

PLANT TAXONOMY

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ABSTRACTS

The Discovery of Native Rare Vascular Plants in Northern Indiana. JAMES R. ALDRICH, LEE A. CASEBERE, Division of Nature Preserves, Indiana Department of Natural Resources, Indianapolis, Indiana 46204 and HELENE STARCS, 4250 Crittenden Avenue, Indianapolis, Indiana 46205.—Active field surveys during recent years have greatly influenced our knowledge of the endangered and threatened flora of northern Indiana. This report includes several new county records and the rediscovery of two species, dragon's mouth orchid—*Arethusa bulbosa* (Orchidaceae) and bluebead lily—*Clintonia borealis* (Liliaceae), thought to be extirpated in Indiana. A native species new to the Indiana flora, bog valerian—*Valeriana uliginosa* (Valerianaceae), is also discussed.

A Preliminary Survey of Phenolic Compounds in Sympatric Populations of *Quercus shumardii* and *Q. rubra* in Northern Indiana. ROXANE A. DUPUIS AND RICHARD J. JENSEN, Department of Biology, St. Mary's College, Notre Dame, Indiana 46556.—Thin layer chromatography was used to investigate phenolic profiles in sympatric populations of *Q. shumardii* Buckl. and *Q. rubra* L. The populations sampled were chosen because of apparent hybridization between these two taxa. Four sites in northern Indiana were sampled in June, 1984. Several twigs were taken from each tree and leaves were air dried in standard plant presses. Methanolic extracts were prepared and spotted on acetate sheets coated with polyamide. Two-dimensional thin layer chromatography was conducted with several solvent systems. The patterns observed were compared with those from trees of the same species from outside the study area. The results suggest that both species contain "unique" compounds. Further, there is evidence of hybridization in that several trees yield patterns that appear to be additive with respect to the species' patterns.

Rust Species Diversity in Temperate and Tropical Regions of the Americas. J.F. HENNEN, R.M. LOPEZ-F. AND M.M. HENNEN, Department of Botany and Plant Pathology, Purdue University, West Lafayette, Indiana 47907.—Nineteen of the 103, (18%), are new species. We estimate the number of vascular plant species to be 300. Indiana is about 232,262 times larger than our Brazilian study area but has only about one and three-fourths times as many species of rusts. In Indiana about 1 out of 14 (7.36%) vascular plant species has a rust; while in Mogi-mirim, about 1 out of 3 (33.3%) vascular plant species has a rust.

In our recent work on the currently known rust fungi of Brazil (Hennen et al., 1982) we reported 687 species in 54 genera. In our general collecting work in Brazil

we found about one new species for each 70 collections. Except for our studies, very little surveying for rusts in Brazil has been done. Therefore, considering the thousands of vascular plant species known for Brazil that could serve as hosts for rusts, we predict that when Brazil is more thoroughly studied at least 3,000 species of rusts will be found.

Literature Cited

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Additions to the Flora of Indiana: II. MICHAEL A. HOMOYA, Division of Nature Preserves, Indiana Department of Natural Resources, Indianapolis, Indiana 46204.—Vascular plant species new to Indiana, and several that have been infrequently collected in southern Indiana, were discovered during the 1983-84 field seasons by members of the Division of Nature Preserves. A partial list of species includes blackstem spleenwort (*Asplenium resiliens* Kunze), sedge (*Carex atlantica* subsp. *atlantica* L.H. Bailey), Fairy-wand (*Chamaelirium luteum* (L.) Gray), American pennywort (*Hydrocotyle americana* L.), oval ladies'-tresses (*Spiranthes ovalis* Lindley), and barren strawberry (*Waldsteinia fragarioides* (Michx.) Tratt.).

Assessing Variation in Mixed Oak Communities: Evaluation of Multivariate Analyses of Morphological Data. RICHARD J. JENSEN AND ROXANNE A. DUPUIS, Department of Biology, St. Mary's College, Notre Dame, Indiana 46556.—Morphological variation in fruit and leaf characters was studied in a community containing three taxa of *Quercus* subg. *Erythrobalanus*: *Q. palustris* Muenchh., *Q. rubra* L., and *Q. velutina* Lam. Data were collected for sixteen individual trees. Discriminant analyses of sets of leaves from each tree revealed that each tree represents a reasonably well-defined multivariate entity. However, one tree tentatively identified as *Q. velutina* appears morphologically more similar to *Q. palustris*. Additional analyses of both leaf and fruit data support the hypothesis that this tree may be a hybrid between these two species. Comparison of relationships among the trees, conducted by employing Mantel's test of similarity of distance matrices, reveals that leaf and fruit data provide significantly different patterns of between tree taxonomic distances. Mantel's test is demonstrated by way of an MBASIC computer program written by RJJ.

Linear Differentiation of *Allium cepa*, *Lens culinaris* and *Vicia faba* Chromosomes. R.C. MEHRA, D. FISHER, S. BREKRUS, S. ALWINE AND J. PALBYKIN, Indiana University at South Bend, South Bend, Indiana 46634 and M.G. BUTLER, Department of Medical Genetics, Indiana University, School of Medicine, Indianapolis, Indiana 46223.—Recently several techniques have been developed to produce bands along the length of plant and animal chromosomes. This linear differentiation has been of tremendous help in chromosome analysis and thus has greatly advanced human genetics in the last fifteen years. The techniques which have had some success in linear differentiation of plant chromosomes are: C, N, Q and silver staining. We have attempted some of these techniques on a few plant taxa. In *Allium cepa*, *Lens culinaris* and

Vicia faba, through a silver staining procedure, we have been able to localize nucleolus organizing regions (NORS) in their chromosomes and found that a polymorphism exists with respect to this chromosomal phenotype. We have N-banded, both *L. culinaris* and *V. faba* and found that, whereas in *L. culinaris*, N-bands are mainly confined to the centromeric region and NORS, in *V. faba* they are also present in the interstitial areas of its chromosomes. On the basis of N-banding and chromosomal measurements, we have developed an N-banded karyotype and an idiogram for *L. culinaris*. With the help of a modified C-banding procedure, we have been able to localize constitutive heterochromatin in different areas of *L. culinaris* and *V. faba* chromosomes. A comparison of C and N bands in these taxa show that both procedures produce bands in same areas of the chromosomes. Evidence will be presented. In conclusion, if plant chromosomes can be banded with the same ease as the mammalian chromosomes, then chromosome banding will become a very powerful tool in plant biosystematics.

Vascular Flora of Grant County, Indiana: Additions and Comments. PAUL E. ROTHROCK, Department of Biology, Taylor University, Upland, Indiana 46989.—Based upon BSC-FLIP data, 132 species of vascular plants are reported for the first time in Grant County. This increases the county total to 568 species. Among the additions are 45 introduced species, one species new to Indiana (*Vicia dasycarpa* Tenore), and *Carex woodii* Dewey, an endangered species in this state. Species near the edge of their range included *Chelone obliqua* L., *Heracleum lanatum* Michx., and *Luzula multiflora* (Retz.) Lej. Two introduced species have become locally common since Deam's flora of 1940: *Rosa multiflora* Thunb. ex. Murr. and *Torilis japonica* (Houtt.) DC. Voucher specimens of these collections are being deposited in the Herbarium of Indiana University.

Pre-burning Floral Inventory of Little Bluestem Prairie, Vigo County, Indiana. REBECCA A. STRAIT AND MARION T. JACKSON, Department of Life Science, Indiana State University, Terre Haute, Indiana 47809.—Nearly 13% of Indiana was once covered by prairie; however, this community type is now very rare. Indiana's only known remnant of sandhill prairie is Little Bluestem Prairie located in Vigo County, Indiana. The prairie is the site for an ongoing study to assess the effect of burning on prairie flora and fauna.

The purpose of this study was to quantitatively sample the plant communities represented and to conduct a flora inventory prior to pre-vernal burning. Density and cover data were taken for all plant species in 20 1 x 1 meter stratified random sample plots in late May, mid July and late August of the 1984 growth season. Follow-up surveys will be conducted at the same sample locations and at similar times following a burn scheduled for early Spring 1985.

Four generalized community types have been recognized: dry sand prairie, moist slope prairie with *Equisetum*, woody ravines and black locust invasion areas. Twenty-three families and 41 genera, and at least 55 species of vascular plants were recorded in the prairie plots. Commonly represented species include: *Andropogon scoparius*, *Crysopsis mariana*, *Euphorbia corollata*, *Guara biennis*, *Lespedeza capatitata*, *Petalostemum villosum*, *Sorghastrum nutans* and *Lithospermum canescens*.

An effort is being made to control black locust invasion by tree cutting followed by basal herbicide application and burning.

