

creeping roots, the numerous slender stems bushy-branched, mostly 5–15 cm tall, strigose and sometimes also finely glandular; leaves numerous, all caudine, much longer than the internodes, small and narrow, linear to linear-oblong or oblanceolate (or the reduced uppermost ones acicular), mostly 6–20 mm long and up to 2.5 mm wide, spinulose-apiculate, entire, hispid-ciliate on the margins and strigose to shortly rough-hairy on the surfaces, sometimes also finely glandular; heads terminating the stems and branches to form a flat-topped inflorescence across the top of the plant, short-pedunculate or virtually sessile, campanulate to short-cylindric; involucle 6–7.5 mm high, strigose to shortly rough-hairy and sometimes also finely glandular, its bracts frayed or irregularly lacerate-ciliate toward the summit, often suffused with anthocyanin distally and just within the prominent colorless hyaline margins;

rays mostly 8–25, white or faintly pinkish, 4–8 mm long; disk-flowers mostly 12–25, with a slender, tubular yellow corolla 4.5–6 mm long, the lobes short, ca 0.5 mm; style-appendages 0.25–0.4 mm long, narrow and acute to broad and blunt; achenes 2.5–3.5 mm long, mostly 5- to 8-ribbed, the ribs often unequally spaced; pappus of numerous subequal, white or whitish capillary bristles;  $2n = 32$ , seldom 16.

Dry, open places, 1300–2800 m elev.; Nebr. to Texas and n. Mex., w. to s. Wyo., Utah, Nev., and s. Calif.; nearly throughout Utah; in Nev. n. to s. Elko, s. Eureka, and Esmeralda cos. May–early July, seldom continuing to (or repeating in) Aug and Sept.

This species has in recent decades usually been considered to form a monotypic genus *Leucelene*. Its close connection to *Chaetopappa* has only recently been pointed out by G. L. Nesom. In spite of the diversity of the pappus, the species all look much alike and have a distinctive involucle.

### 87. ERIGERON L. Daisy

Annual, biennial, or more often perennial herbs, variously fibrous-rooted or taprooted; leaves alternate (or sometimes all basal), in most species entire or merely toothed, but sometimes more strongly cleft or even ternately dissected; heads solitary to several or numerous, in most species radiate, the few to usually more or less numerous pistillate flowers bearing each an evident (often narrow) ray, these chiefly of varying shades of pink, blue, or purple to white, or in a few species yellow; in a few species the pistillate flowers rayless and the heads thus disciform, in a few others the pistillate flowers wanting and the heads thus discoid; involucral bracts narrow, varying from herbaceous and equal to scarcely herbaceous and evidently imbricate, the loss of herbaceousness either uniform throughout their length or more prominent toward the tip; receptacle naked, flat or a little convex; disk-flowers more or less numerous, yellow to occasionally red; some species with rayless pistillate flowers between the disk-flowers and the ray-flowers; anthers entire or nearly so at the base; style-branches flattened, with ventromarginal stigmatic lines and short (up to 0.5 mm), externally minutely hairy, lanceolate and acute to more often broadly triangular and obtuse appendage, or the appendage rarely (as in *E. annuus*) obsolete; achenes 2- to many-nerved; pappus of more or less numerous (seldom few) capillary, often fragile bristles, with or without a short outer (or intermingled) series of minute bristles or scales;  $x = 9$ .

Nearly 200 species of N. and S. Amer., Europe, and Asia, nearly all of temp. or boreal regions, or mountainous parts of trop. Amer.; more than 130 species in N. Amer. north of Mex., centering in the western cordillera. (Name from the Greek *eri*, early, and *geron*, old man, probably referring to the early flowering and fruiting of most species.)

The genus is closely related to *Aster*, on the one hand, and to *Conyzia* on the other, and not always sharply separable from either. Except at high altitudes, where there is of course only one blooming season, erigerons generally flower earlier than asters, being at their peak in spring and early summer, whereas the asters mostly do not come in until late summer and fall. In the following treatment, species 1–55 belong to section *Erigeron*. Sections for the other species are indicated in the key. The measurements of the disk-corollas given in the following descriptions do not in general include the marginal flowers, which are often shorter than the others. The short outer pappus found in some species is best observed at a magnification of  $20\times$  or more.

#### References:

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 Payson, E. B. 1926. *Erigeron compositum* and its allies in the United States. *Univ. Wyoming Publ. Sci., Bot.* 1: 172–186.  
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#### KEY TO THE GROUPS OF SPECIES

- 1 Pistillate flowers very numerous, with long, filiform corolla-tube and very narrow, short, erect ray (or the inner pistillate corollas tubular-filiform and rayless) (sect. *Trimorphaea*) ..... GROUP XV
- 1 Pistillate flowers few to numerous (seldom absent), the corolla-tube generally short-cylindric, the ray typically well developed and spreading, but occasionally reduced or wanting.
  - 2 Internodes very numerous and short; leaves linear or narrowly oblong, essentially uniform from the base to near the top of the plant, the basal ones not markedly larger than the others; involucral bracts clearly and regularly imbricate (sect. *Pycnophyllum*) ..... GROUP XII
  - 2 Internodes neither excessively numerous nor usually very short; leaves variously shaped, sometimes linear, but the basal ones then obviously larger than the caudine ones; involucral bracts equal or more or less imbricate.
    - 3 Annual, biennial, or short-lived perennial, variously taprooted or fibrous-rooted, but without a woody or much-branched caudex.

- 4 Pappus of the ray- and disk-flowers alike, of long bristles, sometimes also with some shorter outer setae or scales (sect. *Olygotrichium*) ..... GROUP XIII
- 4 Pappus of the ray- and disk-flowers unlike, that of the disk-flowers composed of long bristles and short outer setae, that of the ray-flowers lacking the long bristles (unlike all our other species-groups) (sect. *Phalacroloma*) ..... GROUP XIV
- 3 Truly perennial, variously fibrous-rooted or taprooted, often with a branching, woody caudex as well as a taproot.
- 5 Cauline leaves ample, usually lanceolate or broader; plants tall (except in depauperate forms) and erect or merely curved at the base, somewhat aster-like in aspect, fibrous-rooted from a rhizome or caudex or crown ..... GROUP I
- 5 Cauline leaves usually much reduced, mostly linear or oblanceolate, broader only in a few low, distinctly taprooted species; plants relatively low, often spreading, variously fibrous-rooted to taprooted, but not aster-like in aspect.
- 6 Leaves, or some of them, more or less lobed, divided, or parted ..... GROUP II
- 6 Leaves entire or seldom slightly toothed.
- 7 Involucre woolly-villous with multicellular hairs; monocephalous alpine or subalpine plants ..... GROUP III
- 7 Involucre variously pubescent or glandular to sometimes glabrous, but not woolly-villous; plants of various habit and habitat.
- 8 Rays yellow, or none, or shorter than the disk and inconspicuous ..... GROUP IV
- 8 Rays present, evident, blue or purple to pink or white, not yellow.
- 9 Cauline leaves relatively well developed, lanceolate to ovate or oblong ..... GROUP V
- 9 Cauline leaves narrower, mostly linear or oblanceolate to linear-oblong or narrowly lance-oblong, or wanting.
- 10 Plants with numerous fibrous roots, not taprooted ..... GROUP VI
- 10 Plants taprooted, or at least with a long central underground axis, not distinctly fibrous-rooted.
- 11 Achenes mostly (3) 4- to 14-nerved; involucre clearly and regularly imbricate (sect. *Wyomingia*) ..... GROUP XI
- 11 Achenes mostly 2-nerved; involucral bracts subequal to more or less imbricate.
- 12 Basal leaves more or less evidently triple-nerved ..... GROUP VII
- 12 None of the leaves triple-nerved.
- 13 Plants low and densely tufted, with short, erect, naked or subnaked, monocephalous stems (or scapes) arising shortly above the basal leaves ..... GROUP VIII
- 13 Plants otherwise, differing in one or more respects from the previous group as described above.
- 14 Pubescence of the stem (or at least the upper half of the stem) widely spreading, sometimes scanty ..... GROUP IX
- 14 Pubescence of the stem appressed or ascending, or wanting ..... GROUP X

## GROUP I

- 1 Rays mostly 2-4 mm wide; achenes 4- to 7-nerved, most commonly 5-nerved ..... 1. *E. peregrinus*
- 1 Rays less than 2 mm wide (up to 2 mm in *E. eximius*); achenes 2-nerved or seldom 4-nerved.
- 2 Involucre woolly-villous with multicellular hairs ..... 10. *E. elatior*
- 2 Involucre not woolly, but often hirsute.
- 3 Hairs of the involucre with black cross-walls near the base; rays white; leaves hairy ..... 9. *E. coulteri*
- 3 Hairs of the involucre without black cross-walls; rays usually anthocyanic, but sometimes white; leaves glabrous or hairy.
- 4 Cauline leaves glabrous or merely glandular, not even ciliate on the margins, comparatively few and little if at all longer than the internodes; rays mostly 1-2 mm wide ..... 2. *E. eximius*
- 4 Cauline leaves either obviously pubescent or at least ciliate along the margins, sometimes also glandular, often relatively numerous and longer than the internodes; rays mostly ca 1 (to 1.5) mm wide.
- 5 Leaves mainly cauline and well distributed along the stem, the middle ones commonly as large as or larger than the (often deciduous) lowermost ones, the upper leaves only gradually reduced.
- 6 Stem essentially glabrous below the inflorescence; upper and middle cauline leaves essentially glabrous except for the usually ciliate margins ..... 3. *E. speciosus*
- 6 Stem and leaves obviously spreading-hairy and/or glandular.

- 7 Stem and leaves hairy, not glandular ..... 4. *E. subtrinervis*  
 7 Stem and upper leaves glandular as well as rather sparsely spreading-hairy ..... 5. *E. uintahensis*  
 5 Leaves somewhat basally disposed, the middle ones commonly smaller than the usually persistent lowermost ones, the uppermost leaves strongly and often abruptly reduced.  
 8 Stem (in our var.) with appressed hairs; biennial or rather short-lived perennial, with erect stems on a very short caudex ..... 6. *E. glabellus*  
 8 Stem with spreading hairs; true perennials, the stems typically curved at the base and arising from a branching rhizome-caudex ..... 7. *E. formosissimus*

## GROUP II

- 1 Stems (or scapes) short and erect; heads solitary, medium-sized, the involucre 5–10 mm high.  
 2 Caudex divided into several or many long, slender, rhizome-like branches; leaves 3-lobed, with short, broad, rounded lobes ..... 15. *E. vagus*  
 2 Caudex stout, occasionally branching, but the branches relatively stout and usually short, not slender and diffuse.  
 3 Leaves ternately 1–4 times cleft or dissected; pistillate flowers present, but sometimes without a ligule; widespread ..... 16. *E. compositus*  
 3 Leaves pinnately divided; flowers all perfect; La Sal Mts. ..... 17. *E. mancus*  
 1 Stems lax, branched and several-headed when well developed; heads small, the involucre 2.5–4.5 mm high; local in s. Utah ..... 67. *E. sionis*

## GROUP III

- 1 Rays very narrow and short, mostly 3.5–6 mm long and 0.5–1 mm wide ..... 14. *E. humilis*  
 1 Rays larger, mostly (5) 7–13 mm long and 1.2–2.6 mm wide.  
 2 Hairs of the involucre with black or very dark purple cross-walls ..... 13. *E. melanocephalus*  
 2 Hairs of the involucre with pale cross-walls, or seldom some of the cross-walls bright reddish-purple.  
 3 Involucre definitely woolly-villous; outer pappus evidently setose-squamellate; Rocky Mt. species, extending w. as far as ne. Nev. and ne. Oregon ..... 11. *E. simplex*  
 3 Involucre only marginally interpretable as woolly-villous; outer pappus obscure or none; Sierran species; entering our range in the Sweetwater Mts. of Calif. ..... 12. *E. algidus*

## GROUP IV

- 1 Rays more or less well developed, yellow.  
 2 Pubescence of the stem and leaves obviously spreading ..... 22. *E. chrysopsisidis*  
 2 Pubescence of the stem and leaves fine and appressed ..... 19. *E. linearis*  
 1 Rays absent, or inconspicuous and shorter than the disk.  
 3 Pistillate flowers present, but with short or no ligule.  
 4 Stems unbranched, bearing each a single head; leaves mostly or all in a basal cluster.  
   5 Outer pappus wanting, or setose, or scanty and inconspicuous; relatively northern species ..... 22. *E. chrysopsisidis*  
   5 Outer pappus of short but evident, narrow to broad scales; relatively southern species; var. *congestus* of ..... 23. *E. aphanactis*  
 4 Stems, or most of them, branched and bearing 2–several heads; leaves cauline as well as basal ..... 23. *E. aphanactis*  
 3 Pistillate flowers absent, the heads truly discoid.  
 6 Stem and leaves strigose with appressed hairs, varying to subglabrous ..... 18. *E. bloomeri*  
 6 Stem and leaves more or less spreading-hirsute ..... 28. *E. ovinus*

## GROUP V

- 1 Stem and leaves spreading-hairy, not glandular; involucre canescent.  
 2 Basal leaves more or less triple-nerved; pubescence fine and dense; outer pappus evident; widespread ..... 26. *E. caespitosus*  
 2 Basal leaves not at all triple-nerved; pubescence coarser, longer, looser, and less dense; outer pappus obscure or wanting; local in c. Utah ..... 29. *E. maguirei*  
 1 Stem, leaves, and involucre glandular, sometimes also with a few long, spreading hairs; local in c. and sw. Utah and ec. Nev. ..... 27. *E. nauseosus*

## GROUP VI

- 1 Achenes 4- to 7-nerved; pappus simple; widespread at high elev. .... 1. *E. peregrinus*  
 1 Achenes 2-nerved, seldom 3-nerved or the marginal nerves double.  
   2 Involucre somewhat woolly-villous; pappus simple or nearly so; Sweetwater Mts. and Sierra Nevada ..... 12. *E. algidus*  
   2 Involucre glandular or hairy or both, but not at all woolly-villous; pappus more or less evidently double. .... 50. *E. garrettii*  
   3 Stem essentially scapose; local in the Wasatch Mts. ....  
   3 Stem with several more or less well developed leaves; more widespread.  
   4 Involucre hairy but not glandular; rays mostly 125-175 ..... 6. *E. glabellus*  
   4 Involucre glandular or viscid as well as hairy; rays fewer, mostly 30-100 ..... 8. *E. ursinus*

## GROUP VII

- 1 Pubescence of the stem spreading. .... 31. *E. jonesii*  
 2 Involucre glandular and more or less spreading-hirsute .....  
 2 Involucre canescent with fine white hairs, sometimes only sparsely so, but not spreading-hirsute,  
   sometimes also glandular.  
   3 Basal leaves usually rounded or obtuse at the tip; stem only rarely purplish at the base; involucral  
     bracts evidently thickened on the back ..... 26. *E. caespitosus*  
   3 Basal leaves acute; stem ordinarily purplish at the base; involucral bracts only slightly or  
     obscurely thickened on the back ..... 30. *E. corymbosus*  
 1 Pubescence of the stem largely or wholly appressed or closely ascending.  
   4 Disk-corollas mostly 5-7 mm long; style-appendages 0.3-0.4 mm long; pappus coarse and copious,  
     the inner of ca 25-40 bristles ..... 32. *E. nevadincola*  
   4 Disk-corollas mostly 3.5-5 mm long; style-appendages 0.1-0.2 mm long; pappus slender, the  
     inner of ca 15-25 fragile bristles ..... 33. *E. eatonii*

## GROUP VIII

- 1 Achenes densely long-hairy, the hairs covering the surface; se. Oregon to c. Wash. and southernmost  
   B.C. .... 39. *E. poliospermus*  
 1 Achenes more sparsely hairy, the surface evidently exposed between the hairs.  
   2 Achenes conspicuously long-ciliate on the 2 marginal nerves, otherwise glabrous or nearly so;  
     leaves and stems (scapes) finely strigose ..... 55. *E. compactus*  
   2 Achenes with more uniformly distributed (sometimes sparse) pubescence; pubescence of the leaves  
     and stems spreading or less often appressed.  
   3 Leaves with subrotund to broadly oblanceolate blade rather abruptly contracted to and much  
     shorter than the petiole; heads small, the involucre 4-5 mm high, the disk 6-11 mm wide  
       ..... 49. *E. uncialis*  
   3 Plants either with narrower and more gradually tapering leaves, or with larger heads, or both.  
   4 Involucre softly pubescent, more nearly villous or villous-puberulent than hirsute; leaves  
     rather thinly strigose; mts. of c. Utah ..... 37. *E. carringtoniae*  
   4 Involucre more harshly pubescent, hirsute to hispid-hirsute or hirsute-puberulent; leaves  
     usually but not always with spreading hairs.  
   5 Pappus clearly double, the outer of definite small scales; heads (as pressed) more or less  
     hemispheric; widespread ..... 24. *E. pumilus*  
   5 Pappus simple or with only a few inconspicuous short outer setae; heads more turbinate,  
     except in *E. disparipilus*.  
   6 Basal leaves oblanceolate or spatulate, the larger ones 3-7 mm wide; involucre 8-10  
     mm high; Owyhee Co., Idaho, and n. Elko Co., Nev. .... 40. *E. latus*  
   6 Basal leaves linear or rather narrowly oblanceolate, seldom any of them over 3 mm  
     wide; involucre 4-8 mm high.  
   7 Heads hemispheric (as pressed); rays usually white to pink, rarely blue; w. end of  
     the Snake River Plains and adj. Owyhee Co., Idaho, n. to se. Wash. .... 38. *E. disparipilus*  
   7 Heads more turbinate.  
   8 Style-appendages short, blunt to somewhat acutish, 0.15-0.25 mm long.  
     9 Involucral bracts evidently imbricate; hairs of the involucre relatively short,  
       mostly well under 1 mm long; rays usually white or nearly so; Uinta Mts.  
       and Tavaputs Plateau, Utah ..... 42. *E. untermannii*  
     9 Involucral bracts subequal; hairs of the involucre longer, the longer ones gen-  
       erally well over 1 mm long; rays usually blue or purple, seldom white; sw.  
       Wyo. to sc. Idaho, and just within the border of n. Utah ..... 41. *E. nanus*

- 8 Style-appendages longer and more slender, narrowly pointed, mostly 0.3–0.5 mm long; rays mostly blue or purple; Sierra Nevada and the White and Sweetwater mts. of Calif. .... 43. *E. pygmaeus*

## GROUP IX

- 1 Plants scapose; heads small, the involucre 4–5 mm high, the disk 5–11 mm wide; s. and e. Nev., n. to White Pine Co., and w. to s. Calif. .... 49. *E. uncialis*
- 1 Plants with caulinne as well as basal leaves; heads mostly larger.
- 2 Pappus obviously double.
- 3 Involucral bracts evidently imbricate and somewhat thickened on the back; herbage densely pubescent with short stiff hairs not over 0.5 mm long; depauperate forms of ... 26. *E. caespitosus*
- 3 Involucral bracts neither evidently imbricate nor evidently thickened; herbage hirsute, often many of the hairs well over 0.5 mm long; common and widespread species ..... 24. *E. pumilus*
- 2 Pappus simple or only obscurely double.
- 4 Stems erect or nearly so; heads hemispheric.
- 5 Leaves linear or linear-ob lanceolate, up to 2 mm wide; w. Idaho to se. Wash. .... 38. *E. disparipilus*
- 5 Leaves ob lanceolate to elliptic or obovate, the better developed ones well over 2 mm wide; Sweetwater Mts. and Sierra Nevada ..... 12. *E. algidus*
- 4 Stems lax; heads often more turbinate.
- 6 Taproot and caudex rather slender; basal leaves mostly broadly ob lanceolate or broader, with a well defined blade abruptly contracted into the petiole ..... 45. *E. asperugineus*
- 6 Taproot and caudex fairly stout; basal leaves mostly ob lanceolate or linear-ob lanceolate, the blade usually not very well defined, tapering to the petiole.
- 7 Old leaf-bases commonly persistent on the branches of the caudex as long, chaffy-fibrous scales; involucral bracts glandular as well as spreading-hairy; Nev. and Calif. .... 44. *E. clokeyi*
- 7 Old leaf-bases not persistent, or very short; involucral bracts evidently spreading-hairy but only obscurely viscid, not glandular; Uinta Mts. .... 36. *E. goodrichii*

## GROUP X

- 1 Basal leaves relatively broad, broadly ob lanceolate or usually broader, the blade well defined, usually more or less abruptly contracted to the petiole.
- 2 Plants essentially scapose; Wasatch Mts. of Utah ..... 50. *E. garrettii*
- 2 Stem bearing several fairly well developed leaves.
- 3 Leaves essentially glabrous.
- 4 Rays 10–25, white to pinkish or lavender; heads small, the involucre 3–4.5 mm high; seeps and hanging gardens at 1600–2250 m; se. Utah and adj. Colo. .... 48. *E. kachinensis*
- 4 Rays 15–60, usually deep blue; heads a little larger, the involucre 4–6 mm high; widespread in the mts. at 2600 m and above ..... 51. *E. leiomerus*
- 3 Leaves more or less hairy.
- 5 Basal leaves acute or acutish; rays mostly blue or sometimes red-purple; pappus nearly or quite equaling the disk-corollas; fairly widespread, but missing from the Utah portion of the Bear River Range ..... 46. *E. tener*
- 5 Basal leaves rounded at the tip; rays white or pinkish; pappus generally much shorter than the disk-corollas; Bear River Range of n. Utah ..... 47. *E. cronicostii*
- 1 Basal leaves narrow, linear or rather narrowly ob lanceolate, the blade, if distinguishable, tapering very gradually to the petiole.
- 6 Peduncles glandular, the stem otherwise essentially glabrous; involucre strongly imbricate, glandular, not hairy; Wasatch Mts. of Utah ..... 53. *E. arenariooides*
- 6 Peduncles not glandular, or if so, then the stem not glabrous below the peduncles; stem usually more or less hairy; involucre variously imbricate or not and glandular and/or pubescent or not.
- 7 Inner and middle involucral bracts with conspicuous, sharply defined scarious purple margins above the middle; ne. Nev. and adj. Idaho ..... 52. *E. watsonii*
- 7 Inner and middle involucral bracts often purplish distally, but without sharply defined purple margins.
- 8 Basal leaves with their bases neither enlarged nor of different texture than the blades; leaves linear or filiform; stem more densely hairy toward the base than above ..... 21. *E. filifolius*
- 8 Basal leaves with their bases somewhat enlarged, membranous or indurated, of different texture than the blades, or if not so, then the leaves clearly ob lanceolate, not linear; stem not more densely hairy at the base than above.
- 9 Involucre glandular, not hairy; leaves glabrous or nearly so ..... 51. *E. leiomerus*

- 9 Involucre more or less hairy, sometimes also viscid or glandular; leaves, except in forms of *E. nematophyllum*, evidently hairy, or glandular, or both.
- 10 Involucral bracts hispid-hirsute to hirsute-villous, with relatively long and more or less spreading hairs, sometimes sparsely so.
- 11 Herbage only very sparsely strigose or subglabrous except for the often somewhat ciliate margins of some of the leaves; vicinity of Zion Natl. Park, Utah ..... 34. *E. canaani*
- 11 Herbage more obviously pubescent; more northern or widespread species.
- 12 Petioles or margins of at least the basal leaves with some coarse spreading hairs unlike the other hairs of the leaves ..... 25. *E. engelmannii*
- 12 Petioles of the basal leaves without coarse spreading hairs.
- 13 Caudex well developed, conspicuously branching; leaves grayish-strigose ..... 56. *E. pulcherrimus*
- 13 Caudex short and simple or nearly so; leaves green ..... 33. *E. eatonii*
- 10 Involucral bracts strigose or hirsute-strigose with appressed hairs, or hirtellous or hispidulous with very short loose hairs.
- 14 Leaves very narrow, only 0.5–1 mm wide; base of the stem and bases of the basal leaves conspicuously smooth, shining, somewhat enlarged and indurated, often stramineous; ne. Oregon to n. Calif. ..... 20. *E. elegantulus*
- 14 Leaves somewhat wider, the basal ones mostly 1.5 mm wide or more; base of the stem not modified as above.
- 15 Leaves sparsely strigose to nearly glabrous, typically linear or nearly so and only 1–2 mm wide, rarely more linear-ob lanceolate and up to 4 mm wide; pappus simple or nearly so; Daggett and Uintah cos., Utah to Wyo. and n. Colo. ..... 54. *E. nematophyllum*
- 15 Leaves more or less copiously strigose or strigose-puberulent to sometimes loosely hirtellous, the basal ones mostly oblanceolate, up to 5 mm wide; pappus double; c. and se. Utah ..... 35. *E. abajoensis*

## GROUP XI

- 1 Achenes glabrous, 8- to 14-nerved; old leaf-bases persisting and becoming strongly fibrous ..... 59. *E. canus*
- 1 Achenes more or less hairy, 2- to 8-nerved; old leaf-bases, if persistent, becoming somewhat chaffy, not strongly fibrous.
- 2 Involucre villous-hirsute with crinkled, somewhat flattened, spreading hairs, also obscurely viscid; achenes 2- to 5-nerved ..... 56. *E. pulcherrimus*
- 2 Involucre more or less strigose, sometimes only at the base, or only sparsely so, and sometimes also finely glandular.
- 3 Achenes mostly 6- to 8-nerved; basal leaves tufted and persistent, the caudine ones reduced ..... 58. *E. argentatus*
- 3 Achenes mostly 4-nerved (rarely 6-nerved); basal leaves usually withered or deciduous by flowering time, not forming a conspicuous persistent tuft ..... 57. *E. utahensis*

## GROUP XII

- 1 Heads radiate ..... 60. *E. breweri*
- 1 Heads strictly discoid ..... 61. *E. inornatus*

## GROUP XIII

- 1 Plants fibrous-rooted.
- 2 Rays very narrow, only 0.2–0.6 mm wide; disk-corollas mostly 2.5–3.2 mm long ..... 62. *E. philadelphicus*
- 2 Rays wider, ca 1 mm wide; disk-corollas mostly 4–5.5 mm long ..... 6. *E. glabellus*
- 1 Plants taprooted.
- 3 Pappus simple; plants annual; hairs of the stem characteristically incurved above a more spreading short base ..... 63. *E. bellidiastrium*
- 3 Pappus more or less evidently double, with some short outer setae or scales in addition to the long bristles; plants biennial or short-lived perennial; hairs of the stem either spreading or appressed, but not incurved as in *E. bellidiastrium*.
- 4 Hairs of the stem spreading ..... 64. *E. divergens*
- 4 Hairs of the stem, or most of them, more or less appressed.
- 5 Plants with a characteristic growth-habit, the heads mostly solitary and conspicuously naked-pedunculate on ± erect, slender stems that may have scattered leaves up to about the

- middle; some of the basal stems, or branches from the lower half of the erect main stems, becoming long, slender, sparsely leafy stolons; heads larger than in the next group, the disk 7–13 mm wide, the disk-corollas 2.5–3.5 mm long; widespread ..... 65. *E. flagellaris*
- 5 Plants of more ordinary habit; heads smaller, the disk 3–7 mm wide, the disk-corollas 1.6–2.8 mm long; local in sw. Utah.
- 6 Plants shortly stoloniferous; usually some of the leaves lobed or cleft ..... 67. *E. sionis*
- 6 Plants not stoloniferous; leaves entire, or occasionally some of them with a few teeth or lobes ..... 66. *E. religiosus*

## GROUP XIV

- Foliage ample; plants mostly 6–15 dm tall; pubescence of the major part of the stem long and spreading ..... 68. *E. annuus*
- Foliage sparse; plants mostly 3–7 dm tall; pubescence of the major part of the stem mostly short and appressed ..... 69. *E. strigosus*

## GROUP XV

- Tubular-filiform, essentially ligulate pistillate flowers present between the perfect flowers and the outer (shortly ligulate) pistillate flowers; inner involucral bracts long-attenuate, almost caudate; inflorescence corymbiform, the peduncles more or less spreading or ascending-spreading or the head solitary; cauline leaves usually but not always broader than linear ..... 71. *E. acris*
- Tubular-filiform ligulate pistillate flowers absent; inner involucral bracts merely sharply acute or acuminate; inflorescence racemiform, the peduncles erect or nearly so, or the head solitary; cauline leaves generally linear ..... 70. *E. lonchophyllus*

1. *Erigeron peregrinus* (Pursh) Greene

*Aster peregrinus* Pursh, Fl. Amer. Sept. 556. 1814. *Erigeron peregrinus* Greene, Pittonia 3: 166. 1897. (D. Nelson, Unalaska; holotype at BM!)

*E. salsuginosus* (Richardson) A. Gray, misapplied by numerous authors to what is here treated as *E. peregrinus* subsp. *callianthemus*. See Rhodora 45: 262–264. 1943.

*Aster glacialis* Nutt., Trans. Amer. Philos. Soc. II, 7: 291. 1841. *Erigeron salsuginosus* var. *glacialis* A. Gray, Syn. Fl. N. Amer. 1(2): 209. 1884. *E. glacialis* A. Nelson, Bot. Gaz. 37: 270. 1904. (Nuttall, near the summit of Thornberg's Ridge, Rocky Mts., Wyo.; not found at BM in 1988.) = var. *scaposus*.

*Aster salsuginosus* var. *scaposus* Torr. & A. Gray, Fl. N. Amer. 2: 503. 1843. *Erigeron peregrinus* subsp. *callianthemus* var. *scaposus* Cronquist, Brittonia 6: 146. 1947. *E. callianthemus* var. *scaposus* Breitung, Canad. Field-Naturalist 71: 69. 1957. (Frémont s.n., Wind River Mts., Wyo.; holotype at NY!)

*Aster salsuginosus* var. *angustifolius* A. Gray, Bot. Calif. 1: 325. 1876. *Erigeron salsuginosus* var. *angustifolius* A. Gray, Proc. Amer. Acad. Arts 16: 93. 1880. *E. angustifolius* Rydb. Bull. Torrey Bot. Club 24: 295. 1897. *E. peregrinus* subsp. *callianthemus* var. *angustifolius* Cronquist, Brittonia 6: 147. 1947. (Lemmon s.n., Sierra Co., Calif.; holotype at GH!)

*E. callianthemus* Greene, Leafl. Bot. Observ. Crit. 2: 197. 1912. *E. peregrinus* subsp. *callianthemus* Cronquist, Rhodora 45: 264. 1943. *E. peregrinus* subsp. *callianthemus* var. *eucallianthemus* Cronquist, Brittonia 6: 145. 1947. *E. peregrinus* subsp. *callianthemus* var. *callianthemus* Cronquist, Univ. Wash. Publ. Biol. 17(5): 188. 1955, in key. (A. Nelson 8724, near Centennial, Albany Co., Wyo.; lectotype in effect by Cronquist, Brittonia 6: 144. 1947, and here designated to be the specimen at RM!)

Fibrous-rooted perennial from a short, thick rhizome or short, stout caudex, up to 7 dm tall, amply leafy, or in small forms subscapose; peduncles closely gray-villous-puberulent just beneath the heads, the herbage otherwise usually glabrous; leaves ordinarily entire; heads solitary or few, very showy, the disk 10–25 mm wide; involucle 7–11 mm high, its bracts mostly rather herbaceous and subequal, linear-attenuate, ca 1 mm wide below, loose, densely glandular on the back; rays mostly 30–90, rich rose-purple or darker, 8–25

mm long and 2–4 mm wide (very wide for an *Erigeron*); disk-corollas mostly 4–6 mm long; achenes asymmetrically 4- to 7-nerved, most commonly 5-nerved; pappus of 20–30 bristles, occasionally with a few short and inconspicuous outer setae;  $2n = 18$ .

Moist meadows and streamsides in the mts., in our range from 2100 to 3700 m elev.; mts. of Calif., n. Nev., Utah, and n. N.M., n. to ca 56 degrees in the Canadian Rockies, and extending along the Canadian and Alaskan coast through the Aleutian Islands to the Commander Islands. Mostly July, Aug.

This is a common and highly variable but sharply defined species. All of our plants, as here described, belong to the subsp. *callianthemus* (Greene) Cronquist, which is the more southern and inland phase of the species. Subspecies *callianthemus* consists of four ill-defined varieties, three in our range. Our varieties may be characterized as follows:

- 1 Reduced, mostly alpine plants, less than 2 dm tall, with relatively ample, apically rounded or obtuse basal leaves and very much smaller cauline leaves, often subscapose; a highland ecotype that passes freely into var. *callianthemus* ..... var. *scaposus* (Torr. & A. Gray) Cronquist
- 1 Larger, mostly only subalpine plants, up to 7 dm tall (smaller in alpine forms of var. *angustifolius*, but then with narrow, acute basal leaves).
- 2 Leaves narrow, the basal ones oblanceolate or narrower, the cauline ones linear or lanceolate; Cascade-Sierran (mainly Sierran) var., extending into our range in the Sweetwater Mts. of Calif. ..... var. *angustifolius* (A. Gray) Cronquist
- 2 Leaves more ample, the basal oblanceolate or broader, the cauline mostly ovate and not so strongly reduced; common and widespread in our range; in Nev. s. to Elko and Humboldt cos.; in Utah s. to the La Sal, Abajo, and Wasatch mts., and according to S. L. Welsh to Washington Co. .... var. *callianthemus* Cronquist

2. *Erigeron eximius* Greene

*Erigeron eximius* Greene, Pittonia 3: 295. 1898. (Greene s.n., Little Ouray Mt., Colo., 3 Sept 1896; holotype at NDG!) *E. superbus* Greene ex Rydb. Fl. Colorado (Agric. Exp. Sta. Agric. Coll. Colorado Bull. 100): 361, 364. 1906. (C. F. Baker 679, near Pagosa Peak, s. Colo.; holotype at NY!) *E. eldensis* Greene, Leafl. Bot. Observ. Crit. 2: 196. 1912. (Leiberg 5837 [incorrectly cited as 5387], Elden Mesa, n. Ariz.; holotype at US!)

Fibrous-rooted perennial herb from a slender rhizome or from a short caudex that emits slender rhizomes, these commonly each producing a distal tuft of radical leaves; stems solitary or several, 1.5–6 dm tall, glabrous below, glandular in the inflorescence; leaves more or less triplinerved, few, commonly shorter than or barely surpassing the internodes, obtuse or acute, apiculate, entire, or some of them, especially the lower, crenulate, not ciliate on the margins, or the lowermost ones but slightly so toward the base of the petiole; basal and lowermost cauline leaves glabrous, persistent, lanceolate to oval, rather abruptly narrowed to the winged petiole, 3–15 cm long overall and 10–33 mm wide; middle cauline leaves smaller than or equaling those below, lanceolate to ovate or oblong, glandular; heads mostly 1–7 (16), commonly borne on nearly naked peduncles; disk 11–19 mm wide; involucre 7–9 mm high, equaling or surpassing the disk, its bracts equal, glandular, occasionally with a few long hairs as well, the outer ones broad, mostly 0.8–1.3 mm wide, acuminate, the tip appressed or a little loose; rays mostly 40–80, 12–20 mm long and 1–2 mm wide, blue or rose-purple, rarely white; disk-corollas 4.5–6 mm long; achenes hairy, 2-nerved; pappus double, the inner of ca 25 reddish or tawny bristles, the outer shortly setulose and sometimes very scanty.

In woods and forest openings in the mts., at 2500–3200 m elev.; s. Rocky Mt. region, from s. Wyo. to N.M., and w. to Utah and n. Ariz.; disjunct in the Davis Mts. of Texas; in Utah in the Abajo, Henry, La Sal, and Uinta mts., and on the Utah Plateaus as far s. as Garfield Co. July–Sept.

The distinction of *E. eximius* from the *viscidus* phase of *E. formosissimus* occasionally becomes problematic. Otherwise the species is well characterized and defined.

### 3. *Erigeron speciosus* (Lindl.) DC.

*Stenactis speciosa* Lindl. Edward's Bot. Reg. 19: pl. 1577. 1833.

*Erigeron speciosum* DC. Prodr. 5: 284. 1836. (Garden plants, from seeds brought from "California" by Douglas; an original specimen at K!)

*E. macranthum* Nutt. Trans. Amer. Philos. Soc. II. 7: 310. 1841. *E. speciosus* var. *macranthus* Cronquist, Bull. Torrey Bot. Club 70: 269. 1943. (Wyeth, towards the sources of the Missouri; holotype at PH!)

*E. leiophyllus* Greene, Leafl. Bot. Observ. Crit. 2: 218. 1912. (M. E. Jones s.n., Fort Douglas [at the edge of Salt Lake City], Utah, 17 July 1886; holotype at US!) = var. *macranthus*.

Fibrous-rooted perennial from a woody caudex or short, stout, caudex-like rhizome; stems clustered, 1.5–8 dm tall, amply leafy, essentially glabrous except commonly for some hairs and small glands just under each head; basal and lowermost cauline leaves petiolate and more or less triplinerved, but usually soon deciduous, not much enlarged; principal cauline leaves numerous and well distributed along the stem, typically much longer than the internodes, sessile, more or less evidently 3 (5)-nerved from the base, glabrous except for the usually ciliate margins, the middle ones mostly 3–11 cm long, the upper only gradually reduced and usually ovate, sometimes merely lanceolate; heads 1–13 in a short terminal inflorescence, the disk 11–22 mm wide; involucre 6–9 mm high, finely glandular, its bracts equal, narrow, ca 0.3–0.8 mm wide, acuminate or attenuate, loose-tipped; rays numerous, ca 65–150, blue or rarely white, 8–18 mm long, ca 1 mm wide; disk-

corollas 4–5 mm long; achenes 2-nerved, or occasionally 4-nerved; pappus of 20–30 bristles and some short outer setae;  $2n = 18$ .

Open woods, and openings in wooded areas, mostly in the foothills and at moderate elev. in the mts., but sometimes extending up to 3400 m; nw. Oregon, w. Wash., and s. B.C. to Mont., s. through Wyo., Idaho, Colo., Utah, and e. Nev. to n. N.M. and Ariz.; also in the Black Hills of S.D. and the Sierra San Pedro Martir of n. Baja Calif. June–Aug.

The species is weakly divisible into two morphologic-geographic phases: var. *speciosus*, mainly in Washington, Oregon, northern Idaho, and western Montana; and var. *macranthus* (Nutt.) Cronquist, more southern and eastern. Our material belongs to var. *macranthus*, as primarily described above. Variety *speciosus* typically has somewhat narrower leaves than var. *macranthus*, the uppermost ones lanceolate; it is a little more hairy, commonly with a few hairs on the involucre and sometimes on the upper part of the stem, the leaves often more strongly ciliate and often with a few hairs on the surface. The morphological distinction between the two varieties is imperfect, and extreme specimens from within the range of one seem more or less typical of the other. A case could be made for dropping the varietal distinction altogether, but there is still an obvious difference in averages.

### 4. *Erigeron subtrinervis* Rydb.

*Erigeron glabellum* var. *molle* A. Gray, Proc. Acad. Nat. Sci. Philadelphia 1863: 64. 1863. *E. subtrinervis* Rydb. Mem. Torrey Bot. Club 5: 328. 1894. *E. speciosus* var. *molles* S. L. Welsh, Great Basin Naturalist 43: 278. 1983. (Hall & Harbour 239, Rocky Mts., latitude 39–41 degrees, Colo.; holotype at GH!)

Much like *E. speciosus*, but more pubescent, the stems, leaves, and involucres more or less copiously spreading-hairy; hairs seldom over 1 (1.5) mm long; rays sometimes pink;  $2n = 18$  (var. *conspicuus*).

Open woods, typically in drier places than *E. speciosus*; Wash., s. B.C., and Alta. to Utah, N.M., Nebr., and S.D. July, Aug.

Our plants, as here described, belong to the var. *subtrinervis*, which occupies the more inland and southern part of the range of the species. The more northwestern var. *conspicuus* (Rydb.) Cronquist has sparser and longer pubescence, the longer hairs of the stem mostly 1.5 mm long or more. *Erigeron subtrinervis* seems well set off from *E. speciosus* in our range, but in the northwestern states the distinction of *E. subtrinervis* var. *conspicuus* from *E. speciosus* is sometimes problematic.

### 5. *Erigeron uintahensis* Cronquist

*Erigeron uintahensis* Cronquist, Bull. Torrey Bot. Club 70: 270. 1943. *E. speciosus* var. *uintahensis* S. L. Welsh, Great Basin Naturalist 43: 279. 1983. (Payson 4984, Mill Creek, foothills of the Uinta Mts., Summit Co., Utah; holotype at RM!)

Much like *E. speciosus* and *E. subtrinervis*, but the stems glandular at least above, and rather sparsely pubescent throughout their length with spreading, several-celled hairs sometimes as much as 2 mm long; leaves more or less glandular and hirsute like the stem, the lower ones generally more hirsute, the upper ones more glandular, all more or less ciliate on the margins; involucre glandular and with a few loosely spreading hairs.

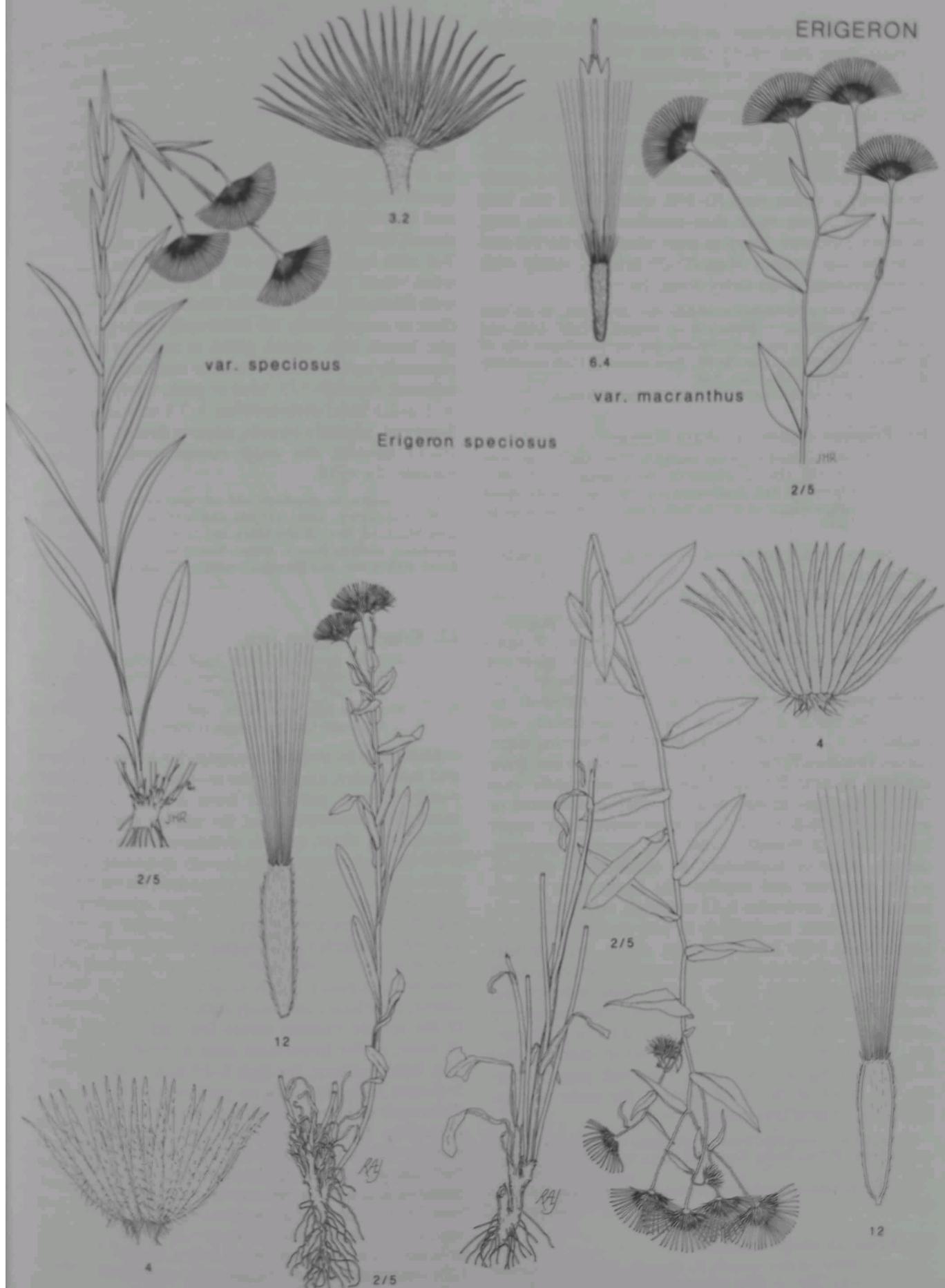
Middle elev.; Uinta Mts. of ne. Utah, extending e. to se. Wyo. and s. in the Utah Plateaus to Kane Co. July, Aug.

This species seems well characterized in the Uinta Mountains, but in central Utah there are puzzling intergrades with *E. speciosus* or *E. subtrinervis*. An expanded view of the limits of *E. speciosus*, as recently proposed by S. L. Welsh, would logically bring in also *E. platyphyllus* Greene, of Arizona and New Mexico.

### 6. *Erigeron glabellus* Nutt.

*Erigeron glabellus* Nutt. Gen. N. Amer. Pl. 2: 147. 1818. *Tessaria glabella* Lunell, Amer. Midl. Naturalist 5: 59. 1917. (Nuttall, Fort Mandan, on the plains of the Missouri; holotype at BM!)

## ERIGERON

*Erigeron subtrinervis* var. *subtrinervis**Erigeron uintahensis*

well follow Payson, who in his second effort (1926) recognized three varieties, based largely on the degree of dissection of the leaves:

- 1 Leaves mostly only once ternate; rare in our range, where apparently confined to high elev. (3200+ m) in the mts. of Nev. (Ruby Mts., Toiyabe Range, Wheeler Peak), but often at more ordinary elev. in Wyo. and Colo., and extending far n. into Can. and Greenland . . . . . var. *discoideus* A. Gray
- 1 Principal leaves mostly 2-4 times ternate.
- 2 Best developed leaves mostly 3-4 times ternate, often irregularly so, with very long and slender divisions; sandy riverbanks at low elev. in Wash., Oregon, and adj. Idaho; probably not at all in our range . . . . . var. *compositus*
- 2 Best developed leaves mostly regularly 2-3 times ternate, the divisions usually not very long and slender; common and widespread throughout the range of the species, typically at middle elev. in the mts., but ascending to above timberline, and descending to the upper Snake River Plains . . . . . var. *glabratus* Macoun

It will at once be seen that the varietal epithets *discoideus* and *glabratus* are in this instance unfortunate and misleading, since both of these varieties may be either radiate or disciform and evidently hairy or subglabrous. The rules of nomenclature leave us no choice.

A local population of *E. compositus* var. *discoideus* at 3300 meters shortly north of the summit of Toiyabe Dome in central Nevada has attracted the attention of several botanists. Here the plants of var. *discoideus* are very dwarf and pulvinate-cespitoso, in contrast to the intermingled larger and looser plants of var. *glabratus*. Confronted with this evidence alone, no field-botanist would hesitate to consider that the plants belong to two different species. Elsewhere it is often not so easy. In Greenland and northern Canada the distinction is especially problematical, and might be thought to be a direct reflection of the severity of the habitat.

### 17. *Erigeron mancus* Rydb.

*Erigeron pinnatisectus* var. *insolens* J. F. Macbr. & Payson, Contr. Gray Herb. 49: 79. 1917. (Walker 271, La Sal Mts., Utah; holotype at RM!)

*E. mancus* Rydb. Fl. Rocky Mts. 902, 1067. 1917 [1918]. (Rydburg & Garrett 8671, La Sal Mts., Utah; holotype at NY!)

Perennial from a taproot and freely branching caudex, forming compact little mats; leaves mainly basal, small, pinnately few-cleft with crowded, narrow segments, or some (rarely many) of them linear and entire, up to ca 3.5 cm long overall, often coarsely long-ciliate along the margins of the petioles, otherwise mostly glabrous or nearly so; stems or scapes numerous, up to ca 7 cm high, arising above the basal leaf-mat, subnaked or with a few reduced leaves, each terminating in a single strictly discoid head; disk 8-15 mm wide; involucre 5-7 mm high, evidently spreading-hirsute and often finely glandular; pappus evidently shorter than the disk-corollas.

Fell-fields and alpine tundra, 3100-3700 m elev.; La Sal Mts. of Utah, July, Aug.

This species is evidently related to *E. pinnatisectus* (A. Gray) A. Nelson of the southern Rocky Mountains, from southern Wyoming to northern New Mexico. It is smaller and more compact than *E. pinnatisectus*, and differs sharply in the complete absence of pistillate flowers. No intermediates are known to me.

### 18. *Erigeron bloomeri* A. Gray

*Erigeron bloomeri* A. Gray, Proc. Amer. Acad. Arts 6: 540. 1865. *E. filifolius* *bloomeri* A. Nelson, Bot. Gaz. 54: 413. 1912. (Bloomer 83, near Virginia City, Nev., in 1863-1865; lectotype by Cronquist, Brittonia 6: 198. 1947, at GH!)

Perennial with a taproot and much-branched caudex, 5-15 cm tall; stems numerous and usually somewhat indurated at the base and shining, but not so prominently and consistently so as in *E. linearis*; herbage finely white-strigose; leaves all or mostly in a basal

cluster, linear, 2-7 cm long, 0.7-2 mm wide, some smaller ones often scattered along the lower part of the stem; heads solitary, bright yellow, strictly discoid, without pistillate flowers; involucre 5-10 mm high, strigose to villous; disk-corollas mostly 4.5-7 mm long; style-appendages lanceolate or narrowly triangular, evidently acute, 0.3-0.5 mm long; achenes 2-nerved, glabrous below, short-hairy above; pappus-bristles 25-40, generally unequal;  $2n = 18$ .

Dry, open, often rocky places, often with sagebrush, from the lowlands (750 m) to fairly high elev. (2950 m) in the mts.; c. Wash. to e. Idaho, s. to the Sierra Nevada of Calif.; in Nev. as far s. as Lyon Co. (Sweetwater Mts.), the mts. of n. and nc. Nye Co., and the mts. of Elko Co.; in Idaho e. on the Snake River Plains to Lincoln and Twin Falls cos.; barely entering Utah in nw. Box Elder Co. May-July.

We have only the widespread var. *bloomeri*, as here described. In northwestern California and southwestern Oregon there are two other local varieties, differing in details of pubescence. Variety *nudatus* (A. Gray) Cronquist, glabrous or subglabrous, is a serpentine ecotype. Variety *pubens* D. D. Keck, of the Marble Mountains in Siskiyou Co., is softly spreading-hairy.

### 19. *Erigeron linearis* (Hook.) Piper

*Diplopappus linearis* Hook. Fl. Boreali-Amer. 2: 21. 1834.

*Erigeron linearis* Piper, Contr. U.S. Natl. Herb. 11: 567. 1906. (*Douglas* 112, common on dry rocks and sandy grounds near the "Priests Rapid" of the Columbia and near the branches of Lewis and Clark's River, in 1826; holotype at K!)

*E. peucephyllus* A. Gray, Proc. Amer. Acad. Arts 16: 89. 1880. (B.C. and Idaho to Calif.; no type cited; original material at GH!)

Perennial, 5-30 cm tall, with several or many stems from a stout taproot and branched caudex; herbage finely gray-strigose; bases of stems and of basal leaves conspicuously indurated and somewhat enlarged, stramineous to sometimes purplish; leaves linear or nearly so, 1.5-9 cm long, mostly 0.5-3 mm wide, basal and cauline, or nearly all basal; heads solitary or few, the disk mostly 8-13 mm wide; involucre 4-7 mm high, strigose or strigose-villous, and sometimes finely glandular; rays 15-45, usually bright yellow, seldom rather pale, 4-11 mm long, rarely shorter; disk-corollas 3.5-5.3 mm long; pappus of 10-20 bristles and some short, often narrow, outer scales;  $2n = 45$  (pentaploid), perhaps also other numbers.

Dry, often rocky soil, often with sagebrush, from the lowlands to 2200 or even 2500 m elev. in the foothills and lower parts of the mts.; nw. Utah (Box Elder Co.) and the n. tier of cos. in Nev. to the Sierra Nevada of Calif. (as far s. as Yosemite Natl. Park), n. to w. Wyo., w. Mont., Idaho, Wash., and s. B.C. May, June (July).

This abundant and characteristic species is ordinarily well defined, but it hybridizes occasionally with *E. bloomeri* and *E. elegantulus*.

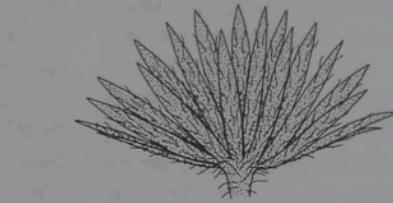
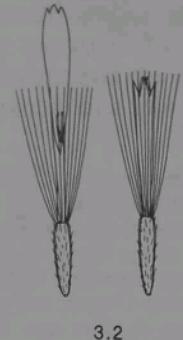
There has been some confusion in the past about the identity of the types of *E. linearis* and *E. filifolius*, so that in some of the older treatments the application of the two names is reversed. Recent opinion is uniformly in accord with the treatment here adopted.

### 20. *Erigeron elegantulus* Greene

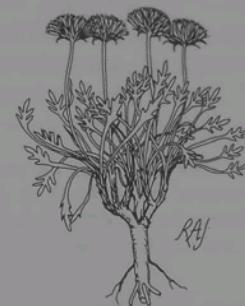
*Erigeron elegantulus* Greene, Erythea 3: 65. 1895. *E. linearis* var. *elegantulus* J. T. Howell, Leafl. W. Bot. I: 205. 1936. (Baker & Nutting s.n., Dixie Valley, Lassen Co., Calif.; holotype at NDG!)

Much like *E. linearis* in aspect, but appearing more slender and delicate, and with anthocyanic to nearly white rays; perennial, 3-15 cm tall, with numerous slender stems from a taproot and much-branched caudex; herbage sparsely or moderately strigose; bases of

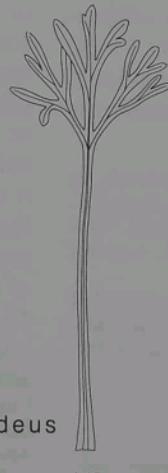
## ERIGERON

*Erigeron humilis*

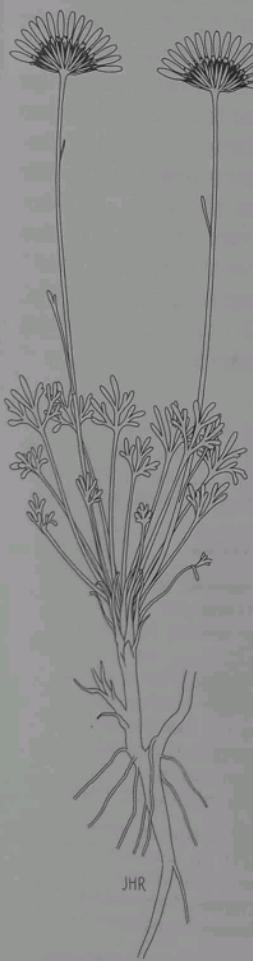
3.2

*Erigeron mancus*

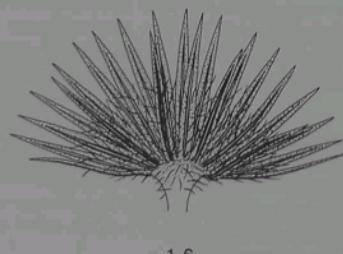
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*Erigeron vagus*

4/5

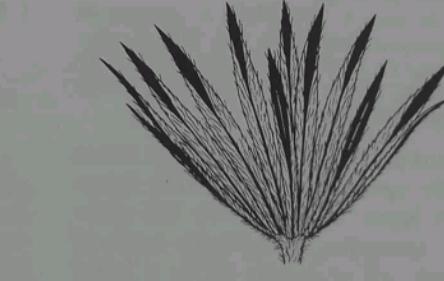
*var. glabratus*

2/5

*Erigeron compositus*

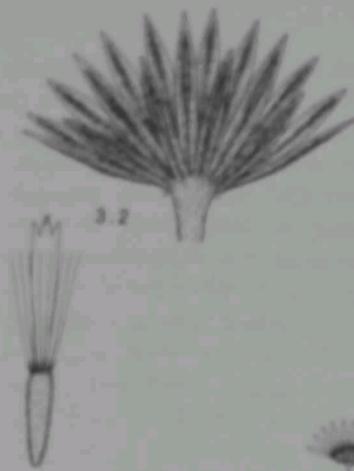
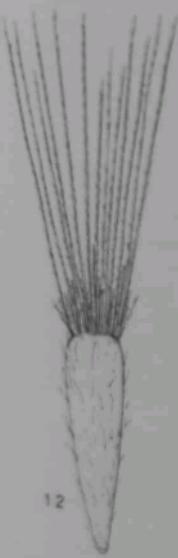
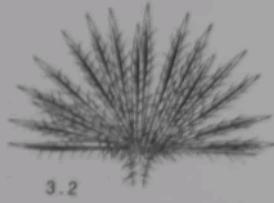
3.2

2/5

*Erigeron bloomeri var. bloomeri*

JHR

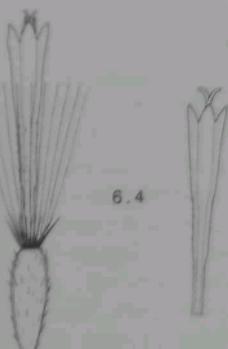
## ERIGERON

*Erigeron linearis**Erigeron elegans**Erigeron filifolius*  
var. *filifolius**Erigeron chrysopsidis* subsp. *austini*

2/5

*Erigeron aphanactis*

6.4



differ in nuances of pubescence of the stem and texture of the disk-corollas, as indicated in the descriptions.

It does not appear that our mental picture of the taxonomy and relationships in this group would be improved by a further expansion of specific limits with an infraspecific hierarchy to match.

#### 24. *Erigeron pumilus* Nutt.

*Erigeron pumilum* Nutt. Gen. N. Amer. Pl. 2: 147. 1818.  
*Tesseria pumila* Lunell, Amer. Mid. Naturalist 5: 59. 1917.  
 (Nuttall, on the plains of the Missouri; original specimens at GH!, NY!, PH!)

*Distasis (?) concinna* Hook. & Arn. Bot. Beechey Voy. 350. 1839. *Erigeron concinnus* var. *concinna*, priorable autonym generated by the publication of *E. concinnus* var. *condensatus* D. C. Eaton, 1871, q.v. *E. pumilus* var. *concinna* Dorn, Vasc. Pl. Wyoming 295. 1988. (*McLeod* via *Tolmie*. Snake River, below the Salmon Falls; an original specimen, which I had considered to be the holotype, is at K!; another original specimen, at E, was examined by G. L. Nesom and considered by him to be the holotype, but it is so badly damaged by insects that Nesom thought its precise identity to be questionable. Although it comes from the northern edge of the geographic range, the *McLeod* collection as represented at K is fully characteristic of the subspecies to which the name is here [as conventionally] applied.)

*E. concinnum* var. *condensatum* D. C. Eaton in King, Rep. U.S. Geol. Explor. 40th Parallel 5: 151. 1871. *E. condensatus* Greene, Bull. Torrey Bot. Club 24: 511. 1897. *E. pumilus* subsp. *concinnoidea* var. *condensatus* Cronquist, Brittonia 6: 182. 1947. (*Watson* 543, ridge at Robert's Station, 6000 ft., and East Humboldt Mts., 8000-9000 ft; original material at NY!, US!; holotype at YU! The YU specimen, East Humboldt Mts., 8000 ft, July 1868, looks like a smallish plant of var. *concinna*.)

*E. concinna* var. *eremica* Jeps. Man. Fl. Pl. Calif. 1057. 1925. (*Jepson* 5464, New York Mts., Calif.; holotype at JEPS!) = var. *concinna*.

*E. perglaber* S. F. Blake, J. Wash. Acad. Sci. 30: 471. 1940. (*Palmer* s.n., Ariz., in 1869; holotype at US!) = var. *subglaber*.

*E. pumilus* subsp. *intermedius* cum var. *euntermedius* Cronquist, Brittonia 6: 180. 1947. (*A. A. & E. G. Heller* 3229, near Lewiston, Nez Perce Co., Idaho; holotype at NY!)

*E. pumilus* subsp. *intermedius* var. *gracilior* Cronquist, Brittonia 6: 180. 1947. (*Cronquist* 1236, 6 mi ne. of U.S. Sheep Station headquarters, Clark Co., Idaho; holotype at MO!)

*E. pumilus* subsp. *concinnoidea* cum var. *euconcinnoidea* Cronquist, Brittonia 6: 181, 182. 1947. (*Clokey* 7743, Kyle Canyon, Charleston Mts., Clark Co., Nev.; holotype at NY!)

*E. pumilus* subsp. *concinnoidea* var. *subglaber* Cronquist, Brittonia 6: 183. 1947. *E. concinna* var. *subglaber* G. L. Nesom, Sida 10: 165. 1983. (*Rydberg & Garrett* 9141, s. of Monticello, San Juan Co., Utah; holotype at NY!)

*E. zothecinus* S. L. Welsh, Great Basin Naturalist 46: 262. 1986. (*Welsh* 22115, near N. Escalante, Kane Co., Utah; holotype at BRY!) = var. *subglaber*.

Perennial with a taproot and caudex, the caudex varying from short and little-branched to sometimes long and moderately branched; stems 5-50 cm high, usually more or less leafy, sometimes naked above the basal leaf-cluster, thinly to usually conspicuously hirsute with usually spreading hairs, often also finely glandular or slightly viscid, especially under the heads; leaves hirsute, sometimes sparsely so (varying to merely striate or subglabrous in var. *subglaber*), oblanceolate, sometimes very narrowly so, up to 8 cm long and 5 (8) mm wide, usually much smaller, the basal and lowermost cauline ones tufted and persistent in smaller forms, fewer and deciduous in larger ones, the middle and upper cauline leaves varying from numerous and nearly as large as the basal ones, in robust forms, to much reduced or absent in small forms; heads solitary

to numerous, sometimes as many as 75, the disk 7-15 mm wide, usually hemispheric or nearly so; involucle 4-7 mm high, sparsely to densely spreading-hirsute (or with only a few more or less appressed hairs in var. *subglaber*) and very finely glandular, its bracts subequal, narrow, acuminate or attenuate, green, with brown midrib and sometimes very narrow scarious margins; rays mostly 50-100+, or as few as 30 in var. *condensatus*, white or pink to deep blue, 6-15 mm long, mostly 0.7-1.5 mm wide (to 2.5 mm wide in some plants near Logan, Utah); disk-corollas mostly 3-5 mm long, the lower part of the limb (above the short basal tube) white and conspicuously indurated, commonly also slightly inflated; achenes 2-nerved, sparsely or moderately short-hairy; pappus double, the inner of ca 7-27 slender or coarse, somewhat fragile bristles, the outer of evident short bristles or narrow to broad and conspicuous short scales;  $2n = 18, 36$ , seldom 27.

Open places, often with sagebrush, at middle and lower elev., up to 2300 (3000) m; from the Great Plains w. through the Rocky Mts. to the e. side of the Cascade Mts. of Wash. and southernmost B.C., s. to n. N.M., n. Ariz., and the mts. of s. Calif. May-Aug.

This is a highly variable species, embracing enough diversity to provide for several species or infraspecific taxa, but the different phases are so thoroughly confluent as to defy rational taxonomic organization. I think it most useful to admit three geographic subspecies, two of which contain or consist of ill-defined varieties. The three subspecies form a sort of geographic ring. Subspecies *pumilus*, of the Great Plains, passes freely into subsp. *intermedius* in Montana. Subspecies *intermedius* passes equally into subsp. *concinnoidea* in southern Idaho and northernmost Nevada and Utah. Subspecies *concinnoidea* is the characteristic phase of the Great Basin and Colorado Plateau. Where subsp. *concinnoidea* comes together with subsp. *pumilus* in Colorado these two behave almost as distinct species.

Characteristic materials of the varieties here admitted within our two subspecies seem very different from each other, but the populational distinctions are dubious. The difference between var. *euntermedius* and var. *gracilior* of subsp. *intermedius* seems to be purely a matter of vigor, but there is no escaping the fact that most of the more northern plants of the subspecies come out as var. *euntermedius*, and the more southern ones as var. *gracilior*. Despite the obvious difference in averages, many individual specimens are difficult to place.

Plants of subsp. *intermedius* in the vicinity of Logan, Utah, consistently have white rays, which are often broader than in other plants of the species. In other respects most of these plants would pass as var. *gracilior*, but the larger ones could as easily be accommodated in var. *euntermedius*. These plants of the Logan area might defensibly be described as still another variety, but I choose not to do so.

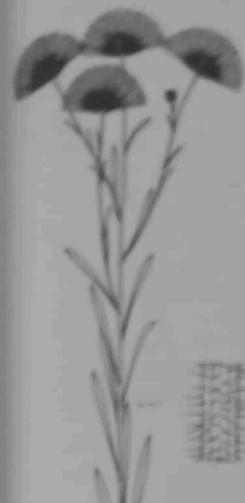
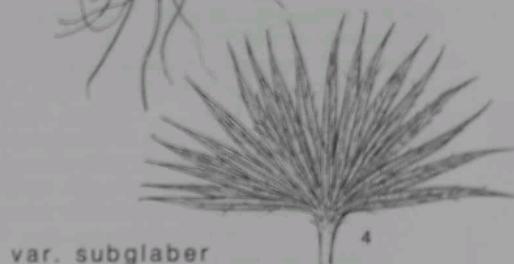
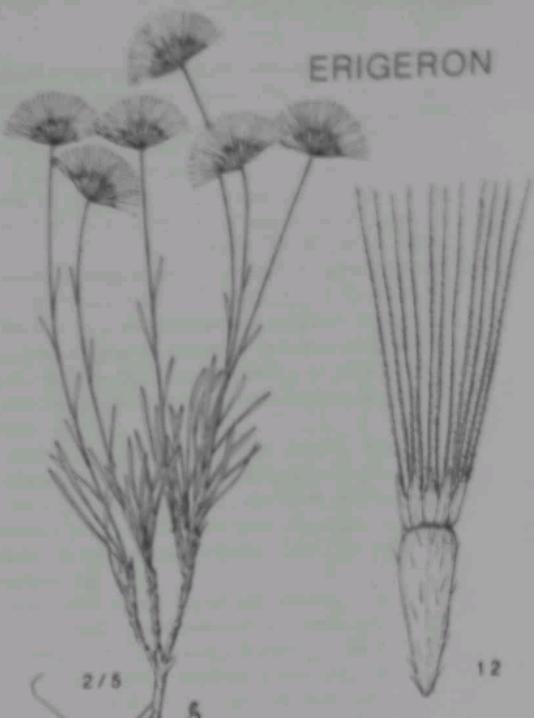
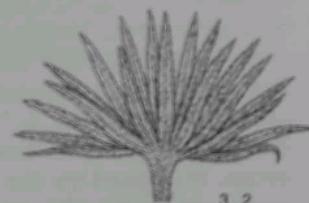
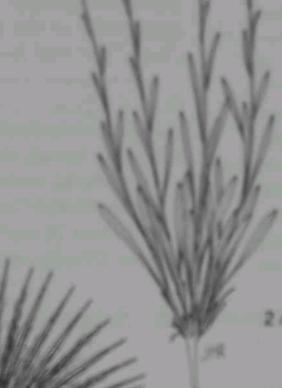
In its most characteristic form, in central and southern Utah, the var. *condensatus* of subsp. *concinnoidea* has short pubescence, the hairs not over ca 0.5 mm long, in contrast to up to 1 mm or more in var. *concinna*. Elsewhere (including the type locality of var. *condensatus*), the distinction is often less clear, and the more depauperate individuals in a local population of var. *concinna* may pass as var. *condensatus*. Furthermore, in Utah the var. *condensatus* sometimes grows with the habitually very similar *E. aphanactis* var. *congestus*, with or without apparent intermediates in the development of the rays. Based on this sort of information, one could treat *E. aphanactis* as still another subspecies of *E. pumilus*, but I do not think our understanding would thereby be improved.

There is a considerable concentration of thinly hairy to subglabrous plants of subsp. *concinnoidea* in southeastern Utah and adjacent states. These make up the var. *subglaber*. Variety *subglaber* intergrades completely with the widespread var. *concinna*, without any obvious local ecologic segregation.

In the light of the foregoing commentary, the following organization of the infraspecific taxa of *E. pumilus* should be taken with some reservation, but the morphological differences and ecogeographic correlations do exist.

1 Outer pappus of bristles, not very conspicuous; inner pappus of ca 15-27 slender, white, obscurely barbellate bristles; rays nearly always white; indurated portion of the disk-corollas glabrous; east of the continental divide (thus not in our area)  
 subsp. *pumilus*

## ERIGERON

*Erigeron caespitosus**Erigeron pumilus**var. euintermedius**var. subglaber**var. gracilior*

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*Erigeron engelmannii*