RINHewS

The Newsletter of the Rhode Island Natural History Survey

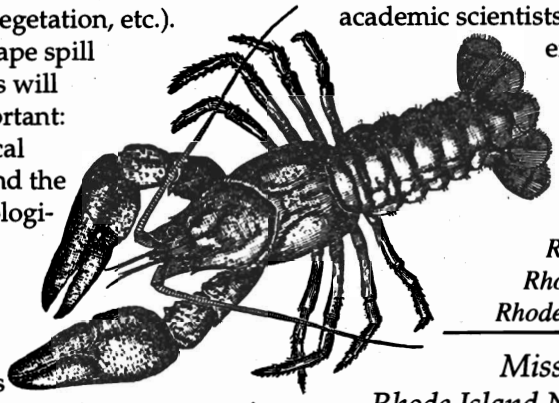
Vol. 3, No. 1 April 1996

President's Corner

Ecological Monitoring and Environmental Disasters

by Peter V. August

There is no doubt in my mind that we will experience another catastrophic oil spill like the North Cape disaster that struck Rhode Island's south shore in January. What is unclear is whether the next spill will come next week, next year, or next decade. It is important that we dissect the response to the North Cape spill to determine what worked and what did not. Such a dissection was done after the World Prodigy spill of 1989, when it was determined that cleanup efforts could be better targeted if there were up-to-date data on the location of critical ecological regions in Narragansett Bay. This realization prompted the Narragansett Bay Project (funded by EPA and administered by the Rhode Island Department of Environmental Management) to develop a comprehensive database of ecological resources (e.g., rookeries, shellfish beds, areas of extensive submerged aquatic vegetation, etc.). When the audit of the North Cape spill response is complete, two areas will emerge as being critically important: the need for long-term ecological monitoring to assess impact, and the need to include centralized ecological information management and distribution in the disaster response plan.



The effects of the North Cape spill are difficult to assess without access to long-term ecological monitoring of the coastal ponds of near-shore marine ecosystems. It will be absolutely impossible to monitor the recovery of these ecosystems without ongoing ecological monitoring of the impacted ponds and shoreline, as well as nearby coastal ponds that did not receive significant exposure to heating oil (these are the control systems). Now is the time to determine what we need to measure to assess the recovery of our south shore ecosystems and set to work doing it. It is critical that Rhode Island's leadership (in the state and in Washington) be successful in securing the federal funds required to support the future monitoring of our pond ecosystems.

The number of agencies, institutions, and individuals who rallied forth to assist in the spill assessment and cleanup was truly spectacular. Critical data were collected on the geographic changes in the distribution of oil sheen; on chemical levels in sediments, the water column, and tissues of various species of marine organisms; and on mortality of vertebrates and invertebrates. Now is the time to ensure that this information is maintained in a common, well-curated, and accessible database. With so many institutions involved in the response, database fragmentation is extremely likely and must be avoided.

When the final report card is tallied, I am certain that the scientists and citizens of Rhode Island who dedicated their time and effort in the response to the North Cape spill will get an A+ for their efforts. Kudos to the staff of RIDEM, CRMC, USFWS, NOAA, Coast Guard, EPA, Save the Bay, the academic scientists, and private citizens who endured biting cold, brutal winds, and the stench of fuel oil to assist in the cleanup. Job well done!

***Peter V. August** is Chair of the Department of Natural Resources Science, University of Rhode Island, and President of the Rhode Island Natural History Survey.*

Mission Statement of the Rhode Island Natural History Survey

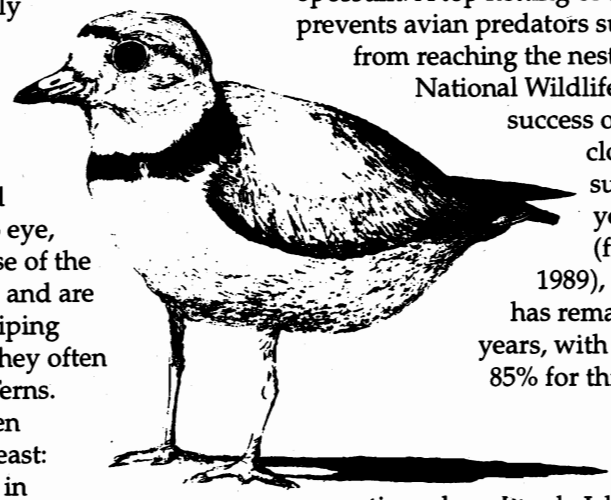
- To advance scientific knowledge of Rhode Island's biota, ecological communities, and environmental resources;
- To facilitate and coordinate the gathering and dissemination of information on Rhode Island's biota and natural communities;
- To enhance communication among Rhode Island's environmental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

Research Reports

The Piping Plover in Rhode Island

by Marcianna Caplis and Jennifer Casey

The Piping Plover (*Charadrius melodus*) is a pale, sandy-colored shorebird, slightly smaller than a Starling, that is found on U.S. coastal beaches from Maine south to North Carolina. The adult has yellow-orange legs, a black-tipped orange bill, a black band across the forehead from eye to eye, and a black ring around the base of the neck. Piping Plovers nest alone and are usually separated from other Piping Plover nests by 50-100 yards. They often nest in association with Least Terns.



Piping Plovers nest on seven Rhode Island beaches, west to east: Napatree Point and East Beach in Watch Hill, Quonochontaug Beach Conservation Area and East Beach-Ninigret Conservation Area in Charlestown, Trustom Pond National Wildlife Refuge in South Kingstown, and Briggs Beach and Goosewing Beach in Little Compton. Historically, Piping Plovers nested on Block Island, but have not nested there since 1945. Plovers last nested at Sandy Point Island and East Matunuck State Beach in 1981.

After nearly disappearing due to market hunting in the 19th century, Piping Plover numbers recovered to a 20th century peak during the 1940s. Thereafter, Piping Plovers suffered a perilous decline toward extinction, attributed to increased coastal development and recreational use of beaches since the end of World War II. In 1994 there were an estimated 1,150 pairs on the Atlantic coast, 968 of them in the U.S.

Active management and protection of the Piping Plover began with its listing under the Endangered Species Act in January 1986. Along the Atlantic Coast, the Piping Plover is designated as threatened, which means that the population would continue to decline if not protected. Since 1986, land managers and biological researchers have been working to determine the most important factors that limit plover reproduction and developing and implementing management techniques to increase plover productivity. Their efforts have identified three significant limiting factors on plover success — predation on eggs; human disturbance, degradation, and destruction of habitat; and predation on chicks.

Initially, predation upon plover eggs was determined to be the primary limiting factor, and nest exclosures were developed to protect plover nests. The design of these exclosures has evolved over the years, and is currently a 10- to 15-foot circular fence constructed of 4-foot high welded wire mesh surrounding the plover nest. The 2" x 4" openings in the wire allow the adult plovers to freely access the nest in the center of the exclosure, while excluding predatory mammals such as skunk, raccoon, and opossum. A top netting of 1" x 1" plastic mesh prevents avian predators such as gulls and crows from reaching the nest. At Trustom Pond National Wildlife Refuge, a site where the success of exclosures has been closely monitored, hatch success doubled the first year exclosures were used (from 27% in 1980 to 63% in 1989), tripled in 1990 (95%), and has remained high for the past five years, with an average of 70% (over 85% for three of the past five years).

Human activities, particularly residential development and beach recreation, along Rhode Island's beaches have steadily increased since the early 1950s. The impacts of such human activity became the second focus of plover management. In 1992, funding became available to increase protection to the plovers nesting on the western beaches of Rhode Island. These South County beaches have long been a popular and heavily-used recreational area for resident Rhode Islanders as well as for vacationers from other states. Nesting sites were located in April and May and surrounded with roped barriers which provided a buffer between human activities and plover nest sites. As an example of their effectiveness, between 1989 and 1991, four pairs of plovers consistently nested at East Beach in Watch Hill, producing a maximum of two fledglings per year. After implementing roped barriers and exclosures in 1992, these same four pairs have been producing eleven to sixteen fledglings each year. This is a 500% increase in productivity for this area. Similar management implemented by The Nature Conservancy at Goosewing Beach in Little Compton has resulted in similar increases in Piping Plover productivity.

Currently, the most pressing limiting factor for plovers is predation of chicks. Although exclosures protect the eggs, and roping provides a buffer from human disturbance, the chicks are at risk to predation as soon as they leave the nest, which is generally within the first 48 hours after hatching. Plover chicks are precocial (very self-sufficient); however, agile mammals such as fox, raccoon, and mink, as well as gulls, pose a serious threat to chicks. The small predatory mammals also are showing the effects of changes in their environment: their numbers are out of control because larger predators, which kept them

in balance, have been eliminated and the natural hunting areas have shrunk because of development. Development and recreational use on and near beaches also attract predators to the beach. At some locations, the exclosures which have served to protect plover nests are becoming markers for an individual predator which persists until it gets inside, not an easy task.

Piping Plover management in Rhode Island has had successes: more plovers are hatching and fledging since their protection began, but the success is still tenuous. The challenge facing U.S. Fish and Wildlife Service biologists and State and private land managers with Piping Plovers is the same as with other threatened species. We can control some environmental factors, but the question remains: how do we help these species regain a healthy balance in an altered environment, an environment which is itself out of balance? Increasing and maintaining the Piping Plover populations in Rhode Island and along the Atlantic Coast will require a continuing commitment from public land managers, private landowners, and beach users.

***Marcianna Caplis** is Outreach Specialist for the U.S. Fish and Wildlife Service's Southern New England - New York Bight Coastal Ecosystems Program; **Jennifer Casey** is Assistant Manager of the Ninigret National Wildlife Refuge, and heads the Refuge's barrier beach management efforts.*

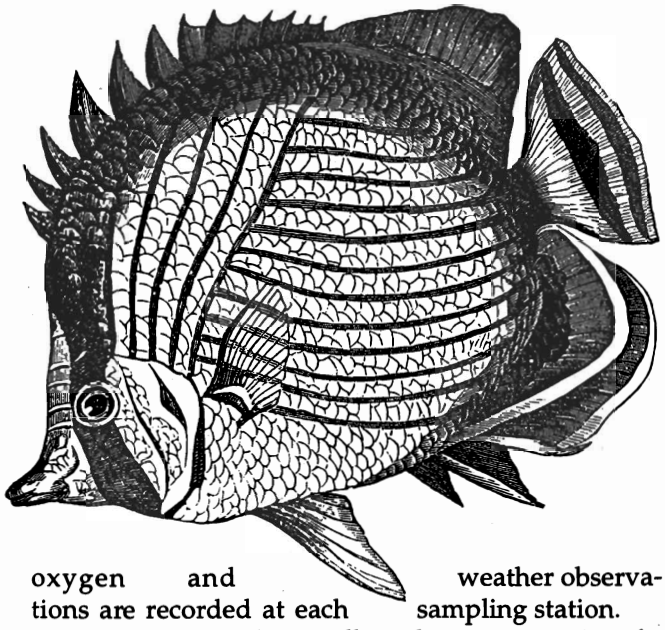
The Class of 1996

by Christopher Powell

When most of us think of the class of 1996, we think of those students who will graduate this spring. To a fisheries biologist, however, the class of '96 means the young fish who will be born during 1996. To the biologist these fish are very important. Why do we care about these young fish if they are too small to catch on a hook, and certainly not large enough to filet? Because young fish grow up to be big fish! In fact over the last ten years the RIDEM Division of Fish and Wildlife has spent a considerable amount of time and money studying juvenile fish in Narragansett Bay.

So what is a juvenile fish? By definition it is a fish that has attained all the adult characteristics but is not sexually mature. Why do we study juvenile fish? By studying the populations of these young fish we are able to determine their abundance and evaluate the health of the class of 1996. Using these data we can predict how many of these young fish will grow up and possibly make it to your table. Think of it this way: a female winter flounder may lay as many as three million eggs, but only two may survive to reproduce! What happens to the other 2,999,998 eggs? The reality is that many do not hatch, many that do hatch never become adults, and many never live long enough to reproduce. Why? Because there is a myriad of obstacles to overcome if you are a fish in Narragansett Bay. You could be eaten by a predator or die of starvation; suffocate from lack of oxygen or die from a disease. You could be overcome by pollution or be caught by a fisherman and eaten! If you are lucky enough to survive all this, hopefully you will live long enough to produce offspring.

So how do we study juvenile fish populations? Monthly from June through October, we sample eighteen fixed sites around the Bay, using a two hundred foot long by ten foot deep beach seine. Because of the large size of this net it is deployed from a boat. One end of the net is put onshore while the rest of the net is set in a large semicircle using our research vessel, the *R/V Allie Thomas*. Once the net is set it is slowly pulled ashore to retrieve the catch. Target species, or those that have commercial or recreational importance, are counted and each fish is measured. Water temperature, salinity, dissolved oxygen and weather observations are recorded at each sampling station.



Since 1986, we have collected seventy species of fish representing thirty-eight families. By collecting information on the size and numbers of each species present at each station, we have developed a picture of the spatial and temporal distribution and abundance of each species in the Bay. Using these data, and data from the Division's monthly trawl survey, we are able to evaluate the status of fish stocks within the Bay and make management recommendations to the Rhode Island Marine Fisheries Council. In addition to collecting data on the recreational and commercially important species, we record informa-

tion on all fish collected. Some species are important as prey for other species and some are just interesting. A rather unique group are the tropical and subtropical species which visit Narragansett Bay in the late summer and early fall. Most are juveniles that have been carried north from the warmer southern waters by the Gulf Stream. In our survey, we have collected such warm water exotics as butterfly fish, cornetfish, groupers, filefish, lookdowns, and many others.

What has this survey told us over the last ten years? We have learned that Narragansett Bay is home for a unique and diversified community of fish, and that the Bay provides critical habitat for many of these species. Many fish populations are in a constant state of change, adapting to changing environmental conditions. What we do know is that there is much natural variability in fish populations and that sorting out what is "natural" and what is caused by man-made conditions is part of the long-term goal of this study. With all this knowledge we can only hope that we are making the proper management decisions to insure that fish populations in Narragansett Bay will be abundant and healthy for present and future generations of Rhode Islanders.

***Chris Powell** is Senior Fisheries Biologist, RIDEM Division of Fish and Wildlife, and serves on the Board of Directors of the Rhode Island Natural History Survey.*

RINHS Receives Champlin Foundation Grant

The Rhode Island Natural History Survey was very pleased to receive a $27,629 grant from the Champlin Foundation this past December. The grant is to be used to purchase a new computer system to use for data entry on the *Flora and Fauna of Rhode Island* project, reference literature for our growing library, four museum cases for voucher specimens, and to create a traveling RINHS display.

We are very grateful for this support!

"How May We Help You?"

Where are Harbor Seal haul-out sites in the Bay? .....Who in the state has data on the effects of #2 heating oil on ecosystems and biota? .....What species in the Spurge Family are present in Rhode Island? .....Who in Rhode Island would have the most information on the natural history of the Piping Plover? .....Is there a list of butterflies for Rhode Island? ....Is there more Ragweed this year than usual? are a few of the questions that have come to the RINHS office since it opened. These requests come from scientists, state and federal agencies, nonprofit groups, journalists, teachers, students, homeowners, landscapers, librarians, MasterGardeners, and "ordinary" citizens. *.....What scientists in the state might be willing to work with high school students to teach them about research and how science is done? .....Do bat houses really work? .....What will be the effect on a local watershed of a new sand-and-gravel site? .....Where are large stands of Purple Loosestrife in the state? .....What are useful native plants to use in roadside plantings? .....Who in the state is doing work on the Diamondback Terrapin? .....What are the state regulations on growing American Ginseng? .....Is the Red-backed Salamander dangerous inside my home? ....What native plants would be useful in creating a 10' coastal wetland buffer on my property?*

No, we can't answer every question, but we do put people in touch with those who *can* answer, working to fulfill our Mission to "facilitate and coordinate the gathering and dissemination of information on Rhode Island's biota and natural communities."

....How do I get rid of snakes on my property? .....Can you identify.....? What are the invasive plants in Rhode Island and why is there concern about them? .....What would be the effects of a water drawdown on a pond? ....Has there been an inventory of [organisms] in [location]?

These questions also help show us what isn't known by *anyone* in the state, especially when biotic inventory information is needed on specific pieces of property or bodies of water. We look forward to the day we can initiate a statewide inventory and begin to fill in some of these gaps. In the meantime, keep the questions coming!

RINHS Conference a Big Success!

128 environmental leaders, scientists, educators, policy-makers, and citizens attended the January 19 conference, *Sharing the Knowledge: The Use of Ecological Information in Rhode Island*, held at Roger Williams University. Keynote Speaker Trudy Coxe began the day by reminding us that research is narrow in scope, while policy-making is broad in scope; we must look at the whole picture (including economics and politics) in order to make meaningful policy decisions. She urged scientists to work harder expressing themselves "in clear English" and to protect themselves from the misuse of data through careful peer review and sound science.

Similar themes emerged from plenary speakers Dennis Esposito, Lee Schisler, Jr., Virginia Carpenter, and Peter August, and their panels: the need for quality non-biased data, the importance of delivering data effectively, and the need to educate people and build consensus. The 25 posters and organizational displays at the Conference provided specific examples of the efforts people in the state are making in these areas. Senator John Chafee ended the day by commending the efforts of RINHS and urging us to continue our efforts to provide sound scientific data from the organismal to the ecosystem level.

The North Cape Spill

Some FAQ's (Frequently Asked Questions)

by Ron Flores

How was the U.S. Fish and Wildlife Service involved with the spill? The Service has a dual role in spill response. The Service participates as a response agency, providing information to the On-Scene Coordinator regarding fish and wildlife resources and sensitive environments in relation to protection and cleanup. The Service also coordinates any wildlife response activities, such as bird recovery, in response to a spill. The Service's second role involves conducting a natural resource damage assessment as it relates to any of the Department of the Interior's trust resources (migratory birds, endangered species, and anadromous fish). The Service works in concert with Trustees for other resources, including the National Oceanic and Atmospheric Administration (NOAA) and the State. Approximately 27 Service employees from Ninigret National Wildlife Refuge, Stewart B. McKinney NWR (CT), the Southern New England-New York Bight Coastal Ecosystem Program, and Ecological Services Rhode Island Field Office assisted with the spill response. Additional staff were called in from the New England, Maine, Vermont, Long Island, and Chesapeake Bay field offices. Also, a large number of Refuge volunteers assisted with a myriad of tasks from bird recovery to answering phones.

How many birds were lost; how many survived? Approximately 400 birds were recovered from the mainland and Block Island (about 70 were from BI). Thirty-five percent of these were seaducks (Common Eider, Red-breasted Merganser, Common Goldeneye, and Bufflehead). Common Loons were the most affected species, 16percent of the total. Seventeen percent of the species were gulls (Herring, Great Black-backed). Grebes (Horned, Red-necked) were also a group significantly affected by the spill, comprising 10% of the species brought in. The remainder of birds brought in were a mixed bag of approximately 30 species — everything from Black Ducks, Great-blue Herons, and Gannets, to several owls. Only about 100 birds were brought in live, most from the first two days of the spill. Despite intensive and expert rehabilitation, only about 10% have survived, in part because of an outbreak of an avian respiratory infection.

What was the impact to Moonstone Beach, Trustom Pond, and Card's Pond? Oil was found in the sand on Moonstone Beach as deep as three feet. Dead amphipods were found on the high tide wrack line on the beach as well as other beaches. Oiled sediments were also found in the Trustom Pond breachway. Some oil did get into Trustom Pond as waves overwashed the breachway on the night the tug and barge ran aground. Fortunately, most of the pond was frozen over, so oil was confined to the breachway area. Cleanup crews tried to soak up what oil they could using absorbent pads, however, some oil remains in the sediments near the breachway and on the eastern side of the pond. Card's Pond breached during the storm on the night of the 19th and received a significant amount of oil. Despite cleanup efforts and booming in Card's Pond, oil still persists in the sediments. Large numbers of dead amphipods and fish were observed along the shore of the pond when the pond was breached a

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week and a half later. Heavy amounts of oil were found in the sediments and on vegetation in some parts of the pond, while other areas were seemingly unaffected. Studies to determine the extent of damage caused by oil are continuing.

Why was Moonstone Beach closed to the public? Moonstone Beach was closed for a variety of reasons, but the most compelling ones were the safety issues relating to exposing the public to a beach which was oiled and where removal activities for the tug and barge were being conducted. No. 2 heating oil volatilizes readily and the fumes can cause a variety of health problems. Secondarily, the beach had to be closed because of security reasons associated with the tug and the barge. Additionally, because of the great public interest in the spill, large numbers of people came to see the area; this could have caused great difficulty for cleanup crews, bird recovery teams, and all other personnel performing official work at the spill site.

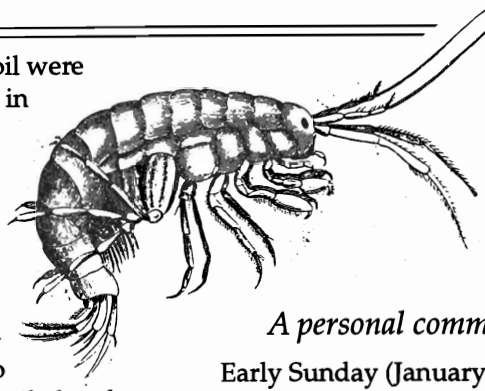
How will the spill affect the Piping Plover? Currently we don't have a definitive answer to this question. We know that amphipods (a main prey item of plovers and other shorebirds) on Moonstone Beach were affected by the spill. We are currently trying to assess the extent of the damage. We also know that there is still oil buried in the sands on Moonstone; whether and how this will affect the birds is a complex issue depending on a variety of factors. We are still assessing the impacts to find these answers.

What is the extent of your involvement now that the spill is over? We are currently conducting a natural resource damage assessment. In particular, we have focused on Moonstone Beach, Trustom Pond and Card's Pond, and the inshore habitats where migratory waterfowl forage.

What will be the short- and long-term impacts of the spill? We are currently assessing those questions.

How can I help; do you still need volunteer assistance? The response from the public for volunteer assistance was tremendous. We received calls from people as far as Massachusetts who wanted to help. Currently, all of our assessment work is being contracted out to experts in each area. We are still trying to understand how No. 2 heating oil moves through the environment and the food chain. *Any contacts from people who are knowledgeable in the field would be appreciated.*

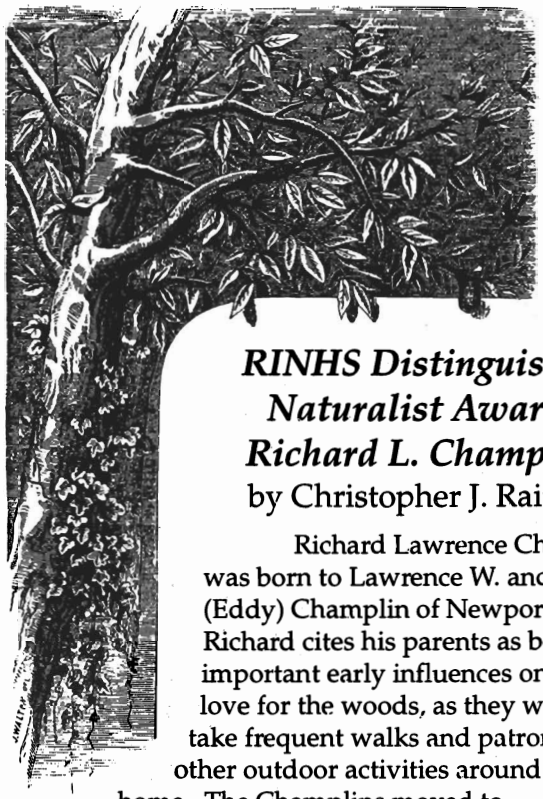
Ron Flores *is the Wildlife Biologist for the Ninigret National Wildlife Refuge Complex.*



Why a Rhode Island Natural History Survey Makes Good Sense/Cents

A personal commentary by Ron Flores

Early Sunday (January 21) morning, U.S. Fish and Wildlife Service fisheries biologist Tom Halavik and I walked an oil-soaked section of Moonstone Beach looking for survivors from the oil spill, but found very little. The stench of No. 2 heating oil filled the air as we searched for any signs of life. Towards the crest of the dunes I could see the wrack line created from Friday night's storm. To my amazement, the line was littered with small amphipods, a small but vital link in the food chain on Moonstone Beach. How much of the population of amphipods was affected? What species were they? How long would it take for them to recover? How would Piping Plovers be affected by the damage? It seemed that the spill was generating more questions than we had answers. As immediate response and cleanup efforts from the spill have slowed down, we have entered a new phase of the spill — determining the actual extent of the damage. Damage assessment is an important component of post-spill operations and is a relatively recent phenomenon brought about by the Oil Pollution Act of 1990 (OPA). One component of the Act is termed Natural Resource Damage Assessment, or NRDA. NRDA states that assessments provide a process for restoring natural resources and services injured as a result of an incident involving oil. Once the extent of injuries has been determined, restoration plans can be developed with input from the public and the responsible parties to form the basis of a claim for natural resource damages. However, to know how bad the injury has been, we also need to know what was there to begin with, what species were present, what their life histories are — all very basic kinds of information, but woefully lacking for certain taxa. This problem is a timely reminder of the value of a Natural History Survey for Rhode Island. We still need to know, for a vast majority of areas, what is there, how many, and for how long. Viewing things from a purely NRDA perspective, if you can document how your resources have been affected, then you can make a better case for a NRDA claim. The Rhode Island Natural History Survey provides the baseline data, important all the time, but invaluable in an environmental crisis.



RINHS Distinguished Naturalist Award: Richard L. Champlin

by Christopher J. Raithel

Richard Lawrence Champlin was born to Lawrence W. and Ena (Eddy) Champlin of Newport. Richard cites his parents as being important early influences on his love for the woods, as they would take frequent walks and patronize other outdoor activities around their home. The Champlins moved to Jamestown during World War II. Richard, after beginning school in Newport, attended Mt. Hermon Prep School in Massachusetts, from which he graduated in 1944. Richard spent 1944-1946 in the Navy, where he instructed on the use of SONAR equipment. Under F. D. Roosevelt's "lend-lease" program, Richard's experience was used, ironically, to teach the Russian military about this equipment. During this time, Richard notes, "The Navy, in its infinite wisdom, sent me to Key West in the summer and to the Aleutian Islands during winter."

After this military service, Richard resumed his formal education at Middlebury College, graduating in 1950 with honors in Russian. Richard's interest in natural history was further stimulated while taking geology at Middlebury; though he did by his own admission "not especially well" in this course, he credits his professor Brunc Schmidt for "bringing the subject to life."

Following school, Richard was hired by the Redwood Library of Newport in 1951, eventually attaining the title of Cataloguer and Assistant Librarian, a job that Richard quips was "a double title without double the pay." Having access to the combined resources of the Redwood Library was obviously to Richard's liking, and during his forty-year tenure he probed first one question and then another, eventually self-educating himself in a variety of fields but with an emphasis on the natural sciences.

Richard's interest in Rhode Island's flora and fauna began in earnest when he met John Hudson. Hudson was an outdoorsman of great skill and knowledge, who took the time to acquaint Richard with some of the more interesting wild places in northwestern Rhode Island. Though John Hudson lived only a few years after their meeting, these field trips, invariably conducted on Richard's day off on Thursdays, began a pattern of investigations that continue today, after more than forty years. Richard was always fascinated with the northern areas of Rhode Island, and his Thursday sojourns to Glocester, Foster, and other "remote" points were so regular that the natives teased him about setting their clocks by his visits. On the odd non-Thursday appearance they would feign amazement and utter, "It has to be Thursday today if you're here." John Hudson's repeated and insightful advice to Richard clearly shaped his style and approach to the investigation of natural things. "Get to know the country people: they can show you something," he would say.

In more recent years, Richard has not been one to sit comfortably on the great pile of site-specific information he gathered over the years, though he often teased that he would not divulge everything at once, "Or else you will lack further use of me." He was on the forefront of plant conservation when he collaborated with Dr. George Church to create the New England Botanical Club list of the rare plants of Rhode Island. Though Dr. Church brought the clout of academia and Brown University's formidable herbarium to bear in this exercise, the field work was primarily Richard's. Similarly, years of Thursday field trips were spent with George Seavey creating the Rhode Island Natural Areas Survey for the Audubon Society of Rhode Island, a valuable and unique compilation of unusual sites which eventually became the core of the Rhode Island Natural Heritage Program inventory. The Thursday field trips continued unabated as Richard selflessly revealed secret places and offered information about the rare plants for the Heritage inventory. These trips continue today, even at a greater frequency since Richard's retirement from the Redwood Library in 1991.

Richard has published over seventy peer-reviewed and popular articles about topics as apparently disparate as his recent botanical finds, "champion" trees, the carvings on Box Turtles, the clock-making of William Claggett, the trees of Newport, and the springs of Conanicut Island. He counts among his most exciting finds a red-flowering form of the common Spicebush, a salmon-pink variety of Witch Hazel, and an unusual variety of the Rock Polypody. His wildlife sightings have been no less valuable, and he has contributed several significant

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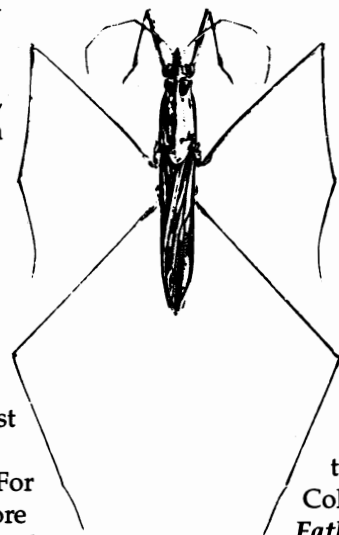
Rhode Island Collections

The Reichart Collection

by Charles V. Reichart

A question frequently put to me—whatever led you to study insects? Sounds like a simple question to answer, doesn't it? However, like so many seemingly simple questions, the answer might be quite complex. Growing up in a small Ohio town I do not recall any childhood interest in insects, except seeking relief from mosquito bites suffered on hot and sultry nights, or being careful when picking blackberries to exclude the stink bugs associated with the berries. I had no interest in insects until I had spent several quarters in graduate school in protozoology.

When I returned to Providence College in December, 1947 with my doctoral degree, I resumed teaching Invertebrate Zoology. By this time GI's were returning to college in such numbers that little time was available to continue research in the larval entomology which occupied me full time during the preceding three years. As time passed my life became more complicated by being appointed chairman of the Biology Department, pre-med adviser, and chairman of the Recommendation Committee to professional health schools. The only time left for entomological activity was during the summer months, but while this solution worked for a time, it was neither satisfying nor satisfactory.



As I reviewed in my mind the many hours I had spent in the library on my dissertation, I recalled an almost complete absence of references to any area of entomology in Rhode Island. For an area that had been occupied for more than 350 years by Europeans this seemed to leave a tremendous number of opportunities to explore. The more I turned the problem over in my mind the more convinced I became that the vast aquatic acreage within the boundaries of the state and its inhabitants offered the best solution. Known as the Ocean State, most people think of Rhode Island in the framework of its beaches, Narragansett Bay, Rhode Island Sound, Block Island Sound, and a lucrative deep-sea fishing industry. Almost totally overlooked are the freshwater ponds, streams, and reservoirs. Nor, for that matter, do most people know that among the thirty (±) orders of insects, ten of them have varying numbers of species with larval or nymph immature states; and that two of the ten (Coleoptera and Hemiptera) have families that are strictly aquatic even as adults.

With this general background in mind I made the decision to go with the aquatic population rather than with the terrestrial insects, although I had been collecting the latter for six to seven years. Having selected the aquatics the next choice to be madewas: which group? From the outset the determination was almost forced upon me. At every aquatic site my net captured Hemiptera and Coleoptera. The most interesting turned out to be the Hemiptera because of the variety of their forms. As time passed, those belonging to the family Notonectidae took over first place, followed by the Belostomatidae, Nepidae, Naucoridae, and Corixidae.

The aquatic beetles were as numerous but not as interesting as the Hemiptera. At the present time I am trying to sort some 3,000+ of them to species for a publication. It is also interesting to note that at almost all watery sites there are hangers-on. By this I mean insects that live either on the surface—such as Gerridae, Veliidae, Hydrometridae—or Gelastocoridae that live along the shore margins. Of all these, only the Gerridae (the water striders) are widely recognized, the others seldom seen by the average individual.

At the present time I have roughly 32,000 specimens of which 14,690 are aquatic Hemiptera and Coleoptera. I also have 300-500 preserved larval specimens. Almost 100% of the aquatic Hemiptera are identified to species and include my main research interest, the *Anisops* genus of the Eastern Hemisphere.

Negotiations are currently underway with the Smithsonian as a repository for the collection but until that problem is finalized anyone interested in the collection may contact me at the Providence College Biology Department, (401) 865-2109.

***Father Charles V. Reichart** is Professor Emeritus, Providence College.*

RINHS Publications: Up & Growing

Les Sirkin's *Block Island Geology: History, Processes and Field Excursions* (1994, Book & Tackle Shop) is the newest addition to our listing. Other additions include brochures from RIDEM Mosquito Abatement Coordination Office.

Our own *Illustrated Key to the Seaweeds of New England,* by Martine Villalard-Bohnsack, has been selling all over the world! We also offer bird and butterfly checklists, geologic maps, Reichart's monographs on aquatic Hemiptera, and a variety of natural history books. For ordering information, call the RINHS office at (401) 874-5800.

Focus On
RINHS Institutional Members:
The Roger Williams Park Zoo
by Anthony Vecchio

Babirusas and bongos, kowari and coendou: Rhode Islanders know that Roger Williams Park Zoo is the place to see strange creatures from all over the world. But why would the zoo be active in the Rhode Island Natural History Survey when there are no Rhode Island animal exhibits? For the answer to this question one needs to look at the mission of the zoo and see what most of the zoo's casual visitors miss.

The zoo has a dual mission, the first part being conservation and the second part service to the community. Integral to accomplishing both of these missions is the zoo's role as an educational institution. It is here that the Roger Williams Park Zoo and the Rhode Island Natural History Survey overlap. We believe that our biggest contribution to conservation does not come from breeding endangered species in captivity but from teaching our audience about environmental issues. While the topics of the zoo's education programs may be as global in scope as the loss of rainforest or coral reefs, the message that we leave with the students is that *their* actions affect the world in which they live. It may be a cliche but we still believe that to think globally and act locally is the best lesson we can teach.

Last year the zoo saw over 35,000 students through formal programs. We offer preschool classes, urban youth programs, summer and winter camps, special needs tours, overnights, outreach, teacher training, and traditional lecture/slide programs for any age group. While we do not attempt to give our students the type of learning they could receive in a semester-long college-level conservation biology course, we do strive to make our audience aware of environmental problems, encourage them to get involved, and give them the suggestions for actions they can take that will have a positive impact on the environment.

The zoo attracts over 700,000 visitors a year. Reaching 35,000 of them with a structured education program is a significant accomplishment. However, we are not willing to allow the other 665,000+ visitors to get away without our making an effort to introduce conservation education to their day. Many of our graphics attempt to go beyond just teaching natural history facts, by presenting wildlife conservation topics.

While emphasizing education, we have not given up on the importance of captive breeding and reintroduction programs as a tool for saving endangered species. The zoo participates in 24 cooperative breeding programs. Five of these have a reintroduction component to them. One of particular note to Rhode Islanders is the American Burying Beetle. Working in collaboration with the U. S. Fish and Wildlife Service, the zoo houses the only captive population of this highly endangered native invertebrate. We have devoted one of our most critical resources—space—to saving this species: one off-exhibit room has been turned into the world center for burying beetle reproduction. This past year we successfully produced over 115 beetles that were turned over to the U. S. Fish and Wildlife Service for reintroduction to a portion of their historic range. Whether a beetle, a wolf, or a monkey, there is no more rewarding experience for the zoo staff than to see one of our charges sent back to the wild.

The last ten years have seen the Roger Williams Park Zoo grow and improve until it has become the premier zoo in New England. We intend to continue our rapid redevelopment over the next ten years. One way a small zoo with limited resources can make giant strides is to collaborate with other organizations that share common goals. The staff of the Roger Williams Park Zoo looks forward to our continued association with the Rhode Island Natural History Survey as we all strive to use education as a means to conserve our natural resources, whether they are found on Block Island, Barrington, or Borneo.

***Anthony Vecchio** is Director of the Roger Williams Park Zoo in Providence, Rhode Island, and serves on the Board of Directors of the Rhode Island Natural History Survey.*

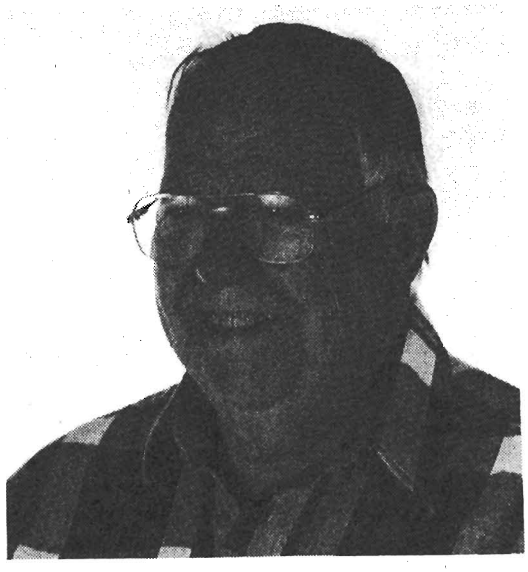
Editor's Note: The Roger Williams Park Zoo was featured in the March/April 1996 issue of *Wildlife Conservation* [Vol. 99(2):52-55]; in that article *The New York Times* was quoted as calling the zoo "one of the best zoos in the country for its conservation efforts." Good work!

Elmer A. Palmatier

23 September 1912--16 December 1995

by Keith T. Killingbeck

"Elmer the botanist." That was the signature at the bottom of a letter written on 8 August 1994 to, of all people, Ann Landers. It seems that Ann didn't quite understand the subtle differences between the beans from plants in the family Fabaceae, and say, jelly beans. A letter published earlier that year in her syndicated column had proved to be a milestone, since, for the first time ever, coffee beans and cola nuts were thrust into the legume family. Well, that was just too much for Elmer. His letter of response kindly suggested that Ann's grasp of botanical facts was woefully inadequate and needed major modification.



As I thought about this letter that I found mixed in with the many books donated in his name to the University of Rhode Island, it dawned on me that Elmer was right on two counts. He was clearly right about the misinformation that caught his eye in the newspaper, but more importantly, he was right about his self-assigned moniker: "Elmer, the botanist." In his professional career and in much of his personal life, Elmer was, above all, the consummate botanist.

Elmer was born in Tacoma, Washington, but his botanical roots were in the prairie. Ord, Nebraska, a tiny town in the middle of North America's sea of grass, was his home. Formal training in botany began at the University of Nebraska where, in 1935, Elmer earned a Master of Science degree. Ithaca, New York was the next stop on his road to Rhode Island. At Cornell University, Elmer earned his Ph.D. under the guidance of Dr. Arthur J. Eames and a host of eminent botanists. Plant taxonomy and morphology were the topics that excited him most and were ultimately the focus of his dissertation: "Some Studies on the Floral Anatomy and Morphology of Saxifragaceae."

His arrival in Rhode Island in 1942 marked the beginning of a long and productive career in the Department of Botany at the University of Rhode Island. A year abroad at the University of Baghdad in Iraq and a year with the National Science Foundation in Washington, DC, punctuated his professional career. His most noted scholarly contribution to the field of botany was *The Flora of Rhode Island* published in 1952, a work that is only now being supplanted by updated treatments. Elmer's considerable teaching abilities were officially recognized and acclaimed in 1974 when he was awarded the URI President's Award for Teaching Excellence.

In his 40-year tenure at URI, Elmer shared his knowledge of botany, philosophy, and life with over 12,000 students. He was rightfully proud of that accomplishment and felt fortunate to have touched so many lives. Many of you were students of his. I can see the smiles on your faces as memories of his classes kindle recollections of Elmer in action. I have seen those smiles before. In the aisles of a grocery store. On the campus quadrangle. In the post office. Virtually everywhere Elmer went, former students would hail him, smile, and ask, "Doctor Palmatier, do you remember me from...?" Sometimes the "from" would be followed by "Introductory Botany." Other times it would be "Field Botany" or "Plant Ecology." It didn't matter which, they all remembered him. They still do.

Shortly after I arrived in Rhode Island from the midwest to join the URI Department of Botany, Elmer invited me to join his section of the Field Botany class, which met on Tuesdays and Thursdays. This was my good fortune for I taught the Wednesday/Friday section of Field Botany and I, unlike Elmer, did not have thirty-plus years of experience with the flora of Rhode Island. One bright fall day, Elmer led us across a fence onto the right-of-way of Route 95 at the end of Tefft Hill Trail in the Arcadia Management Area. There grew several species new to the class and ripe for inspection and discussion. To our collective chagrin, a state police car eased onto the shoulder of the highway nearby and rolled to an ominous stop. Slowly, one of Rhode Island's Finest emerged from the car. Methodically, he approached our huddled mass. We just knew he was intent on having us whisked away to the Adult Correctional Institution for trespassing on state property. His jackboots, razor-creased uniform, and military hat did nothing to ease our fears. When he had strolled the 50 feet from his car to us at a pace that made the retreat of the last ice age look rapid, he looked squarely at Elmer, removed his dark sunglasses, and said, "Hi, Doctor Palmatier, do you remember me from...?" He could have said "our days on Mars?" and none of us would have heard. We were all too

busy breathing again.

Even outside the university classroom venue, Elmer taught botany. Saturdays in the fall were often graced by the occurrence of "Serendipity Botany." Elmer would post fliers announcing these impromptu events and lead enthusiastic followers through the forests and bogs of South County in search of nothing, in search of everything. "The faculty of finding valuable or agreeable things not sought for" was an ability Elmer honed to perfection. There is a certain incongruity to the notion that serendipity can be an art or a skill to be nurtured and improved, but finding the unsought is not a trivial endeavor. Of the many lessons Elmer taught his students, appreciation for the unexpected was perhaps one of the most important.

Elmer Palmatier reveled in the unexpected delicacies life has to offer for those who can see them, feel them, hear them, smell them, or imagine them. Always the teacher, always the learner. Elmer, the botanist.

In memory of Dr. Palmatier, his family has established the Elmer A. Palmatier Memorial Scholarship Endowment Fund. The Fund will support a scholarship awarded annually to a student in the Department of Biological Sciences at the University of Rhode Island. The Elmer A. Palmatier Scholarship will be awarded on the basis of academic achievement. Contributions should be directed to the Elmer A. Palmatier Memorial Scholarship Endowment Fund, URI Foundation, 21 Davis Hall, Kingston, RI 02881-0806. Checks should be payable to Account #4264, URI Foundation.

__Keith Killingbeck__ is a Professor of Botany in the Department of Biological Sciences at the University of Rhode Island. He is also on the Board of Directors of the Rhode Island Natural History Survey and the Rhode Island Wild Plant Society.

The above article is reprinted from the Newsletter of the Rhode Island Wild Plant Society, March 1996.

Report from the Committee for the National Institute for the Environment

Legislation to establish the **National Institute for the Environment,** a non-profit organization dedicated to improving the scientific basis of environmental decision making, has been introduced in the U.S. House of Representatives (H.R. 2827). RINHS is an endorser of the NIE. For more information contact David Blockstein, CNIE, 1725 K Street, NW Suite 212, Washington, DC 20006; (202) 628-4303. Email: cnie@access.digex.net

RINHS Institutional Members: Special News & Events

The Roger Williams Park Museum of Natural History is pleased to help Rhode Island College's Department of Biology sponsor, along with RINHS, the upcoming lecture by Professor Rodney Honeycutt of Texas A & M University, to be held on Friday, April 12, at 4:00 p.m. at the Museum of Natural History in Providence.

Entitled *The Systematics and Natural History of North American Grouse,* the talk will highlight the use of museum specimens to molecular genetics and recovery efforts for endangered species. Part of Dr. Honeycutt's research included taking a DNA probe of the RWP Museum's only Heath Hen specimen, and making genetic comparisons with the endangered Attwater Prairie Chicken.

Refreshments will be served; for information contact Dr. Lloyd Matsumoto at R.I. College, (401) 456-9539.

The Rose Island Lighthouse Foundation announces that April 1 to July 15 is the island's bird-nesting season. Access is limited during this time when no boats are to be beached and there's no walking around the island on the beaches. It's a perfect time to stay overnight on the lighthouse or for school groups to visit and learn about the birds. Harbor seals stay around until early May.

Public tours of the Lighthouse begin on July 19 and are offered Fridays and Saturdays through Labor Day. For more information call the Foundation at (401) 847-4242.

Save the Bay's Habitat Protection and Restoration Initiative is offering competitive mini-grants to local nonprofit community groups, town environmental agencies and neighborhood associations working on or initiating estuarine habitat assessment or restoration projects. These grants are targeted for Narragansett Bay coastal communities. Contact Andy Lipsky or Nicole Cromwell at (401) 272-3540, or email savebay@savethebay.org

Rhode Island Wild Plant Society is offering a 5-day, hands-on *Wild Plant Identification Course* from June 3-6 and August 2, 9 a.m. to 4 p.m. daily. The first 4 days will focus on inland terrestrial and wetland species; the August day on plants of coastal habitats. Naturalist Lisa Gould will be the instructor; for more information contact the RIWPS office at (401) 949-0195.

Roger Williams Park Zoo reminds science teachers Grades 7-10 to "Stay one step ahead" with *Survival Strategies,* Project W.I.Z.E. (Wildlife Inquiry through Zoo Education) Two-Day Curriculum Workshops, to be offered May 3 & 4, 9 a.m.-3:30 p.m, at the Roger Williams Park Zoo in Providence, RI. *Survival Strategies* was developed by a team of scientists and educators at the Bronx Zoo Education Department and is validated as an exemplary program by the U.S. Department of Education. For registration, call Rose Baker at 1-800-937-5131.

Upcoming Conferences & Seminars

April 12 ***The Systematics and Natural History of North American Grouse*****, 4:00 p.m., a RIC lecture by Rodney Honeycutt (Texas A & M U.) at the Roger Williams Park Museum of Natural History, Providence, RI. Contact Lloyd Matsumoto, Rhode Island College; (401) 456-9539. Cosponsored by RINHS & RWP Museum.**

April 12-14 *The Ecotourism Equation: Measuring the Impacts.* Yale University Chapter of the International Society of Tropical Foresters, School of Forestry and Environmental Studies, 205 Prospect Street, New Haven, CT 06511. Contact Kelly Keefe at (203) 432-6999; email istf@minerva.cis.yale.edu

April 18 ***The Natural History of Lyme Disease*****, an RINHS lecture by Howard Ginsberg, Roger Williams Park Museum of Natural History, Providence, RI, at 7:00 p.m. Contact RINHS office at (401) 874-5800.**

April 27 *Tidal Marsh Restoration Assessment Training Workshop*, Save the Bay's Habitat Protection and Restoration Initiative. Contact Andy Lipsky or Nicole Cromwell, (401) 272-3540; email SAVEBAY@savethebay.org

April 27 *Annual Seedling Sale*, Eastern Rhode Island Conservation District. Contact (401) 847-9196.

April 27 *Fishing With Kids*, a class on trout fishing for children under 16. Narragansett Bay Classroom, URI Office of Marine Programs, Narragansett, RI; 874-6211.

April 9, 25 & May 6, 16 *Teacher Workshops on Outdoor Education*, 3:30-5 p.m., at Caratunk Wildlife Refuge (Seekonk, MA), Parker Woodland (Coventry), Powder Mill Ledges (Smithfield), and Fisherville Brook Refuge (Exeter), respectively. Cosponsored by Audubon Society of R.I. and the R.I. Environmental Education Association. Free. To register call (401) 949-5454.

May 1, 8, 15, 22, 29 *The Art and Science Connection*, a series of classes using art to enhance natural history teaching, writing, drawing, and self-discovery. 10 a.m.-2 p.m. Tower Hill Botanic Garden; to register call (508) 869-6111 x 24.

May 2 *The 1996 Last Great Places Auction*, Providence Biltmore, 6:30 p.m. A dinner and auction to benefit The Nature Conservancy. $100/ticket. Contact (401) 331-7110.

May 3 & 4 *Project W.I.Z.E.: Survival Strategies*, curriculum workshop for Grades 7-10 science teachers, Roger Williams Park Zoo, Providence, RI; (800) 937-5131.

May 5 *Clean Air Challenge*, American Lung Association of Rhode Island, a bicycle and walking fundraiser to promote clean air and healthy lungs, Narragansett, RI. Contact (401) 421-6487.

May 11 *Vernal Pool Ecology*, 3-5 p.m., an investigation of the flora and fauna of a temporal wetland community. Tower Hill Botanic Garden, (508) 869-6111 x 24.

May 11 *4th Annual Plant Sale*, Southside Community Land Trust, South Providence, RI, 10 a.m.-1 p.m. Contact Dennis E. Conway at (401) 273-9419.

May 20-June 21 *Plant Biology for Gardeners*, PLS 150, a 3-credit course taught by Professor Dick Hull. 6-9:30 p.m., URI Greenhouses, Kingston, RI. To register call URI's College of Continuing Education, (401) 277-3814 or 874-2107.

June 1 *Annual Plant Sale*, R. I. Wild Plant Society, 9:30-noon, URI Greenhouses, Flagg Road, Kingston, RI. For information call (401) 949-0195.

June 3-6; August 27 *Wild Plant Identification Course* sponsored by the R.I. Wild Plant Society, 9 a.m.-4 p.m., URI Alton Jones Campus, West Greenwich, RI & the RI coast. Contact RIWPS at (401) 949-0195.

June 12-15 *Historic Natural History Collections*, 11th Annual Meeting, Society for the Preservation of Natural History Collections, Philadelphia, PA. Contact Ted Daeschler, (215) 299-1133; email daeschler@say.acnatsci.org For a local contact, call Marilyn Massaro at (401) 785-9457 x 248.

June 15-20 *2nd. International Interdisciplinary Conference on the Environment, Newport*, RI. 1996 Themes: Education and Technology. Contact Demetri Kantarelis or Kevin Hickey, IEA/Kantarelis-Hickey, Assumption College, 500 Salisbury Street, Worcester, MA 01615; (508) 767-7557; email dkantar@eve.assumption.edu

June 20-22 *Paved to Protected: Restoration in the Urban/Rural Context*, Annual Conference of the Society for Ecological Restoration, Rutgers University, New Brunswick, NJ. Off-campus session June 17-19, 33, 23. Contact SER Conference, 1207 Seminole Highway, Madison, WI 53711; (608) 262-9457; email ser@vms2.macc.wisc.edu

July 8-11 *Vacation Oceanography*, a summer science program for Junior High students. Narragansett Bay Classroom, URI Office of Marine Programs, Narragansett, RI; 874-6211.

August 3-7 *Promoting Watershed Stewardship*, Fifth National Volunteer Monitoring Conference, Madison, WI. Contact Celeste Moen, Wisconsin DNR, WR2, P. O. Box 7921, Madison, WI 53707; email moenc@dnr.state.wi.us

August 3-16 *Recent Advances in Conservation Genetics*, A Smithsonian Institution NOAHS Short Course. Contact Judy Manning, NOAHS-Conservation Research Center, National Zoological Park, Smithsonian Institution, Washington, DC 20008; (202) 673-4733; email NZPNC004@sivm.si.edu

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 90523; (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.

Proceedings Riparian Zone Conference Available

The Society of Soil Scientists of Southern New England has copies of the November 1994 Riparian Zone Conference available for $10, *prepaid*. Send check to: SSSSNE, P. O. Box 258, Storrs, CT 06268; (860) 429-3902.

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.

Center for Field Research, 680 Mt. Auburn Street, Watertown, MA 02172 is inviting proposals for 1997 field grants awarded by its affiliate Earthwatch. Volunteers pay for the opportunity to join scientists in the field and assist with data collection and other research. Contact Dr. Andy Hudson, (617) 926-8200; email: ahudson@earthwatch.org

Johnson & Wales University, 8 Abbott Park Place, Providence, RI 02903 is seeking sites and site supervisors for students during winter 1996-1997. Thanks to an endowment from Alan Shawn Feinstein, 1000 students (mostly sophomore business majors) per year will be placed in positions to work 1-4 hours per week for 8-10 weeks, where they will help with activities such as organizing walks, public events, or educational fairs. For more information contact Matthew McConeghy at (401) 598-1766.

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) 4 Education Interns to work with school children, youth groups, and adults in programs teaching about the coastal zone.
(2) 1 Research Intern for field survey of Lepidoptera in pine barrens and coastal bogs.
(3) 1 Administrative Intern to assist in membership development and publicity.

Massachusetts Audubon Society, South Great Road, Lincoln, MA 01773; (617) 259-9500. The Coastal Waterbird Program needs 16 Piping Plover/Tern Monitors for the 1996 breeding season, and 2 Coastal Waterbird Monitors/Naturalists during the summer. Weekly stipend of $190; housing may be available.

Also needed are volunteer Coastal Waterbird Interns, for a minimum of 32 hours per week during the internship period.

For all positions, send cover letter and resume to Scott Hecker, MA Audubon Society.

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 (860) 572-5955.

The Nature Conservancy, Rhode Island Field Office, 45 S. Angell Street, Providence, RI 02906 is looking for volunteers to monitor Piping Plover and Least Tern sites in Rhode Island; a minimum commitment of a half-day training session and 2 days of monitoring is expected. Unique opportunity to help endangered species! Contact G. Venator at (401) 331-7110.

The Newport Aquarium, 18 Market Square, Newport, RI 02840 needs enthusiastic summer interns to teach visitors about marine mammals, assist with school groups, help care for marine animals, and conduct beach tours. Students with a background or interest in natural sciences and education are encouraged to apply. Contact George Klein, (401) 849-1340.

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. 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 Lisa Gould at (401) 874-5800.

1996 International Biodiversity Courses Offered by Smithsonian Institution

1) *Biodiversity Measuring and Monitoring*, May 12-June 14, 1996; 2) *Biodiversity Monitoring at Permanent Plots*, September 9-20, 1996. For information contact Christopher Ros at the Smithsonian's Man and the Biosphere Biodiversity Program, (202) 357-4793; email SIWPO1.IC.CJR@IC.SI.EDU

Opportunities, *continued from page 9*

Roger Williams Park Museum of Natural History, Elmwood Avenue, Providence, RI 02905 has a number of collection-related projects for (unpaid) student internships; projects include curatorial upgrading, 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 information contact: Marilyn Massaro, Curator, (401) 785-9457 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.

Rose Island Lighthouse Foundation, P. O. Box 1419, Newport, RI 02840 needs volunteers and interns for spring and summer work to help develop school curriculum for grades K-5, and to guide at the lighthouse in the summer. Interest in education, lighthouses, history, birds, native plants and/or marine biology is helpful. Enthusiasm and reliability are required. For information contact: Charlotte Johnson, Executive Director, at (401) 847-4242.

Save the Bay: Volunteers needed to assist URI/GSO and Save the Bay with an eelgrass transplant project, Saturdays during the month of May, at URI's Graduate School of Oceanography, Narragansett, RI. For information contact: Save the Bay at (401) 272-3540.

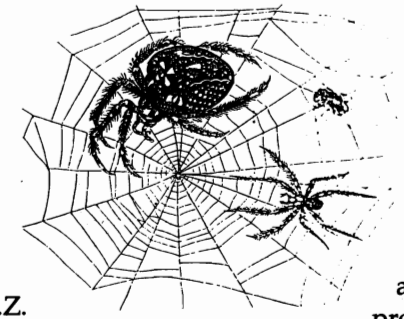
Eagle Hill Field Seminars

Advanced, Professional, and Specialty Natural History Seminars & Workshops on the Coast of Maine

Want to do something different this summer? Take a natural history course at Eagle Hill and enjoy a cool week in Maine! Courses are offered in geology, soils, ornithology, ecology, specialized invertebrate groups, field ethnobotany, lichens, specialized plant groups, photography, ecological techniques, and much more. Course credit available through the University of Maine. For information contact: Eagle Hill Field Research Station, P.O. Box 9, Steuben, ME 04680 (207) 546-2821; email eaglhill@maine.maine.edu

Rhode Island Natural History Survey, Inc.
c/o Cooperative Extension Education Center
E. Alumni Ave., URI, Kingston, RI 02881
Telephone: (401) 874-5800; Fax 401-874-2259
RINHS@URIACC.URI.EDU

Weaving the Web: Electronic Resources



Consortium of Aquariums, Universities, and Zoos, [C.A.U.Z. for Worldwide Conservation], an international network between university scientists and educators and their counterparts in zoos and aquariums. Those who become part of the C.A.U.Z. Network share information on their interests in specific taxonomic groups (e.g., Order Sphenisciformes), their general interests (e.g., penguin ecology), and their current projects (e.g., field studies on the Humboldt penguin). Information on the C.A.U.Z. database is published in annual directories and also appears on its site on the World Wide Web: http://www.fhcrc.org/~ialwww/CAUZ/CAUZ.html

This database is a searchable online, and will be of interest to those involved in wildlife research and conservation, restoration ecology, captive propagation of endangered species, wildlife rehabilitation and reintroduction, and veterinary medicine (especially with exotic species). For more information contact the Coordinator: Donna FitzRoy Hardy, California State University-Northridge, Northridge, CA 91330; (818) 885-4970; Email: dhardy@huey.csun.edu

Earthwatch can be reached at email: ahudson@earthwatch.org

FACT Net, the Forest, Farm, and Community Tree Network, a global network of people exchanging information on multipurpose trees. Fact sheets, publications, workshops, and other information. Contact: Winrock International, FACT Net, 38 Winrock Drive, Morrilton, AR 72110; (501) 727-5435; email: forestry@msmail.winrock.org

Government Institutes Environmental Email, a new environmental news service. Monthly newsletter describing new courses, publications, electronic products, and other information. To subscribe, email: giinfo@aol.com

Spatial Odyssey, World Wide Web access to the full text of GIS conference proceedings, a joint project of the University of Maine Library and the National Center for Geographic Information and Analysis. Web site: http://www.odyssey.maine.edu/gisweb/

The Tragedy of the Coastal Commons: Molluscan shellfisheries, is a new interactive web site, focusing on problems of the commonly held coastal shellfisheries. Email: weymullers@Kenyon.edu
Web site: http://www.kenyon.edu/projects/envs61/commons.htm

U. S. Geological Survey, Earth Science Information:
EARTHFAX, a menu driven fax-on-demand service to provide USGS news releases, current information on activities and projects, and a range of water, mapping, and geologic products automatically. Call (703) 648-4888.
Water Information Clearinghouse: Water data and information, including special topic fact sheets, may be obtained by calling the Water Information Clearinghouse at 1-800-426-9000.
Earth Science Information Center: Map, digital data, and aerial photography products and information; call 1-800-USA-MAPS [872-6277]
Geologic Inquiries Group: Geologic information on topics such as earthquakes, volcanoes, energy, and mineral resources; call (703) 648-4383
U. S. Geological Survey World Wide Web page: http://www.usgs.gov

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Thanks!

The Rhode Island Natural History Survey is grateful for the continued donations to our library and publications program. Marilyn Harlin, Grace Klein-MacPhee, and Steven Reinert have donated to our growing collections of literature about Rhode Island's natural history. Thanks also to Irene Stuckey for a copy of Elmer Palmatier's 1952 *The Flora of Rhode Island,* and to Mark and Lisa Gould, and Peter Lockwood, for other reference materials for the library. Matthew McConeghy of Johnson & Wales University donated two copies of *Along the Woonasquatucket* for publications sales, and Alan Gettman of RIDEM's Mosquito Abatement Coordination Office has provided us with brochures on mosquitoes in Rhode Island, Lyme Disease, and encephalitis. From Bernard Gordon of the Book & Tackle Shop have come *Hurricane in New England* and *If An Auk Could Talk.*

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Distinguished Naturalist, *continued from page 7*

observations to the Rhode Island bird record, including the first sighting of the Long-tailed Jaeger from land and the nestings of the Pileated Woodpecker.

Through it all Richard evokes a well-roundedness of approach which was more common last century, and is getting harder to find in this era of increasing specialization. "When everything is so obviously connected, how can you study only one thing?" he would muse. He is virtually unique among wildlife observers in recognizing that, for better or worse, the history of Rhode Island wildlife and habitat is inextricably linked to our human history. From consulting those who were connected to the land, Richard is able to blend human and wildlife perspective in a way which may never be equaled.

***Christopher Raithel** is Natural Resources Specialist for RIDEM's Division of Fish & Wildlife, and serves on the RINHS Advisory Board.*

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