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Classification of the genus *Melampodium* (Asteraceae)

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The genus *Melampodium* consists of 39 species distributed throughout Mexico and Central America with extensions northward into the southwestern United States and southward into Colombia and Brasil. The genus reflects broad chromosomal evolution involving dysploidy and euploidy with n = 9, 10, 11, 12, 14, 18, 20, 23, 24, 27, 28, 30 and 33 having been documented. The most recent classification of the genus (STUESSY 1972), based primarily on morphology and chromosome numbers, recognized six taxonomic sections: *Alcina, Bibractiaria, Melampodium, Rhizomaria, Serratura* and *Zarabellia*. Section *Melampodium,* which contains 20 species, was divided into five series: *Cupulata, Leucantha, Longipila, Melampodium* and *Sericea.* Recent molecular studies utilizing nuclear ribosomal ITS and chloroplastic matK have allowed these classificatory hypotheses to be tested. Congruence between the two markers reveals sections *Bibractiaria, Rhizomaria* and *Serratura* to be holophyletic. The largest section *Melampodium* is holophyletic with both markers, except that *M. longipilum* is shown as an outlier with ITS. Section *Zarabellia* appears holophyletic in matK but biphyletic with ITS, suggesting recognition of two distinct series. Section *Alcina* is the most problematic, being triphyletic in ITS and matK and with the species not connecting to the same relatives. These insights recommend recognition of two new sections from within section *Alcina,* one housing *M. nutans* and another *M. glabrum.* These may represent ancient independent lines that have diverged from the original x = 11 ancestors. Within section *Melampodium,* series *Leucantha* and *Longipila* are holophyletic, and series *Cupulata* nearly so, with *M. glabribracteatum* deserving treatment in a series of its own. The most complex relationships are between series *Melampodium* and *Sericea.* Molecular and cytogenetic data reveal polyploid origins for several of these species, in some cases involving parents between the two series, such as *M. nayaritense* and *M. sericeum,* which exacerbates taxonomic delimitation.

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Literatur:

STUESSY, T.F., 1972: A revision of the genus *Melampodium* (Compositae: Heliantheae). Rhodora **74**: 1-70, 161-219.

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