PLANT TAXONOMY

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Abstracts

Vascular Plant Inventory of Fall Creek Nature Preserve[1], Warren County, Indiana. DENNIS E. GROSSNICKLE, 1055 4th Street NE, Hickory, N.C. 28601 and MARION T. JACKSON, Department of Life Sciences, Indiana State University, Terre Haute, IN 47809.——Fall Creek Nature Preserve is a 43-acre forested tract which includes Fall Creek Gorge, a steep-walled sandstone canyon with large potholes along the creek floor. The tract was preserved by the Indiana Chapter of The Nature Conservancy.

A year-long floristic inventory concluding in June, 1977, yielded a total of 175 species of vascular plants, including 34 tree, 15 shrub and vine, 116 flowering herb and 10 fern species. Several additional species of graminoids await verification. Species of special interest because of disjunct distribution or small population size include *Pinus strobus* L., *Gaylussacia baccata* (Wang.) K. Koch, *Aralia nudicaulis* L., *Panax quinquefolius* L., *Cynoglossum officinale* L., *Lobelia inflata* L., *Cacalia atriplicifolia* L., *Psoralea onobrychis* Nutt., *Trillium nivale* Riddell, *Polygala senega* L., *Dodecatheon media* L., *Monotropa uniflora* L., *Mitchella repens* L., *Gerardia tenuifolia* Vahl., *G. virginica* (L.), *Mimulus alatus* Ait., *Zizia aurea* (L.), *Athyrium filix-femina* (L.) Roth., *Woodsia glabella* R. Br., and *W. obtusa* (Spreng.) Torr. Nomenclature follows Fernald (1950). Voucher specimens are located in the Indiana State University Herbarium.

A complete floristic list is available from the authors or from The Nature Conservancy, Route 1, Box 155, Nashville, IN 47448.

The Effectiveness of External Factors in Isolating Sympatric Species of Milkweed *(Asclepias).* SUSAN RIVAR KEPHART, Department of Biology, Indiana University, Bloomington, Indiana 47401.——The coexistence of closely related plant species is made possible in large part by the presence of reproductive barriers to hybridization. As part of a study of reproductive isolation among locally sympatric *Asclepias* species, umbels from an experimental population containing *A. incarnata* and *A. syriaca* were examined for interspecific and intraspecific pollinium insertions. Previous study had indicated that insects fly freely between these species and that a given insect may carry both pollinium types simultaneously. *A. incarnata* pollinium insertions into stigmatic chambers of 871 *A. syriaca* flowers averaged 13% of the total number of correct insertions

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(values ranged from 2-35%) during a 16-day overlap in flowering between the species. Reciprocal insertions have not yet been found (302 flowers sampled). Thus, neither the specific fit between pollinium and stigmatic chamber operating as a lock and key mechanical barrier nor differential positioning as a result of behavioral factors is sufficient to prevent pollinium transfer between species. However, mechanical and ethological factors, acting alone or in combination, may provide a partial, or one-way, barrier to hybridization. Experimental pollinations completed to date between *A. syriaca* and *A. incarnata* have also failed to yield hybrids, indicating physiological factors may be effective in preventing gene flow. It is suggested that both external factors and physiological effects are important in maintaining the very low level of hybridization observed in natural populations of sympatric milkweeds.

Computerized Information Retrieval and Graphics to Study The Mustard Flora of the Soviet Union. THEODORE J. CROVELLO and DOUGLAS MILLER, Department of Biology, University of Notre Dame, Notre Dame, Indiana 46556.——The need arose to obtain as much information as possible about the mustard flora of the Soviet Union, especially of South Central Asia, and to have it in various summary formats, and to have it quickly. Accordingly, data in Volume 8 of the Flora of the Soviet Union was keypunched for computer processing. The mustard family (Brassicacceae) was found to be represented by 757 species in 128 genera. For each genus its name, number, year published, and page number were captured. For each species its name, number, year published, distribution within and without the Soviet Union, habitat, months of flowering, and phytogeographic regions were captured for computer processing. Results included printouts of all or selected taxa, with all or only selected information on each. Graphic summaries included summary distribution maps over the 51 phytogeographic regions of the Soviet Union, frequency distributions of number of species for each region, and plots of number of species by number of regions. Statistical analyses also were made. Total effort was less than two people-months.

Artificial Interspecific Hybrids in *Proboscidea* (Martyniaceae). PETER K. BRETTING, Department of Biology, Indiana University, Bloomington, Indiana 47401.——Gene flow between species can be prevented or reduced by many different sorts of isolating mechanisms. The nature of the reproductive isolating mechanisms separating species of *Proboscidea* (Martyniaceae) is being examined through interspecific cross pollinations. To date, three species native to different geographical areas have been crossed: *P. triloba* (native to central Mexico), *P. parviflora* (native to the American Southwest and northern Mexico), and *P. louisianica* (native to the Great Plains). The following crosses yielded F_1 plants: *P. triloba* X *P. parviflora, P. louisianica* X *P. triloba*, and *P. parviflora* X *P. louisiancia. P. parviflora* X *P. louisiancia* hybrids showed no reduction in pollen stainability, while *P. triloba* X *P. parviflora* and *P. louisiancia* X *P. triloba* hybrids had pollen stainabilities of 72% and 74% respectively. Several Indian groups of the American Southwest cultivate a distinct form of *Proboscidea parviflora* for use in basketry. Crosses of this cultivar with *P. louisianica* and *P. parviflora* yielded F_1 plants with pollen

stainabilities greater than 95%. Additional crosses involving the preceding taxa and recently obtained *Proboscidea* accessions should lead to a better understanding of the reproductive isolating mechanisms extant in this genus.