113. MICROSERIS D. Don

Annual or perennial, scapose or caulescent, taprooted herbs with milky juice, alternate (or all basal), entire to pinnatifid leaves, and 1–many heads at the end of long, naked peduncles; flowers all ligulate and perfect, yellow; involucral bracts variously subequal, imbricate, or calyculate; receptacle naked; achenes columnar to fusiform, but scarcely beaked, with a whitish basal callosity, prominently about 8- to 10-ribbed or -nerved; pappus of 5–many members, these commonly with scale-like base and slender, bristle-like, naked or plumose top, varying to very narrow and elongate, bristle-like scales (in one extralimital species the scales so narrow as to be merely flattened capillary bristles; and in another the slender scales intermingled with capillary bristles). (*Calais*; *Nothocalais*; *Ptilocalais*; *Ptilophora*; *Scorzonella*; *Uropappus*)

Perhaps 20 species, native chiefly to w. N. Amer., especially Calif.; also one species in S. Amer. and one in Australia and New Zealand. (Name from the Greek *micros*, small, and *seris*, chicory.)

The section *Nothocalais*, sometimes taken as a distinct genus, morphologically approaches *Agoseris*, which differs in its consistently capillary pappus and nearly always distinctly beaked achenes.

References:
Chambers, K. L. 1955. A biosystematic study of the annual species of *Microseris*. Contr. Dudley Herb. 4: 207–312.
———. 1957. Taxonomic notes on some Compositae of the western United States. Contr. Dudley Herb. 5: 57–68.
———. 1964. The nomenclature of *Microseris lindleyi* (DC.) Gray. Leafl. W. Bot. 10: 106–108.
Wallace, R. S., and R. K. Jansen. 1990. Systematic implications of chloroplast DNA variation in the genus *Microseris* (Asteraceae: Lactuceae). Syst. Bot. 15: 606–616.

1 Annual; pappus-members 5 (*Calais*; *Uropappus*) ..... 3. *M. lindleyi*
1 Perennial; pappus-members 10–30.
2 Plants more or less caulescent, often branched and several-headed; pappus of 15–20 narrow scales, each bearing a long, white, terminal, plumose bristle (*Ptilocalais*; *Ptilophora*; *Scorzonella*) ..... 2. *M. nutans*
2 Plants scapose, simple and monocephalous; pappus of 10–30 very slender, gradually attenuate, bristle-like white scales, not plumose (*Nothocalais*).
3 Leaves narrow, mostly 20–50 times as long as wide, the margins generally ±crisped or wavy; involucral bracts lanceolate or lance-linear; widespread in our range ..... 1. *M. troximoides*
3 Leaves broader, mostly 5–20 times as long as wide, the margins scarcely or not at all crisped or wavy; involucral bracts ovate or broadly lanceolate; n. Wyo. and w. Mont. to c. Idaho; bordering on our range in the Camas Prairie of Camas Co., Idaho ..... *M. nigrescens* L. F. Hend.

1. Microseris troximoides A. Gray

Microseris troximoides A. Gray, Proc. Amer. Acad. Arts 9: 211. 1874. *Nothocalais troximoides* Greene, Bull. Calif. Acad. Sci. 2: 55. 1886. *Scorzonella troximoides* Jeps. Man. Fl. Pl. Calif. 994. 1925. (*Spalding*, hills of the Clearwater River, Idaho; holotype at GH!)

Scapose perennial from a stout root, 5–30 cm tall, the scape glabrous or puberulent; leaves crowded, narrow, elongate, rarely over 1 cm wide, mostly 20–50 times as long as wide, the margins generally ±crisped or wavy and often minutely white-ciliolate; heads solitary, ±matutinal; involucre 15–25 mm high, its bracts subequal, lanceolate or lance-linear, long-acuminate, generally with a dark midrib and sometimes also finely purple-dotted as in *M. nigrescens*; achenes ca 8–10 mm long, the slightly narrowed terminal portion puberulent; pappus of 10–30 slender, gradually attenuate, bristle-like white scales seldom as much as 0.5 mm wide, at least the larger ones generally over 0.15 mm wide; fruiting heads forming a dandelion-like ball at maturity; $2n = 18$.

Dry, open places in the foothills and lowlands, up to 2200 m elev.; s. B.C. to n. Calif., e. of the Cascade-Sierran axis, e. across c. Idaho to w. Mont., sparingly on and s. of the Snake River Plains to se. Idaho (Bannock and Caribou cos.) and northernmost Utah (Box Elder and Cache cos.); in Nev. throughout the length of Washoe Co. and (disjunct?) in Elko Co. Apr–June.

2. Microseris nutans (Hook.) Sch. Bip.

Scorzonella nutans Hook. London J. Bot. 6: 253. 1847. *Ptilophora nutans* A. Gray, Mem. Amer. Acad. Arts, II. 4: 113. 1849. *Calais nutans* A. Gray, Pacif. Railr. Rep. Whipple, Bot. 4(5): 113. 1857. *Microseris nutans* Sch. Bip. Pollichia 22–24: 309. 1866. *Ptilocalais nutans* Greene, Bull. Calif. Acad. Sci. 2: 54. 1886. (*Geyer 376*, declivities of the Spokan and Coeur d'Alcine mts.; holotype at K!)

Ptilophora major A. Gray, Mem. Amer. Acad. Arts, II. 4: 113. 1849. *Calais major* A. Gray, Pacif. Railr. Rep. Whipple, Bot. 4(5): 113. 1857. *Microseris major* Sch. Bip. Pollichia 22–24: 309. 1866. *Ptilocalais major* Greene, Bull. Calif. Acad. Sci. 2: 54. 1886. *Microseris nutans* var. *major* A. Nelson & J. F. Macbr. Bot. Gaz. 61: 47. 1916. (*Spalding*, Clearwater River, Idaho; holotype at GH!)

Calais nutans var. *latifolia* D. C. Eaton in King, Rep. U.S. Geol. Explor. 40th Parallel 5: 197. 1871. (*Watson 695* in part, East Humboldt [Ruby] Mts., Nev.; lectotype by K. L. Chambers, 1957, at YU!)

Ptilocalais macrolepis Rydb. Bull. Torrey Bot. Club 38: 11. 1911. *Microseris nutans* var. *macrolepis* A. Nelson & J. F. Macbr. Bot. Gaz. 61: 47. 1916. (*Garrett 182*, benches near Salt Lake City, Utah; holotype at NY!) A local form with relatively long pappus-scales (3–6.5 mm exclusive of the awn), wholly intergradient with more typical plants in the same area.

Glabrous or slightly scurfy perennial with 1 or several thickened fleshy roots, leafy chiefly toward the base, exceedingly variable, small forms only 1 dm tall, often curved or decumbent, with elongate, very narrow, often laciniate leaves and mostly solitary heads with the involucre only about 1 cm high, passing by continuous variation to erect, robust, branching forms 6 dm tall, with broader leaves and several larger heads with the involucre as much as 2 cm high; heads nodding in bud, erect at anthesis and after; outer bracts much shorter than the inner, often merely calyculate; flowers matutinal; achenes slightly tapering above, 5–8 mm long, glabrous or puberulent; pappus of 15–20 narrow scales mostly 1–3 (6.5) mm long, each bearing a long,

white, plumose terminal bristle often seated between the lobes of the shortly bifid scale; $2n = 18$.

Various habitats, chiefly in open, fairly moist places, from the lowlands to moderate or fairly high elev. (3200 m) in the mts.; s. B.C. to the Sierra Nevada of Calif., e. to Mont., Wyo., Utah, and Colo.; in Nev. in the n. tier of cos. and irregularly to Lander and White Pine cos.; in Utah in and about the mts. in the n. part of the state, also in the Deep Creek Range, and s. in the Utah Plateaus to Sevier Co. Apr–Aug.

3. Microseris lindleyi (DC.) A. Gray

Calais lindleyi DC. Prodr. 7: 85. 1838. *Uropappus lindleyi* Nutt. Trans. Amer. Philos. Soc. II. 7: 425. 1841. *Microseris lindleyi* A. Gray, Proc. Amer. Acad. Arts 9: 210. 1874. (Horticultural specimens, collected by *Lindley* in England and sent to de Candolle; original at G!)

Calais linearifolia DC. Prodr. 7: 85. 1838. (Name illegitimate, because the earlier *Hyponema glaucum* Hook. was included as a synonym.) *Uropappus linearifolius* Nutt. Trans. Amer. Philos. Soc. II. 7: 425. 1841. *Microseris linearifolia* Sch. Bip. Pollichia 22–24: 308. 1866. (*Douglas s.n.*, Calif., the first collection cited, was considered by K. L. Chambers, 1955, to be the type; original at G!)

Microseris nevadensis Gand. Bull. Soc. Bot. France 65: 52. 1918. (Specimens from *Doten, Heizer,* and *Kennedy* are cited; said to come from Calif. and Nev. near Reno.)

Glabrous or sometimes villous-puberulent annual, 1–6 dm tall, simple or more commonly branched at or near the base, subscapose, or at any rate with long, erect, naked peduncles each bearing a single erect head; leaves up to 15 or 20 cm long, linear, entire or with some spreading, linear lobes; involucre 15–30 mm high, its bracts lance-acuminate, imbricate or the outer irregularly calyculate; achenes 9–13 mm long, narrowed to the summit, black or blackish; pappus of 5 long, narrow, scarious scales, each bifid at the tip and bearing a slender awn between the lobes, the whole scale finally deciduous; $2n = 18$.

Dry, open places in the valleys, foothills, and plains, up to 2100 m elev.; s. Wash. to n. Baja Calif., e. to Idaho (as far as Twin Falls Co.), Nev. (mainly in the w. tier of cos., but also to Humboldt Co., and in the s. to Lincoln and Clark cos.), Utah (Tooele and Washington cos.), Ariz., sw. N.M., and n. Sonora. Late Mar–June.

114. AGOSERIS Raf. False Dandelion, Mountain Dandelion

Taprooted annual or perennial herbs with milky juice, scapose (most species) or at least with the leaves all clustered near the base; leaves entire to pinnatifid; heads solitary, terminating the 1–several scapes; flowers all ligulate and perfect, yellow to burnt orange, often turning pinkish or lavender (purple in *A. aurantiaca*) in drying; involucral bracts subherbaceous or partly scarious, in 2–several series, subequal to strongly imbricate; receptacle naked, or sometimes chaffy in individual plants; achenes terete or angular, prominently about 10-nerved, more or less strongly beaked at maturity, or sometimes beakless in one variety of *A. glauca*; pappus of numerous capillary bristles, ca 0.1 mm thick or less. (*Troximon*)

Eight species, seven in w. N. Amer., the eighth in Patagonia. (Name from the Greek *aix*, goat, and *seris*, chicory.)

1 Plants perennial.
  2 Flowers burnt orange, often drying purplish; beak mostly more than half but less than twice as long as the body of the achene ..... 2. *A. aurantiaca*
  2 Flowers yellow, often drying pinkish or lavender.
    3 Beak up to about as long as the body of the achene, often less than half as long ..... 1. *A. glauca*
    3 Beak elongate, mostly 2–4 times as long as the body of the achene.
      4 Achenes tapering to the beak; leaves antrorsely, divaricately, or irregularly lobed or cleft ..... 3. *A. grandiflora*
      4 Achenes abruptly contracted to the beak; leaves mostly retrosely lobed or cleft ..... 4. *A. retrorsa*
1 Plants annual; beak mostly 2–3 times as long as the body of the achene ..... 5. *A. heterophylla*

1. Agoseris glauca (Pursh) Raf.

Troximon glaucum Pursh, Fl. Amer. Sept. 505. 1814. *Agoseris glauca* Raf. Herb. Raf. in Atl. J. Extra of 6: 39. 1833. *Macrorrhynchus glaucus* D. C. Eaton in King, Rep. U.S. Geol. Explor. 40th Parallel 5: 204. 1871. (On the banks of the Missouri; the presumed holotype is *Nuttall*, at PH!)

Ammogeton scorzoneraefolius Schrad. Index Seminum Hort. Goettingen. 1833. 1. *Agoseris scorzoneraefolia* Greene, Pittonia 2: 177. 1891. *A. glauca* (subsp.) *scorzoneraefolia* Piper, Contr. U.S. Natl. Herb. 11: 542. 1906. (Garden specimens, presumably from seeds collected by *Richardson* on the Saskatchewan River.) = var. *dasycephala*.

Troximon parviflorum Nutt. Trans. Amer. Philos. Soc. II. 7: 434. 1841. *Agoseris parviflora* D. Dietr. Syn. Pl. 4: 1332. 1847. *Troximon glaucum* var. *parviflorum* A. Gray, Proc. Amer. Acad. Arts 19: 71. 1883. *Agoseris glauca* (var.) *parviflora* Rydb. Contr. U.S. Natl. Herb. 3: 511. 1896. (*Nuttall*, plains of the Platte to the Rocky Mts.; holotype at BM!) = var. *glauca*.

Troximon taraxacifolium Nutt. Trans. Amer. Philos. Soc. II. 7: 434. 1841. *Agoseris taraxacifolia* D. Dietr. Syn. Pl. 4: 1332. 1847. *Troximon glaucum* var. *taraxacifolium* A. Gray, Bot. Calif. 1: 437. 1876. (*Nuttall*, plains of the Wahlamet; holotype at BM!) = var. *dasycephala*, but the name often misapplied to var. *laciniata*.

Troximon glaucum var. *dasycephalum* Torr. & A. Gray, Fl. N. Amer. 2: 490. 1843. *Agoseris glauca* var. *dasycephala* Jeps. Man. Fl. Pl. Calif. 1005. 1925. (*Richardson s.n.*, banks of the Saskatchewan River; lectotype by Cronquist, Univ. Wash. Publ. Biol. 17(5): 26. 1955, at GH!)

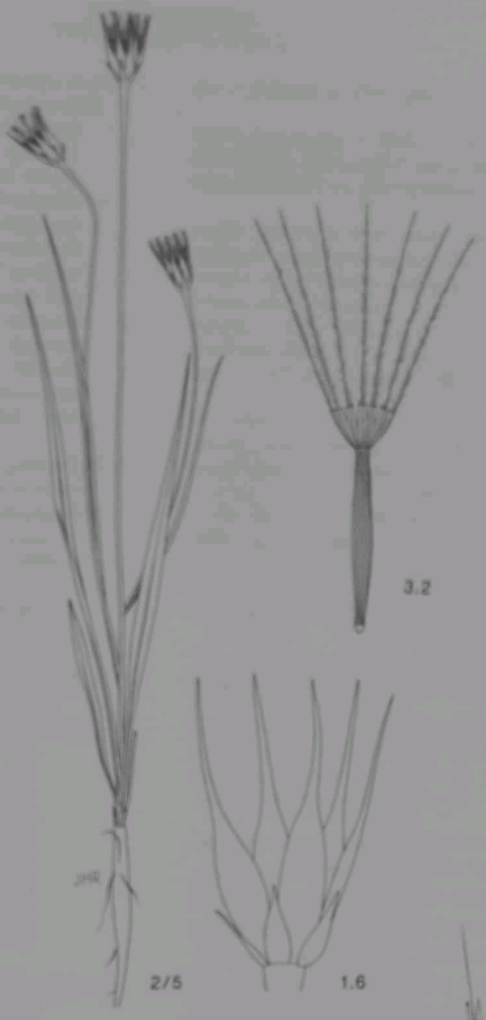
Macrorrhynchus glaucus var. *laciniatus* D. C. Eaton in King, Rep. U.S. Geol. Explor. 40th Parallel 5: 204. 1871. *Troximon glaucum* var. *laciniatum* A. Gray, Proc. Amer. Acad. Arts 19: 71. 1883. *Agoseris leontodon* Rydb. Mem. New York Bot. Gard. 1: 457. 1900. *A. glauca* var. *laciniata* Smiley, Univ. Calif. Publ. Bot. 9: 404. 1921. (*Hall & Harbour 354* in part, Colo., is the first specimen cited; original at YU!)

Troximon arizonicum Greene, Pittonia 2: 78. 1890. *Agoseris arizonica* Greene, Pittonia 2: 176. 1891. (Mts. of Ariz. and N.M.; represented by two sheets at NDG!: herbarium number 065348, Bill Williams Mt., Ariz., 5 July 1899; herbarium number 065349, San Francisco Mt., Ariz., 14 July 1899.) = var. *laciniata*.

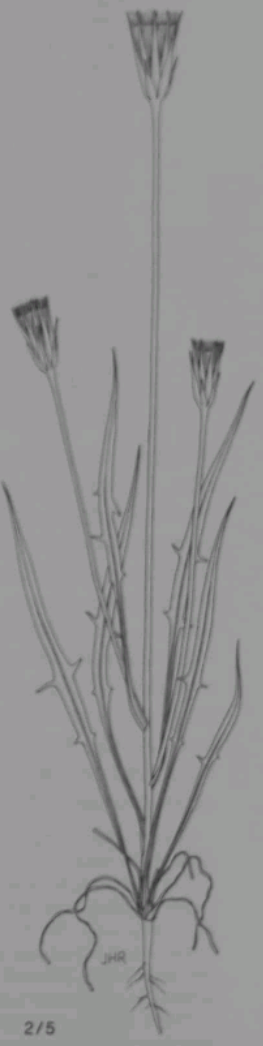
A. dens leonis Greene, Erythea 3: 23. 1895. (*Greene s.n.*, near the summits of the West Humboldt Mts., Nev., July 1894; represented by two duplicates at NDG!, herbarium numbers 065365 and 065366.) = var. *laciniata*.

A. dasycarpa Greene, Pittonia 3: 26. 1896. (Ne. Calif. and adj. Oregon and Nev.; the apparent holotype is *Baker s.n.*, near

Microseris troximoides



Microseris nutans



Microseris lindleyi

Agoseris glauca var. agrestis

Additional varieties of A. glauca on next plate

Egg Lake, Modoc Co., Calif., 5 July 1893, at NDG!) = var. *monticola*.

A. monticola Greene, Pittonia 4: 37. 1899. *A. glauca* var. *monticola* Q. Jones ex Cronquist, Univ. Wash. Publ. Biol. 17(5): 26. 1955. (*Merriam 88*, Mt. Shasta, Calif., in 1898, holotype at US!)

A. leontodon (var.) *aspera* Rydb. Mem. New York Bot. Gard. 1: 457. 1900. *Troximon glaucum asperum* Piper, Mazama 2: 96. 1901. *Agoseris glauca* (subsp.) *aspera* Piper, Contr. U.S. Natl. Herb. 11: 542. 1906. *A. scorzonerae folia aspera* S. F. Blake, Contr. U.S. Natl. Herb. 25: 630. 1925. *A. glauca* var. *aspera* Cronquist, Leafl. W. Bot. 6: 41. 1950. (*Rydberg & Bessey 5286*, Mt. Chauvet, Idaho; holotype at NY!) = var. *dasycephala*.

A. agrestis Osterh. Bull. Torrey Bot. Club 28: 645. 1901. *A. glauca* var. *agrestis* Q. Jones ex Cronquist, Univ. Wash. Publ. Biol. 17(5): 26. 1955. (*Osterhout 2215*, Estes Park, Larimer Co., Colo.; holotype at RM!)

A. taraxacoides Greene, Leafl. Bot. Observ. Crit. 2: 123. 1911. (*M. E. Jones 5372*, near Marysvale, Utah, 2 June 1894; holotype at US!) = var. *laciniata*.

A. isomeris Greene, Leafl. Bot. Observ. Crit. 2: 123. 1911. (*Goodding 1397*, Fish Lake, Uinta Mts., Utah, 18 July 1902; holotype at US!) = var. *glauca*.

A. caudata Greene, Leafl. Bot. Observ. Crit. 2: 124. 1911. (*M. E. Jones s.n.*, Salina Canyon, Utah, 15 June 1894; holotype at US!) = var. *laciniata*.

A. longula Greene, Leafl. Bot. Observ. Crit. 2: 125. 1911. (*Greene s.n.*, Humboldt River, Deeth, Nev., 14 July 1896; represented by two duplicates at NDG!, herbarium numbers 065521 and 065522.) = var. *glauca*, the robust lowland form.

Glabrous or hairy, often somewhat glaucous perennial, 1–8 dm tall; leaves linear to broadly oblanceolate, 5–40 cm long and 2–30 (50) mm wide, entire or toothed to laciniate-pinnatifid; involucre (1) 1.5–2.5 (3) cm high, its bracts imbricate or subequal, sharply pointed or sometimes obtuse, sometimes purple-spotted; flowers yellow, often drying pinkish; achenes mostly 5–12 mm long overall, the body tapering gradually to a stout, evidently striate beak up to about half as long as the body (in var. *laciniata* the beak sometimes up to as long as the body and the achene more than 12 mm long, and in extralimital forms of var. *dasycephala* the achene sometimes beakless); $2n = 18, 36$.

In open places, up to ca 3300 m elev. in the mts.; B.C. to Calif. and Ariz., e. to Man., Minn., and N.M. May–Sept.

The species as here interpreted consists mainly of five ecogeographic varieties, fairly well defined on the diploid level, but confluent through the tetraploids. All five varieties occur in our range, but only two (*glauca* and *laciniata*) are common with us. Some of the scattered specimens here referred to var. *agrestis* might be differently placed if studied in the context of their local populations.

There are in addition two notable ecotypic variants in our range that may deserve some sort of taxonomic status. One of these is a very robust phase, part of var. *glauca* in the broad sense, in somewhat alkaline meadows in the intermontane valleys. The name *A. longula* Greene applies to this phase. The other is a dwarf alpine form, up to 15 cm tall, at 3000–3600 meters in the Uinta, La Sal, and Tushar mountains, which may be entirely glabrous as in var. *glauca*, or may have a little tomentum at the base of the involucre. Plants with and without the tomentum sometimes grow intermingled. This phase appears to be nameless, although it is approached by *A. isomeris* Greene, from the Uinta Mountains. See Addenda.

1 Plants glabrous, or merely sparsely ciliate on the lower part of the leaves and on the petioles; leaves ±strongly acute, entire or sometimes with a few irregular teeth, not laciniate; plants often tall and stout, even up to 7 dm tall, with a scape to 6 mm thick, and with leaves up to 40 × 3 cm, but varying to much smaller, only 1 dm tall or less, with small, narrow, entire leaves; in sweet to alkaline meadows or along streams in the valleys and lower parts of the mts., seldom at more than 2400 m elev. (up to 2700 m in the White Mts.); nearly the range of the species; in appropriate habitats nearly throughout our area, but only rare and scattered in Nev. ..... var. *glauca*

1 Plants ±pubescent, at least on the involucre or just below it.

2 Pubescence at the top of the peduncle and base of the involucre consisting partly or wholly of short, gland-tipped hairs or short, beaded-glandular, evidently multicellular hairs; plants low, as in var. *laciniata*; leaves sometimes with a slender midstrip and slender spreading segments as in var. *laciniata*, but often broader and less dissected, with few and short lateral segments, or entire; bracts of the involucre tending to be in about three length-classes; dry meadows and open slopes in the mts., 2300–3300 m elev.; Sierra Nevada and the White and Sweetwater mts. of Calif., n. through the Cascade Mts. to Mt. Adams, Wash., e. into the mts. of e. Oregon (including the Blue Mts., Strawberry Mt., and Steens Mt.), and disjunct in the mts. of Elko Co., Nev.; July, Aug ..... var. *monticola* (Greene) Q. Jones ex Cronquist

2 Pubescence longer and wholly eglandular; bracts of the involucre tending to be in about two length-classes.

3 Plants mostly tall, seldom less than 25 cm; outer involucral bracts tending to be pinkish in part; mainly in the Rocky Mts., extending w. to e. Wash. and ne. Oregon, at scattered localities in our range; chiefly in the foothills and at middle elev. in the mts., occurring at lower elev., in the area of sympatry, than var. *dasycephala* ..... var. *agrestis* (Osterh.) Q. Jones ex Cronquist

3 Plants shorter, seldom more than 25 cm; involucral bracts generally not pinkish.

4 Beak of the achenes short, up to about half as long as the body (sometimes beakless in the Cascade-Wenatchee phase); leaves mostly oblanceolate or broader and ±obtuse, entire or sometimes weakly laciniate below; plants tending to be rather copiously pubescent, especially on the involucre; northern plants, extending s. to Wash. and the mts. of c. Idaho and w. Mont., and occasionally to se. Idaho (Caribou Range in Fremont Co.), w. Wyo., the Tushar and Uinta mts. of Utah, and Colo. ..... var. *dasycephala* (Torr. & A. Gray) Jeps.

4 Beak of the achene longer, mostly half to fully as long as the body (unlike all the other vars.); leaves typically with a rather narrow midstrip and scattered long, spreading, slender segments, varying to sometimes entire and as much as 2 cm wide; pubescence sparser; widespread and abundant in our range and in the s. Rocky Mts.; mostly in well drained soil, often with sagebrush or pinyon-juniper, from the valleys and lowlands to as much as 3300 m elev. in the mts.; May–July, mostly before the other vars. ..... var. *laciniata* (D. C. Eaton) Smiley

2. Agoseris aurantiaca (Hook.) Greene

Troximon aurantiacum Hook. Fl. Bor.-Amer. 1: 300. 1833. *Macrorhynchus troximoides* Torr. & A. Gray, Fl. N. Amer. 2: 491. 1843. *Agoseris aurantiaca* Greene, Pittonia 2: 177. 1891. (*Drummond s.n.*, alpine prairies, Rocky Mts.; apparent holotype, sent to A. Gray by Hooker, at GH!)

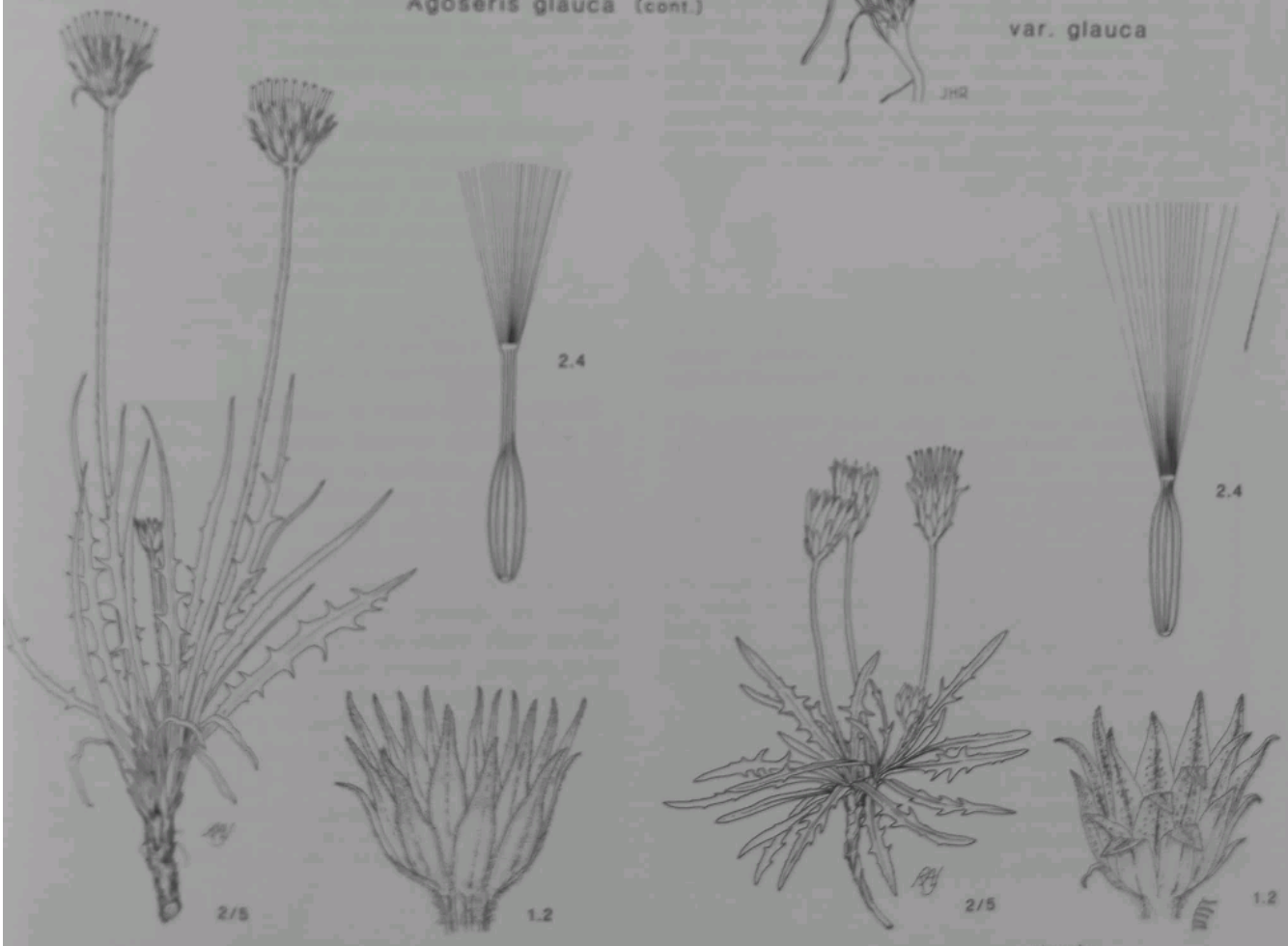
Macrorhynchus purpureus A. Gray, Mem. Amer. Acad. Arts, II. 4: 114. 1849. *Troximon aurantiacum* var. *purpureum* A. Gray, Proc. Amer. Acad. Arts 19: 72. 1883. *Agoseris purpurea* Greene, Pittonia 2: 177. 1891. *A. aurantiaca* var. *purpurea* Cronquist, Rhodora 50: 33. 1948. *A. aurantiaca* subsp. *purpurea* G. W. Douglas, Canad. J. Bot. 64: 2726. 1986. (*Fendler 487*, Santa Fé Creek, N.M.; holotype at GH!) The original publication cites *Fendler 455*, but the specimen at GH, so annotated by Q. Jones, bears the number *487*.

Troximon gracilens A. Gray, Proc. Amer. Acad. Arts 19: 71. 1883. *Agoseris gracilenta* Greene, Pittonia 2: 177. Sept 1891. *A. gracilens* Kuntze, Revis. Gen. Pl. 1: 304. Nov 1891. (*Lyall*, Cascade Mts., Wash.; lectotype by Cronquist, Univ. Wash. Publ. Biol. 17(5): 25. 1955, at GH!) = var. *aurantiaca*.

Troximon gracilens var. *greenei* A. Gray, Proc. Amer. Acad. Arts 19: 71. 1883. *Agoseris gracilenta* var. *greenei* Greene, Pittonia 2: 177. 1891. *A. greenei* Rydb. Mem. New York Bot. Gard. 1: 459. 1900. *A. gracilens greenei* S. F. Blake, Contr. U.S. Natl. Herb. 25: 629. 1925. *A. gracilens* var. *greenei* Jeps. Man. Fl. Pl. Calif. 1007. 1925. (*Greene 1033*, Mt. Scott, Siskiyou Co., Calif.; holotype at GH!) = var. *aurantiaca*.

Agoseris glauca (cont.)

var. glauca



A. confinis Greene, Leafl. Bot. Observ. Crit. 2: 124. 1911. (*M. E. Jones 5893z*, Marysvale, Utah, and *M. E. Jones 6056an*, De Motte Park, Buckskin Mts., Ariz.; both at US!) = var. *purpurea*, but the beak of the achene unusually short and stout, suggesting *A. glauca*.

A. longirostris Greene, Leafl. Bot. Observ. Crit. 2: 125. 1911. (*M. E. Jones 5743n*, Fish Lake, Utah, 4 Aug 1894; holotype at US!) = var. *purpurea*.

Perennial, glabrous or somewhat villous, 1–6 (8) dm tall; leaves 5–35 cm long and 1–30 mm wide, rounded to acuminate at the tip, entire or with a few divergent slender teeth or lobes; flowers burnt orange, commonly turning purple in age or in drying; body of the achene 5–9 mm long, rather abruptly narrowed to the slender, scarcely or obscurely striate beak, which varies from distinctly longer to barely more than half as long as the body; $2n = 34$.

Dry meadows, open slopes, forest openings, and open woods, 2000–3500 m elev., cordilleran region from Alta. and B.C. to Calif., Nev., Ariz., and N.M.; disjunct on the Gaspé Peninsula of Que. June–Aug.

The possibility must be entertained that there are some hybrids, or alloploids of hybrid origin, between this species and *A. glauca*.

The species consists of two varieties, as follows:

Var. *aurantiaca*. Involucral bracts only inconspicuously or not at all imbricate, relatively narrow, seldom over 3 mm wide, usually broadest near the base and tapering gradually to the tip, sometimes finely purple-dotted, but only rarely conspicuously mottled or blotched; relatively northern and western; in our range occurring in the mts. of s. Idaho, c. and ne. Nev., se. Oregon (Steens Mt.); in Utah in the Uinta Mts. and Wasatch Mts. sections, s. occasionally in the Utah Plateaus as far as Beaver Co., and in the La Sal Mts.

Var. *purpurea* (A. Gray) Cronquist. Involucral bracts usually more evidently imbricate, broader, the outer (and often also the middle) ones mostly (2.5) 3–6 mm wide, often carrying their width to the middle or beyond and then abruptly narrowed (or rounded) to the tip, very often evidently mottled or blotched with purple; relatively southern and eastern; mainly in the Southern Rocky Mt. and Colorado Plateau provinces (including the Utah Plateaus), extending w. to the Wasatch, Stansbury, and Deep Creek ranges in Utah, and in the Snake Range of e. Nev.; also n. occasionally through w. Wyo. to sw. Mont.

3. Agoseris grandiflora (Nutt.) Greene

Stylopappus grandiflorus Nutt. Trans. Amer. Philos. Soc. II. 7: 432. 1841. *Macrorhynchus grandiflorus* Torr. & A. Gray, Fl. N. Amer. 2: 492. 1843. *Agoseris grandiflora* Greene, Pittonia 2: 178. 1891. (*Nuttall*, high plains of the Wahlamet; holotype at BM!)

Stylopappus laciniatus Nutt. Trans. Amer. Philos. Soc. II. 7: 432. 1841. *Macrorhynchus laciniatus* Torr. & A. Gray, Fl. N. Amer. 2: 492. 1843. *Troximon grandiflorum* var. *laciniatum* A. Gray, Bot. Calif. 1: 438. 1876. *Agoseris laciniata* Greene, Pittonia 2: 178. 1891. *A. grandiflora* var. *laciniata* Jeps. Man. Fl. Pl. Calif. 1006. 1925. (*Nuttall*, plains of the Wahlamet near its estuary; holotype at BM!)

Stylopappus laciniatus var. *longifolius* Nutt. Trans. Amer. Philos. Soc. II. 7: 432. 1841. *Macrorhynchus laciniatus* var. *longiflorus* Torr. & A. Gray, Fl. N. Amer. 2: 492. 1843. *Troximon grandiflorum* var. *tenuifolium* A. Gray, Proc. Amer. Acad. Arts 9: 216. 1874. (Doubtful typonym.) (*Nuttall*, plains of the Wahlamet near its estuary; holotype at BM!)

Perennial, mostly 2–7 dm tall, often very stout, generally somewhat villous-hirsute when young, becoming subtomentose at the base of the involucre, often later glabrate; leaves oblanceolate to lance-elliptic or broadly linear, entire to deeply pinnatifid with broad or narrow rachis, commonly 10–25 cm long and 1–3 cm wide, or even larger, the lobes mostly antrorse or divaricate, sometimes some of them retrorse; heads large and many-flowered, the involucre mostly 1.5–4 cm high in fruit, its outer bracts relatively broad and short, the inner narrow and conspicuously elongate; flowers yellow, often turning pinkish in drying; body of the achene 4–7 mm long, tapering to a slender, nerveless beak 2–4 times as long; $2n = 18$.

Meadows and other open places in the lowlands, up to ca 2000 m elev. in the mts.; B.C. to Calif., e. to n. and c. Idaho, sw. Idaho (Ada, Elmore, and Owyhee cos.), and w. Nev. (Douglas, Humboldt, Ormsby, Storey, and Washoe cos.); disjunct (apparently) in Utah (Cache and Salt Lake cos.). May, June.

4. Agoseris retrorsa (Benth.) Greene

Macrorhynchus retrorsus Benth. Pl. Hartweg. 320. 1849. *Troximon retrorsum* A. Gray, Proc. Amer. Acad. Arts 9: 216. 1874. *Agoseris retrorsa* Greene, Pittonia 2: 178. 1891. (*Hartweg 361*, "montibus Sacramento," Calif.; holotype at K!)

Perennial, 1.5–6 dm tall, somewhat villous-tomentose when young, often later glabrate or even glaucous; leaves 10–40 cm long, pinnately parted into narrow, usually retrorse (rarely merely divaricate) lobes, the terminal lobe long and narrow, all callous-tipped; heads mostly narrower in shape than in *A. grandiflora*; involucre 2.5–5 cm high in fruit, its inner bracts narrow, much longer than the lanceolate or oblong outer ones; flowers yellow, often turning pinkish in drying; body of the achene 5–7 mm long, truncate or nearly so at the top, the slender nerveless beak 2–4 times as long.

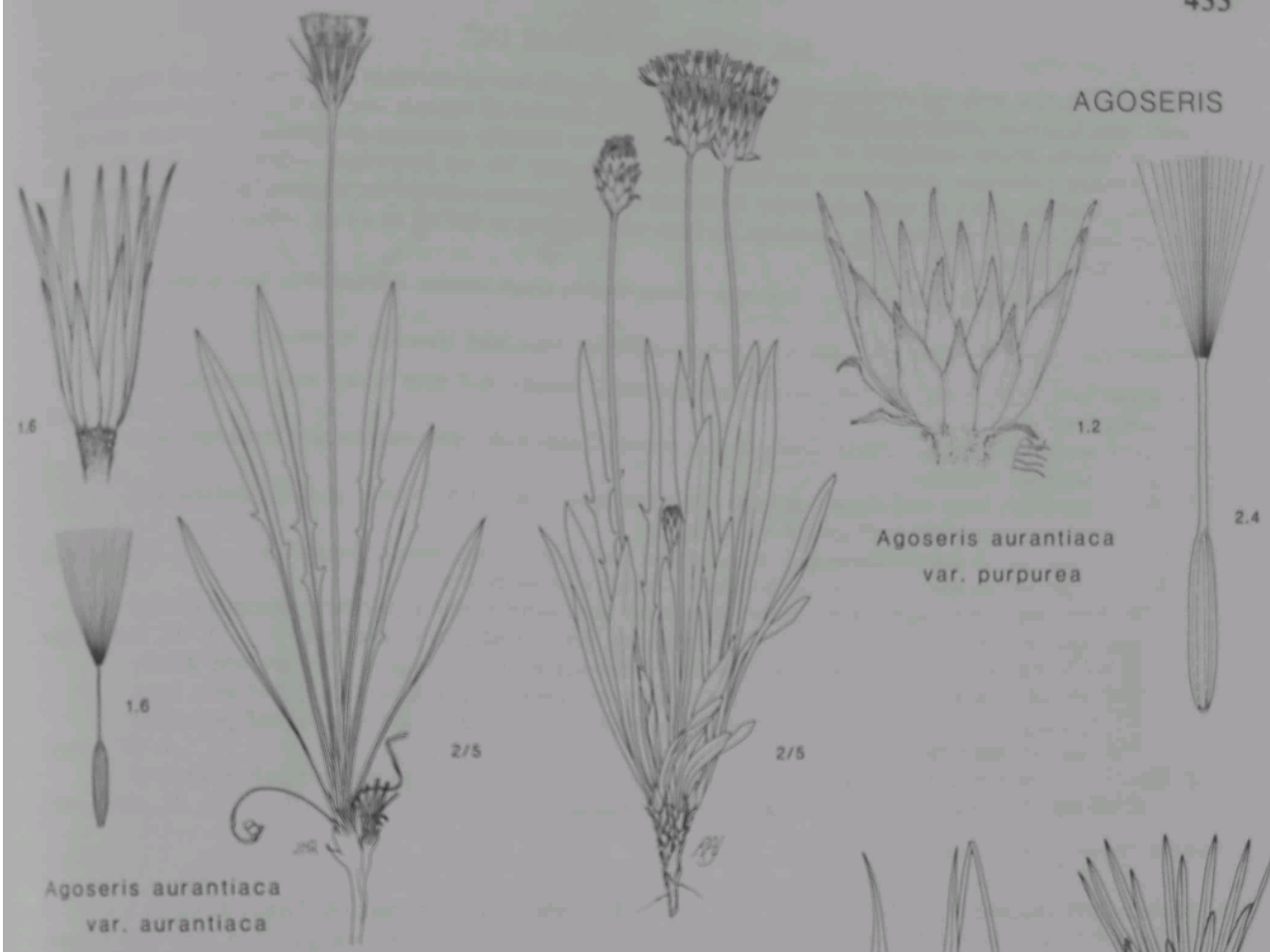
Dry, open woods and brush, up to ca 1800 m elev.; Calif. and adj. Nev. (Douglas and Washoe cos.), n. to sw. Idaho and occasionally to Chelan Co., Wash.; disjunct (apparently) in the Deep Creek Range, Pine Valley Mts., and Zion Natl. Park, Utah. May, June.

5. Agoseris heterophylla (Nutt.) Greene

Macrorhynchus heterophyllus Nutt. Trans. Amer. Philos. Soc. II. 7: 430. 1841. *Kymapleura heterophylla* Nutt. Trans. Amer. Philos. Soc. II. 7: 455. 1841. *Troximon heterophyllum* Greene, Bull. Torrey Bot. Club 10: 88. 1883. *Troximon heterophyllum* var. *kymapleura* Greene, Bull. Torrey Bot. Club 10: 88. 1883. *Agoseris heterophylla* Greene, Pittonia 2: 178. 1891. *A. heterophylla* var. *kymapleura* Greene, Pittonia 2: 179. 1891. *Troximon heterophyllum* f. *kymapleurum* H. M. Hall, Univ. Calif. Publ. Bot. 3: 278. 1907. (*Nuttall*, plains of the Oregon; holotype at BM!)

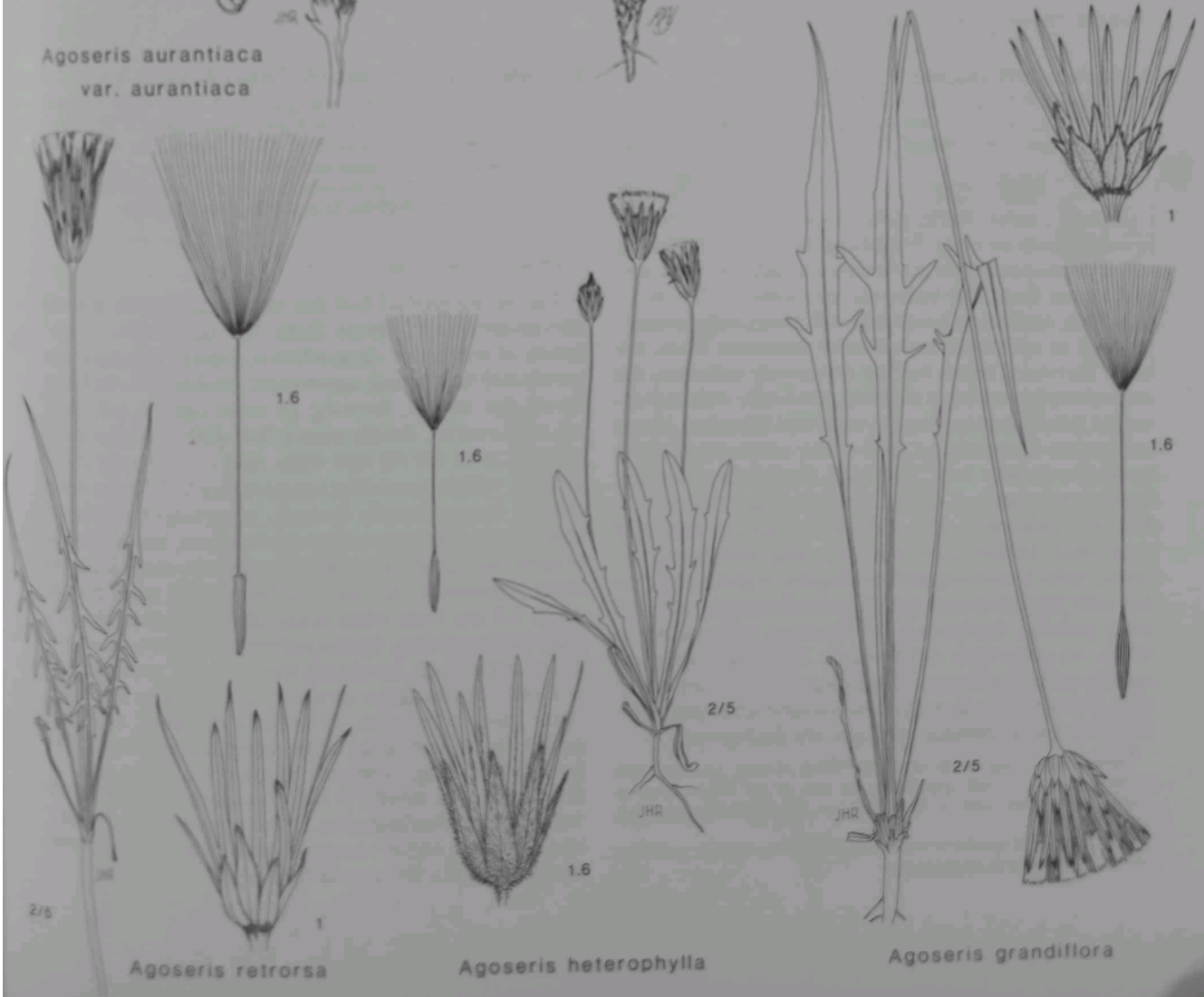
Slender, crisp-hairy to subglabrate annual, 3–40 cm tall, often with several scapes from the base; leaves oblanceolate, toothed or pinnatifid to entire, up to 15 cm long and 1.5 cm wide, all in a basal cluster, as in other species of the genus, but the uppermost internodes sometimes developed, so that the leaves may not all be strictly basal; involucre 5–13 mm high in flower, elongating to 1–2 cm in fruit, rather sparsely villous with multicellular hairs, the cross-walls of the hairs purple; flowers matutinal, yellow, often turning pinkish in drying; body of the achene 2–5 mm long, prominently several-ribbed or even winged, the wings sometimes crisped, tapering to a slender beak ca 2–3 times as long as the body; $2n = 18, 36$.

Dry, open places in the foothills and lowlands, up to 2300 m elev.; B.C. to Calif., e. to w. Mont., sw. Idaho, the w. base of the Wasatch front and Bear River Range in Utah, and to Ariz. and sw. N.M. May–July.



Agoseris aurantiaca var. purpurea

Agoseris aurantiaca var. aurantiaca



Agoseris retrorsa

Agoseris heterophylla

Agoseris grandiflora