

**DRAFT Key to Genera of Oregon Grasses**  
**Version 17**

**Carex Working Group, for Oregon Flora Project**

This key is intended to identify to genus all grass species that have been confirmed as occurring in Oregon. Contact Barbara Wilson (bwilson(at)peak.org), with questions or suggestions for improving the key.

**Conventions:** Lemma and spikelet measurements exclude the awns.

**Key to Groups**

- 1a. Plant usually 2 – 9 meters tall, very tough or woody, culms usually > 10 mm in diameter ..... Group 1, p. 1
- 1b. Plant usually 0.1 – 2(2.5) meters tall, not or only somewhat tough, culms usually < 5(10) mm in diameter
  - 2a. Spikelets enclosed in spiny, bur-like fascicle ..... *Cenchrus longispinus*
  - 2b. Spikelets not enclosed by bur-like fascicle
    - 3a. Inflorescence a spike, spike-like panicle, dense head, raceme, or single spikelet; panicle branches not easily seen at arm's length (even when the inflorescence is bent to the side.) ..... Group 2, p. 2
    - 3b. Inflorescence a panicle, not spike- or head-like; panicle branches easily seen at arm's length (at least when the inflorescence is bent to the side)
      - 4a. Panicle branches spike-like or like very condensed panicles, the inflorescence sometimes digitate; spikelets often paired ..... Group 3, p. 8
      - 4b. Panicle branches not spike-like, sometimes further branched 2 or more times; spikelets usually not paired
        - 5a. Floret 1 per spikelet ..... Group 4, p. 9
        - 5b. Floret 2 or more per spikelet (1 or more florets sometimes minute)
          - 6a. Leaf sheaths closed for at least ¼ their length ..... Group 5, p. 12
          - 6b. Leaf sheaths open to the base (or very nearly so) ..... Group 6, p. 13

**Group 1: Very large, tough plants**

- 1a. Stem woody, usually branched near middle; inflorescence axillary (bamboos, long-persistent but not naturalized in Oregon)
- 1b. Stem tough, not woody, not branched near middle; inflorescence terminal
  - 2a. Inflorescence a terminal spike, the spikelets attached directly to the inflorescence axis
    - 3a. Glumes 2 – 5 veined at mid-length; lemmas awned, awns 7 – 35 mm long ..... *Elymus*
    - 3b. Glumes 1-veined at mid-length; lemmas acute to short-awned, awns 0 – 4 mm long ..... *Leymus*
  - 2b. Inflorescence a terminal panicle (sometimes also with thick spikes in the axils of leaves)
    - 4a. Spikelets with long silky hairs; inflorescence a large, fluffy panicle
      - 5a. Plant strongly rhizomatous, growing in water at least part of the year; lemma glabrous (spikelet axis long-soft-hairy) ..... *Phragmites*

- 5b. Plant densely cespitose, growing in uplands (though sometimes near water); lemma long-hairy, especially below middle ..... *Cortaderia*
- 4b. Spikelets lacking silky hairs; inflorescence a wide or sparse panicle, sometimes also with thick spikes in the leaf axils
  - 6a. Terminal inflorescence a large, dense, elliptical panicle, the primary inflorescence branches branched; staminate and pistillate spikelets adjacent to each other in pairs or triplets; all parts of the inflorescence with both staminate and pistillate spikelets ..... *Sorghum*
  - 6b. Terminal inflorescence a sparse terminal panicle +/- pyramidal in shape, the primary inflorescences not or little branched; staminate and pistillate spikelets separated (sometimes pistillate spikelets found only in axillary spikes)
    - 7a. Plants growing in water; inflorescence a terminal panicle with the lower branches staminate, upper branches pistillate ..... *Zizania*
    - 7b. Plants growing in uplands; inflorescence consisting of a terminal, staminate panicle with spike-like branches and dense, thick, lateral, pistillate spike(s) ..... *Zea*

**Group 2: Inflorescence a spike, spike-like, or a head; branches none or obscure**

- Aa. Florets producing tiny bulbs rather than normal seeds ..... *Poa bulbosa*
- Ab. Florets usually producing normal seeds, not tiny bulbs
  - 1a. Spikelet 1 per inflorescence
    - 2a. Plant perennial ..... *Danthonia unispicata*
    - 2b. Plant annual
      - 3a. Leaf sheaths closed, the margins fused ..... *Bromus*
      - 3b. Leaf sheath margins open, the margins overlapping ..... *Brachypodium distachyon*
  - 1b. Spikelets 2 or more per inflorescence
    - 4a. Plant less than 20 cm tall AND spikelets mostly hidden in short clusters of strongly scabrous leaves that have stiff, sharp tips; plants of the Great Basin ..... *Munroa squarrosa*
    - 4b. Plant differing from the above in some way
      - 5a. Inflorescence one-sided or with one-sided clusters of spikelets
        - 6a. Individual spikelets 20 – 40(50) mm long, spreading to reflexed ..... *Pleuropogon*
        - 6b. Individual spikelets 3 – 25 mm long, if 20 – 25 mm long, then spikelets appressed
          - 7a. Glumes absent or vestigial; leaves 0.5 – 1 mm wide, stiff and sharp-pointed .. *Nardus*
          - 7b. Glumes present; leaves 0.5 – 14 mm wide, not stiff, not sharp-pointed
            - 8a. Glumes rounded at tip; base of mature inflorescence usually hidden in leaves ..... *Sclerochloa dura*
            - 8b. Glumes pointed to awned at tip; base of mature inflorescence well exerted from leaves
              - 9a. Inflorescence head-like, 1 – 2(4) times as long as wide ..... *Cynosurus echinatus*
              - 9b. Inflorescence much longer than wide
                - 10a. Leaf sheath closed; inflorescence an open raceme ..... *Melica stricta*
                - 10b. Leaf sheath open; inflorescence a spike or condensed panicle
                  - 11a. Spikelets paired, one of each pair fertile and one sterile . *Cynosurus cristatus*
                  - 11b. Spikelets not paired, all similar ..... *Spartina*

- 5b. Inflorescence 2-sided or more or less round in cross section; clusters of spikelets not 1-sided
- 12a. Spikelet clearly subtended by bristles longer than the spikelet ..... *Setaria*
- 12b. Spikelet not subtended by bristles longer than the spikelet
- 13a. Inflorescence axis thickened; all spikelets or at least the lower ones strongly appressed or sunken into the axis
- 14a. Glumes with awns 6 – 9 mm long (at least on the upper spikelets) ..... *Aegilops*
- 14b. Glumes acute to acuminate, awnless
- 15a. Spikelets radial to the inflorescence axis (with 1 edge against the inflorescence axis), glume 1, on outside edge of spikelet (but terminal spikelet with 2 glumes)
- 16a. Spikelets with 1 functional floret (a second, reduced floret sometimes present) ..... *Hairnardia cylindrica*
- 16b. Spikelets with 2 – 20+ functional florets ..... *Lolium*
- 15b. Spikelets tangential to the inflorescence axis (with the flat side against the axis, so both glumes are visible at once), glumes 2 on all spikelets
- 17a. Lemmas awnless ..... *Parapholis incurva*
- 17b. Lemmas awned, the awns 2 – 4 mm long ..... *Scribneria bolanderi*
- 13b. Inflorescence axis not clearly thickened; spikelets neither strongly appressed nor sunken into inflorescence axis
- 18.2a. Spikelets 2 – 4 per node, sessile on the main inflorescence axis or, in *Leymus flavescens*, one of the spikelet pair elevated on a stalk to 15 mm long (to facilitate counting spikelets in the crowded spike, break the inflorescence axis to isolate a node) ..... Key 2b, *Triticeae* Tribe, p. 5
- 18.2b. Spikelets 1 per node, often on a short stalk
- 19a. Florets 1 per spikelet
- 20a. Each lemma with 3 awns ..... *Aristida*
- 20b. Each lemma with 0 – 1 awn
- 21a. Spikelets 10 – 13 mm long; plants of either coastal or disturbed habitats
- 22a. Leaves 4 – 8 mm wide when flat but usually involute and 0.5 – 2.5 mm in diameter; perennial plants of coastal sands ..... *Ammophila*
- 22b. Leaves 6 – 15+ mm wide, flat; annual plants of disturbed habitats ..... *Triticum aestivum*
- 21b. Spikelets 0.8 – 10 mm long
- 23a. Glumes keels strongly ciliate
- 24a. Glumes awned
- 25a. Spikelets with a stipe and disarticulating below the glumes; panicle tending to be lobed ..... *Polypogon*
- 25b. Spikelet lacking a stipe, initially disarticulating above glumes (later also below the glumes); panicle an even-sided cylinder .... *Phleum*
- 24b. Glumes not awned
- 26a. Ligules membranous; lemmas awned ..... *Alopecurus*
- 26b. Ligules of hairs; lemmas awnless ..... *Crypsis*
- 23b. Glumes keels not strongly ciliate

- 27a. Glumes swollen at base where distended by the floret, long-tapered; upper glume 3 – 5 times as long as lemma body *Gastridium phleoides*
- 27b. Glumes not swollen at base, tip obtuse to acuminate; upper glume (excluding awn) to 2.5 times as long as lemma body
- 28a. Glumes clearly awned
- 29a. Spikelet disarticulating above glumes, floret falling alone; lemma 3-veined; lemma awn lacking or usually shorter than lemma body ..... *Muhlenbergia*
- 29b. Spikelet disarticulating below glumes and stipe, falling as 1 unit; lemma 5-veined; lemma awn lacking or usually longer than lemma body ..... *Polypogon*
- 28b. Glumes truncate to long-tapered or mucronate, not clearly awned
- 30a. Lemma awned from the middle or below; glumes connate in the lower half ..... *Alopecurus myosuroides*
- 30b. Lemma awned from the tip or awnless; glumes not connate
- 31a. Glumes 2 – 8 mm long, often winged; lemmas 2 – 6.8 mm long; culm (10)20 – 230 cm tall; leaves (0.5)2 – 20 mm wide; inflorescence (0.8)1 – 4 cm wide ..... *Phalaris*
- 31b. Glumes 1.5 – 3.2 mm long, not winged; lemmas 1.5 – 2.6(3.2) mm long; culm (3)5 – 30 cm tall; leaves 0.5 – 6 mm wide; inflorescence 0.1 – 1.7 cm wide ..... *Muhlenbergia*
- 19b. Florets 2 – 20+ per spikelet
- 32a. Fertile floret 1, usually subtended by 2 sterile florets (which may be reduced to tiny soft bristles in *Phalaris*)
- 33a. Sterile florets longer than the fertile floret, awned ..... *Anthoxanthum*
- 33b. Sterile florets usually shorter than the fertile floret, awnless ..... *Phalaris*
- 32b. Fertile florets (1)2 or more; sterile florets, if any, above fertile floret(s)
- 34a. Glume 1, on outside edge of spikelet (but terminal spikelet with 2 glumes) ..... *Lolium*
- 34b. Glumes 2 on all spikelets
- 35a. Spikelets sessile or subsessile
- 36a. Spikelets (4.8)5 – 6 times as long as wide; inflorescence nodding ..... *Brachypodium*
- 36b. Spikelets 1 - 4 times as long as wide; inflorescence nodding or erect ..... Key 2B, *Triticeae* Tribe, p. 5
- 35b. Spikelets on short stalks
- 37a. Leaf sheath closed
- 38a. Palea keels with awns or small triangular appendages at about midlength ..... *Pleuropogon*
- 38b. Palea keels lacking awns or appendages at midlength ..... *Bromus*
- 37b. Leaf sheath open
- 39a. Spikelets (15)20 – 40(50) mm long ..... *Brachypodium*
- 39b. Spikelets 2.5 – 12 mm long
- 40a. Upper and lower glumes of different shapes (widest at different points along their total length)

- 41a. Upper glumes 1.5 – 2.5 mm long, rounded to truncate;  
lemmas 1.9 – 2.8 mm long ..... *Sphenopholis obtusata*
- 41b. Upper glumes 2.5 – 5 mm long, acute; lemmas 2.5 – 6.5  
mm long ..... *Koeleria macrantha*
- 40b. Glumes +/- alike in shape, though often differing in length
  - 42a. Lemmas not awned ..... *Trisetum wolfii*
  - 42b. Lemma awned from tip or back
    - 43a. Lemma awned from the tip ..... *Vulpia*
    - 43b. Lemmas awned from the back
      - 44a. Spikelets 2.8 – 3.8 mm long; glumes longer than the  
florets and hiding them ..... *Aira praecox*
      - 44b. Spikelets 4 – 7 mm long; glumes as long as or shorter  
than the spikelets and revealing them ..... *Trisetum*

**Group 2b: Triticeae (Wheatgrass Tribe).** Most perennial wheatgrasses traditionally classified in the genus *Agropyron* have been transferred to *Elymus* or placed in the smaller segregate genera *Leymus*, *Pascopyrum*, *Pseudoroegneria*, and *Thinopyrum*. Except for thick-glumed *Thinopyrum*, these segregate genera are hard to distinguish concisely from *Elymus* in its current circumscription. Therefore, this key picks *Elymus* apart almost species by species in order to distinguish the *Elymus* species from the segregate genera.

Number of spikelets per node should be assessed near the middle of the spike. If the number of spikelets per node is not obvious, break the spikes. The smallest units they break into consist of a node with its spikelets and the internode above it. Glumes may be reduced and awn-like. Sometimes some lemmas are sterile, reduced, and awn-like.

- 1a. Inflorescence axis thickened; lower spikelets strongly appressed or sunken into axis *Aegilops*
- 1b. Inflorescence axis not clearly thickened; spikelets neither strongly appressed nor sunken into axis
  - 2a. Spikelets 1 per node at most nodes
    - 3a. Lemma keel and margin ciliate ..... *Secale cereale*
    - 3b. Lemmas not ciliate
      - 4a. Plant annual
        - 5a. Lemmas 5 – 7.5 mm long; spikes 1.3 – 2.4 cm long (excluding awns)  
..... *Eremopyrum triticeum*
        - 5b. Lemmas 10 – 15 mm long; spikes (3.5)6 – 18 cm long (excluding awns)  
..... *Triticum aestivum*
      - 4b. Plant perennial
        - 6a. Inflorescence axis internodes usually less than 3 mm long; spikelets more than 3 times as long as the internodes ..... *Agropyron cristatum*
        - 6b. Inflorescence axis internodes 4 – 15+ mm long; spikelets ½ - 3 times as long as the internodes
          - 7a. Glumes thick, stiff and hard, truncate to acute, lacking awns; lemmas usually awnless ..... *Thinopyrum*
          - 7b. Glumes +/- thin and flexible, obtuse to +/- acuminate, awned or not; lemmas usually awned

- 8a. Culm prostrate to decumbent and geniculate; plants of subalpine to alpine zones ..... *Elymus*
- 8b. Culms usually erect; plants of low elevations to subalpine zone
- 9a. Plants strongly rhizomatous
- 10a. Spikelets 2 per node at most or all nodes in the middle of the spike, 1 per node near the base and tip of the spike ..... *Leymus*
- 10b. Spikelets 1 per node at most or all nodes in all parts of the spike
- 11a. Blades normally flat, 5 – 10 mm broad; lower sheaths usually hirsute-pilose; plants usually not strongly glaucous; awn of lemma, if any, straight ..... *Elymus*
- 11b. Blades normally strongly involute or considerably less than 5 mm broad; lower sheaths usually glabrous; plants often strongly glaucous; awn of lemma, if any, often divergent
- 12a. Spikes loose and open, most of the spikelets usually shorter than, to 1.5(2) times longer than the internodes of the inflorescence axis; inflorescence axis usually plainly visible; lemmas glabrous or only puberulent, never pubescent; anthers about 5(8) mm long; rhizomes short ..... *Pseudoroegneria spicata*
- 12b. Spikes compact, the upper spikelets usually 2 – 3 times as long as the internodes of the inflorescence axis; inflorescence axis usually almost concealed; lemmas often pubescent; anthers often less than 5 mm long; rhizomes usually extensive
- 13a. Glumes mostly 5 – 7-nerved, oblong-lanceolate, broadest at or above midlength, shorter than the first lemma, rarely awn-tipped, usually hairy; lemmas usually copiously hairy; lower sheaths finely strigillose to pilose; anthers more than 4 mm long ..... *Elymus*
- 13b. Glumes mostly 3 – 5-nerved, lanceolate, tapered from near the base, often as long as the first lemma, frequently awn-tipped, mostly glabrous but sometimes pubescent; lemmas glabrous to moderately pubescent; lower sheaths often glabrous; anthers mostly 3 – 4 mm long ..... *Pascopyrum smithii*
- 9b. Plants caespitose to weakly rhizomatous
- 14a. Anthers 0.7 – 3 mm long ..... *Elymus*
- 14b. Anthers 3 – 7 mm long
- 15a. Lemmas awnless or nearly so
- 16a. Range strictly coastal; spikelets mostly > 1 times as long as the adjacent internodes ..... *Elymus glaucus* ssp. *virescens*
- 16b. Range E of Cascades and in SW OR, not coastal; spikelets 0.5 – 1.5(2) times as long as the adjacent internodes .... *Pseudoroegneria spicata*
- 15b. Lemmas awned
- 17a. Lemma awns straight ..... *Elymus*
- 17b. Lemma awns strongly divergent, outcurving, or recurved
- 18a. Glumes 0.9 – 2.2 mm wide, +/- flexible; spikes with internodes 7 – 20(25) mm long, spikelets 1.1 – 1.5(2) times as long as the internodes ..... *Pseudoroegneria spicata*

- 18b. Glumes 0.5 – 1.3 mm wide, stiff; spikes with internodes 5 – 12 mm long, spikelets about twice as long as the internodes ..... *Elymus*
- 2b. Spikelets 2 – 4(8) per node, spikelets sometimes reduced, the glumes and sterile lemmas very narrow to awn-like
- 19a. Spikelets 3 per node, dissimilar, the central spikelet fertile and usually sessile, the lateral spikelets usually on pedicels and usually sterile and reduced, the glumes and sterile lemmas very narrow to awn-like (or sessile and fertile in cultivated annuals) ..... *Hordeum*
- 19.5a. Plants annual or perennial; lateral spikelets usually on pedicels (if sessile, then plants cultivated annuals with fertile lateral spikelets) ..... *Hordeum*
- 19.5b. Plants perennial; lateral spikelets sessile ..... *Elymus elymoides* ssp. *hordeoides*
- 19b. Spikelets 2 – 4(8) per node at most nodes, similar (if 3, all 3 spikelets sessile)
- 20a. Some awns longer than the axis of the inflorescence; plants annual ..... *Taeniatherum caput-medusae*
- 20b. Awns, if present, shorter than the inflorescence; plants annual or perennial
- 21a. Lemmas strongly keeled, the keels scabrous or ciliate ..... *Secale cereale*
- 21b. Lemmas rounded over the back proximally, sometimes keeled distally, the keels smooth to hairy distally
- 22a. Lemma awns more than 3 mm long ..... *Elymus*
- 22b. Lemma awns 0 – 3 mm long
- 24a. Glumes tapering very gradually from the base or from a point well below the middle ..... *Leymus*
- 24b. Glumes parallel-sided to above the middle, then tapering less gradually
- 25a. Long-rhizomatous plants of unstable, sandy soils near the coast or Columbia River; inflorescences 1 – 3 cm wide ..... *Leymus flavescens*
- 25b. Short-rhizomatous to loosely cespitose plants of more stable, better developed substrates, widely distributed; inflorescences 0.5 – 1 cm wide *Elymus*

**Group 3: Inflorescence umbel-like or branches spike-like**

- 1a. Leaves ovate to ovate-lanceolate, the bases heart-shaped and clasping, the margins ciliate with hairs 1 – 2+ mm long ..... *Arthraxon hispidus* var. *hispidus*
- 1b. Leaves lanceolate to linear, straight or tapering at the base and not cordate-clasping, the margins not ciliate or with shorter hairs
- 2a. Inflorescence axis much shorter than the spike-like branches
- 3a. Lemmas conspicuously awned, the awns as long as or longer than the lemmas ... *Chloris*
- 3b. Lemmas awnless or with inconspicuous awns shorter than the lemmas
- 4a. Spikelets laterally compressed
- 5a. Plants creeping perennials with shoots scattered ..... *Cynodon*
- 5b. Plants annual, all shoots arising at about the same place ..... *Eleusine indica*
- 4b. Spikelets dorsiventrally compressed
- 6a. Plants annual; upper lemmas and paleas flexible at maturity; lemma margins flat, hyaline ..... *Digitaria*
- 6b. Plants perennial; upper lemmas and paleas tough to hard at maturity; lemma margins involute, not hyaline ..... *Paspalum*
- 2b. Inflorescence axis as long as or longer than most of the branches, so that the branches are attached at markedly different heights

- 8a. Spikelets laterally compressed; proximal floret(s) fertile
  - 8.5a. Glumes +/- semicircular, with wrinkled, +/- inflated wings *Beckmannia syzigachne*
  - 8.5b. Glumes not semicircular, either not winged or wings flat
    - 9a. Spikelets very flat and very tightly crowded, like teeth of a comb, on one-sided branchlets ..... *Spartina*
    - 9b. Spikelets not particularly crowded, branchlets not one-sided
      - 10a. Lemmas (1)3-veined; habitat usually wet places ..... *Leptochloa fusca*
      - 10b. Lemmas (3)5 – 9-veined; habitat usually dry places
        - 11a. Lemmas awnless ..... *Desmazeria rigida*
        - 11b. Lemma awns usually 1 – 22 mm long ..... *Vulpia*
- 8b. Spikelets dorsally compressed; proximal floret sterile
  - 12a. Ligule lacking; glumes and lemmas usually awned ..... *Echinochloa*
  - 12b. Ligules present; glumes and lemmas awnless
    - 13a. Leaf sheaths densely long hairy in the lower half ..... *Urochloa mutica*
    - 13b. Leaf sheaths glabrous to sparsely hairy throughout
      - 14a. Fertile lemma flexible, thinner than sterile lemma and upper glume, back of fertile floret facing away from inflorescence axis ..... *Digitaria*
      - 14b. Fertile lemma firm to hard, thick, usually like sterile lemma and upper glume, back of fertile floret facing inflorescence axis, or orientation hard to determine ..... *Paspalum*

**Group 4: Inflorescence a panicle, branches not spike-like; floret 1 per spikelet**

- 1a. Glumes lacking
  - 2a. Plants 20 – 900 cm tall; inflorescence a +/- normal
    - 3a. Plants tending to stick to clothing, to 150 cm tall; leaf margins and surfaces sharply scabrous, sometimes cutting skin; all parts of the panicle similar; spikelets bisexual ..... *Leersia oryzoides*
    - 3b. Plants not sticking to clothing, 20 – 900 cm tall; leaf margins and surfaces smooth or scabrous but not cutting skin; lower part of panicle with staminate spikelets (which are narrower and fall early), and upper part of panicle with pistillate spikelets (which are wider and persist longer) ..... *Zizania*
  - 2b. Plants 1 – 5(10) cm tall; panicles with umbel-like clusters of branches . *Coleanthus subtilis*
- 1b. Glumes 2, well developed
  - 5a. Spikelets dorsiventrally flattened; spikelet actually consisting of 2 florets, the lower one glume-like; spikelet with a small glume (sometimes reduced to a shallow rim), a larger glume, a glume-like sterile lemma, and a harder fertile lemma that often clasps the palea ..... (*Paniceae* Tribe) Group 6, lead 4, p. 11
  - 5b. Spikelets +/- laterally flattened, sometimes round in cross section (rarely somewhat dorsiventrally flattened in *Catabrosa*), spikelet consisting of two +/- similar glumes and one floret that may or may not be harder than the glume
    - 5.5a. Glumes +/- semicircular, with wrinkled, +/- inflated wings ... *Beckmannia syzigachne*
    - 5.5b. Glumes not semicircular, not winged (except *Phalaris*), or wings not wrinkled
  - 6a. Glumes and lemmas awnless
    - 7a. Lemma stiffly membranous to hard, +/- tightly enfolding the palea and fruit, usually +/- round in cross section, not keeled ..... *Achnatherum*

- 7b. Lemma thin and flexible, +/- not enfolding palea and fruit, usually laterally flattened, sometimes keeled
- 8a. Lemma base clearly hairy-tufted, lemmas sometimes evenly densely hairy with hairs at least 1 mm long
- 9a. Spikelets 10 – 13 mm, subsessile; inflorescence dense; habitat coastal sand dunes ..... *Ammophila*
- 9b. Spikelets 3 – 10 mm, usually clearly stalked; inflorescence +/- dense to open; habitat not coastal sand dunes
- 10a. Lemma longer than the glumes; culms often solid; paleas well developed, mostly subequal to the lemmas ..... *Muhlenbergia*
- 10b. Lemma shorter than the glumes; culms never solid; paleas often reduced or lacking ..... *Agrostis*
- 8b. Lemma base not hairy-tufted, if the lemmas evenly hairy then the hairs less than 1 mm long
- 11a. Lower glume (or both glumes) shorter than the lemma
- 12a. Leaf sheath closed; leaves 2 – 13 mm wide, inflorescence an open panicle ..... *Catabrosa aquatica*
- 12b. Leaf sheath open; leaves 0.6 – 6 mm wide; inflorescence a condensed or open panicle
- 13a. Ligule of hairs; leaf sheath with a tuft of hairs at the top ..... *Sporobolus*
- 13b. Ligule membranous (sometimes also minutely ciliate); leaf sheath without a tuft of hairs at the top ..... *Muhlenbergia*
- 11b. Both glumes equalling or longer than lemma
- 14a. Glumes with midrib expanded as a thin, membranous wing ..... *Phalaris*
- 14b. Glumes not winged
- 15a. Spikelets disarticulating below the glumes; leaves 7-20 mm wide; panicle open ..... *Cinna latifolia*
- 15b. Spikelets disarticulating above the glumes; leaves 0.3 – 6 mm wide or if to 10 mm wide, panicle condensed
- 16a. Rachilla prolonged 0.1 – 1.9 mm beyond the base of the floret, sometimes with hairs near the tip; paleas nearly as long as the lemmas ..... *Podagrostis*
- 16b. Rachille not prolonged; paleas absent to about  $\frac{3}{4}$  as long as the lemmas ..... *Agrostis*
- 6b. Glumes or lemmas awned
- 18a. Lemmas with 3 awns ..... *Aristida*
- 18b. Lemmas with 1 awn
- 19a. Lemmas stiffly membranous to hard, +/- tightly enfolding the palea and fruit, usually +/- round in cross section; awn 0.9 – 225 mm long ..... *Stipeae* Tribe, Key 4a., p. 10
- 19b. Lemmas thin and flexible, +/- not enfolding palea and fruit, usually laterally flattened; awn to 16 mm long
- 20a. Upper or both glumes abruptly short-pointed to awned from tip or from between 2 teeth
- 21a. Glume awn as long as or longer than the glume body ..... *Polypogon*
- 21b. Glume awn much shorter than the glume body

- 22a. Palea less than  $\frac{2}{3}$  as long as lemma; lemma usually 5-veined or veins too faint to see ..... *Agrostis*
- 22b. Palea usually as long as lemma; lemma usually clearly 3-veined ..... *Muhlenbergia*
- 20b. Glumes obtuse, acute, or tapered to tip
- 23a. Lemma awns more than 2 times as long as the spikelets ..... *Apera*
- 23b. Lemma awns lacking or less than 2 times as long as the spikelets
- 24a. Lemma awned +/- below middle
- 25a. Lemma with conspicuous callus hairs, easily visible with the naked eye or a 10X hand lens ..... *Calamagrostis*
- 25b. Lemma glabrous or with inconspicuous callus hairs
- 26a. Palea less than 60% as long as the lemma; rachilla not prolonged beyond the floret as a bristle ..... *Agrostis*
- 26b. Palea 75 – 100% as long as the lemma; rachilla prolonged beyond the floret as a bristle, though sometimes for only 0.1 mm
- 26.5a. Inflorescence dense, branches spikelet-bearing throughout; culms (10)35 – 100+ cm long; callus hairy, the hairs 0.5 – 4.5 mm long; lemmas usually awned, the awns 0.9 – 3.5(4.5) mm long, attached in the lower half of the lemma (to the upper  $\frac{3}{4}$  of the lemma in some *C. canadensis*) ..... *Calamagrostis*
- 26.5b. Inflorescence open, branches spikelet-bearing only in the outer half; culms 5 – 50 cm long; callus hairless or with hairs to 0.5 mm long; lemmas usually awnless, if awned the awn up to 1.3 mm long and usually arising from near the tip, rarely as low as half way down the lemma ..... *Podagrostis*
- 24b. Lemma abruptly short-pointed or awned at or near the tip
- 27a. Inflorescence branches spreading; leaves 1 – 20 mm wide; spikelet disarticulating below the glumes ..... *Cinna latifolia*
- 27b. Inflorescence branches appressed; leaves 0.5 – 1.6(4.2) mm wide; spikelet disarticulating above the glumes ..... *Muhlenbergia*

**Key 4a: Stipeae (Needlegrass Tribe)**

- 1a. Leaf tips stiff and sharp, piercing skin; caryopses obovoid, often with 3 smooth ribs at maturity; introduced to Portland, last collected in 1915 ..... *Amelichloa caudata*
- 1b. Leaf tips soft to +/- stiff and pointed but not piercing skin; caryopses fusiform, ovoid, or obovoid, without ribs
- 2a. Lemma awns 3 – 11 mm long or early deciduous and absent
- 3a. Awns persistent; lemma margins separate their entire length ..... *Piptatherum exiguum*
- 3b. Awns readily deciduous; lemma margins overlapping ..... *Achnatherum*
- 2b. Lemma awns 12 – 225 mm long
- 4a. Hairs on basal segment of awn 3 – 8 mm long ..... *Pappostipa speciosa*
- 4b. Hairs on basal segment of awn 0 – 2 mm long
- 5a. Lemma surface minutely warty and glabrous (with hairs near the base and on the midvein) lemma apex with a membranous crown 0.1 – 0.2 mm long, edged with hairs less than 0.5 mm long ..... *Nasella tenuissima*
- 5b. Lemma surface smooth to hairy but not minutely warty; lemma apex with hairs or lobes or swellings but lacking a crown

- 6a. Calluses 1.5 – 6 mm long, sharply pointed; awns 65 – 225 mm long *Hesperostipa comata*  
 6b. Calluses 0.1 – 2 mm long, blunt or sharp pointed; awns 1 – 70 mm long *Achnatherum*

**Group 5: Inflorescence a panicle; florets 2+ per spikelet; leaf sheaths closed**

- 1a. Florets producing tiny bulbs rather than normal seeds ..... *Poa bulbosa*  
 1b. Florets usually producing normal seeds, not tiny bulbs  
 2a. Spikelets sessile in dense 1-sided clusters at the tips of comparatively few, stiff panicle branches ..... *Dactylis glomerata*  
 2b. Spikelets not borne in dense 1-sided clusters  
 3a. Leaf tips shaped like the prow of a boat; leaves folded in the bud; lemmas awnless  
 4a. Spikelets sessile or subsessile on one side of the rachis, in one or more spikes; plants annual ..... *Sclerochloa dura*  
 4b. Spikelets pedicellate in open or contracted panicles; plants mostly perennials ..... *Poa*  
 3b. Leaf tips not shaped like the prow of a boat and/or leaves rolled in the bud; lemmas awnless or awned  
 5a. Lemmas awnless, prominently veined AND the veins parallel (not converging at the lemma tip)  
 6a. Lower glume veinless; spikelets with (1)2(3) florets; upper floret on a relatively long rachilla internode (about half as long as the lower floret), so the spikelet looks open ..... *Catabrosa aquatica*  
 6b. Lower glume 1-veined; spikelets with 2 – 16 florets; rachilla internodes relatively short, so the florets strongly overlap, often concealing the rachilla, and the spikelet looking compact ..... *Glyceria*  
 5b. Lemmas awned and/or veins not parallel (i.e., converging at the lemma tip)  
 7a. Culms bulbous-based ..... *Melica*  
 7b. Culms not bulbous-based (or bases not present)  
 8a. Upper 2 – 4 florets represented by empty lemmas that enfold one another and may be club-like; auricles lacking; sheaths often closed their full length; plant perennial ..... *Melica*  
 8b. Upper 1 or 2 florets more or less normal, though usually reduced and often staminate, a palea present in each; auricles sometimes present; sheaths always with at least a V-shaped opening near the top; plants perennial or annual  
 9a. Lemmas awned ..... *Bromus*  
 9b. Lemmas awnless  
 10a. Spikelets 0.7 – 2 mm long, if more than 12 mm long then plants of coastal sands; tip of ovary and seed glabrous; callus sometimes with cobwebby hairs ..... *Poa*  
 10b. Spikelets 16 – 40(45) mm long; tips of ovary and seed densely short-hairy; callus never with cobwebby hairs..... *Bromus*

**Group 6: Inflorescence a panicle; florets 2+ per spikelet; leaf sheaths open**

- 1a. Florets producing tiny bulbs rather than seeds ..... *Poa bulbosa*  
 1b. Florets producing seeds, not tiny bulbs

- 2a. Lemmas of fertile florets firmer or thicker than glumes AND spikelets dorsiventrally flattened
- 3a. Spikelets with 3 – 4 florets; florets not or only slightly dorsiventrally flattened ..... *Scolochloa festucacea*
- 3b. Spikelets with 2 florets, 1 of them so modified it may not be recognized as a floret; spikelets dorsiventrally flattened
- 4a. Spikelets (or clusters) subtended by 1 – many bristles ..... *Setaria*
- 4b. Spikelets not subtended by bristles (*Panicaceae* Tribe)
- 5a. Ligule lacking; upper glume acuminate to long-awned ..... *Echinochloa*
- 5b. Ligule present; upper glume obtuse to acute or acuminate, not awned
- 6a. Basal rosettes well developed, usually persistent; leaves of 2 forms, the basal ones smaller and usually wider than the cauline; plants perennial *Dichanthelium*
- 6b. Basal rosette not well developed, not persistent; leaves all similar in shape; plants annual or perennial ..... *Panicum*
- 2b. Lemmas of fertile florets and glumes +/- alike in texture, or glumes thicker than fertile lemma; spikelets usually laterally flattened
- 7a. Mature glumes leathery, shiny, thicker than fertile lemma ..... *Sorghum*
- 7b. Mature glumes and lemmas +/- alike in texture
- 8a. Inflorescence one-sided and dense; spikelets both fertile and sterile, unlike *Cynosurus*
- 8b. Inflorescence not one-sided and dense; spikelets usually all fertile, +/- alike
- 9a. Culms usually more than 10 mm in diameter; inflorescence a dense, plumose panicle 30 – 130 cm long ..... *Cortaderia*
- 9b. Culms usually less than 10 mm in diameter, inflorescence various
- 10a. Leaf sheath with a distinct tuft of long hairs at the top
- 11a. Plants strongly rhizomatous, unisexual; leaves stiffly 2-ranked; habitat alkaline areas east of Cascades and saline areas near the coast *Distichlis*
- 11b. Plants weakly cespitose, bisexual; leaves neither stiff nor strongly 2-ranked; habitat various
- 12a. Paleas with conspicuously, densely hairy keels, the tufts of hairs visible without dissection or a hand lens; culms disarticulating at maturity; leaf sheaths somewhat inflated, hiding axillary inflorescences ..... *Triplasis*
- 12b. Paleas not conspicuously hairy; culms not disarticulating at maturity; leaf sheaths not inflated, not hiding axillary inflorescences (except sometimes in *Danthonia*)
- 13a. Lemmas awnless
- 14a. Lemmas strongly 3-veined, glabrous ..... *Eragrostis*
- 14b. Lemmas faintly veined or several-veined, sometimes pubescent
- 15a. Ligule membranous; glumes unequal, the lower shorter, the longer glume up to  $\frac{3}{4}$  as long as the spikelet; the largest of the lemmas rugose (cross-wrinkled); habitat greenhouses, perhaps escaping into flowerbeds ..... *Ehrharta erecta*
- 15b. Ligule a line of hairs; glumes subequal or the lower longer, the longer glume usually longer than the rest of the spikelet; lemmas never rugose (cross-wrinkled); habitat disturbed areas near the coast ..... *Danthonia decumbens*

- 13b. Lemmas awned
- 16a. Lemmas with distinct tufts of hairs near the callus base and elsewhere on the lemma, often in 1 or more transverse rows(s) above the callus and/or at midlength ..... *Rytidosperma*
- 16b. Lemmas with tufts of hairs only at the base of the callus, otherwise glabrous or with hairs evenly distributed or mostly marginal ..... *Danthonia*
- 10b. Leaf sheath lacking a distinct tuft of hairs at the top, though sometimes more or less hairy in that area if the rest of the sheath is hairy
- 17a. Spikelets with 2 – 3 florets that differ greatly in shape, size, hairiness, and/or awns
- 18a. All lemmas awnless
- 19a. Lower florets vestigial and minute to about  $\frac{3}{4}$  as long as the uppermost, fertile floret; plants with only the usual grass-like odor .... *Phalaris*
- 19b. Lower florets a little longer than the uppermost, fertile floret; plants with a pleasant, sweet odor when crushed ..... *Anthoxanthum*
- 18b. Some lemmas awned
- 20a. Uppermost small, awnless fertile floret enfolded and hidden by two similar, awned, sterile lemmas; plants with a pleasant odor when crushed ..... *Anthoxanthum*
- 20b. Not as above; the uppermost fertile floret not hidden by two sterile lemmas that are similar to each other; plant with a grass-like odor
- 21a. Plants annual, delicate; leaves and nodes glabrous; florets 2 - 3
- 22a. Lemmas 1.3 – 2.6 mm long ..... *Aira caryophyllea*
- 22b. Lemmas 5 – 10 mm long ..... *Ventenata dubia*
- 21b. Plants perennial, not especially delicate; leaves and nodes glabrous or pubescent; florets 2
- 23a. Lower lemma awnless; disarticulation below the glumes ..... *Holcus*
- 23b. Lower lemma awned; disarticulation above the glumes  
..... *Arrhenatherum elatius*
- 17b. Spikelets with 2 – many florets, these all similar though the upper ones tend to be smaller, and awns, if present, may vary somewhat in length
- 24a. Lemmas with 3 conspicuous veins
- 25a. Florets 1 – 2 per spikelet ..... *Muhlenbergia*
- 26a. Leaf sheath open to the base; leaves 0.6 – 6 mm wide, if more than 2 mm wide, then inflorescence a condensed panicle; glumes and lemmas generally short-pointed to awned ..... *Muhlenbergia*
- 26b. Leaf sheath open part way, closed in the lower half; leaves 2 – 13 mm wide, inflorescence an open panicle; lemmas rounded to truncate..... *Catabrosa aquatica*
- 25b. Florets (3)5 – 40 per spikelet; (glumes and lemmas obtuse to acuminate)
- 27a. Primary inflorescence branches branched; many spikelets attached to secondary or tertiary branches ..... *Eragrostis*
- 27b. Primary branches unbranched; spikelets attached directly to the primary branches ..... *Leptochloa fusca*

- 24b. Lemmas with (3)5 – many veins, which may be faint
- 28a. Ligule a line of hairs, sometimes with a membranous base but the hairs at least as long as the membranous portion
- 29a. Primary inflorescence branches shorter than internodes of main inflorescence axis; leaf tips and tips of primary inflorescence branches tending to be come hard and spiny; introduced to Portland in 1915 and not persisting ..... *Cladoraphis cyperoides*
- 29b. Primary inflorescence branches longer than internodes of main inflorescence axis; leaf tips and tips of primary inflorescence branches not especially hard or spiny
- 30a. Ligule consisting of hairs ..... *Molinia caerulea*
- 30b. Ligule consisting of a membrane edged with hairs ..... *Festuca*
- 28b. Ligule membranous, marginal hairs, if any, shorter than the membranous portion
- 31a. Some lemmas awned, awns more than 1 mm long
- 32a. Lemma awns 15 – 90 mm long ..... *Avena*
- 32b. Lemma awns usually less than 12(15) mm long
- 33a. Lemmas awned at or below middle
- 34a. Lemmas 1 – 2 mm long, tips with 2 slender teeth; spikelet axis not prolonged; floret base short-bristly ..... *Aira caryophyllea*
- 34b. Lemmas 2 – 4 mm long, tips truncate, with 2 – 4 short teeth; spikelet axis prolonged beyond upper floret; floret base soft-hairy
- 35a. Leaf blades flat, 3 – 6 mm wide, rolled in the bud; ligules obtuse to truncate, 1 – 3.5 mm long; awns firm, bent, twisted, and scarcely 3 mm long ..... *Vahlodea atropurpurea*
- 35b. Leaf blades folded or involute, usually less than 3 mm wide, folded in the bud; ligules mostly acute or acuminate, usually at least some of them longer than 3.5 mm long; awns usually slender and more than 3 mm long ..... *Deschampsia*
- 33b. Lemmas awned from above middle or near tip
- 36a. Lower glume longer than lowest floret ..... *Trisetum*
- 36b. Lower glume shorter than or as long as lowest floret
- 37a. Leaf tips strongly prow-shaped ..... *Koeleria macrantha*
- 37b. Leaf tips not prow-shaped
- 38a. Upper glume as long as or longer than lowest floret; lemma awned from below tip ..... *Trisetum*
- 38b. Upper glume shorter than lowest floret; lemma awned from tip
- 39a. Plant annual; stamens usually 1 ..... *Vulpia*
- 39b. Plant perennial; stamens 3
- 40a. Auricles claw-like, clasping, or broadly rounded and/or leaf bases broadly rounded ..... *Schedonorus*
- 40b. Auricles lacking represented by inconspicuous swellings or small upright flaps; leaf bases not expanded or rounded ..... *Festuca*

- 31b. Lemmas awnless or with awns less than 1 mm long
- 41a. Lemma wider than long ..... *Briza*
- 41b. Lemma longer than wide
- 42a. Lemma veins +/- equally spaced, parallel, not converging at lemma tip, distinct
- 43a. Lower glume half or more than half as long as the lowest lemma; lemma veins (3)5 ..... *Poa*
- 43b. Lower glume usually less than a third as long as the lowest lemma; lemma veins 5 – 9
- 44a. Lemma veins prominent; leaf blades flat, 4 – 15 mm wide; ligules erose or lacerate, 3 – 9 mm long; habitat fresh water wetlands and riparian areas, not in saline or alkaline habitats *Torreyochloa*
- 44b. Lemma veins not especially prominent; leaf blades usually involute, usually <3 mm wide (rarely >4 mm wide); ligules entire or nearly so, rarely more than 3 mm long; habitat usually saline or alkaline ..... *Puccinellia*
- 42b. Lemma veins not equally spaced, usually curved, usually converging at tip, or too faint to see
- 45a. Plants emergent in shallow water; callus densely hairy, the hairs 1 – 1.5 mm long; rhizomes extensive, stout; culms 6 – 8 mm thick at the base ..... *Scolochloa*
- 45b. Plants of moist to upland sites; differing in some way from the above
- 46a. Leaf tips shaped like the prow of a boat
- 47a. Panicle branches covered with soft hairs; inflorescence often silvery-shiny; callus never with cobwebby hairs ..... *Koeleria macrantha*
- 47b. Panicle branches glabrous or scabrous; inflorescence not silvery-shiny; callus sometimes with cobwebby hairs ..... *Poa*
- 46b. Leaf tips tapering to the tip and not shaped like the prow of a boat
- 48a. Upper glumes obviously expanded above the middle *Sphenopholis*
- 48b. Glumes not obviously expanded above the middle
- 49a. Florets 3, the 2 lowest sterile, upper 1 fertile; plants with a pleasant odor when crushed ..... *Anthoxanthum*
- 49b. Florets 2 – 12, the lower 1 – few fertile, the upper 1 – few sometimes sterile
- 50a. Leaves with claw-like or clasping auricles or with expanded, flaring area at base of leaf blade ..... *Schedonorus*
- 50b. Leaves without auricles, without expanded, flaring, rounded area at base of leaf blades
- 51a. Panicle branches covered with soft hairs *Koeleria macrantha*
- 51b. Panicle branches glabrous, scabrous, or strigose, never covered with soft hairs
- 52a. Leaves 0.5 – 1.5 mm wide, often folded or rolled *Festuca*

- 52b. Leaves 1.6 – 10+ mm wide, flat, though sometimes rolling lengthwise when dry
- 53a. Plants dioecious, with separate male and female plants; rhizomatous ..... *Leucopoa*
- 53b. Plants bisexual, with ovaries and anthers on the same plant; rhizomatous or cespitose
- 54a. Lower glume shorter than lowest lemma; lemmas awned from the tip; florets 4 – 1-, as few as (1)2 in dwarf alpine plants; low to high elevation, including alpine habitats..... *Festuca*
- 54b. Lower glume usually exceeding the lowest lemma; lemmas awnless or awned from the back; florets 2(3); plants 20 – 80+ cm tall; medium to high elevations but not in alpine habitats ..... *Trisetum wolfii*