

II. ERIOGONUM SUBG. OLIGOGRAMMUM

Plants perennials, herbaceous, cespitose mats, subshrubs or shrubs, infrequently single-stemmed and flowering anew each year; *leaves* glabrous or variously pubescent but not hirsute; *stems* rarely inflated; *bracts* foliaceous to semifoliaceous or infrequently scalelike, 2 to several; *involucres* solitary, turbinate to campanulate, the teeth 5–20 or more; *flowers* attenuated basally and stipitate, the perianth glabrous or pubescent but not hirsute; *achenes* glabrous or pubescent, not winged; *embryo* straight or curved. 38 species of N. Amer. from ec. Alaska and Yukon, s. to Mex. and the Appalachian Mts. of Va. and W.Va.

- 1 Involucres with lobes at least half as long as the tube, the lobes usually reflexed or spreading, not erect or teeth-like at anthesis.
- 2 Perianth pubescent abaxially.
 - 3 Flowering branches without subtending bracts and with a solitary terminal involucre; throughout our area 74. *E. caespitosum*
 - 3 Flowering branches with a whorl of subtending bracts at the base of the umbel or near the middle of the branches.
 - 4 Involucres more than 1 per flowering branch; inflorescences umbellate, subtended by (2) 3 to several leafy bracts at base of umbel or occasionally with a whorl of bracts midlength on the central branch of umbel; n. half of our area in ne. Calif., se. Oregon, s. Idaho and n. Nev. 72. *E. sphaerocephalum*
 - 4 Involucres solitary, terminal, not immediately subtended by leafy bracts, the flowering branches with a whorl of bracts near the middle; ne. Calif. (Lassen Co.), wc. Nev. (Washoe Co.), and se. Oregon, disjunct in Elko Co., Nev. 73. *E. douglasii*
- 2 Perianth glabrous abaxially.
 - 5 Flowering stems with a whorl of leafy bracts about midlength; leaves mostly linear-ob lanceolate to oblanceolate; throughout the n. half of our area, disjunct in Coconino Co., Ariz. 69. *E. heracleoides*
 - 5 Flowering stems without a whorl of leafy bracts near the middle.
 - 6 Stipe 0.5–3 mm long.
 - 7 Leaf blades 0.3–3 (4) cm long, not cordate basally; involucres 2–5 mm long; flowering branches not fistulose; common throughout our area 68. *E. umbellatum*
 - 7 Leaf blades 2–10 (20) cm long, usually cordate basally; involucres 6–10 mm long; flowering stems occasionally fistulose; Lake Section of n. Harney and Lake Cos., Oregon, and in Washington Co., Idaho 70. *E. compositum*
 - 6 Stipe 0.1–0.4 mm long, indistinct.
 - 8 Perianth 5–7 mm long; achenes 4–6 mm long; flowering stems prostrate to decumbent; inflorescences subcapitate to umbellate (ours), infrequently biumbellate; n. Calif. and wc. Nev., limited in our area to the Sweetwater and White Mts. and Glass Mtn. 79. *E. lobbii*
 - 8 Perianth 7–9 mm long; achenes 6–8 mm long; flowering stems erect; inflorescences biumbellate; local and infrequent in wc. Nev. 80. *E. robustum*
- 1 Involucres with lobes much shorter than the tube, the lobes teeth-like and erect or nearly so at anthesis.
 - 9 Perianth pubescent abaxially.
 - 10 Leaves short-pilose or hirtellous to subglabrous; umbel subtended by 2 linear bracts; involucres 5–8 mm long; perianth sparsely pubescent abaxially; Sierra Nevada and White Mts. (Mono and Inyo Cos., Calif., and Esmeralda Co., Nev.) 78. *E. latens*
 - 10 Leaves tomentose abaxially.
 - 11 Flowering stems with a whorl of 6–10 (12) linear bracts about midlength; in our area in Malheur Co., Oregon, and near our boundary in Washington and Gooding Cos., Idaho 71. *E. thymoides*
 - 11 Flowering stems without a whorl of bracts about midlength; Colorado Plateau from se. Wyo. s. to n. Ariz. and nw. N.M. 77. *E. arcuatum*
 - 9 Perianth glabrous abaxially.
 - 12 Stipe 0.1–0.4 mm long, indistinct.
 - 13 Perianth 5–7 mm long; achenes 4–6 mm long; flowering stems prostrate to decumbent; inflorescences subcapitate to umbellate (ours), infrequently biumbellate; n. Calif. and wc. Nev., limited in our area to the Sweetwater and White Mts. and Glass Mtn. 79. *E. lobbii*
 - 13 Perianth 7–9 mm long; achenes 6–8 mm long; flowering stems erect; inflorescences biumbellate; local and infrequent in wc. Nev. 80. *E. robustum*
 - 12 Stipe 0.5–3 mm long.
 - 14 Leaves glabrate above, mostly rounded basally, the upper surface bright green to olive-green; male plants with capitate to subcapitate inflorescences; female plants with umbellate inflorescences elongating after fertilization; Lake Section, n. Calif. and nw. Nev. and s. of Bend in Deschutes Co., Oregon 75. *E. marifolium*
 - 14 Leaves lanate to tomentose on both surfaces; Reno Section, e. Calif. and wc. Nev., known in our area only from the Sweetwater Mts., Mono Co., Calif. 76. *E. incanum*

8. *Eriogonum umbellatum* Torr.

- Eriogonum umbellatum* Torr., Ann. Lyceum Nat. Hist. New York 2: 241. 1827. (*E. James s.n.* [Long expedition], "base of the Rocky Mountains," se. side of Sheep Mtn. near the South Platte River, Jefferson Co., Colo., 7 July 1820; holotype: NY!) = var. *umbellatum*.
E. stellatum Benth., Trans. Linn. Soc. London 17: 409. 1836.
E. umbellatum var. *stellatum* (Benth.) M. E. Jones, Contr. W. Bot. 11: 5. 1903. *E. umbellatum* subsp. *stellatum* (Benth.) S. Stokes, Eriogonum 112. 1936. (*D. Douglas s.n.*, "interior of North-west America," probably the Blue Mts., Umatilla Co., Oregon, July 1830; holotype: K!) = var. *ellipticum*.
E. ellipticum Nutt., Proc. Acad. Nat. Sci. Philadelphia 4: 14. 1848. *E. umbellatum* var. *ellipticum* (Nutt.) Reveal, Taxon 32: 294. 1983. (*T. Nuttall s.n.*, "Rocky Mountains," probably se. Oregon, 1834 or perhaps 1835; holotype: BM!) = var. *ellipticum*.
E. umbellatum var. *majus* Hook., Hooker's J. Bot. Kew Gard. Misc. 5: 264. 1853. *E. umbellatum* subsp. *majus* (Hook.) Piper, Contr. U.S. Natl. Herb. 11: 238. 1906. (*C. A. Geyer* 403, near the Flathead River, Mont., Sept.-Nov 1843; lectotype by J. L. Reveal, Taxon 17: 532. 1968, at K!) = var. *majus*.
E. subalpinum Greene, Pittonia 3: 18. 1896. *E. umbellatum* var. *subalpinum* (Greene) M. E. Jones, Contr. W. Bot. 11: 5. 1903. *E. umbellatum* subsp. *subalpinum* (Greene) S. Stokes, Eriogonum 109. 1936. *E. heracleoides* var. *subalpinum* (Greene) S. Stokes in R. J. Davis, Fl. Idaho 247. 1952. (*E. L. Greene s.n.*, e. of Central City, Gilpin Co., Colo., 18 July 1871; lectotype by W. A. Weber & R. C. Wittmann, Cat. Colorado Fl. 121. 1992, at NDG!) = var. *majus*.
E. aridum Greene, Pittonia 3: 200. 1897. *E. umbellatum* subsp. *aridum* (Greene) S. Stokes, Eriogonum 110. 1936. *E. umbellatum* var. *aridum* (Greene) S. Stokes in R. J. Davis, Fl. Idaho 249. 1952. (*E. L. Greene s.n.*, Holborn, above the Humboldt Wells, Elko Co., Nev., 16 July 1896; lectotype by J. L. Reveal, Great Basin Naturalist 45: 488. 1985, at NDG!) = var. *dichrocephalum*.
E. croceum Small, Bull. Torrey Bot. Club 25: 43. 1898. *E. umbellatum* var. *croceum* (Small) S. Stokes, Eriogonum 110. 1936. (*A. A. Heller & E. G. Heller* 3414, near the "breaks" of the Salmon River, Nez Perce Co., Idaho, 14 July 1896; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 203. 2004, at NY!) = var. *ellipticum*.
E. covillei Small, Bull. Torrey Bot. Club 25: 42. 1898. *E. ursinum* var. *covillei* (Small) S. Stokes, Eriogonum 115. 1936. *E. umbellatum* subsp. *covillei* (Small) Munz, Aliso 4: 90. 1958. *E. umbellatum* var. *covillei* (Small) Munz & Reveal in P. A. Munz, Suppl. Calif. Fl. 43. 1968. (*F. V. Coville & F. Funston* 1656, near Whitney Meadows, Tulare Co., Calif., 29 Aug 1891; holotype: US!) = var. *covillei*.
E. porteri Small, Bull. Torrey Bot. Club 25: 41. 1898. *E. umbellatum* var. *porteri* (Small) S. Stokes, Eriogonum 109. 1936. (*T. C. Porter s.n.*, Uinta Mts., Utah, 25 Sept 1870; lectotype [step 1] by J. C. Arthur et al., Bull. Torrey Bot. Club 31: 254. 1898; [step 2] designated here by J. L. Reveal, at NY!) = var. *porteri*.
E. latum Small ex Rydb., Mem. New York Bot. Gard. 1: 121. 1900. (*J. H. Flodman s.n.*, Cottonwood Creek, Mont., 30 July 1896; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 202. 2004, at NY!) = var. *dichrocephalum*.
E. azaleastrum Greene, Pittonia 5: 67. 1902. (*E. L. Greene s.n.*, Black Canyon, West Humboldt Mts., Pershing Co., Nev., 29 July 1895; holotype: NDG!) = var. *aureum*.
E. modocense Greene, Pittonia 5: 68. 1902. *E. umbellatum* var. *modocense* (Greene) S. Stokes, Eriogonum 110. 1936. (*L. A. M. Black s.n.*, Davis Creek, Modoc Co., Calif., Aug 1894; holotype: NDG!) = var. *modocense*.
E. neglectum Greene, Pittonia 5: 69. 1902. (*E. L. Greene s.n.*, Blue River, White River Plateau, Summit Co., Colo., 6 Aug 1875; holotype: NDG!) = var. *aureum*.
E. reclinatum Greene, Pittonia 5: 67. 1902. (*C. H. Michener* s.n., without location, Nevada Co., Calif., Aug 1893; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 203. 2004, at NDG!) = var. *nevadense*.
E. umbelliferum Small, Bull. Torrey Bot. Club 33: 51. 1906. *E. umbellatum* var. *intectum* A. Nelson in J. M. Coulter & A. Nelson, New Man. Bot. Rocky Mts. 149. 1909, based on
- E. neglectum* and *E. umbelliferum*, typified by C. L. Hitchcock, Univ. Washington Publ. Biol. 17(2): 136. 1964. *E. umbellatum* var. *umbelliferum* (Small) S. Stokes, Eriogonum 109. 1936, nom. illeg. (*L. M. Underwood & A. D. Selby* 177b, w. of Ouray, San Miguel Co., Colo., 9 Sept 1901; holotype: NY!) = var. *aureum*.
E. cuprum Gand., Bull. Soc. Roy. Bot. Belgique 42: 196. 1906. (*J. H. Linford* s.n., without location, Idaho, July 1897; holotype: LY!) = var. *umbellatum*.
E. glaberrimum var. *aureum* Gand., Bull. Soc. Roy. Bot. Belgique 42: 195. 1906. *E. umbellatum* var. *aureum* (Gand.) Reveal, Taxon 17: 532. 1968. (*E. Nelson* 4953, Ferris Mts., Carbon Co., Wyo., 23 July 1898; holotype: LY!) = var. *aureum*.
E. heracleoides var. *viride* Gand., Bull. Soc. Roy. Bot. Belgique 42: 190. 1906. (*F. H. Hillman* s.n., Peavine foothills, Washoe Co., Nev., 15 June 1894; holotype: LY!) = var. *nevadense*.
E. marginale Gand., Bull. Soc. Roy. Bot. Belgique 42: 195. 1906. (*G. E. Osterhout* s.n., North Park, Larimer Co., Colo., July 1896; holotype: LY!) = var. *aureum*.
E. subalpinum var. *arachnoideum* Gand., Bull. Soc. Roy. Bot. Belgique 42: 197. 1906. (*J. W. Blankinship* s.n., Fort Ellis, near Bozeman, Park Co., Mont., 24 June 1900; holotype: LY!) = var. *dichrocephalum*.
E. subalpinum var. *stenophyllum* Gand., Bull. Soc. Roy. Bot. Belgique 42: 197. 1906. (*P. A. Rydberg & E. A. Bessey* 5335, Spanish Basin, Gallatin Co., Mont., 23 June 1897; holotype: LY!) = var. *majus*.
E. subalpinum var. *subnivale* Gand., Bull. Soc. Roy. Bot. Belgique 42: 197. 1906. (*A. Nelson* 664, Garfield Peak, Natrona Co., Wyo., 29 July 1894; holotype: LY!) = var. *majus*.
E. subalpinum var. *vulcanicum* Gand., Bull. Soc. Roy. Bot. Belgique 42: 197. 1906. (*J. W. Blankinship* s.n., Norris Geyser Basin, Yellowstone Natl. Park, Wyo., 7 July 1899; holotype: LY!) = var. *majus*.
E. umbellatum var. *californicum* Gand., Bull. Soc. Roy. Bot. Belgique 42: 199. 1906. (*F. H. Hillman* s.n., Peavine foothills, Washoe Co., Nev., 11 June 1894; holotype: LY!) = var. *nevadense*.
E. umbellatum var. *chrysanthum* Gand., Bull. Soc. Roy. Bot. Belgique 42: 198. 1906. (*W. C. Cusick* 1733, without location, e. Oregon, 1897; holotype: LY!) = var. *ellipticum*.
E. umbellatum var. *crandallii* Gand., Bull. Soc. Roy. Bot. Belgique 42: 198. 1906. (*C. S. Crandall* s.n., 6–8 mi w. of Fort Collins, Larimer Co., Colo., 9 July 1898; lectotype by W. A. Weber & R. C. Wittmann, Cat. Colorado Fl. 121. 1992, at LY!) = var. *umbellatum*.
E. umbellatum var. *dichrocephalum* Gand., Bull. Soc. Roy. Bot. Belgique 42: 199. 1906. (*W. C. Cusick* 1965, Steens Mtn., Harney Co., Oregon, 25 June 1898; holotype: LY!) = var. *dichrocephalum*.
E. umbellatum var. *nevadense* Gand., Bull. Soc. Roy. Bot. Belgique 42: 198. 1906. (*F. H. Hillman* s.n., Huffakers, near Reno, Washoe Co., Nev., 27 May 1893; holotype: LY!) = var. *nevadense*.
E. biumbellatum Rydb., Bull. Torrey Bot. Club 39: 306. 1912. (*P. A. Rydberg & E. C. Carlton* 7609, Fish Lakes, around Twin Creeks, Fish Lake Plateau, Sevier Co., Utah, 8 Aug 1905; lectotype [step 1] by S. L. Welsh, Great Basin Naturalist 42: 167. 1982; [step 2] by J. L. Reveal, Harvard Pap. Bot. 9: 205. 2004, at NY!) = var. *subaridum*.
E. ferrissii A. Nelson, Amer. Bot. (Binghamton) 28: 21. 1922. *E. umbellatum* subsp. *ferrissii* (A. Nelson) S. Stokes, Eriogonum 113. 1936. (*W. N. Clute* 10c, at the Betatakin Ruins, Navajo Co., Ariz., Aug 1919; holotype: RM!) = var. *subaridum*.
E. umbellatum var. *glabratum* S. Stokes, Eriogonum 109. 1936. (*A. O. Garrett* 7016, Huntington Canyon, Emery Co., Utah, 17 July 1935; holotype: UT!) = var. *aureum*.
E. umbellatum var. *subaridum* S. Stokes, Leaflet W. Bot. 2: 53. 1937. *E. umbellatum* subsp. *subaridum* (S. Stokes) Munz, Aliso 4: 90. 1958. (*I. W. Clokey* & C. B. Clokey 7492, Kyle Canyon, Spring Mts., Clark Co., Nev., 17 July 1937; holotype: CAS!) = var. *subaridum*.
E. umbellatum var. *versicolor* S. Stokes, Leaflet W. Bot. 3: 17. 1941. *E. umbellatum* subsp. *versicolor* (S. Stokes) Munz, Fl. S. Calif. 697. 1974. (*M. F. Gilman* 1929, Arcane Meadow, Panamint Range, Inyo Co., Calif., 12 July 1935; holotype: CAS!) = var. *versicolor*.

E. umbellatum var. *chlorothamnus* Reveal in P. A. Munz, Suppl. Calif. Fl. 44, 1968. (N. H. Holmgren & J. L. Reveal 2938, summit of Sherwin Grade, 4 mi s. of Tom's Place, Mono Co., Calif., 23 July 1966; holotype: UTC!) = var. *chlorothamnus*.

E. umbellatum var. *vernatum* Reveal, Great Basin Naturalist 28: 157, 1968. (J. L. Reveal 1139, n. end of Shoshone Mtn., 1 mi w. of Tippipah Spring, Nye Co., Nev., 4 June 1968; holotype: UTC!) = var. *vernatum*.

E. umbellatum var. *desereticum* Reveal, Great Basin Naturalist 35: 365, 1976. (J. L. Reveal 3702, along Timpooneke Road, 1 mi nw. of Utah Hwy. 80, Utah Co., Utah, 10 July 1974; holotype: US!) = var. *desereticum*.

E. umbellatum var. *juniperinum* Reveal, Great Basin Naturalist 45: 279, 1985. (J. L. Reveal & C. G. Reveal 3925, Sacramento Pass, 11 mi nw. of Baker, White Pine Co., Nev., 13 Aug 1975; holotype: US!) = var. *juniperinum*.

E. umbellatum var. *mohavense* Reveal, Phytologia 86: 149, 2004. (J. L. Reveal 8384, Dixie-Corridor, Wolf Hole Mtn., sw. of Quail Hill, Mohave Co., Ariz., 21 May 2003; holotype: NY!) = var. *mohavense*.

E. umbellatum var. *strigulum* Reveal, Phytologia 86: 156, 2004. (J. L. Reveal 8394, 19 mi e. of Fairfield, n. of Magic Reservoir, Blaine Co., Idaho, 20 June 2003; holotype: NY!) = var. *strigulum*.

Sulphur flower.

Plants low cespitose, matted herbaceous perennials, subshrubs to large spreading shrubs, (0.2) 1–12 (20) dm tall, (0.5) 1–12 (20) dm across, often polygamodioecious; leaves in loose to compact basal rosettes, the petioles 0.1–3 (4) cm long, tomentose to floccose or glabrous, the leaf blades oblong-ovate or oblanceolate to elliptic or round, 0.3–3 (4) cm long, 0.1–2.5 (3) cm wide, densely lanate to tomentose or floccose abaxially, tomentose to floccose or glabrous adaxially, occasionally glabrous on both surfaces, the margins plane or rarely wavy; *flowering stems* erect, (0.1) 0.5–3 (4) dm long, tomentose to floccose or glabrous, without a whorl of foliaceous bracts midlength although rarely with one foliaceous bract; *inflorescences* umbellate or compound-umbellate, 3–25 cm long, 2–18 cm wide, tomentose to floccose or glabrous, rarely with a whorl of bracts about midlength; *bracts* 3 to several, semifoliaceous at first node, 0.3–2.5 cm long, 0.2–1.8 cm wide, mostly scalelike and 1–5 mm long, 0.5–3 mm wide at upper nodes; *peduncles* mostly lacking; *involucres* solitary, turbinate to campanulate, 1–6 mm long, (1) 1.5–10 mm wide, tomentose to thinly floccose or glabrous abaxially, the lobes 6–12, reflexed, 1–4 (6) mm long; *perianth* yellow, cream to red or purple, 2–10 (12) mm long including (0.7) 1.3–2 mm long stipe, glabrous abaxially, the tepals monomorphic, mostly spatulate to obovate; *stamens* exserted, 2–8 mm long, the filaments pilose basally; *achenes* trigonous, light brown to brown, 2–7 mm long, glabrous except for a sparsely pubescent beak.

Widespread and common throughout w. N. Amer. from s. Can. to s. Calif., Ariz. and N.M. in a wide variety of plant communities; 100–3700 m. May–Nov.

Eriogonum umbellatum is composed of some 40 varieties scattered throughout the western United States and just entering Canada. Representatives, notably var. *umbellatum*, var. *aureum* and var. *majus*, are widely cultivated in temperate gardens, especially in Europe. In recent years, attention has been given to var. *dichrocephalum*, var. *porteri* and the San Bernardino Mountains endemic of California, var. *minus* I. M. Johnston. The widespread introduction of *Eriogonum umbellatum* cv. 'Alturas red'—a selection derived from var. *modocense*—is causing new interest in the species.

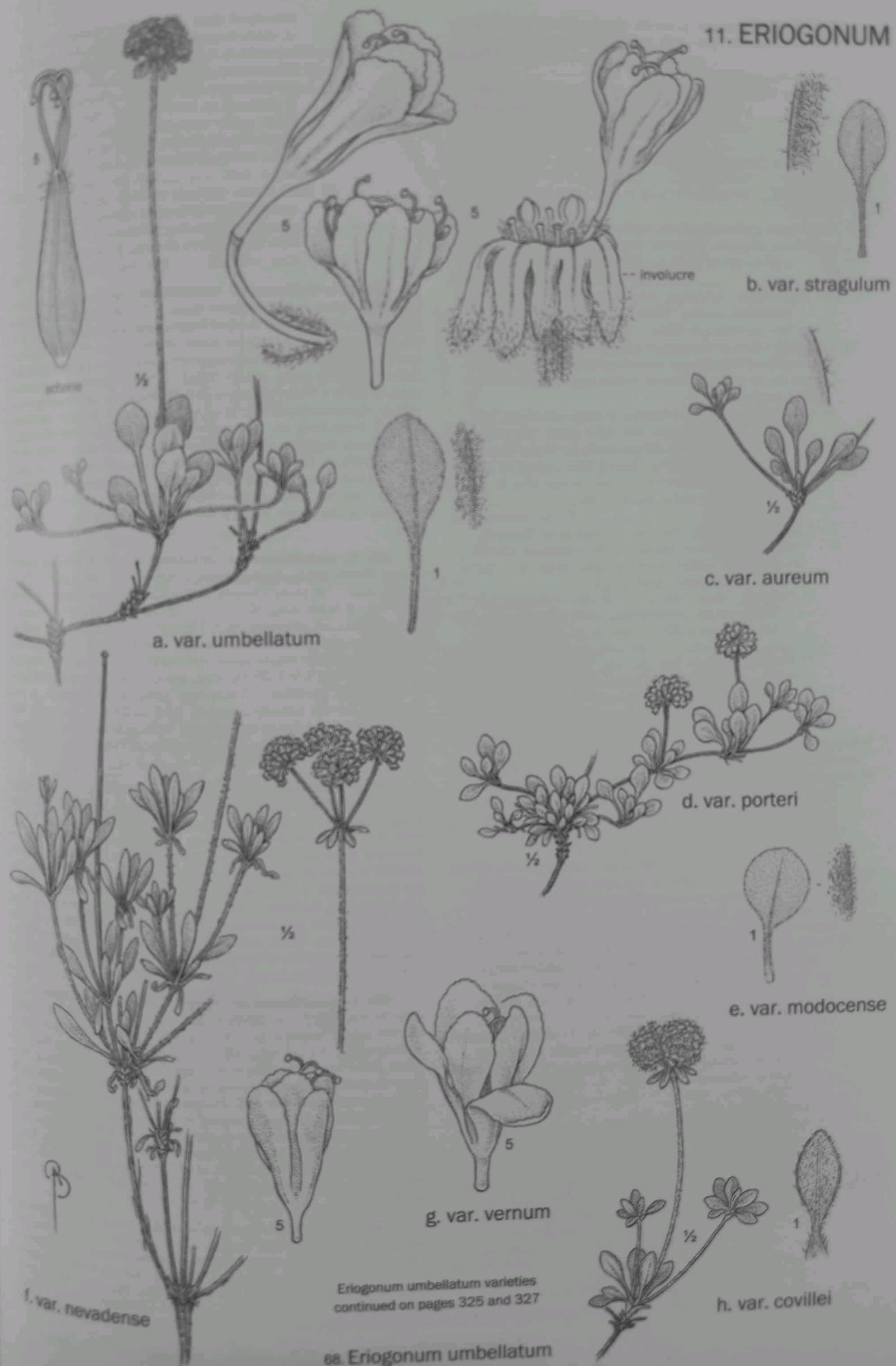
Although most of the variation in *Eriogonum umbellatum* is found in California, the Intermountain West has its share. Here we

treat 17 varieties within our borders, with two more just on its western edge noted. Most are easy to recognize and can be quickly separated using the following key. The degree of tomentum on the leaves is best judged using specimens in full flower or early fruit with fully expanded leaf blades. Immature specimens of entities that ultimately have glabrous or nearly glabrous leaf blades often have thinly floccose blades when young. Flower color is often possible to determine while the plant is still in bud, but older (or poorly prepared) specimens with faded flowers may be difficult to place. Simple or compound inflorescences are typically obvious prior to flowering. As the tender inflorescences are sometimes eaten, and such cropping can cause malformed inflorescences on individual plants, care should be taken to observe representative material in the field.

Gross misapplication of certain varietal names, especially in Utah, has resulted in a large number of misidentified specimens in herbaria. The name var. *majus*, for example, has been misapplied to numerous pale-flowered varieties of the species so that great care must be taken in using unannotated herbarium material when identifying collections. The same is true for specimens of var. *umbellatum*. Hopefully, the presentation here will alleviate the problems.

- 1 Inflorescences capitate or umbellate, not compound-umbellate or with any branches seemingly with a whorl of bracts about midlength.
- 2 Perianth bright yellow (pale yellow in some individuals of var. *vernatum* in Nev.).
- 3 Umbels congested with branches usually less than 2.5 cm long (immature specimen should also be keyed out in the alternative couplet).
 - 4 Plants prostrate and of high elev. (mostly above 3000 m); Sierra Nevada and White Mts., Calif. or Ruby Mts., Nev., Uinta and Wasatch Mts. of Utah, and in Cole Toiyabe, Toquima and East Humboldt ranges and Ruby Mts., Nev., and Wasatch Range and Uinta Mts. of Utah (s. to Iron Co.) 68d. var. *porteri* (Small) S. Stokes
 - 5 Leaf blades glabrous on both surfaces at full anthesis; Toiyabe, Toquima and East Humboldt ranges and Ruby Mts., Nev., and Wasatch Range and Uinta Mts. of Utah (s. to Iron Co.) 5 Leaf blades tomentose abaxially, less so and greenish adaxially; Sierra Nevada and White Mts., Calif. 68h. var. *covillei* (Small) Munz & Reveal
- 4 Plants erect to slightly spreading, not prostrate, mostly at lower elev.
- 6 Leaf blades glabrous on both surfaces; sc. Oregon, s. Idaho and sw. Mont., s. to Nev., Utah and w. Colo. 68c. var. *aureum* (Gand.) Reveal
- 6 Leaf blades lanate to tomentose or floccose at least abaxially at full anthesis.
 - 7 Leaf blades thinly tomentose abaxially, less so to thinly floccose or glabrous and green adaxially; mainly e. slope of the Sierra Nevada and in the Great Basin of e. Calif., Nev. and se. Oregon 68f. var. *nevadense* Gand.
 - 7 Leaf blades densely lanate or tomentose on abaxial surface, less so to floccose or glabrous and greenish adaxially.
 - 8 Larger leaf blades 1–3 (3.5) cm long, elliptic to ovate, densely white lanate to tomentose abaxially; plants forming spreading mats; w. Mont. and se. Idaho s. to n. and se. Utah, and s. Colo. 68a. var. *umbellatum*
 - 8 Larger leaf blades usually less than 1.5 cm long, mostly elliptic; plants subshrubs; ne. Calif., nw. Nev., se. Oregon and sw. Idaho 68e. var. *modocense* (Greene) S. Stokes
- 3 Umbels open with branches usually more than 2.5 cm long.
 - 9 Leaf blades glabrous on both surfaces at full anthesis; s. Idaho and sw. Mont., s. to Nev., Utah and w. Colo. 68c. var. *aureum* (Gand.) Reveal
 - 9 Leaf blades at least thinly tomentose abaxially.
 - 10 Leaf blades densely white-tomentose abaxially, less so to glabrous adaxially; w. Mont. and se. Idaho s. to n. and se. Utah, and s. Colo. 68a. var. *umbellatum*
 - 10 Leaf blades thinly tomentose or nearly so on both surfaces or glabrous adaxially.
 - 11 Plants low, spreading mats.
 - 12 Leaf blades broadly elliptic to ovate, (0.8) 2–3 (3.5) cm long, (0.7) 1–2 (2.5) cm wide, s. Idaho, w. Wyo., and possibly in extreme ne. Oregon; var. *strigulum* Reveal

11. ERIOGONUM

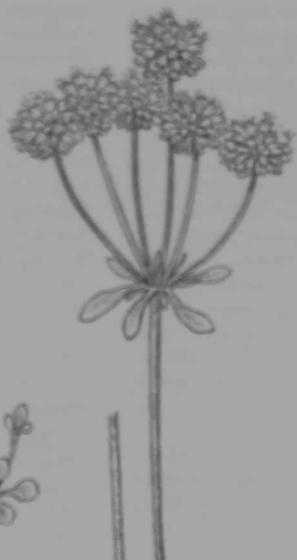


- 12 Leaf blades narrowly elliptic, 0.7–2.5 cm long, 0.3–1 cm wide; nc. Mohave Co., Ariz. 68k. var. *mohavense* Reveal
- 11 Plants shrubby.
- 13 Perianth mostly 4–7 mm long; mainly e. slope of the Sierra Nevada and in the Great Basin of e. Calif., Nev. and se. Oregon 68f. var. *nevadense* Gandy
- 13 Perianth mostly 6–10 mm long; e. Nye Co., Nev. 68g. var. *vernatum* Reveal
- 2 Perianth mostly whitish or cream to red, occasionally pale yellow.
- 14 Leaf blades glabrous on both surfaces.
- 15 Plants compact, prostrate mats, subalpine and alpine regions above 3300 m; Ruby Mts., Elko Co., Nev. 68i. var. *dichrocephalum* Gandy
- 15 Plants open, spreading mats; desert scrub to conifer woodlands, mostly (1500) 1950–3300 m; s. Idaho, ne. Nev., n. Utah, sw. Wyo. 68j. var. *desereticum* Reveal
- 14 Leaf blades densely floccose to tomentose or lanate at least abaxially at full anthesis, occasionally thinly floccose to glabrate on both surfaces in e. Nev. populations of var. *dichrocephalum*.
- 16 Leaf blades densely tomentose or lanate abaxially, less so and often glabrous and olive-green adaxially; plants forming dense compact mats up 10 dm across; perianth cream-colored; Rocky Mts. region of sw. Can. s. to Idaho, Utah and Colo.; in our area in se. Idaho, sw. Wyo. and n. and e. Utah 68l. var. *majus* Hook.
- 16 Leaf blades densely floccose to tomentose abaxially, less so to glabrous adaxially, the tomentum whitish or greenish; plants forming open mats to 5 dm across or subshrubs; desert ranges.
- 17 Perianth cream-colored to pale yellow in fruit; leaf blades mostly greenish adaxially; s. Idaho and w. Mont. s. to e. Calif., e. Nev., w. Utah and w. Wyo. 68i. var. *dichrocephalum* Gandy
- 17 Perianth yellow but quickly becoming reddish brown to pink with a large reddish spot on each outer tepal; leaf blades mostly reddish adaxially; se. Calif. and s. Nev. 68p. var. *versicolor* S. Stokes
- 1 Inflorescences compound-umbellate or at least with some of the branchlets seemingly with a whorl of bracts about midlength.
- 18 Flowering stems with a whorl of bracts seemingly midlength; branches of inflorescences occasionally with bracts seemingly about midlength along branches; perianth pale yellow, 4–7 mm long; Warner Mts., sc. Oregon (Lake Co.) and ne. Calif. (Modoc Co.) just w. of our boundary 68e. var. *glaberrimum* (Gandy) Reveal
- 18 Flowering stem without a whorl of bracts seemingly midlength; branches of inflorescences with bracts restricted to base of the inflorescence, involucres or peduncles, seemingly midlength only along some of the branches of the inflorescences.
- 19 Perianth cream to pale yellowish or rose or pink, or if yellow then quickly becoming pink, rose or reddish brown.
- 20 Perianth yellow, becoming reddish brown to rose or pink with a large reddish spot on each midrib; plants low, spreading mats; se. Calif. and s. Nev. 68p. var. *versicolor* S. Stokes
- 20 Perianth cream or whitish, or pale yellow to greenish yellow without a large reddish spot on the midribs; plants subshrubs or shrubs; se. Calif., s. Nev., s. Utah and nc. Ariz. 68q. var. *juniperinum* Reveal
- 19 Perianth bright yellow.
- 21 Leaf blades densely tomentose abaxially, less so to thinly floccose or glabrous adaxially; plants mainly along the northwestern edge of our area.
- 22 Flowering stems mostly tomentose, rarely nearly glabrous at maturity; leaf blades mostly 1–1.5 cm wide, the upper surface typically glabrous; Idaho, wc. Mont., e. Oregon and se. Wash.; just entering our area in sw. Idaho and se. Oregon 68m. var. *ellipticum* (Nutt.) Reveal
- 22 Flowering stems mostly sparsely floccose to glabrous; leaf blades mostly 0.3–0.8 (1.3) cm wide, the upper surface floccose to glabrous; Sierra Nevada of Calif. and w. Nev. (Washoe Co.) just w. of our boundary 68n. var. *furciforme* Reveal
- 21 Leaf blades thinly floccose to glabrous on both surfaces or, if tomentose abaxially, then plants of se. Utah.
- 23 Leaf blades sparsely floccose on both surfaces or, if glabrous on both surfaces, then plants of s. Utah, rarely tomentose abaxially in se. Utah; plants low subshrubs; mainly of the Great Basin and s. Colorado Plateau, se. Calif. e. to sw. Colo. and n. Ariz. 68n. var. *subaridum* S. Stokes
- 23 Leaf blades glabrous on both surfaces or infrequently sparsely floccose abaxially when young; plants low spreading subshrubs to shrubs, foot-hills of the Sierra Nevada, s. Mono and n. Inyo Cos., ec. Calif. 68o. var. *chlorothamnus* Reveal
- 68a. *E. umbellatum* var. *umbellatum*.** Common sulphur flower. Plants low often rather compact mats, 1–3.5 dm tall, 2–6 dm across; leaves in loose rosettes, the leaf blades mostly elliptic to ovate, 1–2.5 (3) cm long, 0.5–1.5 (1.8) cm wide, white- to gray-lanate abaxially, less so to floccose or more commonly glabrous and green adaxially; flowering stems erect, mostly 1–2.5 (3) dm long, tomentose to floccose, without a whorl of bracts about midlength; inflorescences umbellate, the branches 0.3–2.5 (8) cm long, mostly floccose; involucral tubes 2–3 mm long, the lobes 1.5–3 mm long; perianth bright yellow, 4–7 (8) mm long; $2n = 80$. Widespread and common, (1000) 1200–2700 (3100) m; Colo., e. Idaho, w. Mont., n. and se. Utah, w. and s. Wyo.; in our area from mts. of Idaho and Wyo. (Fremont and Lincoln Cos.) s. into the Uinta and n. Wasatch Ranges (s. to Utah Co.), and disjunct on the Abajo and La Sal Mts., San Juan Co., Utah. June–Sept.
- 68b. *E. umbellatum* var. *stragulum*** Reveal. Spreading sulphur flower. Plants low spreading mats, 1–3.5 (4) dm tall, 2.5–10 (15) dm across; leaves in loose rosettes; leaf blades broadly elliptic to ovate, (0.8) 2–3 (3.5) cm long, (0.7) 1–2 (2.5) cm wide, thinly tomentose to sparsely floccose abaxially, thinly floccose to glabrous and green adaxially; flowering stems erect, mostly 1–3 dm long, thinly floccose, without a whorl of bracts about midlength; inflorescences umbellate, the branches (1) 2.5–5 (8) cm long, mostly floccose; involucral tubes 2–3 mm long, the lobes 3–5 mm long; perianth bright yellow, 4–7 (8) mm long; $2n = 80$. Locally common, 1450–2450 m; se. Idaho, ne. Nev. and wc. Wyo.; n. edge of Snake River Plain s. to Bannock Co., Idaho, and tentatively in Elko Co., Nev. (Morefield & Price 5566, NY). May–Sept.
- 68c. *E. umbellatum* var. *aureum*** (Gandy) Reveal. Golden sulphur flower. Plants low often rather compact mats, 1–3.5 dm tall, 2–6 dm across; leaves in loose rosettes, the leaf blades mostly elliptic, 1–2 cm long, 0.5–1.5 cm wide, glabrous on both surfaces or essentially so; flowering stems erect, mostly 1–2 dm long, thinly floccose to glabrous, without a whorl of bracts about midlength; inflorescences umbellate, the branches 0.3–2 (2.5) cm long, typically glabrous; involucral tubes 1.8–3 mm long, the lobes 1–3 mm long; perianth bright yellow, 4–7 mm long. Widespread and common, (1450) 1650–3150 (3350) m; sc. Oregon, s. Idaho, sw. Mont. and w. Wyo. s. into Nev., Utah and w. Colo.; scattered on n. portion of the Great Basin and on the Snake River Plain, common throughout most of Utah. June–Sept.
- 68d. *E. umbellatum* var. *porteri*** (Small) S. Stokes. Porter's sulphur flower. Plants low, cespitose and prostrate mats, 0.2–0.6 dm tall, 1–5 dm across; leaves in tight rosettes, the leaf blades mostly elliptic to spatulate, 0.4–1.1 cm long, 0.3–0.8 cm wide, glabrous on both surfaces; flowering stems erect or nearly so, mostly 0.1–0.5 dm long, floccose to nearly glabrous, without a whorl of bracts about midlength; inflorescences umbellate and subcapitate or capitate, the branches less than 0.5 cm long, usually glabrous; involucral tubes 2–3 mm long, the lobes 2–3 mm long; perianth bright yellow, 3–6 mm long. Infrequent, (2450) 2750–3700 m; Toiyabe Range (Lander Co.), Toquima Range (Nye Co.), East Humboldt Range and Ruby Mts. (Elko Co.), Nev. and Wasatch Range and Uinta Mts. of Utah (s. to Iron Co.), and Colo. July–Sept.
- 68e. *E. umbellatum* var. *modocense*** (Greene) S. Stokes. Modoc sulphur flower. Plants low mats, 1–3.5 (4) dm tall, 1–3 (5) dm across; leaves in somewhat compact rosettes, the leaf blades mostly elliptic, (0.3) 1–1.5 (2) cm long, 0.1–1 (1.2) cm wide, densely tomentose abaxially, mostly glabrous and green adaxially; flowering stems erect, mostly 0.7–2.5 dm long, usually tomentose, without a whorl of bracts about midlength; inflorescences umbellate, the branches 3–10 (15) cm

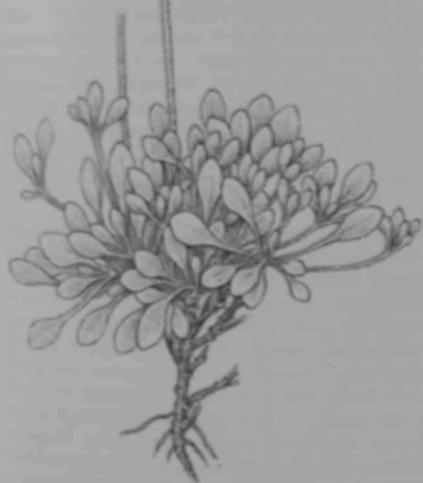
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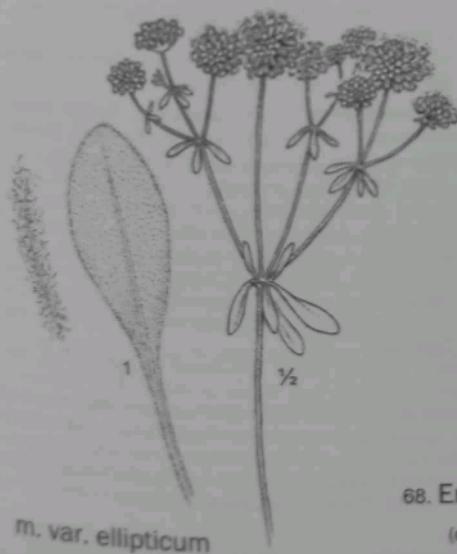
i. var. *dichrocephalum*



k. var. *mohavense*



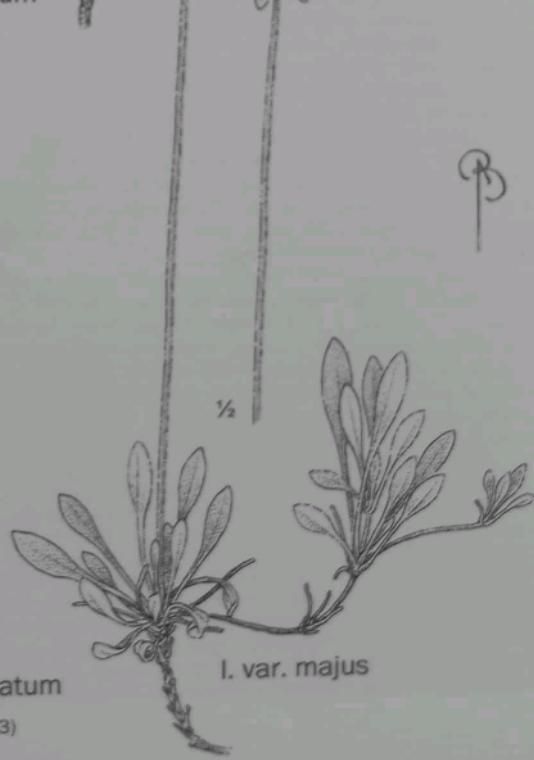
j. var. *desereticum*



m. var. *ellipticum*

68. *Eriogonum umbellatum*

(continued from page 323)



i. var. *majus*

long, usually tomentose; *involucral tubes* 2–3 mm long, the lobes 2–3 mm long, *perianth* bright yellow, 4–8 mm long. Common, (200) 600–2300 (2450) m; ne. Calif. (Lassen Co.) and nw. Nev. (Washoe Co.) n. to e. Oregon and sw. Idaho (e. to Camas, Gooding, Owyhee and Twin Falls Cos.). June–Sept.

68f. *E. umbellatum* var. *nevadense* Gandy. Nevada sulphur flower. Plants low, mostly spreading subshrubs, 1–5 dm tall, 2–6 dm across; *leaves* in rather open rosettes, the leaf blades mostly elliptic, 1–2 (2.5) cm long, 0.5–1.5 cm wide, thinly tomentose to floccose abaxially, less so to glabrous and green adaxially; *flowering stems* erect, mostly 1–3 dm long, thinly tomentose to nearly glabrous, without a whorl of bracts about midlength; *inflorescences* umbellate, the branches 0.3–3 (5) cm long, thinly tomentose to subglabrous; *involucral tubes* 2–3.5 mm long, the lobes 1.5–3.5 mm long; *perianth* bright yellow, 4–7 mm long; $2n = 80$. Common, (1050) 1500–3000 (3400) m; Sierra Nevada of e. Calif., and desert ranges in Nev. (e. to White Pine and Elko Cos.) and se. Oregon (Lake and Malheur Cos. in our area). June–Sept.

A single collection from Johnson Canyon in the Canyon Mountains southeast of Holden in eastern Millard Co., Utah (Goodrich 15832, BRY) may prove to be this variety, thereby greatly extending the range of var. *nevadense* in our area.

68g. *E. umbellatum* var. *vernus* Reveal. Spring-flowering sulphur flower. Plants dome-shaped shrubs, 3–6 (9) dm tall, 3–9 (13) dm across; *leaves* in rather open rosettes, the leaf blades elliptic, 0.5–2.5 cm long, 0.3–1 cm wide, thinly floccose abaxially, less so to glabrous and green adaxially with some individual blades glabrous on both surfaces; *flowering stems* erect, mostly 0.5–1.5 dm long, floccose to glabrous, without a whorl of bracts about midlength; *inflorescences* umbellate, the branches 3–8 cm long, mostly glabrous; *involucral tubes* 1.5–2.5 mm long, the lobes 2–3 mm long; *perianth* pale to bright yellow, (5) 6–9 (10) mm long. Infrequent, 1400–1950 (2200) m; endemic, e. of Tonopah, c. Nye Co., Nev. May–June.

68h. *E. umbellatum* var. *covillei* (Small) Munz & Reveal. Coville's sulphur flower. Plants low, typically prostrate mats, 0.5–1 dm tall, 1–5 dm across; *leaves* in tight rosettes, the leaf blades mostly narrowly elliptic, 0.3–0.6 (1) cm long, 0.2–0.4 (0.6) cm wide, white-tomentose abaxially, slightly less so and greenish adaxially; *flowering stems* spreading to erect, mostly 0.3–0.9 dm long, thinly tomentose to nearly glabrous, without a whorl of bracts about midlength; *inflorescences* compact umbellate, the branches 0.2–1 cm long, thinly tomentose to floccose; *involucral tubes* 1.5–2.5 mm long, the teeth 1–3 mm long; *perianth* bright yellow, 2–4 (5) mm long. Rare to infrequent, 3050–3550 m; Sierra Nevada and White Mts., Mono, Inyo and Tulare Cos., Calif. July–Sept.

68i. *E. umbellatum* var. *dichrocephalum* Gandy. Bicolor sulphur flower. Plants loose, spreading (rarely compact) mats, 1–3 (3.5) dm tall, (3) 5–10 dm across; *leaves* mostly in loose rosettes, the leaf blades elliptic to broadly elliptic, 1–2 (2.5) cm long, 0.5–1.5 (2) cm wide, tomentose to floccose abaxially, thinly tomentose to glabrous and green adaxially; *flowering stems* erect, mostly (0.5) 1–2.5 dm long, thinly tomentose to floccose or rarely glabrous, without a whorl of bracts about midlength; *inflorescences* umbellate, the branches 0.5–4 cm long, thinly tomentose; *involucral tubes* 2–3 mm long, the lobes 1–2.5 mm long; *perianth* pale yellow to cream or whitish, rarely greenish white, 4–8 mm long. Widespread and common, (1250) 1400–3050 (3400) m; se. Oregon, s. Idaho, w. Mont. and w. Wyo. s. to ne. Calif., n. and c. Nev. and w. Utah. June–Sept.

Considerable diversity is retained in var. *dichrocephalum* as circumscribed here. The plant is common throughout most of the Intermountain West (except the Colorado Plateau), being the predominant form of the species in our area, and while consistent throughout much of its range, plants in central Nevada (mainly Eureka Co.) will have both leaf surfaces thinly floccose to glabrate. Also, as might be expected, this widely distributed plant tends to merge with other expressions. On the White Mountains of the California–Nevada border, the var. *dichrocephalum* and var. *versicolor* are difficult to distinguish. Also, a distinction between var. *nevadense* and var. *dichrocephalum* is difficult in the same area, and it is likely that some of the plants are merely cream-flowered expressions of var. *nevadense* (e.g., Maguire & Holmgren 26032, NY). There are some low, matted, high-elevation populations of var. *dichrocephalum* that mirror the bright yellow-flowered var. *porteri*. In the Ruby Mountains of Nevada one finds this matted expression with densely tomentose lower leaf surfaces and green, thinly floccose or glabrous upper surfaces that turn red with age (e.g., Maguire & Holmgren 22114, N. H. Holmgren et al. 10281, NY); a similar plant is atop the East Humboldts (Heller 9149, CAS). This de-

pauperate phase also is found atop Eagle Peak in the Warner Range in California (Holmgren & Reveal 1720, NY) and the summit of Steens Mountain in Oregon (Cronquist 8784; Holmgren & Reveal 2881, NY). This alpine expression is worthy of a place in the garden.

68j. *E. umbellatum* var. *desereticum* Reveal. Deseret sulphur flower. Plants loose, spreading mats, 1–3.5 (4) dm tall, 3–6 dm across; *leaves* in loose rosettes, the leaf blades mostly elliptic, 1–2 (2.5) cm long, 0.5–1.5 (2) cm wide, glabrous on both surfaces at full anthesis; *flowering stems* erect, mostly 1–3 dm long, thinly floccose to glabrous, without a whorl of bracts about midlength; *inflorescences* umbellate, the branches 2–4.5 (5.5) cm long, glabrous; *involucral tubes* long, the lobes 1–2.5 mm long; *perianth* pale yellow to cream, 4–8 mm long. Common, (1500) 1950–3300 m; s. Idaho, sw. Mont. and sw. Wyo. ranges of Idaho (Owyhee Co.), Nev. (Elko Co.), and Utah (Box Elder Co.), more common in the Uinta Mts. and Wasatch Range of Utah (s. to Sanpete Co.) and in Uinta Co., Wyo. June–Sept.

68k. *E. umbellatum* var. *mohavense* Reveal. Mohave sulphur flower. Plants mostly low, spreading mats, 0.5–2 dm tall, 1–3 dm across; *leaves* mostly in rather tight rosettes, the leaf blades narrowly elliptic, 0.7–2.5 cm long, 0.3–1 cm wide, thinly floccose on both surfaces or glabrous adaxially; *flowering stems* erect or nearly so, (0.3) 0.5–1.5 (2) dm long, floccose, without a whorl of bracts about midlength; *inflorescences* umbellate, the branches 2.5–8 cm long, thinly floccose to glabrous; *involucral tubes* 2–3 mm long, the lobes 1.5–3 mm long; *perianth* bright yellow, 3–7 mm long. Infrequent, 1250–1600 m; endemic, Ariz. Strip, n. Mohave Co., Ariz. May–June.

68l. *E. umbellatum* var. *majus* Hook. Subalpine sulphur flower. Plants large prostrate and spreading, compact mats, 1–4.5 (5) dm tall, 2–8 (10) dm across; *leaves* in loose rosettes, the leaf blades oblanceolate to elliptic, (0.3) 0.5–2 (4) cm long, 0.3–1 (1.5) cm wide, densely whitish, greenish or reddish lanate abaxially, olive-green to bright green and glabrous adaxially; *flowering stems* erect, mostly 1.5–3 dm long, usually floccose, without a whorl of bracts about midlength; *inflorescences* umbellate, the branches (2) 3–9 cm long, usually floccose; *involucral tubes* 2–3.5 mm long, the lobes 1–4 mm long; *perianth* cream-colored, 3–7 (9.5) mm long; $2n = 76$. Widespread and common, (800) 1200–2800 (3500) m; mainly in the Rocky Mts. from s. B.C. and sw. Alta. s. to e. Wash., Utah and Colo.; in our area mainly along the n. edge of the Snake River Plain, mts. of e. Idaho, sw. Wyo., and n. Wasatch and Uinta Ranges s. to Salt Lake and Summit Cos., and disjunct to Sevier and Wayne Cos., Utah. June–Sept.

68m. *E. umbellatum* var. *ellipticum* (Nutt.) Reveal. Starry sulphur flower. Plants low, often rather compact mats, 1–3.5 dm tall, 2–5 dm across; *leaves* in loose rosettes, the leaf blades mostly elliptic, (0.5) 1.5–3 (4) cm long, (0.3) 1–1.5 cm wide, tomentose abaxially, less so to floccose or more commonly glabrous and green adaxially; *flowering stems* erect, mostly 0.7–2 (3) dm long, thinly floccose to glabrous, without a whorl of bracts about midlength; *inflorescences* compound-umbellate, divided 2–4 times, thinly floccose to glabrous; *involucral tubes* 2–4 mm long, the lobes 2–4 mm long; *perianth* bright yellow, 6–8 mm long. Common, 700–2400 m; se. Wash. and e. Oregon e. across Idaho to w. Mont.; uncommon in our area, n. Harney and Malheur Cos., Oregon, and n. Ada and Washington Cos., Idaho, disjunct in the Dry Creek Basin of Malheur Co., and the Owyhee Mts., Owyhee Co., Idaho. June–Sept.

The related var. *furcosum* Reveal (Sierra Nevada sulphur flower) occurs in the Sierra Nevada to our west.

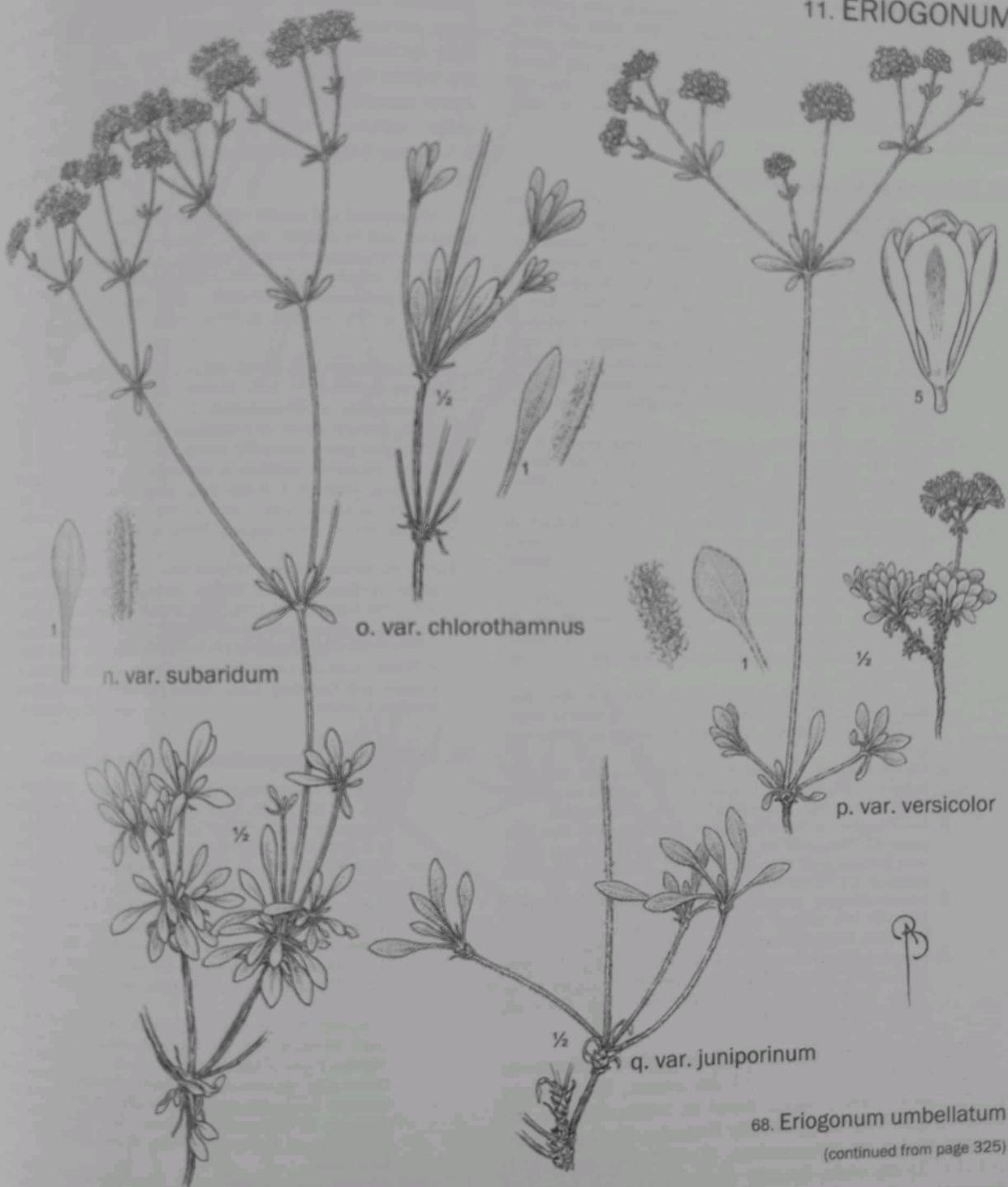
68n. *E. umbellatum* var. *subaridum* S. Stokes. Ferris' sulphur flower. Plants mostly low to rounded subshrubs (rarely shrubs), 2–7 dm tall, 3–9 (12) dm across; *leaves* in rather loose rosettes, the leaf blades elliptic, 1–3 cm long, 0.5–2 cm wide, thinly floccose on both surfaces or glabrous and green adaxially, rarely glabrous on both surfaces or tomentose adaxially; *flowering stems* erect, (0.5) 1–3 dm long, floccose to glabrous, without a whorl of bracts about midlength; *involucral tubes* 2–3 (3.5) mm long, the lobes 1–3 mm long; *perianth* bright yellow, 3–7 mm long. Common, 1250–3050 m; s. Calif. e. across s. Nev., n. Ariz. and Utah to sw. Colo. June–Oct.

As here defined, some low-elevation populations (mainly in Washington Co., Utah, e.g., Neese & Neese 9633; Thorne & Welsh 15194; Welsh et al. 27166, BRY) approach var. *chlorothamnum* in that individual plants can have glabrous leaf blades in late anthesis or in fruit. A few populations in southeastern Utah (e.g., Welsh & Thorne 25091, BRY) have densely tomentose abaxial leaf blades, and thus approach var. *munzii* Reveal of southern California.

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11. ERIOGONUM

68. *Eriogonum umbellatum*

(continued from page 325)

68a. *E. umbellatum* var. *chlorothamnus* Reveal. Sherwin Grade sulphur flower. Plants erect to rounded subshrubs or shrubs, (4) 5–10 dm tall, 5–12 dm across; leaves in rather loose rosettes, the leaf blades oblanceolate to narrowly elliptic, 0.5–2 cm long, 0.3–1 cm wide, glabrous on both surfaces or nearly so; flowering stems erect, 1–2.5 dm long, glabrous, without a whorl of bracts about midlength; inflorescences compound-umbellate, divided 2–5 times; involucral tubes 2–3 mm long, the lobes 1–1.5 mm long; perianth bright yellow, 1–2 mm long. Infrequent, 1600–2600 (2850) m; Inyo, Mono and Tuolumne Cos., Calif. July–Sept.

68p. *E. umbellatum* var. *versicolor* S. Stokes. Panamint sulphur flower. Plants large, spreading to somewhat prostrate mats, 1–3 dm tall, 1–4 dm across, leaves mostly in loose rosettes, the leaf blades mostly elliptic, 0.5–1.5 cm long, 0.3–1 cm wide, thinly tomentose on both surfaces, sometimes nearly or quite glabrous and green, sometimes

becoming reddish adaxially; flowering stems erect or nearly so, mostly 0.5–1.5 dm long, floccose, without a whorl of bracts about midlength; inflorescences umbellate or compound-umbellate, the branches 5–10 cm long, floccose; involucral tubes 2–3 mm long, the lobes 1–2 mm long; perianth yellow but quickly becoming reddish brown to rose, 3–6 mm long. Infrequent, 1900–3250 m; Inyo and s. Mono Cos., Calif. e. into Lyon, Clark, s. Eureka, Lincoln, Nye and White Pine Cos., Nev. June–Sept.

68q. *E. umbellatum* var. *juniporinum* Reveal. Juniper sulphur flower. Plants subshrubs or shrubs, 4–8 dm tall, 5–10 dm across; leaves in rather loose rosettes, the leaf blades elliptic, (0.7) 1–2 cm long, (0.3) 0.5–1 (1.2) cm wide, floccose to glabrous on both surfaces; flowering stems erect, 1–2.5 dm long, floccose to glabrous, without a whorl of bracts about midlength; inflorescences compound-umbellate, divided

2–5 times, floccose or glabrous; involucral tubes (2.5) 3–3.5 mm long, the lobes 1–2.5 mm long, perianth cream or whitish or pale yellow to greenish yellow, (4) 5–6 mm long, infrequent, 1350–2300 (2450) m, ne. San Bernardino and se. Inyo Cos., Calif. e. to n. Lincoln and s. White Pine (Schell Creek and Snake Ranges) Cos., Nev., the Beaver Dam Mts. of Washington Co., Navajo Mtn., San Juan Co., Utah, and on the northern edge of the Kaibab Plateau, Coconino Co., Ariz. June–Oct.

69. *Eriogonum heracleoides* Nutt.

- Eriogonum heracleoides* Nutt., J. Acad. Nat. Sci. Philadelphia 7: 49. 1834. (N. J. Wyeth s.n., "sources of the Missouri," along the Henry's Fork of the Snake River, Fremont Co., Idaho, 8 July 1833; holotype BM!) = var. *heracleoides*.
E. angustifolium Nutt., Proc. Acad. Nat. Sci. Philadelphia 4: 15. 1848. *E. heracleoides* var. *angustifolium* (Nutt.) Torr. & A. Gray, Proc. Amer. Acad. Arts 8: 159. 1870. *E. heracleoides* subsp. *angustifolium* (Nutt.) Piper, Contr. U.S. Natl. Herb. 11: 238. 1906. (T. Nuttall s.n., "western slopes of the Rocky Mountains," probably along the Columbia River in Oregon or Wash. in 1835; holotype: BM!) = var. *heracleoides*.
E. gyroptilum Nutt., Proc. Acad. Nat. Sci. Philadelphia 4: 15. 1848. (T. Nuttall s.n., "Rocky Mountains of the Plate," probably along the Sweetwater River, Fremont Co., Wyo., 8–14 July 1834; holotype: BM!) = var. *heracleoides*.
E. heracleoides var. *minus* Benth. in A. P. de Candolle & A. L. P. P. de Candolle, Prodri. 14: 11. 1856. (H. H. Spalding s.n., Clearwater, near Spalding, Nez Perce Co., Idaho, 2 May 1846; holotype: K!) = var. *heracleoides*.
E. douglasii subsp. *ramosissimum* Piper, Contr. U.S. Natl. Herb. 11: 236. 1906. *E. caespitosum* subsp. *ramosissimum* (Piper) S. Stokes, Eriogonum 103. 1936. (*K. Whited* 643, e. of Ellensburg, Kittitas Co., Wash., 29 May 1898; holotype: US!) = var. *leucophaeum*.
E. heracleoides var. *microanthum* Gandy, Bull. Soc. Roy. Bot. Belgique 42: 189. 1906. (W. N. Suksdorf 695, without locality, Spokane Co., Wash., 23 June 1884; holotype: LY!) = var. *heracleoides*.
E. heracleoides var. *multiceps* Gandy, Bull. Soc. Roy. Bot. Belgique 42: 190. 1906. (W. C. Casick 1732, without location, e. Oregon, July 1897; holotype: LY!) = var. *heracleoides*.
E. heracleoides var. *rydbergii* Gandy, Bull. Soc. Roy. Bot. Belgique 42: 190. 1906. (P. A. Rydberg & E. A. Bessey 5336, near Indian Creek, probably Park Co., Mont., 21 July 1897; holotype: LY!) = var. *heracleoides*.
E. heracleoides var. *utahense* Gandy, Bull. Soc. Roy. Bot. Belgique 42: 190. 1906. (J. H. Linford s.n., Cache Valley, Cache Co., Utah, 1900; holotype: LY!) = var. *heracleoides*.
E. heracleoides var. *leucophaeum* Reveal, Phytologia 25: 200. 1973. (N. H. Holmgren & J. L. Reveal 2730, 0.3 mi ne. of Tyler, Spokane Co., Wash., 19 June 1966; holotype: US!) = var. *leucophaeum*.

Plants low, spreading, freely branched herbaceous perennials, 1–6 dm tall, 2–10 dm across, infrequently polygamodioecious; leaves basal in loose rosettes, the petioles 0.5–3 cm long, usually floccose, the leaf blades mostly linear to oblanceolate, (1) 2–5 cm long, (0.1) 0.4–1 (1.5) cm wide, densely white or grayish lanate to tomentose abaxially, thinly floccose to glabrous and green adaxially, rarely lanate on both surfaces, the margins plane; flowering stems erect, (0.5) 1–3 (4) dm long, tomentose to floccose, nearly always with a whorl of (2) 5–10, linear to oblanceolate, foliaceous bracts about midlength, these similar to leaves only 0.5–4 (5) cm long, 0.2–1 (1.5) cm wide; inflorescences umbellate or compound-umbellate, rarely reduced and compact, 1–10 cm long and wide, tomentose to floccose; bracts 3 to several, foliaceous at first node and oblanceolate to linear, 0.3–1 cm long, 0.2–0.4 cm wide, otherwise mostly scalelike and 1–5 mm long, 0.5–2.5 mm wide; peduncles lacking; involucres solitary, turbinate to campanulate,

3–4.5 mm long, 2.5–5 (6) mm wide, tomentose, rarely glabrous abaxially, the lobes reflexed, 1.5–6 (8) mm long, perianth white to cream or ochroleucous, 4–9 mm long including 1.5–3 mm long stipe, glabrous abaxially, the tepals monomorphic, spatulate to oblong-ovate; stamens exserted, 4–8 mm long, the filaments pubescent; achenes trigonous, light to dark brown, (2) 3.5–5 mm long, glabrous except for a sparsely pubescent beak.

Widespread and common in sagebrush and mixed grassland communities, and in juniper, oak or montane conifer woodlands, infrequently on the edges of moist meadows, in aspen groves or in subalpine grasslands, mainly on flats and gentle slopes on sandy to gravelly or rocky soil and outcrops, 200–3050 (3500) m; s. B.C. and s. Alta, s. ne. Calif., n. Nev., e. Utah, w. Wyo. and nw. Colo., distinct to n. Ariz. May–Sept.

1 Flowering stems with a well-defined whorl of foliaceous bracts about midlength; leaf blades mostly linear to linear-oblanceolate or oblanceolate, 2–5 cm long, 0.2–1 (1.5) cm wide, densely lanate to tomentose abaxially, floccose to glabrous and green adaxially, rarely densely lanate on both surfaces; involucres turbinate to campanulate, the lobes 1.5–6 (8) mm long, perianth 4–8 mm long, range of the species; a portion of our area s. to ne. Calif., e. Nev. and e. Utah, distinct to Coconino Co., Ariz., parsnip-flower wild buckwheat

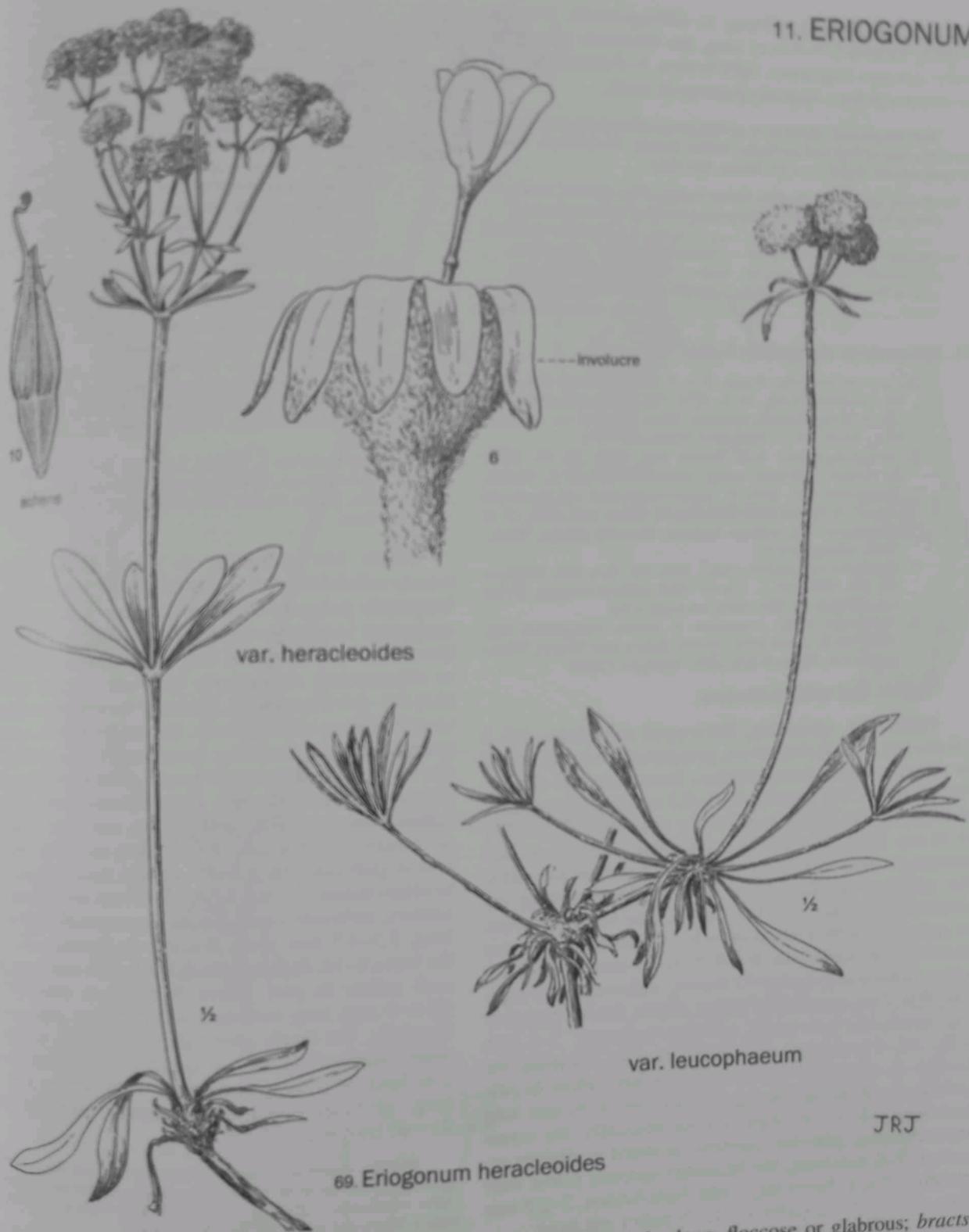
var. *leucophaeum*
 1 Flowering stems bractless or with only a single foliaceous bract about midlength; leaf blades mostly linear-oblanceolate, 1.5–3 cm long, 0.2–0.5 cm wide, densely lanate to tomentose on both surfaces; involucres mostly campanulate, the lobes 2.5–3.5 mm long, perianth (5) 6–9 mm long; nw. and e. Idaho, e. Wash.; Lincoln Co., Idaho, and just n. of our boundary in Camas and Gooding Cos., Idaho; bractless parsnip-flower wild buckwheat

var. *leucophaeum* Reveal

70. *Eriogonum compositum* Douglas ex Benth.

- Eriogonum compositum* Douglas ex Benth., Edwards's Bot. Reg. 21: ad t. 1774. 1835. (*D. Douglas* 232, Columbia River, Oregon or Wash., "1829" (certainly an error as Douglas was in London much of that year); lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 163. 2004, at K!) = var. *compositum*.
E. tolmiranum Hook., Fl. Bot.-Amer. 2: 134. 1838. *E. umbellatum* var. *monocephalum* Torr. & A. Gray, Proc. Amer. Acad. Arts 8: 160. 1870. *E. umbellatum* var. *tolmiranum* (Hook.) M. E. Jones, Contr. W. Bot. 11: 6. 1903, nom. illeg. (W. F. Tolmie s.n., "banks of the walla-walla" River, Walla Walla Co., Wash., probably 1836; holotype: K!) = var. *tolmiranum*.
E. compositum var. *leianthum* Hook., Hooker's J. Bot. Kew Gard. Misc. 5: 264. 1853. *E. compositum* subsp. *leianthum* (Hook.) Piper, Contr. U.S. Natl. Herb. 11: 237. 1906. (C. A. Geyer 470, "on bare trap rock upper Pelouse [Palouse] River between Spokane[e] and Kooskookie [=Clearwater River]," probably in Whitman Co., Wash., July 1844; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 163. 2004, at K!) = var. *leianthum*.
E. heracleoides var. *simplex* S. Watson ex Piper, Contr. U.S. Natl. Herb. 11: 238. 1906. *E. compositum* var. *simplex* (S. Watson ex Piper) St. John & F. A. Warren, Res. Stud. State Coll. Washington 1: 87. 1929. (S. Watson 351, banks of the Columbia River opposite the mouth of the Wenatchee River, Douglas Co., Wash., 14 Oct 1880; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 163. 2004, at GH!) = var. *leianthum*.
E. compositum var. *piliculae* St. John & F. A. Warren, Res. Stud. State Coll. Washington 1: 86. 1929, ap. "Piliculae." *E. piliculae* (St. John & F. A. Warren) G. N. Jones, Univ. Washington Publ. Biol. 7: 70. 1938. (O. D. Allard 296, Goat Mts., Pierce Co., Wash., 12 Aug 1898; holotype: WS!) = var. *compositum*.
E. johnstonii S. Stokes, Leaf. W. Bot. 1: 35. 1933, ap. "Johnstonii." (*E. C. Johnston* s.n., La Grande, Union Co., Oregon, 28 July 1931; holotype: CAS!) = var. *johnstonii*.
E. compositum var. *citrinum* S. Stokes, Eriogonum 122: 103. (A. Eastwood & J. T. Howell 1767, near Yreka, along the

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69. *Eriogonum heracleoides*

Shasta River, Siskiyou Co., Calif., 20 Apr 1934; holotype:
CAS) = var. *compositum*.

Plants stout, erect herbaceous perennials, 4–7 dm tall, 2–5 dm across, infrequently polygamodioecious; leaves basal, solitary or occasionally in rosettes, the petioles 4–10 (15) cm long, tomentose, the leaf blades lanceolate to ovate or deltoid, (2) 7–25 cm long, (1) 1–8 cm wide, densely white lanate to tomentose abaxially, less so to glabrate and greenish adaxially, the margins plane; flowering stems erect, often fistulose, 1–5 dm long, flocose or glabrous; inflorescences umbellate or compound-

umbellate, 0.3–2 dm long, flocose or glabrous; bracts 3 to several and foliaceous or semifoliaceous at lower nodes, linear to linear-lanceolate, 1–3 (6) cm long, scale-like at uppermost nodes and usually 1–5 mm long, 0.5–3 mm wide; peduncles lacking; involucres solitary, turbinete-campanulate to campanulate, 6–10 mm long, 4–10 mm wide, sparsely to densely lanate or glabrous abaxially, sometimes weakly glandular-puberulent, the teeth (5) 7–10, erect to weakly reflexed, 2–4 mm long; perianth pale to deep lemon-yellow, 4–6 mm long including 0.7–1.5 mm long stipe, glabrous abaxially, the

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wide, those of inner whorl oblanceolate to oblong, 3–4 mm long and 1–2 mm wide; stamens included to slightly exserted, 2–5 mm long, the filaments pilose basally; achenes trigonous, light brown to brown, 3–3.5 mm long, glabrous.

Widespread and common on a wide variety of soils and ecological settings mainly in mixed grasslands and sagebrush communities, and in oak and conifer woodlands, 100–2700 m; e. Wash. to w. Mont. s. to n. Calif. and n. Nev. May–Sept.

- 1 Flowering stems and inflorescence branches glabrous; perianth white, 3–6 mm long; leaf blades mostly elliptic to ovate, 1–4 cm long, densely white-tomentose adaxially, thinly floccose or glabrous abaxially; inflorescences (2) 5–20 cm long; involucres 4–5 mm long, 1.5–3 mm wide, glabrous or floccose on the ridges and sinuses; sandy to gravelly flats and slopes in mixed grassland and sagebrush communities, and in scattered conifer woodlands, (100) 450–1400 (1750) m; wc. Idaho, ne. Oregon, and se. Wash., just entering our area in Washington Co., Idaho; strict wild buckwheat var. *strictum*
- 1 Flowering stems and inflorescence branches densely floccose to tomentose.
 - 2 Perianth white to purplish or reddish, 3–5 mm long; leaf blades broadly elliptic to ovate, 1–3 cm long, grayish tomentose to floccose on both surfaces or greenish tomentose to floccose adaxially; inflorescences 5–15 cm long; involucres 4–6 mm long, 2–4 mm wide, tomentose; sandy to gravelly flats and slopes mainly in sagebrush communities, and in montane conifer woodlands, (150) 450–2700 m; essentially the range of the species but scattered, in our area in se. Oregon, wc. and sc. Idaho, s. Lassen Co., Calif., and Elko Co., Nev.; proliferous wild buckwheat var. *proliferum* (Torr. & A. Gray) C. L. Hitchc.
 - 2 Perianth yellow, 3–4.5 mm long; leaf blades mostly ovate, 0.5–2 cm long, grayish tomentose or floccose on both surfaces; inflorescences 1–3 (5) cm long; involucres 4–5.5 mm long, 4–5 mm wide, tomentose; sandy to gravelly flats and slopes in sagebrush communities and conifer woodlands, (150) 450–2550 m; e. Wash., sw. Idaho, and e. Oregon s. to ne. Calif. and nw. Nev., scattered in our area in se. Oregon and wc. Idaho, ne. Calif. (Modoc Co.) s. to Storey and Washoe Cos., and e. to nw. Humboldt Co., Nev.; Goose Lake wild buckwheat var. *anserinum* (Greene) S. Stokes

66. *Eriogonum ovalifolium* Nutt.

Eriogonum ovalifolium Nutt., J. Acad. Nat. Sci. Philadelphia 7: 50. 1834. *Eucycla ovalifolia* (Nutt.) Nutt., Proc. Acad. Nat. Sci. Philadelphia 4: 16. 1848. (*N. J. Wyeth* s.n., "source of the Missouri . . . June," likely Lost River Valley, Custer Co., Idaho, 3–15 June 1833; holotype: PH!) = var. *ovalifolium*.

Eriogonum tenellum Nutt., Proc. Acad. Nat. Sci. Philadelphia 4: 16. 1848, nom. illeg., non Torr., 1828. *Eriogonum nuttallii* Gammel in Nutt., J. Acad. Nat. Sci. Philadelphia, n.s. 1: 165. 1848. *Eriogonum purpureum* var. *tenuissimum* Benth. in A. P. de Candolle & A. L. P. P. de Candolle, Prodr. 14: 10. 1856. (*T. Nuttall* s.n., "in the Rocky Mountains, on the western slopes," probably w. of South Pass, Sweetwater Co., Wyo., 14–18 June 1834; holotype: BM!) = var. *purpureum*.

Eucycla purpurea Nutt., Proc. Acad. Nat. Sci. Philadelphia 4: 17. 1848. *Eriogonum purpureum* (Nutt.) Benth. in A. P. de Candolle & A. L. P. P. de Candolle, Prodr. 14: 10. 1856. *Eriogonum ovalifolium* var. *purpureum* (Nutt.) Durand, Trans. Amer. Philos. Soc., n.s. 11: 175. 1860. *Eriogonum ovalifolium* subsp. *purpureum* (Nutt.) A. Nelson ex S. Stokes, Eriogonum 68. 1936. (*T. Nuttall* s.n., "Rocky Mountain of the Platte," probably along the Platte River in Converse or Natrona Cos., Wyo., 3–7 June 1834; holotype: BM!) = var. *purpureum*.

Eriogonum oblongifolium var. *minus* Benth. in A. P. de Candolle & A. L. P. P. de Candolle, Prodr. 14: 13. 1856. (*W. D. Brackenridge* s.n. [Wilkes expedition], Spokane River, Stevens Co., Wash., 21 June 1841; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 190. 2004, at NY!) = var. *purpureum*.

Eriogonum niveum Canby ex Coville, Contr. U.S. Natl. Herb. 4: 187. 1893. *Eriogonum ovalifolium* var. *nivale* (Canby ex Coville) M. E. Jones, Contr. W. Bot. 11: 8. 1903. (*F. V. Coville*

& F. Funston

1857, near Whitney Meadows, Tulare Co., Calif., 20 Aug 1891; holotype: US!) = var. *nivale*. *Eriogonum ovalifolium* var. *depressum* Blank., Monatss. Agric. Sci. Stud. Bot. 1: 49. 1905. *Eriogonum depressum* (Blank.) Rydb., Bull. Torrey Bot. Club 39: 308. 1912. (*J. W. Blankinship* s.n., Black Butte, Tobacco Root Range, Madison Co., Mont., 11 Aug 1902; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 189. 2004, at MONT!) = var. *depressum*.

Eriogonum orthocaulon Small, Bull. Torrey Bot. Club 39: 31. 1906. *Eriogonum ovalifolium* var. *celatum* A. Nelson, Bot. Gaz. 52: 262. 1911, a substitute name for both *Eriogonum orthocaulon* and *Eriogonum ochroleucum* Small ex Rydb., typified on *Eriogonum orthocaulon* by C. L. Hitchc., Univ. Washington Publ. Biol. 17(2): 127. 1964. *Eriogonum ovalifolium* var. *orthocaulon* (Small) C. L. Hitchc., Univ. Washington Publ. Biol. 17(2): 127. 1964, nom. illeg. G. E. Osterhout 2125, Rifle, Garfield Co., Colo., 23 June 1960; holotype: NY!) = var. *purpureum*.

Eriogonum dichroanthum Gand., Bull. Soc. Roy. Bot. Belgique 42: 193. 1906. (*A. Nelson* 4658, in part, Cokeville, Lincoln Co., Wyo., 11 June 1898; holotype: LY!) = var. *purpureum*. *Eriogonum ovalifolium* var. *cerastoides* Gand., Bull. Soc. Roy. Bot. Belgique 42: 194. 1906. (*J. W. Blankinship* s.n., Great Falls, Cascade Co., Mont., 10 July 1900; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 189. 2004, at LY!) = var. *ovalifolium*.

Eriogonum ovalifolium var. *cyclophyllum* Gand., Bull. Soc. Roy. Bot. Belgique 42: 194. 1906. (*J. W. Blankinship* s.n., Great Falls, Cascade Co., Mont., 19 July 1900; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 190. 2004, at LY!) = var. *purpureum*.

Eriogonum ovalifolium var. *deltoides* Gand., Bull. Soc. Roy. Bot. Belgique 42: 193. 1906. (*J. W. Blankinship* s.n., Baldwin Ranch, upper Madison River, Madison Co., Mont., 8 July 1899; holotype: LY!) = var. *ovalifolium*.

Eriogonum ovalifolium var. *multiscapitatum* Gand., Bull. Soc. Roy. Bot. Belgique 42: 194. 1906. (*A. Nelson* 4658, in part, Cokeville, Lincoln Co., Wyo., 11 June 1898; holotype LY!) = var. *ovalifolium*.

Eriogonum ovalifolium var. *nevadense* Gand., Bull. Soc. Roy. Bot. Belgique 42: 193. 1906. (*P. B. Kennedy* s.n., hills near Truckee River, Washoe Co., Nev., 4 May 1901; holotype LY!) = var. *ovalifolium*.

Eriogonum ovalifolium var. *utahense* Gand., Bull. Soc. Roy. Bot. Belgique 42: 194. 1906. (*J. H. Linford* s.n., without location, Cache Co., Utah, 4 July 1897; holotype: LY!) = var. *purpureum*.

Eriogonum roseiflorum Gand., Bull. Soc. Roy. Bot. Belgique 42: 194. 1906. (*W. C. Cusick* 2751, Sycan [given as "Cyan"] Valley, Lake Co., Oregon, 13 Aug 1901; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 190. 2004, at LY!) = var. *purpureum*.

Eriogonum rubidum Gand., Bull. Soc. Roy. Bot. Belgique 42: 194. 1906. (*W. C. Cusick* 2039, head of Wild Horse Creek, Steens Mtn., Harney Co., Oregon, 15 July 1898; holotype LY!) = var. *depressum*.

Eriogonum rubidum var. *frigidum* Gand., Bull. Soc. Roy. Bot. Belgique 42: 194. 1906. (*P. A. Rydberg* & E. A. Betsey 1138, Old Hollowtop near Pony, Madison Co., Mont., 9 July 1892; holotype: LY!) = var. *depressum*.

Eriogonum rhodanthum A. Nelson & P. B. Kenn., Proc. Biol. Soc. Washington 19: 35. 1906. (*P. B. Kennedy* 1184, Mt. Rose, Washoe Co., Nev., 17 Aug 1905; holotype: NESH!) = var. *eremicum*.

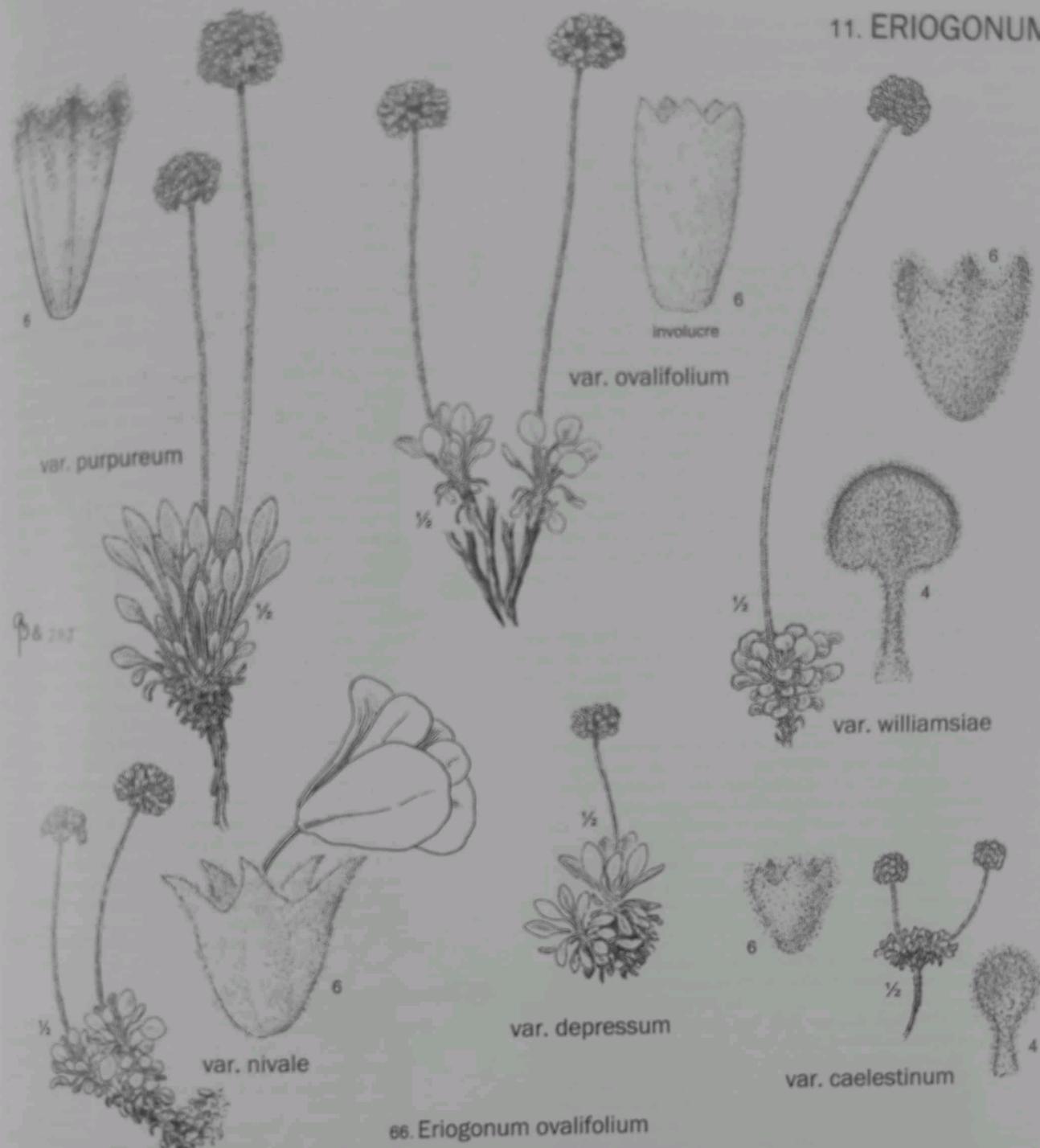
Eriogonum eximium Tidestr., Proc. Biol. Soc. Washington 36: 181. 1923. *Eriogonum ovalifolium* subsp. *eximium* (Tidestr.) S. Stokes, Eriogonum 68. 1936. *Eriogonum ovalifolium* var. *eximium* (Tidestr.) J. T. Howell, Mentzelia 1: 19. 1976. (*A. J. Heller* 10649, near Franktown, Washoe Co., Nev., 16 Aug 1912; holotype: US!) = var. *eximium*.

Eriogonum daviscianum S. Stokes, Leaflet W. Bot. 3: 200. 1940; holotype: IDS; isotype: IDS) = var. *purpureum*.

Eriogonum ovalifolium var. *caelestinum* Reveal, Great Basin Naturalist 32: 115. 1972. (*J. L. Reveal* 629, South Fork of Pine Creek, Toquima Range, Nye Co., Nev., 23 July 1964; holotype: US!) = var. *caelestinum*.

Eriogonum ovalifolium var. *williamsiae* Reveal, Brittonia 33: 446. 1981. (*M. Williams* & A. Tichon 79–71, San Joaquin

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66. *Eriogonum ovalifolium*

Springs, Washoe Co., Nev., 7 June 1979; holotype: US!) = var. *williamsiae*.

Plants low, pulvinate to cespitose herbaceous perennials, 0.2–3 dm tall, (0.3) 0.5–5 dm across; leaves basal, solitary but occasionally in distinct rosettes, the petioles 0.1–10 cm long, mostly tomentose, the leaf blades oblanceolate to elliptic or spatulate to rounded, 0.2–6 cm long, (0.1) 0.2–1.5 cm wide, lanate to tomentose or floccose, sometimes less so adaxially, the margins plane, occasionally with brown edges; flowering stems scapose (ours) or essentially so, spreading to mostly erect, 0.03–4 dm long, floccose to tomentose or lanate, mostly grayish or occasionally greenish or whitish; inflorescences capitate (ours) or rarely umbellate, 0.7–3.5 cm long, 0.7–3.5 cm wide and floccose to tomentose; bracts 3,

scalelike, linear to triangular, 0.8–4 mm long; peduncles lacking; involucres solitary or (2) 3–15, turbinate to turbinate-campanulate, (2) 3.5–5 (8) mm long, 2–4 mm wide, tomentose to floccose abaxially, the teeth 5, erect, 0.1–1 mm long; perianth yellow, white or cream, often fading to rose, red to purple, (2.5) 3–6 (7) mm long, glabrous abaxially, the hypanthium $\frac{1}{4}$ or less length of perianth, the tepals strongly dimorphic (less obvious in high-elev. expressions), those of outer whorl mostly oval to orbicular, 2–4 mm long and wide, those of inner whorl oblanceolate to elliptic, 3–7 mm long, 0.8–1.5 mm wide; stamens mostly included, 1–3 mm long, the filaments pilose basally; achenes trigonous, light brown to brown, 2–3 mm long, glabrous; $2n=40$ (var. *caelestinum*, var. *nivale*, var. *ovalifolium*, var. *purpureum*).

Common and widespread in a wide variety of soils and plant communities from moving desert sands to alpine scree slopes and ridges, 650–4120 m; sw. Can. to s. Calif., n. Ariz. and nw. N.M. Apr.–Aug.

The wealth of variation in *Eriogonum ovalifolium* is largely accounted for in the following key. Our most common expressions are var. *ovalifolium* (yellow flowers) and var. *purpureum* (white to cream flowers that mature to red or purple at times). These share a significant part of their range where occasionally both may be found growing together leading one to suspect the difference in flower color is not taxonomically significant. Yet, each has independent ranges where non-mixed populations occur or where only one of the expressions can be found. Elevational separation and local differentiation have played a role in the establishment of some variants. For example, var. *eximium* is clearly a low-elevation expression that is closely related to the adjacent var. *nivale* found on the crest of the Sierra Nevada. The var. *cælestinum* is a high-elevation segregate of var. *ovalifolium*. Edaphic specialization accounts for var. *williamsiae*, this being restricted to heavily mineralized soils around hot springs. A sharp distinction between var. *nivale* and var. *depressum* is not possible, and the assignment of some populations is difficult. By and large the var. *nivale* is a plant of the Cascade and Sierra Nevada cordillera, whereas the var. *depressum* is a plant of the northern Rocky Mountains and on the Idaho batholith. The var. *depressum* is disjunct on Steens Mountain in Oregon. Low-elevation populations found mainly on black pumice sand in and near Craters of the Moon National Monument and Preserve, long assigned to var. *depressum*, may well be distinct and worthy of recognition; they will key to var. *nivale*. The var. *nivale* occurs as a series of disjunct, high-elevation populations scattered across Nevada to the Deep Creek Mountains of Utah.

Members of the species are frequently cultivated. The arrangement of the leaves into small but distinct rosettes as seen in vars. *eximium*, *nivale*, and *williamsiae* makes them particularly attractive. Of these only var. *nivale* is common as var. *williamsiae* is federally protected.

- 1 Leaf blades usually 1–6 cm long, occasionally shorter; scapes (0.1) 0.5–3 (4) dm long; involucres (3.5) 4–6.5 (8) mm long.
 - 2 Scapes usually (0.4) 0.7–3 (4) dm long; leaves without distinct brownish margins; widespread and generally common.
 - 3 Perianth white to cream to rose or purplish, 4–5 mm long; leaf blades spatulate, oblong, obovate or oval, 0.5–2 cm long; scapes (0.4) 0.5–2 dm long, tomentose; involucres 3–15, turbinate, 4–5 mm long; sandy to gravelly flats, washes, slopes and ridges in mixed grassland, saltbush and sagebrush communities, and in pinyon and/or juniper and montane conifer woodlands, 750–3100 m; s. B.C. and sw. Alta. s. to e. Calif., n. Ariz. and nw. N.M., common throughout our area; purple cushion wild buckwheat

var. *purpureum* (Nutt.) Durand
 - 3 Perianth yellow, 4–5 mm long; leaf blades mostly elliptic to spatulate or oblong, (1) 3–6 cm long; scapes (0.4) 0.5–2 dm long, thinly tomentose; involucres 3–15, 4–5 (6.5) mm long; sandy to gravelly flats, washes, slopes and ridges in mixed grassland, saltbush and sagebrush communities, and in pinyon and/or juniper and montane conifer woodlands, 650–2600 m; Wash., sw. Mont. and sw. Wyo. s. to e. Calif., Nev. and Utah, common throughout most of our area; cushion wild buckwheat

var. *ovalifolium*
 - 2 Scapes mostly 0.1–0.5 (0.75) dm long; leaves often with distinct brownish margins; rare; w. Nev. and adjacent Calif.
 - 4 Leaves densely lanate, the tomentum brownish, the leaf blades elliptic or spatulate to oval, (0.3) 0.5–1.5 (2) cm long; involucres 3–10, 4–5 (6.5) mm long; perianth white to cream, 4–5 mm long; granitic sandy or gravelly to rocky or even talus slopes in sagebrush communities, and in montane conifer woodlands, 1750–2450 m; Alpine Co., Calif., and in Douglas and Washoe Cos., Nev., just w. of our boundary; in our area in Carson City, Nev.; Slide Mountain wild buckwheat

var. *eximium* (Tidestr.) J. T. Howell
 - 4 Leaves tomentose, the tomentum whitish; leaf blades elliptic to oval or reniform, 0.3–0.7 cm long; involucres 3–10, 4–5 mm long; perianth white, 4–5 mm long; heavy clay soil in a sagebrush community, 1400 m; Steamboat Springs, s. Washoe Co., Nev.; Steamboat Springs wild buckwheat

var. *williamsiae* Reveal

5 Perianth yellow, becoming tinged with red, 2–3 mm long; leaf blades mostly elliptic, 0.2–0.5 cm long, thinly tomentose; scapes 0.1–0.6 dm long, thinly floccose; involucres 1–2, 2–2.5 mm long; granitic sand on alpine ridges and slopes in high-elev. sagebrush communities, 3000–3350 m; Sierra Nevada, Mono Co., Calif., and on the Toiyabe and Toquima Mts., Nye Co., Nev.; heavenly wild buckwheat

var. *cælestinum* Reveal

- 5 Perianth white, becoming pink or rose.
 - 6 Leaves with distinct brownish margins.
 - 7 Leaves densely lanate, the tomentum brownish; Slide Mountain wild buckwheat

var. *eximium* (Tidestr.) J. T. Howell
 - 6 Leaves without distinct brownish margins, or if so then plants of high elev.
 - 8 Leaves greenish and thinly tomentose at least adaxially, mostly elliptic or oblong to spatulate, the leaf blades 0.4–0.8 cm long; scapes decumbent to suberect, thinly floccose in most, 0.1–0.4 (0.8) dm long; involucres 2–4, 3–3.5 mm long; perianth white, cream or rose, 4–5 mm long; sandy to gravelly flats, slopes, ridges or talus slopes, and in alpine fell-fields in mixed grassland, sedge and sagebrush communities, and in montane to alpine conifer woodlands, 975–3500 m; mostly of the Rocky Mts. and n. Cascade Range from sw. Alta. s. through Idaho and w. Mont. to e. Oregon and w. Wyo., entering our area on Steens Mtn., Harney Co., Oregon; dwarf cushion wild buckwheat

var. *depressum* blank
 - 8 Leaves densely lanate to white-tomentose on both surfaces or only slightly less so adaxially, not at all greenish, mostly roundish, the leaf blades 0.2–0.8 cm long; scapes erect, mostly lanate to tomentose, 0.5–0.5 (1.3) dm long; involucres 2–4, 3–4.5 mm long; perianth white to cream to rose or red, 4–5 mm long; sandy to gravelly often granitic slopes, ridges and alpine fell-fields in mixed grassland, sedge and sagebrush communities, and in conifer woodlands, 1700–4120 m; mostly of the Sierra Nevada, Cascade Range and desert ranges of the Great Basin, s. B.C. s. to e. Calif., n. and c. Nev., and w. Utah, also at low elev. in and around Craters of the Moon Natl. Monument and Preserve, Butte Co., Idaho (if not taxonomically distinct); Sierran cushion wild buckwheat

var. *nivale* (Canby ex Coville) M. E. Jones

67. *Eriogonum saxatile* S. Watson

Eriogonum saxatile S. Watson, Proc. Amer. Acad. Arts 12: 267. 1877. (C. C. Parry [& J. G. Lemmon] 161, Mill Creek Canyon, San Bernardino Mts., San Bernardino Co., Calif., 1876; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 195. 2004, at GH!)

E. bloomeri Parish, Erythea 6: 87. 1898. (S. B. Parish & W. F. Parish 1664, San Bernardino Mts., San Bernardino Co., Calif., Aug 1884; lectotype by J. L. Reveal, Harvard Pap. Bot. 9: 196. 2004, at DS!)

E. stokesae M. E. Jones, Contr. W. Bot. 8: 39. 1898. *E. saxatile* var. *stokesae* (M. E. Jones) S. Stokes ex M. E. Jones, Contr. W. Bot. 11: 8. 1903. (*M. E. Jones* s.n., Pleasant Canyon, Panamint Range, Inyo Co., Calif., 6 May 1897; holotype: POM!)

E. saxatile subsp. *multicaule* S. Stokes, Leafl. W. Bot. 3: 201. 1943. (A. M. Alexander & L. Kellogg 2478A, top of main ridge on Gold Mtn., Esmeralda Co., Nev., 5 July 1941; holotype: UC!)

Hoary wild buckwheat.

Plants low, loosely to densely matted herbaceous perennials, (1) 2–4 dm tall, 0.5–2 dm across; leaves basal and forming dense rosettes, usually solitary and sheathing up stems 4 cm, the petioles 1–3 (4) cm long, tomentose, the petiolate basal leaf blades obovate to rounded, 1–2 (2.5) cm long, 1–2 cm wide, lanate to tomentose, the scissile cauline leaf blades elliptic to rounded, 0.3–1 cm