

## PLANT TAXONOMY

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### ABSTRACTS

**Flora of Indiana Railroad Prairies.** JOHN A. BACONE, LEE A. CASEBERE, AND THOMAS W. POST, Indiana Department of Natural Resources, Division of Nature Preserves, Indianapolis, Indiana 46204. —During the past five years, a systematic search for remnant railroad prairies has been conducted in the northwestern part of Indiana. Historically this area was considered Indiana's "prairie region," a natural continuum of the Grand Prairie of Illinois. Stretches of potential prairie were first located by aerial surveillance during the fall when the prairie grasses easily were identified by their bronze color. Follow up ground checking of these potential sites located the best remaining stretches of railroad prairie in the State. These prairies exist today because of their protection from plowing and grazing. This was due to their location on railroad right-of-ways that were established prior to these agricultural practices. Periodic burning has maintained these prairies to the present time.

We present species lists and characteristics of dry, mesic and wet sand and silt loam prairies found along these railroad lines in Benton, Jasper, Lake, LaPorte, Newton, Porter, Pulaski, Starke and White Counties. We also discuss a number of rare plants found in these railroad prairies.

**Geographic Spatial Auto-correlation in Fruit Characters of *Quercus ellipsoidalis*.** E. J. HILL AND RICHARD J. JENSEN, Department of Biology, Saint Mary's College, Notre Dame, Indiana 46556. —*Quercus ellipsoidalis* is an oak found in the Great Lakes Region from Minnesota east to northwestern Ohio and south to Iowa and the northern thirds of Indiana and Illinois. The species was recognized originally on the basis of its fruit morphology, especially the shape of the nuts. Seventeen morphological characters, consisting of both raw measurements (size characters) and ratios (shape characters), have been analyzed for 235 trees from 36 counties in Wisconsin, Illinois, Indiana and Michigan. Geographic spatial auto-correlation revealed significant variation in all size characters. The pattern of auto-correlations depicted in correlograms for size characters is distinctly clinal. On the other hand, all shape characters yielded few, if any, significant auto-correlations and their correlograms revealed crazy quilt patterns. These results suggest that, in *Quercus ellipsoidalis*, size characters are responding to broad environmental influences, the clines are distinctly north-south, while shape characters, which do vary significantly among samples, have no predictable pattern of variation. (The authors acknowledge support from NSF Grants DEB-7917958 and BSR-8415059 and the Indiana Academy of Science).

**AUTOCOR: A Program for Analyzing Geographic Spatial Auto-correlation.** RICHARD J. JENSEN, Department of Botany, Saint Mary's College, Notre Dame, Indiana 46556. —Detecting patterns of character variation in geographic space is an impor-

tant, yet poorly developed, aspect of plant taxonomy and systematics. The method of spatial auto-correlation analysis, which permits significance testing of character patterns, was introduced to the systematic literature in the late 1970s. Examples of the application of this method to zoological problems exist, but to date there have been no published applications in plant systematics. The author has developed a computer program, AUTOCOR, which will perform significance tests on the patterns revealed by continuous and dichotomous characters. The program was initially written in MBASIC and has recently been implemented in an IBM-PC format. Spatial auto-correlation analysis will be explained and the use of the program demonstrated with some simple examples. The program will be made available to those interested in its application to their own research. (The author acknowledges support from NSF Grant BSR-8415059).

**The Computerization of Regional Floristic Data.** CLIFTON KELLER AND KIRBY GUILD, Andrews University, Berrien Springs, Michigan 49104.—Students of biology, interested in the distribution of plants and animals, are hampered often in their work by the quantity and quality of data available and its format. Charles Deam in his *Flora of Indiana* (1940) presented distribution maps with locations of voucher specimens for all known taxa in Indiana. Since then, numerous county records have been reported and other changes have occurred making the current status of Indiana's flora difficult to discern. Because printed information is expensive and difficult to modify and distribute, we have created a microcomputer database with appropriate programs to display it. We used an IBM compatible Zenith 150 microcomputer with graphics capability to display our data. Our shaded distribution maps of Indiana show, in addition to Deam's original data, over eight thousand county records not reported by Deam. The availability of microcomputers with graphic displays and their ability to convert data from one format to another makes ideal the media of computer communications for storing, updating and sharing data among investigators.

**Natural Area Remnants within the Indiana Army Ammunition Plant, Charlestown, Indiana.** RICHARD H. MAXWELL, Indiana University Southeast, New Albany, Indiana 47150.—A botanical survey was begun within the 20,000 acre plant in 1976. Concentrating on 1,400 to 3,000 acres in Clark County on both sides of Fourteen Mile Creek near the Ohio River, the survey is enhancing the southern Indiana reference collection in the IUS herbarium.

Ecologists with the Indiana Natural Heritage Program have targeted several areas for investigation. Glades containing *Heliotropium tenellum*, *Leavenworthia uniflora*, *Linum sulcatum*, and *Ophioglossum engelmanni*, and limestone faces containing large populations of *Sullivantia sullivantii* with *Carex eburnea* and *Heuchera villosa* var. *macrorhiza*, seem least disturbed. Appropriate checklists will be presented to the Academy.

Other areas include the Ohio River bluffs with scattered populations of *Sedum telephoides*, and the Lick Creek ravine, a lowland forest community remnant. Two others share upland xeric conditions and colonies of *Leavenworthia uniflora*: one a large, open bluegrass-poverty grass community, the other a small, fossil strewn waste surrounded by dry sinkholes.

The survey is being conducted with the permission and cooperation of the Department of the Army and ICI Americas, Inc.