

NJPB

NEW JERSEY Outdoors

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Spring 1991



**Celebrating Shad • Wetlands to Use and Preserve
Conservation Revisited • Getting Ready for Boating
Wildlife Ways • Reeves Reed Arboretum**

Governor's Message

Think about New Jersey without its outdoors.

No more beautiful state forests.

The Pine Barrens — gone.

Our Jersey Shore, unswimmable.

It's unthinkable, isn't it?

Well, for close to a year now, we've had to do without **New Jersey Outdoors**, a magazine dedicated to writing about and preserving our wonderful New Jersey resources.

The absence of **New Jersey Outdoors** — shut down because of budget constraints — was noticed by everyone who enjoys and is concerned about preserving the wonderful natural beauty of our state. That's why I am so honored to have the chance to write an article for this reinaugural edition of **New Jersey Outdoors**.

Losing a magazine is one thing, but losing our open space is quite another. A magazine can be restored; New Jersey's great outdoors, once lost, cannot.

When money gets tight, we can't turn off the trout streams, close the Jersey Shore, or sell our park lands — and later start it all back up again.

That's why we can never pause in our efforts to preserve our small piece of the planet. We have too many wonderful natural resources in New Jersey to lose.

So what can we do in these tough financial times to keep our air clean and our water pure?

The answer is the same thing we've been doing, only we've got to do it better. We've got to spend our money more wisely. We need to implement our laws and regulations more efficiently. And we must ask for the help of, and listen to, the people all over this state who believe in keeping New Jersey clean and green.

All of you who subscribe to **New Jersey Outdoors** form the core of that committed group of people. Whether it's involvement in community efforts to preserve a small wooded area in an otherwise built-up township, or a decision to contribute to the Wildlife Tax Check-off Conservation Fund to support the work of biologists protecting endangered species, we can all make a difference.

Anyone who doubts the power of individual involvement in protecting our environment need only look at our recycling success in New Jersey. We're leading the nation.

We recycle almost 42 percent of our garbage in New Jersey in large part because people all over the state take the time, one evening a week, to separate their bottles, newspapers and garbage. Almost 350 towns have curbside recycling programs and our leading corporations, such as AT&T, have set ambitious recycling goals. I announced last year our goal of recycling 60 percent of our garbage by 1995. We will meet that goal thanks to how seriously so many New Jerseyans take their environmental responsibilities.

Recycling isn't the only way that individuals can help keep litter out of our parks and forests and waterways. For example, we can all help keep our streams and rivers clean by being careful about using fertilizers and pesticides on our lawns.

As part of this effort to keep our water clean, the state will provide more than \$5 million in grants to local communities to help them control storm water overflow.

Our state also hasn't forgotten its responsibility for preserving New Jersey's great outdoors. This year we will spend \$150 million to acquire 18,000 acres of open space because parks and other open space are integral to our quality of life.

By the way, we saved the taxpayers millions of dollars when we sold those bonds. That's because New Jersey's triple-A rating on Wall Street is the highest in the nation. And we've kept that rating because we made the tough choices needed to keep our state budget under control.

But it's not enough to acquire land. We need managed land use throughout our state. That's why we're going to continue moving ahead with the state land use plan. And why we've set a goal of preserving 5,000 acres of farmland.

It's also the philosophy behind our effort to regulate development on the Jersey Shore. This year, I look forward to signing a tough law that will accomplish that goal.

We know the challenge. It's the same whether you enjoy fishing in the Delaware River, swimming at the Jersey Shore or camping in the Ramapo Mountains. The challenge is not to conquer the forces of nature, but to master the much more difficult task of learning to live with them.

I look forward to working with, and listening to, all committed New Jerseyans as we meet that challenge.



Jim Florio
Governor

Sincerely,

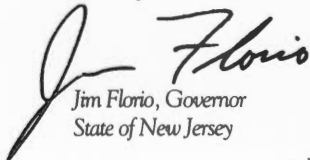

Jim Florio, Governor
State of New Jersey

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Editorial

From the Commissioner



Scott A. Weiner
Commissioner

Welcome to the new **New Jersey Outdoors**. We have redesigned the magazine in a number of ways, many suggested by you, our readers. But the most important change, we think, is that its traditional features — stories and pictures of the state's rich natural endowment, boating and other recreational facilities, fishing and hunting resources and historical legacy — are supplemented by information on the department's regulatory, planning and research programs. We've done this for a compelling reason: without these programs, the outdoor beauties and activities that you enjoy would not be possible.

In this and subsequent issues, we hope to share with you how our open space acquisition and preservation programs have increased the number of public parks and other recreational opportunities, and provided critical habitat for threatened fish and wildlife; how our planning and land use policies have helped preserve and enhance the state's natural resources from the Palisades to the Pinelands; how our strict regulatory and enforcement programs for waste disposal have kept our coastal waters and our rivers and streams clean, and even restored some fish populations; and how our research is helping to protect ecologically sensitive areas from man-made threats like oil spills and natural threats like radium.

We want you to join us, then, in helping to preserve and protect the unique and irreplaceable natural endowment with which our state was blessed, and, most of all, to share in the pleasures of those wonderful resources that can be discovered and appreciated only when we leave our homes and cars and explore New Jersey's outdoors.

WALTER CHORASZEWSKI



State of New Jersey
Jim Florio
Governor



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This publication is dedicated to promoting and encouraging the wise management and conservation of our natural, cultural and recreational resources by fostering a greater appreciation of those resources, and providing our residents with the information necessary to help the Department protect, preserve and enhance them.

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Mailbox

To our loyal subscribers,

Our last issue of **New Jersey Outdoors** (March/April 1990) included a survey that asked you to tell us what you liked and disliked about the magazine and to suggest ways to improve it. The wide range of your responses indicated that we need to satisfy more of you with a more varied content in each issue of NJO. We will continue our coverage of nature and wildlife and expand our coverage of environmental news and issues, historical and cultural resources and outdoor activities.

This first issue of the new **New Jersey Outdoors**, now a 64-page quarterly, represents our commitment to keeping all of you interested and involved in the beauty, heritage, recreational offerings and environmental concerns of this diverse state.

We thank you for staying with us during the magazine's suspension (98 percent of you did) and ask that you continue to comment on the magazine's content by writing letters to the editor.

Following is a sampling of your responses to the survey.

The Editor

Environment

"Touching on environmental problems is good, especially if a solution is suggested, but don't act as if the world is coming to an end and we can't do anything about it."

"I least like your articles on the environment. They tend to be oversimplified."

"Use recycled/recyclable paper. We can deal with it aesthetically and it would promote a responsible environmental image." (*Editor's note: We hope to print on recycled paper beginning with the Fall, 1991 issue.*)

New Jersey Outdoors welcomes letters to the editor. Please include your name, address and daytime telephone number. Our address is NJO, NJDEP, CN 402, Trenton, NJ 08625. We reserve the right to edit letters for length and clarity.

Children

"As a Newark teacher, my copy of NJO always goes on the library table. The children always head right for it."

"Our children will be the major factor as to our earth's recovery. Can't we have more articles addressed to them?"

Carol Decker's Art

"The best feature by far is Carol Decker's painting and its accompanying description of her subject."

"Have framed many of Carol Decker's pictures. Have you ever thought about selling her prints?"

Hunting and Fishing

"Your well-rounded selection of articles is great. I don't like too many hunting or fishing articles in one issue."

"Some of my friends say there are not enough huntin' and fishin' stories. How about some interviews on the Flatbrooks, etc. ? (Get the first hand reaction from the hunters and fishermen.)"

"Please highlight a different species of local fish — color photos, how to identify, how best to catch and where best found."

"We love the deer that come into our yard and we hate seeing pictures of dead deer that hunters have killed."

"I find photos of dead animals offensive."

"I never read hunting or fishing articles."

"More on bear and deer."

Outdoors

"Could become more of a guide and handy schedule for the park system, environmental events and other outdoor activities that would encourage people to get outside."

"Add more local history. For many, 'outdoors' is not just hunting, fishing, camping, but history, folklore, ethnic spirit of the state."

Finances

"If the problem is financial I feel a new section should be added for financial advertising to fund any cash deficit."

"Perhaps all you need is to heavily promote. I hope you will never consider accepting commercial ads." (*Editor's note: We found that commercial advertising would not be profitable for us at this time. We are, as of this issue, offering items with the NJO logo for sale. See Marketplace, page 63.*)

Coverage

"The entire magazine is one of the most interesting I have seen and I've been a resident of this state for 64 years."

"I have been a subscriber of this magazine from day one and have seen its direction changed drastically for the worst."

"I have subscribed to NJO since the 1960s and sadly watched it change to a birdwatchers', hikers' and children's magazine."

"Please stop covering just North Jersey. Over half the state is ignored or given only token coverage. South Jersey has beautiful state parks and wildlife areas that deserve just as much attention."

"... do not care for the dense, statistic-laden articles designed to enlighten and inform the already informed environmentalist."

"There is something in it for the whole family."

"Your magazine truly covers an area most people don't know about, especially in other states. I live in Texas, and you would be surprised how many people here think of NJ as the turnpike only. Your magazine has changed some minds."

Gardens

Reeves Reed Arboretum

A large swath of yellow and white daffodils heralds spring at the Reeves Reed Arboretum in Summit, Union County. Following the subtle colors of winter, this vivid display marks one of many sharp contrasts in the single landscape that give the 12.5-acre enclave year-round appeal.

In February, witch hazel blooms on the site's woodland trail and orchids blossom in the greenhouse. As the spring equinox approaches, sprouts of skunk cabbage and jack-in-the-pulpits decorate the woods. In April, a phenomenal profusion of color arrives in the thousands of yellow daffodils that carpet an area called "the bowl," a large glacial kettle formed 10,000 years ago.

Then May ushers in its glorious assortment of flora, including flowering trees — dogwood, crab apple, fringe, magnolia and

cherry. Fragrant white and purple lilacs and multicolored azaleas add to the spectacle. Later in the month, colorful rhododendrons flower, grass shoots high in the bowl and white flashes of daisies appear. June brings mountain laurel and rows of roses that bloom in the formal garden.

During sultry July days, the day lily beds are resplendent in gold, red and orange. (Some varieties continue to flower through the season.) By midsummer, many field flowers sprout in the bowl, by then overgrown and drier. This is a good time to observe the arboretum's herb garden. High summer is the time to enjoy kaleidoscopic blooms in the rock-lined, serpentine perennial garden, which provides its own spectacles from early spring through late fall. An extraordinary variety of sequential flowers appears, ranging from astilbe and balloon flowers to foxglove and malva.

As summer wanes and fall arrives, the flora changes slowly. Overall, the abundant

deciduous trees do not wear their best finery until late October, when the sugar maples and red oaks blaze with color well into November. This colorful time makes a walk on the woodland paths especially enjoyable. The arboretum's woodland is a fine example of a typical eastern deciduous forest.

The garden walk is rewarding in any season. It is a good way to become familiar with some of the arboretum's more unusual vegetation: a huge European Beech called the Elephant Tree; a Franklinia Tree not seen in the wild since 1803; fig trees; the Bull Bay Magnolia; Silver Bell trees and a stunted Giant Sequoia.

Recently the arboretum added a wildlife habitat area to the walk. It attracts a variety of birds, butterflies and small animals that find well placed food, water, shelter and nesting sites.

In addition to the botanical attractions, the arboretum offers a wide range of educational events. A stately Colonial Revival



PHOTOS BY WALTER CHOROSZEWSKI

Above:
Leonard J. Buck Garden in Far Hills

Left:
Beginning in 1889, successive owners of the site of the Reeves Reed Arboretum cultivated daffodil, rose and herb gardens and trails. In 1974, the pending sale of the property prompted the community to hold a fundraising drive to purchase it and save it from possible future development. After additional funding support from the city of Summit, the arboretum became a nonprofit conservancy open free of charge to the public.

Spring Peaks across NJ

house, built as a residence in 1889 for the site's first owners, Mr. and Mrs. John Wisner, now serves as the arboretum's headquarters and center of activities. Workshop offerings there range from fall pruning methods to watercolor painting. There is a Sunday series of free chamber music concerts and lectures, and special educational programs in spring and fall are designed to mesh with the science curriculum in area schools. The arboretum's library contains 711 volumes of botanical reference books, plus books on gardens and gardening and travel guides featuring gardens to visit throughout the United States.

The Reeves Reed Arboretum is located at 165 Hobart Avenue in Summit, Union County. Open dawn to dusk. Dogs and picnicking prohibited. Office and library open Monday, Tuesday and Thursday, 9 a.m. to 3 p.m. A ramp is available for physically limited individuals. For further information, call (201) 273-8787.

By Chad Kopp, a freelance writer in Summit

Daffodil
(*Narcissus pseudo-narcissus*)



You can enjoy spring flowers throughout NJ at these and other public and private gardens.

□ Leonard J. Buck Garden

Spring display mid-April through mid-June: rock garden with more than 300 varieties of plants in bloom or in fruit, including lilacs, daffodils, primrose and azaleas
Hours: 10:00 a.m. - 4:00 p.m., Monday - Saturday; Sunday, noon - 5:00 p.m., spring and summer

Admission: Donation requested: \$1 per person. Fee for group tours, by appointment. Phone (908) 234-2677

Location: 11 Layton Rd., Far Hills (Somerset County)

□ Duke Island Park

Spring display April - May: standard wildflowers, Virginia bluebells
Hours: 8:30 a.m. - dusk, spring and summer

Admission: free
Phone: (201) 722-1200
Location: Old York Rd., Bridgewater (Somerset County)

□ Emilie K. Hammond Wildflower Trail

Spring display in May: more than 250 wildflowers and shrubs native to eastern United States; in May, flowering plants include dogwoods, azaleas, lilacs and snow bells

Hours: 8:00 a.m. - dusk daily
Admission: free
Phone: (201) 316-0749
Location: Main entrance on Mount Lake Blvd., in Boonton Township (Morris County)

□ Holmdel Arboretum

Spring display late April - May: flowering crab apple and cherry trees

Hours: 8:00 a.m. - 4:30 p.m. daily
Admission: free
Phone: (201) 431-7903

Location: Long Street Rd., Holmdel (Monmouth County)

□ Island Beach State Park

Spring display late April: beach plum and shade brush

Hours: 8:00 a.m. - dusk, Labor Day - Memorial Day weekend; 8:00 a.m. - 8:00 p.m. Memorial Day - Labor Day
Admission: parking fee, except on Tuesdays, when parking is free
Phone: (201) 793-0506

Location: south side of Seaside Park (Ocean County)

□ Presby Memorial Iris Gardens

Spring display peaks around Memorial Day: medium and tall bearded iris
Hours: daily from dawn to dusk

Admission: free
Phone: (201) 783-5974
Location: 474 Upper Mountain Ave., Montclair (Essex County)

*Annual Open House Saturday, May 25, 2:00 p.m. to 4:00 p.m.

□ George Washington

Memorial Arboretum

Spring display late April: redbud and crabtrees

Hours: 8:00 a.m. - 4:30 p.m., winter; 8:00 a.m. - 5:00 p.m., spring and summer
Admission: Memorial Day, Labor Day and weekends, parking fee of \$4.00/car
Phone: (609) 737-0623

Location: Main entrance Rt. 546, Titusville, 8 miles north of Trenton (Mercer County)

□ Cape May Plant Material Center

Please note: not set up as an arboretum or garden

Main purpose: research orientation for people with farmland

Spring display late April: primrose
Hours: 7:30 a.m. - 5:00 p.m., Monday through Friday; group touring with prior arrangements

Admission: free
Phone: (609) 465-5901
Location: Cape May, Rt. 9, Exit 13 off Garden State Parkway (Cape May County)

□ Cross Estate Gardens

Spring display late April: royal azaleas, silver bell trees, dogwood and peonies

Hours: 8:30 a.m. to dusk daily
Admission: free
Phone: (201) 377-2087

Location: Old Jockey Hollow Rd., Bernardsville (Somerset County)

□ Twin Lights State Historic Site

Spring display late April: dogwoods, lilacs, azaleas

Hours: 8:30 a.m. to 4:30 p.m., Wednesday through Sunday

Admission: free
Phone: (201) 872-1814
Location: Lighthouse Rd., Highlands, off Rt. 36 (Monmouth County)

Profile

PHOTOS BY MARK LENNIHAN



The Civil War era farm began as the site of a brick factory.

The Burchams change the bedding for their six pigs.



Keeping a Farm Afloat

Eleven miles upstream from where the Maurice River meets the Delaware Bay stands the Burcham farm, sole survivor among a string of farms that once lined the river's banks. A mile long, ten-foot high wall of mud and concrete prevents the river's tidal waters from flooding Janice and Jeanette Burcham's modest 35 acres and enables them to farm the rich land at the level of the river bed. Maintaining the dike is a daily struggle and a constant expense, but the 65-year-old twins insist on continuing the centuries-old tradition of dike farming.

Rich in natural clay deposits, the riverfront property was first settled just after the Civil War by Amaziah Burcham, who built a brick factory on the site. The land's first harvests fed Burcham's work horses, which hauled barges of bricks along an earthen dike to downtown Millville, six miles away. Unlike the farmers of yesteryear who shared the expense of dredging the river's bottom to fortify their dikes, Burcham's granddaughters are on their own. A break in the dike would flood the farm within 24 hours.

Aside from the heavy currents and storms that always plagued the river's farmers, today speed boaters zoom past the buoys too close to shore, ignoring the "Dike Area — No Wake" warnings and causing erosion that dangerously weakens the walls. Today's dike no longer consists of earthen walls, but is sustained by clean concrete, gravel and shellpile, all environmentally sound materials recycled from the refuse of the local clamming industry and demolition companies. Although the dike materials themselves are free, last year the cost of hauling the material out to the banks soared into the thousands. "As you can see," Jeanette said, "all our money is in the banks."

In addition to the dike, a sluice gate and holding ditch help regulate the water.

Throughout the farm, a network of drains and wooden pipes leads to a pond in the center of the property that serves as a holding ditch. On the river bank, the sluice gate controls the flow of water into and out of the pond. At high tide the sluice gate remains closed but when the tide is low, pressure from the holding ditch forces water out through the gate, past the dike and back into the river.

In 1989, the New Jersey Agricultural Society presented the Burchams with the Century Farm Award. This honor pays tribute to historical farms in the state and to the farmers who have worked on their land for generations. The farm is also under consideration for both the State and National Registers of Historic Places. Although the women appreciate the recognition, they know it cannot guarantee the farm's survival. They unhaltingly investigate preservation options, including land endowments or easements, to keep their land as a working farm.

On either side of the organic farm, the sunken remains of a dairy farm and an apple orchard serve as grim reminders of the challenge the Burchams face in maintaining their ancestral home on this piece of marshland. But each day, the farm turns into a churning life force at 5:45 a.m., as soon as the resident rooster declares a

new day. Janice begins her chores amid 200 bustling chickens, six insatiable pigs, 40 or so ducks, 20 geese and 40 babbling sheep that roam freely in the grazing fields. Sea gulls flock and squawk overhead, waiting for leftovers. Jeanette prepares for school. She is a substitute teacher in the Maurice River Township and the Millville school districts.

As the sun rises toward noon, Janice takes a break from hoeing to "pick up lunch." She makes 17 stops, gathering leftover cooked food and day-old produce from local restaurants and markets. "It's a good way to recycle," she said. "The food is always fresh and none goes to waste. Whatever the pigs don't eat, the seagulls will."

In spring, the sheep's coats grow heavy and the sisters prepare for their annual sheep shearing festivity. Last year more than 100 people attended, some of whom brought their own sheep for shearing. The resulting "wool-pool" is hauled by trailer to Rutgers University, where it is sold to the highest bidding mill. Occasionally, the women sell a few sheep and other livestock at the Cowtown Auction.

Like the wool, most of the farm's produce is sold privately. Each year the Burcham farm abounds with fresh hay, Silver Queen sugar corn and pole lima beans. They sell these crops but keep their

One of the farm's 200 chickens



The Burchams



Twins Jeanette and Janice Burcham: tradition keepers with non-traditional backgrounds

Sixty-five year old twin sisters Jeanette and Janice Burcham hold down the homestead now, but they weren't always "home-girls."

Commander Janice Burcham served in the U.S. Navy Corps as chief nurse aboard the USS Sanctuary from 1969 to 1971 during the Vietnam War. She received the Vietnam Service Medal, Vietnam Campaign Medal, Vietnamese Armed Forces Medal First Class, National Defense Service Medal, Meritorious Commendation Ribbon and the Navy Commendation Medal for her service. She was awarded a bachelor's degree at the University of Oregon and a master's degree at Columbia University.

Jeanette, who holds a master's degree from the University of Pennsylvania, practiced transportation law before the Interstate Commerce Commission for 23 years, specializing in trucking. Two years ago she traveled to China as part of a delegation of experts called in to consult on that country's transportation needs. She has also taught high school social studies in Washington State and in Egypt and now substitutes in the Millville schools.

In 1951 the Burchams' mother died and left the farm to them. Janice has worked full time on the farm since 1975, Jeanette since 1983.

Profile



If the dike breaks, the farm would flood in 24 hours.

garden's bounty of tomatoes, eggplant and peppers solely for themselves. All the Burchams' produce is grown organically. Pesticides are not used and chemical fertilizers are not needed on the farm, Jeanette said. Once a week during the winter, the sisters spread pig and chicken manure to fertilize the ground and once every two or three years they spread lime. Abstaining from the use of pesticides ensures the safety of the unique river environment, whose proximity to the farm makes it especially vulnerable to agricultural runoff.

At the end of each day, Jeanette returns from teaching. She joins Janice, and the two women finish a day's work out

in the fields together, just as the Burchams have been doing for over a century. One hundred and twenty-three years set like the sun into the river and gradually dissolve into the landscape.

"Life here is quiet," said Jeanette. "Peaceful," adds Janice. "Good for the soul. And we will bust our butts to keep it this way."

By Rachel Soifer, student intern from the journalism program at Rutgers University

Cityscape

Camden's Waterfront Revival

Today, one of the areas where Camden was first settled is the site of Ulysses S. Wiggins Waterfront Park, "an unparalleled public place for enjoying the Delaware River," according to Tom Corcoran, executive director of the Cooper's Ferry Development Association, which oversees the plans for this site.

The 17 acres of abandoned industrial waterfront property are now graced with red brick walkways and gently sloping grassy hills, carefully situated to take advantage of the sweeping views of the Philadelphia skyline that provide a backdrop for concerts held in the natural amphitheater at the river's edge.

The project was a joint effort of the Green Acres Program of the NJ Department of Environmental Protection, the National Park Service and the County and City of Camden. The park, named after Dr. Ulysses S. Wiggins (1897-1966), the son of a plantation slave who became the first African American physician in Camden County, and president of both the NJ Medical Association and the Camden chapter of the NAACP, lends itself readily to fishing, picnicking, photography and, with the completion of a 65-slip marina, boating. The marina represents the third of a four-phased development project begun in 1979. The fourth phase has received funding approval from the Green Acres program and is awaiting a land donation from both the Campbell Soup Company and General Electric. This phase will extend the length of the promenade to the General Electric Pier. Eventually the promenade will reach to the Ben Franklin Bridge.

The redevelopment of the area does justice to its and the city's origin. For years Camden was known as Cooper's Ferry, dating back to William Cooper's purchase of the ferry service to Philadelphia that William Royden had started in 1688. In 1764, William Cooper's great-grandson,



GREG JOHNSON

Ulysses S. Wiggins Waterfront Park, with view of the Delaware River, Ben Franklin Bridge and Philadelphia

Jacob Cooper, purchased land near Cooper's Point from his father and named the site after the Englishman Charles Pratt, Earl of Camden. The city was officially incorporated in 1828.

Notwithstanding its rapid commercial growth, the village from the start provided the proper ambience for literary achievement. Famed naturalist John James Audubon did much of his work on the American edition of his masterwork "Birds of America" here, and Walt Whitman, America's poet and Camden's most famous resident, settled here to revise his immortal "Leaves of Grass."

Wiggins Waterfront Park will soon be home to the NJ State Aquarium, a \$52 million facility developed by the NJ Sports and Exposition Authority and managed by the NJ Academy for Aquatic Sciences. Visitors will be greeted by a reproduction of a northwest NJ trout stream. But the dominant feature of the aquarium will be a 700,000-gallon open ocean tank with a 150-foot run.

In an effort that will recall Camden's

origins, the city is planning to revive ferry service from Penn's Landing in Philadelphia to a new pier to be built in front of the aquarium. The two ferryboats will resemble those used 100 years ago. Both the aquarium and the ferry service are expected to open this year.

By Gregory Johnson, principal planner, Green Acres Program

Volunteers

Somerset County: People Taking Action

Imagine government officials, educators, industry representatives, concerned citizens and community leaders all coming together, voluntarily, to solve their regional environmental problems. It sounds like a utopian idea, but that's just what's happening in Somerset County, where people from all walks of life are not only talking, but acting to ensure a safe, just, sustainable future.

The Environmental Stewardship Council of Somerset County is a new kind of environmental partnership, one that started from ground zero to create a personalized solution for Somerset County's environmental problems and may very well serve as a model to New Jersey's 20 other counties. The key word here is "stewardship" — the individual's responsibility to manage life and property with proper regard for the rights of others.

The council, created by the Somerset County Chamber of Commerce, began with a group of business people proposing to offer an event to educate the community about the business point of view on the environment. Edward Seliga, manager of environmental engineering for the Edmar Corporation and council treasurer, said, "Business is taking a leadership role these days in protecting the environment. Private industry can sometimes solve problems quicker than government. Many businesses within our community have a strong environmental ethic and are way ahead of private citizens as they are often better equipped than individuals to take on major recycling projects or other environmental initiatives."

The council has emerged into a county-wide environmental volunteer organization dedicated to solving the county's environmental problems. Currently co-chaired by John Kitchen, Somerset County Freeholder, and Regina



COURIER NEWS PHOTO BY DAVID BERGELAND

Desvernine, a longtime environmental activist, the council was originally the brainchild of Marguerite Chandler, owner of Edmar and former Chamber president.

The group first identified the environmental concerns of a range of county residents: environmentalists, students, educators, business leaders and concerned citizens. The Chamber held two electronic, interactive town meetings during which 250 students and 250 adults, representing a cross-section of the community, used an instantaneous electronic polling system to respond to a series of questions on environmental issues. A 50 member steering committee spent six months designing and developing the purpose,

statement and format for the system.

The findings of the town meeting were not all that surprising. Citizens expressed concern about all environmental issues raised, particularly those dealing with land use, open space and protection of natural resources. Hazardous waste and air pollution were not far behind, along with groundwater pollution and solid waste.

The day after the town meetings, the Chamber held a leadership conference using the same interactive electronic methodology to determine the council's agenda. The 51 community leaders represented the business sector, government, education and environmental organizations. Some of this group's concerns coincided with those of the

citizens and students: land use planning, transportation, environmental education, financing environmental programs and proposals, clean water, pollution and solid waste.

It is always easy to identify problems, but the real trick is resolving them. These leaders formed two subcommittees to get the job done: one for Land Use/Transportation and one for Solid Waste/Recycling. "They are becoming a force in the public discourse on environmental policy," said Seliga.

After holding three leadership conferences, (two more will be held this year) the group has set a charter with a plan for the subcommittees. The council will function within the environmental committee of the Greater Somerset County Chamber of Commerce and will also act as an advisory panel to the County's Board of Chosen Freeholders. A total of 20 members constitute the council, six from public agencies, six from the private sector, six from community organizations, one from the Chamber of Commerce and one from the County Board of Chosen Freeholders. Seliga estimates that the members spend at least half a day per week on council matters. Said Kitchen, "This very

unique blend of people from industry, government, education and environmental organizations will be invaluable in helping officials at all levels in making critical decisions concerning our environment."

Said Desvernine, "Under the leadership of Marguerite and John, our core group was inspired to continue meeting. We formally organized, brought in some additional key community representatives and the council is now evolving into a viable, productive and permanent organization. The support of both the Chamber and county government has been crucial to our success."

The council's subcommittees are already hard at work. Students for Environmental Awareness teamed up with the Somerset Alliance for the Future to raise \$15,000 as part of Global Releaf (a national reforestation program to help remedy global climate change and air pollution) to plant 10,000 trees throughout the county. The Solid Waste subcommittee is working with businesses and environmental groups to increase public participation in recycling. In addition, letters have been sent to packaging companies discussing efficient packaging techniques as a way

of reducing solid waste. The Land Use subcommittee will be participating in the county's six month study of open space and recreation needs. Said Ed Seliga, "We will provide the vehicle for public input. The county planning board is conducting this study and we want to make sure that people can live with it and support it when it's final."

Council secretary Ross Zito, supervisor of environmental services for the Somerset County Park Commission and director of its environmental education center, said the open communication among local government, local businesses and individuals is a democratic concept. "People are taking control to make things happen, not relying on bureaucracy to make things happen," he said. Zito believes the Environmental Stewardship Council of Somerset County to be a model of regional networking and hopes to see other counties follow suit.

For more information on the council, contact Edward Seliga at 908-560-9222.

By M. Erica Dankoff, DEP communications specialist

Left: Registering an opinion at the Earth Day '90 electronic town meeting is Jamie Mulholland, from North Plainfield High School, one of 250 participating students from schools throughout Somerset County.

Right: Sharing survey results at the first leadership forum at the Somerset County Environmental Education Center in Basking Ridge are (left to right) consultant Mike Rowan, with meeting co-chairpersons Freeholder John Kitchen and Marguerite Chandler.



COURIER NEWS PHOTO BY KATHY JOHNSON

Afield

PHOTOS BY ED NEAFSEY



Wildwood



Breaking waves at Island Beach State Park

Bicycling the Jersey Shore

The diversity of activities and attractions along NJ's 127 miles of coastline from Sandy Hook to Cape May are a microcosm of the diversity of the state. To fully appreciate its character, you must soak up the sun in your pores, feel the sand between your toes, and let the salt spray hit your face. A visit that treats the shore as a fast food meal simply does not do its enchanting nature justice. Which means you have to bicycle it. That's exactly what I did for six vacation days last May.

The first leg of the expedition ran from Spring Lake to the tip of Island Beach State Park. I started the trip just before dawn because there is no time more magical at sea than sunrise. When the sun's first rays crested the water, it appeared as though a tiny beam of fire shot across the ocean. As the remainder of the sun made its way above the horizon, it emanated a huge red radiance, which caused the sky and the water to merge, but within minutes the sun rose high enough so that the sea and sky separated. Those brilliant moments inspired me to sail down the empty boardwalk before taking to the pavement and crossing into Sea Girt. From there I headed to Route 71 south through Manasquan and Brielle. It merged with Route 35 as I crossed over the Manasquan River and entered Ocean County.

I made the most of the early morning hours and light traffic by riding on the highway instead of the road's bumpy shoulder. Within an hour and a half, I reached Island Beach State Park, and pedaled the next nine miles along my favorite section of the shore. Island Beach State Park is what NJ's coastline looked like to the Indians who inhabited it in its pristine state about 200 years ago. In contrast, the houses, bulkheads and boats tightly packed in along each lagoon on northern Barnegat Bay offer a snapshot of today's society.

The beach buggies were out in full force despite the early hour of the day. Many had spent the night there. License plates showed that fishermen from all over the tri-state area congregate here to cast lures into the rough surf. Across Barnegat Inlet sat Old Barney, which was beckoning me to start tomorrow's ride. I got out of the saddle to refresh myself with a walk on the magnificent beach lying between hilly dunes and a blue-green ocean. I took my time coming back to take photographs and to replenish my water supply. The sun was much higher and the air was significantly warmer than when I had started. Some of the layers of clothing that protected me from the early morning chill were now soaked.

Returning north through the park, I observed the beauty of the holly forest and hearty dune grass. I decided to ride along the boardwalk in Seaside Park. The stands and amusement rides are an unforgettable vision of summer for many young children, and a haven

for adolescents bent on an evening of romance. The ferris wheel, towering above, and the roller coaster, extending over the the ocean waves, were just as I had remembered them from my childhood. I rested at the bridge over the Manasquan River and viewed what seemed an armada of fishing boats in the marina. Just beyond the docks on the Brielle side of this river inlet sat a condominium complex, while another stood on the final strip of land in Point Pleasant that juts between the inlet and ocean. I returned home before noon feeling like the first day was a good omen of things to come.

On the second day, I started later. After all, I merely had to traverse Long Beach Island, which runs 18 miles from Barnegat Lighthouse State Park in the north and the warm shadows of Old Barney to Holgate in the south and the faint outline of the casinos. Sitting between Barnegat Bay and the Atlantic Ocean, the Island teems with structures suited for seasonal and year-round living. The strong northerly wind made it a perfect day for sailing the bay. I used the wind by cranking a big gear as hard as I could. A few weeks before the rush of the summer season, most of the traffic lights are blinking yellow. Within an hour, I arrived at Holgate and its protected habitat area for the endangered piping plover. During the return trip, I explored some of the Island's immaculate beaches, considered to be the finest in the state. As I reached the northern half of the Island, I studied the oddly shaped residences in Harvey Cedars and Loveladies, valued in the millions.

Once back at Barnegat Lighthouse State Park, I drank Gatorade and watched boats carefully moving in and out of the inlet. The inlet is one of the most dangerous waterways on the east coast. Its shifting sands make the channel tricky to navigate. The DEP is helping to build a new south jetty there to temper the currents and protect the beach. I also marvelled that there was precious little room to sprout new development anywhere.

Day three found me riding the Cape May County leg of the trip, from Cape May Lighthouse in Cape May Point State Park up the coast to Ocean City. Though a work day, birdwatchers and photographers were at the Point in droves. It was an exquisite day for any outdoor activity — gorgeous blue skies punctuated by a few puffy clouds, a sparkling sun and a cool easterly breeze. After I left the Victorian charm of our nation's oldest seaside resort, Cape May, I visited many of its renowned coastal wetlands. I saw an astronomical number of birds because May is a migratory month and NJ is on the Atlantic flyway. This spectacular visual bombardment persuaded me to take a break at Stone Harbor to birdwatch at the Wetlands Institute. At Ocean City I took a quick jaunt up to the boardwalk, where I found people out for a stroll in the pleasant weather.

I chose the same route — Great Egg Harbor Inlet, Corson's Inlet, Townsend's Inlet and Hereford Inlet — for my return adventure rather than ride along the Delaware Bay. I've ridden there before and it is quite lovely. Nevertheless, I had so thoroughly enjoyed the first half of the day's ride that I was intent on doubling my fun. Wildwood is the home of the "endless summer" and the state's widest beaches. However, biking through Wildwood this day was like traveling in a time warp because the strip of unopened hotels seemed surrealistic.

Day four was, amusingly, national "ride your bike to work day." It was also the shortest day of my trip. It covered the Atlantic County coastal area from Brigantine to Longport. Brigantine lies between the Atlantic Ocean and the Edwin B. Forsythe Wildlife Refuge. I circumnavigated this island, one of the prettiest locations on the coast. Once in Atlantic City, I headed for the boardwalk, which starts in the North Inlet area. Here, abandoned houses stand in ironic juxtaposition with the Showboat Casino and

the Taj Mahal. The countless casino patrons walking the boardwalk made me steer carefully through the center of town. I also had to contend with a stiff southerly wind that occasionally gusted strongly enough to stand me up. Undaunted, I dropped into low gear, spun the pedals and slowly rolled along the boards until my mission was accomplished. Once in Margate, I headed to the main drag, where I tipped my helmet to Lucy the Elephant. At Longport, I was finally able to reverse direction and take advantage of the wind as I headed back.

I woke up on the fifth day to the bane of all bike riders — rain! However, since I was ahead of schedule, I decided to pamper myself and sit it out. My four days in the saddle had obviously lessened the stresses of life and made complex decisions much easier to reach.

On day six, I left South Belmar and headed for Sandy Hook on the last leg of the trip. Steel gray skies meant a threat of rain, but I felt like gambling. I rode along the Belmar boards, where I glimpsed surfers taking on challenging waves. Once I crossed the Shark River Inlet into picturesque Avon-by-the-Sea, I followed Ocean Avenue past Sylvan and Fletcher Lakes. In Ocean Grove I traveled along Pilgrim Pathway before crossing Wesley Lake into Asbury Park. Riding through Miracle Mile, I noticed the city's slow progress toward rejuvenation. I continued the route north beyond Deal and Takanasee Lakes. Takanasee is the scene of weekly road races during the summer. As I neared Monmouth Beach, I observed a tall crane moving boulders to strengthen the Sea Bright seawall, which protects the roadway and town from the constant pounding of waves. Finally, I climbed the hill from Route 36 and entered Sandy Hook. I could barely see Twin Towers Lighthouse in Highlands through the fog.

Sandy Hook, part of the Gateway National Recreation Area, is the fourth most visited federal park in the nation. Here one can appreciate wildflowers, a lush holly forest and even a nude beach. Since a holly forest is sturdy enough to take root in sandy soil, it is prevalent in coastal areas that have been spared from development. I rode past the Coast Guard facility and Sandy Hook Lighthouse, one of the oldest on the east coast. Riding along Sandy Hook Bay, I saw a Navy frigate making its way

to Earle Naval Weapons Station pier. I filled my water bottles at Building 18, which houses two vigilant coastal environmental groups — Clean Ocean Action and the American Littoral Society. I needed to make tracks during the 23-mile return trip or pay the price of having the heavens open upon me. Despite the weather, brave fishermen were testing their skills on jetties in each town along the coast. I ended the trip where it began, at the immortal Spring Lake boardwalk, which has endured the ravages of nor'easters since it was constructed by the WPA in 1936. It was now time to tour Como Lake and go home for a well-deserved beer.

The sense of accomplishment I felt the next morning made up for aching muscles. I felt a deeper appreciation for the diversity and importance of the Jersey Shore and a renewed commitment to keeping it a beautiful and thriving place for all to enjoy. Whether you go to surf or swim, beachcomb or exercise, fish or birdwatch, boat or relax, the Jersey Shore has something to offer. That's why millions of New Jerseyans treasure it.

But I'm partial to biking it!

By Ed Neafsey, an attorney with the DEP who supervised the department's coastal monitoring program last summer



Inside DEP

P.O.E.T. Program

The NJ Department of Environmental Protection, which for two decades has been a national pioneer in comprehensive and stringent environmental policies, today is on the cutting edge of applied technology to address a newly recognized natural pollution problem (yes, nature can sometimes be a polluter, too). The pollutant in this case is radium, which finds its way into certain drinking water supplies, and the experimental technology administered by the department is a point-of-entry water treatment system, known affectionately as P.O.E.T.

While the scope and seriousness of the problem are only just now beginning to be assessed, the origin of the problem dates back perhaps five to ten million years, when the Hudson River flowed down along the NJ-Pennsylvania border into southern NJ. Rocks and minerals containing naturally-occurring radium were thus carried from the Hudson River Valley, the Reading Prong and the Newark Basin, and were deposited to form what is now known as the Bridgeton Formation. The Bridgeton Formation overlies the Kirkwood-Cohansey Aquifer, which supplies most of Atlantic, Camden, Cumberland, Gloucester and Salem Counties with their drinking water.

A few years ago, routine monitoring of municipal water supply wells by the DEP disclosed elevated levels of radium in several systems serviced by ground water from the Kirkwood-Cohansey Aquifer, leading the U.S. Geological Survey and the DEP to conduct a joint study to determine the source and extent of the radium contamination. Phase one of that study, conducted throughout 1988 and 1989, found that more than a quarter of the wells sampled showed concentrations above the state standard. While additional investigations continue to achieve

more definitive results, it is clear that both the Bridgeton Formation and the natural acidity of the water, which tends to mobilize the radium, are implicated in the high readings.

While medical science has yet to find conclusive evidence of an adverse health effect from radium consumption, elevated levels — levels far in excess of those found in the study — consumed over a long period of time may lead to an increased risk of cancer. For that reason, the Division of Water Resources within DEP has established a program to assist municipalities affected by radium-contaminated water in securing alternate supplies.

The alternative usually considered is connection to a public water system. But such connections are necessarily time consuming and invariably costly, especially in rural areas such as characterize much of South Jersey. That is where the P.O.E.T. systems come in and why the department is so excited about them. They promise an effective, reasonably inexpensive interim solution to the problem.

How do they work? Simply put, they are ion exchange treatment processes, the same

treatment used to remove hardness in water. The ion exchange process works just as its name implies. Ions present in the water (i.e., common hardness ions such as calcium and magnesium, or radium ions) are "exchanged" with ions of similar charge present on a filtering medium, here a resin, and are thus removed from the water.

How effectively this treatment will remove radium over a long period of time is the object of the pilot project now going on in homes in the affected area, where these modest systems have been installed at the point in the home where water enters, usually in a garage or basement.

Early results are promising. If additional results indicate such reductions of radium concentrations, these systems will provide an adequate safe water supply for the residents who would otherwise be forced to drink bottled water for an extended period of time. A final report on this treatment study is expected to be ready within a month or two.

Sharon Cummins, principal environmental specialist, Division of Water Resources, contributed information for this article.

ION EXCHANGE SCHEMATIC Raw water from the well enters the system through the inlet and runs through the resin in the mineral tank. There it exchanges unwanted hardness or contaminant ions with ions of similar charge present on the resin. Once saturated, a sodium chloride, or brine, solution is passed back through the resin to "recharge" the resin with its original ions. The displaced ions are discharged to waste.

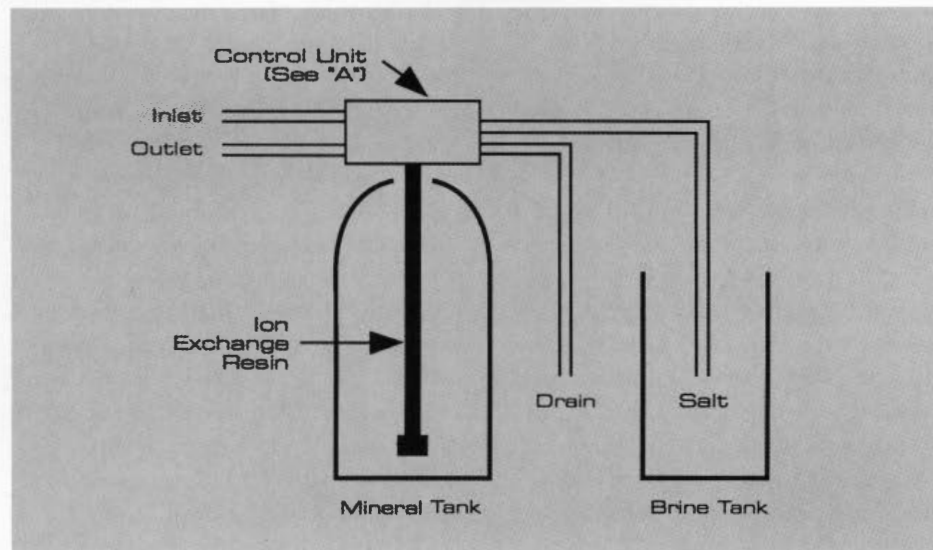


DIAGRAM BY DENISE BECK

Research

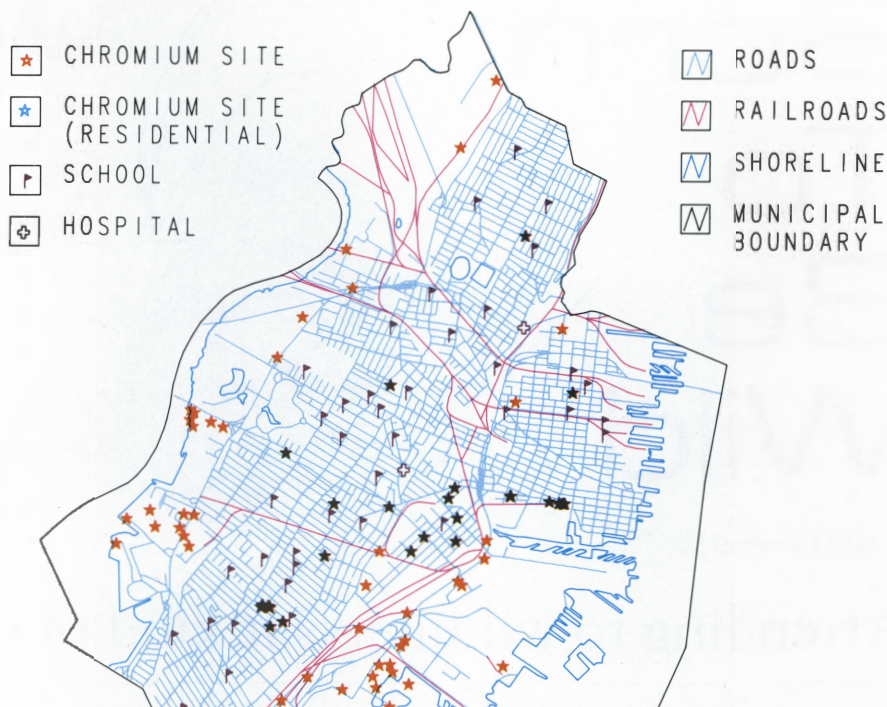
Tracking Environmental Threats

Among the many wondrous capacities of computer technology is one that will be playing an increasingly significant role in the protection of natural resources and human health. It is made possible by a computer mapping tool called the Geographic Information System, or GIS. Given the appropriate information, the GIS can correlate and display, on a single electronically produced map, an environmental threat such as a landfill, a hazardous waste site or an oil spill, with the geographical features that may be impacted by that threat, be they nearby streams, water supply wells or residential or school properties. It can thus serve a variety of functions, from crisis management, e.g., tracking a toxic plume to assure it doesn't hit a potable water supply, to providing definitive evidence to support the department's enforcement efforts.

The DEP has been using this technology since 1987, but its capacity is only just being fully realized since, like any other computer, the GIS is only as good as the information that is fed into it.

Essentially, two kinds of information are entered into the GIS: reference data, such as roads, municipal and county boundaries, geology and soil types, land uses and the like; and environmental monitoring data, such as well permits, hazardous waste sites, landfills and endangered species habitats. It can then bring these categories of information together, in any combination, on command, and display the relationship clearly on a map.

A look at specific applications of the GIS will demonstrate its utility. Last year an alarming increase in oil spills in and around the Arthur Kill doubled the quantity of oil spilled in the same region during 1989. The most significant of these occurred on June 7th, when the B.T. Nautilus spilled more than 225,000 gallons in the Kill Van Kull. In immediate response, the GIS mapped the path of the spill over the first several critical



By mapping chromium waste discharge sites in Hudson County, the GIS played a critical role in reducing exposure to chromium and minimizing its health threatening effects.

days. Plots of shoreline oiling and major slicks were produced from data provided by Emergency Response personnel.

Furthermore, the state's tough new oil spill prevention laws mandate a significant role for the GIS. While requiring oil companies to map their facilities, pipelines and other areas that could be affected by a discharge, the DEP is directed to develop base maps of adjacent wetlands, shellfish growing areas, waterways and coastal areas and other environmentally sensitive areas, so that emergency response to an oil spill can be guided immediately to the most fragile and most vulnerable natural resources potentially affected.

It also played a critical role in reducing exposure to health threatening chromium in Hudson County. The chromium waste sites identified were entered into the GIS. The site locations were then compared with the locations of schools and hospitals. Buffer zones were created around each of the schools to help identify those located in close proximity to known chromium sites. These schools were then targeted for additional testing by the department (see graphic).

But the state is not the only user of GIS technology. Several counties and municipalities are also exploiting its utility. Planned county applications range from mapping underground tanks or wells to tracking rabies cases. Such cooperative efforts enable local governments to run their programs more efficiently, and improve the management of NJ's environmental resources by all levels of government.

Though relatively early in its development, the GIS has enormous potential to not only supplement DEP's crisis management and environmental remediation efforts, but to serve as a unique land use planning tool as well. This will be especially relevant as the state's environmental programs move to a pollution prevention mode, wherein minimization of the combined impacts from all sources of pollution on the total environment will require the level of analysis and scrutiny that can be provided only by the most sophisticated technological equipment.

By Patricia Cummins, chief, Bureau of Geographic and Statistical Unit, DEP's Division of Science and Research

Born To Be Wild



By Mimi Dunne and David Chanda

Attending to wildlife: is it kind or cruel?

Every year, especially during the spring and early summer, the lives of many young animals are disrupted. People encountering young animals alone in the wild attempt to “save” them, assuming that they have been abandoned. Yet chances are the mother was in fact close by, helplessly watching as her young were taken. Though these people are well-meaning, their efforts to “save” the young wild animals often do more harm than good.

It is a normal human instinct to want to care for the helpless-looking young animal that crosses one’s path. These newborn or newly-hatched youngsters venturing into the world on shaky legs and untried wings are often learning survival skills from their parents. The perils of survival are to them part of the natural scheme of things. Some will not survive. However, those that do make it learn well and are most fit for their environment.

Instinctively, some animals quickly develop the skills they need to survive. Ducklings are walking and feeding moments after they are born. Robins, on the other hand, spend weeks in the nest being fed by their parents before they will go out on their own. Other animals develop survival skills over a longer period of time. Young raccoons must remain with their mother in a family group throughout summer and into the winter.

It is during this time of development that most problems arise. Some people assume that the young wildlife they have found are abandoned. They believe that the young animals are helpless and need to be saved. These acts of kindness often have the opposite effect. Rather than being left to learn their place in the world, young wildlife are removed from the wild. They are denied the most important natural learning experiences. Worse, most people quickly find that they do not really know how to care for young wild animals.

If the young animals do survive in captivity and are released back into the wild, they have missed the experiences that help them to fend for themselves and are more likely to perish. Their ability to find natural foods is limited. Their defenses against predators are lacking. They may find themselves unwelcome intruders in the territory of other members of their species.

Often, the care given to young wildlife unavoidably results in some kind of attachment to people. Upon release into the wild, those animals generally have little fear of humans. Some return to places where people live, only to be attacked by domestic animals or to be hit by cars. Some become nuisances by getting into stored food, trash cans or dwellings. People have also been injured by once-tamed wildlife.

All of these problems can be avoided if one simple rule is followed when coming upon young wildlife: **LEAVE THEM ALONE!** It may be difficult to do, but this is the real act of kindness. We must not allow ourselves to be fooled into thinking that the situation is different — in nearly all cases, young wildlife do not need to be saved. Resist the temptation to help them. Only when they are found injured or with their dead mother is there reason to do something, and the state’s wildlife laws are specific about what may be done legally.





Nearly all wild birds and mammals are protected under the law. They may not be legally taken from the wild or kept in captivity. Never consider them as possible pets; it is both illegal and unwise. However, a distressed or injured wild animal (other than a potentially dangerous species) may legally be kept temporarily with the permission of the Division of Fish, Game and Wildlife, provided that:

☐ the Division's law enforcement office in your area, the DEP Emergency Hotline or the Wildlife Control Unit is notified of the situation within 12 hours, and

☐ the Division Wildlife Control Unit prescribes a course of action that is in the best interest of the animal. Normally the problem will be referred to a wildlife cooperator who has the required experience and facilities to properly care for injured and distressed wildlife.

With its wide variety of wildlife and the greatest concentration of people of any state, New Jersey lands provide thousands of opportunities to "save" wildlife. However, with a little knowledge, a little understanding and a lot of common sense, we can all distinguish those situations which truly require our intervention and act responsibly toward our wildlife resources.



How to Treat Wildlife Humanely

Following are five instances in which you may encounter wildlife this spring. See if you would have handled them properly.

1. While walking in the thick grass along a far corner of your property, you accidentally kick open a nest of baby rabbits. They seem helpless and there is no sign of their mother. What should you do?

Although it may be tempting to save the cute little bunnies, they do not need to be rescued. Simply replace the top of the nest that you uncovered and leave. The mother will not return as long as you remain at the nest. Cottontail rabbits leave their young for hours while eating and return to the nest only to nurse the young. If you return the next day and find the nest empty, do not be alarmed. The mother has simply moved the young to a safer area.

2. A baby bird has fallen out of its nest in a tree. It seems so vulnerable on the ground and you are sure the neighbor's cat is going to kill it. What should you do?

Most people would bring the baby bird home in a box. Even if the young bird lives, how would you teach it to hunt for insects or to catch worms? The best thing to do is to put the bird carefully back into the nest. Don't worry about getting your scent on the bird; it will NOT affect the mother's care. If you find that a nest has blown out of a tree, put it back in the tree securely and place the nestling back in the nest.

3. While walking through a small woodlot, you notice several baby raccoons on the ground near a large hollow tree. It appears they may have fallen out of the hole way up in the tree and the mother has abandoned them because she can not put them back in their nest. What should you do?

LEAVE THEM ALONE! They are wild animals that belong in the wild. Most likely the young raccoons are merely exploring and their mother is nearby. They are probably old enough to be fully capable of climbing back up the tree to their den when they are ready to return. However, if they are too young to climb, the mother will carry them back.

4. While hiking along the edge of a field, you encounter an abandoned fawn. It just lays there perfectly still and there is no sign of any other deer in the area. What should you do?

Each year the Division of Fish, Game and Wildlife receives several frantic calls from people who save fawns in this situation, but, once back at their house, they realize they don't know how to care for the animal. When you encounter a fawn in the wild, simply enjoy it and move on, disturbing the fawn as little as possible. The reason the fawn is lying perfectly still is that nature has taught it to remain motionless to avoid detection by predators. The fawn thinks it is hiding from you. If you have already brought the fawn home,



immediately take it back to the spot where you found it and leave it there. The mother should come back again looking for the fawn. Even one to two days after removal from the wild, fawns have been successfully reunited with their mothers by their being returned to the place where they were found. When you picked up the fawn, the mother was probably eating not far away. Usually young fawns are quite safe when left alone because their color pattern and lack of scent help them remain undetected until their mother's return.

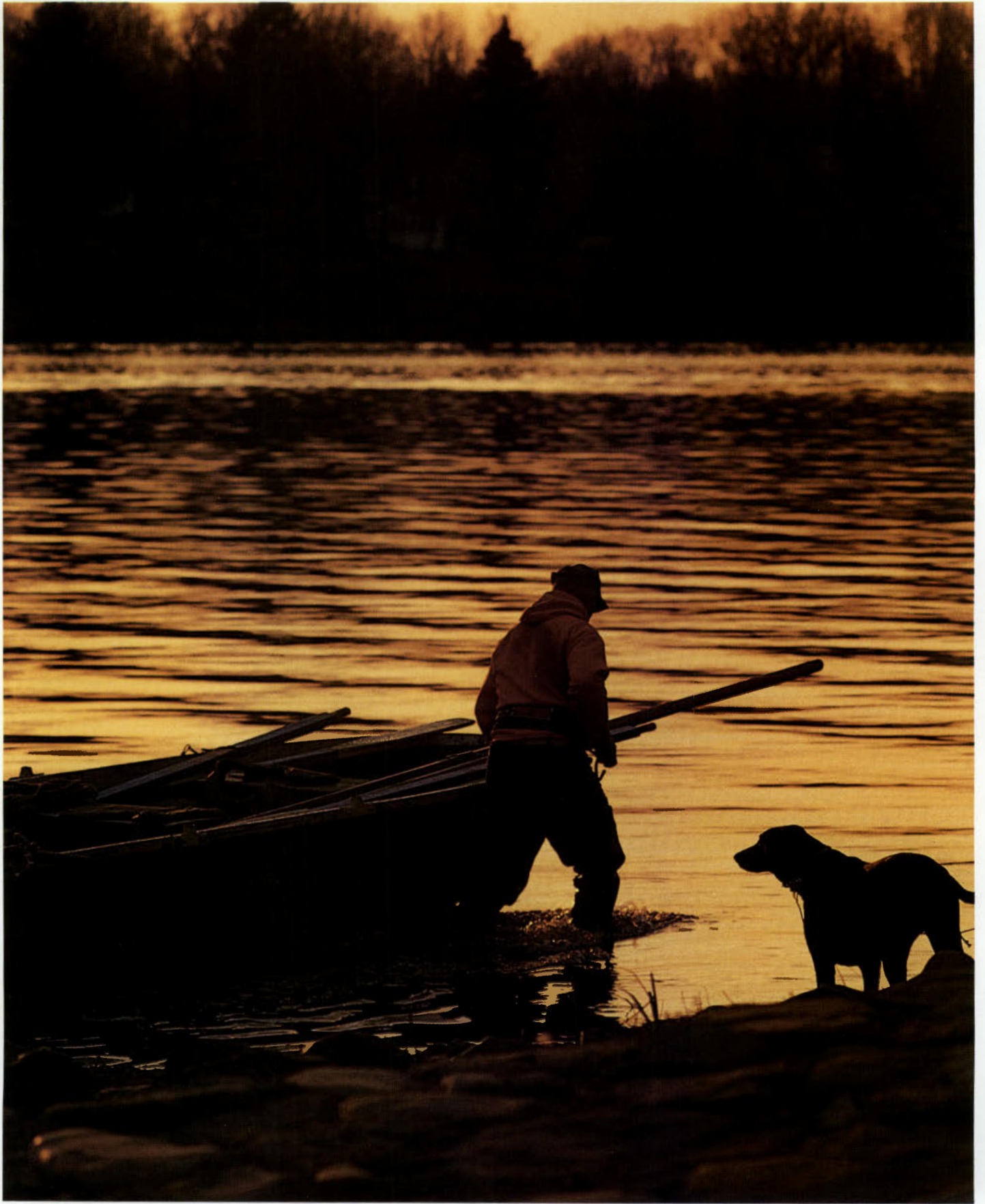
5. A storm knocks a tree down in your backyard. The next morning you find a nest of young squirrels. You also notice that the parents did not survive the fall. What should you do?

Unless you are a licensed wildlife rehabilitator, resist the temptation to save these young animals yourself and immediately contact the Division of Fish, Game and Wildlife's Wildlife Control Unit at the Clinton Wildlife Management Area, RD 1, Hampton, (201) 735-8793. They will help you find a wildlife cooperator who knows how to properly care for injured and distressed wildlife.

How did you do? If you answered all five questions correctly, you are either Aldo Leopold or a close relative (Aldo Leopold was a forester, game manager, ecologist, professor and author of *A Sand County Almanac*, an analysis of environmental ethics and stewardship.)

David Chanda is chief of the Office of Information and Education in DEP's Division of Fish, Game and Wildlife.

Mimi Dunne is a wildlife biologist and coordinator of NJ's Project WILD education program in DEP's Division of Fish, Game and Wildlife.



Of Shad, Time and the River

By Jim Morris

This spring about 10,000 people will gather on the banks of the Delaware River to celebrate an unlikely hero — the American shad.

This year's Lambertville Shad Festival on April 27 and 28 will mark the 10th annual celebration of the fish that is known among even its most devoted fans as the "poor man's salmon." Many longtime shad fishermen readily admit they care little for the taste of this bony, somewhat gamy fish. And many first-time visitors will arrive having never fished, tasted or even seen a shad.

Yet the annual spring shad run on the Delaware is cause for celebration. The festival highlights the return of the shad to the Delaware. Centuries of the combined devastation of dumping raw sewage, oil and other industrial and agricultural pollutants had literally flushed the shad out of the river by the 1950s.

In 1953 and 1956, there were no shad — none — caught around Lambertville during the spring run, according to Fred Lewis, whose family has been fishing shad commercially since 1898. The shad population has crashed several times to near zero levels, when weeks of fishing produced fewer than 60 shad during the past 50 years, Lewis said.

Today, the shad has rebounded so far that during some runs in the last three years, the Lewis fishing nets caught more shad than the crew could physically pull in, he said. In 1989, more than 830,000 shad were estimated to have made the spring spawning run up the Delaware, according to population estimates by the Division of Fish, Game and Wildlife (FG&W) of the NJ Department of Environmental Protection. The 1989 population was the largest in 15 years, and it was almost seven times the estimate of 110,000 in 1975, the first year modern population estimates were made.

"We've seen a continual gradual trend upward," said Arthur Lupine, senior fisheries biologist, who compiled the report for the Division's Bureau of Freshwater Fisheries. "I don't think we've reached a plateau. There's room for more growth." The report noted that shad restoration projects in the Lehigh and Schuylkill Rivers, tributaries of the Delaware, should contribute to future shad population increases, provided pollution control programs continue.

Shad are increasing in size as well as numbers. In 1964, the book **Familiar Freshwater Fish of America** lamented the decline in size of the American shad from 12 pounds in its heyday to a maximum of about eight pounds. Today, shad of eight pounds are common, and shad as large as 11 pounds have been caught recently, Lewis said.

Despite recent successes, the shad population remains far below the levels attained before pollution became its fiercest predator. Early warnings about the river quality surfaced nearly a century ago, including an 1894 report of the Fish Commissioners of Pennsylvania that called for "thorough protection of the upper river and spawning grounds" to ensure the shad's future on the Delaware.

For decades, warnings were ignored, and the river paid the price in dying shad. The long-term destruction of habitats and decline of water quality has made it impossible to reach the historical high shad population levels, Lupine said. Cynthia Poter, who monitors the river as the appointed Delaware Riverkeeper, also cited toxic pollutants, such as the pesticide chlordane and polychlorinated biphenyls (PCBs), which have been found in channel catfish, as persistent threats to the river and its inhabitants. "Toxics are a pervasive problem. Their long-term impact on the food chain is unknown," she said.

Nonpoint source pollution — the stormwater runoff from urban, suburban and agricultural areas that cannot be traced to a single discharge point — particularly threatens the water quality in the upper Delaware, Poter said.

In the heyday of the shad and the fishery in the early 1900s, Lewis's father took unpaid,

The pools in the river around Lambertville make it an ideal spot to catch a run of shad.



The Lambertville Festival offers shad cake, shad gumbo or shad chowder, a Shad Hop, fish stories and fish games. The central event is the riverside shad dinner, served to more than 700 people last year.

ten-week leaves of absence from the Union paper mill across the river in New Hope, Pennsylvania, and his income from those ten weeks of fishing exceeded his mill paychecks for the rest of the year, Lewis said. During those years, farmers would buy loads of shad during their trips to Lambertville and sell them to neighbors on the way home, he said.

With the decline of the shad population, the fishery turned to a part-time operation in the 1940s. Today, the Lewis fishery is the only commercial shad fishing operation left on the river, although it is more a tradition than a business, Lewis said. Shad can be caught only during their spawning run up the Delaware, which begins around Lambertville in late March as the water temperature increases, and ends in early May, Lewis said. This short season makes commercial shad fishing a part-time business. The crew of four or five gathers after work to fish for about three hours an evening, enough time to make three or four runs in the boat, he said.

Back on shore Lewis's wife, Nel, sells the evening's catch to customers who have phoned in their orders and wait by the river for their fish. "We sell our fish right where we catch them. Our customers want to see their fish still kicking," Lewis said.

The city of Lambertville elevated the shad to festival status in 1981 after the fishery reported a record catch of more than 6,000 shad, Lewis said. The first Lambertville Shad Festival was held the next spring, and the popularity of the event has grown steadily since then despite bad luck with rainy festival weekends, said Edith Mosig, who coordinates the festival for the Lambertville Chamber of Commerce. The festival now features craft exhibitors and a poster auction that raises scholarship money for local arts students and widens the appeal of the festival.

From the start, festival organizers have faced the challenge of figuring out how to celebrate a fish. Not surprisingly, the festival offers countless ways to eat shad. "Rather than stepping up to buy a hot dog, you can get a shad cake, or shad gumbo or shad chowder," Mosig said. The Elks Club joined in with a Shad Hop, and fish stories and fish games have been featured on the Elks Club lawn. The central event of the weekend is the riverside shad dinner, served to more than 700 people last year, Mosig said. Local restaurants also dream up innovative ways to serve the same fish. Completely shad-free food vendors cater to the people who have neither developed a taste for shad nor care to.

While the shad is hailed in Lambertville as the returning hero of the river, an awkward smile often greets questions about its taste. Shad is no universal delicacy. "You love it or you hate it" is the common wisdom around town. J.B. Kasper, a river guide with 30 years experience fishing for shad on the Delaware, has caught as many as 50 shad on a good day, but he seldom eats them. "A lot of people aren't fond of the taste, and it takes good skill to bone them," said Kasper, author of **Fishing and Discovering the Delaware River**.

Why, then, is there so much devotion to a fish that many people prefer kept off the menu? An anadromous fish, the Delaware shad is spawned in the river and swims to the ocean where it matures over three or four years before returning to swim upstream to reproduce at its original spawning grounds. A hearty shad unimpeded by predators or pollution may make the river-to-ocean-to-river trip three times before it dies, Lupine said. For the sport fisher with

For more information on the festival, call (609) 397-0055.



In 1953 and 1956, there were no shad caught around Lambertville during the spring run. In 1989, an estimated 830,000 shad made the spring spawning up the Delaware — the largest population in 15 years.

well-traveled shad on the line, that means a fish long on fighting spirit and the muscle to back it up.

“The shad is a good fighter,” Kasper said. “It’s like fighting someone who works out versus someone who doesn’t. The shad is in good shape.” Ranging from three to 11 pounds, shad also grow bigger than many other sport fish, he said.

In fact, the shad’s life story closely parallels the salmon, the fish often filmed valiantly jumping upstream to its spawning ground. The shad endures the same hardships, but the salmon is bigger (almost three times the weight) and the shad cannot leap as high to overcome obstacles swimming upstream, Kasper said. The salmon story also has tragic drama because salmon die after they spawn. Shad can repeat the trip.

Along the Delaware, however, the shad is king. “You don’t have to go to Nova Scotia or Maine to get the same thrill (as fighting salmon). That’s why it’s called the poor man’s salmon,” Lewis said. The Division of FG&W estimated in 1989 that recreational shad fishing generated more than \$4 million in lodging, meals, travel and equipment purchases in the area, where tourism is the largest industry. “The Delaware is considered the prime river for shad fishing,” said Kasper, vice president of the Delaware River Fishermen’s Association.

Last year, one observer counted 89 fishing boats — before losing count — from the bridge at Lambertville, Lewis said. The Delaware is a series of rapids and pools, and the shad rest in pools before tackling the next set of rapids upstream, Lewis said. The pools in the river around Lambertville make it an ideal spot to catch a run. But there are no guarantees in shad fishing. “If you don’t know where they’re running, you can sit there all day and never catch a thing,” he said. If you do catch a run, you’re in for a challenging fight with a fish that has no intention of giving up. And shad advocates say you’ll understand why this fish has earned its own festival.

Jim Morris is a freelance writer living in Bernardsville, and assistant director of the Office of Continuing Education at Cook College.

American Shad

Shape: well compressed body

Color: predominantly silver, with greenish hues on its back

Average weight: three to five lbs.

NJ’s record weight: 11lbs., 1oz.

Most popular lure: shad dart, made of lead

Spawning method: anadromous (live in salt water, ascend coastal rivers to spawn); juvenile shad

migrate to sea in late fall, males return in four years to spawn, while it takes the female five years to mature;

only about five percent of spawning population survive to spawn again;

shad enter the Delaware Bay from the Atlantic Ocean in spring when water temperature is approximately 41 degrees; most shad return to the waters where they were born by using their olfactory sense to smell familiar chemical substances of individual rivers

Spawning ground: Delaware Water Gap and Hancock, NY; in the last decade, limited spawning activity documented below the Gap, between the estuary in Trenton and Philadelphia

Economic value: shad spawning runs provide a recreational fishery estimated at more than \$4 million

Water Quality in the Delaware

The recovery of the American shad population in the Delaware River in the past 20 years is a success story about improved water quality, but is it the whole story? Some observers see the Delaware as an example of how environmental regulations have improved the quality of the river since its darkest days in the 1950s, when pollution choked the shad out of the river. Critics see the Delaware as an example of how much remains to be done, and they believe it is too early to celebrate success in the Delaware's battle against pollution.

The fate of the shad in the 330-mile Delaware over the past century has been a widely followed barometer of the river's health. Following peak populations estimated at four million, decades of pollution effectively eradicated the fish from the river by 1953, when no shad were reported in the Lambertville area, once a hub for commercial shad fishing. After a series of recoveries and crashes, the population began a steady recovery around the mid 1970s as the number of shad in the Delaware increased from 120,000 in 1975 to 830,000 last year, according to estimates of the NJDEP's Division of Fish, Game & Wildlife (FG&W).

Many observers see a direct correlation between the recovery of the shad and the upgrading of several sewage treatment plants that discharge into the Delaware, particularly in the heavily industrialized Camden-Philadelphia area in the Delaware estuary. More than 50 treatment plants discharge 750 million gallons of treated wastewater each day into the Delaware, and more than \$1.5 billion has been spent to upgrade them in recent years. These upgrades were required by the federal 1972 Clean Water Act, which set a standard for all rivers to become "fishable and swimmable."

Arthur Lupine, senior fisheries biologist with the Division of FG&W's Bureau of Freshwater Fisheries, said the treatment plant upgrades have helped reduce the "pollution barrier" in the Delaware estuary. The barrier is an area where dissolved oxygen in the water, which is critical to healthy aquatic life, has been reduced by wastewater discharged into the river. Lupine said the pollution barrier has been cut in half, from approximately 60 miles to 30 miles. The duration of the barrier also has been reduced from 12 months a year to June through October, when oxygen demand is heaviest, he said. "I think we've seen a sincere effort to improve (water quality). There's been a lot of money spent, and we've seen good results."

Recent reports by the Delaware River Basin Commission (DRBC), the interstate agency that sets water quality standards in the Delaware, confirm the improvement in the Delaware estuary, where water quality has been the most degraded. "This portion of

the Delaware has vastly improved in recent years due to pollution abatement effects," a 1989 report found. The same report also cited the need to closely monitor violations of discharge permits "in order not to jeopardize the tremendous gains in water quality improvement to date."

In fact, several DRBC reports on the Delaware follow the same theme: optimism about past improvements tempered by warnings of potential problems. For instance, the same report that cited improvement in the estuary also warned that "toxic levels at some locations and in some fish are high enough to generate major concern." The report found water samples that exceeded limits for heavy metals, and it found high levels of toxic organic compounds and contaminants in river sediments.

As riverkeeper for the Delaware, Cynthia Poten monitors the river and the agencies charged with protecting it. "My job is to protect the Delaware River and its habitat in the broadest possible sense. It's my job to give the river a voice," Poten said.

Poten acknowledges that water quality has improved by some measures, but she cites other important measures of quality show a river in poor health. "Toxics are a pervasive problem. The water may look clean, but you don't know the long-term effects of these toxics," she said. Toxic pollutants are responsible for advisories against eating channel catfish and American eel and some white perch, she noted.

Poten also fears that the easiest ways to improve water quality have already been accomplished by upgrading sewage treatment plants. Further improvements will require tackling less identifiable sources, such as nonpoint source pollution in the upper Delaware. This pollution includes the overland runoff carrying contaminants such as oil from roads, pesticides from farms and fertilizers from lawns, and cannot be traced to any one point or source. "Until recently, we have gone in, paved over the surface and ignored the consequences. That has to change. There has to be a fundamental change in the way development is made," Potent said.

Recent reports have noted other pollution sources that degrade Delaware River quality. Some older cities along the estuary still have combined sewer systems for stormwater and sewage. During storms, the systems become overloaded and discharge raw sewage into the river.

Raw sewage discharges and malfunctioning treatment plants were linked to fecal coliform counts more than seven times higher than allowed standards in tributaries of the upper Delaware. A review of these problems indicates serious problems remain in the Delaware.



The rings on the trees in this forested wetland indicate the amount of excess water stored by the woodlands during wet weather.

Why Save Wetlands?

By Priscilla Hayes

"If there is any fact which may be supposed to be known by everybody and therefore by the courts, it is that swamps and stagnant waters are the cause of malaria and malignant fevers, and that public power is never more legitimately exercised than in removing such nuisances."

U.S. Supreme Court, the Swamp Land Act of 1850

"Wetlands are areas of great natural productivity, hydrological utility, and environmental diversity, providing natural flood control, improved water quality, recharge of aquifers, flow stabilization of streams and rivers, and habitat for fish and wildlife resources."

President Jimmy Carter, May 24, 1977

When environmental consciousness began to spread in the 1970s from a relatively small number of scientists to the general public, the image of wetlands began to improve. Since then, NJ has been a leader in efforts to protect wetlands, passing a Coastal Wetlands Act in 1970, the Pinelands Protection Act in 1978 and the Freshwater Wetlands Protection Act in 1987. Today, there may be controversies about the exact boundary of a wetland or the interpretation of particular clause in a law or regulation governing



The Great Swamp contains prime nesting grounds for great blue herons, and breeding and nursery areas for the bog turtle and blue-spotted salamander, all on NJ's lists of endangered or threatened wildlife.

wetlands, but almost no one argues that they aren't worth protecting. It is useful, however, to remember how far we've come.

New Jerseyans shared the view of them as merely swamps and marshlands for a long time, especially when it came to coastal (estuarine or saltwater) wetlands. In the late 1800s, vast areas in the Hackensack Meadowlands were filled. Northeastern NJ hardly shows a fraction of the estuarine wetlands it once had — between 1925 and 1975 it lost more than 23,000 acres of these marshes. In the years between 1953 and 1973, the state as a whole saw nearly 62,000 acres of coastal wetlands converted for development. Today it is estimated that NJ has approximately 300,000 remaining acres of coastal wetlands.

Inland wetlands suffered their share of development, too. Although figures are not available for these coastal wetlands, it is likely that during the 1960s and 1970s approximately 200,000 acres of inland wetlands were developed (leaving an estimated 300,000 acres in the Pinelands and an additional 300,000 or 400,000 acres in the rest of the state).

But in spite of all this development, in the middle of an urban

area, when you least expect it, you can still find yourself on a dead end road facing nothing but trees and swamp.

A good example is the Bear Swamp, a wetlands located just a few miles outside of Trenton and within sight of the burgeoning Route 1 strip. If you take Route 295 south from Route 1 and stop on the overpass over Amtrak's Northeast Corridor line, you can get a bird's eye view of Bear Swamp. Getting in is harder, since it requires both a knowledge of local backroads and permission from the private owners. Inside, all you will see are a variety of trees and grasses and other assorted vegetation. Around the edge of the wetlands are houses and new office complexes and Quaker Bridge Mall. What you won't see is what would happen if Bear Swamp were filled and developed to resemble its surrounding human environment.

Dr. David Rose of Trenton State College has recently been studying Bear Swamp as part of an ongoing 14-year project on the Assunpink Creek system. Bear Swamp, with its low lying, water tolerant vegetation and soils, collects water and holds it during wet weather. Later, when dry weather could otherwise reduce the Assunpink to a mere trickle, the Bear Swamp lets water out and maintains flow in the creek. Rose warns that developing this wetland would mean increased wet weather flooding of the previously developed areas downstream in Lawrence and Ewing townships, since rainwater would no longer be detained for any period. During dry weather, the major source recharging the Assunpink would be the discharge pipes from the Ewing-Lawrence Sewage Treatment Plant.

So the Bear Swamp goes on quietly teaching us that for all our manipulation of nature, we remain part of an interrelated ecosystem. We prosper the most when we allow wetlands to remain undisturbed, for they perform vital services for us and everything else in nature.

Flood control

Flooding has always occurred in nature, but it has been a problem only since people started building houses, roads, and factories close to rivers and streams. Flooding is simply nature's way of dealing with extra water caused by either seasonal changes (such as melting snow in the spring) or intense storms. Wetlands plants slow down rushing waters and help store large amounts of floodwater. As flooding subsides, water is released gradually to surrounding streams and water bodies. While most plants and trees found in wetlands do not thrive if they are constantly flooded, they can withstand the wetter conditions that go with periodic flooding and even help reduce soil erosion, since they bind soil in place. Upland buffer or transition areas around wetlands provide more storage room for floodwater, while also helping to protect the vegetation in the wetland itself and sometimes offering a nice pathway or park.

When wetlands are filled in for development, water has no place to collect. It simply runs across the uplands artificially created by development, and rushes downstream towards what-

ever objects may be there, including basements, parking lots, roads and buildings.

Pollution control

Eighty percent of the geographic area of NJ draws drinking water from aquifers with a limited recharge area, which means that much of NJ is especially vulnerable to the effects of groundwater pollution. Runoff from agricultural and urban areas carries with it large amounts of excess nutrients, such as nitrogen and phosphorus, as well as other pollutants. Wetlands plant life provides pollution treatment by grabbing and using waste nutrients. Heavy metals bind to sediments, which in turn collect and remain in wetlands. If undisturbed, wetlands can filter out pollution before it reaches groundwater. Similarly, water discharged into surface water bodies from wetlands shows greatly increased quality compared to runoff which originally entered the wetland.

However, this natural capacity of wetlands can be overtaxed. Existing wetlands sometimes lack the capacity to serve as detention basins for new development, which increases stormwater loads. Furthermore, many pollutants, like herbicides and insecticides from lawns and farms, may be toxic to wetlands plants and animals. Again, a transition area is vital to protect wetlands from overexposure to pollutants from adjacent development.

Recharge of ground and surface waters

Just as flooding is a natural, often seasonal, phenomenon, so too is drought. During periods of little rain, fish and other aquatic life may rely on the waters that wetlands stored earlier, and released slowly into open water bodies such as streams and ponds. Indeed, wetlands may sometimes have to be protected against release of all water during such periods (see discussion of Manasquan River Reservoir, in sidebar on NJ wetlands).

Stored water from wetlands serves to recharge groundwater, too, guarding against depletion of an underground aquifer. This, in turn, benefits those who rely on that underground water for fresh drinking water.

Wildlife and human habitat

Unlike floods and dry spells, which require the wetlands to serve a specific function on a seasonal basis, the needs of wildlife for a safe, unspoiled home extend throughout the year. In the spring, wetlands provide the only available private nursery areas for many animals bringing up their young, from log turtles to great blue herons to blue-spotted salamanders, all on NJ's lists of endangered and threatened wildlife. Twenty of the 57 animal species on these lists are directly dependent on freshwater wetlands. Another 15 or so endangered or threatened species use freshwater wetlands, and still other such species rely on saltwater wetlands.

The wetlands provide food sources for many other animals year-round, including deer, bear and other large mammals. In fact,

Legal Protection for NJ Wetlands

NJ's Freshwater Wetlands Protection Act, passed on July 1, 1987, made headlines as one of the strictest wetlands protection laws in the country. But various earlier federal and state laws, starting in 1970, had begun to protect wetlands.

Using the Wetlands Act of 1970 and the Coastal Area Facility Review Act of 1973, the NJDEP was able to reduce annual coastal wetlands losses from an average of 3,200 acres to fewer than 50 acres. For both freshwater and coastal wetlands, Section 404 of the federal Clean Water Act of 1977 restricts the amount of fill which may be placed in any wetlands to ten acres or less, and requires a written permit from the U.S. Army Corps of Engineers. A host of other state and local provisions gave some protection to wetlands.

But these laws and ordinances often used different definitions of wetlands and conflicting permit approval criteria. The Freshwater Wetlands Protection Act was passed in an attempt to afford freshwater wetlands more comprehensive protection. This act regulates practically every activity that may take place in a NJ mapped wetland, including filling, dumping, drainage or disturbance of the water level or water table, destruction of any plant life, and placing any obstruction in a wetland. The state act also regulates activities in the upland areas directly adjacent to wetlands, called transition areas, since the noise, traffic and pollutants from our human environment can harm otherwise unprotected wetlands.

The NJDEP is currently preparing new wetlands maps, county by county. These maps, with a scale of one inch to 1,000 feet include infinitely more detail than any previous maps. The maps are now available for Mercer, Middlesex, Monmouth, Atlantic and Hunterdon Counties and will be completed for the rest of the state as funding permits over the next year.

For more information on wetlands protection, contact the Division of Coastal Resources, CN 401, Trenton, NJ 08625, or your municipality's environmental commission.

freshwater wetlands, and their cousins, salt marshes, are among the most productive of the world's ecosystems, since the plants living there tend to be highly efficient at using sunlight to make plant tissue. Moreover, as already noted above, wetlands trap all sorts of nutrients and organic matter that enter them, which is used as nourishment by plants there.

Wetlands also tend to have a more moderate climate than the towns, suburbs or cities around them. In hot weather the wetlands tend to "air condition" better than uplands. In cold weather, the wetlands retain more heat.

Humans, too, have been wise enough to recognize the unparalleled recreational opportunities wetlands offer during the seasons. Wetlands allow glimpses of many species of birds, rare plants and animals. Hiking and horseback riding may be available, especially in wooded wetlands, which tend to have less standing water. Hunting and fishing is permitted in some wetlands, and in a few wetlands areas, including some in the Assunpink Wildlife Management Area, muskrat trapping is popular.

Raise property value

Current laws require that most remaining wetlands must be protected from new development. "The best developers are mapping wetlands out up front, and planning around them," said Rob Piel, Chief of NJDEP's Bureau of Freshwater Wetlands. "They recognize that leaving this open space, including the transition areas, raises property values of the homes or offices built on the site, and provides unique aesthetics."

Andrew Didun, the environmental review officer for the NJDEP's Division of Fish, Game and Wildlife, has a collection of slides that he uses to show people some of the things that can happen when wetlands are destroyed. But he thinks children, as well as adults, are key to reeducating our society to the value of wetlands.

"We need to start teaching kids about wetlands in junior high and high school," said Didun. "We need our kids to come home and say, look, we have wetlands right here in our town. What can we do to save them?"

Identifying Wetlands

All of the state's parks and natural areas contain wetlands as a part of their ecosystems. Wildlife may range back and forth between wetlands and their upland neighbors. Human visitors may go from one to the other, similarly unaware that an invisible boundary has been crossed. Observe carefully, and after a while you won't have to step into a swamp to know you've found wetlands.

In NJ, wetlands fall roughly into four types. Salt marshes and tidal marshes lie along coasts or estuaries. Plants found here must be able to tolerate high levels of sea salt, and indeed may develop an ability to "sweat off" excess salt. The salty or brackish waters here nourish fish and shellfish, which in turn provide food for wetlands birds and wildlife.

Classic freshwater marshes may lie adjacent to larger water bodies such as lakes and rivers, and they tend to collect a lot of water year-round.

Many people might not recognize a wetland in a wood swamp, which generally has standing water only part of the year. Although the trees and shrubs found here tolerate wet conditions, like all wetlands vegetation, they would not survive year-round flooding. Muddy rings at the bases of the trees and bare roots show that the woodland helps to store excess water during wet weather.

Bogs are the classic Pinelands wetlands—full of soggy peat mosses, and water high in acid and low in dissolved oxygen. Dead plants and animals that fall into a bog decompose extremely slowly. The conditions here often cause plants to seek unique ways of nourishing themselves, such as trapping and consuming insects, as in the case of bladder worts, pitcher plants and sundews. In NJ, bogs are not limited to the Pinelands.

Priscilla Hayes is a freelance writer living in Robbinsville and a former deputy attorney general in NJ.

PRISCILLA HAYES



Horseback riders explore trails in the Assunpink Wildlife Management Area.

The endangered bog turtle is one of 20 species dependent on freshwater wetlands for survival.

Selected NJ Wetlands

The following is a sampling of the wide range of wetlands throughout NJ.

The Great Swamp National Wildlife Refuge (Morris County) comprises approximately 7,000 acres, mostly wetlands, with prime nesting grounds for great blue herons, and breeding and nursery areas for the bog turtle and blue-spotted salamander, all on the state's lists of endangered or threatened wildlife. Two boardwalk trails, one interpreted, and both of which have observational blinds, allow glimpses into the refuge for more than 175,000 visitors yearly. There is also a wildlife observation center. In nearby portions of Morris County, other vital wetlands such as the Great Peace Meadow, sit, like the Great Swamp, right in the middle of major urban areas. *For more information, call (908) 647-1222.*

The Edwin B. Forsythe National Wildlife Refuge (Atlantic County) preserves more than 36,000 acres of

coastal wetlands near Atlantic City, primarily for use by migratory birds on the Atlantic Flyway. In the refuge, secluded beaches provide nesting areas for rare birds. A variety of other habitats including woodlands, fields and salt marshes are maintained to encourage continued use by the more than 280 species of birds which have been observed here. Although large tracts of the refuge are off limits to humans, wildlife and birds may be seen from the self-guiding wildlife drive and two short trails. *For more information, call (609) 652-1665.*

The Manasquan River Reservoir (Monmouth County) has a 5 1/4 mile perimeter trail around the reservoir that allows visitors to peek into six of the developing wetlands built by the NJ Water Supply Authority to offset the wetlands lost in creating the reservoir. Dikes have been installed at the mouth of each wetland to keep it from drying out completely during dry seasons. Herons have already been spotted in the new wetlands,

and it is hoped they will eventually establish nesting grounds. Horseback riding, walking, bicycling and jogging are permitted on the marked trails only. *For more information, call (201) 842-4000.*

The Assunpink Creek (Monmouth and Mercer Counties) has both a great diversity and amount of wetlands in its watershed area, and a variety of public areas set aside where those wetlands may be enjoyed. In the Assunpink Wildlife Management Area, you can find almost every type of freshwater wetlands, from bogs to wooded swamps. An ongoing study on the endangered bog turtle is being conducted by the Rutgers University-Camden Biology Department. In Mercer County's Washington Township, off Route 130, a dam placed for flood control has converted agricultural fields to wetlands, with public access. During wetter seasons, the area resembles a small lake. In Mercer County Park, wetlands also surround the manmade lake, which is tributary to the stream. The

Assunpink passes through Bear Swamp (not a public facility), and eventually wends its way to the Delaware. *For more information, call (609) 259-2120.*

Whitesbog (Burlington County) and the surrounding 27,594 acres of the Lebanon State Forest (main tract, Burlington County; other areas, Ocean County) provide an excellent opportunity to explore a variety of pinelands wetlands habitats. Whitesbog itself, where the blueberry was first developed for commercial culture, is an almost deserted village, adjacent to both active and abandoned cranberry bogs and blueberry fields. Along the quiet roads in Lebanon State Forest are numerous cedar swamps. The Pinelands Institute for Natural and Environmental Studies (PINES) in Whitesbog offers study programs for all ages on the Pinelands' unique ecosystem; proceeds support the institute. *For more information, call (609) 893-1765 for PINES; (609) 726-1191 for Lebanon State Forest.*



LARRY TOFIK



Conservation: Before and Beyond Earth Day

By Marlena Gloff-Straw and Tanya Oznowich

First we conserved for personal survival, then for that of the country and now for that of the earth.

One year ago New Jerseyans gathered at events statewide to commemorate the 20th anniversary of Earth Day. Regardless of the grandeur of the event or the composition of the audience, people were urged to take action to remedy local environmental ills, to reduce their contributions to global environmental problems and to adjust some of their habits to reflect reverence for the environment. The thread that knotted these action measures together was conservation, the wise use of the Earth's natural resources.

Conservation is not a new concept to Americans. In 1929, given their first helping of deprivation since the Industrial Revolution, Americans reached back a generation or two and summoned the conservative lifestyles practiced by their immigrant forefathers to cope with the depression. They did this not out of concern, but out of necessity.

During World War II, Americans once again conserved natural resources. This time, to meet the needs of the military - the soldiers abroad and, to some degree, the allied forces. Sacrifices were made and shortages were prevalent. "It wasn't fun, let me tell you. I didn't like

waiting in lines for sugar, butter, and when it came to be my turn they were out," recalls Louise Callan, 72, who was a nurse in Trenton during the war and now resides in Manasquan.

Under government orders, automobile manufacturers stopped producing family cars. Gasoline was rationed, and people were encouraged to repair aging cars, drive slower, carpool and take public transportation.

Like soldiers, children went through a form of basic training. Troops of Girl Scouts and Boy Scouts enthusiastically collected scrap metal, paper, household grease and fat, all of which were put to use in the war effort. Walter Buczak, 62, of Clinton Township, reminisced about being a Boy Scout in Livingston and collecting scrap metal. "I'll never forget that! We thought it was the greatest thing. We collected everything from car motors and gun parts to barrels of brand new nails....To us scrap was gold."

Despite the inconvenience, people tolerated, accepted and eventually practiced conservation as a way of life.

However, after the Second World War, "Americans engaged in a 25 year period of avid consumerism. By 1970 people began to realize

Everyday Solutions to Global Concerns

Curbing the Greenhouse Effect and Ozone

It is only in the last century that we have begun pouring wastes into the air and water in quantities that threaten global consequences. The results? In 1985, a hole the size of the United States was discovered in the ozone layer over Antarctica. Scientists also tell us that evidence is mounting regarding projected increases in global temperature, referred to as the "greenhouse effect." What can be done to lessen and prevent these occurrences?

- ❑ Reducing the amount of driving by carpooling, using public transit, walking and bicycling

- ❑ Purchasing fuel efficient cars and keeping them well-tuned; checking cars with air conditioning regularly for leaks; and recycling coolants when the air conditioning is serviced or the car is scrapped
- ❑ Seeking alternatives to household air conditioners by using fans or planting trees on the southern side of the house
- ❑ Reducing and eliminating the use of aerosols in and around the home
- ❑ Using less electricity by turning off lights and moderating our use of appliances and air conditioning
- ❑ Planting and maintaining the trees and bushes on our property
- ❑ Purchasing and using recycled materials as often as possible

Protecting the Water's Quality

Historically, government and industry have been held responsible for protecting our water supply. Numerous

that the air was becoming less breathable and the water less swimmable and fishable," recounts Grace Singer, DEP Bureau Chief of Community Affairs. In 1970 Singer was a lobbyist for the NJ League of Women Voters. "In New Jersey these effects were felt very strongly because of the state's high density of industry and population. People began to demand that government do a better job of protecting the environment," she said. "I spent many hectic days in the State House trying to convince legislators to support strong environmental laws."

What NJ experienced, so did the world: The voices of harbingers like author Rachel Carson, political leader Stewart Udall, and ecologist Aldo Leopold were heard. On April 22, 1970, the world celebrated Earth Day, which in the United States is still recognized as the largest organized demonstration in the country's history. The fledgling movement, which on that day drew a crowd of more than 200,000 in Washington, D.C. alone, began a revolt against the country's polluted air and waterways and loss of open space. That year, the United States Environmental Protection Agency and the NJ Department of Environmental Protection were established.

"I would say that in 1970 you could divide the population into thirds," noted Dr. John Kirk, director of the NJ School of Conservation since 1963. "One third of the people felt that if things were as bad as some environmentalists were saying, then whatever contributions they made wouldn't matter. Another third was indifferent and very quickly forgot the message, that is if they received it in the first place. And the last third were stirred and motivated to make a difference. They carried environmentalism through the 1980s."

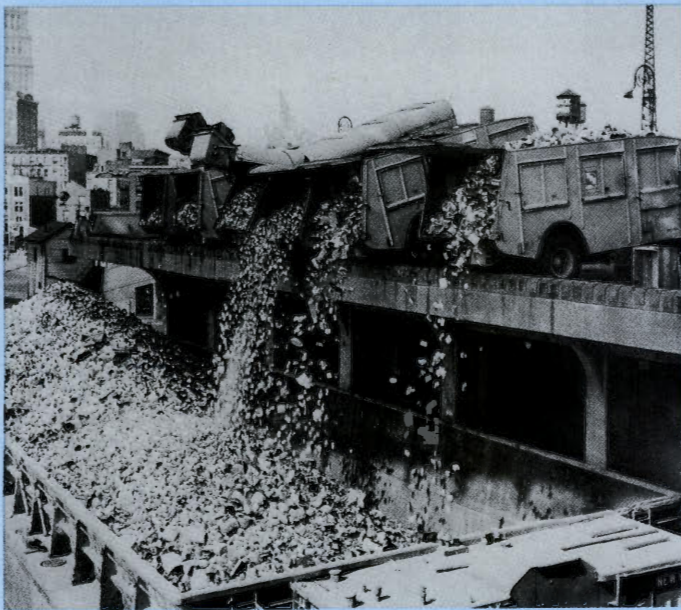
Since 1970 membership in, and public acceptance of, environmental organizations has increased dramatically. Grass roots organizations have adopted local issues from landfill closures to well water contamination. NJ students in elementary and secondary schools as well as colleges formed environmental clubs addressing issues as immediate as

the abolition of Styrofoam products in their school cafeterias to issues that have worldwide ramifications, like the preservation of tropical rainforests. Dan Van Abs, Ph.D., co-founder of the Youth Environmental Society based in Cranbury, observed "...three major changes in the environmental movement since 1970. First, most organizations have come to rely on professional staff, even the so-called 'grass roots' organizations. Second, local health concerns have become top political issues, though natural resource protection is still strong. Third, the student movement quieted in the late 1970s, but now is back stronger than ever."

The NJ legislature has passed 36 pieces of major environmental legislation since 1970, providing a catalyst for similar legislation at the federal level. The Spill Compensation and Control Act of 1976 was the model for the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, more commonly known as the Federal Superfund Program. The NJ Right To Know Act of 1983 provided the framework for the federal Superfund Amendments and Reauthorization Act (SARA). And the state's Toxic Catastrophe Prevention Act of 1986 was reviewed and considered by the U.S. Senate Committee on Environment and Public Works in December 1989 as part of the reauthorization process of the federal Clean Air Act.

As the 1980's came to a close, it became apparent that New Jerseyans supported more local and state government spending for environmental programs, as documented in a public opinion poll conducted in 1989 by the *Newark Star Ledger* and Eagleton Institute. In 1981, the figure rose to 53%; in 1986 to 62%; and by 1989 to 72%. Consumers are more willing to make a special effort to buy products from companies that protect the environment, and consequently, pay more for their products.

By Earth Day 1990 this understanding was mirrored by the



AP/WIDE WORLD PHOTOS

programs and regulations related to wastewater discharge, industrial discharge and pretreatment measures help control pollution that is produced on a large scale, readily apparent and easily traced. More recently, research indicates that another type of pollution impacts New Jersey's waters, one that originates from many miscellaneous sources and is caused, in part, by individual actions. These are referred to as "nonpoint source pollution."

As water moves in the water cycle it comes into contact with a variety of uses and materials in urban, suburban

In this September, 1942 photo, New York City sanitation trucks dump their tin can collections into barges at the foot of Roosevelt Street, Manhattan, for shipment to a de-tinning plant in New Jersey. Between March and September, 1942, New York City collected 8,641 tons of tin cans, yielding more than 70 tons of pure tin, so necessary in the manufacture of munitions of war.



MARK LENNIHAN

A crowd of 40,000 celebrated Earth Day 1990 in NJ at Liberty State Park. Many of them signed the Earth Day 1990 Green Pledge to do their share in saving the planet by letting their concern for the environment shape how they act, purchase, vote and support the passage of laws and international treaties that protect the environment.

number and variety of projects undertaken statewide. Residents in Ocean City joined together to beautify a vacant lot with indigenous plants, walkways and benches. Public Service Electric and Gas displayed its energy conservation museum on wheels, alternatively fueled vehicles and exhibits throughout northern NJ. The utility also recognized employees who volunteered for environmental projects. The congregation at the All Saints Episcopal Parish in Hoboken signed green pledges and listened to an outdoor service on theology and ecology. Sunday school children learned about the habitat needs of wildlife and took what they learned one step further by planting trees. "The message," says Janet Jackson-Gould, lifelong resident of Tabernacle, and Curator of Education at the Philadelphia Zoo, "of Earth Day 1990 was that government regulation is not enough. Every person has to do his and her part."

People "do their part" by conserving water and electricity, composting, properly disposing of household hazardous waste and motor oil and abiding by their community's recycling laws. Some go one step further by joining environmental organizations, communicating their concerns on environmental issues to their representatives and sharing what they have learned with others.

After World War II, the victors and the defeated united in an effort to put back together a world that was economically sound. The need for unity still exists — globally, nationally, locally and within our own families — to fight the raging battle of environmental protection so that generations to come can enjoy the quality of life experienced by generations past.

Marlena Gloff-Straw is supervisor of DEP's environmental education programs. Tanya Ornowich is an educator at DEP and coordinator of Environmental Education Week 1991.

and rural areas. Rainfall, snow melt and hence, runoff, carry with them fertilizers, pesticides, erosion materials, road salts, motor oil, animal waste, metals, litter and chemicals that are disposed of directly onto a hard surface, into the ground or dumped into a storm drain. These pollutants eventually collect and settle in ponds, lakes, groundwater, estuaries and the ocean itself. There they impact upon the habitat of aquatic plants and animals and can affect the potability and recreational value of the water.

We can reduce nonpoint source pollution by:

- Recycling used motor oil and antifreeze at a local filling station, repair garage or car dealership; dumping it into the ground or storm drain is illegal!
- Picking up after pets and disposing of such waste in the garbage or toilet and walking pets in undeveloped, grassy areas, instead of allowing deposited waste to be washed into a nearby storm drain or waterway
- Using household hazardous materials sparingly, if ever;

sharing extra materials with others and storing empty containers until they can be disposed of at a "Hazardous Waste Collection Day;" never dumping hazardous products into the ground or storm drain

- Using sand, instead of salt, on icy patches during the colder months
- Properly maintaining and inspecting septic systems
- Controlling erosion by planting vegetation on sloped surfaces; building steps or ramps in steep areas; building with permeable surfaces such as wooden decks or porous pavement; and planting trees and groundcover in bare areas and along property edges
- Limiting (or eliminating) the use of pesticides and chemical fertilizers, both outdoors and indoors; if such materials must be used, checking the label for proper application procedures and not applying near hard surfaces or waterways
- Not littering and discouraging others from doing so

NJ Environmental Education Week

Sunday, April 21 - Saturday, April 27, 1991

What Are You Going To Do?

Celebrating Environmental Education for one week in NJ has two goals: to encourage environmental activity in schools and communities around the state, and to support the idea that environmental concerns and responsible actions should be practiced year-round by NJ residents.

Originated in 1987 by the NJ Department of Environmental Protection (DEP) and the Alliance for NJ Environmental Education (ANJEE), the Environmental Education Week "fever" has spread greatly during the past five years. In 1990, more than 300 communities, nature centers and businesses sponsored Earth Day/Environmental Education Week celebrations. Thousands of students in kindergarten through college took pro-environmental action in classrooms and communities and on campuses.

It is not too late to get involved - there is plenty to do! Join us in making Environmental Education Week stronger than ever.

For further information, contact:

- NJDEP, OCPE, CN 402, Trenton, NJ 08625, (609) 633-1317
- ANJEE, c/o Sherman Hoffman Sanctuaries, PO Box 693, 11 Hardscrabble Rd., Bernardsville, NJ 07924, (201) 292-2532
- NJ Earth Day Office, 317 Belleville Ave., Bloomfield, NJ 07003, (201) 748-2114
- NJ ReLeaf, NJDEP, Bur. of Forest Management, CN 404, Trenton, NJ 08625, (609) 292-2532

Environmental Action Among Students

Environmental clubs have sprung up in New Jersey's schools in amazing numbers during the past five years. The clubs are made up of children as young as third graders and as old as college seniors. They meet after school, before class and during lunch. Their enthusiasm motivates both them and their advisors and their ideas regarding environmental concerns and actions are limitless. These clubs are no longer interested only in traditional hikes, picnics and field trips. They also attend public meetings, write letters and meet with legislators. They help to coordinate school recycling programs and community "Hazardous Waste Pick Up Days." They test stream waters, clean up vacant lots and raise money to buy an acre of rainforest or sponsor a whale. They even design and distribute their own shirts, hats and newsletters.

If you are interested in learning how to form and maintain such a club, contact the DEP office listed below. The DEP will also provide you with a list of organizations that work closely with youth. If you already have an environmental club in your school, we would like to hear about it. Please contact:

NJ Department of Environmental Protection, Office of Communications and Public Education, CN 402, Trenton, NJ 08625, (609) 633-1317.

Reducing Our Solid Waste

The issue of waste disposal was not an issue of the past when there were fewer people and fewer products. Currently we have many products which make our lifestyles easier and more convenient. Since land is at a premium and the quality of our environment is so important to preserve, we must be responsible more than ever for producing the least amount of waste and disposing of this waste properly. Did you know that:

- New Jersey residents are recycling 42% of the state's solid waste stream? The state's new goal is to reach a recycling rate of 60%.
- Grass clippings make up almost one third of the state's summer waste handled by garbage haulers?
- Each year, New Jersey residents who change their own motor oil generate more than 9 million gallons of used motor oil?

The reduction of waste entering the waste stream is being achieved by the use of less packaging material, the use of environmentally sound materials, the use of recycled materials and

the increase of recyclability of packaging that cannot be reduced. We can help reduce solid waste by:

- Re-using (or sharing) as many items as possible, such as toys, clothing, containers, appliances, publications, furniture, plastic bags, pie pans, cloth rags, bags, towels, napkins and real dinnerware, instead of those made from plastic or paper
- Recycling as many materials as possible, such as glass, aluminum, tin, newspaper, cardboard and paper
- Leaving grass clippings scattered on lawn
- Recycling used motor oil by contacting our municipal or county recycling coordinator to find a local used oil collection site
- Purchasing necessary items in bulk amounts and purchasing fewer items that are disposable, used once only, or excessively packaged
- Using both sides of the paper for scrap paper and the comics as wrapping paper
- Purchasing products made from recycled materials



Sites of Spring

Spring is the season of new beginnings, a time of renewal for flora and fauna and humans alike. On these pages, some of the most picturesque sites of spring show nature reawakening.

(below and right) On Reeds Beach in Cape May County, thousands of migrating horseshoe crabs spawn annually, making it a seasonable stop for hungry terns. These shore birds feed on the crab eggs during their migration.

(opposite page, top left) Once nearly extinct but now a common visitor to Brigantine during the spring and summer, a great egret looms in the tall grass.

(opposite page, top right) Two osprey engage in their springtime courtship ritual in Keyport, Monmouth County. As of 1990, 140 pairs of osprey nest in NJ.



WALTER CHOROSZEWSKI



WALTER CHOROSZEWSKI



ROBERT E. BIRDSALL



ROBERT E. BIRDSALL



WALTER CHOPROSZEWSKI



LLOYD B. HILL

(above) Absent from NJ prior to 1976, the state's wild turkey population now numbers more than 7,000. This young wild turkey poult is two to three weeks old.

(left) A delicate fawn strayed from its parents and wandered into a daisy field in the photographer's back yard.



PHOTOS BY WALTER CHOROSZEWSKI

Dating back to 1895, Branch Brook Park, in Newark and Belleville, is the oldest county park in the country. More than 3,000 cherry blossom trees explode with color during April. The majestic site rivals the renowned cherry blossom display in Washington, D.C.

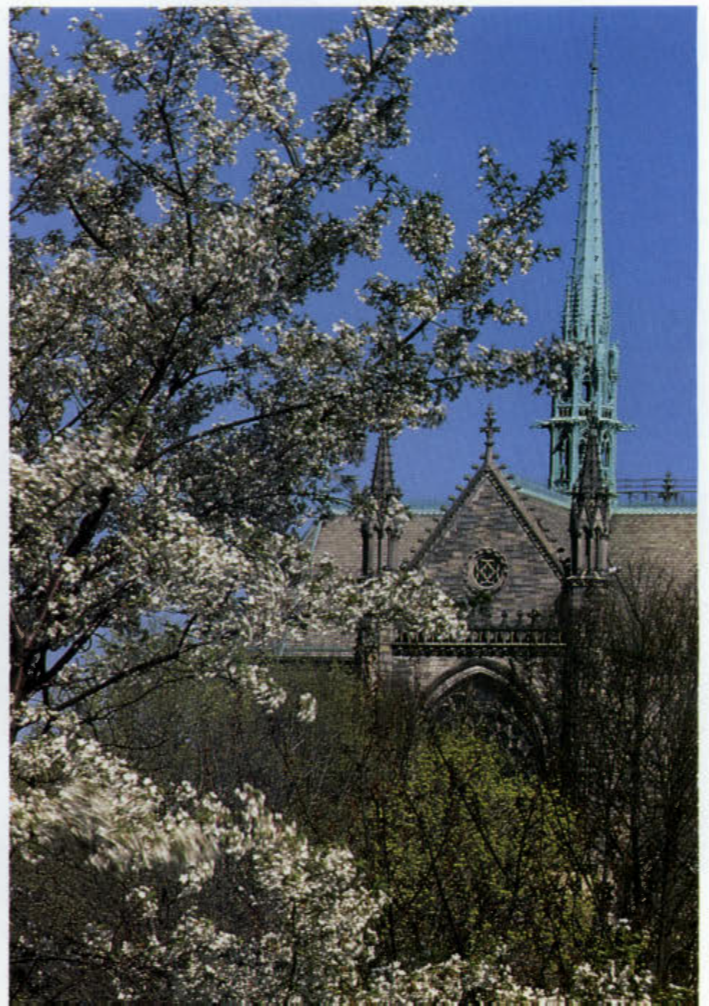
(Clockwise from top right) The canal channeled through Branch Brook Park is actually part of the old Morris Canal which once flowed 109 miles between Phillipsburg and Jersey City.

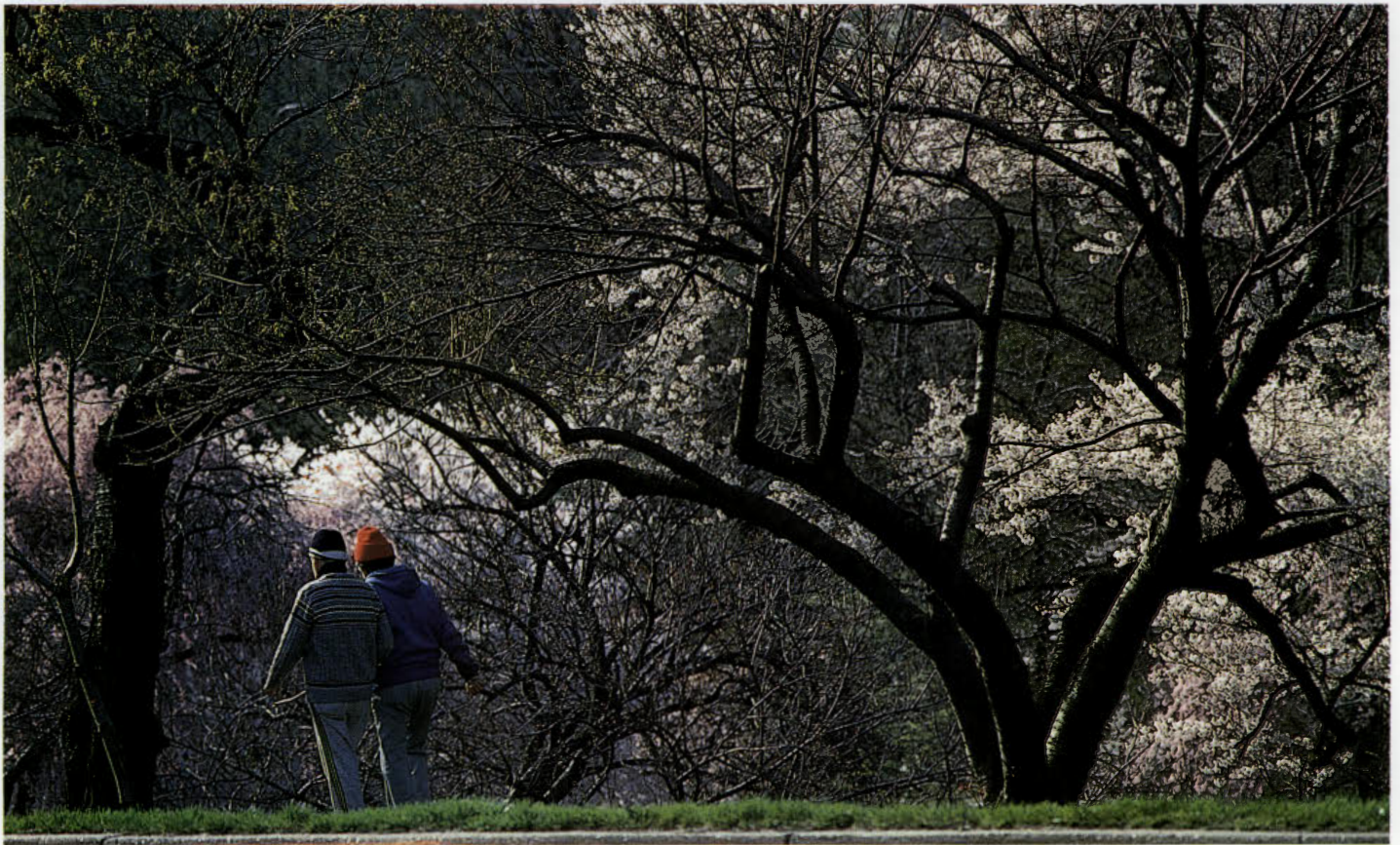
Two men take a peaceful walk along the 17 miles of paved walkways in the park.

Set in the background, the Cathedral of the Sacred Heart peeks through the trees into the Essex County park.

Here is a closer look at a cherry blossom against a clear blue sky.

No fisherman in Branch Brook will ever catch what the camera has captured here.





(Clockwise starting far right) Focus on one of a variety of roses found in the Rudolf W. van der Goot Rose Garden in the Colonial Park Arboretum in East Millstone, Somerset County. The garden is open year-round but is most popular during peak months for roses — June through September.

The fruit of Queen Anne's lace ripens at the same time that the plant's flower blooms. This close-up view shows the fruit of one stem found on the Delaware and Raritan Canal Towpath between Lambertville and Stockton in Hunterdon County.

The grass pink (calopogon) blooms in many bogs and wetlands of the New Jersey Pine Barrens during late May and June.

The prickly pear cactus blooms in June and can be found in the Holly Forest of the Sandy Hook Gateway National Recreation Area in Monmouth County. Sandy Hook offers a short, ranger-led walk, called the Holly Forest Ramble, through the dense forest. The walk is offered year-round on specific dates. Juniper and wild black cherry trees dominate the forest along with the American holly.

A wall of rhododendrons lines the old stone house of a local residence along the Delaware and Raritan Canal in Griggstown, Somerset County. Rhododendrons peak during the month of May.



WALTER CHODOSZEWSKI



CORNELIUS HOGENBIJK

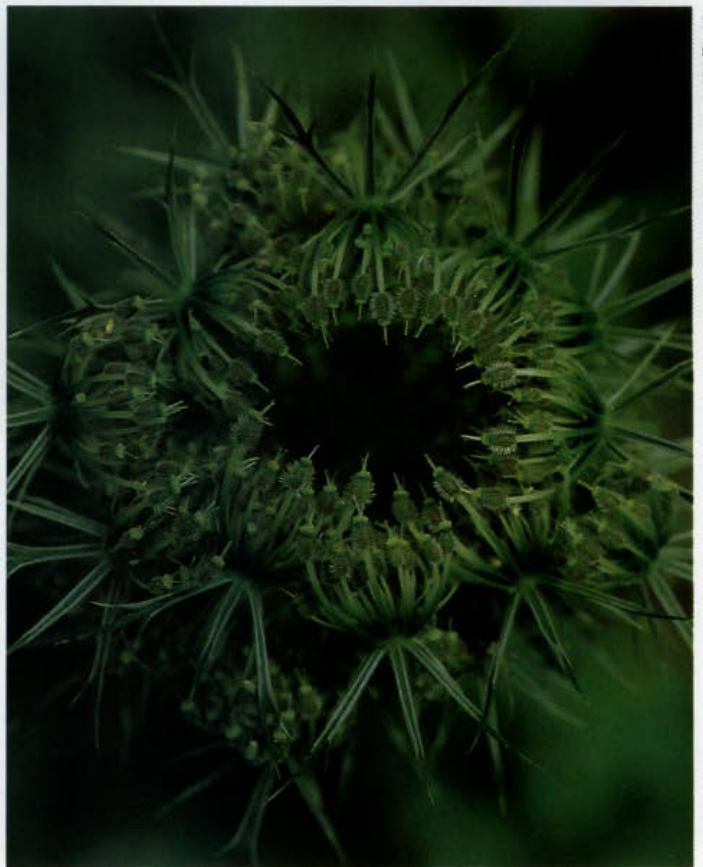
By Adam Paratore,
journalism intern from
Cook College, Rutgers University



WALTER CHOROSZEWSKI



CORNELIUS HOGENBIRK



J. KAPLAN



Making an Ethical Kill

By Jan McDowell

Turkey hunters have responsibilities to the game, other hunters, landowners, the public and themselves

For eight days the hunter had hunted hard, hiking hills and calling across lush, green valleys from before sunrise until noon, hoping for a chance at a wild turkey. A skilled and many-times successful hunter, he had tried all his tricks, but the turkeys just weren't cooperating.

On the morning of the eighth day of the season – it was one of NJ's ten-day permit seasons – his luck started to change. A nice "jake" (young male) turkey strutted forward, almost within range, in answer to the hunter's calls. Only a few more steps and the hunter, with his muzzleloading shotgun, would have a chance at a sumptuous dinner.

Author Jan McDowell and son Tom after a successful day in the woods

As the turkey neared, another jake appeared alongside it. The hunter, who knew the wide spray of the shot from the gun could hit both birds, lowered the muzzle. He would have to wait for another chance.

This is the true story of a NJ hunter who, like many, made an ethical decision not to shoot. He cared more about the possibility of wounding the other bird than about a "bird in the hand."

The next morning the same hunter called in three gobblers. Again he could not shoot because the birds were only about four feet apart. So he let them walk past. Later, only hours before the expiration of the hunter's permit, one of the birds came back alone and was taken with much pride by a man who had not compromised his hunting principles.

When hunters hunt, most follow the rules of fair chase, many of which are set down within the hunting laws of the state: hunt turkeys only during the prescribed hours on legal days of the year; use the proper weapons and ammunition; take only the legal number of birds; and don't shoot hens.

Today, more and more, hunters are also adhering to additional rules of their own making, rules that embody the ethics of people who appreciate the privilege of hunting and respect the game that they seek.

The National Rifle Association describes these ethics as the personal responsibilities a hunter has to the game, other hunters, landowners, the general public and himself.

The turkey hunter above was fulfilling one of his responsibilities to the game – making sure of an ethical kill. In addition to following the laws of the sport, which are designed to conserve the population for future generations, ethical hunters choose also not to shoot beyond the limits of their marksmanship or at anything less than a perfect target (no brush or other obstructions in the way, for example); take care of the game so it can be used as food and possibly a trophy; and support laws and organizations that promote conservation.

Ethical hunters also never shoot at game unless they've recently patterned their guns to find the best ammunition for the hunting they're doing. Since shotshell brands and loads shoot differently in different guns, this is a must.

Hunters must also be ethical with each other. To be certain that other hunters are safe from their shots, hunters must be sure that their target IS a turkey – and know what's beyond it. Hunters watching intently for turkeys have been fooled by a patch of red or white or blue clothing on another hunter or simply by the movement of a person in camouflage. Shots taken at game on the crest of a hill could go far and cause untold danger to people and property.

NJ hunters have had only two shooting accidents – both victims were mistaken for game as they began to move – over the course of nine turkey hunting seasons. Neither was fatal. The practices of allowing an average of less than one hunter per square mile in turkey hunting areas and making the stalking of turkeys illegal preclude some dangerous situations.

Requiring hunter education courses and offering optional turkey hunting seminars undoubtedly reduce the number of shooting accidents. The seminars emphasize defensive and offensive safety actions as well as ethical strategies for hunting success. A high percentage of NJ's turkey hunters have taken advantage of the seminars because they know the wild turkey cannot be taken often by a hunter who has not studied up on his quarry. Both the DEP's Division of Fish, Game and Wildlife and the NJ Chapter of the National Wild Turkey Federation give seminars each spring.

Beyond safety, hunters should respect each other's right to a quality hunt. If a hunter is working a bird, another hunter should not walk in and also start to call the bird. Turkey hunting is not a game where the best caller wins; it is a contest between a wary wild bird and the person who first found it. This, as all turkey hunters know, is enough of a contest for the decidedly less-wary human being. Besides being unethical, the practice of coming in on another's calling situation could be deadly if the moving hunter were mistaken for a bird.

A major annoyance to hunters in popular hunting areas is the non-hunting caller who spends a lot of time in the turkey woods

Facts of the Hunt

Turkey hunting in NJ takes place in the spring. The season is for males only and is carefully timed so that most hens are already nesting. Since the tom takes no part in incubating the eggs, or in raising the young, his role in reproduction is completed upon mating.

Prior to 1976, wild turkeys were not found in NJ. In 1977, the DEP's Division of Fish, Game and Wildlife received 23 wild turkeys from New York and Vermont. These birds were released in Sussex County. As the flocks increased in size, they were trapped and transferred to other areas. In 1980, NJ sported a turkey population sufficient to support a limited hunting season. The division issued 900 permits spread out over three turkey management zones (TMZ) during a period of three weeks. Only males were hunted. During the first full season in 1981, hunters bagged 71 wild turkeys. During the 1990 season, hunters took 449 turkeys over a four week period. Today, more than 5,000 wild turkeys range in 17 counties, encompassing 16 TMZs.

This season, permits were drawn from a lottery with a first, second and third choice of TMZ and week of hunt. A hunter is entitled to bag one male wild turkey with each special wild turkey hunting permit. Only one turkey may be taken on a given day. Bearded hens may not be taken. Consult the **NJ Fish and Wildlife Digest** for additional information.

before and during the hunting season just trying out his calling. He wants to see if he is good enough to call various birds in close enough to be able to shoot them, or get them on film. This is a great recreation for many people, except the hunters who find call-shy or non-gobbling birds after they've been educated by too much calling beforehand.

A late hunter rushing into the woods at fly-down time when others are already set up in the area is another annoyance. If you're late, take the time and trouble to watch for other hunters and stay clear of them.

Hunters have learned the importance of treating the land and its owner with respect. Once permission to hunt is secured, leave no signs of occupation: no trash, spent shells, tire ruts in fields. Do not disturb farm animals, crops, fences and other property, and leave gates the way you found them. The NRA suggests you not wear out your welcome by taking a carload of companions with you or hunting the land day after day.

Landowners are the key to hunting places for most hunters. Thank them with a gift, some of the game you take, or offer to do chores such as posting and patrolling the property.

McDowell uses a slate call during a recent spring turkey hunting season in New Jersey.



Tips for the Hunt

To help make your next turkey hunt as enjoyable as possible, here are seven tips to a safe and successful spring turkey hunt:

Scout the area you plan to hunt. More wild turkeys are killed by good woodsmanship than good calling.

Pattern your shotgun. All guns, even two of the same model, shoot differently. A good pattern will place ten or more pellets in the head and neck of a gobbler from a distance of 35 yards.

Never stalk a wild turkey. Not only is it illegal in NJ, it is dangerous as well.

As in real estate, location is everything. Do not try to call a wild turkey through or over obstructions such as a fence row or river. Try to be on the same level as the turkey when hunting in mountainous terrain. When setting up to call, try to sit in front of a tree that is larger in diameter than the width of your shoulders. This will help break up your outline.

Use total camouflage. Turkeys have tremendous eyesight and, unlike deer, can see in color. Be careful of items such as a watch or belt buckle, the reflections of which may tip a turkey to your presence.

Get out early. Early morning is prime gobbling time. If the sun is already peeking into your bedroom window, you have overslept.

Attend a turkey hunting seminar. Contact your local chapter of the National Wild Turkey Federation for information on hunting seminars near you, or call DEP's Division of Fish, Game and Wildlife.

*By David Chanda,
Chief, Office of Information
and Education, Division of
Fish, Game and Wildlife*

Ethical hunters also respect the rights of non-hunters, including bird watchers, hikers and campers, by not hunting close to them, not displaying bagged animals to people who may not want to see them, and keeping signs of hunting out of view.

Encouraging other hunters to act ethically is also a responsibility. A hunter's responsibility to himself is to never compromise his own ethics while enjoying the outdoors.

Jan McDowell is a long-time turkey hunter who enjoys the sport in New York as well as at home in Sussex and Warren counties. She is the outdoors columnist for the New Jersey Herald in Newton, as well as a free-lance writer and photographer.

Rebuilding Main Street, Bridgeton

A return to personal service,
local ownership and a sense
of community

By Barbara Swanda

A subtle change is occurring deep in the heart of Bridgeton. Former dilapidated storefronts and commercial buildings have been restored as models of Victorian architecture. The streets of downtown, which in recent years stood empty, once again brim with tourists and shoppers. With each square foot of restored commercial space in its ongoing revitalization, Bridgeton edges ever closer toward regaining the soul of its downtown.

"It is a slow and labor intensive process, but this community has made the commitment to itself to make it happen," says Dennis Campbell, project manager of *Main Street Bridgeton*, a downtown revitalization program.

The city's growth and prosperity have waxed and waned during the past century. The most recent downturn occurred in the 1960s and 1970s when in Bridgeton, as in many communities across the nation, tough economic times, social unrest and suburban sprawl brought about factory closings, racial strife and high unemployment rates. In addition, stiff competition from outlying shopping malls caused the central business district to falter.

The character of this southern Jersey city began to revive in 1978 when municipal officials took advantage of a series of federal and state programs aimed at revitalizing troubled urban areas. Bridgeton became a New Jersey urban enterprise zone (UEZ) and used Housing and Urban

BARBARA SWANDA



One of many recently restored buildings in downtown Bridgeton

Bridgeton Facts and Lore

- ❑ 1686 Richard Hancock built a sawmill and several workmen's houses near the head of the Cohansey River, a settlement to become known as Bridgetown.
- ❑ 1749 Bridgetown grew to include more than 15 buildings downtown and became the designated Cumberland County seat.
- ❑ 1800 Population reached 400.
- ❑ 1816 Bridgetown opened its first bank, which misspelled the town's name as "Bridgeton." According to local lore, the new name was adopted because it was less expensive to officially change the town's name than to reprint the bank's materials.
- ❑ 1838 Population reached 2,387. The bustling downtown contained more than 475 commercial and residential buildings. Bridgeton's port was home base to 30 coastal cargo schooners.
- ❑ Today, Bridgeton contains New Jersey's largest historic district, with more than 2,000 structures listed on the National Register of Historic Places. Much of the city's architectural heritage recently has been restored, making a walk through the downtown a lesson in history and urban development.



The redevelopment of Bridgeton's downtown district began with the reclamation of the riverfront area. What was once nothing more than an unkempt, muddy bank is today a popular walking promenade as well as the centerplace for community festivals, concerts and theatrical events.

Development and Community Development Block Grant programs to revitalize its housing stock. Through a matching grant from the Department of Environmental Protection's Office of New Jersey Heritage, Bridgeton conducted a city-wide survey of residential and commercial buildings. This led to the designation of the city's historic district, the largest in the state.

Bridgeton reclaimed its riverfront area first. What was once nothing more than an unkempt, muddy bank is now a popular walking promenade as well as the centerplace for community festivals, concerts and theatrical events. Next, the city rebuilt its infrastructure, then added aesthetic touches to the downtown area, including brick sidewalks, lamp posts and public benches. Yet another grant program assisted private businesses in restoring the facades of 18th and 19th century buildings to their original glory.

The resulting historic atmosphere pervading downtown Bridgeton imbued the city with a renewed sense of place. City leaders quickly realized, however, that successful revitalization is measured more by the level of commerce achieved than the number of attractive building facades. Despite the physical improvements made, Bridgeton's business district was still plagued by the more complex economic issues of vacant storefronts, a poor mixture of retail shops and a lack of community activities occurring in the town center.

In 1989, Bridgeton became one of four pilot municipalities selected to participate in the newly created *Main Street New Jersey Program*, sponsored by the Office of New Jersey Heritage. It provides guidance and technical assistance to establish a compre-

While You're in Bridgeton . . .

Visit the city's historic sites, including

❑ Potter's Tavern

Have a revolutionary visit to the site of New Jersey's first published newspaper.

Hours: 11:00 a.m. to 3:00 p.m., Monday through Friday; 12:00 p.m. to 4:00 p.m., Saturday and Sunday

Admission: \$1.00 donation

Phone: (609) 451-4802

Location: West Broad Street

❑ Nail House Museum

This building is at the gateway to City Park and houses a fine collection of early glass and iron from Bridgeton's industrial past.

Hours: 10:30 a.m. to 3:30 p.m., Tuesday through Friday; 11:00 a.m. to 4:00 p.m., Saturday and Sunday

Admission: free

Phone: (609) 455-4100

Location: Bridgeton City Park, Mayor Altken Drive

❑ New Sweden Farmstead/Museum

This 17th century farmstead/museum is of the type built by early Swedish colonists. The seven buildings include a blacksmith shop, threshing barn, main residence, stable, storehouse and a bath and smokehouse.

Hours: 10:00 a.m. to 3:00

p.m., Tuesday through Friday; 10:00 a.m. to 5:00 p.m., Saturday; and 12:00 p.m. to 5:00 p.m., Sunday

Admission: \$2.00 adults, \$1.00 children and \$5.00 family of 4

Phone: (609) 455-9785

Location: Bridgeton City Park, Mayor Altken Drive

Admission: \$1.00

Phone: (609) 455-6910

Location: Bridgeton City Park, Mayor Altken Drive

❑ The Cohanzick Zoo

The zoo traces its origin to a small herd of white-tailed deer from DEP's Fish, Game and Wildlife Division. The collection has grown to

include birds and mammals from around the world. Lions, leopards, cougars, bears, bald eagles and other exotic birds are a few of the animals that may be seen.

Hours: 8:00 a.m. to dusk daily
Admission: free; a \$1.00 parking donation is used for animal care and new exhibits

Phone: (609) 455-3230, ext. 242

Location: Bridgeton City Park

For more information on what to see in Bridgeton, contact the Bridgeton Tourist Center at (609) 451-4802.

hensive downtown revitalization program.

Rather than continue to simply restore storefronts, with no guarantee of their use for business, Bridgeton began to turn to less visible but fundamental improvements, including organizing local community leaders and volunteers, developing business retention and recruitment efforts and promoting downtown Bridgeton as a unified shopping district.

In the first year of the program, Bridgeton established a local volunteer Main Street board of directors, defined the role of a fulltime downtown manager and prioritized goals for the revitalization program. In addition, *Main Street Bridgeton* organized several promotional festivities to increase local awareness of the goods and services available downtown: an Easter parade on the riverfront, lunchtime concerts, a Victorian Faire on Labor Day complete with vintage costumes and house tours, and weekend river cruises on the Cohansy River, where brunch diners enjoyed live ragtime jazz on deck.

Today, with a population near 19,000, Bridgeton's upward climb during recent years is nowhere more apparent than downtown. The sounds of workers' hammers and saws drift through the streets as building renovation proceeds. Sensing a strengthening business climate, new businesses are deciding to locate downtown, and out-of-town businesses are choosing to open second locations here.

One creative addition to the area is "23 Laurel Place," a cooperative arrangement of small retail businesses including quality women's clothing and home decorating shops. Opened in the fall of 1990 as "a retail incubator," the site houses several small businesses that share services in order to be financially viable. The incubator concept, which has been successful nationwide, places several fledgling businesses under one roof. The businesses typically have similar interests and share secretarial services and other resources to avoid duplicate costs. The facility's management personnel provide technical business assistance to help avoid pitfalls common to new small business owners.

What is unusual about Bridgeton's venture is its retail nature. *Main Street Bridgeton* and the Bridgeton Zone Development Corporation opened 23 Laurel Place after carefully screening applicants and matching them with appropriately sized store space. They helped the retailers develop business plans, working inventories and market data analyses.

One of the site's retailers, Brenda Lingo, owns Njeri's, a gift shop brimming with international treasures. She credits the cooperative arrangement for providing the administrative skills in setting up her shop. "The personalized business assistance and attractive retail setting that the incubator provides have been instrumental in establishing my business," she said.

While downtown Bridgeton is full of these noticeable changes, volunteers from both the public and private sectors continue to guide the city's revitalization efforts. They recognize that federal and state programs, including the *Main Street Bridgeton Program*, cannot guarantee commercial success for the city, but can reenergize and guide the community toward increasingly sound redevelopment.

Barbara Swanda is state coordinator of *Main Street New Jersey* in DEP's Office of NJ Heritage.



Broad Street, Trenton, NJ, circa 1937

COURTESY OF TRENTON FREE PUBLIC LIBRARY

What Is Main Street?

Sponsored by the Office of New Jersey Heritage, Division of Parks and Forestry, *Main Street New Jersey* is the state's downtown revitalization program. It helps municipalities improve the economy, appearance and image of their traditional downtown business districts through the organization of their local people and resources.

The program provides guidance and technical assistance in all areas of downtown revitalization through site visits and consultations with professionals in the field. The hands-on process teaches local leaders how to manage and strengthen the business climate of their community and achieve lasting results.

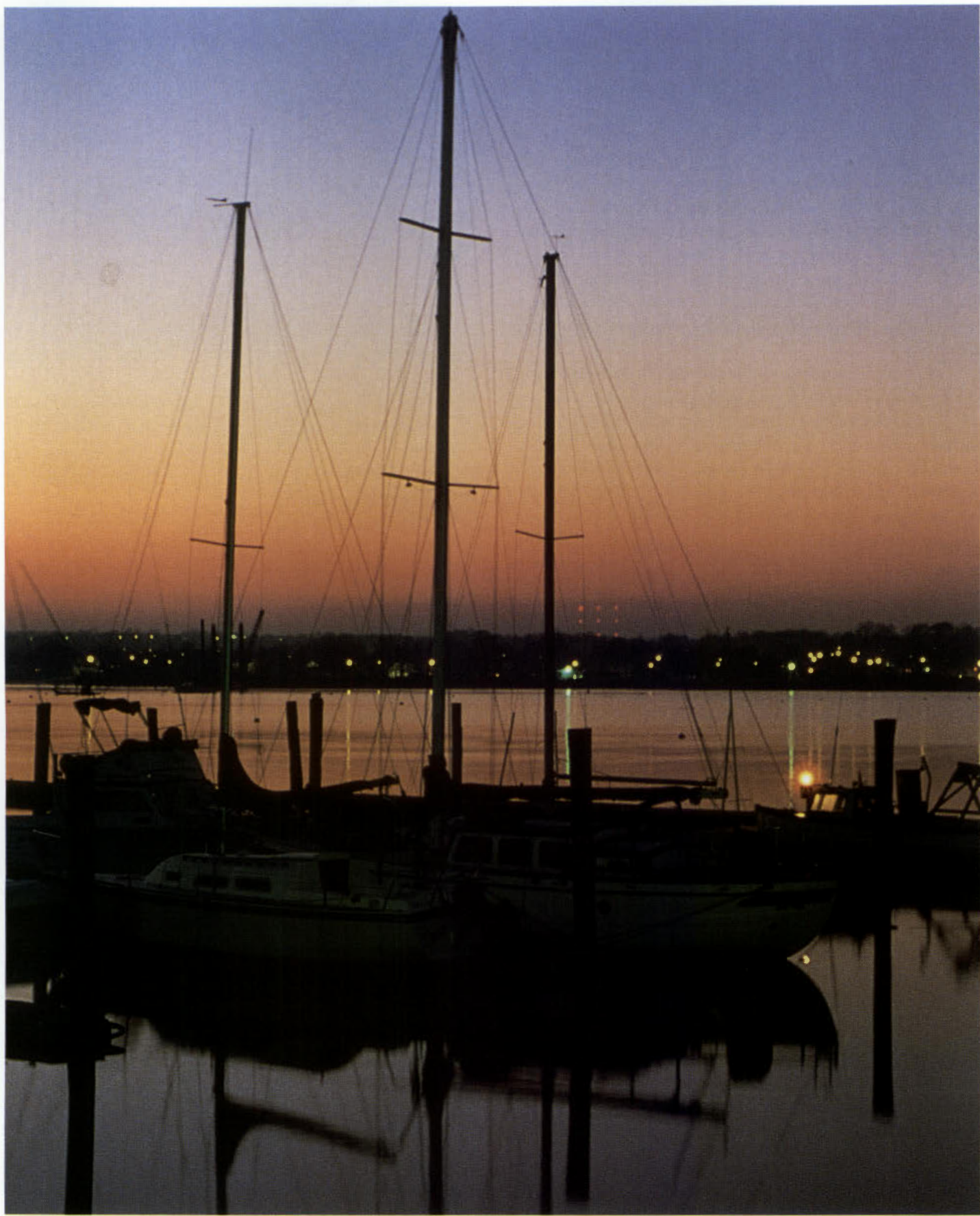
The comprehensive, incremental approach stresses the importance of working simultaneously on organization, promotion, design and economic restructuring, emphasizing that downtown revitalization is a long-term process that exacts fundamental changes in the downtown's economic base.

Providing for economic development within the context of historic preservation, the *Main Street* approach encourages the retention and reuse of the old while incorporating new, compatible development. The approach advocates a return to community self reliance and the rebuilding of *Main Street* based on its traditional assets: personal service, local ownership, unique architecture and a sense of community.

The program is modeled after the approach developed by the National *Main Street* Center, an affiliate of the National Trust for Historic Preservation in Washington, D.C.

Eligible NJ municipalities are selected to participate for a minimum of three years through a competitive application process. In December of 1989, the first *Main Street New Jersey* communities selected included Bridgeton, Englewood, Little Falls and West Orange. A second round of municipalities will be selected this spring.

For additional information about the program, contact the Office of New Jersey Heritage, CN 404, Trenton, NJ 08625, or call (609) 292-2023.



DJANE POLCOU

Getting Ready to Go Boating

Before taking to the open water, prepare yourself and your boat for the challenges that nature and Murphy's law may throw your way.

By Priscilla Hayes

"Safe boating begins on land and at home," said George Horzepa, who has been boating for nearly 20 years. At the small marina and boat rental service he co-owns in Dividing Creek, NJ, he has seen both prepared and woefully unprepared boaters.

Horzepa tells a story of a man in his 70s who took his grown son out on his prize wooden boat of Scandinavian birch. The boat seemed in good condition, but the outboard motor looked too worn to be reliable. He would have been even more concerned had he known the pair had launched without lights, flares, a radio and life jackets. The two had not even brought insect repellent or any extra clothes, only the shorts and short-sleeved shirts they were wearing.

About two hours after closing, Horzepa called the Marine Police, who found the pair wrapped in plastic bags to fend off the mosquitoes. The Police issued a summons for the lack of safety equipment and towed the boat back to the marina.

Plan ahead

Depending on where you plan to launch your boat, shore preparations may vary. It is always important to check your engine, making sure oil has been changed, systems have been flushed and all working parts have been properly lubricated and maintained. Check the little things, like whether the drain plug has been closed. It's also important to anticipate problems and take extra parts, like cables, as well as the proper tools to do any small repairs that may be necessary.

If you are planning to be out in a waterway that is lightly traveled and remote, greater precautions may be necessary. Horzepa started taking a small extra motor along on his own trips from Dividing Creek, after one boater pointed out that there would be no promise of assistance in remote areas if the boat's motor gave out.

Special attention should be given to life jackets or personal

flotation devices. In 1989, NJ recorded a record high of 30 boating fatalities. Sergeant Thomas Bibby of the State Marine Police said that generally these fatalities involved people without personal flotation devices or flotation devices in poor condition.

Any life jacket or personal flotation device should be checked for rips, weak fabric or frayed or loose straps. Those not in good repair should be replaced. Each person aboard the boat should be provided with a personal flotation device appropriate to his or her weight and size. Those which keep the wearer afloat with minimum effort allow someone who has fallen overboard to conserve energy longer.

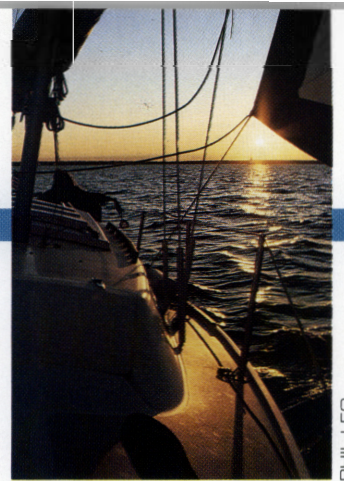
Other necessary safety equipment includes fire extinguishers and/or flame arresters, ventilation equipment, flares, lights, whistles or bells, distress flags and possibly a ship to shore radio. The State Marine Police describe acceptable and required safety equipment in their booklet on Boating Safety. For a copy, call the nearest Marine station or (609) 882-2000, ext. 2758.

Know what to do

Checking equipment and bringing proper tools and supplies for emergencies or unexpected mishaps is just one part of the safety preparation that should take place on land. Boat operators 17 years old and under are required to pass a course in safe boat handling, but it is advisable for adults to take such a course before heading out, too. Courses are given by the U.S. Coast Guard Auxiliary, and the U.S. Power Squadrons, as well as private groups.

Most boats will have a U.S. Coast Guard Capacity Information Plate which indicates the number of people the vessel can safely carry in good weather conditions. Otherwise, the formula for calculating passenger capacity, based on a 150-pound average weight person is: number of people = length multiplied by width divided by 15. Be sure not to overload.

Smaller boats are generally less stable than larger boats and hence, passengers should not stand up or make sudden moves which might cause the boat to capsize. In fact, many accidents and fatalities involve capsizing or someone falling overboard, perhaps unconscious from sustaining a head injury during the course of the fall. Consumption of alcohol or lengthy exposure to sun and heat may reduce reaction time; hypothermia may set in and further reduce the ability of the person overboard to survive. Using flotation devices in any questionable situation, especially in small



PHIL LEO



Recycling at Marinas

Trash found in our waters is unsightly, a hazard to boaters and a threat to public health and marine life. Currently, DEP is implementing a marina recycling pilot project to encourage recycling at port, discourage tossing trash overboard and inform boaters about the problems of marine pollution.

The three participating marinas are the Winter Yacht Basin, Brick, Ocean County; Lincoln Harbor Yacht Club, Weehawken, Hudson County; and the Frank S. Farley State Marina, Atlantic City, Atlantic County. From May to September, 1990, more than 723 fifty-five gallon containers of glass, aluminum cans, newspapers and plastic beverage containers were recycled by boaters at the three marinas.

A "How to Recycle at Your Marina" kit for the NJ boating community is being distributed to help marina operators implement or improve recycling programs. The kit provides helpful hints and materials on recycling, ocean pollution, the disposal of waste oil, Marpol requirements and other essential marine pollution information for marina operators and boaters. For further information on this project or the kit, contact DEP at 609-633-1317.

Inspecting Navigational Aids

Every year, a 14 person crew from DEP's Division of Coastal Resources maintains navigational aids in 600 miles of NJ inland waterways and two large lakes, Lake Hopatcong and portions of Greenwood Lake. In the inland waterways, they build, repair, position, maintain or remove 465 floating aids, 100 lights on navigational structures, 32 floating lights, 90 slow speed buoys and more than 2,000 cedar poles that are used to hold day markers in narrow channels. The same work is done on 130 aids to navigation in the two lakes.

With more than 160,000 registered boaters in NJ, carefully placed aids to navigation are essential for safe boating traffic on our waterways. Be sure to report damage to these markers.

boats, can help avoid serious injury or death. When a vessel capsizes or is disabled, staying with the boat generally increases the chance of being rescued.

Understanding and obeying aids to navigation is also vital. And don't forget that a lot of narrow floating docks and fingers may be unstable and a sudden move may end in a dunking. Even stepping into your boat should be done with respect for the characteristics of the element you are entering.

Launch safely

Launching any boat is easier if the boat ramp is fairly steep. A trailer with rollers also makes the job easier. If the boat is not properly balanced when the trailer and the motor are up while the boat is being launched, it may be damaged.

If you partially submerge your trailer to launch or load your boat, be sure to disconnect the trailer lights before starting. Likewise, if you have a power winch or other electrically powered devices on the trailer, they should be grounded to the towing vehicle, not the trailer, or you might get a shock from either standing in the water or touching the trailer.

Wheel bearings on the trailer should be replaced with properly lubricated "buddy bearings," and other parts of the trailer which may be exposed to water, especially salt water, should be kept lubricated to promote longer life. Rinsing with fresh water is also helpful.

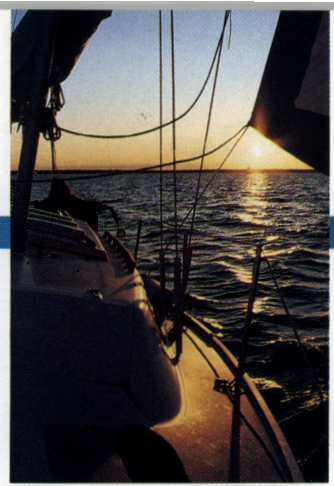
Treat the environment gently

Boaters pollute the water in deliberate and accidental ways that degrade water quality and harm aquatic life. Here are just a few ways to keep water quality desirable and to maintain the beauty of the waterways.

Boat Bottom Paint: Fiberglass boats do not require painting except antifouling bottom paint to discourage the buildup of barnacles and other hitchhiking aquatic life on the part of the boat that remains in the water.

Bottom paint is toxic not only to the aquatic life it is designed to discourage, but also to other animals, including fish and shellfish and to the humans who apply it. It is illegal to use antifouling bottom paint containing tributyltin (TBT) on boats less than 82 feet in length because of its highly toxic nature.

Most boats that remain in the water during the boating season will need to be painted once a year. If you trailer your boat and remove it from the water each day, you may not need antifouling



bottom paints of any type, especially if you rinse off the bottom after each use.

Solid Waste: Keep trash and recycling containers on board your vessel. Never toss trash overboard, since litter, especially plastic litter, is regularly mistaken for food by birds and aquatic life, causing serious injury and even death. Garbage can also become entangled in propellers and clog intake systems on boats, causing malfunctions and expensive repair bills. New federal regulations called Marpol Annex V prohibit the dumping of plastic and other debris from boats into the water. Violators are subject to civil and criminal penalties. If your marina does not recycle, remind the marina operator that recycling is mandatory in NJ.

Sanitary Wastes: The discharge of sewage, even treated sewage, can cause pollution which may make swimming or harvesting of shellfish a health hazard. In fact, laws permit discharges only from approved sanitation devices that treat sewage. Even these systems should be used only in deep open waters, preferably 20 feet deep or three miles offshore.

Other systems which have holding tanks must be taken to a pumpout station for waste disposal. Waste from a porta-pottie should be properly disposed of at a site other than a marina or crowded anchorage area, since on-land systems at such sites already may be overloaded.

Boat Cleanup: Federal laws prohibit the discharge of oil or oily waste into our waterways if it creates a film or sheen, discolors the surface water or builds up sludge beneath the surface. Even where a violation does not occur, oily residues washed overboard while cleaning create a pollution hazard.

Biodegradable cleaners and those that bond with the oil still leave oil residue in the water, along with the used cleaning substances. Great care should be taken to wipe up as much oil and dirt from the bilge and engine as possible and to dispose of it properly. Likewise, cleaning solvents for use on the boat or its trim should be used sparingly and kept out of waterways as much as possible.

Remember, the minute you leave the launching site or slip, you are entering a whole new world, with no highway-like lanes of travel and many imperceptible hazards underwater. Be prepared for the unexpected.

Priscilla Hayes is a freelance writer living in Robbinsville and a former deputy attorney general in NJ.

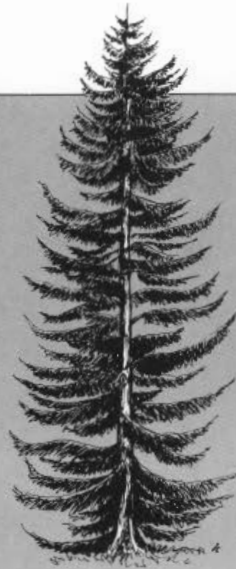
Where to Get Important Boating Information

- For specific boating safety questions:**
U.S. Coast Guard Boating Safety Hotline, 1-800-368-5647
- For courses in your area on safe boat handling:**
 - Marine Police at (609)-882-2000, Ext. 2533
 - BOAT-US Foundation, 1-800-336-BOAT
- Brochures containing boating safety tips:**
 - BOAT-US Foundation, 1-800-336-BOAT
 - Safe Captains USA, (201)-257-1083
 - New Jersey Sea Grant, Communications Office, (201)-872-1300
- Grant money for "grass roots" boating safety programs:**
BOAT-US Foundation, 1-800-336-BOAT
- New Jersey coastal boat launching sites and trailering tips:**
New Jersey Sea Grant, Communications Office, (201)-872-1300
- Aids to navigation brochures:**
 - Fifth Coast Guard District, (804)-398-6486 or 398-6552
 - U.S. Coast Guard Boating Safety Hotline, 1-800-368-5647
 - Safe Captains USA, (201)-257-1083
- "Rules of the Road Decal" and Boaters' Source Directory:**
BOAT-US Foundation, 1-800-336-BOAT
- Brochures on the "Safer Use of Boat Bottom Paints" and "A Guide to Pumpout Facilities in New Jersey:"**
New Jersey Department of Environmental Protection, (609)-984-0921
- List of New Jersey marinas and launching sites:**
 - Marine Trade Association of New Jersey, (201)-269-1412, (201)-915-0559 or (609)-927-8659
 - New Jersey Division of Travel and Tourism, (609)-292-2470
- Brochure on ways to be an environmentally responsible boater:**
New Jersey Department of Environmental Protection, (609)-633-1317

Roundup

Hazardous Waste Slide Program and Brochure

DEP's Division of Hazardous Site Mitigation (DHSM), Bureau of Community Relations (BCR), has developed an audio-visual slide presentation and an accompanying brochure to meet the growing public demand for information about hazardous waste issues. The slide program runs 22 minutes and is designed for general audiences, including school groups starting at the intermediate level. The brochure gives an overview of NJ's hazardous waste management program and includes recommendations on what individuals can do about hazardous household products. *To receive the brochure and/or schedule this program for a group presentation, please write to Grace Singer, chief, BCR, DHSM, DEP, CN 413, Trenton 08625-0413. (If scheduling a program, please include the following information: date desired, time, location, name and/or orientation of group, approximate number expected to attend and a telephone number.)*



THE ADVERTISING COUNCIL

**One tree can make
3 million matches**

**One match can
burn 3 million trees**

A reminder: The danger of forest fire in NJ is highest between mid March and mid May, usually peaking in April. But forest fires can occur at any time of the year when the woods are dry enough to burn. Even after a rainfall the forest floor is often dry or prone to dry from winds in a few hours. The state Forest Fire Service, a unit of DEP's Division of Parks and Forestry, reported that in 1990 a total of 1,250 fires burned 2,650 acres of NJ's woodlands.

Most wildfires are the result of human activities. Please practice fire prevention—make sure campfires are completely extinguished, butt cigarettes in the car ashtray when driving through wooded areas and keep matches away from children. Lives, property, animal life, hundreds of acres of forest land and thousands of dollars in fire-fighting equipment thus will be saved.

All forest fires should be reported. To report a forest fire, dial "O" for the telephone operator and say, "I want to report a forest fire." You will be connected to the nearest firewarden.

Mercury Cleanup Completed

The removal and disposal of mercury-contaminated soils from ten properties in Wood-Ridge and one property in Moonachie, near the Ventron/Velsicol Superfund site (also known as the Berry's Creek site) in Bergen County, was completed three weeks ahead of schedule this past fall. The contaminated soil was excavated from the 11 sites, replaced with clean fill and replanted with vegetative cover. The excavated soils were transported to the Bergen County Solid Waste Transfer Station for proper disposal. The cleanup represents a continuing effort to reduce the off-site impacts of Superfund sites on surrounding areas in an increasingly expeditious manner. DEP will seek cost reimbursement of the state funds used for the cleanup from the currently identified responsible parties, Morton International, Inc., and Velsicol Chemical Corporation.

DEP ACTION LINE

To Report Abuses of
the Environment

Call:

609-292-7172

24 hours a day.



Tons of Debris Cleaned from Shore

Nearly ten million pounds of material was collected between April and November 1990 through "Operation Clean Shores," the state program that uses selected prison inmates to pick up debris along NJ's northern coastal areas. Cleanup activities involved combing the shoreline and collecting recyclable items such as glass, aluminum and plastics. Large chunks of driftwood from old piers were cut into smaller pieces by a private contractor.

The wood and other large material were collected by a front-end loader for removal by the local municipality (see photo). Finally, each site was raked and remaining items moved.

"Operation Clean Shores" is a cooperative effort by the state departments of Environmental Protection and Corrections, local municipalities and, in 1990, several private industries with property along the waterfront. The total amount of wood, plastic, glass and metals collected by inmates since the effort began in 1989 totals more than 16 million pounds.

No application deadline

Emergency Grant and Loan Fund for Historic Properties

The Emergency Grant and Loan Fund, established by the NJ Historic Trust in 1979 and maintained by private and public donations, offers a quick response to emergencies, aids small-scale projects and assists preservation activities that are outside the scope of the Historic Preservation Bond Program. Awards may fund the stabilization, repair, purchase or other direct protection of threatened historic sites. Awards also may be used for the preparation of research reports or architectural plans.

Assistance is provided by dollar-for-dollar matching grants, and/or short term, low-interest loans. Grant awards range from \$1,000 to \$10,000. Applicants must be either nonprofit organizations or county or municipal agencies. Properties helped through the fund must be listed in the NJ Register of Historic Places or be certified as eligible for listing.

Applications are accepted throughout the year. For further information, contact: NJ Historic Trust, DEP, 506-508 E. State St., CN 404, Trenton 08625-0404.

Special Park Pass and License Programs

The 1991 NJ State Park Pass, which costs \$35, permits "free" entry to state park system areas that charge daily parking or walk-in fees. Frequent day-use visitors will find the pass both economical and convenient. The pass does not guarantee entry when facilities are closed because they are filled to capacity. PLEASE NOTE: The NJ State Park Pass is NOT VALID for buses.

Senior Citizen Park Passes for free admission and free parking to day-use facilities at any state park/forest/recreation area or historic site are available to state residents age 62 or over upon presenting proof of age and completing the application form. Holders of Senior Citizen Passes receive a \$2 reduction on camping fees. Other charges are not covered by the pass. **Totally Disabled Person Passes**, which provide the same free admission and free parking privileges and a \$2 reduction on camping fees, are available to

NJ residents who are totally disabled. Applications for these three types of passes can be obtained at any state park/forest/recreation area or historic site office, or from DEP, Division of Parks and Forestry, CN 404, Trenton 08625-0404.

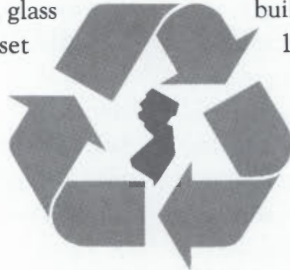
Free Clamming and Oystering Licenses (one license is issued for both activities) are available to state residents age 62 and over for a \$2 application fee. **Free Fishing Licenses and Trout Stamps** are available to NJ residents afflicted with total blindness. No application fee. Applications for any of these licenses can be obtained from DEP, Division of Fish, Game and Wildlife, CN 400, Trenton 08625-0400.

Jr.-Sr. Fishing Licenses, which cost \$7 each (the regular cost is \$12.25), are available to state residents ages 14, 15 and ages 65 - 69 from any license agent (most sporting goods stores) in the state or from the division. The Trout Stamp costs an additional \$6.25.

Practicing What We Preach

March 31, 1990, marked the third anniversary of the recycling program at the DEP headquarters building in Trenton. Three weeks before the statewide recycling bill became law in April 1987, mini centers for the collection of aluminum cans, glass bottles and newspapers were set up on each floor and in the cafeteria for use by employees and visitors. The collected recyclables are removed by and donated to the City of Trenton.

DEP, like all state agencies, has been recycling office paper for several years and using recycled paper whenever



practicable. Office paper is sold to a contracted vendor. All revenues from this program are returned to the state's general revenue fund.

Between April 1987 and November 1990, the DEP headquarters building recycled approximately 12,515 pounds of aluminum cans, 14,359 pounds of glass, 61,770 pounds of newspaper and 345,807 pounds of office paper. *According to DEP's Office of Recycling, this recycling saved 3,465 trees, 693 barrels of oil, 1,426,600 gallons of water, 815 cubic yards of landfill, and 835,580 kilowatts of electricity.*

JOE KLEIN



BOXWOOD HALL. Built about 1750 by Samuel Woodruff, Mayor of Elizabeth, Boxwood Hall later became the home of Elias Boudinot, president of the Continental Congress and a signer of the "Peace with Great Britain." George Washington met with the Committee of Congress here on April 23, 1789 on the way to New York for his inauguration as first president of the United States of America. The French general and statesman, Marquis de LaFayette, was entertained in Boxwood Hall on his triumphal tour of the U.S. in 1824. The house, which contains period furniture, is located at 1073 East Jersey Street, Elizabeth (Union County). There is no admission charge. Please call (201) 648-4540 for visiting schedule. This historic site is administered by DEP's Division of Parks and Forestry.

Visit 'Ms. Liberty' and Ellis Island

The ferry boat service to the Statue of Liberty and Ellis Island from Liberty State Park is operated by the Circle Line in cooperation with the National Park Service. For information about sailing schedule and rates, please call (212) 269-5755 or (201) 435-9499. The parking fees at the Circle Line lot per day are \$3 per car and \$20 per bus (school buses are exempt). Liberty State Park is located on the Jersey City waterfront (Hudson County), off Exit 14B of the NJ Turnpike.





"Foxes," a signed, limited edition print by wildlife artist Irene V. Bowers of Milford, NJ, was created especially for the Pequest Natural Resource Education Center at NJ's Pequest

Trout Hatchery. The contributions received from the sale at \$10 each of the limited run of 500 prints will benefit the education program. *Prints are available only at the education center.*

Phone: (201) 637-4125. The education center and the hatchery, located on Route 46 in Oxford, NJ, are administered by DEP's Division of Fish, Game and Wildlife.

THE PEACE TREE. The Salem Oak (right) took its place in history more than 300 years ago when, under its boughs, a treaty of peace and friendship was concluded between the Lenni Lenape Indians and John Fenwick, leader of one of the first groups to settle in the area now known as Salem County. The year was 1675. The sturdy white oak (more than 20 feet in circumference at breast height) still stands, surrounded by the historic Salem Friends' Burial Ground in the city of Salem. "Salem," like the Hebrew word "Shalom" and the Arabic word "Salaam," means peace. Arbor Day, the annual "celebration of the trees," is observed in NJ the fourth Friday in April — this year, April 26. Tree planting ceremonies are held throughout the state in schoolyards and in the greens of villages, towns and cities to call attention to the benefits provided by these wonders of nature.



JOE KLEIN

NJ Water Watch Groups 'Adopt' Local Waterways

In October 1988, DEP began a pilot program called NJ Water Watch to involve community and neighborhood groups in the protection of the state's water resources. Through the program, the volunteer groups "adopt" a local lake, stream or wetlands and play a significant role maintaining and enhancing it. More than 100 groups joined the program in its first two years. For more information about the NJ Water Watch Program, contact Kyra Hoffman, DEP, Division of Water Resources, CN 029, Trenton 08625-0029. Phone: (609) 633-7021.



Barrier Free Beach Access

Don't let being confined to a wheelchair or being otherwise physically limited keep you from joining friends and relatives for an outing in a recreation facility. The newer areas — Spruce Run, Round Valley, Liberty and Atsion — have barrier free design. At Island Beach State Park there is an access ramp from each of the two bathouses to the water line. The ramps will be in place from Memorial Day through Labor Day. A new access ramp (which begins at the parking area) and observation deck was completed at Cape May Point State Park in 1989. Other parks, such as Washington Crossing, which have nature trails for the blind, are partially barrier free. Also, new facilities — visitor centers and bathhouses, for example — have sanitary facilities with safety bars and booths wide enough to accommodate wheelchairs. The *State Parks and Forests in New Jersey* brochure (mentioned under "Bookshelf, page 62)

lists the addresses and phone numbers of all state park/forest/recreation area offices. To find out the degree of difficulty for handicapped persons at a facility, contact the particular office in advance of your trip.



The barrier free ramp and deck at Island Beach State Park

Get Those Swimsuits Ready!

Fourteen inland beach/park areas and the pool at Liberty State Park will open for the 1991 season on May 25, Memorial Day weekend. The oceanfront area, Island Beach State Park, will open later, on June 15, when the water temperature is more comfortable.

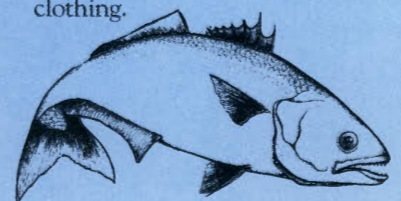
Here's the list, by county, of state operated facilities with swimming areas. Inland: BURLINGTON—Atsion Recreation Area (RA) in Wharton State Forest (SF), Bass River SF, Lebanon SF; CAPE MAY—Belleplain SF; HUDSON—Liberty State Park (SP);

HUNTERDON—Round Valley RA, Spruce Run RA; MIDDLESEX—Cheesequake SP; MORRIS—Hopatcong SP; PASSAIC—Shepherd Lake in Ringwood SP; SALEM—Parvin SP; SUSSEX—Stokes SF, High Point SP, Swartwood SP, Wawayanda SP. Oceanfront: OCEAN—Island Beach SP.

Trained lifeguards will be on duty at all state operated swimming areas. The guards have to pass a series of difficult performance tests at various facilities and must take part in a summer long program of physical conditioning, first aid and water safety.

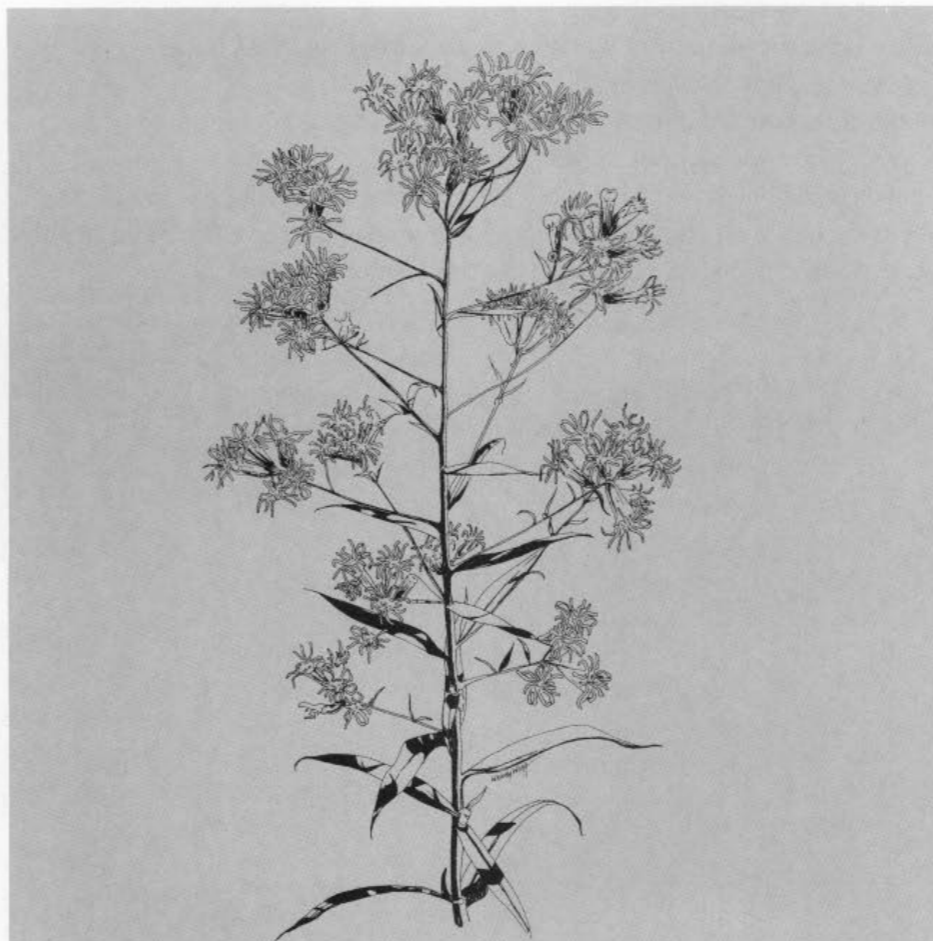
Attention Anglers:

DEP's Division of Fish, Game and Wildlife reminds anglers that the NJ fishing license must be prominently displayed on outer clothing.



Two NJ Newspapers Top Rep.'s Recycler List

Two NJ newspapers — the *Newark Star-Ledger* and the *Asbury Park Press* — recently were listed as among the most environmentally friendly publications in the nation based on their use of entirely recycled newsprint. Congressional representative Richard T. Schulze of Chester County, PA, said the rankings were based on a survey of 100 newspapers he conducted to draw attention to what he called “the number one identifiable source of solid waste in the nation” — newsprint.



FALSE BONESET. NJ's only known remaining population of False Boneset (*Kuhnia eupatorioides*) is located in Sussex County and consists of about 50 plants. The land on which this plant population is found is considered vulnerable to development because it is privately owned upland habitat and is adjacent to property that is in the process of being developed. The False Boneset, which reaches the northern limit of its U. S. range in NJ, has cream-colored flowers and is a member of the Composite or Daisy Family. (Above, Pen and ink drawing by Wendy Wolff from a photo by David B. Snyder.)

About ten percent of NJ's native plant species are now officially classified as endangered. The Endangered Plant Species List, adopted on June 4, 1990, contains 287 species. For further information or to obtain a copy of the list, please contact Robert J. Cartica, DEP, Division of Parks and Forestry, Office of Natural Lands Management, CN 404, Trenton 08625-0404.

NJ ReLeaf to Plant Eight Million Trees

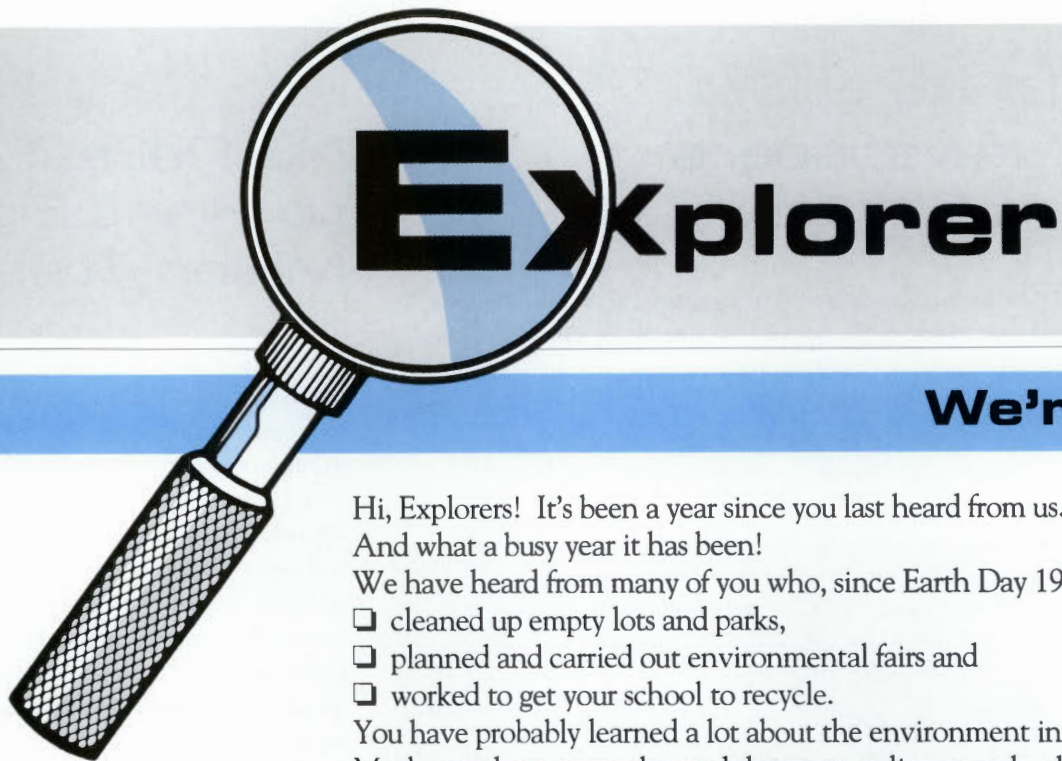
NJ ReLeaf plans to change the current practice of replacing one tree for every four cut down by planting and maintaining eight million trees, one tree for every New Jerseyan. The goal of NJ ReLeaf, an alliance of leaders from business, professional and civic organizations, state forestry officials and private citizens, is to function as a statewide education, action and lobbying group to improve the state's environment through the planting of more and better trees and forests.

The majority of trees planted by NJ ReLeaf will be placed in urban settings, especially in treeless city streets, where they will add beauty and help to clean and cool the air. For more information, write to NJ ReLeaf, 501 E. State St., CN 404, Trenton 08625-0404.

Service for Home Buyers

DEP's Hazardous Site Information Program is a public service for prospective home buyers and sellers, real estate agents, legal professionals, lending institutions and government agencies concerning hazardous waste sites at or near properties of interest. The program deals primarily with information on 1,450 known or suspected hazardous waste sites, including Superfund sites. Contact HSIP at (609) 633-2325 or (609) 984-3081, or write to: DEP, Division of Hazardous Site Mitigation, Bureau of Community Relations, HSIP, CN 413, Trenton 08625-0413. *Please be prepared to give the following information: county, municipality, street and cross street closest to property of interest.*

By Edith H. Joseph, staff writer, Office of Communications and Public Education, DEP



Explorer

We're Back!

Hi, Explorers! It's been a year since you last heard from us. And what a busy year it has been!

We have heard from many of you who, since Earth Day 1990, have:

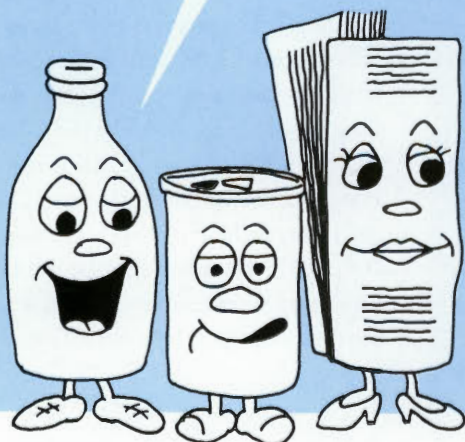
- cleaned up empty lots and parks,
- planned and carried out environmental fairs and
- worked to get your school to recycle.

You have probably learned a lot about the environment in the past year.

Maybe you have even changed the way you live to make the earth more healthy.

To see how much you have learned, take this **Explorer Survey**.

**RECYCLE
US!**



- | | |
|---|-----|
| 1. Using energy wisely helps the environment. | T F |
| 2. An environmentally safe way to clean the bathroom is to use baking soda instead of cleansers with chlorine (klor-een). | T F |
| 3. Trees do nothing for the environment except make it prettier. | T F |
| 4. All New Jerseyans are required to recycle much of their household trash. | T F |
| 5. We can pollute wetlands by pouring used motor oil or unused household cleaners in our backyards. | T F |
| 6. Bald eagles do not nest in New Jersey. | T F |
| 7. You should care for chicks that have fallen from their nests. | T F |
| 8. Food scraps can be used as food for livestock. | T F |
| 9. An area of land cluttered with abandoned buildings and parking lots can never again be parks or homes for wildlife. | T F |
| 10. We can prevent pollution by changing the way we live and the things we buy. | T F |

The answers to the **Explorer Survey** are below.

No matter how well you scored, you can learn more about all these things in this issue of **New Jersey Outdoors**.

Answers to the Explorer Survey:
1-T, 2-T, 3-F, 4-T, 5-T, 6-F, 7-F, 8-T, 9-F, 10-T.

A Scavenger Hunt to help you along your way!

1. Find five things that you can do at your house that will cause less damage to the environment.
2. Find a picture of a place that soaks up flooding rain water and filters pollution.
3. Find a picture of a place you could go to learn more about trees and shrubs.
4. Find a habitat where the water is cleaner and, as a result, fish populations are increasing.
5. Find two people that grow crops without using insect or weed killers called pesticides.
6. Find a picture of a town that looks like it did 100 years ago.
7. Find the name of the park that will soon be the home to the New Jersey State Aquarium.
8. Find information on NJ ReLeaf.

Clues to the Scavenger Hunt are at the bottom of this page.

1. Read, with your parents, the lists of things that you can do on pages 30-33.
2. Refer to pages 25 and 26 for the answer!
3. Look at page 4 for a clue.
4. The article on pages 20-24 looks like a winner!
5. Turn to pages 6-8 for an interesting story.
6. Can page 45 help you with this one?
7. Read, with your parents, the article on page 9.
8. Page 55 contains helpful information about this group.



Responsible Water Ways

Spring is a good time to explore New Jersey's waterways. Whether you're preparing to canoe the Oswego River or water ski in the Barnegat Bay, remember to pack your manners. Here is a list of manners to include but first you have to fill in the blanks. Unscramble the letters that fall in the spaces with the "O" to complete the message below.

Put your recyclables, things that can be _____ O _____, in a separate bag.

Put your _____ O _____ in a bag that can be closed.

Give the "right of way" to boaters that are _____ O _____ for the same area in the water.

Obey the law by not taking shellfish like _____ O _____ from areas that are posted.

(Those areas are closed for harvesting shellfish to protect your health.)

When you go ashore to explore, stay on the _____ O _____ or walkway.

(If everyone made his and her own trail there wouldn't be anything to explore.)

Pick up _____ O _____ left behind by other boaters.

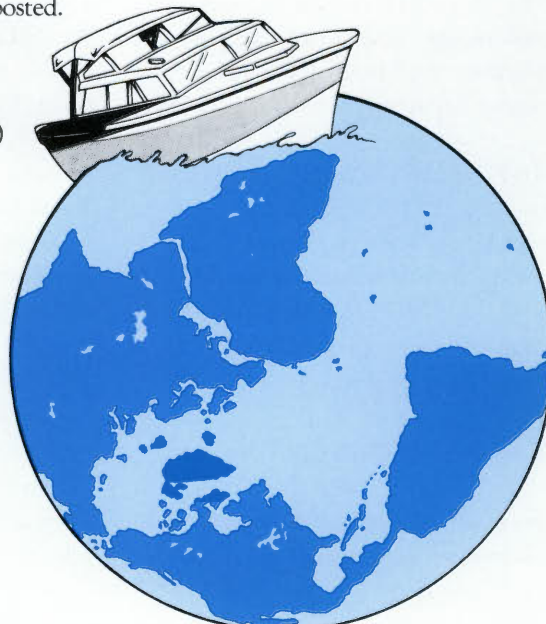
(This is not always ugly but it can harm plants and animals.)

Dispose of human _____ O _____ into marina holding tanks or use land based toilets.

(The bacteria, or germs, in the sewage dumped from your boat adds to bacteria levels in the water.

If levels are too high, beaches could be closed to swimming and shellfish beds could be closed to harvesting.)

_____ the Earth and Each Other.



Answers: recycled, trash, competing, clams, trail, litter, waste, RESPECT

Events

APRIL

16 NJ & NORTHEAST REGIONAL DAFFODIL SHOW Specimens, individual arrangements, perennials. **Hours:** 12:30 p.m. - 6:00 p.m. **Admission:** free **Phone:** (201) 326-7600 **Location:** Frelinghuysen Arboretum, 53 East Hanover Ave., Morristown

16 SEASON OPENING - WATER-LOO VILLAGE Restored historic village in Allamuchy State Park; special events, concerts and festivals take place regularly throughout the year. **Hours:** 10:00 a.m. - 6:00 p.m. **Admission:** Monday - Friday, \$6.00 adults, \$4.50 senior citizens and \$3.00 children; Saturday - Sunday, \$7.50 adults, \$5.00 senior citizens and \$3.00 children **Phone:** (201) 347-0900 **Location:** Waterloo Rd., Rt. 80 West, Exit 25

17 "FROM THE ADIRONDACKS TO THE ATLANTIC: A STORY OF THE HUDSON RIVER" Slide show. **Hours:** 8:00 p.m. **Admission:** free **Phone:** (201) 768-1360 **Location:** Hudson River Sloop Clearwater Auditorium in Fort Lee Historic Park

18-21 CAPE ATLANTIC BOAT SHOW AND BAY HERITAGE FESTIVAL Arts and crafts and seafood festival. **Hours:** 10:00 a.m. - 6:00 p.m. **Admission:** free **Phone:** (609) 927-8659 **Location:** Bay Ave., Somers Point

19-28 FINE ARTS WILDLIFE SHOW 225 pieces of art by wildlife artists throughout the country. **Hours:** 10:00 a.m. - 5:00 p.m. daily **Admission:** free **Phone:** (201) 567-1265 **Location:** Flat Rock Brook Nature Center, 433 Van Nostrand Ave., Englewood

20 TALKIN' TURKEY DEP biologist and turkey hunting expert Dave Chanda conducts annual program about the state's largest (and smartest) game bird, the Wild

Turkey Restoration Project and turkey hunting tips. **Hours:** 7:30 p.m. **Admission:** free **Phone:** (908) 637-4125 **Location:** Pequest Trout Hatchery Natural Resource Education Center, 9 miles west of Hackettstown, Rt. 46

20 PASSAIC PADDLE Spring rains make paddling down Passaic pleasurable, staff naturalists lead the way, trip originates in Great Swamp; sponsored by the Somerset County Parks Commission. **Hours:** 8:30 a.m. - 5:00 p.m. **Admission:** \$10/person **Phone:** (908) 766-2489 **Location:** Environmental Education Center, 190 Lord Stirling Rd., Basking Ridge

20 TRENTON OR BUST ! (Class I) First of a season-long series of canoeing trips aimed at covering the entire 210 miles of the Delaware River from Hancock, NY to Trenton, NJ; the first leg is from Easton to Upper Black Eddy; sponsored by Metropolitan Canoe & Kayak Club. **Hours:** 9:00 a.m. - end **Admission:** \$15.00 dues upon joining the club; general public free **Phone:** (718) 643-5324 **Location:** write to Larry Stone, 28 Highland Pl., Great Neck, N.Y. 10022

21 DELAWARE AND RARITAN CANAL SERIES A warmup for the series of paddles on the canal; runs from Griggstown to Millstone and back; sponsored by Metropolitan Canoe & Kayak Club and the Garden State Canoe Club. **Hours:** 9:00 a.m. - end **Admission:** free **Phone:** (201) 434-2000 **Location:** call for details

21 "JEWELS OF THE PALISADES" Nature walk with Nancy Slowik, naturalist. **Hours:** 10:00 a.m. **Admission:** \$2.50 per car **Phone:** (201) 768-1360 **Location:** Meet at south end of Alpine Boat Basin, Alpine

21 EARTH DAY, 21 YEARS AND COMING OF AGE Day devoted to renewing our commitments to save the planet; games, crafts, displays and information will be available. **Hours:** 11:00 a.m. - 4:00 p.m. **Admission:** free **Phone:** (201) 635-6629 **Location:** Great Swamp Education Center, 247 Southern Blvd., Chatham

23 FLOODPLAIN FLOAT Spring rains flood Passaic River's banks, transforming the Great Swamp; see the floodplain by canoe and paddle through woods and marshes; sponsored by Somerset County Park Commission. **Hours:** 5:30 p.m.-7:00 p.m. **Admission:** \$6.50/person **Phone:** (908) 766-2489 **Location:** Environmental Education Center, 190 Lord Stirling Rd., Basking Ridge

27-28 TULIP FESTIVAL In celebration of the town's Dutch founder; special events take place and tulips adorn the town. **Hours:** 9:00 a.m. - 5:00 p.m. **Admission:** free **Phone:** (609) 884-9565 **Location:** Washington St. Mall & Convention Hall, Cape May

27-28 LAMBERTVILLE SHAD FESTIVAL An arts and crafts show and shad dinner on the riverside; celebrating the return of the shad to the Delaware. **Hours:** 12:00 p.m. - 6:00 p.m. **Admission:** free **Phone:** (609) 397-0055 **Location:** Lambertville, Bridge & Union Sts.

MAY

1-31 MAY IN MONTCLAIR - MONTH LONG FESTIVAL Celebrating Montclair's varied ethnic heritage; art shows, films, concerts, drama, markets, garden tours, parades. **Hours:** call for details **Admission:** free **Phone:** (201) 744-7660 **Location:** Montclair

2 FLOODPLAIN FLOAT Same as April 23 but with a family focus

2-5 16th ANNUAL BARNEGAT BOAT SHOW Family day outing, new and used power and sailboats on exhibit on the land and in the water. **Hours:** Tuesday, Friday, Saturday, 10:00 a.m. - 7:00 p.m.; Sunday, 10:00 a.m. - 5:00 p.m. **Admission:** free **Phone:** (908) 793-8383 **Location:** Bay Beaches on Seaside Heights Boardwalk

4 TRENTON OR BUST!(I) Bull's Island to Trenton; second of a season-long series of canoe trips. See April 20 for more information

4 BLUE MOUNTAIN HIKE Exhilarating spring hike through Tillman Ravine, along the Delaware River to peak of Blue Mountain; learn natural and cultural history as you hike; bring food and water. **Hours:** 8:00 a.m. - 5:00 p.m. **Admission:** \$20.00 **Phone:** (908) 766-2489 **Location:** Environmental Education Center at Lord Stirling Park, 190 Lord Stirling Rd., Basking Ridge

4-5 AMPHIBIAN AMBLE Explore the Pequest area in search of frogs, toads, newts and other misunderstood creatures. Waterproof footwear will be helpful. **Hours:** 10:30 a.m. - 12:30 p.m., registration required **Admission:** free **Phone:** (201) 637-4125 **Location:** Pequest Trout Hatchery Natural Resource Education Center, 9 miles west of Hackettstown, Rt. 46

5 HIKE ON PALISADES Sponsored by Metropolitan Canoe & Kayak Club.

Hours: 9:30 a.m. - 6:00 p.m. **Admission:** \$2.00 per car **Phone:** (914) 478-1112 **Location:** Alpine Boat Basin, Alpine

5 LITTER CLEAN-UP DAY Hundreds of hikers help clean up litter in our state parks in northern New Jersey and southern New York; sponsored by North Jersey Chapter of the Adirondacks Club. **Hours:** 9:30 a.m. **Admission:** free **Phone:** (212) 685-9699 **Location:** call for details

9 FLOODPLAIN FLOAT Same as April 23 but aimed at participants from grade 10 and up

10-12 CAPE MAY SPRING WEEK-END Weekend of birding, botanizing and natural history study; takes place at the peak of the spring shorebird migration through Cape May. **Hours:** 8:00 a.m. - 12:00 p.m. **Admission:** varies, call for details **Phone:** (609) 884-2736 **Location:** Grand Hotel, Oceanfront and Phila. Aves., Cape May

11 "WARBLER WANDERS" Roam the Pequest Wildlife Management Area in search of the elusive yet vocal warblers which are migrating through this time of year. Beginners welcome. Binoculars are available. **Hours:** 10:30 a.m. - 12:30 p.m. **Admission:** free. See May 4-5 for more information

12 ANNUAL CHERRY BLOSSOM PARADE Floats, bands and dignitaries in a parade through a route lined with cherry trees; includes bike races, hot air balloons, rock concerts, art show, car show and more. **Hours:** 12:30 p.m. - end **Admission:** free **Phone:** (609) 667-4199 **Location:** Haddonfield Rd. and Kings Hwy., Cherry Hill

16 FLOODPLAIN FLOAT Same as April 23

17-19 NEW JERSEY AMERICAN INDIAN CENTER 16TH ANNUAL POW WOW FESTIVAL Native American Indian dances, music, stories, crafts and foods. **Hours:** 9:00 a.m. **Admission:** \$5 adults, \$2 senior citizens and children under 12 **Phone:** (201) 525-0066 **Location:** NJ American Indian Center, 1301 Highway 9, Old Bridge

18 REPTILE DAY Live reptiles, displays, games and information. **Hours:** 1:00 p.m. - 4:00 p.m. **Admission:** free **Phone:** (201) 635-6629 **Location:** The Great Swamp Outdoor Education Center, 247 Southern Blvd., Chatham

18 WILDFLOWER WALK Pequest staff naturalist will conduct a leisurely hike exploring the Pequest Natural Resource Trail's flowering residents. The folklore surrounding some of the plants will be discussed as you learn to identify the plants and are introduced to some of their uses. **Hours:** 10:30 a.m. - 12:30 p.m. **Admission:** free. See May 4-5 for more information

18 DELAWARE AND RARITAN CANAL SERIES Lawrenceville to Kingston; second in a series of paddles on the canal. See April 21 for more information

23 FLOODPLAIN FLOAT Same as April 23

Events

JUNE

1 BIKE RIDE: PETTICOAT BRIDGE & SKUNK ISLAND ROAD 25 miles; delightful, mostly rural ride through the tiny communities of Jacksonville, Columbus and Jobstown; easy to moderate speed. **Hours:** 10:00 a.m. - 6:00 p.m. **Admission:** free **Phone:** (609) 267-7052 **Location:** South Jersey Outdoor Club, Harrisville Dam, Rt. 679, 11 miles south of Stackworth, Burlington County

1 SOUTH JERSEY CANOE AND KAYAK CLASSIC More than 100 models of canoe and kayak; free test paddling clinics, antique canoes, races and more. **Hours:** 9:00 a.m. - 5:00 p.m. **Admission:** \$1.00 per car **Phone:** (908) 370-7380 **Location:** Ocean County Park, Lakewood

2 NATURE DAY Live animals, nature walks, canoe and pony rides, crafts, exhibits and food. **Hours:** 10:00 a.m.-5:00 p.m. **Admission:** \$2 adults, \$1 senior citizens and children **Phone:** (201) 567-1265 **Location:** Flat Rock Nature Center, 443 Van Nostrand Ave., Englewood

2 TRENTON OR BUST! (I) Martin's Creek to Easton, PA; third of a season-long series of canoe trips. See April 20 for more information

2 DELAWARE AND RARITAN CANAL SERIES Kingston to Millstone; third in a series of paddles on the canal. See April 21 for more information

7-9 OCEAN CITY FLOWER SHOW Creative arrangements depicting themes, artistic design and horticultural displays. **Hours:** 7th, 1:00 p.m. - 10:00 p.m.; 8th, 10:00 a.m. - 10:00 p.m.; 9th, 10:00 a.m. - 4:00 p.m. **Admission:** free **Phone:** 1-800-BEACH NJ **Location:** Music Pier Boardwalk

8 BIKE RIDE: HARRISVILLE TO BATSTO 31 miles; mountain laurel is at its peak; water may be warm enough for a dip upon return to the lake after the ride; a picturesque, mostly level ride to Batsto for lunch. **Hours:** 10:00 a.m. - end **Admission:** free **Phone:** (609) 267-7052 **Location:** South Jersey Outdoor Club, Harrisville Dam, Rt. 679, 11 miles south of Stackworth, Burlington County

8 ATLANTIC CITY/PENN FISHING TACKLE MANUFACTURING COMPANY BLUEFISH TOURNAMENT **Hours:** 7:00 a.m. - 2:00 p.m.; rain date, June 9th **Admission:** \$50.00/person **Phone:** (609) 348-7044 **Location:** 2308 Pacific Ave., Atlantic City

8,9 FREE FISHING DAYS No license needed to fish on non-tidal waters. **Hours:** All day **Admission:** free **Phone:** (609) 292-9450 **Location:** call for details

8-9 SOUTH JERSEY TRADITIONAL SMALL BOAT FESTIVAL AND SNEAKBOX RENDEZVOUS Bring own traditional small craft and swap with someone else, or if you don't have a boat just come and participate, bring fixings for a barbecue. **Hours:** 10:00 a.m. - 5:00 p.m., daily **Admission:** free **Phone:** (908) 370-7380 **Location:** Berkeley Island County Park, Bayville

9 WILD EDIBLES DAY Film, lecture, trail walk; walk concludes with the sampling of prepared wild foods; information and recipes will also be available. **Admission:** free **Hours:** 1:00 p.m. - 4:00 p.m. **Phone:** (201) 635-6629 **Location:** Great Swamp Education Center, Chatham

15 DELAWARE AND RARITAN CANAL SERIES Millstone to New Brunswick; fourth in a series of paddles on the canal. See April 21 for more information

15 TRENTON OR BUST! (I-II) Hankins to Narrowsburg; fourth of a season-long series of canoe trips. See April 20 for more information

15-16 MULLICA R. EXPEDITIONS Sponsored by Metropolitan Canoe & Kayak Club. **Hours:** 6:00 p.m. **Admission:** \$25.00/group **Phone:** (201) 231-9124 **Location:** Atsion Ranger Station, call for details

22 "HUCKLEBERRY FINN DAY" Day full of fun and games, frog jumping, watermelon spitting, tug-o'-war into mud, dunk tank into chocolate, watermelon relays; rain date June 29th. **Hours:** 10:00 a.m. - 4:30 p.m. **Admission:** free **Phone:** (609) 567-1901 **Location:** Hammonton, The Cornucopia

29 TRENTON OR BUST!(I) Pond Eddy to Matamoros; fifth of a season-long series of canoe trips. See April 20 for more information

Year-round THE GARBAGE MUSEUM Educational, hands-on museum. **Hours:** Monday-Friday, 9:00 a.m.-5:00 p.m.; Saturday, 10:00 a.m. - 3:00 p.m. **Admission:** \$1.00 **Phone:** (201) 460-1700 **Location:** Hackensack Meadowlands Development Center (HMDC) Environment Center

Outings



Canoeing the Oswego River

Take an eight-mile canoe run on the Oswego River and enjoy the most magnificent Atlantic white cedar stands in the northern United States. Considered one of the most scenic of the Pinelands rivers, the Oswego is best toured in the spring and fall, when the water is at a median flow. You can glide along the meandering river and lazily take in the cedars, pines and maples along the way.

The most popular run begins at Oswego Lake and terminates at Harrisville Lake, where the ruins of an old paper mill still exist. Between the two lakes lies a broad spectrum of flora and fauna typical of the NJ Pinelands. In early spring, you will see mountain laurel, rose pogonias and red maple blossoms. Curly grass ferns, white fringed and orange fringed orchids and the aquatic golden club also lend their colors to the landscape. Carnivorous plants such as sundews, pitcher plants and bladderworts can be found along the banks and in the savannahs throughout the run. As in most of the Pinelands rivers, Atlantic white cedar stands line most of the Oswego's banks, along with stands of sourgum and pitch pine trees.

While on the river, you may glimpse a white-tail deer feeding on the brush and hear mockingbirds sing. In the more open areas of water, you may see red-bellied or painted turtles basking on fallen trees. The turtles slip

beneath the water as you approach them. If you see a water snake, it poses no threat if left alone and is actually entertaining to watch as it gracefully skims across the water. Only at night can you possibly hear the mating call of NJ treefrogs such as the spring peeper and the Pine Barrens treefrog.

A blueberry and cranberry station is located roughly an hour down the river off to the right. The Pinelands is the nation's second largest blueberry and third largest cranberry production area. Look for remnants of an old pumping station, once used to pump water from the Oswego 25 feet into a canal, where it was transported to a cranberry bog over a mile away.

Other sites include Martha Pond State Natural area, nearly four hours downstream from the access point, depending on your canoeing ability and timeframe. Martha Pond is an open area exhibiting much of the flora and fauna mentioned. Sitting just below the pond is Martha's Furnace, another industrial era ruin, now decorated with orchids and bog asphodel. To see it, you must get out of your canoe and walk along the sand road leading into the ruins area where as many as 400 people once worked in the iron ore furnace. After passing under the old Martha Bridge, the river narrows and an outstanding view of mountain laurel appears.

Approximately 45 minutes from Martha's Furnace awaits Harrisville Lake and the toughest part of the canoe run. Occasional winds off the water make this part of the trip an arduous home stretch. From here, a 30-minute paddle into the wind brings the excursion to an exhilarating end.

Canoe liveries convenient to this run include Mick's and Pine Barrens (see list below for more information). As in any boating activity, it is important to wear a life preserver while canoeing, regardless of your swimming or paddling ability. And remember, carry out what you carry in.

By Adam Paratore, DEP student intern from the journalism program at Cook College, Rutgers University

A partial list of canoe liveries located in the Pinelands

Most canoe rentals include paddles and life jackets. Some liveries have car top carriers available. Some provide transportation. Fees vary.

- Adam's Canoe Rental, 694 Atsion Rd., Atsion Lake, Vincentown (609) 268-0189
- Art's Canoe Rental, Cedar Creek Camp Ground, 1052 U. S. # 9, Bayville (201) 269-1413
- Bell Haven Lake, Rt. 542, Greenbank (609) 965-2205
- Bridgeton Pleasure Boat Co., Mayor Atken Dr., Bridgeton (609) 455-2160
- Camp Albocondo, 1480 Whitesville Rd., Toms River (201) 349-4079
- Clark's Canoe Rental, Hanover St., Pemberton Boro (609) 894-4318
- Mick's Canoe Rental, Rt. 563, Jenkins, Chatsworth (609) 726-1380
- Mullica River Boat Basin, Rt. 542, Egg Harbor (609) 965-2120
- Mullica River Marina, Rt. 563, Sweetwater (609) 561-4337
- Paradise Lake Campgrounds, Rt. 206, Hammonton (609) 561-7095
- Pine Barrens Canoe Rental, Rt. 563, Chatsworth (609) 726-1515
- Pineland Canoes, Rt. 527, Jackson (908) 364-0389
- Winding River Camp Grounds, Weymouth Rd., Mays Landing (609) 625-3191

Bookshelf

NEW JERSEY AT THE CROSSROADS OF MIGRATION, published by the NJ Audubon Society, (NJAS) emphasizes the importance of NJ to the survival of the hundreds of species of birds which twice each year use our forests, marshes, grasslands, lakes, islands, river valleys, wetlands, mountains and beaches for resting and feeding during the most dangerous and stressful period in their lives — their arduous journey between breeding and wintering grounds. In this 75-page publication, NJAS provides information and guidance to government and private land use planners, developers and conservation organizations, as well as landowners, so that the habitat needs of migratory birds are included in decisions involving land use and acquisition. Cost, \$11 (postage included). Please make checks payable to the NJAS and mail to Crossroads, NJAS, P. O. Box 693, Bernardsville 07924.

PLACES TO FISH, a county by county listing of NJ lakes, ponds, reservoirs and streams open to public angling, was prepared by DEP's Division of Fish, Game and Wildlife. It includes each site's owner, size and distance to the nearest town, as well as information on the status of boat ramps and liveries, use of outboard motors, availability of swimming, picnicking or camping areas and the quality of fishing for various types of fish. To receive a copy of the brochure, please include a self-addressed, #10 envelope carrying 52 cents postage and send to DEP, DFG&W, Dept. NJO, CN 400, Trenton 08625-0400.

STATE PARKS & FORESTS IN NEW JERSEY, prepared by DEP's Division of Parks and Forestry, describes the many recreational opportunities in NJ's state-owned facilities. The brochure includes addresses and phone numbers of state parks, forests, recreation areas and historic sites. (Campsite reservations are handled by the particular park/forest office in charge of the desired campsite.) Available from DEP, DP&F, CN 404, Trenton 08625-0404.

NONPOINT SOURCE POLLUTION, a brochure prepared by DEP's

Division of Water Resources, explains how nonpoint source pollution adversely affects our water quality and what individuals can do to reduce it. Available from DEP, DWR, CN 029, Trenton 08625-0029.

The report of the **COMMISSION ON ENVIRONMENTAL EDUCATION, NEW JERSEY, JUNE 1990**, identifies the knowledge, attitudes, values, behaviors and skills that should be communicated, developed and/or nurtured among the state's citizenry. The commission also compiled a list of recommendations for the development of an environmental education master plan. Single copies of the 19-page report are available from DEP, Office of Communications and Public Education, CN 402, Trenton 08625-0402.

The **1989 COMMUNITY RIGHT-TO-KNOW ANNUAL REPORT**, prepared by DEP's Division of Environmental Quality (DEQ), summarizes the findings about hazardous and toxic substances produced, used, stored and released in NJ. Single copies available from DEP, DEQ, CN 405, Trenton 08625-0405.

HAZARDOUS WASTE CLEANUP PROJECTS: WORK COMPLETED AND IN PROGRESS WITH PUBLIC FUNDS, prepared by DEP's Division of Hazardous Site Mitigation, is a 17-page booklet which includes an overview of the cleanup program, site highlights, community involvement and suggestions for individual action. Available from DEP, Bureau of Community Relations, DHSM, CN 413, Trenton 08625-0413.

THE WORLD WE LIVE IN . . ., a brochure prepared by DEP's Office of Communications and Public Education, is a list of environmental "do's and don'ts." Available from DEP, OCPE, CN 402, Trenton 08625-0402.

TEACHERS: THE FUTURE OF THE ENVIRONMENT DEPENDS ON YOU! is a brochure describing DEP's educational services, including several activity guides provided through in-service workshops and workshops sponsored at federal, state, county and private educa-

tion centers. Available from DEP, OCPE, CN 402, Trenton 08625-0402.

ENVIRONMENTAL COMMISSIONERS' HANDBOOK, published in 1990 by DEP with funding from the Victoria Foundation, is an 88-page guide for local action. It is designed to help environmental commissioners in their responsibilities as local officials charged with protection of natural resources and environmental quality. The handbook incorporates the best knowledge of DEP and the Association of New Jersey Environmental Commissions (ANJEC). Cost, \$10 (ANJEC members, \$8.50) including postage and handling. Available through ANJEC, P. O. Box 157, Mendham 07945.

Geologic Report Series and Geologic Map Series: The publications mentioned below are but a sampling of the many New Jersey Geological Survey (NJGS) bulletins, reports, pamphlets, maps and aerial photographs available from DEP. Orders for the NJGS publications should be mailed to DEP, Map and Publication Sales, Bureau of Revenue, CN 417, Trenton 08625-0417. Please make checks payable to "Treasurer, State of New Jersey." Note: Interested persons should write to the above address for a 42-page price list which includes both NJGS and United States Geological Survey publications.

Geological Survey Report 21. **BIBLIOGRAPHY AND INDEX OF NEW JERSEY GEOLOGY: 1783 -1983.** Harper, David P., and Yost, Kay (eds.), 1989, 180 p. Cost, \$10.

Geologic Map Series 89-1. **SURFICIAL GEOLOGY OF THE BOONTON QUADRANGLE, MORRIS AND SUSSEX COUNTIES, NEW JERSEY**, Stanford, Scott D., 1989, 1 plate. Cost, \$10.

Geological Survey Report 19. **WATER QUALITY DATA FOR THE POTOMAC-RARITAN-MAGOTHY AQUIFER SYSTEM IN THE NORTHERN COASTAL PLAIN OF NEW JERSEY, 1923-86**, Harriman, Douglas A., and others, 1989, 94 p., 2 plates, 2 illus., 8 tables. Cost, \$14.

Marketplace



We are proud to offer you these quality products featuring the threatened great blue heron as part of our new logo. It was inspired by the need to preserve New Jersey's outdoors and the endangered and threatened wildlife that inhabit it. Show your concern for the environment and support New Jersey Outdoors.

Order Form	QUANTITY	SIZE	COLOR	TOTAL PRICE
Sweatshirt with embroidered logo White Hanes Beefy, made in USA, 85% cotton/15% acrylic, reverse knit fleece. Available in adult sizes small, medium, large and extra large \$31.95			White	
T-shirt with screen imprinted logo White Hanes Beefy, made in USA, 100% cotton. Available in adult sizes small(children's large), medium, large and extra large \$10.95			White	
Canvas and mesh carry-all with screen imprinted logo Durable, all-purpose, white totebag with canvas hand straps for the beach, a picnic, shopping or just about anything \$9.95		N/A	White	
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Wildlife in New Jersey

The Return of the Bald Eagle

From my vantage point in the truck, I could see the eagle fledglings perched somewhat unsteadily on the edge of a large nest, nearly five feet in diameter, situated in an old sycamore. As I watched them, I saw an adult eagle soaring overhead on wings nearly seven feet long. It headed for the nest, bringing with it that morning's breakfast — a large yellow perch. The scene was captivating, and even more impressive because I was not in some western state where eagles are abundant — I was right here in NJ.

The near-demise of the eagles was directly related to the widespread use of pesticides in the 1960s and 1970s. As their food sources became contaminated with pesticides, the eagles began to lay eggs that had very thin shells. These shells were easily crushed by the adults during incubation. As a result, no young eagles were produced and nests were gradually abandoned. In the 1970's, only one pair of eagles could be counted, located in the Bear Swamp of Cumberland County.

The pesticide DDT was banned in 1972, but the eagles continued to produce eggshells too thin for survival. Records show that the Bear Swamp eagles still had trouble hatching their eggs up to ten years after the pesticide ban. It was clear that it would take many years for the pesticide to work its way out of the eagles' systems. At this point, state biologists working in DEP's Division of Fish, Game and Wildlife's Endangered and Nongame Species Program (ENSP) began a massive restoration effort.

When the Bear Swamp eagles laid eggs, the biologists collected the eggs from their

nest and incubated them in a laboratory setting. They placed decoy eggs in the nest so that it would not be abandoned. When the eggs hatched, the young were carefully returned to the nest, the decoy eggs were removed and the eaglets were accepted by their parents.

In 1983, in a cooperative effort between the ENSP and the Manitoba Department of Natural Resources, the hatching program was supplemented with a "hacking" program. Hacking involves raising these birds in captivity in a natural habitat setting. These two programs, based in two South Jersey locations, resulted in 66 birds fledging into the wild along the Delaware bayshore. For the program to be successful, these birds were expected to return to NJ at maturity (five to six years old) to establish nests.

Sufficient time has passed for the effects of the two eagle programs to be accurately evaluated. In 1989, the winter count was 48 birds (in 1983 it was less than ten), and in one site near the original hack site, 20 birds roosted throughout the winter of 1989-1990. Early counts from the 1990 census indicate 70 birds in NJ. Even more encouraging are the sightings of territorial pairs. In addition to the original pair in the Bear Swamp, one pair had been located in Salem County in 1988, two other pairs were observed in 1989, both in Cumberland County, and this past year, a fifth pair was seen in Cape May County.

These pairs have been carefully monitored. In 1990 the birds started laying eggs and rearing young. For the first time in nearly 15 years, the Bear Swamp pair raised young without

human help. While three of the other pairs laid eggs, two pairs successfully hatched them and raised the young to fledging.

The fifth pair built a nest on the Cohansey River, but did not lay eggs. By the end of this last season, five new eagles had become NJ residents, which is a good start to restoring the state's population of eagles.

The prospects for full recovery are great, yet there are problems on the horizon. Although occupied eagle habitat is being saved through acquisition of lands and restrictions on development, unoccupied but suitable habitat is being lost. This is especially true along waterways where land is not only being developed for expensive waterside homes, but also degraded by increasing recreational and commercial boat traffic. In addition, it is feared that pesticides may continue to present a problem.

Maintaining an eagle population will be a difficult responsibility for our state. The restoration project took nearly a decade of very intensive work by the ENSP, conservationists and many volunteers, and cost nearly \$200,000. But for most people, seeing a high-flying white headed bald eagle is worth the price.

*By Lawrence Niles, principal zoologist,
Division of Fish, Game & Wildlife*



ACRYLIC PAINTING BY CAROL DECKER



The environmental movement is here to stay. See story on page 30.