

2+ series, subequal or unequal, the outer sometimes forming calyculi. Florets 5 to 300+. Corollas yellow, orange, or white (sometimes with abaxial reddish stripes). Cypselae columnar or fusiform, \pm 10-ribbed, beaked (*Agoseris*) or not. Pappi of (0)2 to 90 equal or unequal, smooth to barbellate (rarely plumose) bristles or bristle-tipped scales, persistent or caducous. Pollen echinolophate (Feuer & Tomb, 1977). Chromosome number $2n = 18, 27$ (triploid), or 36.

Included genera: *Agoseris* Rafinesque, *Microseris* D. Don, *Nothocalais* (A. Gray) Greene, *Stebbinsoseris* K. L. Chambers, *Uropappus* Nuttall.

Stephanomeriinae Stebbins ex Solbrig, Taxon 12: 235. 1963. TYPE: *Stephanomeria* Nuttall.

Annual or perennial herbs, or shrubs. Leaf blades linear, oblong, lanceolate, oblanceolate, obovate, or scale-like; margins entire, sinuate-dentate, lobed, or pinnatifid. Capitulescences corymbiform to thyrsoid-paniculiform. Receptacles not paleate, not bristly. Involucres narrowly cylindrical or obconic. Phyllaries usually in 2 series, unequal (outer forming calyculi), sometimes graduated (*Stephanomeria cichoriacea*). Florets 3 to 15 (to 30 in *Rafinesquia*) per capitulum. Corollas pink, purple, or white. Cypselae clavate, columnar, or fusiform, smooth, sometimes grooved or \leq 5-ribbed, beaked (*Rafinesquia*) or not. Pappi of 5 to 20+ equal or unequal (*Prenanthes*), plumose (*Rafinesquia*, *Stephanomeria*), or barbellate, persistent, or deciduous (*Munzothamnus*) bristles. Pollen echinate (Tomb et al., 1974). Chromosome number $2n = 14$ (*Prenanthes*), 16, 24 (triploid), or 32.

Included genera: *Munzothamnus* P. H. Raven, *Pleiacanthus* Rydberg, *Prenanthes* Rydberg, *Rafinesquia* Nuttall, *Stephanomeria* Nuttall.

Glyptoletrininae Joongku Lee & B. G. Baldwin, subtribus nov. TYPE: *Glyptopleura* D. C. Eaton.

Herbae annuae. Laminae foliorum spatulatae vel oblongae, profunde lobatae vel pinnatifidae; margines albi, scariosi, dentati vel setoso-ciliati. Capitula portata singulatum vel capitulescentiae parce ramosae. Receptacula epaleata, non setosa. Involucra cylindracea vel urceolata, ad bases bracteis spatulatis marginibus albis, scariosis, dentatis. Phyllaria 2-seriata, \pm aequalia. Flosculi 7-16. Corollae cremaeae vel luteolae (in sicco subroseae). Cypselae clavatae, tuberculatae, valde costatae, rostratae. Pappi constati ex setis 100+, aequalibus, barbellatis, extimis deciduis. Pollina echinata. $2n = 18$.

Annual herbs. Leaf blades spatulate to oblong, deeply lobed to pinnatifid; margins white, scarious, dentate or setose-ciliate. Capitula borne singly or

capitulescences sparingly branched. Receptacles not paleate, not bristly. Involucres cylindrical to urceolate, at base with spatulate bracts with margins white, scarious, toothed. Phyllaries 2-seriate, \pm equal. Florets 7 to 16 per capitulum. Corollas cream-colored to light yellow (when dry, pink). Cypselae clavate, tuberculatae, strongly ribbed, beaked. Pappi of 100+ equal, barbellate bristles, the outermost deciduous. Pollen echinate (Tomb et al., 1974). Chromosome number $2n = 18$.

Included genus: *Glyptopleura* D. C. Eaton.

Krigininae Joongku Lee & B. G. Baldwin, subtribus nov. TYPE: *Krigia* Schreber.

Herbae annuae vel perennes. Laminae foliorum lineares, oblongae, lanceolatae, vel oblanceolatae; margines integri, lobati, vel pinnatifidi. Capitula portata singulatum vel capitulescentiae cymosae vel interdum superne subumbellatae. Receptacula epaleata. Involucra turbinate, campanulata, vel urceolata. Phyllaria 1-2+-seriata, aequalia. Flosculi 4-30. Corollae flavae vel aurantiacae. Cypselae columnares vel ovoideae, 10-20-nervatae vel costatae, non rostratae. Pappi nulli vel ex squamis 5+ constati (interdum fascientibus coronis minutis), plerumque cingentibus setis 5+, inaequalibus, spiculatis. Pollina echinolophata. $2n = 8, 10, 12, 18, 20, 30$, vel 60.

Plants annual or perennial herbs. Leaf blades linear, oblong, lanceolate, or oblanceolate; margins entire, lobed, or pinnatifid. Capitula borne singly or capitulescences cymiform or subumbelliform. Receptacles not paleate. Involucres turbinate, campanulate, or urceolate. Phyllaries 1- or 2+-seriate, equal. Florets 4 to 30 per capitulum. Corollas yellow or orange. Cypselae columnar or ovoid, 10- to 20-nerved or -ribbed, not beaked. Pappi none or of 5+ scales (sometimes forming minute crowns), usually surrounding 5+, unequal, spiculate bristles. Pollen echinolophate (Feuer & Tomb, 1977). Chromosome number $2n = 8, 10, 12, 18, 20, 30$, or 60.

Included genus: *Krigia* Schreber.

Lygodesmiinae Joongku Lee & B. G. Baldwin, subtribus nov. TYPE: *Lygodesmia* D. Don.

Herbae annuae (*Shinnersoseride*) vel perennes. Laminae foliorum lineares vel lanceo-lineares (vel squamiformes distaliter); margines plerumque integri, interdum lobati. Capitula raro portata singulatum, capitulescentiae plerumque ramosissimae. Receptacula epaleata. Involucra cylindracea vel subcylindracea. Phyllaria 2-seriata, inaequalia (extimis fascientibus calyculis). Flosculi 5-12. Corollae subrosaceae, purpureae, vel albae. Cypselae columnares vel fusiformes, laeves, striatae, rugosae, vel costatae, non rostratae. Pappi ex setis 24-250, aequalis, barbellatis (et squamis 5, subulatis in *Chaetadelpha*), constati omnibus persistentibus. Pollina echinata vel echinolophata (*Lygodesmia*). $2n = 12$ (*Shinnersoseride*) vel 18, vel 27 (triploideis).

Annual (*Shinnersoseris*) or perennial herbs. Leaf blades linear or lance-linear (or scale-like distally); margins usually entire, sometimes lobed. Capitula rarely borne singly, capitulescences usually much-branched. Receptacles not paleate. Involucres cylindrical or subcylindrical. Phyllaries 2-seriate, unequal (the outer forming calyculi). Florets 5 to 12 per capitulum. Corollas pink, purple, or white. Cypselae columnar or fusiform, smooth, striate, rugose, or ribbed, not beaked. Pappi of 24 to 250 equal, barbellate bristles (and 5, subulate scales in *Chaetadelpha*), all persistent. Pollen echinate or echinolophate (*Lygodesmia*) (Tomb et al., 1974). Chromosome number $2n = 12$ (*Shinnersoseris*) or 18, or 27 (triploids).

Included genera: *Chaetadelpha* A. Gray, *Lygodesmia* D. Don (sensu Tomb), *Shinnersoseris* Tomb.

Phalacroseridinae Joongku Lee & B. G. Baldwin, subtribus nov. TYPE: *Phalacroseris* A. Gray.

Herbae perennēs. Laminae foliorum lineares, lanceolines, vel oblanceolatae; margines integri. Capitula portata singulatim (pedunculis scapiformibus); receptacula epaleata; involucria campanulata; phyllaria 2+-seriata, aequalia. Flosculi 13+, corollae flavae. Cypselae fusiformes, laeves, non rostratae; pappi nulli. Pollina echinolophata. $2n = 18$.

Perennial herbs. Leaf blades linear, lance-linear, or oblanceolate; margins entire. Capitula borne singly (peduncles scapiform). Receptacles not paleate. Involucres campanulate. Phyllaries 2+-seriate, equal. Florets 13+ per capitulum. Corollas yellow. Cypselae fusiform, smooth, not beaked. Pappi none. Pollen echinolophate (Feuer & Tomb, 1977). Chromosome number $2n = 18$.

Included genus: *Phalacroseris* A. Gray.

Pinaropappinae Joongku Lee & B. G. Baldwin, subtribus nov. TYPE: *Pinaropappus* Lessing.

Herbae perennes vel frutices rosulatae (*Marshalljohnstonia*). Laminae foliorum lineares (vel squamiformes distaliter), ellipticae, vel rhombeae; margines integri, dentati, vel lobati. Capitula portata singulatim. Receptacula paleata (*Pinaropappo*) vel epaleata. Involucria obconica vel campanulata. Phyllaria 3+-seriata, inaequalia. Flosculi 10-18. Corollae subsaccatae, purpureae, vel albae. Cypselae sulcis 5, angustis, aequaliter dispositis, columnares vel fusiformes, non rostratae (distaliter attenuatae in *Pi-*

naropappo p.p.). Pappi ex setis 40-60, aequalis, barbellatis, persistentibus constati. Pollina echinata. $2n = 18$ vel 36.

Perennial herbs or rosette shrubs (*Marshalljohnstonia*). Leaf blades linear (or scale-like distally), elliptic, or rhombic; margins entire, dentate, or lobed. Capitula borne singly. Receptacles paleate (*Pinaropappus*) or not paleate. Involucres obconic or campanulate. Phyllaries 3+-seriate, unequal. Florets 10 to 18 per capitulum. Corollas pink, purple, or white. Cypselae columnar or fusiform, with 5 narrow, equally spaced furrows, not beaked (distally attenuate in *Pinaropappus* pro parte). Pappi of 40 to 60 equal, barbellate bristles, persistent. Pollen echinate (Tomb et al., 1974). Chromosome number $2n = 18$ or 36.

Included genera: *Marshalljohnstonia* Henrickson, *Pinaropappus* Lessing.

Pyrrhopappinae Joongku Lee & B. G. Baldwin, subtribus nov. TYPE: *Pyrrhopappus* DC.

Herbae annuae vel perennes. Laminae foliorum ellipticae, lanceolatae, vel oblanceolatae; margines integri vel pinnatifidi. Capitula portata singulatim vel capitulescentiae laxae corymbiformes. Involucria cylindracea vel anguste campanulata. Phyllaria 2-seriata, inaequalia (extimis fasciatis calyculis). Flosculi 30-150+. Corollae flavae, purpureae, vel albae. Cypselae fusiformes, 5-12-costatae, rostris fragilibus. Pappi ex setis 119-155, aequalis, barbellatis (cum pilis minutis, reflexis subtentis in *Pyrrhopappo*) constati, persistentibus. Pollina echinata (*Picrosia*) vel echinolophata (*Pyrrhopappo*). $2n = 12, 14$, vel 24.

Annual or perennial herbs. Leaf blades elliptic, lanceolate, or oblanceolate; margins entire or pinnatifid. Capitula borne singly or capitulescences loosely corymbiform. Receptacles not paleate. Involucres cylindrical to narrowly campanulate. Phyllaries 2-seriate, unequal (the outer forming calyculi). Florets 30 to 150+ per capitulum. Corollas yellow, purple, or white. Cypselae fusiform, 5- to 12-ribbed, beaks fragile. Pappi of 119 to 155 equal, barbellate bristles (subtended by minute, reflexed hairs in *Pyrrhopappus*), persistent. Pollen echinate (*Picrosia*) or echinolophate (*Pyrrhopappus*) (Feuer & Tomb, 1977). Chromosome number $2n = 12, 14$, or 24.

Included genera: *Picrosia* D. Don, *Pyrrhopappus* DC.

KEY TO PRINCIPALLY NORTH AMERICAN SUBTRIBES OF CICHORIEAE

- 1a. Capitulescences monocephalic (capitula borne singly); cypselae not ribbed or furrowed; pappi absent Phalacroseridinae
- 1b. Capitulescences corymbiform to thyrsoid-paniculiform or subumbelliform, or if monocephalic, then cypselae ribbed or furrowed and pappi present (rarely absent in *Microseris douglasii*).
 - 2a. Cypselae beaked.
 - 3a. Some or all pappus bristles caducous or fragile.