

NEW INFRAFAMILIAL TAXA IN ASTERACEAE

Jose L. Panero

Section of Integrative Biology, 1 University Station, A6700,
The University of Texas, Austin, TX 78712, USA
panero@mail.utexas.edu

V. A. Funk

US National Herbarium, Department of Botany, P.O. Box 37012,
Smithsonian Institution MRC 166, Washington, DC 20013-7012, USA

ABSTRACT

Phylogenetic studies based on chloroplast DNA have recently identified several lineages that we recognize at the tribal and subfamily levels. Subfamilies Stifftioideae and Wunderlichioideae and tribes Hyalideae, Onoserideae, and Wunderlichieae are described.

KEY WORDS: Compositae, Stifftioideae, Wunderlichioideae, Mutisioideae, Hyalideae, Onoserideae, Wunderlichieae

Molecular studies using 10 loci of the chloroplast DNA and reported elsewhere (Panero & Funk submitted) reveal several clades that require naming to maintain a classification that recognizes only monophyletic groups. We describe the following new taxa formerly placed in Mutisioideae: Mutisieae. These names complement those already published in Panero & Funk (2002), based on the same molecular phylogenetic studies.

Stifftioideae (D. Don) Panero subfam. & comb. nov.; basionym: tribe Stifftieae D. Don, *Trans. Linn. Soc. London*, 16: 291, 1830. Type: *Stifftia* J. C. Mikan

Asteraceae subfamilia ad Mutisioideae similis sed differt (charactera in combinatione) foliis crasse coriaceis rare tenuibus in extremitatibus ramulorum fasciculatis, corollis grandibus tubis antherarum exsertis, capitulis phyllariis multiseriatis, stylis brachiis

glabris, cypselis plerumque 10-nervatis, et pappo aliquando vivide colorato.

Small trees, shrubs, vines. Leaves alternate, rarely opposite, petiolate, membranaceous to coriaceous, with margins entire, glabrous to pubescent. Capitula terminal, rarely axillary, solitary to large paniculiform cymes, rarely tightly grouped in glomerule-like cymes, homogamous, rarely heterogamous. Involucres narrowly cylindrical to hemispheric; phyllaries in 3-several series, imbricate, gradate. Receptacles epaleaceous. Florets hermaphrodite; corollas ligulate, bilabiate or actinomorphic, the lobes sometimes strongly coiled, white, yellow, pink, purple, orange or red; anthers 5, caudate, calcarate; anther appendages apiculate, rarely tapered; styles glabrous, style arms glabrous, rarely papillate or bullate on abaxial surface. Cypselae cylindrical; pappi of multiple capillary bristles, sometimes subplumose, mostly white or stramineous, rarely brightly colored, yellow-orange or pink.

The subfamily contains 10 genera: *Achnopogon* Maguire, Steyermark & Wurdack, *Dinoseris* Griseb., *Duidaea* S. F. Blake, *Eurydochus* Maguire & Wurdack, *Glossarion* Maguire, *Gongylolepis* R. H. Schomb., *Hyaloseris* Griseb., *Neblinaea* Maguire & Wurdack, *Quelchia* N. E. Br., and *Stiffia* J. C. Mikan.

Wunderlichioideae Panero & V. A. Funk, subfam. nov.,
Wunderlichieae Panero & V. A. Funk, tribus nov. Type:
Wunderlichia Riedel ex Benth. & Hook. f.

Asteraceae subfamilia ad Mutisioideae similis sed differt (charactera in combinatione) foliis crasse coriaceis aut deciduis, paginis abaxialibus foliorum aliquando dense pubescentibus albis in facie, corollis grandibus tubis antherarum exsertis, corollis plerumque actinomorphis rare bilabiatis aut ligulatis, capitulis phyllariis multiseriatis, antheris plerumque apiculatis, stylis brachiis papillatis aut laevibus, et cypselis plerumque cylindricis 10-nervatis.

Perennial herbs or shrubs. Leaves alternate, petiolate or sessile, coriaceous; blades linear, ovate to pandurate, obovate, with margins entire, undulate to tightly inrolled and then leaves (tubular,

cylindrical), sometimes densely ferruginous pubescent on abaxial surface. Capitula terminal, solitary, simple dichasia to paniculiform cymes, homogamous or heterogamous. Involucres cylindrical to hemispheric; phyllaries in 3-several series, imbricate, gradate. Receptacles paleaceous or epaleaceous. Florets hermaphroditic; corollas bilabiate, actinomorphic, the lobes erect or rightly coiled, pink, white, purple, magenta, lavender, white or cream-colored; anthers 5, caudate, calcarate; anther appendages apiculate or tapered; styles glabrous, the arms glabrous, papillose or bullate abaxially. Cypselae cylindrical, 10-ribbed; pappi in 3-4 series, sometimes plumose.

The subfamily contains 8 genera: *Chimantaea* Maguire, Steyerl. & Wurdack, *Ianthopappus* Roque & D. J. N. Hind, *Hyalis* D. Don ex Hook. & Arn., *Leucomeris* D. Don, *Nouelia* Franch., *Stenopadus* S. F. Blake, *Stomatochaeta* (S. F. Blake) Maguire & Wurdack, *Wunderlichia* Riedel ex Benth. & Hook. f.

Hyalideae Panero, tribus nov. Type: *Hyalis* D. Don ex Hook. & Arn.

Tribus subfamiliae Wunderlichioideae (in combination) distinctus appendicibus antherarum apiculatis, brachiis stylorum laevibus, et pappo et corollis conspicue exsertis supra involucra in speciebus plurimis.

Perennial herbs, shrubs, or small trees. Leaves alternate; leaf blades entire, linear to broadly obovate, sericeous to pannose white on abaxial surfaces, margins entire to slightly serrate. Capitula terminal, solitary or in small to compact paniculiform cymes, rarely corymbiform cymes, discoid or radiate. Involucres turbinate to campanulate; phyllaries in 3-multiple series, imbricate, gradate. Receptacles epaleaceous. Florets hermaphroditic; corollas ligulate, bilabiate with adaxial lobes strongly coiled, or actinomorphic, white, burgundy or pink; anthers 5, caudate, calcarate; anther appendages apiculate; styles glabrous; style arms glabrous. Cypselae cylindrical to obovoid; pappi of multiple capillary bristles.

This tribe is placed in subfamily Wunderlichioideae and contains 4 genera: *Ianthopappus* Roque & D. J. N. Hind, *Hyalis* D. Don ex Hook. & Arn., *Leucomeris* D. Don, and *Nouelia* Franch.

Onoserideae (Bentham) Panero & V. A. Funk, tribus & comb. nov.
basionym: subtribe Onoseridinae Benth. & Hook. f., Gen. Pl. 2: 168,
215, 1873. Type: *Onoseris* Willd.

Tribus subfamiliae Mutisioideae (in combinatione) distinctus
corollis in morphologia similis et setis paleaceis dimorphis.

Annual or perennial herbs, shrubs, sometimes dioecious. Leaves alternate; blades entire, linear to ovate, rarely deltate, suborbicular or obovate. Capitula solitary, of a few dichasia or rarely forming large capitulescences with hundreds of capitula, radiate, rarely discoid. Involucre campanulate to hemispheric, with several series of imbricate phyllaries. Receptacles epaleate, rarely alveolate or fimbriate. Ray florets female; corollas bilabiate with a 3-toothed outer lobe and 1-2-toothed inner lobe, rarely absentred, orange, purple, pink, white or bicolored white-purple. Disc florets hermaphrodite, fertile or functionally staminate; corollas 5-lobed, the lobes short to long, straight or recurved, equal or unequal in length, sometimes with one lobe enlarged, red, yellow, greenish-yellow, purple, violet, white or pink; anthers 5, caudate, calcarate; styles glabrous, rarely papillose on abaxial surface of style arms. Cypselae cylindrical to turbinate, glabrous to pubescent; pappi 2-4-seriate, mostly heteromorphic. Chromosome number, $x = 9$.

This tribe is placed in subfamily Mutisioideae and contains 6 genera including *Aphyloclados* Wedd., *Gypothamnium* Phil., *Lycoseris* Cass., *Plazia* Ruiz & Pav., *Onoseris* Willd., and *Urmenetea* Phil.

ACKNOWLEDGEMENTS

We thank B. L. Turner and Jim Henrickson for reading the manuscript and providing helpful suggestions. We thank Guy Nesom for providing the Latin diagnoses. Molecular studies and fieldwork were supported by NSF grant 0344116 (to JLP) and Mellon Foundation and Smithsonian Scholarly Studies grants (to VAF).

LITERATURE CITED

- Panero, J. L. and V. A. Funk. 2002. Toward a phylogenetic subfamilial classification for the Compositae. *Proc. Biol. Soc. Wash.* 115: 909-922.
- Panero, J. L. and V. A. Funk. (submitted). The value of sampling anomalous taxa in phylogenetic studies: major clades of the Asteraceae revealed. *Mol. Phylogenet. Evol.* (submitted)