



RINHewS

The Newsletter of the Rhode Island Natural History Survey

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1999 RINHS Conference Taking Shape

Challenges and Opportunities Facing Rhode Island's Biodiversity: The Science Behind the Issues

Mark your calendar now to attend the 5th RINHS Conference, to be held on Friday, March 12, 1999, at the Community College of Rhode Island's Flanagan Campus in Lincoln, RI. The theme for the conference is *Challenges and Opportunities Facing Rhode Island's Biodiversity: The Science Behind the Issues*. It promises to be one of our most stimulating conferences to date!

The conference will feature four breakout sessions, each with four invited speakers. The sessions will focus on **Development Issues** (e.g., fragmentation, nonpoint source pollution, global climate change, suburban sprawl, and fisheries); **Invasives** (e.g., definitions of invasives, mathematics of biological invasions, biological control, and ballast water); **Strategies to Conservation** (e.g., habitat restoration, the use of GIS, site selection and acquisition, and economics); and **Inventory & Monitoring** (e.g., watershed monitoring, shoreline monitoring, plant monitoring, and monitoring with macroinvertebrates).

In addition to the breakout sessions, there will be poster sessions, a plenary speaker, and presentation of the 1999 Distinguished Naturalist Award, as well as organizational displays.

A call for abstracts for the poster sessions will be sent out soon, as well as a call for nominations for the Distinguished Naturalist Award.

RINHS Board member Larry Taft is heading up the conference planning committee. If you would like to join the committee, contact Larry at (401) 846-2577.

Silk Purse Documents Biodiversity: Inaugural Volume in the Biota of Rhode Island Series Makes Its Debut

by Keith T. Killingbeck

Sitting on my desk is a 75-page document published in 1952. It has no binding. Each page is pierced with three holes to accept the rings of a binder. Its pages were once white, but long ago took on the faded tan of a weathered leather baseball. The text is typed, not typeset, and the map of Rhode Island that nearly fills the blue paper cover is two generations short of GIS-quality. Slick it is not. But value, as beauty, is in the eye of the beholder and this volume is as precious to me as any I own. You see, the book is *The Flora of Rhode Island* and the copy that graces my desk was given to me many years ago by its author, the late Elmer Palmatier.

Also on my desk sits the 268-page visual antithesis of Palmatier's timeworn contribution. Expertly bound. Crisp white pages. Computer-generated, typeset text adorned by an artistically striking cover. Slick it is. This botanical version of the proverbial silk purse is Volume 1 of *The Biota of Rhode Island Series* (Gould, L. L., R. W. Enser, R. L. Champlin, and I. H. Stuckey. 1998. *Vascular Flora of Rhode Island: A List of Native and Naturalized Plants*. Rhode Island Natural History Survey, Kingston, RI). From its inception, the development of this new Flora was a joint venture of the Rhode Island Wild Plant Society

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Research Reports

Rhode Island's Colonial Nesting Birds

by Richard L. Ferren and James E. Myers

A moat is a time-honored method of maintaining one's isolation from enemy armies, thieves, unwanted salesmen, and miscellaneous intruders. Popularly thought to have been invented by the designers of medieval fortifications, natural moats have been in use by birds for millennia, to avoid terrestrial predators. Islands have proved to be the very best nesting places for many birds because such natural sanctuaries cannot be reached easily by most of the endangering influences of the nearby mainland.

Rhode Island's coastal regions are particularly rich in small isolated land masses set off from the rest of North America. These range in size from Aquidneck and Block Islands to innumerable rocky islets and sand bars. One would expect that these offshore areas have been used by colonial-nesting birds for hundreds of years; however, today's teeming rookeries of seabirds and herons have not always been present. Although a few sites have been occupied by obligate island-breeders for centuries, for a variety of reasons Rhode Island's isolated land habitats were little used until recently.

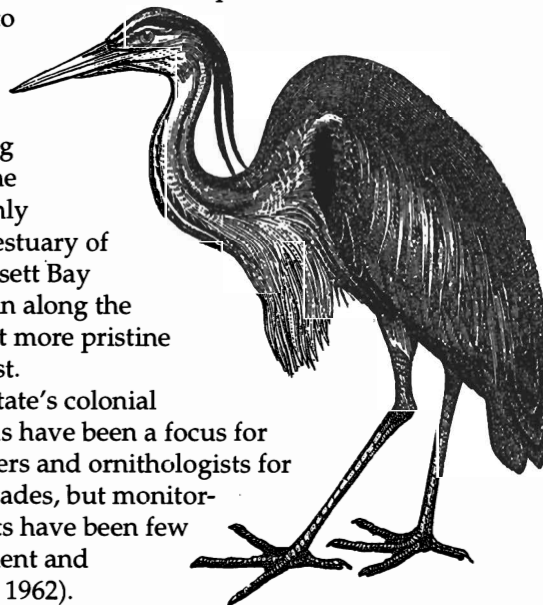
When Howe and Sturtevant published their *Birds of Rhode Island* in 1899, only two or three bird species bred on the islands and beaches: the Black-crowned Night-heron at a few shifting sites such as Prudence Island, and Common Terns at several smaller islands. A very few Piping Plovers nested non-colonially on the mainland beaches at Matunuck and Charlestown. Other present breeding species such as Herring Gull, Great Black-backed Gull, Least Tern, Roseate Tern, Double-crested Cormorant, Great Egret, Snowy Egret, Little Blue Heron, Yellow-crowned Night-heron, Glossy Ibis, and American Oystercatcher were all absent in summer then primarily because of a long period of uncontrolled human exploitation along the Atlantic seaboard. This history in our colonial, pioneering, and industrial eras is full of bad news about the use of feathers for the millinery trade or for stuffing pillows and mattresses, of wagonloads of birds and baskets of eggs for home tables and the market, of rounding up nestlings by the gunnysack to feed hogs or bait lobster traps, and the depredations of unsupervised, year-round "gunners" and oological hobbyists.

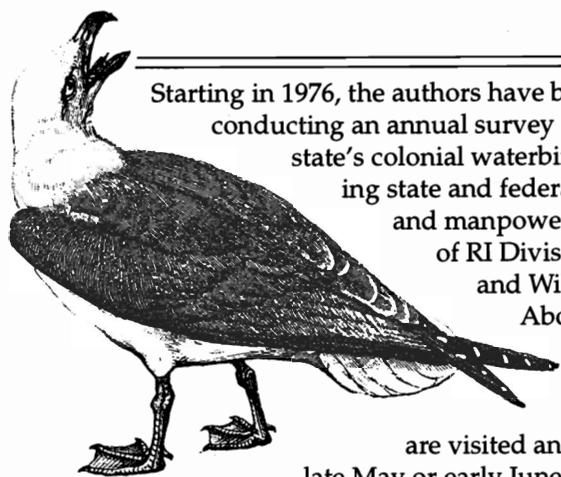
The nation's Audubon societies came into existence in the period 1895-1900 for purposes of stopping the carnage and averting extinctions. Since

then things have changed for the better. Nearly all waterbirds native to the U.S. Atlantic coast have increased since their populations were protected by various laws and treaties about 1918. Most of the above-mentioned species arrived in our area in the period 1935-1976 and are now nesting, sometimes in spectacular numbers. They have expanded into our region from the north (gulls, cormorants) and the south (herons, egrets, ibis, oystercatcher). In the 1990s, between 8,000-10,000+ pairs of colonial waterbirds, and non-colonial oystercatchers and Piping Plovers, were nesting on the state's islands and beaches. This is up from an optimistic estimate of 200 pairs at the turn of the century, not counting a single night-heron colony on Prudence Island that was sometimes estimated at 1,000 pairs. Many islands were barren of trees at the turn of the century, but have become overgrown with brush and trees since the 1950s, providing nesting habitat for some newly arrived wading species. Another fortuitous coincidence was the vast reduction in the Navy presence in the bay area and the assignment of many islands to the state for wildlife management purposes.

After the bad news at the turn of the century, the good news has been the upward spiral of island and beach-breeding waterbirds on some of Rhode Island's most isolated and largely predator-free territories such as Block Island, the Gould Islands, Hope Island, Rose Island, Dyer Island, Sandy Point Island, the Sakonnet Islands, and dozens of smaller rocks and sand bars. The new diversity of birdlife has been a delight to most people living around salt water, including tourists and summer visitors, who cannot ignore the constant sight of gulls, terns, egrets, and other graceful birds that now frequent the coastal zone. The presence of these birds attests to their relative tolerance of polluted waters, since contrary to expectations, the majority are nesting close to the more highly polluted estuary of Narragansett Bay rather than along the somewhat more pristine outer coast.

The state's colonial waterbirds have been a focus for local birders and ornithologists for many decades, but monitoring reports have been few (see Clement and Woodruff 1962).





Starting in 1976, the authors have been conducting an annual survey of the state's colonial waterbirds utilizing state and federal funds and manpower resources of RI Division of Fish and Wildlife.

About 100 island and beach locations

are visited annually in late May or early June to count or estimate numbers of nests and adult

birds of each species present and to assess the birds' reaction to, or creation of, ecological changes. Visits to colonies are quick and relatively unintrusive, and are accomplished early in the season before vulnerable nestlings are numerous. Coupled with data gathered by the senior author for some colony locations prior to 1976 and information on mainland populations of Least Terns and Piping Plovers provided by Christopher Raithel and others, a comprehensive account of the history of Rhode Island's beach and island nesting birds has just been published: *The Maritime Nesting Birds of Rhode Island* (1997). After an historical overview, colonial and non-colonial waterbirds are treated first by species and then by each of 107 breeding sites, followed by chapters that summarize their overall interactions and management recommendations.

Even fortified with knowledge about previous patterns of change within various species and groups, or between particular breeding sites, we have been unprepared for the magnitude of population changes and the abrupt changes of colony locations that have been evident during the 23 years of our survey. Fortunately, our population monitoring activities have been conducted during a period of unprecedented expansion among nearly all species and groups, so that we have often found the first pioneering individuals of various species that have "invaded" Rhode Island and been able to watch their populations grow from a small handful to hundreds or even thousands of nesting pairs. We have watched certain species and whole mixed-species colonies respond to occasional inroads by four-footed and avian predators, illegal "management" by people, losses of food sources, changes in feeding habitats, competition with other species, defoliation of nesting islands by the birds' own guano, and a host of other phenomena that have influenced their numbers. Overall, however, the majority of species have thrived despite an ever-greater presence of humanity in the coastal zone.

Many conclusions have come from our research that are specific to various groups of nesting birds.

Gulls and cormorants will usually nest year after year on particular islands in similar numbers, subject to long-term trends in their population and changes in food sources, nesting substrate, or predators. Black-crowned Night-herons and Great Egrets are also very conservative in making changes from one nesting island to another. American Oystercatchers (on islands) and Piping Plovers (on mainland beaches) are perhaps the most stable, and will occupy the same sites annually if mammalian (including human) disturbances are minimal. On the other hand, terns are bivouac-nesters that often change colony locations, though some sites are fairly stable. The most fickle group includes the smaller herons, egrets, and Glossy Ibis, which usually require the larger wooded islands (and the presence of each other and other herons) for successful nesting but will frequently move en masse to nearby islands for reasons that are not always obvious.

Our data indicate that the one or two major colonies of these waders that exist at any one time in the vicinity of Narragansett Bay seem to change sites on a fairly predictable schedule. The Bay population seems to run through a pattern involving the pioneering of a site, its occupation for 10-14 years, and finally its abandonment for another island. The new site will then be used for a similar period and then be abandoned in turn. Previously-used sites tend to remain "fallow" for a decade or more and are then recolonized, used for a decade or more, and again abandoned. Quite aside from short-term external influences, against which the birds seem quite resilient over time, the cycles of boom and bust seem to be driven by buildups of acidifying guano and the changes of pH on nesting vegetation. The vegetation does not have to die before the herons and ibises move, in contrast to cormorants. Tree-nesting cormorants often kill all the vegetation near their nest sites, including their nest-trees, and move only when the trees decompose or are wind-thrown.

Almost all colonial waterbirds need breeding sites that remain isolated from significant disturbance by humans during the critical breeding period, April 1 to August 15. For the more vulnerable herons and ibises, the timetable of colony startups, periods of use, and subsequent abandonments suggest certain conservation imperatives that are necessary to retain these graceful nesting birds within the realm of Rhode Island's biodiversity. Herons, and to a lesser extent terns, must have alternate sites that are available for occupancy, even if they are not always in current use, or used often, when active colonies "cycle up" for abandonment. The hypersensitive small heron/egret/ibis group is the most dependent on the large, wooded (and therefore scarcer) bay islands while at the same time they are the least tolerant of vegetative degradation by guano. These

realities immediately translate into the need to provide for alternative sites, just as humans need a change of clothes. At the same time, previously occupied sites need to be kept available for natural rehabilitation and future use. Loss to developers of even one of the present suite of small, wooded islands in Narragansett Bay could result in serious and prolonged reductions in the presence of some colonial breeders in the bay area since alternate breeding habitat might not be available for colonies displaced by their own guano or by external influences.

At the present time, two of Rhode Island's most important island nesting sites remain in private ownership and could be threatened by development schemes. Dyer Island, in Portsmouth west of Melville, is owned by a group of investors, but presently functions as one of the bay area's most important *de facto* wildlife refuges. Rose Island, once owned by the Navy, was bought by another group of speculators except for a 1.5-acre enclave owned by the Rose Island Lighthouse Foundation. In the 1990s, Rose Island hosted (mostly in the vulnerable, re-vegetating, privately-owned parcel) 500-750 pairs of colonially-nesting waterbirds, including (in 1997-98) 300-350 pairs of herons, egrets, and ibises. Rose Island hosted the largest colony of Glossy Ibises in New England in 1997-98. The existence of all this avian activity within sight and sound of bustling Newport would seem to be a welcome and diversifying counterpoint to the human activity that crowds that corner of Rhode Island! The undeveloped parts of Rose Island survived two or more major development schemes in the last 20 years, including proposals for casino gambling, construction of an 850-slip marina, and a 125-unit condominium complex. With indefatigable optimism, Rose Island Lighthouse Foundation's Director Charlotte Johnson has put together private donations and \$400,000 from the State Open Space Grant program that may be adequate to save the entire island, allowing the historic lighthouse, Revolutionary War barracks and earthworks of Historic Fort Hamilton, and more recent military artifacts, to coexist peacefully with the waterbird colony.

It is our hope that public and private stewards of coastal property will eventually come to appreciate the spectacular concentrations of summering waterbirds that now call Rhode Island home and that the continuance of this new biodiversity will be factored into decisions about human usage of the state's coastal islands and undeveloped beaches. With recognition of the all-important characteristics of these unique breeding habitats, more can be done to save them. We can even envision many of the Navy's former islands, together with other sites important to colonial or migratory birds, incorpo-

rated into a "Rhode Island Estuarine National Wildlife Refuge" or other suitable entity. No coastal lands are more endangered by development or more indispensable to the needs of specialized and beleaguered aquatic and marshland wildlife, which include basking seals in winter as well as breeding birds in summer. The tendency in Rhode Island has often been to view natural resources purely from immediate economic perspectives, where more (money, recreational usage, development) is frequently thought to be better. We contend that timely acquisition and protection of Rhode Island's marine islands, including well-vegetated Dyer and Rose Islands, will be a small price for a more satisfactory bay-area environment of people as well as wildlife. We believe that in terms of tourism and education over time, island preservation will be both laudable and cost effective.

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- Ferren, Richard L. and James E. Myers. 1997. *The Maritime Nesting Birds of Rhode Island*. Rhode Island Department of Environmental Management, Division of Fish and Wildlife, West Kingston, RI. 220 pp.
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Richard Ferren is Professor of Life Sciences at Berkshire Community College, Pittsfield, Massachusetts. James Myers, now retired, served as Supervising Wildlife Biologist at RIDEM's Division of Fish and Wildlife.

Hydrology of the Matunuck Hills Ponds by Anne I. Veeger and Roberto Esquilin

A truly unique collection of coastal plain ponds, know as the Matunuck Hills Ponds, dots the landscape in southern Rhode Island (Figure 1). Here, groundwater-fed depressions (relicts of melting ice blocks left behind by the retreating Late Wisconsinan glacier) have evolved into pond ecosystems that host

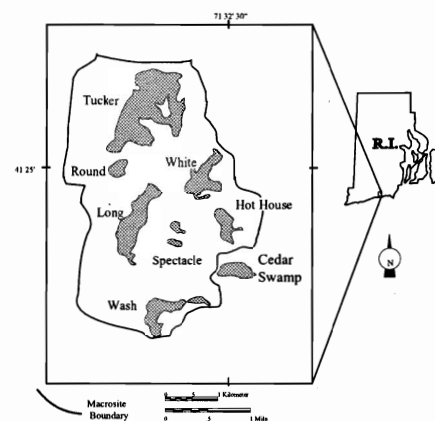


Figure 1. Location of the Matunuck Hills Ponds.

occurrences of nearly twenty rare plant and animal species. A detailed study combining physical and chemical measurements was used to evaluate the surface-water/groundwater interactions, and interpret the hydrogeologic system of the Matunuck Hills Ponds.

Piezometers (small-diameter wells) and staff gages were used to determine the direction of groundwater flow around the ponds. Measurements reveal that most ponds are flow-through ponds with groundwater inflow at the north end and groundwater outflow at the south end (Figure 2).

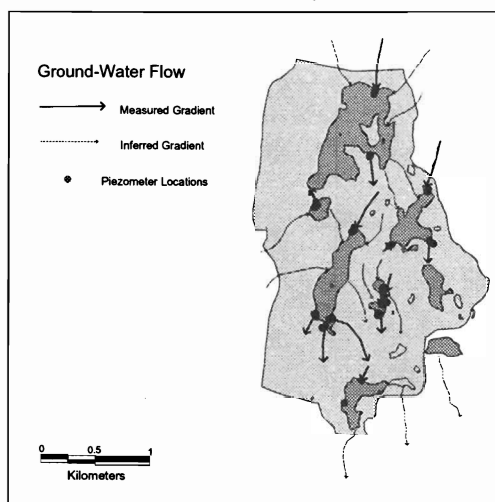


Figure 2. Pattern of ground-water flow.

Water-budget and water-level data show that precipitation events (or the lack thereof) are the dominant factor controlling water levels in the ponds (Figure 3). In some ponds, however, groundwater flow (in or out) plays an important role in controlling pond level fluctuations. At the south end of Tucker

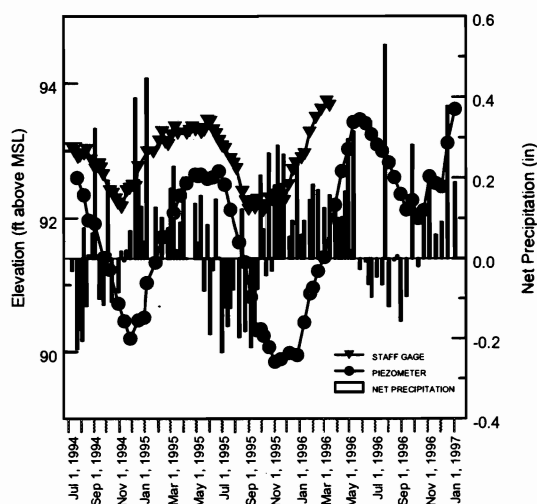


Figure 3. Impact of net precipitation (defined as precipitation minus evapotranspiration) on pond and ground-water level fluctuations at south end of Tucker Pond.

Pond for example, the water table is lower than the level of the pond and oscillates over a wider range than the level of the pond (Figure 3). The pond is therefore losing water to the water table at its south end; groundwater inflow at the north end of the pond, however, more than compensates for this loss and sustains the pond water level.

Although the water budget provides information on the influence of ground water, it does not distinguish between ground water derived from local recharge of the water table and ground water derived from a regional source. This distinction is important for development of meaningful site-protection strategies.

Water samples were collected from the ponds and nearby wells and analyzed for major dissolved constituents. Chemical fingerprinting on the basis of the observed compositions can then be used to identify the source of water supplying the ponds.

The Matunuck Hills ponds receive their input from precipitation and groundwater discharge. Precipitation is characterized by relatively low concentrations of sodium and chloride derived from sea spray. Groundwater samples are sodium-chloride or sodium-bicarbonate type waters with higher bicarbonate and silica concentrations than the surface water samples. The change in composition is a function of water-rock chemical reactions in the subsurface.

The chemical data suggest that regional sodium-bicarbonate-type ground water is discharging to Tucker, Cedar Swamp and Wash ponds. Bicarbonate, silica and to a lesser degree calcium concentrations are notably higher in these ponds. The remaining ponds are dominated by precipitation and input of local ground water.

The potentiometric and water budget techniques alone would not have revealed this aspect of the flow system. These hydrologic relations help to establish the complex hydrology of the pond system which is necessary before an effective watershed protection plan can be developed.

Anne Veeger is an Associate Professor in the Department of Geology, University of Rhode Island. Roberto Esquilin received a Master of Science degree in the URI Department of Geology.

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Rhode Island Odonata Atlas Project

by Virginia A. Carpenter

The insect Order Odonata, containing the dragonflies and damselflies, has enjoyed a recent surge of interest from a variety of angles. These colorful, charismatic predators have charmed young and old, professional scientists and amateur naturalists, with their stunning beauty and unmatched aerial acrobatics. As aquatic organisms, they are an integral component of natural systems, clambering about in the depths of lakes, ponds, rivers, and wetlands as larvae, then winging the air as jewel-toned adults for a few brief weeks each year. Efforts are underway in many parts of the country to study all aspects of their lives—including habitat requirements and their response to the pressures of development, pollution, and other environmental stresses—and to apply this knowledge to the field of conservation.

The very first step in such a process is the inventory. The Odonata is a relatively small insect group, with only about 5,000 species worldwide (compared to the 250,000 beetle species), and 500 or so in North America. Thus, broad-scale inventory in a state as small as Rhode Island is both practical and useful. The goals of the Rhode Island Odonata Atlas are: 1) to establish and maintain an updated species list and collection for the state, with distributional information based on the township unit; 2) to sample wetlands statewide for current species abundance and distribution; 3) to establish a computer database for historic and current Rhode Island occurrences; 4) to identify critical Odonata habitat in Rhode Island; and 5) to make recommendations to the state Natural Heritage Program for species that should be tracked and/or given special status. The project is designed to span a minimum of five years, but may continue on if necessary.

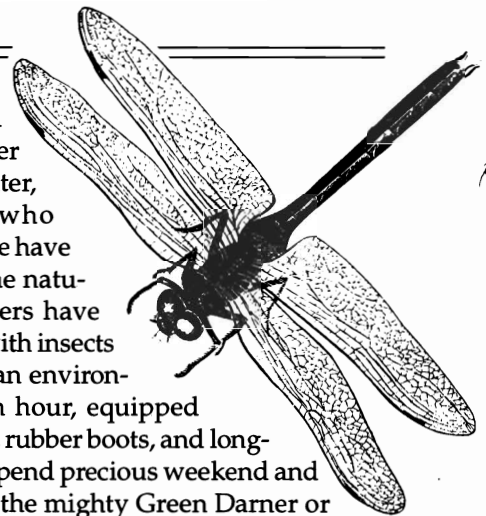
So, on an unseasonably warm day at the end of March, with temperatures in the 80s (a real dragonfly kind of day!), interested volunteers were trained in field and collection techniques at an organizational meeting. They were instructed on how to catch these fast-flying aerial wizards, how to collect responsibly, how to produce a museum quality specimen, where to look, and what to expect. Volunteers purchase their own insect net and acetone (used for specimen preparation), and choose a particular unit (township) in which to work. They are given guidance on what type of habitat to work in, including urban areas, and how to record data. By late April, dragonflies and damselflies began emerging from lakes, ponds, bogs, rivers, and other wetlands across the state.

An army of 16 volunteers spread out across the state, from Little Compton to Burrillville and Block Island to Westerly. They ranged in background from

amateur and professional naturalists and biologists to computer engineer, city firefighter, and simply those who love dragonflies. Some have masters degrees in the natural sciences, and others have no prior experience with insects at all. Some slog urban environments on their lunch hour, equipped with business suit, tie, rubber boots, and long-handled net. Others spend precious weekend and leisure time tracking the mighty Green Darner or diminutive New England Bluet from the seat of a canoe. Regardless of background, profession, method, or skill, these volunteers have contributed enormously to our understanding of the odonate fauna of Rhode Island in just the first year of the project.

There were many surprises in the first season's collected material. Prior to the start of the Atlas, inventories of Rhode Island's dragonfly and damselfly fauna (most focusing on certain species groups or geographic areas) had recorded 114 species. With the increase in coverage and effort, 6 species previously unreported for Rhode Island were taken. One of these, the Southern Sprite (*Nehalennia integrigollis*), was not known from New England. Furthermore, numerous records have come in for species which had been known from only one site, expanding our knowledge of both distribution and abundance within Rhode Island. Although we have just begun to prepare and analyze the data from year 1 of the Atlas, some notable results follow. Over 1,000 specimens have been contributed to the collection by this year's intrepid volunteers. By season's end, this figure may approach 1200. This represents a phenomenal effort on the part of relatively few individuals.

In that group of 1,000 specimens are the six state records: the Unicorn Clubtail (*Argomphus villosipes*), the Spiny Baskettail (*Epithea spinigera*), the Chalk-fronted Skimmer (*Libellula julia*), Needham's Skimmer (*Libellula needhami*), the Lilypad Forktail (*Ischnura kellicotti*), and the Southern Sprite (*Nehalennia integrigollis*). Three of these, the Southern Sprite, Spiny Baskettail, and Chalk-fronted Skimmer, were somewhat surprising, the first being a southern species out of range, the second and third representing more northern species, though certainly not out of range here in Rhode Island. The discovery of the Unicorn Clubtail, Lilypad Forktail, and Needham's Skimmer were not unexpected, and can be explained by a prior lack of effort in the appropriate and abundant habitats in which they occur. Both the clubtail and forktail were subsequently taken in numerous locations state-wide. Also notable in 1998



data were numerous in-state distributional expansions, which helps in our understanding of species abundance. The tiny, blue New England Bluet damselfly, *Enallagma laterale*, which had been a focus of inventories in the early 1990s in Rhode Island, was known only from the southern part of the state, west of Narragansett Bay. However, it began to turn up repeatedly this spring in new locations, from Little Compton through North Kingstown, Scituate, and Burrillville. The colorful Common Sanddragon, *Progomphus obscurus*, was reported from only a single Rhode Island site prior to 1998, when two new populations were discovered. Also of interest was the Black-shouldered Spinyleg (*Dromogomphus spinosus*), a large greenish clubtail previously taken in a single location in the Blackstone River system. With expanded focus in appropriate habitats, new stations were located in 1998 in Lincoln, Scituate, Hopkinton, and Westerly. The spectacular sky-blue Mottled Darner (*Aeshna clepsydra*), a big autumnal dragonfly new to the state in 1996 and known only from two South Kingstown sites, also turned up in good numbers in 1998. It was taken in Charlestown, West Greenwich, Glocester, and Scituate, as well as at new locations in South Kingstown. A sister species, the Lance-tipped Darner (*A. constricta*), whose sole Rhode Island record was from Block Island, was documented from several mainland sites in 1998, the first of which was a road-killed female from Smithfield.

In contrast to those species which are occurring at numerous locations state-wide, a few were notable in their absence from this year's records. The Pine Barrens Bluet damselfly (*Enallagma recurvatum*), which is restricted in range to 5 northeastern states including Rhode Island, was completely absent from any collections made during the first year of the Atlas, despite good effort at appropriate habitat. Furthermore, this year's inventory produced numerous records for its abundant close relative, *E. laterale*, which shares its flight period and habitat type and often occurs with *E. recurvatum*. Similarly, the striking Scarlet Bluet, *E. pictum*, which is even more severely restricted than the previous two bluets and quite rare, was recorded at just 2 new Rhode Island ponds. This species was a target of the search effort at at least 12 ponds with appropriate habitat. It is now documented from only 3 ponds in the state.

With a project of this magnitude, collection and data management become very big responsibilities. Thanks to a loan from the Rhode Island Natural History Survey (through a Champlin Foundations grant), a collection storage cabinet was donated and now houses material collected by Atlas volunteers. We are currently working on entering 1998 data into a database that will allow us to analyze a variety of parameters at the end of this season. Analysis will

allow us to see gaps in coverage, either geographically or taxonomically, and to focus future efforts on filling these gaps. And there is still a need for more volunteer assistance, including field inventory, cataloging data, and collection management. If you have an interest in volunteering for the Rhode Island Odonata Atlas, please contact Ginger Carpenter at The Nature Conservancy, at (401)-331-7110; email gcarpenter@tnc.org

Ginger Carpenter is Director of Science and Stewardship at the Rhode Island Field Office of The Nature Conservancy; she also serves on the Board of Directors of the Rhode Island Natural History Survey.

Proposed Additions to The Biota of Rhode Island: I. "A Numerous Company of Weeds" by Peter T. Lockwood

One century ago this winter, J. Franklin Collins of Providence, RI penned a brief communication for the debut issue of *Rhodora*, the newly formed Journal of the New England Botanical Club. His first contribution was comprised of observations of new or previously unrecorded plant species from the "waste-lots and refuse heaps" about the Providence area (Collins 1899). During the latter half of the 19th Century, amateur botanizing was not only a popular hobby, but many botanists seemed to have a special interest in recording the arrival of any of the so-called "interlopers and vagrants." The tendency for these exotic weed species to be first observed along roadways, railways, and in ballast-yards earned them the designation "tramps of the vegetable kingdom" (Rich 1900).

A review of these early missives is enlightening for those familiar with the present composition of our flora. Such now common to abundant plants as *Lotus corniculatus*, *Festuca elatior* var. *pratensis* (= *F. pratensis*), *Bromus hordeaceus*, *Hypochoeris radicata*, *Hieracium aurantiacum*, and *Euthamia tenuifolia* (= *Solidago tenuifolia*) were being recorded as new or novel records, as previously overlooked, or as only beginning to spread as weeds (e.g., Bailey 1900).

Today, any apparent or perceived lack of communication of this sort is no grounds for complacency--species arrivals and introductions continue apace. The Newsletter of the Rhode Island Natural History Survey, however, has already begun to perform an important function in the documentation of these new arrivals. *RINHewS* has recently included information on the occurrence of two new invasive species in our State (Villalard-Bohnsack and Harlin 1997, Deacutis 1998), and it is evident the Survey has the potential to be a primary resource for this type of information in the future.

In the interest of perpetuating the documentation of first observations of exotic species in Rhode Island (and encouraging others to do likewise), I offer three exotic ruderal species I encountered during this past season. All of these species are represented by specimens in my possession to be placed in the Herbarium of the University of Rhode Island. Since there always may be reason to suspect that various taxa are merely adventive and do not have the potential to fully naturalize, I will follow in the tradition of J. F. Collins and "propose to present them in such a way that each reader may, to a certain extent, be his own judge as to the value or worthlessness of each as a member of our state flora." (Collins 1899).

Luzula campestris L. (Juncaceae) Narragansett, Washington Co., RI, 12 May 1998. Observed on loamy spoils piles in a disturbed area amidst residential development (Ponagansett Parkway X Green Brier Road). This species is distinguished from our native wood-rushes by the distinct presence of rhizomes. Gleason and Cronquist (1991) comment: "Native of Europe, casually introduced in disturbed habitats at least in Massachusetts and perhaps elsewhere."

Eragrostis curvula (Schrader) Nees. (Poaceae) "Weeping lovegrass." North Scituate, Providence Co., RI, 24 July 1998. Observed at three locations on roadside banks along Route 14 west of the Scituate Reservoir causeway. Since this roadway was recently reconstructed by the RIDOT, the presence of this species may be the result of a direct planting or inadvertent weed seeding. This South African native has been widely employed for forage, erosion control, and also planted as an ornamental in the Southeastern United States. Gleason and Cronquist (1991) state: "... escaped at scattered stations as far north as New Jersey and Pennsylvania (where becoming common)." Angelo and Boufford (1998) give the only New England herbarium records of this species from Barnstable County and Plymouth County, MA.

Panicum amarulum A. Hitchc. & Chase. (Poaceae) West Greenwich, Kent Co., RI, 16 August 1998. Observed in a drainage swale alongside Interstate 95 near Route 3. Vigorous, and apparently spreading upslope on dry, sandy, cut-banks nearby. This species, and our closely related native *P. amarum*, are psammophilic and halophilic coastal species; Gleason and Cronquist (1991) describe the habitat and range of *P. amarulum* as "coastal beaches, usually in swale areas behind the foredunes; New Jersey to Mexico, seldom inland in North Carolina and West Virginia." Angelo and Boufford (1998) report herbarium records of this species only from Tolland County, CT and Barnstable County, MA. Its presence along the Interstate clearly suggests its arrival on "the wings of traffic."

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Peter T. Lockwood is Senior Environmental Scientist with Mason & Associates, Inc., and serves on the RINHS Board of Directors.

RINHS Annual Meeting Kicks off Lecture Series and Welcomes New Board Members

The RINHS Annual Meeting was held on September 23 in the Center for Economic & Environmental Development at Roger Williams University. RWU professor Thomas Doty presented the first lecture of the 1998-1999 RINHS Lecture Series on Rhode Island's Fauna, Flora, Geology, & Ecosystems, with a rousing talk on *Rhode Island Amphibian Population Dynamics*.

We also welcomed a number of new members to the Board of Directors; these include Jon Boothroyd, Marcianna Caplis, Roger Greene, Peter Lockwood, Marilyn Massaro, Candace Oviatt, Peter Paton, Gerald Pesch, and Julia Sharpe. New members to the RINHS Advisory Board are Stephen Hale and Patrick Logan.

Upcoming talks in the RINHS Lecture Series will be: *The History of Intense Hurricanes in Rhode Island: A 700-year Record from Succotash Salt Marsh*, by Thompson Webb III of Brown University's Department of Geological Sciences (November 10, 115 MacMillan Hall, Brown University); *Arctic-nesting Geese in North America: Tales of Recovery and Overabundance, and the Contemporary Destruction of Arctic Ecosystems*, by Scott McWilliams of the University of Rhode Island's Department of Natural Resources Science (February 4, 1999, White Hall, URI Kingston campus); and *The Wood-Pawcatuck Watershed: A Special Place and a Model for the New Environmental Management Approach*, by Gerald Pesch of the U. S. Environmental Protection Agency Narragansett Laboratory (April 7, Corless Auditorium, URI Narragansett Bay Campus). All lectures begin at 7:30 p.m. and are free and open to the public.

Rhode Island Collections

The URIZ Fish Collection

by William H. Krueger

When I arrived at URI in the fall of 1964 there were few fish specimens in the Zoology Department, and most were in poor condition. I was hired to develop a program in ichthyology, so the first order of business was to build a fish collection. An undergraduate assistant was assigned to me, and weather permitting, we seined local streams, ponds, and estuaries every Friday afternoon. In succeeding years I collected many additional samples with graduate and undergraduate students, mostly through class field trips, and the collection grew rapidly.

I gave Ichthyology for the first time in spring 1965, then taught the course each fall, when conditions were ideal for field work. There were three seining trips, usually to the Wood River in Hopkinton, the Pettaquamscutt ("Narrow") River in South Kingstown, and Worden Pond, South Kingstown. In addition, I was usually able to arrange a trawling trip to the West Passage of Narragansett Bay. In the early days, Stan Spink, captain of the trawler Billie II, would be waiting at the GSO dock, where we took six students at a time, made a 30-minute tow to the Jamestown Bridge, hauled the net, and sorted the catch while steaming back to the dock, where the next group of students awaited their turn. Because of space limitations, few of these specimens were kept.

The best known of all the specimens used in the Ichthyology course was a goosefish, *Lophius americanus*, ("monkfish" in local fish stores). It was caught at Bissell Cove, North Kingstown, where it was swimming feebly at the surface. Goosefish usually rest on the bottom, where they "angle" for smaller fishes with a highly-modified dorsal fin spine that functions as a rod and lure. Goosefish are also known to pluck seabirds off the surface. This specimen was no exception. There was a pronounced bulge on one side of its abdomen, and when I made a small incision, out popped the head of an adult Herring Gull, *Larus argentatus*. I placed the fish, gull head protruding, into a large white enamel pan, where it spent the next 26 years, to be brought out of the freezer once each year, when the Ichthyology class studied the group of fishes that includes the goosefish.

In the late 1960s and early 1970s I become involved in oceanic expeditions that produced many

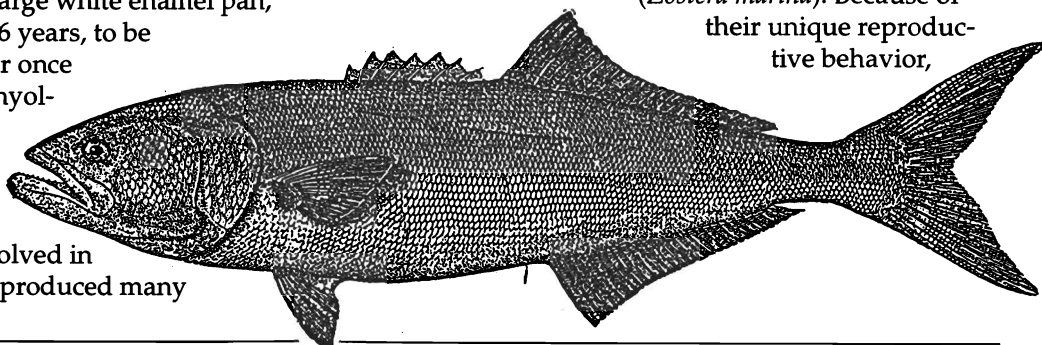
of the unique fishes found only in the mesopelagic and bathypelagic zones, which extend to the depths of 1000 and 4000 meters, respectively. Those collections formed the basis for my Oceanic Ichthyology course, taught for several years. The collections have been transferred to the Museum of Comparative Zoology at Harvard University.

In 1983 I began a field course, Field Biology of Fishes, which was given in alternate springs. By then a lightweight, backpack electrofisher had been added to the collecting gear, which allowed us to sample even rocky stream bottoms quite effectively. The pulsed direct current stuns the fishes, which drift downstream into a waiting dip net or seine.

The electrofisher enabled us to take quantitative samples of American eels, *Anguilla rostrata*, in streams. Most important are those from the Annaquatucket River in North Kingstown, which is now the single most thoroughly studied eel habitat in North America. Both the American and European (*Anguilla anguilla*) eels accomplish their growth in continental waters and then migrate to the southern Sargasso Sea to spawn. Their young drift northward on major currents and eventually enter rivers as elvers, juvenile eels about 45-75 millimeters long. There is evidence that eel populations on both sides of the Atlantic are declining, because of environmental problems, overfishing, or both. Therefore, it is important to have reliable estimates of eel abundance for future comparison.

The most important samples in the URIZ collection are those taken from streams in the Pawcatuck River watershed, beginning in 1964. They show the diversity of our freshwater fishes when the environment was still healthy, and its subsequent decline. Because of increased acid deposition and the loss of buffering capacity, our waters have become more acidic. Several species have declined or disappeared from our streams, particularly the minnows *Notropis bifrenatus* (Bridle Shiner), *Semotilus corporalis* (Fallfish), and *Luxilus cornutus* (Common Shiner), and the White Sucker (*Catostomus commersoni*).

Also important are the extensive collections of sticklebacks (family Gasterosteidae) from shallow estuarine waters. Those habitats have been impacted by eutrophication and the subsequent loss of eelgrass (*Zostera marina*). Because of their unique reproductive behavior,



ecology, and morphological variation, sticklebacks are one of the most studied of all fish groups. When I first sampled Goose Neck Cove, Newport, in spring 1982, all four of our stickleback species were abundant and reproducing successfully. Dense stands of eelgrass provided critically important nursery habitat for their young. By 1985 there was an obvious decline in the eelgrass, and by the end of the decade only scattered clumps remained, and the stickleback population was decimated. The coastal lagoons west of Narragansett Bay underwent similar changes. Marine fish populations are quite resilient, and I believe that the sticklebacks will rebound once the eelgrass recovers. I am far less confident about the recovery of our freshwater fish fauna.

The Department of Zoology merged with the Department of Botany in 1995 to form the present Department of Biological Sciences, and therefore URIZ is a somewhat inappropriate code for the fish collection. However, the American Society of Ichthyologists and Herpetologists uses URIZ as the official code for this collection, and I for one am unwilling to change all those labels. I "retired" in 1994, and stopped adding to the collection, which now contains several hundred thousand specimens, only this year. But I am still writing scientific papers based mainly on URIZ specimens. There is no end in sight.

William Krueger is Professor Emeritus of the Department of Biological Sciences, University of Rhode Island.

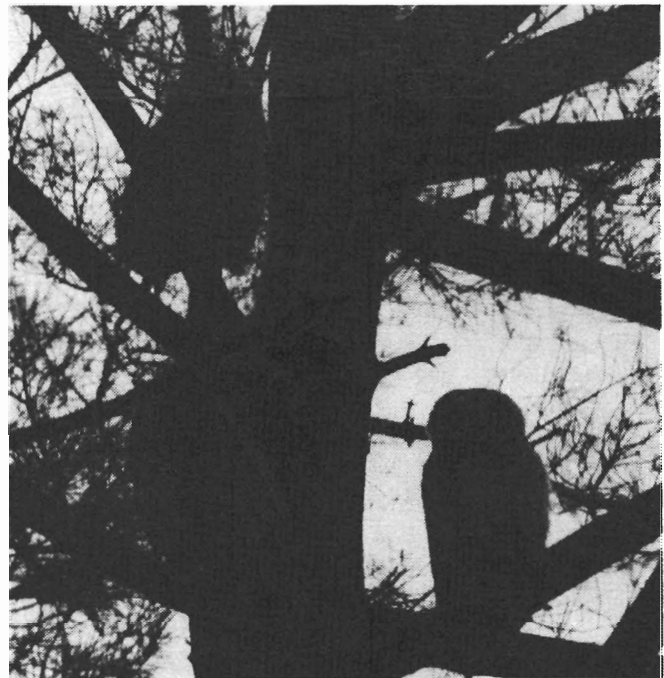
Great Horned Owls Nest in Sequoia at Blithewold by Raymond P. Payson

Great Horned Owls are fascinating and adaptive birds of prey. For me a pair of nesting Great Horned Owls took on particular fascination during the spring and summer of 1998. I live on the north side of the 33-acre Blithewold Mansion & Gardens Estate in Bristol and have experienced the presence of this species here since 1961. Although I have not lived in Bristol during the entire time since 1961, I have been here many summers and many weeks on vacations throughout the different seasons of the year. I have kept bird sighting records since February 1971, when I was treated to a mid-afternoon sighting of a pair of Great Horned Owls on the Columban Father's Seminary property just south of Blithewold.

When fall arrives I always look forward to the powerful, dominating, and unmistakable hooting of the Great Horned Owl, and this past winter was no exception. As if on cue the hooting for the 1997-98 winter started in early December and continued quite regularly into the early spring. Even after a few

actual sightings by a Blithewold staff member, it was not until April 4th that I suspected nesting owls in the area. It was then, while leading a bird walk at Blithewold, that I spotted an owl flying away from a *Sequoia gigantea* tree on the north side of the big lawn. As spring progressed another indicator of owl presence was the ever-increasing crow activity during the day. Crows absolutely detest these owls, and even with their boisterous assistance, I could not locate any nest. Excitement grew on my part.

Great Horned Owls, even with their ever-present hooting during the winter, are very wary and secretive in their nesting habits. It was only by chance that I spotted, on April 9th, a pair of adult owls in the same tree mentioned earlier, a tree about 33 feet high. With the aid of my spotting scope, I confirmed that this pair was guarding a nest near the top of the tree. I had discovered my first Great Horned Owl nest ever and the first here in my 37 years of observation! Needless to say, Blithewold now had a treasure to observe close at hand. The excitement continued a few days later, when on April 14th I discovered a pair of mid-sized owlets in the nest, a pair of owlets dressed in a full tan and off-white down. Because of the tree height the nesting site could not have been



more perfect—difficult to see from the ground, with easy access from the air and a commanding view over much of the 15-acre Blithewold lawn.

There are several interesting observations to be made from this nesting event. With a *Sequoia gigantea* tally of about 40 trees in Bristol (about a third of these

...continued on page 12

Focus On

RINHS Institutional Members:

The Norman Bird Sanctuary

by Lawrence Taft



Located on the eastern shore of Aquidneck Island, the Norman Bird Sanctuary is a 450-acre wildlife refuge which operates as an independent nonprofit corporation. The Sanctuary land is known throughout southern New England for the beauty of its geographical features and the diversity of its natural habitats. It was established in 1949 as a 235-acre preserve "for the protection of animals and birds and for the enjoyment of lovers of nature and the public generally" (Will of donor/founder Mabel Norman Cerio).

The protection of native plant and animal communities and the preservation of the unique landforms found in the refuge are our foremost concerns, but, also important, is the sharing of this natural resource with our visitors. We maintain a trail system for public use and offer programs in nature study.

The Sanctuary maintains a variety of natural habitats which, in turn, support an abundance of wildlife species. Nearly 40 acres of the Sanctuary's 450 acres are maintained as hay field. Old fields in various stages of re-growth make up a second major ecotype. Woodlands are the most prominent plant community. Four craggy ridges made of erosion-resistant rock break these woodlands into isolated valleys.

Management priorities are aimed at maintaining the woodlands as a closed canopy system for use by forest-sensitive nesting and migrating birds such as the Red-eyed Vireo and Ovenbird that utilize the Sanctuary. Management efforts in the old field area are aimed at attempting to restore part of this area back into grasslands through bush-hogging and occasional, experimental, prescribed burns.

The open grasslands—consisting predominantly of hay species—function as nesting sites for Bobolinks, Savannah Sparrows, and wintering sites for Northern Harriers among others. Management efforts here are aimed at improving and reclaiming the grasslands from encroaching invasives. In addition to annual late-summer mowing, the Sanctuary is experimenting with a variety of mowing regimens as well as the use of prescribed fire. Future efforts may include the reintroduction of grazing livestock.

To our visitors, though, the most popular natural feature is the rock outcroppings. The ridges support thriving lichen colonies and dwarfed junipers and offer numerous picturesque overlooks of ocean and

ponds. Beyond the ridges the land slopes down to brackish marsh. A network of hiking trails traverses the lengths of these ridges, two of which are of igneous origin, but one is a metamorphic conglomerate commonly known as "puddingstone"

which ends at a cliff commonly called "Hanging Rock." From there, one can look back over the Sanctuary and also out over the adjacent Sachuest Point National Wildlife Refuge and across the Sakonnet River over to Little Compton and out over the Atlantic Ocean. In early autumn, it is a great vantage to view migrating raptors.

Open to the public year-round, the Sanctuary is enjoyed annually by over 23,000 people who come to hike the 7-mile trail system or to attend educational programs and special events. Sanctuary staff provide educational programs for all ages, from pre-school though adult. The most significant audience, though, is the school-age children of Aquidneck Island. During the spring and fall, school children participate in field trips, exploring the woods, ridges, fields, pond, and marsh to learn about the local ecology. During the summer we also run a nature day camp. During the winter months, Sanctuary Naturalists visit schools in the area providing lectures in the classroom.

Looking to the Future

In the summer of 1997, after several years of negotiation, the Norman Bird Sanctuary acquired the original 18th-century farmhouse, outbuildings and property known as Paradise Farm. The buildings were part of the larger parcel that encompasses the Norman Bird Sanctuary, and had been used as a summer residence by Mabel Norman Cerio in the early part of this century. Due to lack of funds and upkeep, many of the buildings had fallen into disrepair and have been abandoned during the past decade.

The Sanctuary is preparing for the long-term rehabilitation, use and maintenance of all of the farm buildings and will be developing its visitor and environmental education center accordingly. These improvements will enable us to increase educational programs and visitor activities that reflect our mission of wildlife and habitat preservation and a continuum of environmental sustainability including Rhode Island history, natural history, ornithology, farming, and environmental education.

When the facility is complete, we will be able to provide educational and public programming that incorporates overnight accommodations for tourists, elderhosteling, and visitors who come specifically for NBS programs. We also plan to establish a small

organic working farm that balances modern technology and respect for traditional methods. This may also include community-supported agriculture. This aspect should not only enhance our program offerings but our land management as well.

Over the next several years, the Sanctuary will be actively seeking the funding support to achieve this vision. And, in the end, we hope to revive an historic farm complex into a thriving, community-supported environmental education center.

Lawrence Taft is the Executive Director of the Norman Bird Sanctuary. He also serves on the Board of Directors of the RINHS.

Great Horned Owls, continued from page 10

at Blithewold), this is the first time ever that I have observed a significant nester in this tree species. I have in past years found only one American Robin and one Northern Cardinal nesting in them. Because these trees (planted in the 1960s), whose branching pattern does not lend itself to nesting for smaller birds, have grown up to significant height, the situation may be changing. This particular nest seemed well-suited, solidly constructed, and stable. Another observation is that human activity and development in the area may be forcing these owls to become even more adaptive and nest in places like Blithewold, where there is ample open space although a fair amount of visitation when the weather is fair.

As mentioned earlier, crows detest owls, and often get a little too close for the owls' comfort. Two or three crow remains were found at the base of the nesting tree. Even though the owlets were quite visible and large, the crows appear to pester only the adults. The presence of at least one adult always seemed to provide a protective shield. The owls tolerated people remarkably well during the fledging phase in late April and early May. Except for staff and a few neighbors, most guests passed the nesting site unaware. Now it remains to be seen whether the adults will return to the same nest in early 1999. I hope so.

Raymond Payson is a member of the R.I. Natural History Survey, and serves on the Bristol Conservation Commission.

Birder's Exchange: New Life for Birding Equipment

by Rosanne Sherry



Do you know where your old binoculars are? Maybe they are in the closet. Perhaps they're still in the car, just in case you see an Eskimo Curlew on your drive home from work. Wherever you left them, those old binoculars are collecting dust. Give new life to your old binoculars by donating them to the best recycling program in the bird world: Birder's Exchange.

In countries throughout the western hemisphere, biologists and park rangers are striving hard to use their limited resources to conduct top-notch science and to protect birds and their habitats, some of which are unique and threatened. All too often, researchers and educators do their work without the essential field tools we sometimes take for granted—binoculars, spotting scopes, and field guides. Many must pay for their own field equipment and binoculars using their modest salaries.

Birder's Exchange works to remedy this situation by collecting new and used binoculars, spotting scopes, camera equipment, field guides, and ornithological texts for distribution to Latin American and Caribbean conservation groups, schools, universities, and government agencies. These donated materials empower local biologists and teachers to gather the data needed to make wise conservation decisions and to educate the public about the importance of conservation efforts.

Birder's Exchange is dedicated to getting tools to where they are needed. There are many ways you can help. You can donate equipment, organize an equipment drive, help promote Birder's Exchange at your bird or environmental club, or simply make a financial donation to help purchase specialized equipment and books.

Birder's Exchange is a joint project of the Manomet Center for Conservation Sciences and the American Birding Association. For complete information about this program contact Betty Petersen, Manomet Center for Conservation Sciences, 81 Stage Point Road, P. O. Box 1770 Manomet, MA 02345, or call her at (508) 224-6521. Be sure to mention you heard about Birder's Exchange in the RINHS newsletter.

Rosanne Sherry is an RINHS member, and Coordinator of the Cooperative Extension Master Gardener Program at the University of Rhode Island.

and the Rhode Island Natural History Survey.

The new Flora recognizes 1618 native and naturalized vascular plant species, which is 35 more than Palmatier, and 309 more than the original state list written by James Bennett in 1888. An additional 362 species are included in three categories titled "not fully naturalized," "documented only with field notes," and "listed in literature but we feel are not here." The number of non-native species listed (537) is 30 higher than the recent estimate of Gil George (George, G. 1995. *Rhode Island Botanical Survey*. Gil George, Providence, RI), who was involved in the early stages of the development of the new Flora. The sequence in which species appear, along with much of the taxonomic nomenclature, follows the preeminent vascular plant manual of our time for this part of the world: Gleason, H. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada, Second Edition*. The New York Botanical Garden, Bronx, NY.

Is the Flora just a list, you ask? Well, it depends on how you define "list" (excuse my foray into the abysmal netherworld of presidential legalese). The plant list is clearly the central framework of the Flora, but draped upon this superstructure is a wealth of additional botany and ecology. Included in this bonus is an insightful description and analysis of the phytogeography of our state by Rick Enser.

For all taxa listed in the Flora, the following information is provided: the page on which the plant is described in Gleason and Cronquist, current scientific name, synonyms, most likely used common name(s) in Rhode Island, habit and life form, wetland indicator status, geographic origin, and relative abundance within the state. Abbreviations are utilized effectively to impart information on the latter four categories. For example, the habit and life form of a native perennial tree would be indicated by the abbreviation "NPT." To spare us from becoming hypothermic from the incessant breeze created by continually flipping back to the Introduction to look up what Abundance Level III means, the authors cleverly developed a 5" x 11" pullout card that comes with every book and contains the detailed descriptions of all 40 categorical abbreviations.

So, you are sitting at home curled up with your well-worn Gleason and Cronquist asking yourself, "do I really need this new Flora when I already have the 'bible' of eastern plants?" I am certainly the last one to be able to answer that question, but consider this. It's late on a Friday afternoon and a friend in Woonsocket calls you to go botanizing. You are able to identify everything to species except three plants. The first is an odd-looking herbaceous plant with milky sap. You turn to your botanical safety net,

Gleason and Cronquist, and key the specimen to the genus *Euphorbia*. Home free? Not a chance. It turns out that there are 32 species of *Euphorbia* in the geographical region covered by Gleason and Cronquist. As the two of you are wrestling with the species identification, a delivery truck whizzes by, hits a pothole the size of an herbarium cabinet, and disgorges a hermetically-sealed copy of the new Flora. Imagine that. You rip off the plastic and find that there are only eight species of *Euphorbia* in Rhode Island. You then proceed to eliminate the non-Rhode Island species from Gleason and Cronquist and easily navigate your way to *Euphorbia vermiculata*.

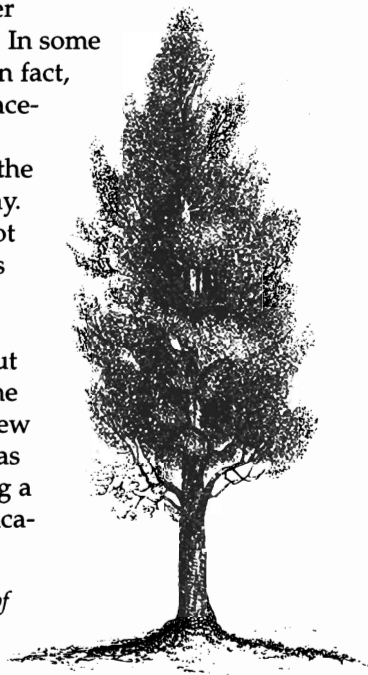
The second unknown keys out to the genus *Clematis*. Seventeen species in Gleason and Cronquist, but only three in the new Flora. Easier yet.

Finally, the third specimen keys out to *Stipa*. Three species in Gleason and Cronquist, but only one in the new Flora. Bingo. It's *Stipa comata*, Needle-and-thread Grass.

Overstated? Maybe. It is possible that the *Stipa* found in Woonsocket was a species other than *S. comata* that had just made its way into the state, or was here all along and was merely overlooked. That is unlikely, but possible. The point is, though, that a credible state flora, or fauna, or biota is an absolutely invaluable tool for anyone interested in species identification. That is one of the many reasons why the Rhode Island Natural History Survey has embraced the challenge of publishing a comprehensive Biota Series for our state. Volume 2 detailing the vertebrates will appear next year, followed by as many volumes as it takes to inventory every taxonomically unique evidence of entropy in our state.

The new Flora will be widely considered the replacement of Elmer Palmatier's 1952 publication. In some sense, that may be true. But in fact, it is its successor, not its replacement. Both are irreplaceable, time-specific benchmarks in the annals of Rhode Island botany. Plant species are dynamic, not static. So should be the books that describe them. Elmer clearly viewed his book as a work in progress, and without question would want to be the first in line to purchase the new Flora. To see that the book was dedicated to him would bring a tear, and a smile. Classy dedication, classy book.

Keith T. Killingbeck is secretary of the RINHS Board of Directors, and a professor in the URI Department of Biological Sciences.



RINHS Distinguished Naturalist: Douglas L. Kraus

If one person was to be named as the most prominent, or important, and certainly tenacious, Rhode Island bird observer of all time, it would certainly be Douglas L. Kraus.

Doug grew up partly in Princeton, Massachusetts. His father was a research chemist at MIT until 1914 and later at Clark University, but when he came to work at Brown University in 1924 the family moved to Rhode Island. Like his father, Doug studied chemistry, first at Brown as an undergraduate and later at Berkeley where he received a Ph.D. in 1937. In 1938 he was hired to teach chemistry at the University of Rhode Island, and has lived in the Kingston area ever since, (except for a brief time at CalTech during the latter part of World War II).

Among Doug's first Rhode Island bird discoveries were the significant flocks of Canvasbacks off Gaspee Point in the late 1920s, as noted in the typewritten records of Harry Hathaway. During these years Doug became involved in leading field trips in the Providence area for Mrs. Walter's Education Committee at the Audubon Society of Rhode Island. He also made occasional forays south to the Kimball Sanctuary, or to visit Harry Hathaway at Quonochontaug, and it was on these trips that Doug first gained a taste for birding in South County. He marks 1933 as his first record-keeping year about South County birdlife.

From 1938 to the present, Doug has been involved in what is unquestionably the longest, and among the most thorough, pieces of field work ever accomplished in Rhode Island. Since 1938 he has combed the South County area on a constant basis and has amassed a vast volume of written records of birds seen along the south shore, as well as since 1950 on his Kingston farm. He is so meticulous a reader of the journals and recorder of everything he sees that his voluminous records are probably more important than those of any other single Rhode Island observer. A portion of these records include the vast amount of data accumulated through banding birds on his farm beginning in the mid-1950s and continu-

ing to 1994. Participating in a number of Christmas Birds Counts, in 1940 he began the Kingston CBC which he has presided over ever since.

The Little Rest Bird Club was organized in 1945 by Stanley Gairloch, but thereafter it was essentially run by Doug until its informal disbanding in the mid-1980s. During the Club's heyday there were screen tour lectures and a half-dozen field trips each spring, and others in the fall. In later years Doug continued to lead caravans of birdwatchers throughout South County during various seasons, and many a present-day observer credits Doug with first instilling in them an enthusiasm for bird study. Doug was one of the charter members of the Rhode Island Ornithological Club which was formed in 1939, and has remained active to the present, especially involving the continual updating of the Checklist of Rhode Island Birds. His interest in conservation

is exemplified through his long-time service on the Board of Directors of the Audubon Society of Rhode Island.

In every respect, Doug has been the Ludlow Griscom of Rhode Island field ornithology. No Rhode Islander has taken a more scholarly approach to the problems of identifying rare birds. As of 1997, he has been involved in the discovery of at least ten species previously unknown in Rhode Island, as well as many second and third state records. He was the first to confirm the Willow Flycatcher nesting in the state, and the last to witness the Henslow's Sparrow during its peak. His field efforts have unearthed the widest possible assortment of unusual

vagrants and stragglers, as well as many unseasonable arrivals and lingerers. Dick Ferren notes that among all the observers whose records are cited in his voluminous "Birds of Rhode Island," Doug's initials are listed more often than any other observer.

In 1997, Doug's birding activities in Rhode Island have exceeded 73 years, and his tenure as a South County bird observer spans 64 years. Had Doug's father not come to Brown in 1924, or if Doug had remained in California after the war, what is known of Rhode Island's birds would be remarkably diminished, and we would all have been the losers.

Compiled by Richard Ferren, RINHS member and Professor at Berkshire Community College, and Rick Enser, vice-president of the RINHS Board of Directors and Coordinator of the R.I. Natural Heritage Program.



President's Corner

by John F. Paul

In recent issues of the newsletter, I have been talking about the organizational consultancy the Board of Directors has been engaged in. As you might remember, the Board undertook this effort with a consultant experienced with small not-for-profit organizations to help us improve our organizational structure and our financial strategy. We have now completed the consultancy and are on our way towards implementing what we must do to continue the RINHS as a viable organization.

The following is a short summary of what we accomplished with the consultancy:

- agreed that we wanted to remain committed to the original RINHS mission: to bring together Rhode Island's ecologists and naturalists to advance scientific knowledge, to facilitate and coordinate information, and to enhance communications.
- developed a new vision statement (presented in the April 1998 *RINHewS*).
- reviewed the functions of the Board, Executive Director, and officers.
- reviewed the functions and operations of RINHS committees.
- compared the organizational structure of RINHS with that of other states' natural history/biological surveys and academies of science. RINHS and the Pennsylvania Biological Survey are the only two surveys in the country which are not a part of state government (including the state university system) and do not receive state funds for their operations.
- identified strengths and weakness of RINHS. Strengths included our Biota Project, annual conferences, and the committed people that form the RINHS; a major weakness was a weak funding base for operations.
- reviewed income and expenditures to evaluate realistically what it costs to operate the RINHS.
- developed a series of operating scenarios for how RINHS might function:

- as an independent not-for-profit with professional staff [current operations];
- as an independent not-for-profit volunteer organization, with clerical support;
- as a department or program of another organization (e.g., government agency, academic institution, non-for-profit organization) with professional staff.

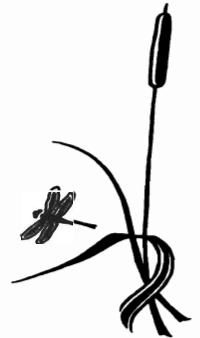
- evaluated each of the operating scenarios against realistic cost estimates (income and expenditures).

As an organization we have been successful in receiving funds for specific projects (such as the Biota Project), but we have not had much success in receiving grants for operations. Our conclusion was

that we could not continue to do what RINHS has been doing and run it as a completely independent not-for-profit organization receiving funds for operations from membership and program support alone. The Board came to the realization that we needed to explore options for becoming part of another organization to support our operating costs. And the Board is actively pursuing these options now. During the interim, the Board agreed that we needed to actively take certain steps while we were securing the funding base for our operations. These steps include:

- Continue our high-quality programs to ensure our credibility as an organization. These programs include the annual conference, lecture series, newsletter, and publication series, of which the Biota Project is part.
- Bring in new Board members. We added 8 new members at our Annual Meeting in September.
- Continue raising funds to finance the program and operations of our organization. Remember, *your* membership renewal and donations are important to us.
- Pursue opportunities for institutions/businesses to sponsor activities, such as *RINHewS*, the lecture series, annual conference, etc.
- Engage the membership in our activities and committees. In your recent membership renewal we provided a list of the committees and asked you to select which ones you would like to be involved in. You will be contacted soon as we begin to get the new topical committees up and running. The topical committees are:

Systematic Collections
Education
Inventory & Monitoring
Database Standards
Information Dissemination
Critical Habitats
Geology & Hydrology
Plants, Fungi, Monera, Protista
Vertebrates
Invertebrates



Remember, you can help now by renewing your membership in RINHS and volunteering to serve on a committee. Looking forward to seeing you at one of our upcoming activities. And thank you for your continued interest in the Rhode Island Natural History Survey.

John F. Paul is president of the RINHS Board of Directors, and a researcher at the U. S. EPA Laboratory in Narragansett, RI.

Upcoming Conferences & Seminars

November 10. *The History of Intense Hurricanes in Rhode Island: A 700-year Record from Succotash Salt Marsh*, an RINHS lecture by Thompson Webb III (Department of Geological Sciences, Brown University), 7:30 p.m., 115 MacMillan Hall, Brown University, Providence, RI. Free. (401) 874-5800

November 21. *Welcome the Winter Waterfowl*, 9:00 a.m. to noon, Norman Bird Sanctuary, Middletown, RI. Join NBS Executive Director Larry Taft for a morning learning how to identify winter waterfowl, both in the classroom and in the field at Sachuest Point. Dress warmly! \$8 non-members, \$6 NBS members. (401) 846-2577.

January 9, 1999. *Invasive Plant Species: Issues & Management*, a lecture by Glenn Dreyer (Connecticut College), 1:00-3:00 p.m., Corless Auditorium, URI Narragansett Bay Campus, sponsored by R. I. Wild Plant Society. Free. (401) 783-5895.

January 21. *Block Island Ecology*, 7:00-9:00 p.m., Providence, RI, a slide lecture by Rick Enser (R. I. Natural Heritage Program). Joint event with The Nature Conservancy and R. I. Wild Plant Society, held at the TNC Office, 159 Waterman Street, Providence, RI. Free. (401) 783-5895.

January 24-27. *National Conference on Marine Bioinvasions*, Massachusetts Institute of Technology, Cambridge, MA. A four-day conference for researchers, coastal managers, and policy makers. Preregister by 1 December, via email: exotics@mit.edu. Web site: <http://massbay.mit.edu/exoticspecies/conference.html>

February 4. *Arctic-nesting Geese in North America: Tales of Recovery and Overabundance, and the Contemporary Destruction of Arctic Ecosystems*, an RINHS lecture by Scott McWilliams (URI Department of Natural Resources Science), 7:30 p.m., White Hall, URI Kingston Campus. Free. (401) 874-5800.

Late February or early March. *Rhode Island Birders' Conference*, sponsored by the Rhode Island Ornithological Club and the Audubon Society of Rhode Island. For information, call ASRI at (401) 949-5454.

March 6. *URI Herbarium Tour*, Ranger Hall, Kingston, RI, 10:00 a.m. to noon, with Keith Killingbeck and Chris Nerone (URI Department of Biological Sciences). R. I. Wild Plant Society. Pre-registration required, \$5 RIWPS members/\$7 non-members. (401) 783-5895.

March 12. *Challenges and Opportunities Facing Rhode Island's Biodiversity: The Science Behind the Issues*, RINHS Conference, 8:30 a.m. to 5:00 p.m., CCRI Flanagan Campus, Lincoln, RI. For fees and registration information, call (401) 874-5800.

March 13. *Salt Marsh Ecology*, a lecture by Mark Bertness, Brown University. R. I. Wild Plant Society Annual Meeting, 1:00-3:00 p.m., Cold Spring Community Center, Wickford, RI. Free. (401) 783-5895.

Is Your Home at Risk from Environmental Pollutants?

Activities in and around your house can cause pollution that affects the quality of life in our home. The Rhode Island Home*A*Syst Program, Sponsored by the University of Rhode Island Cooperative Extension, helps you identify environmental risks and offers suggestions for preventative, cost-effective actions. We offer:

- A multi-session training program each spring.
- Evening and Saturday workshops in your community.
- A quarterly newsletter.
- The Rhode Island Home*A*Syst Handbook.

For more information and upcoming program events, call Alyson McCann, Program Coordinator, at (401) 874-5398 or email at alyson@uriacc.uri.edu

April 5-7. *Coastal GeoTools '99 conference*, Charleston, SC, sponsored by the NOAA Coastal Services Center. The purpose of the conference is to increase awareness and understanding of geospatial data, tools, and technology applications for studying and effectively managing the coastal environment. Abstract deadline December 1. Website: www.csc.noaa.gov/GeoTools99/ or contact Steve Meador at (843) 740-1334; email: smeador@csc.noaa.gov

April 7. *The Wood-Pawcatuck Watershed: A Special Place and a Model for the New Environmental Management Approach*, an RINHS lecture by Gerald Pesch (U. S. Environmental Protection Agency), Corless Auditorium, URI Bay Campus, Narragansett, RI. Free. (401) 874-5800.

April 21-22. *Urban Riparian Buffer Conference*, sponsored by the Southern New England Chapter of the Soil and Water Conservation Society, Hartford/Springfield area. Abstracts due December 1; contact jpushnik@prodigy.net

May 13-14. *26th Annual Conference on Ecosystems Restoration and Creation*, Tampa, FL. Sponsored by the Environmental Studies Center of Hillsborough Community College. Email: webb@mail.hcc.cc.fl.us

May 25-28. *North American Benthological Society's 47th Annual Meeting*, Duluth, MN. Contact program co-chairs: Carl Richards (218) 720-4332; Anne Hershey (336) 334-5839.

September 25. URI Cooperative Extension GreenShare Field Day, Kingston, RI.

For a web site listing all kinds of scientific meetings, try:
<http://www.geocities.com/CollegePark/Quad/4386/meetings.htm>

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 Executive Secretary Cathy Ernsberger at (401) 949-5454.

The Butterfly Society of Rhode Island, P. O. Box 6585, Providence, RI 02940, is in the process of developing an educational program suitable for elementary students, and is searching for volunteers willing to help out with presentations and lectures. They also welcome any educational films or lectures having to do with caterpillars or butterflies.

Coastal Institute Visitor Center, University of Rhode Island Narragansett Bay Campus, Narragansett, RI 02882, seeks volunteers to assist with a variety of marine and environmental education activities. Contact the Office of Marine Programs at (401) 874-6211.

Lloyd Center for Environmental Studies, P. O. Box 87037, S. Dartmouth, MA 02748; (508) 990-0505.

Summer Internships: Must have completed sophomore year of college; position available May 13-August 30, with housing & stipend of \$75/week. Send cover letter, resume, & 2 letters of reference.

- (1) One Education Intern to work with school children, youth groups, and adults in programs teaching about the coastal zone.
- (2) One Research Intern for field survey of Lepidoptera in pine barrens and coastal bogs.

Mystic Aquarium and the Institute for Exploration, 55 Coogan Blvd., Mystic, CT 06355, has volunteer opportunities in animal care, exhibit interpretation, greeting, grounds-keeping, the laboratory, office and classroom settings, and more! Individuals over age 15 are encouraged to apply. Call (860) 572-5955 ext. 213 to request an application.

The Mystic Aquarium and the Institute for Exploration also offer an Internship Program for college students to gain practical experience in a marine research and education setting. Working from 21 to 35 hours per week, students gain experience working with marine mammals and birds, fish and invertebrates, research, education, graphics, development, and engineering and maintenance. College credit is available for these internships. Call (860) 572-5955, ext. 129 for information or to request an application.

Information on both programs is available at our web site: <http://www.mysticaquarium.org>

The Nature Conservancy, Rhode Island Field Office, 159 Waterman Street, Providence, RI 02906, is looking for volunteers to monitor Piping Plover and Least Tern sites in Rhode Island. Unique opportunity to

help endangered species! Contact G. Venator at (401) 331-7110.

TNC is also looking for volunteers to participate in the Odonata Atlas project (see Research Report p. 6). Contact Ginger Carpenter at (401) 331-7110.

Rhode Island's National Wildlife Refuges: Ninigret, Trustum 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. For more information contact Ron Flores at (401) 364-9124.

New England Wild Flower Society, 180 Hemenway Road, Framingham, MA 01701, is now accepting applications for its Horticulture and Conservation Internship Program at Garden in the Woods, the Society's 45-acre botanical garden. Intern assignments are Propagation and Nursery Management, Botanic Garden Management and Development, and Plant Conservation. Interns live and work at the Society's headquarters. Four internships are available in 1999:

- 1) Two 6-month internships (April 1-Sept. 30) in Propagation /Nursery Management and Garden Maintenance/Development.
- 2) One 10-month internship (Jan.-Oct. 1999) in Propagation/Nursery Management (**deadline December 15** for applications)
- 3) One summer internship (mid-May-Aug. 30) in Plant Conservation.

Housing on site, \$160/week stipend for summer interns, \$200/week for 6- and 10-month positions, and free admission to numerous classes. Application deadline February 12, 1999 (except for 10-month program). For information contact Cheryl Lowe at NEWFS, or call (508) 877-7630 x 3401. Email: lowe@newfs.org

Norman Bird Sanctuary, 583 Third Beach Road, Middletown, RI 02840, is seeking Nature Guides. These volunteers lead school students on natural history walks (students primarily range from pre-school to 6th grade). The walks are two hours in length and include activities and discussions such as *Seasonal Changes*, *Exploring Habitats* (forest, field, pond, salt marsh, and/or seashore), and *Geology*. Training is provided for Nature Guides and they can choose a grade preference to teach. There are week-end opportunities as well. For information, call Sue or Fred at (401) 846-2577.

Roger Williams Park Museum of Natural History, Elmwood Avenue, Providence, RI 02905, has a number of collection-related projects for (unpaid

Opportunities, continued from page 9

student internships; projects include identification, nomenclatural updating, cataloging, and conservation of the museum's 80,000+ mollusk collection.

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 information contact: Marilyn Massaro, Curator, (401) 785-9457 ext. 248.

The Sierra Club, RI Chapter, 10 Abbot Park Place, 4th Floor, Providence, RI 02903, has many interesting opportunities for volunteers. The chapter is always looking for people interested in leading outings to natural areas, as well as people to join their political activist network. Call (401) 521-4734.

Tower Hill Botanic Garden, P. O. Box 598, Boylston, MA 01505-0598, is a living museum on 132 rural acres, operated by the Worcester County Horticultural Society. Internships are available to gain experience in horticulture, garden maintenance and construction, orchard culture, record-keeping, plant propagation, and public information.

Preference is given to candidates with one or more years of educational course work in horticulture, botany, landscape design, plant conservation, or other plant-related fields. Previous experience and career aspirations in plant-related fields are also helpful. Preference for summer internships is given to those who can begin in early May.

Interns work an average of 40 hours/week; some weekends will also be required. Salary is \$6.50/hour; housing and transportation are not included.

The deadline for summer internship applications is **March 1, 1999**. For applications and more information call (508) 869-6111.

Wood-Pawcatuck Watershed Association, 203 Arcadia Rd., Hope Valley, RI 02832, is looking for volunteers to help develop an "Adopt-A-Stream" program in the Pawcatuck watershed. For information contact Denise Burgess at (401) 539-9017 or email wpwa@efortress.com

The City of Cranston Conservation Commission is initiating an "Adopt-A-Spot" Program. The Commission is seeking information concerning the beautification process of city property, including rotaries and traffic islands. The Commission welcomes input from landscape architects, garden clubs, Master Gardeners, and others. Contact Susan DeCrosta at (401) 942-0512.

Rhode Island Natural History Survey, Inc.

Cooperative Extension Education Center

3 East Alumni Ave., URI, Kingston, RI 02881

Telephone: (401) 874-5800; Fax 401-874-2259

Email: rinh@uriacc.uri.edu

Website: <http://www.edc.uri.edu/rinh/nathist.htm>

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Richard W. Enser, R. I. Natural Heritage Program

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Douglass H. Morse, Brown University Department of Ecology & Evolutionary Biology

Scott W. Nixon, Rhode Island Sea Grant

Candace A. Oviatt, URI Graduate School of Oceanography

Peter Paton, URI Department of Natural Resources Science

John F. Paul, U. S. Environmental Protection Agency

Gerald G. Pesch, U. S. Environmental Protection Agency

Chris Powell, RIDEM Division of Fish & Wildlife

Christopher J. Raithel, RIDEM Division of Fish & Wildlife

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Linda M. Longo, Administrative Assistant



Weaving the Web: Electronic Resources

Career & Job Sites in Biology, a website from the University of Buffalo's Science and Engineering site, with career planning guides, employment trends, and opportunities and positions available:
<http://ublib.buffalo.edu/libraries/units/sel/bio/careers.html>.

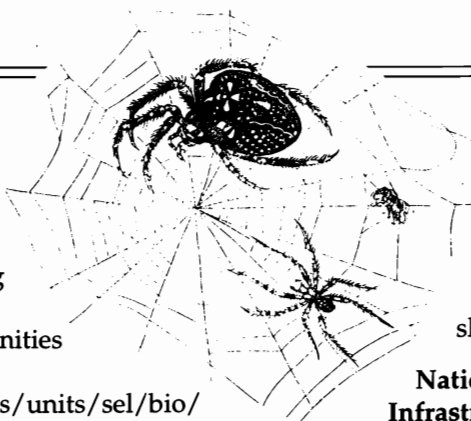
Climate Change Briefing Book, compiled by the Library of Congress's Congressional Research Service, is available from the online National Library for the Environment. For anyone interested in the issue of Global Climate Change, this is the first stop for objective and nonpartisan information on a wide range of Climate Change issues. <http://www.cnle.org/update43.html>

Ecological Regions of North America: Toward a Common Perspective, a re-mapping of North America in terms of ecosystems and ecological regions instead of political boundaries, is now available at the website: <http://www.cec.org/english/resources/publications/> under the "Environmental Conservation" section.

EPA's Center for Environmental Information and Statistics has a database to help the public clean up local environments, "a one-stop source of data and information on environmental quality, status, and trends." <http://www.epa.gov/ceis>

Global Biodiversity Magazine website:
www.nature.ca/english/gbzine.htm

IUCN Biodiversity Policy Coordination Division has developed a new Web site focusing on the economics of biological diversity. <http://iucn.org>



Jeff's Nudibranch Site shows stunning photographs of nudibranchs and other reef creatures, as well as including a glossary and book list.

Website: home.mem.net/~zipper/ Other sea slug web sites: slugsite.tierranet.com

National Biological Information

Infrastructure (NBII) website features a storehouse of information about where to find biological information. It includes links to biological databases, information products, and guides produced by the government, institutions, and private-sector organizations from the U.S. and internationally. <http://www.nbio.gov>

Rhode Island birders may want to check out this site: <http://www.virtualbirder.com/vbirder/realbirds/rbas/RI.html>

Stanford University Libraries/ Banner Earth Sciences Library and Map Collections have made available a resource of **online vegetation and plant distribution maps**. Under each classified area (world, continent, or region), users will find hyperlinked titles and brief descriptions of websites offering vegetation distribution information. Most of the world's forests are covered here, with many protected areas highlighted. Includes cartographic links for botanists. <http://www.sul.stanford.edu/depts/branner/vegmaps.htm>

Tree of Life website: phylogeny.arizona.edu/tree/phylogeny.html

USGS Biological Resources Division, in conjunction with the National Audubon Society, is displaying the spring migration of satellite radio-marked Snow Geese on the internet, as it happens. Website: <http://north.audubon.org/>

✓ 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/Senior Citizen (\$15) ___ Organizational (\$100)
___ I would like to make an additional donation of: _____

___ I would like a one-year subscription to *Northeastern Naturalist*, at the special RINHS member rate of \$32/regular subscription, \$24/student. The subscription form & a check payable to *Northeastern Naturalist* are enclosed, along with my RINHS dues.

Name _____ Telephone _____
Affiliation & title _____ Fax _____
Address _____ Email _____

Make checks payable to: **RINHS** & send to: RINHS, c/o C. E. Education Center, E. Alumni Avenue, URI, Kingston, RI 02881-0804

RINHS is a nonprofit 501(c)(3) organization. Dues in excess of \$4 (for annual subscription to the newsletter)

and contributions are tax deductible to the full extent allowed by law.

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.

Benefits of membership in the Rhode Island Natural History Survey

For Individual, Family, and Student Members

RINHewS, the newsletter
Free membership list
10% discount on all publications
reduced conference fee
20% discount on subscription to the journal
Northeastern Naturalist

For Institutional Members

RINHewS, the newsletter
2 free membership lists
Listing in Program for Annual Conference
10% discount on all publications
1 free registration at annual conference
20% discount on subscription to the journal
Northeastern Naturalist



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Thanks!

The Rhode Island Natural History Survey is grateful for the following donations to the library:

- Reprints of published articles from: Hannah Gould, Ray Hartenstine, and Douglass Morse;
- Rhode Island Preserves*, The Nature Conservancy, 1997, from Ginger Carpenter;
- Rhode Island Botanical Survey Check List, Ed. 5*, by Gilbert George, 1997, from Peter Lockwood;
- Rhode Island's Maritime Nesting Birds: a history and survey of the state's beach and island breeders: cormorants, terns, herons, plovers, oystercatchers, and more*, by Richard L. Ferren and James E. Myers, 1998, from Chris Raithel;
- County Distribution of Ferns and Fern Allies in Rhode Island*, by Dorothy Crandall, 1965, from Carl Sawyer;
- What's Up Outside: teacher-friendly, kid-tested lesson plans and activities*, by Penney Parsekian, 1998, from the Stonington (CT) Garden Club;
- Postcards featuring photographs by Irene H. Stuckey, from I. Stuckey;
- Atlas of Oregon Wildlife: Distribution, Habitat, and Natural History*, by B. Csuti et al., 1997, from Tony Vecchio.

RINHS members are welcome to visit the office and use reference materials there.

Thanks also to the staff of the C. E. Education Center for their daily support, and to Virginia Carpenter, Mark Gould, and Douglass Morse for proofreading RINHewS.

New Office Staff

RINHS is pleased to announce the addition of a new staff member, Linda M. Longo. Linda joined the RINHS staff in August, replacing Nicole Duprey who now works for the R.I. Department of Environmental Management.

In addition to keeping the office well-organized and our publications sent out, Linda is a junior in URI's Department of Natural Resources Science.

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