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Nancy R. Morin and Judith M. Unger, co-editors

FLORA OF NORTH AMERICA NEWS

Editorial Committee

The fall Editorial Committee meeting was held in St. Louis on Sunday and Monday, October 2-3. The FNA organizational structure was revised, editorial procedures were better defined, and new documentation requirements were agreed upon.

Organizational Changes: Nearly from the inception of the Flora of North America project, the Editorial Committee has been its sole policy-setting body. Members of the editorial committee have a wide variety of skills and interests, and many of them have developed expertise in computerization and information management over the years. In order to assure that computerization and information management receives sufficient attention in management of the FNA project, it was decided to establish an Information Management Committee parallel to the Editorial Committee. The two committees together compose the "Flora of North America Organization." Editorial committee members who *also* serve on the Information Management Committee are Ted Barkley, David Boufford, Luc Brouillet, Ron Hartman, Barbara Murray, Alan Smith, and Leila Shultz. We are pleased to announce that Frank Bisby, University of Southampton and head of the International Legume Database and Information Service (ILDIS); John Wiersema, U.S.D.A. Agricultural Research Service and compiler of "Families and Genera of Spermatophytes Recognized by USDA"; and John Schnase, head of the Advanced Technology Group at Washington University Medical Library in St. Louis, have agreed to join the FNA Organization to serve on the Information Management Committee. Schnase has been instrumental in introducing FNA to the world of hypertext. The Medical Library provided staff and facilities for the development of the FNA World Wide Web site (see below for details). John hosted the second day of the editorial committee meeting at Washington University Medical Library (our thanks also to Mark Frisse, Director of the School of Medicine Library and Biomedical Communications Center, for his hospitality and support). An Advisory Board of especially knowledgeable computer experts is also being established to advise the project. To date we have received positive responses from John Briggs,

Konza Prairie Research Natural Area LTER, Warren Bringham, Illinois Natural History Survey, Steve Young, Environmental Protection Agency; Avi Silberschatz, University of Texas, and Janet Gomon, National Museum of Natural History, Smithsonian Institution.

New Documentation Requirements: During the past several meetings the Editorial Committee has discussed the philosophy behind the distribution maps and distribution statements. We all agree that it is extremely important that distribution statements be supported by actual herbarium specimens. It is expected that authors will examine and annotate as many specimens as possible, with special attention to herbaria having significant regional holdings. We find that all too often an author has seen specimens from only a portion of the range of a genus. The Canadian portion of a range is often the most inaccurately portrayed. In order to assure that there is at least minimum documentation supporting geographic ranges, we have

decided to ask authors to provide data for every taxon from one specimen examined for each state or province in which that taxon occurs. The minimum data required are: Taxon name, state or province, collector and number, date of collection, and herbarium in which deposited. We realize that this adds to the burden of the author, but we assume that in most cases researchers have these data already captured in some form. In special circumstances, the taxon name and accession number or a secondary reference referring to a specimen will be allowed. This will be required for Volume 11, is strongly recommended for Volume 3, and will be retroactively sought where possible for Volume 2.

The Flora of North America (FNA) project is a cooperative program to produce a Flora of the plants of North America north of Mexico. The FNA Newsletter is published quarterly by the Flora of North America Association to communicate news about the FNA project and other topics of interest to North American floristic researchers. Readers are invited to send appropriate news items to: FNA Newsletter, P.O. Box 299, St. Louis, MO 63166, U.S.A.

Family Descriptions: Several years ago it was agreed that family descriptions would be parallel within orders. A list of characteristics that should be treated in all family descriptions was devised at the EC meeting and will be sent to authors of family treatments. The following additional subjects may be dealt with in the discussion: 1.Morphological problems that pertain to the description and its clarification. 2.Comparison of the taxonomic treatment used with other classifications in current use. 3.Ecological/ distributional information when particularly noteworthy. 4.Noteworthy fossil records. 5.Economic importance relevant at the family level. 6.Taxa not dealt with in the flora, such as sporadic, historical records.

Bryophyte Volume: Barbara Thiers reported that sample treatments for the bryophyte volume are being mailed to authors who have accepted invitations. Bryophyte regional coordinators will encourage authors to borrow specimens from herbaria and have since begun a list of herbaria with important regional holdings. This project, spearheaded by Diana Horton, is leading to a similar list for vascular plant holdings in herbaria.

Organizational Center

Status of Volume 3 - All of the 32 families in Volume 3 have been sent for taxonomic and regional review; most reviews have been received, and most manuscripts have been revised by the author. Many families have been reviewed by the "Final Four" team and are being coded prior to being sent to Oxford University Press. Regional reviewers now number about 50 botanists in all parts of the U.S. and Canada (plus 2 in Europe for Greenland). They receive manuscripts of entire families if even one species shows distribution in their state/province (in some large families only selected genera are sent).

Volume 11 reviewers and authors will begin receiving manuscripts for review or revision in January 1995.

Information Management: Deborah Kama, FNA database manager, worked with Scott Hassan and Ted Metcalfe of the Washington University Medical Library Advanced Technology Group to develop a prototype of FNA data that will provide a richer browsing interface using World Wide Web on the Internet. They also moved FNA data into a mature relational database, linked to GIS applications (thanks to Environmental Systems Research Institute Inc.). FNA information on ferns and gymnosperms, including the hypermedia version of volumes 1 and 2, is available on

World Wide Web through FNA's home page (<http://fna.wustl.edu/FNA>) or can be accessed using PPP-mediated TCP/IP by way of Washington University Medical School's modem bank (phone 314/362-9622; login=guest). For information about FNA services, send email to fna@fna.wustl.edu. Oxford University Press now has a team of people designing the FNA CD-ROM using with data structures, entity relationships, and coded data.

In the last issue of the Newsletter, we mistakenly identified the developers of the Missouri Botanical Garden World Wide Web pages. Alan Tucker and Hong Song, members of the Garden's Botanical Information Management Department, developed and programmed the Web site and are responsible for maintaining and revising its content. Leland Ellis and the staff of the Keck Center for Genome Informatics at Texas A&M University provide support for the project. Visit the site at: <http://straylight.tamu.edu/MoBot/welcome.html>.

Volume 1 Slide Set

35 SLIDES IN A SET are available for US\$50. To order send your name, address, and payment in cash or check, made out to the Missouri Botanical Garden, to Judy Unger, Flora of North America, P. O. Box 299, St. Louis, Missouri 63166. The following lists slides in the set; numbers refer to figures in Volume 1. Those slides using a map use the same base map as is used for the distribution maps in Volume 2.

1.1. Airstreams and currents, 1.2. Veg boundaries and air masses, 1.3. Climatic regions. 1.7. Tectonic map, 1.8. Geologic plate movement, 1.9a. Deglaciation, 1.9b. Deglaciation contd, 1.10. Surficial geology, 1.11. Bedrock geology, 1.12. Permafrost. 1.13. Physiographic regions.

2.1. Soil orders, 2.2. Orders of soils, 2.3. Soil horizons.

3.2. Tertiary temps w/ events and floras, 3.3. Tertiary plant fossil studies

4.1. Paleoclimatic glacier volume and seasonal shifts of solar radiation, 4.2. Computer simulation of atmospheric patterns in 18000 B.P., 4.3. Global climatic and environmental changes, 4.4a. Paleoclimate and vegetation maps, 4.4b. paleoclimate and vegetation maps contd, 4.5a. Changing distribution of Spruce (*Picea*), 4.5b. Changing distribution of Oak (*Quercus*), 4.5c. Changing distribution of Pine (*Pinus*), 4.7. Changes in vegetational patterns, inferred biotic responses, and climate and environmental controls during past 20,000 yrs, 4.10. Elevational range shifts of selected taxa, 4.11. Elevational zonation of major plant communities in Arizona during last 24,000 yrs, 4.12. Percentages of late Quat pluvial lakes, 4.13a. Vegetation reconstruction in w Washington, 4.13b. Vegetation reconstruction of transect from w coast of Washington to Great Plains of Montana, 4.14. Three transects across Alaska, 4.15. Hypothetical rates of extinctions and speciation.

5.1. Vegetation; 6.1 Plant families in states/provinces; 10.3 Species of conservation concern in states/provinces

IMPORTANT RESOURCES

GENERIC FLORA OF THE SOUTHEASTERN UNITED STATES (GFSEUS) is a series of original taxonomic investigations of genera belonging to the 193 families of native and naturalized seed plants of an area including North and South Carolina, Georgia, Florida, Tennessee, Alabama, Mississippi, Arkansas, and Louisiana. The published results of

the project are useful in a much wider area, in fact throughout the world.

Included in each of the published installments is a description of the family and genus or genera treated, narrative summaries describing the biology of species in each genus (with emphasis on taxonomically significant characteristics), a key to genera when there are two or more per family, and annotated bibliographies of important literature sources about the family and for each genus. The literature cited has been selected to document research already completed and as a guide to future studies. Original line drawings illustrating features of biological significance are included for many of the genera. Because original observations are described, each treatment stands as an important primary, and secondary, source of information, and also as an assessment of knowledge about families and genera occurring in the southeastern United States.

The GFSEUS has been centered at the New York State Museum and the Arnold Arboretum of Harvard University, and now the University of Florida has joined the Project. Norton G. Miller, Carroll E. Wood, Jr., and Walter S. Judd are editors and organizers of the GFSEUS. Comments and questions should be directed to N. G. Miller, Biological Survey, New York State Museum, Albany, New York 12230, nmiller@museum.nysed.gov.

The following files are now available on the New York State Library Gopher Server. While the files are not presently searchable, plans call for the installation of WAIS software on this server during December 1994.

GOPHER pathway

New York

New York State Library (Albany, NY) [Gopher address:
unix2.nysed.gov]
New York State Government Information Locator
New York State Executive Branch
New York State Education Department
New York State Museum
Generic Flora of the Southeastern United States

Files Available (all except README are in WP 5.1):
README - gfseus.readme (text file) 3.9K-bytes
Authors of Plant Names - gfseuspn.wp5 214.4K-bytes
Journal Abbreviations Cited - gfseusja.wp5 395.7K-bytes
Authors/Titles of Papers - gfseusat.wp5 24.7K-bytes
Index-Families Published - gfseusfa.wp5 17.4K-bytes
Chronological List of Papers - gfseusch.wp5 12.7K-bytes
Index-Genera Treated & Illus - gfseusgi.wp5 34.6K-bytes

The files are available for downloading via anonymous FTP from the NYS Library FTP Site (unix2.nysed.gov). The files are located within the pub directory.

SERFIS On-Line: SERFIS, the SouthEast Regional Floristic Information System, is back on-line on INTERNET. SERFIS is a regional multi-institutional database that intends to accommodate all the southeastern herbarium collections, about 6.25 million sheets in 112 herbaria. Although still far from the ultimate goal, SERFIS now has accumulated 60,000 records of collection data from 14 institutions, including ALU, AUA, FLAS, FUGR, NCU, TENN, UNA, and USF, among which >50% are from UNA. The on-line system is designed for curators who do not have much computer experience, and users only need to press either the <Enter> or the

<Esc> key to select queries and to type in the search constraints. SERFIS began on-line in a SQL database format in April 1992 when the Association of Southeast Biologists meeting was held in Tuscaloosa. The SQL database was removed in April 1994, and re-engineered to be more user friendly. For information on accessing SERFIS, contact Xu Zhaoran, zxu@serfis.by.ua.edu, Dept. of Biological Sciences, Box 870344, The University of Alabama, Tuscaloosa, Alabama 35487, phone 205/348-1790; fax 205/348-1786.

The BIODIVERSITY AND ECOSYSTEMS NETWORK (BENE) can be accessed on the World-Wide-Web:

<http://straylight.tamu.edu/bene/bene.html>. This web site contains information on biodiversity related programs in the U.S. government, international programs, U.S. museums and universities, regional ecosystem networks, and other resources.

The Charles B. Graves Herbarium at Connecticut College (CCNL) is creating a database of their 12000 specimen collection. Each record contains specimen label data, and many records are linked to images of the herbarium sheets. The server can only be browsed using WWW clients with forms support at: <http://herbarium.conncoll.edu>. Client software must support clickable maps within forms. The server is a computer also used for data entry and image processing; it may be off-line much of the time. Questions should be directed to Carl Lewis, Connecticut College, celew@conncoll.edu.

NEWS FROM HERBARIA

From the University and Jepson Herbaria, University of California, Berkeley: **Bruce Baldwin** is the new Curator of the **Jepson Herbarium**. He was previously an Assistant Professor of Botany at Duke University. **Barbara Ertter** has been named **Curator of Western North American Flora**. Her duties include promoting and coordinating floristic efforts among academia, government agencies, and conservation organizations; encouraging growth and use of the extensive collections from the area; and promoting regional interest in local floras among the general public. Barbara is a FNA Rosaceae author and regional reviewer for California. The Herbaria have relocated to renovated facilities (finally!). Visitors should check in advance concerning the availability of items of interest. For information, contact Barbara Ertter: ertter@ucjeps.berkeley.edu.

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Mark W. Bierner is the new Executive Director of the Marie Selby Botanical Gardens, effective 1 September 1994. **Bruce Holst** has accepted the position of Herbarium Manager.

Charles R. 'Bob' Gunn retired May 1992 after 29 years of service with the USDA, Agricultural Research Service. His current address and telephone number are: 120 White Squirrel Lane, Brevard, North Carolina 28712, 704/883-9719. He is continuing his research on seed and fruit morphology. **Joseph H. Kirkbride, Jr.** was appointed Director of the U.S. National Seed Herbarium when Bob retired. All inquiries concerning the U.S. National Seed Herbarium should be directed to him: Joseph H. Kirkbride, Jr., Director, USDA, Agricultural Research Service Systematic Botany and Mycology Laboratory, U.S. National Seed Herbarium, Room 304, Building 011A, BARC-West, Beltsville, Maryland 20705-2350, USA; phone: 301/504-9447; fax: 301/504-5810; Internet: jkirkbride@asrr.arsusda.gov.

Steven R. Hill has joined the staff of the Illinois Natural History Survey in the position of Botanist. He was formerly Curator of the Herbarium at Clemson University.

Charles D. Peterson is retiring as Curator of the Spring Branch Science Center Herbarium, part of the Robert A. Vines Environmental Science Center, 8856 Westview Drive, Houston, Texas 77055. SBSC is the largest herbarium in the Houston area, with over 25,000 specimens, and contains an important representation of the local flora. Dr. Larry E. Brown is a research associate. New numbers are: phone 713/365-4175; fax 713/365-4178.

David Schimpf is the new Director of the Olga Lakela Herbarium. He is also Associate Professor of Biology at the University of Minnesota, Duluth. He may be reached at 218/726-7265 or dschimpf@ub.d.umn.edu. Paul Monson continues as Curator of the herbarium.

Roy L. Taylor is the new Executive Director of the Rancho Santa Ana Botanic Garden, effective 1 November 1994. Roy has been President and Chief Executive Officer for the Chicago Horticultural Society and Director of The Chicago Botanic Garden.

AWARDS PRESENTED AT AIBS

The following are some of the awards made at the annual Botanical Society of America (BSA) banquet, held at the 45th annual American Institute of Biological Sciences (AIBS) meeting of 7-11 August 1994, Knoxville, Tennessee.

The **Henry Allan Gleason Award** was presented to **Robert L. Dressler** for his book *Phylogeny and Classification of the Orchid Family*, published by Dioscorides Press in 1993. The New York Botanical Garden makes this award annually for an outstanding recent publication in the field of plant taxonomy, plant ecology, or plant geography. Bob Dressler is a major taxonomic reviewer for the FNA treatment of Orchidaceae.

The **Lawrence Memorial Award** was presented to Kathleen M. Pryer to support travel to Southern Africa for study of Marsiliaceae. Honoring the memory of Dr. George H. M. Lawrence, founding Director of the **Hunt Institute for Botanical Documentation**, the Award (\$1,000) is given biennially to support travel for **doctoral dissertation research** in systematic botany or horticulture, or the history of the plant sciences, including literature and exploration. Kathleen was author of the *Gymnocarpium* treatment for FNA Volume 2.

The **Asa Gray Award** was presented to **Hugh Iltis** for his outstanding contributions in plant systematics and evolution, phytogeography, and conservation. The Asa Gray Award is given by the American Society of Plant Taxonomists to honor an individual "for outstanding accomplishments pertinent to the goals of the Society." The award was made at the annual banquet of the American Society of Plant Taxonomists at the AIBS meeting. Hugh is the author/coauthor of most of Capparaceae, and has been invited to write *Tripsacum* and *Zea* for Flora of North America.

NEWS AND NOTES

News from The Nature Conservancy

The Nature Conservancy's Chief Operating Officer, Bill Weeks, at TNC since 1988, is going to take a half-time sabbatical for 12 months. **Bruce Runnels** has accepted the Chief Conservation Officer position. **Jane Prohaska** will be acting Director of the Midwest Region during the interim period. **Neils Crone** has accepted the Chief Operations Officer position, effective immediately. **Deborah Jensen** has been selected for the position of Director of Science. Her major responsibility will be to implement the report provided by a science task force, and the division is being renamed the Conservation Science Division to reflect the integration of Heritage and Stewardship programs.

News from the National Biological Survey

At its recent meeting in Gainesville, Florida, the National Biological Survey/Association of Systematics Collections Task Force identified ten major groups of organisms to begin gathering data on, as pilot projects. Among these are North American conifers and orchids. **Herbarium curators, researchers, and others who have data on collections of these two groups, and who are willing to make such data available for NBS purposes, are invited to send a brief description of the data sets to Nancy R. Morin, Convening Editor, Flora of North America, P. O. Box 299, St. Louis, Missouri 63166, email morin@mobot.org. Please describe the number of records in the dataset, whether the records are computerized and in what kind of system (or plans for computerization), and geographical regions covered.**

The National Biological Survey (NBS) Director H. Ronald Pulliam announced the appointment of **Dr. W. Reid Goforth** as Chief of the Division of Cooperative Research. Dr. Goforth previously served in the same position in an acting capacity. He holds a doctorate in Zoology from the University of Missouri-Columbia. In his new position, he will direct the operation of the nationwide network of 56 NBS Cooperative Units. All Units are located at universities and contribute to graduate education programs. The Cooperative Units conduct research, provide technical assistance, and teach graduate level courses in ecology and related subjects. Pulliam also announced the appointment of **Gwen Williams** as Assistant Director-External Affairs. She will be overseeing the functions of Public Affairs, Congressional Affairs, International Affairs, and Correspondence Control. Her office provides NBS's primary link with the American public, the news media, and the international community.

News from PCAST

Peter Raven, Director of the Missouri Botanical Garden, has been appointed to serve on the **President's Committee of Advisors on Science and Technology (PCAST)**. This committee is the highest level private sector advisory group guiding the President on science and technology matters and serves as a formal mechanism for providing private sector counsel to the National Science and Technology Council (NSTC). PCAST will provide feedback about federal programs and actively advise the NSTC about science and technology issues of broad national importance.

News from the Native Plant Conservation Initiative

The Native Plant Conservation Initiative has made great progress since the

May 1994 signing of the Memorandum of Understanding establishing the Federal Native Plant Conservation Committee. The following are reports on some activities that the Federal Native Plant Conservation Committee has been involved in. Currently the Initiative includes 7 Federal agencies and 11 non-Federal Cooperators. The Garden Club of America, National Fish and Wildlife Foundation, Botanical Society of America, Flora of North America, Missouri Botanical Garden and New England Wild Flower Society have recently joined as Cooperators. The following organizations also have formal Cooperator status with the Committee: Center for Plant Conservation, National Association of Conservation Districts, Society for Ecological Restoration, Soil and Water Conservation Society. The Department of Defense Services, Environmental Protection Agency, Department of Transportation, Bureau of Mines, and Bureau of Reclamation are considering joining.

A draft National Strategic Plan Outline and Prospectus for the Initiative have been compiled from the results of the Strategic Planning Workshop held in March 1994. These documents provide vision and identify key objectives for the Initiative and have guided collaborative program and budget development. Two grant proposals have been submitted to fund objectives in the draft Strategic Plan.

One proposal was submitted to the Department of Defense Legacy Program for FY 1995 for 3 projects: Conservation Strategy and Plant Biodiversity Assessment Development (\$150,000/year for 4 years), Interagency Land Managers Biodiversity Training and Guidebook (\$160,000), and Plant Conservation Public Outreach Program (\$100,000). Another proposal was submitted to the National Fish and Wildlife Foundation for a \$100,000 challenge grant to fund urgent conservation projects to benefit at-risk plant species and communities. These projects will demonstrate the ability of the Initiative's partnerships to deliver on-the-ground results. Total project cost: \$250,000.

The Federal Native Plant Conservation Committee includes: **Dr. Jeri Berc**, USDA Soil Conservation Service; **Mr. Ken Berg**, Bureau of Land Management; **Dr. Joan Canfield**, U.S. Fish and Wildlife Service; **Dr. Thomas Elias**, U.S. National Arboretum; **Ms. Peggy Olwell**, National Park Service; **Dr. Albert Sherk**, National Biological Survey; **Dr. Chris Topik**, U.S. Forest Service.

News from the Interagency Taxonomy System

A partnership of federal agencies has joined together to cooperatively develop and manage a database of taxonomic information. The goal is to create a standard approach to taxonomy that is easily accessible, scientifically credible, and ensures continuous improvements in quality. The Interagency Taxonomy System (ITS) will track basic taxonomic information for all categories of botanical and zoological taxa, from bacteria to mammals, from aquatic (marine and fresh water) and terrestrial habitats.

The partners in this interagency effort currently include the National Oceanic and Atmospheric Administration's (NOAA) National Oceanographic Data Center (NODC), the National Biological Survey (NBS), the U.S. Geological Survey (USGS) and the Environmental Protection Agency (EPA). The agencies have formed a Steering Committee and two technical work groups - the Database Work Group and the Taxonomy Work Group. The Database Work Group developed a model for the system based upon the nature of taxonomic information and

requirements defined by the participants. Efforts are underway to refine the model and identify elements to include in the system. The system will be built by the USGS using Ingres software. The current schedule for completion is January 1995. The Taxonomy Work Group is responsible for the contents of the system. Ensuring that all data are peer reviewed prior to incorporation in the ITS, and that a process is in place for ongoing review, are two objectives of the project. The Work Group is identifying taxonomic experts to provide information and/or to assist in the review process.

The ITS will incorporate information from the taxonomy file currently managed by NODC. The NODC file tracks the following information for each taxon: scientific name, taxonomic rank, taxonomic serial number, synonyms, common names, and the author(s) of the name. Current coverage includes 203,253 names of which 19,368 names are common names. Of the remaining 183,885 scientific names, 24,168 are synonyms. Of the acceptable names, 80% (128,875) are of species or levels below species. Geographic coverage is world-wide, with emphasis on North American taxa.

Use of the ITS and the taxonomic serial number will facilitate sharing of biological information among cooperating agencies by providing a common framework for taxonomic data that is consistent, accessible, and regularly updated. The database will enable agencies that might not be able to afford to maintain a taxonomic database on their own, to have access to high quality taxonomic information.

For further information contact Barbara Lamborne of EPA's Office of Information Resources Management at 703/235-5609 or at LAMBORNE.BARBARA@EPAMAIL.EPA.GOV.

News from the National Science Foundation

The National Science Foundation announces a special competition in Systematic Biology: Partnerships for Enhancing Expertise in Taxonomy (PEET). Retirement of taxonomic specialists, shifts in academic recruitment and staffing, and reductions in graduate training all conspire to diminish the knowledge that is needed to answer what the National Science Board has labeled a global biodiversity crisis ("Loss of Biological Diversity: A Global Crisis Requiring International Solutions", NSB 89-171). The rate of "extinction" among professional taxonomists led a National Science Foundation task force to call for enhanced training in taxon-specific expertise ("Adapting to the Future: Report of the BBS Task Force Looking to the 21st Century", NSF 91-69).

In partnership with academic institutions, botanical gardens, freshwater and marine institutes, and natural history museums the National Science Foundation seeks to enhance taxonomic research and help prepare future generations of experts. NSF announces a Special Competition, Partnerships for Enhancing Expertise in Taxonomy (PEET), to support competitively reviewed research projects that target groups of poorly known organisms. Projects must encourage the training of new generations of taxonomists and translate current expertise into electronic databases and other formats with broad accessibility to the scientific community.

Projects designed for 5 years of effort are encouraged, with yearly budgets not to exceed \$150,000 (direct plus indirect costs), or \$750,000 total. Group proposals could increase the budget according to the number of Principal Investigators involved. Standard components of taxonomic

monography - species description and diagnosis, geographic distribution, scientific nomenclature, identification keys, illustration - are expected in all projects; training of two students and computerization activities are also required. NSF anticipates making 10-20 awards in Fiscal Year 1995 in this Special Competition, contingent upon availability of funds and quality of proposals received.

Proposals should be submitted for a 1 March 1995 postmark deadline. NSF's "Grant Proposal Guide" provides relevant forms and rules for proposal preparation. On the cover sheet, upper left corner, write "DEB-PEET" (NSF 94-109)" to expedite processing. Institutional cost-sharing in accordance with standard NSF rules is expected on all projects. Institutional commitment to the employment of taxonomists during and beyond the duration of PEET projects provides one clear example of partnership in answering the scientific and societal challenge of diminishing taxonomic expertise.

For the PEET Special Competition announcement, contact: Division of Environmental Biology (PEET), National Science Foundation, Suite 635, 4201 Wilson Boulevard, Arlington, Virginia 22230. Phone 703/306-1481; fax: 703/306-0367; e-mail: sysrev@nsf.gov. NSF 94-109 (new).

DEATHS

We are very sorry to report the death of **Robert M. Lloyd** on 8 December 1994. Bob was on the faculty of the Botany Department, Ohio University. Born in 1938, he was a noted expert on pteridophytes. He studied genetics, reproductive biology, and ecology of many groups including *Polypodium*, onocleoid ferns, and Parkeriaceae. He authored Parkeriaceae and *Acrostichum* for FNA volume 2 and was a great source of moral support for the project.

Carl Sharsmith, for whom the herbarium at San Jose State University is named, and the oldest ranger with the National Park Service, died at his home 14 October 1994. He was 91.

Carl's first park service job was as a seasonal ranger-naturalist in Yosemite's Tuolumne Meadows in 1931. He received his Ph.D. from University of California, Berkeley, in 1940 under Herbert Mason. His thesis, "A contribution to the History of Alpine Flora of the Sierra Nevada," has been an important resource for students of the California flora. As a park ranger, he explored throughout Yosemite's High Sierra. He was the subject of many articles and his life was recounted in the book "Mountain Sage" by Elizabeth O'Neill. He was born in New York, began a teaching career in 1937 and used his summer seasons to continue working as a ranger. He obtained permanent status in the National Park Service in 1953 while teaching at San Jose State University, where he was a professor of botany from 1950 to 1973. He retired as a permanent ranger in 1973 but was rehired 20 days later as a seasonal park ranger, a status he maintained until his death.

PUBLICATIONS

Origin and Relationships of the Major Plant Groups, the proceedings from the 39th Annual Systematics Symposium of the Missouri Botanical Garden, is included in Volume 81 (3), of the Annals of the Missouri Botanical Garden, 1994. To order write Department Eleven, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, phone 314/577-9534, fax 314/577-9594. On U.S. shipments add \$2 for one book

and \$.75 for each additional book; on non U.S. shipments add \$3 for one book and \$.75 for each additional. Add \$1 invoicing fee if order does not include payment.

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Plant Identification Terminology, an Illustrated Glossary by James G. Harris and Melinda Woolf Harris, is a comprehensive, professionally illustrated guide to the terminology of plant taxonomy. It provides over 1700 illustrations of terms used in plant identification keys and description and definitions for more than 2400 taxonomic terms. 1994. 198 pp; 1733 illus. softcover, \$17.95. Make checks or money orders payable to Spring Lake Publishing and mail to Spring Lake Publishing, P. O. Box 266, Payson, Utah 84651.

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Keys to the Flora of Arkansas by Edwin B. Smith, includes taxonomic keys to the families, genera, species, and infraspecific taxa of all the known vascular plants of Arkansas. The keys cover the approximately 2510 plants indigenous to the state and more than 300 that are possible additions to the flora of Arkansas. ISBN 1-55728-312-5, \$30. Arkansas residents add 4.5% sales tax. Add \$3 for 1st book, \$.50 for each additional book on prepaid orders for shipping. Order from The University of Arkansas Press, McIlroy House, 201 Ozark Avenue, Fayetteville, Arkansas 72701, phone 800/626-0090; fax 501/ 575-6044.

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The Families of Flowering Plants by L. Watson and M. J. Dallwitz, ISBN 0-643-00507. Interactive Program, including CD-ROM and color-illustrated manual. Price: US\$180.00. This package applies the interactive identification and information retrieval program INTKEY to 563 world-level, DELTA descriptions of the families of Angiosperms. The CD-ROM carries MS-DOS files containing the program and data, along with 680 high quality line drawings from three classic early works, and some sample colored and black-and-white photos. Also included are references, and a complete set of conventional descriptions, which may be displayed on screen or printed in typeset form.

The package is designed primarily for teachers, students and botanical researchers concerned with identifying and classifying flowering plants, and for researchers in related disciplines interested in detecting taxonomic patterns, or wanting to select taxonomically balanced samples for experimental work.

Every Angiosperm family is represented by a world-level morphological description, usually augmented by at least one illustration. Facilities are provided for isolating regional subsets of families e.g. for Australia, North and South America, Eurasia, tropical Africa, Malesia). Comprehensive information is included on geographical distributions, on variation in photosynthetic pathways, and on the recorded occurrence of leaf phloem transfer cells (the latter summarizing data not published elsewhere). Copious data are compiled on other aspects of general interest, for example, seedling germination type, embryology, anther ontogeny, pollen cytology and morphology, stigma type, sieve-tube plastids, leaf, stem, nodal, and wood anatomy, and phytochemistry (phenolics, alkaloids,

cyanogenesis, etc.). Also included are family synonyms; numbers of species and genera per family; the classifications of Dahlgren, Cronquist, and Takhtajan for Dicotyledons, and of Dahlgren, Clifford, and Yeo for Monocotyledons; and assignment of Dicotyledons to the major groups Crassinucelli and Tenuinucelli of Young and Watson.

To order, please contact: CSIRO Information Services, P.O. Box 89 (314 Albert Street), East Melbourne, Victoria 3002, Australia, tel 61 3 418 7217; fax 61 3 419 0459.

Also available is: **Delta: Primer** by T. R. Partridge, M. J. Dallwitz and L. Watson, ISBN 0-643-055487. Price: US\$10.00. This manual is an introduction to preparing the data running the programs. It is intended to be read while experimenting with the programs and the sample data with them; **Delta: User's Guide** by M. J. Dallwitz, T. A. Paine and E. Surcher, ISBN 0-643-05549-5. Price: US\$30.00. This manual is a comprehensive guide to the data format and the program directories. To order Delta manuals or software please contact: CSIRO Information Services, P.O. Box 89 (314 Albert Street), East Melbourne, Victoria 3002, Australia.

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A BIOGRAPHICAL REGISTER OF BOTANY - The Hunt Institute for Botanical Documentation has begun compiling an alphabetical dictionary containing citations to information about plant scientists of all time periods and all geographic areas. In this *Biographical Register of Botany*, each entry will provide the scientist's full name, vital statistics, botanical specialty, and a list of citations to biographical accounts, to portraits, and to the location of primary source material. Most of the information will be obtained from the data already in the Hunt Institute's master file, which refers to approximately 40,000 persons. They invite contributions from members of the botanical community. Although their files contain a good representation of individuals in varied ethnic groups and cover many specialities, there are some voids that they need help filling. Information about women and people of color in the plant sciences is particularly requested. Also, information on little-known plant collectors or authors who have restricted their efforts to a certain locality is needed. The *Biographical Register* will be published in four volumes, each containing approximately 40,000-50,000 citations. Send information to the Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, Pennsylvania 15213.

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Plants of the Chicago Region, revised fourth edition, by F. Swink and G. Wilhelm. 1994. Indiana Academy of Science, Indianapolis. - This new edition of an old standard that was first published in 1969 is sure to find favor with botanists both in the region it covers and elsewhere. The 22 counties in 4 states that border the southern end of Lake Michigan are heavily populated and intensely industrialized, yet continue to harbor relatively high biological diversity. The new edition treats 2530 species of vascular plants, including 266 taxa added since edition 3. The manual provides keys, commentary, and a range map for each species. The introductory material has been expanded to include more discussion of plant communities, and the enlarged glossary now contains excellent illustrations by Paul Nelson.

The organization of the text follows that of earlier editions and takes some

getting used to. The arrangement is alphabetical to the extent that the book contains no index. Family headings and keys to genera are thus separated in the text from the generic treatments. Each generic name is followed by a reference to its family, and common name entries are referred back to the scientific name of the species. The taxonomic concepts employed are on the whole Fernaldian, although the authors do accept some of the changes suggested in monographs published since the last edition of *Gray's Manual*. What sets this floristic manual apart from virtually every other book of this sort is its attention to the autecology of the species included. Each entry contains not only a discussion of habitats, but also lengthy lists of associates compiled from the authors' years of personal field experience with the plants. Each species is also ranked with a "coefficient of conservatism", a number from 0 to 10 indicating the species relative rarity in the region as well as its fidelity to particular habitats. The system used is explained in detail in the introduction to the book, including how to use floristic checklists for a site to estimate the quality of the plant communities present there. This makes the volume an incredibly useful tool for ecological assessments, and broadens its usefulness as a textbook and reference for land managers.

The new volume looks very different from the preceding editions. Bill McKnight and the Publications staff of the Indiana Academy of Science are to be congratulated on a beautiful book, from dust jacket to typesetting, and also for managing to keep the book's price quite reasonable.

xiv, 921 pp. Hardcover, with dust jacket, US\$35.00 + postage (ISBN 1-883362-01-6). Available from Bill N. McKnight, IAS Publications, 1102 N. Butler Ave., Indianapolis, IN 46219-2918. --reviewed by George Yatskievych.

POSITIONS AVAILABLE

Central Washington University is accepting applications for a Plant Systematist (Tenure-track; Assistant/Associate) to teach botany and genetics courses. Screening begins 6 January 1995. Responsibilities: teach, conduct research, curate a teaching herbarium, advise students. Qualifications: Ph.D. in a related biological field, teaching experience, and research experience in molecular systematics, phylogeny or evolution. Send cover letter addressing qualifications and experience in teaching and research, teaching philosophy and research interests; curriculum vitae; unofficial transcripts; and names, addresses and telephone numbers of three references to: Michael Gleason, Biology, Central Washington University, Ellensburg, Washington 98926-7537. This position is contingent on funding.*

Applications are invited for a full-time Postdoctoral Associateship in the Biological Survey, New York State Museum, as part of the **Generic Flora of the Southeastern United States** (GFSEUS) Project. We seek inquiries or applications from broadly trained plant systematists, ideally with specific knowledge of the Compositae and/or Leguminosae and a desire to study these groups further. The successful applicant will join and interact with other botanists at the New York State Museum and have full access to laboratories and collections of the Biological Survey and to the large New York State Library, which is in the same building. Specific requirements are a Ph.D. degree, strong analytical and writing skills, experience with word processing and manuscript formatting, and a dedication to and patience with detail. Knowledge of one or more second languages is desirable. The resources of the Harvard University Herbaria and the Botanical Libraries of the Arnold Arboretum, Gray Herbarium, and

Botanical Museum of Harvard University are also available, as are those of the University of Florida. The anticipated starting date is 1 March 1995, with the initial appointment for one year, and with annual renewals possible based on adequate progress. Send applications (vita, statement of research interests and professional goals, reprints, and three letters of recommendation) to Norton G. Miller, Biological Survey, New York State Museum, Albany, New York 12230, phone 518/486-2010, 474-5812; fax: 518/473-8496; e-mail: nmiller@museum.nysed.gov.*

The College of Natural Resources and Sciences of **Humboldt State University** announces a tenure-track assistant professor position in bryology and general botany. The successful candidate will teach courses in non-vascular plants and general botany and will advise undergraduate and Master's students, conduct research, and serve on committees. A Ph.D. in biological sciences is required. To apply send curriculum vitae, three letters of recommendation, and academic transcripts to the Biological Sciences Department Search Committee, Humboldt State University, Arcata, California 95521 by 1 February 1995. Phone 707/826-3245, fax 707/826-3201. Starting date is August 1995.*

Hendrix College invites applications or nominations of a broadly trained field biologist to teach five undergraduate courses per year in the area of botany, ecology, and evolution. Preference will be given for experience as departmental chair, in directing undergraduate research, and in obtaining outside funding. Rank and salary commensurate with experience. Send three letters of recommendation, curriculum vitae, transcripts, statement of teaching philosophy, interest in undergraduate research, and interest in administration to: Bruce Haggard, Search Committee, Department of Biology, Hendrix College, 1601 Harkrider, Conway, Arkansas 72031. email haggard@alpha.hendrix.edu. Review begins 16 January 1995.*

National Science Foundation: The National Science Foundation's Division of Environmental Biology (formerly Biotic Systems and Resources) is seeking qualified applicants for **Program Director** positions. The incumbents to these positions will administer grant programs in support of research in the following areas: Ecology, Systematic Biology, Population Biology, Ecosystem studies, and Research Collections in Ecology and Systematics Programs. These positions will be filled on a 1- or 2-year visiting scientist/temporary basis and are exempted from the competitive civil service. The per annum salary range is \$59,022 to \$91,988. Applicants must have a Ph.D. or equivalent experience. In addition, six or more years of successful research experience beyond the Ph.D. is required. Some administrative experience is also desired. Applicants are also being accepted for future vacancies for these positions. Applicants should submit a Standard Form 171, Applications for Federal Employment, or résumé to: NSF, Division of Human Resource Management, Room 315, 4201 Wilson Boulevard, Arlington, Virginia 22230. Attention: Catherine Handle. Phone: 703/306-1185 for further information or 703/306-1480 for technical details on these specific positions. Hearing impaired individuals should call 703/306-0090.*

The **New England Wildflower Society** seeks an enthusiastic, personable, enterprising manager to lead the nation's oldest plant conservation organization. NEWFS is a private membership organization growing rapidly in preparation for its Centennial celebration in the year 2000. The organization has a small endowment, a \$1,000,000 annual budget, 24 full and part-time staff and a board of thirty. It is headquartered at Garden in the Woods, a 45 acre botanic garden landscaped to display native plants of the Northeast. It is expected that applicants interested in this position will have senior management experience and a special interest in horticulture,

botany, and conservation. Send nominations or letter of interest and curriculum vitae to Molly Beard, Search Committee Chair, New England Wildflower Society, 180 Hemenway Road, Framingham, Massachusetts 01701-2699. *

The **New York Botanical Garden** invites applications for the position of **Plant Molecular Systematist** in the Institute of Systematic Botany. Qualifications include a Ph.D. in Botany or Biology, demonstrated excellence in Molecular Systematics, a strong background in Plant Taxonomy, and several years of post-doctoral experience. The successful candidate will conduct research in botanical or mycological systematics with an emphasis on employing molecular techniques. Work will involve teaching and advising of students in the Garden's Graduate Studies Program, and publishing research results in peer-reviewed scholarly journals. The individual occupying this position will also be expected to secure grant funds and assist in other departmental and division-wide duties. This position begins 1 April 1995. Excellent benefits. To apply submit a letter stating research interests and goals, vita, and the names of three references to Personnel Manager-MS, The New York Botanical Garden, 200th Street and Southern Boulevard, Bronx, New York 10458-5126. Fax: 718/220-6504.*

The **New York Botanical Garden** announces a position for **Field Botanist (Ph.D. or M.S. level)** with background in plant taxonomy and field experience within the United States. Duties are to collect, identify, and voucher a broad range of plant taxa from the United States and its territories and possessions. Extensive travel is required. Successful applicant will participate in a study that assesses the potential utility of plant extracts in pharmaceutical products, as a part of a collaborative project with scientists from Pfizer, Inc. The New York Botanical Garden Institute of Economic Botany carries out basic and applied research on the relationship between people and plants. Send curriculum vitae and names of three references to: Personnel Department-FB, The New York Botanical Garden, Bronx, New York 10458-5126. Fax: 718/220-6504.*

Rancho Santa Ana Botanic Garden invites applications for the position of Research Scientist in plant molecular genetics/systematics. The Garden is especially interested in candidates who take a broad view of plant systematics and evolution, but who have expertise in conservation genetics, developmental genetics, plant molecular evolution, and related disciplines. The successful candidate must fit well into a small but highly interactive research group that maintains active collaborations with scientists at other institutions. The disciplines of phylogenetics, anatomy, morphology, and monographic systematics are well-represented among existing researchers. The position involves 20-30% teaching in the Graduate Botany Program of the Claremont Graduate School, 60% Research, and 10% service and administration. Applicants should have a minimum of five years' research experience in molecular genetics and systematic botany. Researchers at RSABG are expected to sustain externally funded research programs, teach one to two courses per academic year, maintain an active publishing schedule and participate in institutional life.

Qualifications: A Ph.D. in Botany and successful prior experience conducting molecular systematics/evolutionary research. Candidates should be able to demonstrate the ability to maintain an active, independent, externally-funded research program, willingness to participate in the Graduate Program, enthusiasm for the native flora of California and for the programs and activities of the Garden. Preference may be given to candidates who study native Californian or related floras. Minority and female candidates are encouraged to apply.

Rancho Santa Ana Botanic Garden is devoted exclusively to the

native flora of the state, maintains a broad program of research in plant systematics, offers high quality Master's and doctoral programs in botany, and supports a herbarium of nearly 1,000,000 plant specimens, an excellent research library and fully equipped laboratories. Send curriculum vitae, statement of research accomplishments and interests/goals, and names, addresses and telephone numbers of three references to: Research Scientist Search, Office of the Director, Rancho Santa Ana Botanic Garden, 1500 N. College Avenue, Claremont, California 91711.*

Sonoma State University seeks to hire a broadly trained evolutionary biologist for a tenure-track position at the assistant/associate professor level starting August 1995. Responsibilities include teaching lower and upper division and graduate courses, advising M.A. students, and developing a research program involving students. A Ph.D. is required, with a strong commitment to teaching excellence. Experience with techniques that bridge laboratory and field approaches is preferred. Initial application postmark deadline is 13 January 1995. To obtain position opportunity announcement and complete application instructions, contact Chris Kjeldsen, Chair, Department of Biology, Sonoma State University, Rohnert Park, California 94928. Fax 707/664-3012, email joyce.francis@sonoma.edu.*

The University of Alaska Museum, the Department of Biology and Wildlife, and the Institute of Arctic Biology at the University of Alaska, Fairbanks, invite applications for a full time, tenure-track position in plant evolutionary biology and systematics to start fall 1995. The successful candidate is expected to curate the botanical collection at the UA Museum, establish an active, externally funded research program using modern methods of molecular biology, teach one course per year, and participate in graduate and undergraduate training in plant systematics and collection curation. Ph.D. or equivalent in Biology or closely related field required. Museum curatorial, postdoctoral, and university teaching experience or demonstrated potential for university teaching experience preferred. The successful applicant will be provided with research space and start-up in the Institute of Arctic Biology, access to the recently acquired automated DNA sequencer and a curatorial assistant. The herbarium has over 160,000 Alaska and holarctic specimens and is a regional resource center for floristic and biogeographic studies. To apply send curriculum vitae, statement of research and teaching interests, copies of reprints, and have at least three letters of reference sent to: Gerald F. Shields, Molecular Plant Systematist Search, Institute of Arctic Biology, University of Alaska Fairbanks, P.O. Box 757000, Fairbanks, Alaska 99775-7000, phone 907/474-7656, by 4 January 1995.*

The University of California at Davis announces that the search for **Professor and Chairperson of the Section of Plant Biology** within the Division of Biological Sciences has been extended and invites applications and nominations for this position. The chairperson will be responsible for providing academic and administrative leadership to promote excellence in teaching and research in the Section. Candidates must have active research programs with outstanding records of achievement in an area of experimental plant biology such as cell and molecular plant biology, developmental plant biology or physiology and biophysics. Candidates should submit a curriculum vitae, a statement of their research program, a statement of their teaching and administrative experience and philosophy to: Chair of the Search Committee, Section of Plant Biology, University of California, Davis, California 95616. Closing date: Open until filled. In this extended search, applications will be considered upon receipt.*

The University of Maryland - College Park invites applications for the

position of Professor and Chair of the Department of Botany, with an anticipated starting date of 1 July 1995. The Department of Botany consists of 23 tenure-track faculty with research and teaching interests in physiology, genetics, cell and molecular biology, ecology, evolution, systematics and pathology. They seek an individual to provide academic and administrative leadership for the teaching, research and extension programs that are ongoing in the department. The successful candidate will also be expected to direct a research program and to participate in the instructional program. Candidates must have an earned doctorate in an area of botany or a closely related field, and have internationally recognized professional accomplishments. For best consideration, completed applications should be received by 16 January 1995. Applications should include a letter of application accompanied by a curriculum vitae and a statement of administrative, research, and teaching philosophies. In addition, four letters of reference should be sent directly to: Search Committee Chair, Department of Botany, University of Maryland, College Park, Maryland 20742-5815.*

The **University of Michigan** Herbarium and the Department of Biology seek to fill a joint tenure-track position in molecular plant systematics at the level of Assistant Curator/Assistant Professor, although applications from candidates at all ranks will be considered. We especially seek applicants with broad training in plant systematics and expertise in molecular and other modern methods for investigating the phylogenetic systematics of vascular plants. The successful candidate also must be qualified to teach undergraduate and graduate courses in biology and plant evolution and systematics, as well as curate the Herbarium. Candidates must have a Ph.D. in Biology, Botany, or Plant Sciences, and postdoctoral or comparable experience. Applications should include a curriculum vitae, a statement of teaching and research interests, and reprints of significant publications. Send these materials and arrange to have three letters of recommendation sent directly to the following address: Search Committee Chair, University of Michigan Herbarium, North University Building Ann Arbor, Michigan 48109-1057. Deadline for receipt of application materials is 6 January 1995. Starting date is 1 September 1995.*

University of Michigan-Flint: The Biology Department at the University of Michigan-Flint invites applications for an Assistant Professor, tenure track position beginning fall 1995. Primary teaching responsibilities will be in plant systematics and other botanical disciplines. Some horticultural experience preferred. Ph.D. by September 1995, demonstrated teaching ability, active research record, and broad training in biology. Selection review will begin 1 February 1995. Send résumé including course work and teaching areas, copies of recent publications, and a list of at least three references to: Gary L. Pace, Department of Biology, University of Michigan-Flint, Flint, Michigan 48502-2186. This campus is a 6,000 student, urban regional unit of the University of Michigan.*

The Department of Biological Sciences, **Western Illinois University**, seeks a plant systematist for the position of assistant professor. The successful candidate will have a research program in vascular plant systematics and will teach plant anatomy, plant systematics, and general biology, will direct masters students, and will curate the herbarium. Deadline for applications is 17 January 1995. Send transcripts, curriculum vitae, publications, statement of teaching and research interests, and three reference letters to L. J. O'Flaherty, Chair of Biological Sciences, Western Illinois University, Macomb, Illinois 61455.*

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