



RINHewS

The Newsletter of the Rhode Island Natural History Survey

Vol. 2, No. 2

November 1995

President's Corner

Start Your Cnidarian Life List Now

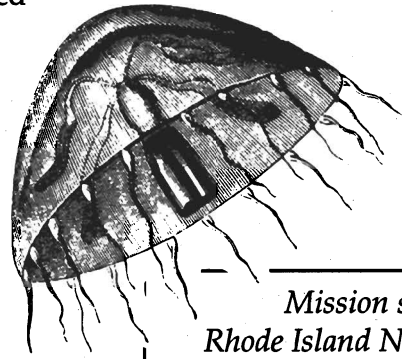
The Summer of 1995 will stand out as a great one for life-listers. Unusual animal sightings seemed to be constantly in the news. The summer began with the discovery of a Black-tailed Gull in Middletown, RI. This species is normally found off the coasts of Korea, China, and Japan. How and why it strayed to Rhode Island, on the opposite side of the globe, is not clear. Scores of anxious birdwatchers were certainly pleased with the event and I am sure the gull was one of the most photographed natural resources in the state in July.

Later in the summer a West Indian Manatee strayed north to spend a few weeks along the southern New England shore. If you want to see Manatees, you go to Florida. However, Rhode Island mammal-watchers reportedly spotted the visitor frolicking off Point Judith for a few days. Once again, it is not clear how or why this particular individual ventured so far north.

The summer came to a close with the discovery of a freshwater jellyfish, probably *Craspedacusta sowerbyi*, in two Rhode Island ponds in September. Volunteer monitors for the Watershed Watch Project observed large numbers of jellyfish in their normal sampling of Mishnock Lake and Lower Sprague Reservoir. Apparently, this is only the second record of this species in the state and no more than 50 sightings have been made in the nation in the last century.

It would be hard to hide a manatee from the watchful eye of Rhode Island naturalists; and I am not surprised, given Rhode Island's cadre of expert ornithologists, that a gull that has strayed 15,000 kilometers from home would remain unnoticed for too long. The jellyfish sighting is different. Were it not for the vigilance of the volunteer monitors at these two ponds, the jellyfish would have come and gone without any notice and any attention. There is no shortage of natural history "discoveries" yet to be made in Rhode Island! And if you ever thought of starting your own Cnidarian life-list, this was the summer to do it!

Peter V. August
Department of
Natural Resources Science
University of Rhode Island



Mission statement of the Rhode Island Natural History Survey

- To advance scientific knowledge of Rhode Island's biota, ecological communities, and environmental resources;
- To facilitate and coordinate the gathering and dissemination of information on Rhode Island's biota and natural communities;
- To enhance communication among Rhode Island's environmental and life scientists.

Research Report

Protecting Plant Diversity with a Geographic Information Systems

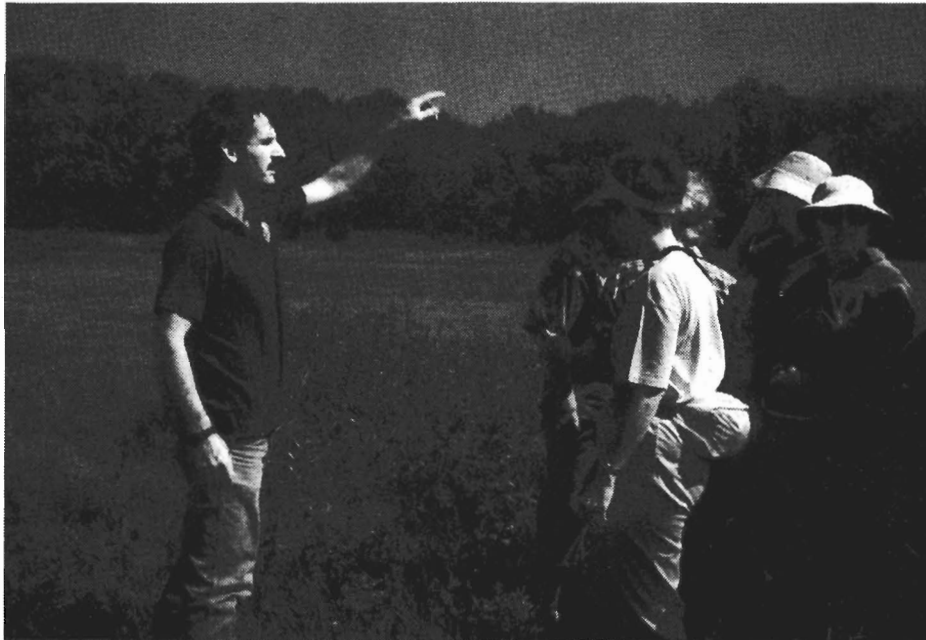
The importance of biodiversity in general, and plant diversity in particular, is evident by our dependence upon biological resources. Plant species are disappearing at an alarming rate, however, due to habitat loss resulting from the pressures of an ever increasing human population. What remains of biodiversity can best be saved through inventory and protection of diverse and unique habitats. Toward that end, an efficient means to predict vascular plant diversity would facilitate the identification and protection of biotically diverse sites.

Conservation efforts recognize the importance of biological diversity as a global resource to be inventoried, used, and most importantly, maintained. Scott *et al.* (1993) describe a method called Gap Analysis, a GIS overlay procedure used for conservation evaluation of large geographic areas. It provides a survey of the distribution and conservation status of several components of biodiversity while identifying gaps in biological diversity protection. This information is then used to fill the gaps in the refuge network (through land acquisition and other conservation practices) in an attempt to ensure adequate representation of biodiversity. Because entire states are mapped, the analysis is conducted on an ecosystem scale with a minimum

mapping unit of 100 hectares.

Although this coarse resolution has its limitations at larger scales, Gap Analysis is an important early stage in establishing conservation priorities. The extent of a site evaluation by local conservation organizations considering land acquisition often centers around a plant species richness list, an important first step for the management of conservation lands. If this biotic measure can be correlated with abiotic variables, then the lists could aid in the prioritizing of large-scale land acquisitions. The ability to predict biodiversity on a large scale would also supplement small-scale biodiversity protection efforts.

The next logical step in clarifying the relationship between biotic and abiotic diversity is to determine how these diversities are interrelated at the landscape level. Burnett *et al.* (1993), sampling 5-hectare plots within a 400-hectare site, found a strong correlation between woody plant diversity and abiotic parameters such as slope, aspect, and soil drainage class. These results support the premise that the more diverse a landscape's geomorphology, the more diverse will be its biota. However, because the scale of these studies was restricted to 5-hectare plots within a single contiguous landscape type, the more general question of whether abiotic diversity can be used to predict biotic diversity among large, discontinuous sites remains unanswered. The research I am conducting is applying the methodology developed



Bill Nichols leading a RI Wild Plant Society walk at Touisset Wildlife Refuge in Warren, RI.

by Burnett *et al.* (1993) to: 1) sites separated geographically, 2) sites varying in size from 2-50 hectares, and 3) sites with different anthropogenic disturbance histories.

The study is focusing on the correlation and predictive potential existing between geomorphological factors and vascular plant diversity. This is being accomplished through the generation of abiotic diversity indices from existing databases using a GIS. The indices are being compared statistically to measures of biotic diversity. Abiotic predictor variables derived from Rhode Island Geographic Information System (RIGIS) data include slope, aspect, soil, and landcover reflecting human disturbance. The vascular plant species richness lists for 42 Audubon Society of Rhode Island (ASRI) refuges is being utilized as the measure of biodiversity in the study. The refuges are distributed across the state and collectively represent all major plant associations in the state. These inventories have been conducted by Gilbert George (one of the state's leading amateur field botanists) and me over the last three years. The inventory method broadly applied to the ASRI refuges followed these guidelines:

1) Pre-inventory: identify salient landscape features and boundaries from plat, topographic, and bedrock maps, and other records.

2) Site inventory: combine pre-inventory data with reconnaissance; a primary survey consisting of field identification of major plant associations and an intensive survey of the entire vascular flora.

3) Inventory sufficiency: plant communities are inventoried until a point of significantly diminished returns is reached. The framework for such a return involves a team inventorying 6.2 hectares/hour. A larger area per hour can be inventoried when no additional species are found within a 10-minute interval (indicating biological homogeneity for that area) or when a small area is traversed completely. Additional time is spent in habitats difficult to traverse or of high biotic and abiotic diversity.

In an attempt to ascertain the thoroughness of these inventories, the methodology listed above was applied to the ASRI Emilie Ruecker Wildlife Refuge in Tiverton, Rhode Island on September 6-7, 1993. The refuge was divided into three sites of 12.5, 4.0, and 2.4 hectares. Four days after completing an 18.7 hour inventory, the three sites were surveyed by 10 amateur and professional field botanists for a total of 60 person-hours. Assuming this survey found approximately 100% of the vascular plants, the methods applied five days earlier resulted in the identification of 92% of all species present.

If in fact biotic and abiotic heterogeneity are intricately linked at the scale of the landscape, then conservation of geomorphological diversity may be

an efficient strategy for conserving biodiversity.

"...it is the physical environments that are the arena of biological diversity, while communities are the temporary occupants of these arenas" (Hunter *et al.*, 1988).

Therefore, a specific goal of the study is to provide a means to prioritize large-scale land acquisition by ranking areas for biodiversity potential through the generation of abiotic heterogeneity indices using a GIS.

Literature Cited

Burnett, M., P. August, J. Brown, and K. Killingbeck. 1993. Using geomorphological variation to predict local biodiversity. Eighth Annual U. S. Landscape Ecology Symposium, Oak Ridge, TN.

Hunter, M. L., Jr., G. L. Jacobson, Jr., and T. Webb, III. 1988. Paleoecology and the coarse-filter approach to maintaining biological diversity. *Conservation Biology* 2: 375-385.

Scott, J. M., F. Davis, B. Csuti, R. Noss, B. Butterfield, C. Groves, H. Anderson, S. Caicco, F. D'erchia, T. Edwards, J. Ulliman, and R. Wright. 1993. Gap Analysis: A geographic approach to protection of biological diversity. *Wildlife Monographs* 123: 1-41.

Bill Nichols is a Masters Degree candidate in the University of Rhode Island's Department of Biological Sciences, working with Professor Keith Killingbeck.

RINHS Launches First Lecture Series

On September 14, the Rhode Island Natural History Survey commenced its first Lecture Series with a talk by RINHS President Peter August on *Bats: A Natural History*. Upcoming talks include: *Ecological Implications of Invasive Plants in Rhode Island*, by Lisa Gould, RINHS Executive Director, to be held Thursday, November 16, at Corless Auditorium on URI's Narragansett Bay Campus, Narragansett, RI; *Rhode Island's Dynamic Coastline*, by Jon Boothroyd, URI Professor of Geology, to be held Thursday, February 22, 1996 in Room 124 of the Science and Mathematics Building at Roger Williams University in Bristol, RI; *The Natural History of Lyme Disease*, by Howard Ginsberg of the National Biological Service, Cooperative Park Studies Unit, to be held Thursday, April 18, 1996 at Roger Williams Park Museum of Natural History in Providence, RI.

The lectures begin at 7:00 p.m., with admission free to RINHS members, \$2 for nonmembers. The lectures are cosponsored by the Cooperative Park Studies Unit of the National Biological Service, the Museum of Natural History at Roger Williams Park, the Rhode Island Wild Plant Society, Roger Williams Park Zoo, Roger Williams University, and URI's Graduate School of Oceanography. For more information contact the RINHS office at (401) 792-5800.

A State What?

All 50 states and Puerto Rico have one. What? Among the many possible answers—a governor, for example—is a less familiar one: a state geologist. Rhode Island was the last state to name an official State Geologist when, as Chair of the URI Geology Department, I was appointed in 1985 by Governor DiPrete. Since then financial support (modest!) has come through Cooperative Agreements with the Division of Planning, Department of Administration.

From 1940 to the mid-1970's Professor Alonzo (Lon) Quinn of Brown University served as a very effective state geologist, but without the title. From 1975 to 1985 Professor Robert L. McMaster of URI's Graduate School of Oceanography served as Associate State Geologist for Marine Affairs (appointed by Governor Noel), but there was no such State Geologist as such. Throughout much of this time Daniel W. Varin, head of the Statewide Planning Program, later the Division of Planning, served in many ways as an unofficial state geologist when interacting with various state and federal agencies.

State geologists usually head an organization (with some staffs numbering 150 or so) called the State Geological Survey (Rhode Island is one of the states without an official survey). Predictably, the mission of the state geologist's office is to generate and provide geological information to individuals, companies, agencies, etc. This information includes basic bedrock and surficial maps, groundwater aquifer delineation, characterization of sand and gravel deposits, radon-risk assessment, hazard susceptibility maps (floods, landslides, coastal erosion, etc.), and similar geological realities of significance to society. In many states the responsibilities also include natural resources such as oil and gas, coal,



Block Island bluffs and cobble beach

metals, industrial minerals and similar deposits. Typically, regulation and enforcement are the responsibility of other agencies such as Departments of Environmental Management.

Many state geologists are located on university campuses and have close ties with the state university geology departments. As Rhode Island's State Geologist, I have been able to function only because of the full cooperation of URI's Geology Department (as a professor in that department I have full advising and teaching responsibilities—three courses and two seminars this semester, with one course having 100 students and six laboratory sections—so the cooperation of colleagues is essential to my role as State Geologist).

The major achievement of this office, so far, was the publication in 1995 of a new, multicolor 1:100,000 bedrock map of the state. This map represents collaboration among geologists at URI and Brown, with contributions from geologists at Boston College and the University of Texas. The map not only shows the type and distribution of rocks underlying

the state, it also gives their ages and describes how they got to be where they are. To help non-geologists cope with unfamiliar territory, the map also includes a brief glossary. The map, available in both paper and laminated forms, can be purchased through this office or from the

RINHS office (see the enclosed publications listing).

Another accomplishment was production of the 1993 state sand and gravel resources map. This and the accompanying report were prepared for the New England Governors' Conference with funding from the Federal Minerals Management Service. The overall study involved all the New England state geologists and attempted to assess future supplies and demand for onshore construction aggregate.

A parallel ongoing study, in cooperation with the Connecticut Geological Survey, focuses on the offshore distribution of sand and gravel in Rhode Island and Long Island Sounds. This resource could be of significance in beach nourishment programs, for example.

In addition to continuing to provide geological information to individuals, companies, and agencies, the current focus of this office is on radon-risk assessment. This has involved cooperation with the U. S. Geological Survey, RISE, the Department of Health, and URI faculty and students. Through measurement of soil, water and air radon levels, plus soil and bedrock gamma radiation (from uranium, the parent of radon), we are generating the most comprehensive radon-risk map in the United States.

J. Allan Cain is the Rhode Island State Geologist and a professor at the University of Rhode Island's Department of Geology. He also serves on the RINHS Board of Directors.

Terrestrial Slide Program a Hit

Over forty secondary school teachers and environmental educators gathered on September 28 at Roger Williams Park Zoo to preview the first program in the joint RINHS-Cooperative Extension project on *The Natural Communities of Rhode Island*.

Based on a document in preparation by RIDEM's Natural Heritage Program Coordinator Rick Enser and others, each slide program will feature a community system and describe the characteristic organisms of the system, the physical nature of the system, and where the system is found in Rhode Island. The six systems to be described are the Marine, Estuarine, Riverine, Lacustrine, Palustrine, and Terrestrial systems.

Each slide program will have approximately 100 slides and is accompanied by a script and a glossary of terms. *Part 1: The Terrestrial System* costs \$150, and is available from the RINHS office.

Every effort is being made to use slides of organisms taken within Rhode Island. Donations of originals are preferred; permission to duplicate an original is also acceptable. Photographers will be credited every time a slide is used. The RINHS slide collection is being housed at the URI Library in the Special Collections room, and is accessible only through the RINHS office.

Dr. Elmer Palmatier, URI Professor Emeritus of Botany, gave the RINHS collection a great beginning by donating his slide collection (over 4000 transparencies) from years of teaching and studying Rhode Island's plants and ecosystems.

If you have slides to donate or loan for duplication, please contact the RINHS office at (401) 792-5800.

RINHS Annual Conference

Hold **January 19, 1996** for the annual RINHS Conference, this year with the theme *Sharing the Knowledge: The Use of Ecological Information in Rhode Island*. The conference will focus on how ecological information has been used (or abused), and if it is adequate (or inadequate) to make informed decisions. We anticipate a lively day!

The morning will feature a keynote speaker and four plenary speakers who will introduce the day's themes. Attorney Dennis Esposito of Adler, Pollock & Sheehan will introduce the theme of *Legal Issues, Regulation, and Enforcement*. Audubon Society of Rhode Island Executive Director Lee Schisler, Jr. will speak on *Advocacy, Education, Media and Information Services*. The Nature Conservancy's Director of Science and Stewardship Ginger Carpenter will discuss *Research, Conservation, and Management*; and Peter V. August, Director of the University of Rhode Island's Environmental Data Center, will speak on *Planning, Development, and Resource Use*.

Following lunch, participants will attend breakout sessions focusing on the above four areas. Each breakout session will feature a panel discussion with audience participation; a final plenary session will summarize the afternoon sessions. Some of the panelists include Dean Albro (RIDEM Freshwater Wetlands), Dan Schatz (Decof and Grimm, Trial Attorneys), Frank Golet (URI Department of Natural Resources Science), Joe Dowhan (US Fish and Wildlife Service), Chris Raithel (RIDEM Fish and Wildlife), Paul Buckley (Cooperative Park Studies Unit, National Biological Service), Barry Devine (a builder and developer), Lisa Fiore (Fiore Realty Corporation), and representatives from the Environmental Protection Agency, the U. S. Geological Survey, the Rhode Island Water Resources Board, and grassroots organizations.

There will also be poster sessions and informational displays to view. A reception will follow the final plenary session.

The conference will be held at Roger Williams University in Bristol, Rhode Island. Fees are \$40 for RINHS members, \$50 for nonmembers, and \$30 for students. Financial aid is available for students, through the RINHS Student Sponsor Fund. Registration forms for the conference are available at the RINHS office; call (401) 792-5800 for more information.

RINHewS, the newsletter of the Rhode Island Natural History Survey, Inc., is published twice yearly. RINHS, c/o C.E. Education Center, E. Alumni Ave., U.R.I., Kingston, RI 02881-0804

Rhode Island Collections

The Brown Herbarium

On file in the Brown University Archives is the will of Stephen Thayer Olney (1813-1878), a once well-known textile manufacturer and amateur botanist. Olney was recognized as a specialist in the sedges by such authorities as John Torrey of Columbia and Asa Gray of Harvard. Through his own efforts and those of many of his correspondents he amassed a collection of mounted seed plants, largely from Rhode Island, but also from other areas of the United States.

Olney's will was probated in March 1879 and Brown University accepted the terms by which the herbarium was to be maintained. "Brown University shall furnish a fireproof depository for them (the collections) within a year after my decease." An annual income of \$3500 was bequeathed for books and plants. In addition 25 shares of Wanscuck Co. stock were to be used to establish a chair of "Professor of Botany," the terminology in a codicil (the original will states "Professor of Natural History"). It is stated further in a codicil of 1874 that "the goods and monies be applied to promote the study, advancement and progress of Botany in the State of Rhode Island."

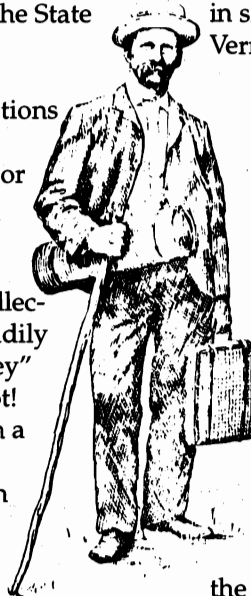
Substantial growth in the size and scientific value of the herbarium collections occurred during the tenure of William Whitman Bailey (1843-1914) as Professor of Botany (1881-1906). Widely known for his field studies in Rhode Island botany, which included many friends and students who covered the state collecting with great enthusiasm, we can readily appreciate his delight when "fast trolley" cars appeared to help long trips on foot! His collections are well annotated with a wealth of ecological data and are very useful in identifying plants of southern New England. Labels of Bailey are a pleasure to read, not only for neatness but for records of details of stations in the last century—varying from "cat swamp" on the east side of Providence to Worden's Pond in "south county."

James L. Bennett, a Providence manufacturing jeweler, was curator of the herbarium from 1890-1894. His collections provide a valuable supplement to those of Bailey. He published "Plants of Rhode Island" in 1888 under the auspices of the Providence Franklin Society.

Still remembered as a keen student of the New England flora is James Franklin Collins (1863-1940) who succeeded Bennett as curator. Collins had a

lifelong association with Merritt L. Fernald, the well-known author of the eighth edition of Gray's Manual. Both men grew up in northern Maine and together made extensive studies of the flora and ecosystems of northeastern Canada. The major part of Collins' time was devoted to administering the branch of the USDA Office of Forest Pathology in Maxcy Hall (1911-1934), which specialized in shade and ornamental tree diseases. One of his pupils was Walter Snell, the famous baseball athlete (Brown '13), and specialist in the fungi. The herbarium contains a substantial part of the local collections of Collins.

Today, the collections number well over 100,000 specimens of both vascular and non-vascular plants and is most valuable in teaching and research. Included are about 50 special sets of North American plants by collectors associated with boundary surveys and exploration in the late nineteenth and early twentieth centuries. It is the only herbarium in Rhode Island recognized in "The Herbaria of the World, Fifth Edition" by L. Lanjouw and F. A. Stafleu (1964), where it is given the reference symbol BRU. With the obvious exception of the famous Gray Herbarium at Harvard University, the collections at Brown are exceeded only moderately in size by those at Yale and the University of Vermont.



Assuming the duties of curator in 1938, the year that the Botany Department was moved from Maxcy Hall to Rogers Hall, I was able to add duplicates from the Gray Herbarium and selected specimens of individual collectors. Most of my personal additions over the years, however, were voucher specimens of grasses (especially genus *Elymus*) upon which I made cytogenetic studies. Future workers in the experimental genetics of wild plant populations will find the herbarium facility an important part of their framework of operation.

Recent and extensive restructuring of Rogers Hall (now the Salomon Center) has necessitated the moving of the herbarium to the basement of the Arnold Biological Laboratory building, where it no longer enjoys the spacious and accessible quarters where it formerly flourished. With the renewed interest in systematic collections and preserving biological diversity, we will hope that collections such as the Brown Herbarium will once again be recognized for their scientific value, and be given the care and attention they so richly deserve.

George L. Church is Professor Emeritus of Botany and Olney Professor of Natural History Emeritus, Brown University.

RINHS Publishes!

The RINHS is pleased to announce the publication of two new books. *A Natural History Directory for the State of Rhode Island: A Listing of Organizations and Individuals Pertaining to Rhode Island's Natural History*, edited by Lisa L. Gould, was released in August 1995. The directory is a compilation of the organizations and individuals involved in studying, teaching, utilizing, regulating, and protecting the state's biota and habitats. Each entry includes name, address, telephone, fax, and e-mail, along with descriptive information about the individual's or organization's expertise and activities. Collections are also described, listing the materials (e.g., preserved specimens, photographs, microscope slides, historical documents), the number of specimens, the level of curation and computerization, and the accessibility of the collection.

The *Directory* is organized by subject matter, and lists organizations and individuals separately within the subject categories Mammals, Birds, Herptiles, Fish, Invertebrates, Plants and Fungi, Ecosystems, Education, Organizations, and Environmental Consulting. It is softbound and fully indexed, with 125 pages (8 1/2" by 11" format), and retails for \$14.95. Order forms are available through the RINHS office.

Illustrated Key to the Seaweeds of New England, by Roger Williams University professor Martine Villalard-Bohnsack, was released in September 1995, and has proved to be a very popular volume. An attractive and usable key designed for students of phycology and for anyone with an interest in marine sciences, it includes 205 algal taxa commonly found on the open coast, estuaries, and bays of New England (40 green algae, 64 brown algae, and 101 red algae). The key is based on distinct macroscopic and microscopic features as well as environmental characteristics. Descriptions are accompanied by black and white photographs and drawings of live specimens or of herbarium mounts. A checklist, glossary, and bibliography are also included. The key is wire bound with a laminated cover, and has 146 pages (8 1/2" by 11" format); it retails for \$23.95.

Martine Villalard-Bohnsack has studied the local marine algae for the past 28 years. She has authored a number of articles on various aspects of algal taxonomy and ecology and is the coauthor of *The Seaweeds of the Connecticut Shore*. She has been teaching botanically related courses at Roger Williams University for 24 years and has also taught at the University of Montréal, the University of Rhode Island, and Connecticut College.

To order these and other publications being distributed by the Rhode Island Natural History Survey, see the enclosed RINHS Publication Listing.



Martine Villalard-Bohnsack teaching RI Wild Plant Society members about marine algae at Beavertail State Park, Jamestown, RI.

Weaving the Web: Electronic Resources

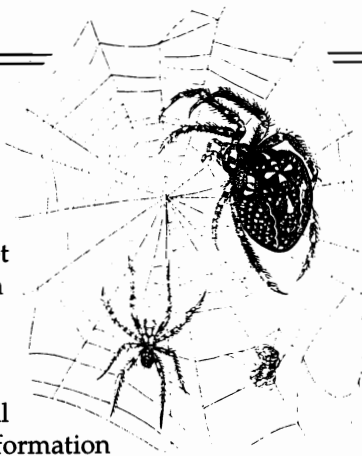
U. S. Fish and Wildlife Service on Information Superhighway, via Internet and the World Wide Web. Available on the new WWW server home pages are summaries of the activities and programs conducted by the Service. Examples include a current listing of all endangered and threatened species, information concerning recreational activities on the more than 500 national wildlife refuges, and valuable tips for travelers concerning the do's and don'ts of buying wildlife products in a foreign country. Also available is information on fisheries management and conservation, detailed descriptions of various popular wildlife species, and information on hunter/angler support programs to enhance fish and wildlife conservation. <http://www.fws.gov/> is the Internet address for the new server.

Information is also available to those with only Internet email text transfer capabilities. Send an email message to R9IRMLIB@mail.fws.gov to access the library server. On the subject line (not the body of the message), type SEND HELP and you will be sent a user's guide including an index of topic to the library.

Government Institutes, a leading publisher and seminar leader in environmental health and safety management, is offering free information on their books and courses on email. Their materials concentrate on environmental management, complying with EPA and OSHA regulations, health and safety management, and environmental science and engineering. They also distribute the Code of Federal Regulations and other government documents. Recent courses and publications include: Natural Resource Damages, State Wildlife Laws Handbook, Endangered Species Act Handbook, Wetlands Delineation Manual, Waste Minimization Manual, and The Environmental Guide to the Internet.

To subscribe to this free email catalogue send an email message to: giinfo@aol.com
In the body of the message, write your email address, name and organizational affiliation. Government Institutes will send you a single monthly message containing a description of their new books, products, and courses; no unsolicited "junk" email will be sent.

Department of Interior, National Biological Service is now providing electronic dissemination of subjects from the Wildlife/Fisheries Review database. These Selective Dissemination of Information (SDI)



packages cover AQUACULTURE, CONTAMINANTS, WETLANDS, and ENDANGERED SPECIES. For more information about the electronic SDI project and other services provided by the Information Transfer Center, send an email message to: nbsitclib@mail.fws.gov with SEND HELP in the subject line.

An Internet Resources web page has been completed as part of a joint effort between the National Biological Service and Colorado State University. Contact: <http://www.colostate.edu/Depts/CTSS/hpage1.html>

Smithsonian Institution Libraries, the Natural History and Botany Branches and Central Research Services can be reached via the Internet at: libem115@sivm.si.edu

The Bulletin Board on Trade and the Environment is a new electronic forum to enable specialists and nonspecialists to interact, build bridges between the trade and environmental communities, and advance current thinking. It will consist of two conferences: (1) library for documents [gets.library] and (2) dialogue for announcements, queries, requests for manuscripts, discussion, etc. [gets.dialogue].

The Board is intended only for the substantive discussion of trade and environmental policy issues. It is NOT intended either for political purposes (e.g., lobbying) or for commercial purposes. To subscribe, send email to majordomo@igc.apc.org with the message: subscribe gets-library or subscribe gets-dialogue

New global discussion list on marine biology.

To subscribe send a message: majordomo@marinelab.sarasota.fl.us
The message should contain one line: subscribe marbio
The list is unmoderated.

USDA Forest Service's Forest Inventory (USDA FIA) and Analysis Program: Forest monitoring at a national scale began with the need for a timber supply inventory in the 1930s. The USDA FIA Program has evolved over the years toward more holistic, ecological assessments, and today is undergoing accelerated redirection toward ecological concerns while continuing its mission to assess U.S. timber supplies.

To view or comment on the FIA initiative, contact: <http://www.msstate.edu/Dept/Forestry/ecofia.html>

Opportunities for Volunteers & Students

Audubon Society of Rhode Island, 12 Sanderson Road, Smithfield RI 02917, welcomes volunteers to help with property surveys and inventories, checking property bounds, doing trail maintenance, and serving as trail wardens. Contact Properties Manager Dave Rodrigues at (401) 949-5454.

Lloyd Center for Environmental Studies, P. O. Box 87037, S. Dartmouth, MA 02748 has a position for an Education Intern (must have completed sophomore year of college), beginning January 1996, with housing & stipend of \$75/week. Contact (508) 990-0505.

Mystic Marinelife Aquarium, 55 Coogan Blvd., Mystic, CT 06355 has volunteer opportunities in administration, visitor and member services, marketing and public relations, special events, exhibits, interpretation, development, education and programs, maintenance and grounds-keeping, husbandry, and research and veterinary services. Both adults and young people ages 15-17 are welcome to participate.

The MMA also offers an Intern Program for college students to gain practical experience in a museum setting. Working from 12-35 hours per week, students may gain experience working with marine mammals and birds, fish and invertebrates, or work in research, education, marketing, public relations, graphics, merchandising, development, human resources, and engineering and maintenance. College credit is available for these internships.

For more information contact the MMA at the above address or call (203) 536-9631.

The Nature Conservancy, Rhode Island Field Office, 45 S. Angell Street, Providence, RI 02906 has a variety of volunteer opportunities. Volunteer receptionist and administrative assistants, research and planning assistants, speakers, shorebird monitors, preserve monitors, and a stewardship crew chief are all needed. Contact Griff Venator at (401) 331-7110.

New England Wild Flower Society, Garden in the Woods, 180 Hemenway Road, Framingham, MA 01701, is accepting applications for its annual Horticultural Internship Program, which offers practical experience in native plant horticulture. Contact Heather McCargo or Cheryl Lowe at (508) 877-7630 ext. 3401 or 3402.



Rhode Island's National Wildlife Refuges: Be a volunteer and help make a difference at one of Rhode Island's National Wildlife Refuges. Ninigret, Trustom Pond, Pettaquamscutt Cove, Sachuest Point, and Block Island Refuges need your help counting wildlife, banding birds, constructing nesting boxes, maintaining trails, leading nature walks, and assisting refuge visitors. The program offers you several areas of opportunity; these include biological, visitor interpretation, education and orientation, maintenance, and miscellaneous skills.

Immediate opportunities include someone with photographic skills, particularly 35mm and 2X2 format, to photograph refuge resources and events; conducting call count surveys for waterbirds; conducting point counts at Sachuest Point NWR; and conducting aural surveys for frogs at Ninigret NWR. For more information contact Ron Flores at (401) 364-9124.

Rhode Island Natural History Survey, C.E. Education Center, E. Alumni Avenue, URI, Kingston, RI 02881, seeks a volunteer to help with the newsletter and other Survey projects. Computer skills (especially PageMaker and database experience) are particularly welcome. Contact (401) 792-5800.

Rhode Island Wild Plant Society, 12 Sanderson Road, Smithfield RI 02917, offers a \$500 scholarship each year to an undergraduate student (sophomore or higher) with a career goal involving wild plants and/or their habitats. Contact the RIWPS office at (401) 949-0195 for application procedures.

Roger Williams Park Museum of Natural History, Elmwood Avenue, Providence, RI 02905 has a number of collection-related projects that would be readily adaptable as (unpaid) student internships. Among these projects are curatorial up-grading, nomenclatural updating, inventory and conservation of the museum's 10,000 specimen herbarium.

Opportunities to work with other natural and physical science collections exist as well. Independent research that earns college or graduate credit toward degree completion is encouraged and welcomed. For further information contact: Marilyn Massaro, Curator, (401) 785-9451 ext. 248.

Roger Williams Park Zoo in Providence, RI has an intern program designed for people considering a career in the zoo world. It provides initial zoo experience and exposure to different zoo careers. Interns spend a minimum of 4 days/week for 10 weeks in the program. Admission to the program is based on an application and interview. For information contact: Curator of Education, Roger Williams Park Zoo, Elmwood Ave., Providence, RI 02905; (401) 785-9450.

A Cure for the Winter Blues

Don't sit around moping this December--get outside and enjoy a Bird Count with members of the Rhode Island Ornithological Club. The Westport count will be held December 16 and the South County count on December 23; the date for the Block Island count is yet to be determined. For more information contact the Audubon Society of Rhode Island at (401) 949-5454.

Block Island Land Trust Announces Public Priority Poll

The Block Island Land Trust will be conducting its Public Priority Poll in the Spring of 1996, to determine the public's consensus regarding Block Island's land acquisition priorities.

This poll coincides with the Land Trust's Tenth Anniversary, which will be celebrated in October 1996. To date the Block Island Land Trust has protected approximately 200 acres on Block Island.

Museum Offers Free Publications

The Museum of Natural History, Roger Williams Park, has recently undertaken a major reorganization of its Library and Archives. In the process many scientific journals, bulletins, and other periodicals have been deaccessioned and are available free of charge to interested researchers, educators, and libraries. Many of these are state-specific (non-Rhode Island) with emphasis in the areas of agriculture, soils, forestry, geology, and zoology. There are also occasional papers, special publications, proceedings, and reports of many museums and scientific societies. These periodicals are antiquarian, with dates spanning the late 19th to the early 20th centuries. Please call for further information or to arrange an appointment: Marilyn Massaro, Curator (401) 785-9457 ext. 248.

ResourceFULL

Roger Williams Park has just published its first issue of *ResourceFull*, a bimonthly bulletin to enhance science teaching and learning in elementary and secondary classrooms. A major aim of this bulletin is to assist in the professional growth of teachers as they decide what, when, where, and how science belongs in the experiences of students.

Each issue will include columns by Park educators from the Zoo, the Museum of Natural History, the Cormack Planetarium and the Charles H. Smith Greenhouses. The bulletin will offer lively activities, curriculum ideas, and freebies, as well as information on National Science Reforms and Issues, a calendar of upcoming events for teachers and students, and opportunities for professional development.

To subscribe send a check for \$10 (payable to Docent Council, RWPZ) to: RWP Zoo, Docent Council, Roger Williams Park, Providence, RI 02905; (401) 785-9457.

Rhode Island Natural History Survey, Inc.
c/o Cooperative Extension Education Center
E. Alumni Ave., URI, Kingston, RI 02881
(401) 792-5800; Fax 401-792-2259
RINHS@URIACC.URI.EDU

Advisors to the Rhode Island Natural History Survey:

David H. Abedon, R. I. Cooperative Extension
Peter V. August, URI Dept. of Natural Resources Science
Allan D. Beck, Narragansett Bay National Estuarine
Research Reserve

David Blockstein, Committee for the National Institute
for the Environment

J. Allan Cain, Rhode Island State Geologist
Virginia A. Carpenter, The Nature Conservancy
Joseph Dowhan, U. S. Fish and Wildlife Service
Richard W. Enser, RIDEM Natural Heritage Program
Howard S. Ginsberg, National Biological Service
Mark D. Gould, Roger Williams University
College of Arts & Sciences

Thomas P. Husband,

URI Department of Natural Resources Science
Marjorie Jensen, URI Department of Community Planning
Keith T. Killingbeck, URI Department of Biological Sciences
Margaret Leinen, URI Graduate School of Oceanography
Christopher H. Little, Christopher H. Little & Associates
Peter T. Lockwood, RI Association of Wetland Scientists
Marilyn Massaro, Roger Williams Park
Museum of Natural History

Leslie Merhoff, CT Geological & Natural History Survey
Joanne Michaud, Rhode Island Wild Plant Society
Douglass H. Morse, Brown University Department of
Ecology & Evolutionary Biology

Jack Mulvena, Rhode Island Zoological Society
Lorin I. Nevling, Illinois Natural History Survey
Scott W. Nixon, Rhode Island Sea Grant
John F. Paul, U. S. Environmental Protection Agency
Chris Powell, RIDEM Division of Fish & Wildlife
Christopher J. Raithel, RIDEM Division of Fish & Wildlife
David S. Reis, Coastal Resources Management Council
Lee C. Schisler, Jr., Audubon Society of Rhode Island
Linda A. Steere, Applied Bio-Systems, Inc.
Everett Stuart, USDA Natural Resources
Conservation Service

Stephen K. Swallow, URI Department of Environmental
and Natural Resource Economics

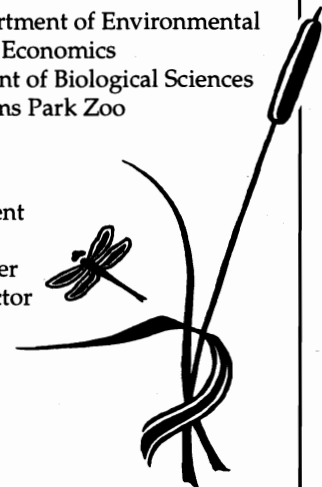
Saran Twombly, URI Department of Biological Sciences
Anthony Vecchio, Roger Williams Park Zoo

Officers & Staff

Peter V. August, President
Richard W. Enser, Vice President
Mark D. Gould, Secretary
Virginia A. Carpenter, Treasurer
Lisa L. Gould, Executive Director

Annual Membership Fees:

\$25 Individual
\$40 Family
\$10 Student/Ltd Income
\$100 Institution
\$500 Corporate



Upcoming Conferences & Seminars

November 16-17 *Environmental Enhancement Through Agriculture*, Tufts University Center for Agriculture, Food, & Environment. Contact William Lockeretz, School of Nutrition, Tufts U., Medford, MA 02155.

November 18 *Building Your Personal Library*, ASRI Headquarters, Smithfield, RI, 1:00-3:00 p.m. Alison Goodsell of Rare Books in Westerly, RI will discuss collectible books, appraise volumes participants bring, and have a few selected volumes for sale. Special focus on natural history, horticulture, and New England and maritime history. R.I. Wild Plant Society, (401) 949-1095.

December 9 *Introduction to Wetland Ecology*, a short course by Frances Clark, at Garden in the Woods, Framingham, MA, 9:00 a.m.-12:00 noon. New England Wild Flower Society, (508) 877-7630.

January 13, 1996 *Rhode Island Greenways: Plans & Program*. RIWPS lecture, 1:00-3:00 p.m., R.I. Wild Plant Society, (401) 949-1095.

January 19 *Sharing the Knowledge: The Use of Ecological Information in Rhode Island*, RINHS Annual Conference, Roger Williams University [see article on page 5 for details]. Contact (401) 792-5800.

February 11 *Waterfowl of Sachuest Point*, Middletown, RI, 1:30-3:30 p.m., sponsored by the Lloyd Center for Environmental Studies, (508) 990-0505.

March 9 *Managing Natural Landscapes through Burning and Other Techniques*, a lecture by Glen Dreyer, Connecticut College Arboretum, 1:00-3:00 p.m. (location TBA). R.I. Wild Plant Society, (401) 949-1095.

March 16-17 *Faith in a Seed*, Annual New England Environmental Conference, Tufts University, Medford, MA. Contact (617) 627-3162; NEEC96@infonet.tufts.edu

May 21-23 *2nd International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences*, Colorado State University, Ft. Collins, CO. Contact H. Todd Mowrer at FAX (970) 498-1010 or email: fswa/s=H.Mowrer/ou=S28A@mhs.attmail.com

June 17-23 *4th International Technical Conference on Plant Genetic Resources*, Leipzig, Germany. Contact Dr. Charles Spillane, Rome Italy, Tel: 39-6-52255392; email: Charles.Spillane@FAO.ORG

August 11-15 *Ecology and Problem Solving*, 81st Annual Meeting of the Ecological Society of America, **Providence, RI**. Contact Jill Baron, Natural Resource Ecology Laboratory, CO State University, Ft. Collins, CO 80523; (303) 491-1968; jill@nrel.colostate.edu

August 20-24 *Natural Science Collections: A Resource for the Future*, 2nd. International Symposium/Work Congress on the Preservation of Natural History Collections, Cambridge, England. Contact Chris Collins, Geological Conservation Unit, Dept. of Earth Sciences, Downing St., Cambridge CB2 3EQ, UK.

September 9-13 *Sustaining Ecosystems and People in Temperate and Boreal Forests*, An International Conference on Integrating Conservation of Biological Diversity with Social and Economic Goals, Victoria, British Columbia, Canada. Contact Victoria Ltd., (604) 382-0332.

September 22-28 *Wetlands for the Future*, 5th International Association of Ecology International Wetlands Conference, Perth, Australia. Contact Dr. Jenny Davis, Tel. 61-9-360-2939; email davis@essun1.murdoch.edu.au

December 2-5, *Aerospace Technologies in Earth Sciences*, Moscow, Russia. Contact Kirill D. Nadezhdin, Tel. 7-(095)-267-5436; kirill@cc.nifhi.ac.ru

✓ Please include me as a member of the
Rhode Island Natural History Survey, Inc.

Annual dues (check one) (see over for membership benefits):

Individual (\$25) Family (\$40) Student/Limited Income (\$10)

Institutional (\$100) Corporate (\$500)



Name _____ Telephone _____
Affiliation _____ Fax _____
Address _____ E-mail _____

Make checks payable to: **RINHS** & send to:

RINHS, C. E. Education Center, E. Alumni Avenue, URI, Kingston, RI 02881-0804

RINHS is a nonprofit 501(c)(3) organization. Dues in excess of \$6 (for annual subscription to the newsletter) and contributions are tax deductible to the full extent allowed by law.

**Benefits of membership
in the
Rhode Island
Natural History Survey**



For Individual, Family, and Student Members

- Free admission to RINHS annual lecture series
- Free membership list
- RINewHS, the newsletter
- 20% discount on all publications
- 20% discount on annual conference fee

For Institutional Members

- 2 free admissions to RINHS annual lecture series
- 2 free membership lists
- RINewHS, the newsletter
- Listing in Program for Annual Conference
- 20% discount on all publications
- 1 free registration at annual conference

For Corporate Members

- 2 free admissions to RINHS annual lecture series
- 2 free membership lists
- RINewHS, the newsletter
- Listing in Program for Annual Conference
- 20% discount on all publications
- 2 free registrations at annual conference

Wildflowers of Northeastern and Northcentral North America, Amphibians and Reptiles of New England, Habitats and Natural History, Native Trees, Shrubs, and Vines for Urban and Rural America, National Audubon Society Field Guide to North American Mammals, National Audubon Society Field Guide to North American Reptiles and Amphibians, and Newcomb's Wildflower Guide.

From Roger Williams Park Museum of Natural History we have received: Jokinen's *The Freshwater Snails of Connecticut*; Taylor and Jokinen's reprint of "A new species of freshwater snail (*Physa*) from seasonal habitats in Connecticut" (in *Freshwater Invertebrates* 3(4): 189—202); and Duckworth, Genoways, and Rose's *Preserving Natural Science Collections: Chronicle of Our Environmental Heritage*.

Marilyn Harlin of URI's Department of Biological Sciences has given us a copy of *Freshwater and Marine Plants of Rhode Island* by Sheath and Harlin.

And from Father Charles Reichart of Providence College has come 40 sets of his *Semi-aquatic and aquatic Hemiptera of Rhode Island*, a 5-part series, for RINHS to include in its publications for sale.

Dr. Elmer Palmatier, URI Professor Emeritus of Botany, donated his teaching slide collection, a gift of over 4000 transparencies. And Dr. Thomas Perry generously donated a number of slides from his extensive collection of Rhode Island birds and other animals. Other items we have gratefully received include the skulls of woodchuck and mouse for use in RINHS displays, donated by Robert L. Sand.

RINHS welcomes literature on Rhode Island's biota, geology, hydrology, and habitats. We are especially seeking up-to-date taxonomic references, to help in preparing the *Flora and Fauna of Rhode Island*. If you have materials to donate please call the office at (401) 792-5800.

Many Thanks!

RINHS is very grateful to its friends who are helping to expand our reference library and literature offerings. Special thanks go the Cooperative Extension Service for references useful to both RINHS and the C.E. Education Center: *A Field Guide to*

Rhode Island Natural History Survey
c/o Cooperative Extension Education Center
East Alumni Avenue, U. R. I.
Kingston, RI 02881-0804

Printed on recycled paper

NON-PROFIT ORGANIZATION
U. S. POSTAGE
PAID
PERMIT # 47
WEST KINGSTON, RI 02892