these 2 taxa.
- 54 7B. Lemma awns <1.5 cm
- 55 10A. Annual
- 56 11A. Lemma awn minute (< 0.2 mm), grass usu. 15cm in height, airy, open panicle with small round seeds at ends of
 57 inflorescence branches ... *Aira caryophylla* **silver hair grass**
- 58 11B. Lemma awn longer than 0.2 mm, inflorescence spreading or packed densely on inflorescence stem, not airy.
- 59 12A. Stem, leaves generally glabrous, or sparsely hairy, bottom inflorescence pedicles reflexed at about 90
 60 degree angle to rachis (main axis) when mature ... *Festuca microstachys* (formerly *Vulpia microstachys*) **Pacific**
 61 **fescue**
- 62 12B. Stem, leaves densely hairy, pubescent, inflorescence branches upright or appressed ... *Bromus hordaeceus*
 63 **soft chess**
- 64 10B. Perennial
- 65 13A. Glumes >= florets, enclosing them, dense clumping perennial with inflorescences nodding if not touching the
 66 ground, lemma awn curved, ligule ciliate, typical of open cooler areas, coastal prairie ... *Danthonia californica*
 67 **California oat grass**
- 68 13B. Glumes only = to lower florets, otherwise smaller than floret, perennials with mostly upright inflorescences
- 69 14A. Lower leaf sheaths pubescent or hairy (scabrous), inflorescence may be nodding in anthesis, lemmas awn >
 70 7mm ... *Bromus carinatus* **California brome** [A very similar bromus taxon – *B. catharticus* var. *elatus* – is found in
 71 disturbed areas and around the parking lot. This grass looks very similar but spikelets are extremely fattened
 72 (planar), lemmas are prominently veined)
- 73 14B. Upper leaf sheaths glabrous to sparsely hairy, large perennial bunchgrass, lemma awn usually < 5 mm
- 74 15A. Leaf blade with prominent clasping basal auricles, leaf blade flat and wide (to 1 cm), awn may be absent ...
 75 *Festuca arundinacea* **tall fescue**
- 76 15B. Auricles not obvious, leaf blade rolled and often needle-like, often "rubber-
 77 like to touch", lemma awn typically ½ length of lemma
- 78 16A. Leaf sheath closed (open < 5mm), leaves generally red at base, can be
 79 slightly rhizomatous, sheath hairs downward pointing, ... *Festuca rubra* **red fescue**
- 80 16B. Leaf sheath open, Leaves generally not red at base, leaf sheath open at
 81 least ½ of its length, not rhizomatous, sheath hairs many-directional (if present) ...
 82 *Festuca idahoensis* **Idaho fescue**
- 83 2B. Awns absent from lemmas and glumes
- 84 17A. Annual, small diminutive grass (< 8 cm), lemma hirsute (cobwebby near
 85 attachment point) ... *Poa annua* **annual bluegrass**
- 86 17B. Perennial
- 87



88 18A. Spreading rhizomatous plant, flowering late (July), spreading over large area in cooler areas and in shade, lower
89 glume with one vein ... *Agrostis pallens* **dune bentgrass** [*A. hallii* **Hall's bent grass** may also be present, which is difficult to
90 discern – *A. hallii* has a larger ligule (> 4mm) and obvious lemma hairs to about ½ length of the lemma visible once the lemma is
91 extracted from spikelet (*A. pallens* lemma hairs are minute, sparse or 0)

92 18B. Not as in 18A, obvious bunchgrass, or weakly rhizomatous plant

93 19A. Glume encloses < ½ of spikelet, lemma base usually cobwebby/hairy, with caryopsis (seed) maturity
94 inflorescence branches tend to (may reflex with age to one side) ... *Poa secunda* ssp. *secunda* **one-sided bluegrass**

95 19B. Glumes enclose at least ½, & often ¾ of spikelet, No cob-webby hairs on lemmas (lemma may be scabrous)

96 20A. Glumes unequal (~2 mm difference in length), ligule 0-2mm, upper glume +/- 5mm, inflorescence usually
97 dense with many overlapping spikelets, bottom of inflorescence stalk often with sets of spikelets all condensed to
98 one side of axis ... *Koeleria macrantha* **Junegrass**

99 20B. Glumes equal, ligule 1-5mm, inflorescence with open space between spikelets, glumes papery and
100 translucent with age, lemma base glabrous

101 21A. Spikelet usually > 10 mm, large plant of open areas with weak clumping, lowest internodes +/- swollen,
102 base of plant may look bulbous ... *Melica californica* **California melic**

103 21B. Spikelet 3-7 mm, plant in shade or around rock outcrops in open areas, obviously caespitose (clumped),
104 lemma back and margin hairy ... *Melica torreyana* **Torrey's melic**

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

106 22A. Spikelets without awns, usually only 1 glume on a spikelet, annual, inflorescence two-ranked (planar), auricles
107 often overlapping, at least clasping stem, 3-8 florets/spikelet ... *Festuca perennis* **Italian rye grass**

108 22B. Awns present on spikelets/lemmas/glumes

109 23A. Both glumes and lemmas awned

110 24A. Annual

111 25A. Glumes narrow and acute like awns

112 26A. Glumes with hairs, auricles of upper leaves well developed ... *Hordeum murinum* **foxtail**

113 26B. Glumes not with obvious hairs, auricles of upper leaves not obvious ... *Hordeum marinum* ssp. *gussoneanum*
114 **Mediterranean barley**

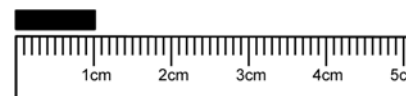
115 25B. Glumes are not awn-like, reduced to needle-like structures

116 27A. Inflorescence with many spikelets (>10 usually) with dense obvious awns and soft hair, often in wet
117 locations, individual spikelets with both male and female parts ... *Polypogon monspeliensis* **rabbit's foot grass**

118 27B. Inflorescence more or less flattened usually with 2-5 (up to 7) spikelets per inflorescence, stem nodes
119 conspicuously pubescent ... *Brachypodium distachyon* **false brome**

120 24B. Perennial

121 28A. Glumes awn-like, plant typically < 0.7 m



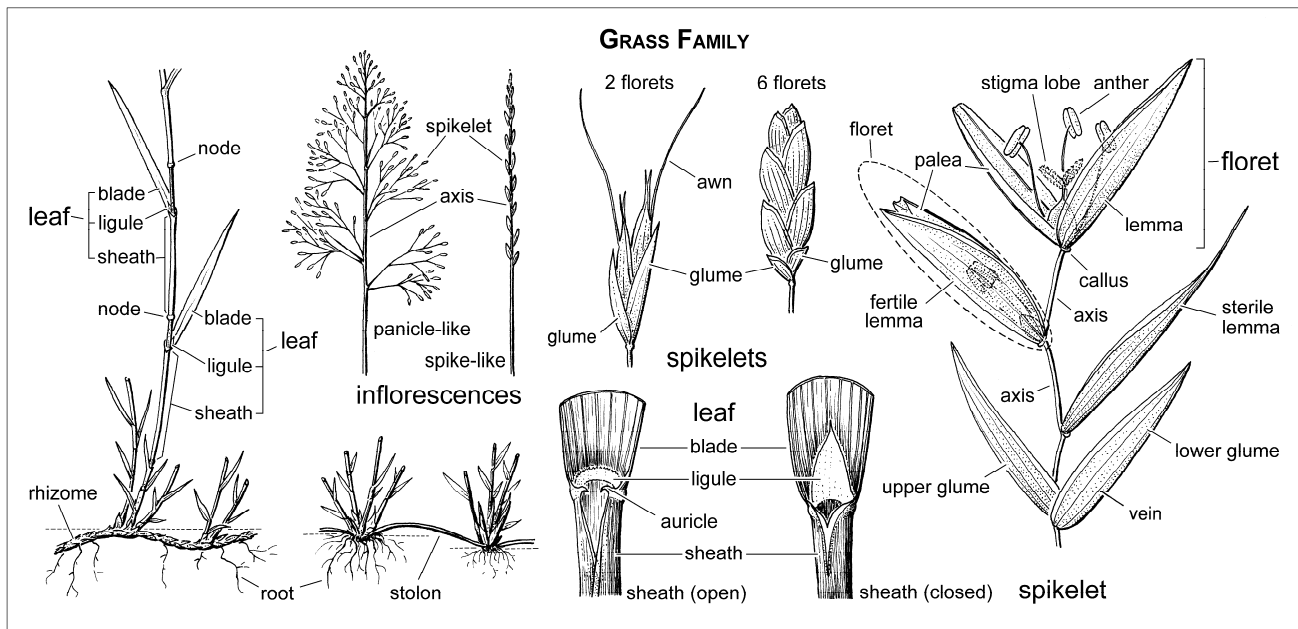
122 29A. Lemma awn <3 cm ... *Hordeum brachyantherum* **meadow barley**

123 29B. Lemma awn >3 cm, inflorescence resembles bottlebrush when seeds mature, plant leaves and stem often
124 hairy ... *Elymus multisetus* **big squirreltail**

125 28B. Glumes not awn-like, inflorescences stalks tall (> 1m), plant large in maturity, plant stem usu. glaucous ... *Elymus*
126 *glaucus* **blue wild rye**

127

- 128 23B. Only glumes or only lemmas awned (not both)
- 129 30A. Perennial
- 130 31A. Spreading rhizomatous plant, often forming large interconnected stands with few inflorescence spikes ... *Elymus*
131 *triticooides* **creeping wild rye**
- 132 31B. Plant with basal leaves, often in dense clump – plant not rhizomatous
- 133 32A. Plant with one glume subtending spikelet, typically one spikelet per node, leaves shiny, bright green, ligule to
134 1mm, auricles clasping ... *Festuca perennis* **Italian rye grass** (note this plant is listed as both annual and perennial based on
135 growth conditions)
- 136 32B. Plant usually with 2 glumes, leaves glabrous or dull, maybe glaucous, ligule 1-3mm... *Elymus glaucus* **blue wild**
137 **rye**
- 138 30B. Annual
- 139 33A. Awns < 1 cm, tightly packed spikelets of 2 of more seeds (usu. 4-7), one glume subtending spikelet, forming dense
140 annual stands sometimes with notable bunchgrass-like base, auricles usu. present, lemma glabrous ... *Festuca perennis*
141 **Italian rye grass**
- 142 33B. Awns > 1cm, shorter annuals usually < 30 cm in height
- 143 34A. Spikelets attach directly to rachis (main inflor. stalk), stem nodes pubescent on an otherwise glabrous stem...
144 *Brachypodium distachyon* **false brome**
- 145 34B. Inflorescence usually a raceme with spikelets on appendages/pedicles
- 146 35A. Lower glume ½ or less of length of upper glume ... *Festuca myuros* **rat-tail fescue**
- 147 35B. Lower glume > ½ of length of upper (often nearly equal) ... *Festuca bromoides* **six-week fescue**



148

149 From *The Jepson Manual, Vascular Plants of California*, Baldwin et al. 2012, University of California Press, used with permission.

150

151

