

to dense; spikelets 2-ranked, 1 per node, basal gen vestigial, distal spikelets also gen reduced; breaking away as a single unit or in sections with axis segments attached. **FERTILE SPIKELET**: gen not compressed, 5–15 mm; glumes thick, hard, 3 ± veined, tips gen toothed or 1–5-awned; florets 2–5[8]; lemma similar to glumes or firmer, toothed or 1–3-awned at tip; palea papery, 2-keeled. **DISTAL SPIKELET**: 2–5 mm, similar or not to fertile spikelet, gen sterile. 21–23 spp.: Medit, sw&c Asia. (Greek, preferred by goats, or Latin, a sweet-fruited oak) [Saufferer 2007 FNANM 24:261–267] Interfertile with *Triticum* and perhaps not distinct from it. *A. tauschii* Coss. is reported from a single occurrence in Riverside Co., doubtfully naturalized.

1. Spikelets narrowly cylindrical; glumes of fertile spikelets 1-awned or long-toothed *A. cylindrica*
- 1' Spikelets lance-ovate to urn-shaped; glumes of fertile spikelets 2–5-awned
2. Distal spikelets > 7 mm; fertile lemmas 2–3-toothed, 1 occ extended as awn to 10 mm *A. triuncialis*
- 2' Distal spikelets 2–5 mm; fertile lemmas with 2–3 awns to 40 mm
3. Basal vestigial spikelets 1(2); spikelets gradually narrowing distally [*A. geniculata*, incl *A. ovata*]
- 3' Basal vestigial spikelets 3(2); lower spikelets ± ovate, upper abruptly ± oblong *A. neglecta*

A. cylindrica Host (p. 1417) JOINTED GOAT GRASS ST: 14–50 cm. LF: blade 3–15 cm, 2–5 mm wide; sheath margins, occ ciliate. INFL: 2–12 cm; spikelets narrowly cylindrical, ± 0.3 cm wide; vestigial basal spikelets 0–2; axis breaking apart in fr; spikelets partly sunken in axis. **FERTILE SPIKELET**: 9–12 mm, narrowly cylindrical, glumes acute, tapered, or short-awned; florets 2–5; lemma abruptly pointed or with awn 1–5 mm. **DISTAL SPIKELET**: 7–10 mm; glume awns 3–6 cm, lemma awn 4–8 cm. 2n=28. Disturbed, dry sites, cult fields; CaR, ScV, SW, MP; to WA, Great Plains, Mex; native to Medit Eur, w Asia. Crosses and backcrosses with *Triticum aestivum* L. to yield fertile hybrids. May–Jul ♦

A. neglecta Bertol. THREE-AWNED GOAT GRASS ST: 25–35 cm. LF: blade 2–8 cm, to 3–4 mm wide, long-hairy, margins gen ciliate. INFL: 3–6 cm, vestigial basal spikelets gen 3; distal spikelets abruptly ± oblong; falling as a whole at maturity. **FERTILE SPIKELET**: 10–11 mm, laterally compressed, ± inflated or urn-shaped; glumes ± equal, 9–10 mm, 7–9-veined, 2–3-awned to 5 cm; lemma

10–11 mm, 5-veined, 2–4-awned to 2.5 cm. **DISTAL SPIKELET**: 2–5 mm, narrowly cylindrical. 2n=28,48. Disturbed fields, roadsides; 30–800 m. NCo, SN, ScV; to WA; native to Medit, w Asia. [*A. triariastata* Willd.] Because this sp. has not appeared in earlier CA floras, specimens have often been misidentified as *A. triuncialis* L. Potentially an aggressive weed. May–Jul

A. triuncialis L. (p. 1417) BARBED GOAT GRASS ST: 17–45 cm. LF: blade 1.5–7 cm, 2–3 mm wide. INFL: 2–5.5 cm; vestigial basal spikelets 2–3; ± cylindrical distally; axis breaking at base of spikelets at maturity; spikelets gen not sunken in axis. **FERTILE SPIKELET**: 7–13 mm, lance-ovate, glumes 2–3 awned; florets gen 3–5, lower 2 gen fertile; lemma 2–3-toothed, central tooth occ extended as an awn to 10 mm. **DISTAL SPIKELET**: 7–9 mm, glumes 3-awned or 1-awned with 2 lateral teeth, awns gen 4–8 cm. 2n=28. Disturbed sites, cult fields, roadsides; < 1000 m. s NCoR, CaRF, n&c SNF, ScV, n CW; native to Medit Eur, w Asia. Many collections of *A. neglecta* are misidentified as this. May–Jul ♦

AGROPYRON CRESTED WHEAT GRASS

Per, gen cespitose. ST: erect or bent, 2.5–10 dm. LF: sheath open, gen appendaged; ligule membranous; blade flat or rolled. INFL: spike-like, axis not breaking apart at maturity; spikelets 1, 2-ranked, strongly overlapping, divergent or spreading. **SPIKELET**: laterally compressed, glumes ± equal, < floret, lanceolate, 1–5-veined, keeled, acute to short-awned; florets 3–8[16]; axis breaking above glumes and between florets; lemma 5–7-veined, keeled, acute to awned; palea ± = lemma; anthers 3, 3–5 mm. 12–15 spp.: Medit, e Eur, c Asia. (Greek: field wheat, perhaps referring to a weed resembling wheat) [Barkworth 2007 FNANM 24:277–279] Siberian wheat grass, *A. fragile* (Roth) P. Candargy, has also been reported for CA, but is doubtfully naturalized; often used for soil stabilization on range and cropland.

A. cristatum (L.) Gaertn. subsp. *pectinatum* (M. Bieb.) Tzvelev (p. 1417) Occ rhizomatous. ST: gen erect. LF: blade 3–12(20) cm, 1.5–6 mm wide, glabrous or pubescent. INFL: 1.3–10 cm; internodes gen 1–5 mm, equal or not, glabrous or long-hairy; spikelets diverging at 30–95° angles. **SPIKELET**: 7–16 mm; glumes 3–6 mm, gen 3-veined, gen awned, awns 1.5–3 mm; florets 3–8; lemma 5–9 mm,

gen 5-veined, tip acute, gen awned, awn 1–6 mm. 2n=14,28,42. Disturbed areas, degraded agricultural sites; 600–1500 m. KR, CaRF, n SNH, s SCORO, SW, GB, DMoj; most of N.Am; native to Eur, Medit, Asia. [*A. c.* subsp. *desertorum* (Link) Á. Löve; *A. d.* (Link) Schult.] Used to rejuvenate burned or overgrazed areas. Jun–Aug

AGROSTIS BENT GRASS

Paul M. Peterson & Michael J. Harvey

Ann or per, gen tufted, occ from rhizomes or stolons. ST: gen erect. LF: sheath gen smooth, glabrous; ligule membranous; blade flat to rolled. INFL: panicle-like, densely cylindric to openly ovate. **SPIKELET**: glumes gen subequal, back gen glabrous, vein gen finely scabrous, 1-veined, gen acute; floret 1, < glumes, gen breaking above glumes; callus glabrous to densely hairy; lemma gen 5-veined, veins not converging, occ extended as short teeth, awned from back or not; palea gen 0 or << lemma, translucent; anthers gen 3, ± 220 spp.: esp temp Am, Eurasia. (Greek: pasture) [Harvey 2007 FNANM 24:633–662; 693–697] Some cult in pastures, lawns. *Agropogon lutosus* (Poir.) P. Fourn. is a sterile hybrid between *A. stolonifera* and *Polygonum monspeliensis*. *A. viridis* is treated as *P. viridis*. *A. nebulosa* Boiss. & Reut. is reported for CA (FNANM 24: 661), but no specimens have been located. Generic delimitation adopted here reflects editorial preference.

1. Rhizomes or stolons well developed, clearly present; per
2. Pl from stolons
3. Ligule 0.5–2 mm, gen wider than long; stolons < 5 cm; infl widely ovate in outline, 1° branches mostly spreading, spikelets not crowded ³*A. capillaris*
- 3' Ligule 2–5 mm, longer than wide; stolons 5–100 cm; infl elliptic to lanceolate in outline, 1° branches gen all ascending, spikelets overlapping, crowded *A. stolonifera*

- 2' Pl from rhizomes
4. Floret callus hairs 1.5–2 mm, gen > 1/2 lemma; ligule 4–7 mm ³*A. hallii*
 - 4' Floret callus hairs gen minute, sparse, or 0; ligule gen < 3 mm (exc *Agrostis gigantea*)
 5. Palea 0 or minute, << lemma
 6. Lower lf blade 1–6 mm wide; lemma tip minutely toothed; rhizome < 10 cm; anthers 0.7–1.8 mm ³*A. pallens*
 - 6' Lower lf blade < 1 mm wide; lemma tip ± acute; rhizome < 5 cm; anthers 0.5–0.7 mm ³*A. variabilis*
 - 5' Palea well developed, ± 1/2 to slightly < lemma
 7. Infl ± oblong in outline, ± open, branches gen ascending to erect; montane to alpine, 1300–3500 m ²*A. humilis*
 - 7' Infl gen ovate in outline, open, most branches spreading; open, gen disturbed places, < 2000 m
 8. Rhizomes < 5 cm, slender, not clearly scaly; ligule gen wider than long; infl branches with spikelets on distal 1/2 ³*A. capillaris*
 - 8' Rhizomes < 25 cm, ± thick, ± scaly; ligule longer than wide; infl branches with spikelets ± throughout ²*A. gigantea*
- 1' Rhizomes or stolons 0; ann or per
9. Lemma awned from back or near tip
 10. Infl open, gen oblong to ovate in outline; spikelets not crowded, infl axes clearly visible
 11. Infl gen oblong to lanceolate in outline, 1° branches gen ascending
 12. Lemma awned below middle; anthers 1–1.5 mm; lower lf sheaths finely tomentose *A. hooveri*
 - 12' Lemma awned at or above middle; anthers ≤ 0.8 mm; lower lf sheaths gen glabrous
 13. Lower infl branches 1–2 cm; awn < 3.5 mm, straight to bent; palea < 1/3 lemma; anthers 0.3–0.6 mm ³*A. exarata*
 - 13' Lower infl branches 2–6 cm; lemma awn < 2 mm, straight; palea 1/5–1/4 lemma; anthers 0.6–0.8 mm ²*A. oregonensis*
 - 11' Infl gen ovate in outline, lowest 1° branches spreading, upper branches gen ascending
 14. Lemma back puberulent below middle; floret axis prolonged beyond floret ± 1 mm, short-hairy-tufted; palea > 1 mm *A. avenacea*
 - 14' Lemma back glabrous or fine-scabrous; floret axis not prolonged beyond lemma; palea 0 or minute
 15. Lemma gen awned near tip, awn 3–10 mm, wavy; callus hairs < 0.6 mm, dense; anther 1, persistent in fr; ann *A. ellottiana*
 - 15' Lemma awned below middle, awn < 2 mm, ± straight; callus hairs << lemma, sparse; anthers 3, deciduous; per ²*A. scabra*
 - 10' Infl dense, gen cylindric; spikelets crowded, overlapping, infl axes not clearly visible
 16. 1° infl branches gen > 0.5 cm, often evident at base (exc *Agrostis blasdalei*)
 17. Lf blade gen < 1 mm wide, ± inrolled; floret callus glabrous; infl base often partly enclosed by upper lf; anthers 1–2 mm ²*A. blasdalei*
 - 17' Lf blade gen 2–10 mm wide, flat; floret callus minutely hairy; infl clearly stalked; anthers ± 0.5 mm
 18. Back of glume fine-scabrous throughout; palea 0.5–0.7 mm; ligule 1.5–2 mm ³*A. densiflora*
 - 18' Back of glume ± glabrous (keel fine-scabrous); palea ± 0.3 mm; ligule 2.5–4 mm ³*A. exarata*
 - 16' 1° infl branches gen < 0.5 cm (< 1.5 cm in *Agrostis microphylla*), obscured by densely clustered spikelets
 19. Lemma teeth 4, two < 1 mm, other two 1–1.5 mm; lemma awned below middle; callus densely short-hairy *A. tandilensis*
 - 19' Lemma teeth 0 or 2, equal; lemma awned at or above middle; callus gen sparsely hairy, hairs minute
 20. Lemma awned above middle, awn < 3.5 mm, straight; glume tips acute; per ³*A. densiflora*
 - 20' Lemma awned ± at middle, awn 3.5–10 mm, gen bent; glume tips narrowly acuminate to awn-like; ann
 21. Lemma 2–4 mm, awn 8–10 mm *A. hendersonii*
 - 21' Lemma 1.5–2 mm, awn 3.5–8 mm *A. microphylla*
- 9' Lemma awnless (occ short-awned near tip in *Agrostis capillaris*)
22. Spikelets crowded and often overlapping on same branch, spikelet stalks and 2° axes not clearly visible
 23. Palea ± 1/3 lemma ³*A. densiflora*
 - 23' Palea 0 or < 1/3 lemma
 24. Lf blade gen < 1 mm wide, gen inrolled or folded
 25. Anthers 1–2 mm; infl branches gen < 0.5 cm; coastal habitats < 100 m ²*A. blasdalei*
 - 25' Anthers 0.5–0.7 mm; infl branches 0.5–1.5 cm; inland mtns, 1600–4000 m ³*A. variabilis*
 - 24' Lf blade gen 2–7 mm wide, gen flat
 26. Floret callus hairs 1.5–2 mm, gen slightly > 1/2 lemma ³*A. hallii*
 - 26' Floret callus hairs 0 or < 0.5 mm, < 1/2 lemma
 27. Lower infl branches 1–2 cm; anthers 0.3–0.6 mm ³*A. exarata*
 - 27' Lower infl branches 2–5 cm; anthers 0.7–1.8 mm ³*A. pallens*
- 22' Spikelets not crowded, gen well spaced on same branch, axes gen clearly visible
28. 1° infl axes branched 1–2 × above middle, spikelets 0 on lower 1/2
 29. Lower lf blades 2–4 mm wide; glumes 2–3 mm; palea 1/5–1/4 lemma; anthers 0.6–0.8 mm ²*A. oregonensis*
 - 29' Lower lf blades 0.5–3 mm wide; glumes 1.5–3 mm; palea 0 or minute, << lemma; anthers ≤ 0.7 mm
 30. Lvs basal and caudine; infl ± 2 × longer than wide; 1° axes ± stiff *A. idahoensis*
 - 30' Lvs mostly basal; infl ± long as wide; 1° axes flexible, lower ± arched ²*A. scabra*
 - 28' 1° infl axes branched 1–2 × from base upwards, spikelets distributed throughout
 31. Floret callus hairs 1.5–2 mm, gen slightly > 1/2 lemma; anthers ≥ 1.5 mm ³*A. hallii*

- 31' Floret callus glabrous or hairs minute, << lemma; anthers gen < 1.5 mm (exc some *Agrostis pallens*)
 32. Palea 0 or minute, << lemma
 33. Lf blade 1–6 mm wide; pls gen 10–70 cm; anthers 0.7–1.8 mm ³*A. pallens*
 33' Lf blade gen < 1 mm wide; pls 4–30 cm; anthers 0.5–0.7 mm ³*A. variabilis*
 32' Palea ≥ 1/2 lemma
 34. Infl branches ascending to erect; anthers < 1 mm; moist to ± dry areas, gen > 1500 m ²*A. humilis*
 34' Infl branches spreading to ascending; anthers 0.8–1.5 mm; disturbed areas, gen < 1500 m
 35. Ligule 0.5–2 mm, gen wider than long; infl branches with spikelets on distal 1/2 ³*A. capillaris*
 35' Ligule 2–6 mm, longer than wide; infl branches with spikelets ± throughout ²*A. gigantea*

A. avenacea J.F. Gmel. PACIFIC BENT GRASS Per 15–65 cm. **LF:** ligule 3–5 mm; lower blades 8–20 cm, 1–3 mm wide, gen flat, finely scabrous. **INFL:** 7–30 cm, widely ovate, open; upper 1° branches gen ascending, lower 1° branches spreading, 5–15 cm, axes branched above middle, thread-like. **SPIKELET:** glumes 2.5–3.6 mm, back puberulent below middle; floret axis prolonged beyond floret ± 1 mm, tip hairy-tufted, hairs ± 0.6 mm; callus hairs < 0.7 mm; lemma 1.3–2(2.3) mm, back puberulent below middle, tip 2-toothed, awned from middle, awn 4–7.5 mm, bent; palea > 1 mm, ± 1/2 lemma; anther ± 0.5 mm. 2n=56. Open, often disturbed places; < 300 m. s NCo, s NCoR, SNF, GV, CW, n SCo; to TX, OH, SC; native to s Pacific islands. [*A. filiformis* G. Forst.; *Lachnagrostis* f. (G. Forst.) Trin.] Jun–Jul ♦

A. blasdalei Hitchc. (p. 1417) BLASDALE'S BENT GRASS Per 6–30 cm, decumbent to erect. **LF:** ligule gen 1–1.5 mm; lower blades 2–5 cm, gen < 1 mm wide, ± inrolled. **INFL:** 2–8 cm, cylindric, dense; base often partly enclosed by upper lf; 1° branches ascending to appressed, lower gen < 0.5 cm. **SPIKELET:** glumes 1.8–4 mm; callus glabrous; lemma 1.5–3 mm, occ awned above middle, awn < 0.7 mm, straight; palea ± 0.3 mm, < 1/3 lemma; anthers 1–2 mm. 2n=42. Dunes, gravelly soils, coastal bluffs, scrub; < 100 m. s NCo, n CCo, n SnFrB. May intergrade locally with *A. densiflora*; needs study. May–Jul ★

A. capillaris L. (p. 1417) COLONIAL BENT Per 10–75 cm; stolons or rhizomes < 5 cm, slender. **LF:** ligule 0.5–2 mm, gen wider than long; lower blades 3–10 cm, 1–5 mm wide, gen flat. **INFL:** 3–20 cm, widely ovate in outline, open; 1° most branches spreading, lower 1.5–4 cm, axes thread-like. **SPIKELET:** glumes 2–3 mm; callus glabrous or minutely hairy; lemma 1.5–2.5 mm, occ short-awned near tip; palea 1/2–2/3 lemma; anthers 0.8–1.3 mm. 2n=28. Roadsides, open, disturbed places; < 1900 m. KR, CaR, n&c SN, CCo, SnFrB, SCe; to AK, w US, Can; native to Eur. Jul–Sep

A. densiflora Vasey (p. 1417) Per 9–85 cm. **LF:** ligule 1.5–2 mm; lower blades 2–12 cm, 2–10 mm wide, flat. **INFL:** 2–10 cm, ± cylindric, dense; 1° branches ± appressed, < 1.5 cm. **SPIKELET:** glumes 2–3 mm, back finely scabrous, tip acute; callus minutely hairy; lemma 1.5–2 mm, occ awned above middle, awn < 3.5 mm, straight; palea 0.5–0.7 mm, ± 1/3 lemma; anthers ± 0.5 mm. 2n=42. Coastal bluffs, sandy soils; < 200 m. NCo, CCo, w SnFrB; to OR. May–Aug

A. ellottiana Schult. (p. 1417) Ann 5–45 cm. **LF:** ligule 2–3 mm; lower blades 0.5–4 cm, < 1 mm wide, flat to inrolled. **INFL:** 5–20 cm, gen widely ovate in outline, open; lower 1° branches 1–4.5 cm, spreading, upper ascending, axes thread-like with spikelets clustered near tip. **SPIKELET:** floret axis not prolonged beyond lemma; glumes 1.5–2 mm; callus hairs < 0.6 mm, dense; lemma 1–2 mm, back glabrous or fine-scabrous, gen awned from near tip, awn 3–10 mm, wavy; palea 0; anther 1, persistent in fr. 2n=14. Vernal pool margins; < 500 m. NCoRI, CaRF, n SNF, n ScV; to NM, KS, TX, e US. Mex. Apr–May

A. exarata Trin. (p. 1417) Per 8–100 cm. **LF:** lower sheaths gen glabrous, ligule 2.5–4 mm; lower blades 4–15 cm, 2–7 mm wide, flat. **INFL:** 5–30 cm, oblong to ± ovate in outline, ± open to dense, occ interrupted near base; 1° branches 1–2 cm, ascending to ± appressed. **SPIKELET:** glumes 1.5–3.5 mm, acute to narrowly acuminate, back ± glabrous, keel fine-scabrous; callus hairs < 0.5 mm; lemma 1–2 mm, awned at or above middle, awn < 3.5 mm, straight to bent; palea ± 0.3 mm, < 1/3 lemma; anthers 0.3–0.6 mm. 2n=28, 42, 56. Common. Moist or disturbed areas, open woodland, conifer forest; < 2000 m. CA-FP, GB, DMtns (Panamint Range); to AK, w US, Mex. Jun–Aug

A. gigantea Roth Per 20–100 cm; rhizomes < 25 cm, ± scaly. **LF:** ligule 2–6 mm, longer than wide; lower blades 4–10 cm, 3–8 mm wide, flat. **INFL:** 8–25 cm, widely ovate in outline, open; 1° branches gen spreading, lower 4–7 cm, axes thread-like. **SPIKELET:** glumes 2–3 mm; callus hairs 0 or minute; lemma 1.5–2 mm, awn 0 (short-awned); palea 0.7–1.4 mm; anthers 1–1.4 mm. 2n=42. Roadsides, disturbed areas; < 2000 m. CA-FP; to e US; native to Eur. Difficult to separate from *A. stolonifera*. Jun–Sep

A. hallii Vasey (p. 1417) HALL'S BENT GRASS Per 17–100 cm; rhizomes < 50 cm. **LF:** ligule 4–7 mm; lower blades 7–20 cm, 2–5 mm wide, flat. **INFL:** 7–22 cm, lanceolate to narrowly ovate in outline, ± open to dense; 1° branches ascending to ± appressed, lower 1–5 cm. **SPIKELET:** glumes 2.5–4 mm; callus hairs 1.5–2 mm; lemma 2–3 mm, awn 0; palea minute, << lemma; anthers 1.5–2.3 mm. 2n=42. Open oak woodland, conifer forest; < 1800 m. w NW, CCo, SnFrB, n SCe, WTR; OR. May–Jul

A. hendersonii Hitchc. (p. 1417) HENDERSON'S BENT GRASS Ann 6–70 cm. **LF:** ligule 1–4 mm; lower blades 1–4 cm, ± 1 mm wide, flat to weakly inrolled. **INFL:** 1–5 cm, cylindric, dense; 1° branches < 0.5 cm, ascending to ± appressed. **SPIKELET:** glumes 5–7 mm, tip narrowly acuminate to awn-like; callus hairs ± 0.7 mm; lemma 2–4 mm, awned ± at middle, awn 8–10 mm, ± bent; palea 0; anthers ± 0.5 mm. 2n=42. Vernal pools; < 300 m. CaRF, n SNF, ScV, n SnJV; OR. May–Jul ★

A. hooveri Swallen (p. 1417) HOOVER'S BENT GRASS Per 30–80 cm. **LF:** lower lf sheaths finely tomentose; ligule 4–6 mm; lower blades 10–16 cm, 1–2 mm wide, flat, becoming inrolled. **INFL:** (4)10–17 cm, gen lanceolate in outline, open; 1° branches ± ascending, 15–40 cm, axes thread-like. **SPIKELET:** glumes 2–3 mm; callus hairs < 0.3 mm, dense; lemma 1.5–2 mm, awned below middle, awn < 2.5 mm, bent; palea 0; anthers 1–1.5 mm. Dry sandy soils, open chaparral, oak woodland; < 600 m. s CCo, s SCoRO (San Luis Obispo, Santa Barbara cos.). Apr–Aug ★

A. humilis Vasey (p. 1417) MOUNTAIN BENT GRASS Per, cespitose, occ rhizomatous; 56–50 cm, erect to ascending. **LF:** mostly basal; ligule 0.5–2 mm; lower blades 2–15 cm, 1–4 mm wide, flat to ± folded. **INFL:** 1.5–14 cm, narrowly oblong to ovate, ± open; 1° branches gen ascending to erect, the lower 0.5–7 cm. **SPIKELET:** green to purple, glumes 1.5–2.3 mm; callus hairs minute, sparse; lemma = glumes, awn 0, 5-veined; palea 1–1.5 mm; anthers 0.5–0.7 mm. Moist to dry, subalpine or alpine meadows, slopes; 1500–3350 m. KR, NCoRH, CaRH, c&s SNH; to AK, MT, CO, NM. [*A. thurberiana* Hitchc.; *Podagrastis* h. (Vasey) Björkman; *P. thurberiana* (Hitchc.) Hultén] Jul–Aug ★

A. idahoensis Nash (p. 1417) Per 8–30 cm. **LF:** basal and caudate; ligule 1–3 mm; lower blades 1–5 cm, 0.5–2 mm wide, flat, often inrolled with age. **INFL:** 3–13 cm, lanceolate to ovate in outline, ± open; 1° branches gen ascending, axes ± stiff, lower 1–4 cm, axes thread-like. **SPIKELET:** glumes 1.5–2.5 mm; callus glabrous or hairs < 0.3 mm; lemma 1–2 mm, awn 0; palea minute, << lemma; anthers 0.3–0.5 mm. Open, wet meadows, conifer forest; < 3500 m. NW, CaR, SN, n SnFrB, SnBr, SnJt, W&I; to BC, w US. Jul–Aug

A. microphylla Steud. (p. 1417) Ann 8–45 cm. **LF:** ligule 1.5–4 mm; lower blades 3–15 cm, 0.7–2.5 mm wide, fine-scabrous, flat, becoming inrolled. **INFL:** 2–12 cm, ± cylindric, dense; 1° branches ascending to ± appressed, lower 0.3–1.5 cm. **SPIKELET:** glumes 2.5–5 mm, tips narrowly acuminate to awn-like; callus hairs < 0.5 mm; lemma 1.5–2 mm, awned from middle, awn 3.5–8 mm, slightly

bent; palea 0; anther ± 0.5 mm. Thin, rocky soils, cliffs, vernal pools, occ on serpentine; < 200 m. NCo, s NCoR, GV, CCo, SCo; to BC, Baja CA. May–Jul

A. oregonensis Vasey Per 12–75 cm. **LF:** ligule 2–4.5 mm; lower blades 10–30 cm, 2–4 mm wide, gen flat. **INFL:** 8–35 cm, lanceolate to ovate in outline, open; 1° branches ascending, lower 2–6 cm, axes thread-like. **SPIKELET:** glumes 2–3 mm; callus hairs 0 or minute, sparse; lemma 1.5–2.5 mm, occ awned above middle, awn < 2 mm, straight; palea 1/5–1/4 lemma; anthers 0.6–0.8 mm. Moist areas, meadows, streambeds; < 2400 m. KR, NCoR, CaR, SN, SnBr, SnJt; to BC, MT, WY. Jun–Jul

A. pallens Trin. Per gen 10–70 cm, occ from rhizomes < 10 cm. **LF:** ligule 1.5–3 mm; lower blades 1.5–5 cm, 1–6 mm wide, flat to inrolled. **INFL:** 5–20 cm, lanceolate to narrowly ovate in outline, ± open; 1° branches gen ascending, lower 2–5 cm. **SPIKELET:** glumes 2–3 mm; callus hairs minute; lemma 1.5–2.5 mm, occ awned near tip, awn < 0.5 mm, straight; palea 0 or minute, << lemma; anthers 0.7–1.8 mm. 2n=42, 56. Common. Open meadows, woodland, forest, subalpine; 200–3500 m. CA-FP, GB; to BC, MT, Mex. [*A. diegoensis* Vasey; *A. lepida* Hitchc.] Geog and ecological variation need study. Jun–Aug

A. scabra Willd. (p. 1417) Per 20–75 cm. **ST:** ascending to erect. **LF:** mostly basal; ligule 2–5 mm; lower blades 4–14 cm, 1–3 mm wide, flat, finely scabrous. **INFL:** 8–25 cm, ovate in outline, open; 1° upper branches ascending, lower branches spreading, 4–11 cm, ± arched, axes thread-like, branched 1–2 × above middle, often breaking at base in fr. **SPIKELET:** floret axis not prolonged beyond lemma; glumes 1.5–3 mm; callus hairs minute, sparse; lemma 1.5–2 mm, back glabrous or fine-scabrous; occ awned from below middle, awn < 2 mm, ± straight; palea 0 or minute, << lemma; anthers 3, 0.4–0.7 mm, deciduous. 2n=42. Open roadsides, meadows, conifer

forest; 100–3500 m. KR, NCoR, SN, TR, SnJt, SNE; to AK, Can, e US. [*A. s.* var. *geminata* (Trin.) Swallen] Jul–Sep

A. stolonifera L. (p. 1417) CREEPING BENT Per 8–60 cm, decumbent to erect, often mat-like; stolons 5–100 cm. **LF:** ligule 2–5 mm, longer than wide; lower blades 2–10 cm, 2–5 mm wide, flat. **INFL:** 3–15 cm, elliptic to lanceolate in outline, ± dense; 1° branches ascending to ± erect, lower gen 2–6 cm. **SPIKELET:** glumes 1.5–3 mm; callus hairs minute, sparse; lemma 1.5–2 mm, awn 0; palea slightly < lemma; anthers 1–1.5 mm. 2n=28. Ditches, lake margins, marshes; < 1000 m. NW, CaR, n SN, CW, SW (exc Chl), W&I, DMtns; to s Can, e US; native to Eur. [*A. alba* var. *a.*, in part, misappl.; *A. a.* L. var. *palustris* (Huds.) Pers.] Difficult to separate from *A. gigantea*. Jun–Sep ♦

A. tandilensis (Kuntze) Parodi Ann 9–21 cm. **LF:** ligule 2–2.5 mm; lower blades 2–5 cm, < 1 mm wide, flat, inrolled with age. **INFL:** 2–5 cm, cylindric, dense; 1° branches erect to appressed, gen < 0.5 cm. **SPIKELET:** glumes 3–3.5 mm; callus densely short-hairy; lemma ± 1.5 mm, back densely puberulent below middle, awned below middle, awns < 6 mm, bent, lemma tip 4-toothed, 2 teeth < 1 mm, other teeth 1–1.5 mm; palea 0; anther 1, < 0.2 mm. Vernal pools; < 100 m. Deltaic GV (Solano Co.), s SCo (San Diego Co.), expected elsewhere; native to Argentina. [*A. kennedyana* Beetle; *Bromidium t.* (Kuntze) Rúgolo] Apr–May

A. variabilis Rydb. (p. 1417) Per 4–30 cm, occ from rhizomes < 5 cm. **LF:** mostly basal; ligule 1–2.5 mm; lower blades 3–7 cm, < 1 mm wide, flat, becoming folded. **INFL:** 2.5–6 cm, ± cylindric, gen ± dense; 1° branches ascending to erect, lower 0.5–1.5 cm. **SPIKELET:** glumes 2–2.5 mm; callus hairs minute; lemma 1.5–2 mm, awn gen 0; palea 0; anthers 0.5–0.7 mm. Meadows, subalpine forest, talus, alpine; 1600–4000 m. KR, NCoRH, CaRH, SNH, Wrn; to BC, w Can, CO, NM. Jul–Aug

AIRA

Ann. **ST:** tufted, glabrous to puberulent. **LF:** ± basal; collar glabrous to puberulent; ligule < 1 mm, membranous; blade 0.3–14 cm, 0.3–2.5 mm wide, flat to rolled, upper gen much reduced. **INFL:** panicle-like, open to dense. **SPIKELET:** bisexual, laterally compressed, 1.5–4 mm; glumes > lower floret, translucent, keel scabrous; callus short-bristly; axis breaking above glumes and between florets; florets 2, fertile; lemma faintly 5-veined, gen glabrous, tip with 2 slender teeth, slightly scabrous, awned at or below middle, awn bent once or straight, exserted (occ reduced or 0 in lower floret) or straight; palea slightly < lemma; anthers 3. 8 spp.: s Eur, Medit, Afr, w Asia. (Greek: a weedy grass, perhaps a *Lolium*) [Wipff 2007 FNANM 24:615–617] *A. cupaniana* Guss. [*A. caryophyllea* var. *cupaniana* (Guss.) Fiori] was collected in Contra Costa Co. in 1995, but does not appear to have persisted.

1. Infl compact, spike-like, 0.3–0.7 cm wide; glumes 3–3.5 mm *A. praecox*
- 1' Infl open, 1.5–10 cm wide; glumes 1.5–3 mm
2. Infl branches equal; spikelet stalk gen 1–2 × spikelet; spikelet 2.4–3.5 mm *A. caryophyllea*
- 2' Infl branches unequal; spikelet stalk 2–8 × spikelet; spikelet 1.5–2.5 mm. *A. elegans*

A. caryophyllea L. (p. 1417) SILVER HAIR GRASS **ST:** 1–10, 6–45 cm, gen glabrous (occ puberulent just below nodes). **LF:** sheath slightly scabrous; ligule minutely scabrous. **INFL:** > 1.5 cm wide, open, branches equal; spikelet stalk gen 1–2 × spikelet. **SPIKELET:** 2.4–3.5 mm; glumes 2–3 mm; lemma 1.5–2 mm, awn ± 3 mm. 2n=24. Sandy soils, open or disturbed sites; < 1900 m. NW, w CaR, SN, GV, CW, e SW; to BC, e US, Baja CA; native to Eur. Apr–Jun

A. elegans Roem. & Schult. (p. 1417) ELEGANT HAIR GRASS **ST:** 9–35 cm, gen glabrous. **LF:** sheath and ligule glabrous to slightly scabrous. **INFL:** > 1.5 cm wide, open, branches not equal; spikelet stalk 2–8 × spikelet. **SPIKELET:** 1.5–2.5 mm; glumes 1.5–2.5 mm; lemma ± 2 mm, awn ± 3 mm. 2n=14. Sandy to clay soils, open sites;

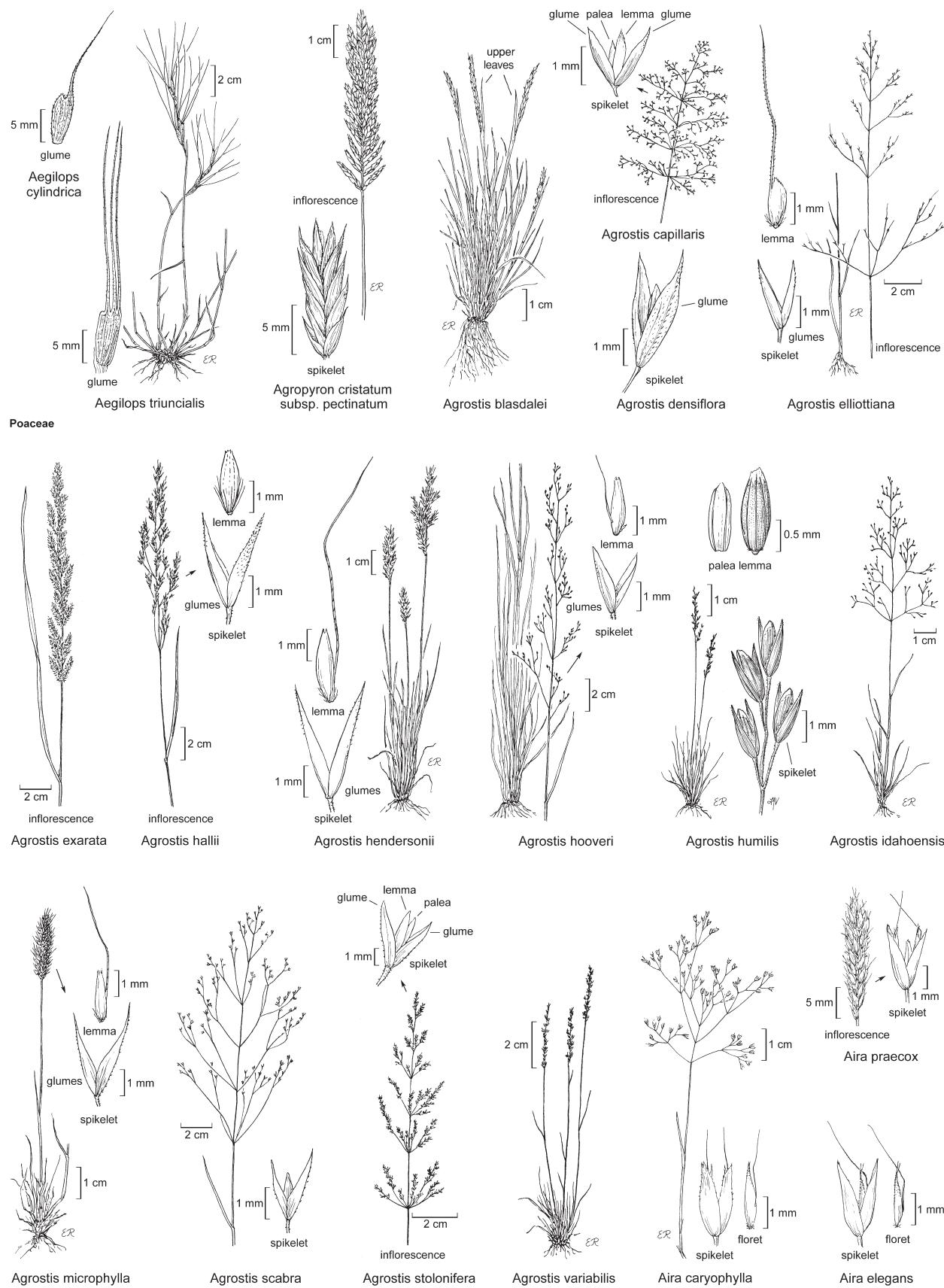
gen < 400 m. NCoRO, n SNF, ScV, SnFrB, w WTR, PR; to WA, e&s US; native to s Eur. [*A. elegantissima* Schur] Also treated as *A. caryophyllea* var. *capillaris* Bluff, Nees & Schauer, *A. elegantissima* Schur, *A. pulchella* Willd. Until the taxonomy of these European spp. is more clearly understood, it seems best to use *A. elegans* as in Wipff 2007 FNANM 24:615–617. Apr–May

A. praecox L. (p. 1417) EARLY HAIR GRASS **ST:** (1)5–25(35) cm, gen glabrous. **LF:** sheath gen slightly scabrous; ligule 1.4–5.3 mm, slightly scabrous, acute; blade 0.2–5 cm, 0.3–2 mm, prow-tipped **INFL:** gen 1–4 cm, 0.3–0.7 cm wide, narrow. **SPIKELET:** gen 3–4 mm; glumes 3–3.5 mm; lemma 1.5–3 mm, awn 3–4.5 mm. 2n=10, 14. Sandy soils, open sites; < 100 m. NCo, s NCoRO; to BC, e US; native to s Eur. May–Jul

ALOPECURUS FOXTAIL

William J. Crins

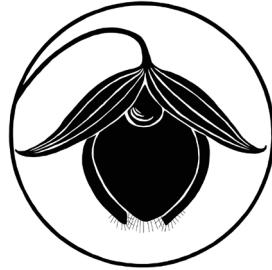
Ann, per, cespitose or from stolons. **ST:** decumbent to erect, 1–8 dm; nodes visible, brown. **LF:** ligule 1–6 mm, membranous, truncate to acute, gen scabrous; blade flat, glabrous or scabrous. **INFL:** panicle-like, gen cylindric, dense; branches short.



The Jepson Manual

Vascular Plants of California

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