

testa. The combination of floral and seed morphology identify three groups of twig epiphytes: *Rodriguezia* Ruiz Lopez & Pavon, *Leochilus*, and their close relatives; *Psycmorchis* Dodson & Dressler and *Oncidium* sect. *Disticha* Garay & Stacy (*O. crista-galli* Reichb. f.); and the "variegata oncidiums" (the former *O.* sect. *Oncidium*).

420

CLARK, CURTIS. Biological Sciences Department, California State Polytechnic University, Pomona, CA 91768. - The phylogeny of *Encelia* (Asteraceae: Heliantheae).

Encelia consists of nineteen species and subspecies of arid western North and South America. Cladistic methods were applied to information from gross morphology, micromorphology, and phytochemistry to derive a cladogram for the group. The genus is diagnosed by rounded shoulders of the achene converging on a narrowed apical notch. *Encelia nutans*, generally treated as an *Enceliopsis*, shares only that feature with the rest of the genus. The remaining taxa form two clades. One is diagnosed by UV-reflecting ray corollas, a unique benzofuran-benzopyran dimer, and the presence of moniliform trichomes. The color of the disk corollas and stigmas, morphology of leaf trichomes, and disposition of the capitula establish kinship within the clade. The other is diagnosed by erect fruiting heads and the absence of resin ducts and their associated secondary metabolites. Within this clade, the presence of broad-based trichomes and the absence of all benzopyrans and benzofurans are additional apomorphies. Three species are of hybrid origin, one involving a parent from each of the two clades. The resulting cladogram provides insight into the evolution and ecology of the genus.

421

CONSAUL, LAURIE L.*, and J. MCNEILL. Department of Biology, University of Ottawa, Ottawa, Canada, K1N 6N5. - The biosystematics of the *Polygonum lapathifolium* complex and closely related species of section *Persicaria*.

Polygonum lapathifolium and *P. scabrum* are found across North America, usually as agrestal or ruderal weeds (sometimes growing together), but, in the case of the former at least, also as components of natural vegetation. Some works treat *P. scabrum* as a variety of *P. lapathifolium*, and others reduce it to synonymy completely. Plants identifiable to these taxa differ biologically, in that those of *P. scabrum* germinate more easily and flower more rapidly than those of *P. lapathifolium*. Although the two taxa are usually also easily distinguishable by inflorescence and leaf characteristics, identification problems exist for about 5% of individuals in the field and a somewhat greater percentage in herbarium material. Multivariate analysis of fruit characteristics show clear differences between the two taxa and support the view that species rank may be the most appropriate. This view is not supported, however, by electrophoretic data. From a study of 15 enzymes, it was found that 17 of the 22 loci resolved show absolutely no variation. Only leucine aminopeptidase (LAP) revealed allozymes characteristic for the two taxa. A comparison of these results with the variation found in European populations of the *P. lapathifolium* complex will be presented.

422

COWAN, CLARK P. Department of Botany, University of Texas, Austin, TX 78712. - Taxonomic value of seed morphology in the classification of the New World species of *Stemodia* (Scrophulariaceae).

The genus *Stemodia* (Scrophulariaceae) is comprised of some 30 species in the New World and 20 in the Old World and occurs between latitudes of 30 N and 30 S. The traditional subgeneric classification of the New World species as presented in the most recent monograph is based on inflorescence type and the presence or absence of floral bracteoles. This lead Minod and Pennell to recognize an additional 5