

## PLANT TAXONOMY

Chairman: JOHN A. BACONE

Director, Division of Nature Preserves, Indiana Department of Natural Resources,  
Indianapolis, Indiana 46204

Chairman-Elect: RICHARD J. JENSEN

Department of Biology, St. Mary's College, Notre Dame, Indiana 46556

### ABSTRACTS

**The Flora of the Southeastern United States: A Review.** BUDDY CANTRELL, Department of Biology, The University of Notre Dame, Notre Dame, Indiana 46556.—Beginning with the earliest expeditions to the New World, the flora of the North American colonies was of great interest to botanists and horticulturalists, alike, in Europe. The travels, collections, and correspondence of early biologists including John Banister and John and William Bartram introduced much of the European community to the southeastern flora. The notes and specimens of John Clayton served as the basis of Gronovius' *Flora Virginica* and southern plants, particularly from Virginia and the Carolinas, also were reported in works by such Old World masters as Linnaeus and Andre Michaux. A prominent interest in the flora of North and South Carolina was first evidenced by Thomas Walter's *Flora Caroliniana* and, later, by Stephen Elliot's *Sketches of the Botany of South Carolina and Georgia*. The first regional flora was *Flora of the Southern United States* by Alvan Wentworth Chapman and the first state floras were Augustin Gattinger's *Flora of Tennessee* and Charles T. Mohr's *Plant Life of Alabama*. John K. Small published works concerning the flora of Florida and produced three regional treatises. His *Manual of the Southeastern Flora* is the most recent, comprehensive flora though several excellent state and specialized treatments have been completed. Continuing biosystematic and floristic work by southeastern botanists has, in part, satisfied the floristic needs of their respective interests and has produced smaller works of great interest to the taxonomic community. These endeavors provide the framework for the *Vascular Flora of the Southeastern United States* of which the first volume, *Asteraceae* by Arthur Cronquist, was released in 1979.

**An Updated, Computer-based Checklist Of The Vascular Plants of Indiana: The Unending Synthesis.** THEODORE J. CROVELLO, Department of Biology, The University of Notre Dame, Notre Dame, Indiana 46556, and CLIFTON KELLER, Andrews University, Berrien Springs, Michigan.—The flora and fauna of any geographic area may seem fixed and unchanging, but it is actually in dynamic and constant change. For an area the size of Indiana, this change is caused by: habitat modifications (both natural as well as human caused); by inherent characteristics of organisms; and by the amount of taxonomic and biogeographic knowledge available at a given time. This last factor affects what taxa are considered to be present in Indiana, but it also mandates changes in taxonomic nomenclature. This "unending synthesis" also mandates changes in taxonomic nomenclature. This "unending synthesis" of knowledge and resultant nomenclatural changes causes problems for people in both academic and applied positions. For example, use of Deam's 1940 Flora of Indiana does not reflect either nomenclatural changes of the taxa he described or the addition of the new taxa discovered growing in the state since 1940. We have developed a computer-based checklist of the vascular plants of In-

diana. Nomenclatural changes are based on the recently published checklist of North America, North of Mexico by J. T. and R. Kartesz. Sources of information on taxa new to the state included: those published in the Proceedings of The Indiana Academy Of Science since 1940; those in Swink's 1974 edition of the Flora of the Chicago Region; and the Indiana Department of Natural Resources (particularly the Division of Nature Preserves). Our computer-based checklist allows us to relate any nomenclatural changes since Deam with the names that he used. This linking of the most recent nomenclature with that use in the standard and classic floristic work of Indiana (Deam's 1940 Flora) was a high priority. The checklist not only will be available in regular published form, but also as a customized computer printout that will include the latest information on new state records and nomenclatural changes. Readers are requested to send fully documented herbarium specimens of possibly new state records to Crovello at the University of Notre Dame to assure proper credit and inclusion in the checklist.

**Phylogenetic Reconstruction in *Quercus*.** RICHARD J. JENSEN, Saint Mary's College Notre Dame, Indiana 46556.—Fifteen taxa of red oaks native to the eastern United States were examined with the objective of estimating phylogenetic relationships within the group. A set of 28 characters was used as the basis for UPGMA cluster analysis, Wagner Tree construction, and character compatibility analysis. The phenetic and compatibility tree diagrams were used as input to the Wagner algorithm and lengths and deviation ratios were determined for each. Standard Wagner analysis produced two trees: a tree of length 107 was produced with the OTUs arranged alphabetically and a tree of length 106 was produced after the OTU sequence was randomized. The lengths of the phenetic trees varied from 110 to 114, a tree approximating Trelease's 1924 view of species relationships had a length of 120, and the compatibility tree had a length of 111. Deviation ratios were lowest for trees based on compatibility (0.55), correlations from standardized characters (0.56), distances from standardized characters (0.58), the Wagner Tree of length 107 (0.59), and the Wagner Tree of length 106 (0.61). Perhaps the most interesting aspect of the study is revealed by comparing relationships depicted by these trees with those illustrated by two independent data sets. In both cases, the tree exhibiting the greatest agreement with these new data sets is that produced by character compatibility. Even so, there are reasons to question all of the derived trees. The basic problems seem to center on (1) the possibility of the group being polyphyletic, (2) the possibility of misrepresentation of character trends, and (3) the possibility of reticulate evolution.

**Vascular Plants of Sand Hill Nature Preserve, Pulaski County, Indiana.** VICTOR L. RIEMENSCHNEIDER, Department of Biological Sciences, Indiana University at South Bend, South Bend, Indiana 46615.—Sand Hill Nature Preserve, at 24.3 ha area, is located in the northern one third of Tippecanoe River State Park, 11.3 km north of Winamac, Indiana. The preserve and surrounding area are within the Outwash and Dune Facies of the Atherton Formation. The soils are medium to strongly acid, very poorly to excessively drained and sandy textured. The pre-settlement vegetation of this area ranged from oak forests dominated by white and black oak to wet marsh prairie. Today, the preserve communities are black oak forest, pin oak-black gum-red maple swamp forest, scotch and white pine plantations and degenerate shrub prairie. The 220 species of vascular plants identified in the preserve area reflect the vegetational history of the preserve including early attempts to farm portions of the area. None of the species are on Indiana's special plants list. An alphabetical list of species is available from the author.

**The Epidermal Anatomy of *Deeringothamnus* Small and Its Taxonomic Implications.** JOHN L. ROTH, JR. and DAVID L. DILCHER, Department of Biology, Indiana University, Bloomington, Indiana 47405.—The generic status of *Deeringothamnus* Small has been argued extensively in systematic literature for the past fifty years. Some favor retaining *Deeringothamnus* as a separate genus while others would combine it with *Asimina* Adans. However, due to a lack of compelling evidence the systematic treatment of *Deeringothamnus* has been largely a matter of personal taxonomic judgment. This report presents for the first time a characteristic of the two *Deeringothamnus* species which is unique among the more than 2000 species of the Annonaceae. The leaves of *Deeringothamnus* are amphistomatic: stomatal complexes are found on both the abaxial and adaxial surfaces. Together with evidence pointed out by previous authors, especially the differences in pollen morphology, this character argues for the recognition of *Deeringothamnus* as a separate genus of the Annonaceae that is closely related to but distinct from *Asimina*.

***Najas marina* L. in Indiana.** HELENE STARCS, Indianapolis.—*Najas marina* L., the spiny naiad, was found by the author growing in the highly calcareous Beaverdam Lake, Steuben County: 8-26-1974 and 8-31-1980. This is a new plant distribution record for the state of Indiana.