

NJPB

# NEW JERSEY Outdoors

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Summer 1991



**Green Acres Celebrates 30 Years**  
The Fight to Save Pyramid Mountain • A Guide to Saltwater Fishing  
Hiking the Pine Barrens • The Treasures of Buck Garden



Golden star (*Chrysogonum virginianum*) provides a burst of summer color at the foot of a rock outcropping at the Leonard J. Buck Garden in Far Hills. See Page 4 for a tour of this Somerset County garden.

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GREG JOHNSON



The Mercer Oak in Princeton Battlefield Park is the symbol of the Green Acres Program.

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**Front:** The summer beauty of Ringwood State Park is reflected in Sally's Pond. Most of the 4,055-acre park in North Jersey was acquired with Green Acres funds.

Photo by George M. Aronson

**Back:**

Photo by Michael A. Hogan

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# Editorial

## From the Commissioner



Scott A. Weiner  
Commissioner

This issue of *New Jersey Outdoors* celebrates the 30th anniversary of our state's natural resource preservation strategy — the Green Acres Program. During the past three decades, the program has provided more than \$500 million in bond funds to help cities, towns and counties acquire and develop more than 280,000 acres of open space and recreational lands.

For citizens of New Jersey — the most densely populated and highly urbanized state in the nation — the Green Acres Program provides a number of environmental benefits: water retention and flood control; fish, wildlife and plant habitat; air pollution control; and water purification.

And Green Acres projects are not simply broad expanses of undeveloped landscape. They have enhanced urban revitalization efforts; expanded and improved state, county and municipal parks; established wildlife management areas and picnic grounds; purchased lakes, wading rivers and forests; and restored historical monuments, battlefields and structures. Green Acres funds also have been used to establish environmental education centers, interpretive walks and hiking trails, and baseball diamonds and soccer fields.

When Green Acres funds enabled New Jersey to become the first state to completely buffer the Appalachian Trail with public lands, it ensured trail walkers an experience of solitude. When the program funded the acquisition and development of Liberty State Park, an oasis of stunning beauty was made easily accessible to millions of people.

It is people, then, that the program is all about. Today, thousands of acres are set aside in a permanent green trust, or legacy, for our children and grandchildren. It is entirely appropriate, therefore, that we devote much of this issue to highlighting the broad and diverse contributions of the Green Acres Program to the lives of the citizens of the state — past, present and future.

Green Acres has helped preserve key natural areas, such as Island Beach State Park.



GREG JOHNSON

State of New Jersey  
Jim Florio  
Governor



Department of Environmental Protection

Scott A. Weiner  
Commissioner

Wendy Kaczerski  
Director, Office of Communications and  
Public Education

**New Jersey Outdoors**  
Summer 1991, Vol. 18, No.2

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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The views and opinions of authors do not necessarily represent the opinion or policies of the Department of Environmental Protection or the State of New Jersey.

# Mailbox

## Kudos From Idaho

Your new magazine is smashing! I'd already grabbed it to show to our designer when your letter and a second copy arrived. If you can continue at this level of excellence when you have to turn out an issue every three months instead of once a year, you'll be getting all kinds of awards (not to mention increased readership!). From the revised contents to the great graphics, it's really a quality product. I especially like the people profiles, "helpful hints" and "where to go/what to see" sidebars. You, your staff and your production people should be proud.

Good luck and keep up the great work.

Diane Ronayne  
Editor, *Idaho Wildlife*

## New Shad Fan

I enjoyed your article on shad and the Delaware River, both the current and historical perspectives. Last Sunday, I had shad for the first time ever and loved it. I'm sending copies of your article to my family, with whom I shared my dinner on that day.

Vicki L. Kohanek  
Trenton

## Congratulations

The magazine is just beautiful. My husband Ray also enjoyed it. Congratulations, and we wish you a huge success with all your efforts.

Alice Tindall  
Ocean City

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**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 08625. We reserve the right to edit letters for length and clarity.

## Spring Issue Available

Limited numbers of the Spring issue of *New Jersey Outdoors* are available at a discounted \$3 price. To order copies, call (609) 292-2477.



## Surprise, Surprise

The unheralded arrival of *New Jersey Outdoors* (after a year's shutdown) was a most welcome surprise. I could not put it down until I finished reading it from cover to cover.

Welcome back *New Jersey Outdoors*!

Lois Ann Kirby  
Medford

What a pleasant surprise to receive *New Jersey Outdoors* in my mail today.

Your Spring 1991 issue is BEAUTIFUL — and I hope it will continue. It was well-worth waiting for. Need I say more?

Elizabeth D. Hart  
East Millstone

## A Boost for New Jersey

I was so pleased to see the re-emergence of *New Jersey Outdoors*. Your magazine shows its readers all the very best our great state has to offer. In these difficult times, we need all the positive input we can get.

I was impressed by the lavish photo spread, "Sites of Spring." The pictures depict the New Jersey I know and enjoy.

Best of luck to all of you at *New Jersey Outdoors*. New Jersey needs the boost you're giving it.

Hans Martini  
Hamilton Square

## 'Egret-gious' Errors

Congratulations on the new issue of *New Jersey Outdoors*. As a longtime resident of New Jersey, I have enjoyed your magazine.

The (Spring) issue, however, seems to have some inaccuracies, unless I am mistaken. The beautiful pictures illustrating "Sites of Spring" identify the birds eating crab eggs as terns, whereas to me they obviously seem to be laughing gulls.

Also, the bird identified as a great egret is really a snowy egret, although its feet aren't seen.

These may be minor points to all but bird watchers, but your readership probably does largely consist of people who appreciate wildlife and nature.

Bjorn Thorbjarnarson  
Fort Lee

*Editor's Note: No, you're not mistaken, and neither were other sharp-eyed readers who brought the errors to our attention. Though you can't see the snowy egret's feet, which would have been an obvious clue to its identity since they are bright yellow, the black bill should have been enough to tip us off. And you're right again about the laughing gulls. Thanks for setting the record straight.*

# Gardens

## Leonard J. Buck Garden

It's hard to look past the beauty of the exotic plant life at Leonard J. Buck Garden in Far Hills. Weekly bursts of spring flowers give way to the deep green tapestry of summer. In September, wildflowers again recharge the garden before brilliant autumn colors command the eye's attention.

There's much more to Buck Garden than pretty plants, however. The landscape is both a guidebook to the rich natural history of Somerset Hills and a laboratory demonstration of nature's diversity. Its design incorporates and celebrates the complexities of rock, soil, water, wind and sun — and how they combine to affect plant life.

The garden's unique design creates an impressive variety of microclimates, according to Melissa Grossman, the garden's curator. Temperatures can differ by as much as 10 degrees between sites that are only yards apart, and those conditions produce entirely different plant communities, she said.

This diversity of plant life and landscape conditions is contained within only 12 acres of a stream valley in the wooded hills of northern Somerset County. The

garden reflects the vision of Leonard J. Buck, who traveled the world as an importer of minerals and ores, and Zenon Schreiber, a renowned rock garden designer. The garden was developed in the 1930s to take advantage of its unique geologic location. Moggy Hollow, as the area is known, was the drainage point of Lake Passaic, a glacial lake that covered much of northern Somerset and southern Morris counties.

Today, visitors can stroll the gardens with a free, 10-page guidebook that paints the landscape as it appeared 12,000 years ago in the times of Lake Passaic. The site of a roaring, ancient waterfall, for instance, now offers an expansive, peaceful view of an emerald pond and garden floor below.

The garden was donated to the Somerset County Park Commission in 1976 by Helen Buck after the death of her husband. The grounds cover 33 acres, but only about a third of the property is cultivated. With part of \$165,000 in Green Acres funding from the N.J. Department of Environmental Protection, the commission transformed a carriage house into a visitors center. Today, Buck Garden is recognized as one of the premier rock gardens in the Northeast.

"Buck Garden is interesting and beautiful on two scales — in its design and in the plant material," Grossman said. The garden includes many plants from distant

lands, such as a dawn redwood that was grown from seeds in China. In fall, its brilliant bronze color is irresistible to photographers. "We will go to all ends of the Earth to find these garden-worthy plants," Grossman said.

Like many treasures, Buck Garden has improved with age. "Part of the beauty of this garden is in its maturity and the intermingling of plants (maturity brings). They grow together in combinations you couldn't think of if you tried," Grossman said.

As if to prove the point, a rhododendron has taken root alongside a flowering moss pink in the crack of a boulder. "One seed out of thousands lodged in there and grew. That's an authenticity that only time can give," Grossman said.

At every turn, Buck Garden demonstrates that plants are inexorably connected to their physical setting. This was the vision of its designers, and it's contained within the beauty of plants collected from throughout the world.

The Leonard J. Buck Garden is open from 10 a.m. to 4 p.m. Monday through Saturday and from noon to 4 p.m. on Sunday. A donation of \$1 is requested for admission. For more information, call (908) 234-2677. 🐾

*By Jim Morris of Bernardsville, a freelance writer and assistant director of the Office of Continuing Education at Cook College*





## Summer Peaks Across NJ

You can enjoy summer flowers at these Green Acres-funded gardens.

### **Skylands Botanical Garden - Ringwood**

**State Park** Summer display June through August: 96 acres of plants from habitats around the world including fringe tree, locust, Japanese dogwood, climbing hydrangea, azaleas and lilacs. **Hours:** Sunrise to sunset daily **Admission:** \$2 parking fee. New Jersey residents 62 or older or totally disabled park for free. Tuesdays free. **Phone:** (201) 962-7031 **Location:** Routes 23 and 511 from the west and Route 17 and Sloatsburg Road from the east (Bergen County)

### **Rudolf W. Van Der Goot Rose Garden -**

**Colonial Park** Summer display June through August: All-American Rose Selections (AARS) display garden with approximately 4,000 roses of 275 varieties. **Hours:** Sunrise to sunset daily **Admission:** None, donation requested. Guided tours for groups at a modest fee. **Phone:** (908) 234-2677 **Location:** RD 1, Mettler's Road, Somerset (Somerset County)

### **Fragrance and Sensory Garden - Colonial**

**Park** Summer display June through August: Garden designed for visitors who are physically or visually impaired; features fragrant herbs and textured plants. **Hours:** Sunrise to sunset, or when park is open **Admission:** None, donation requested. Guided tours for groups can be arranged for a small fee. **Phone:** (908) 234-2677 **Location:** RD 1, Mettler's Road, Somerset (Somerset County)

See color photo of Leonard J. Buck Garden on the inside front cover.

**Colonial Park Arboretum** Summer display June through September: includes lilac garden, viburnum, honeysuckle and forsythia. **Hours:** Sunrise to half-hour before sunset daily **Admission:** Free **Phone:** (908) 234-2677 **Location:** RD 1, Mettler's Road, Somerset (Somerset County)

**South Branch Arboretum** Summer display June through September: 63 acres of display gardens including marigolds, zinnias, impatiens, geraniums and cornflowers. **Hours:** Sunrise to sunset **Admission:** Free **Phone:** (201) 782-1158 (weekdays), (201) 782-PARK (weekends) **Location:** Route 31 in Clinton Township (Hunterdon County)

### **Edmund A. Laport Greenhouse -**

**Hunterdon County Arboretum** Summer display June through August: Greenhouse is used for production of the arboretum's collections. Summer plantings include ground covers, shrubs, trees and perennials. **Hours:** 8 a.m. to 4:30 p.m. Monday through Friday **Admission:** Free **Phone:** (201) 782-1158 (weekdays), (201) 782-PARK (weekends) **Location:** Route 31, RD 1, Lebanon (Hunterdon County)

**Deep Cut Park** Summer display June through August: Home gardening display includes annuals, perennials, water lilies, vegetables, butterfly/hummingbird display, rock garden with cascading pools and a greenhouse display of tropical plants. **Hours:** 8 a.m. to 8 p.m. daily **Admission:** Free **Phone:** (908) 671-6050 **Location:** Red Hill Road, Middletown (Monmouth County)

**Frelinghuysen Arboretum** Summer display June through August: 127-acre park with display gardens including lilacs, azaleas, peonies, roses, annuals, dogwoods, wildflowers, rhododendrons and ferns. **Hours:** Grounds, 9 a.m. to dusk daily;

Visitors Center, 9 a.m. to 4:30 p.m. daily; Gift Shop, 10 a.m. to 4 p.m. Tuesday through Saturday, and 1 p.m. to 4 p.m. Sunday **Admission:** Free **Phone:** (201) 326-7600 **Location:** Entrance off of Hanover Avenue. Exit off of Whippany Road in Morris Township (Morris County)

**Bucleuch Park** Summer display peaks in July and August: 7,000 plants including salvia, coleus, ageratum, marigolds, dusty miller and begonias. **Hours:** Sunrise to sunset **Admission:** Free **Phone:** (201) 745-5112 **Location:** George Street and Easton Avenue at Lafayette Street, New Brunswick City (Middlesex County)

**Village Green Park** Summer display Memorial Day through Labor Day: including geraniums, marigolds, ageratum, azaleas and sedum. **Hours:** Dawn until dusk daily **Admission:** Free **Phone:** (201) 322-6700, ext. 222 **Location:** Corner of Park Avenue and Front Street in downtown Scotch Plains (Union County)

**Sayen Gardens** Summer display June through September: five display gardens on 20 acres including rhododendrons, perennials, annuals, lilies, roses and cherry trees. **Hours:** Sunrise to sunset **Admission:** Free **Phone:** (609) 890-3874 **Location:** Corner of Mercer Street and Hughes Drive, Hamilton Township (Mercer County)

**Thompson Park** Summer display June and July: formal garden including 50 varieties of award-winning All-American roses. **Hours:** 8 a.m. to 7:30 p.m. daily **Admission:** Free **Phone:** (908) 842-4000 **Location:** Newman Springs Road, Lincroft (Monmouth County)

# Profile

## She Fights to Save a Mountain

*Lucy Meyer got fired up when she heard about the plans*

*For condos, roads and developments that would desecrate the land*

*She sat up in her lookout with her whistle and her pen*

*And called on politicians and state assemblymen*

From "Up on Pyramid Mountain"  
A song by Bruce Scofield

With her walking stick and a whistle around her neck, Lucy Meyer intuitively walks the trails of Pyramid Mountain like the hallways of a lifelong home. She knows where each mountain laurel stands, where each pudding stone lies. Her eyes focus immediately on a new bloom of the season or a fungus she has not spotted before.

"It's like this place is your friend," Meyer says on a recent hike, resting aside Tripod Rock, the mysteriously perched boulder rich in Lenape Indian history and one of the mountain's most treasured resources. "You know where every plant is and when it will come up."

It's a friendship that cuts both ways. Meyer has spent nearly two decades leading a group of Pyramid Mountain advocates to preserve the steeply sloped mountain and its surroundings. Her journey, on the brink of a success that early on seemed impossible, has taken her through every level of government, from local boards of health, to the halls of Trenton, to the White House to be awarded for her efforts.

"I started from the bottom up," she says. From local environmental commissions and governing bodies in Kinnelon,



DORY DEVLIN

Lucy Meyer, leader of the effort to save Pyramid Mountain, looks out over Turkey Mountain, which also will be preserved.

Montville and Boonton to the Morris County Park Commission, the state Department of Environmental Protection (DEP) and the governor's office, she advanced her cause the way she climbs Pyramid Mountain: one step at a time.

"She worked with government and she made it easier for government because she did its homework," says Helen Fenske, a former DEP assistant commissioner in charge of natural and historic resources at the time Pyramid Mountain's rescue was being planned.

"She had a persistence and a determination," Fenske says. "She made it happen, and not everybody can make things happen."

A Kinnelon resident for 33 years, the 60-year-old Meyer first hiked Pyramid Mountain when she got involved with the Girl Scouts as her three daughters were growing up. A math physicist by training, she also has long held a keen interest in geology, and she quickly became fascinated with the varieties of Precambrian bedrock found on the mountain, along with Tripod Rock and Bear Rock, the largest glacial erratic (boulder) in its natural setting in New Jersey.

Her first effort to save the rocks was, to

say the least, modest: one acre around each boulder.

"I went to our (Kinnelon) mayor and council and asked for a one-line amendment to the Master Plan that would protect Bear Rock as a historic site and Tripod Rock as a natural phenomenon," she says.

That was in 1971. Twenty years later, the preservation goal is 3,500 acres on four mountain ranges: Pyramid Mountain, Stony Brook Mountain, Turkey Mountain and Rock Pear. The mountains flank the Taylortown Reservoir, and the area is home to the headwaters of the Stony Brook, which feeds into the Rockaway River and into downstream reservoirs, including Taylortown and the Jersey City Reservoir. To the north lies Butler's Kakeout Reservoir, and negotiations are under way to include the 670 acres surrounding it in the preserve. Though it would still be owned by Butler, the property would be the northern tip of the Pyramid Mountain mosaic.

"As a mathematician, that's what I love about Pyramid Mountain," says Meyer. "It's one giant puzzle."

Piecing that puzzle together began

when Meyer helped organize the borough's first environmental commission in 1970. "I felt you couldn't do anything as an environmental commission unless you did an environmental resource inventory," she says. Working on the inventory, she learned Kinnelon inside out — its geology, soil makeup, hydrology, vegetation and wildlife — all information she would build on to document Pyramid Mountain's uniqueness.

It wasn't until 1983, after Meyer began rebounding from a formidable bout with cancer, that the Pyramid Mountain preservation effort took true shape. She called a meeting of other Pyramid enthusiasts, including her husband, Karl, Ed Lenik of the Archaeological Society of New Jersey, Bruce Scofield and Ken Lloyd of the New York/New Jersey Trail Conference, and Mead Stapler of the North Jersey Highlands Historical Society. That night the Committee to Save Pyramid Mountain was born.

Countless letters were written, mostly by Meyer and Scofield. Contact was made with key people in the DEP, including Tom Hampton, administrator of the DEP's Office of Natural Lands Management, and the New Jersey Conservation Foundation. And Meyer began identifying more than 400 species of native plants and cataloging the sightings of more than 20 species of mammals (including the beaver, bobcat and bear) and at least 100 bird species, including the great blue heron, barred owl, kestrel, Cooper's hawk, osprey, saw-whet, and screech and great horned owls.

The Meyers' next step brought them to the Morris County Park Commission. The initial reception was cool. The area had never been considered for a county park, and the commissioners already ran the biggest park in the state.

"But she was persistent," says Quentin Schlieder, executive director of the Morris County Park Commission. Her extensive knowledge of the natural and historic importance of the area was immediately evident, he says. She knew the folklore, as well, and carried letters from five Lenni-

Lenape chiefs saying they consider the area surrounding Tripod Rock sacred. To clinch their support, she took some commissioners to hike the land, knowing they'd fall in love with it.

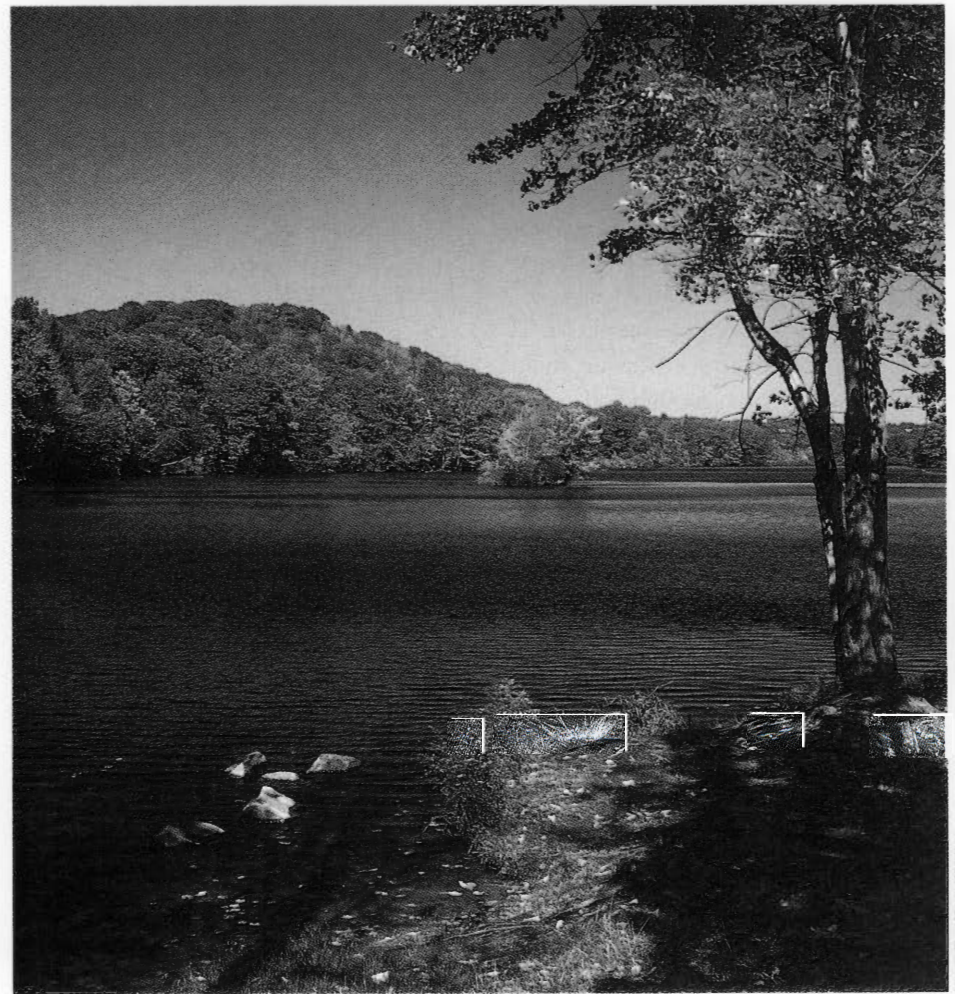
"I have people who nag me about open space, but they haven't done the research to change the open space priorities," says Schlieder. "She made sure that project fit all the commission's criteria and there was a reason to take extraordinary measures to reformat our open space plans."

They were sold, but still there was no money.

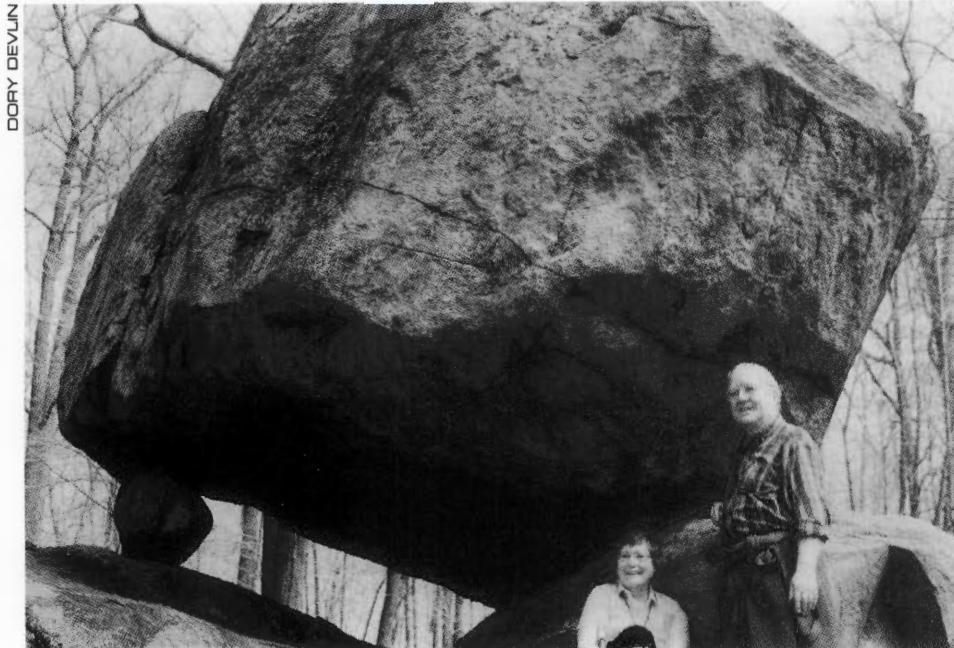
That's when the Mennen Co. entered the picture. The Morris Township-based firm approached the park commission about getting back some Green Acres property behind its headquarters that it

She knew the folklore,  
as well, and carried  
letters from five  
Lenni-Lenape  
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the area surrounding  
Tripod Rock sacred

Preservation of Pyramid Mountain (background) helps ensure that the water quality of this reservoir will be maintained.



GREG JOHNSON



DORY DEVLIN

Lucy and Karl Meyer pause for a rest at Tripod Rock.

had donated to the state 16 years before. Green Acres land is rarely retrievable, but the commission wagered if Mennen purchased some property on Pyramid Mountain and swapped it with the county for the parcel it wanted, the state and Morris County Freeholders might go for it.

Through the New Jersey Conservation Foundation, Mennen purchased an 11-acre tract from Montville businessman Thomas Marotta. In the 1988 swap, the county got the 11-acre foothold on Pyramid Mountain and \$2 million in seed money to begin buying property for a natural and recreational preserve. The goal: 450 acres.

The land swap, which hinged on approvals in several layers of government and took three years to achieve, was a pivotal point in the crusade. But the Morris County Freeholders still were not convinced, until Boonton committed to donate to the preserve 98 acres it owned around the Taylortown Reservoir, Schlieder remembers.

With only about \$2 million to spend when land values in the region were skyrocketing and developers' luxury housing plans threatened Pyramid

All the while  
Meyer was working  
to save  
Pyramid Mountain,  
the mountain  
was helping to  
save her, too

Mountain's future, the preservation movement was at a tenuous juncture.

"There were tremendous ups and downs," says Lucy Meyer. "There'd be days when we'd be up in the air, and we'd get a (disappointing) phone call and we'd be down in the dumps."

Meyer never gave up. Her persistent lobbying and cool-headed style made Pyramid Mountain a reality, preservationists and politicians alike say.

"She doesn't come on strong," says longtime Kinnelon Mayor Glenn Sisco. "She thinks things out very well before she opens her mouth. And when she gets her mind made up, she's a persevering gal."

"When you think about Lucy, the one thing that pops into my mind is what one person can do," says Edward Lenik, president of the Eastern States Archaeological Federation.

When the battle turned to the state Legislature to get a bill passed to reroute Green Acres funds to buy 80 acres threatened by development, Meyer did as much homework on lawmaking as she did on the mountain.

"She must have gone to every assemblyman and every state senator," Schlieder says. "She did it all. She got everybody interested."

When legislators from urban parts of the state questioned what Pyramid Mountain could do for them, she produced a list revealing the names and addresses of hikers from across the state, including their districts. She walked the bill from legislator to legislator, gathering support and making sure the Assembly and Senate bills were identical. And she took the willing lawmakers, like Assemblyman Chuck Hardwick (R-Union), on hikes.

It worked. On August 3, 1989, Gov. Thomas Kean signed a bill allocating \$1.5 million in Green Acres bond funds to buy the tract, which included Tripod Rock. Three months earlier the park commission spent \$2.3 million for 180 acres owned by a Fort Lee developer who wanted to build a "Beverly Hills" of New Jersey on prime Pyramid Mountain land. Both developers had cleared portions of their properties to do damaging percolation tests.


All the while Meyer was working to save Pyramid Mountain, the mountain was helping to save her, too.

"It's kept us young and healthy," Meyer says. "When I first started hiking Pyramid, I was so debilitated" from cancer surgery, radiation and rheumatoid arthritis. "Pyramid helped me."

You cannot tell the story of Lucy Meyer without talking about Karl Meyer, her husband of 37 years. He has been her partner in the roller-coaster ride to save Pyramid Mountain, and made her laugh at the darkest times.

"When we were falling off the hill, we always laughed about it," she says. These days, they get a kick out of it when a politician calls to ask them to pose in a campaign picture with them.

"You reach a point instead of being nuts, you have a lot of support," says Karl Meyer. "Instead of being pulled, you're being pushed."

And lately, though the work is not done, the couple has more time to hike Pyramid Mountain — Karl, with his compass, and Lucy, with her walking stick and whistle. 

## A Cooperative Effort



Since a land swap three years ago providing the Morris County Park Commission with an 11-acre toehold on Pyramid Mountain, a few strategic land acquisitions by the state and county have secured the heart of the natural and recreational preserve.

And several other pending Green Acres applications and property negotiations, if successful, could expand the refuge to 3,500 acres — that's 3,000 acres more than what Pyramid Mountain preservationists set as a goal less than a decade ago.

Lucy Meyer, the Kinnelon resident who heads the Committee to Save Pyramid Mountain, calls Pyramid "one giant puzzle." Green Acres, county and municipal officials have been working together and separately to acquire each piece of that puzzle needed to form a contiguous park.

To date, the Morris County Park Commission has spent \$2.4 million to purchase 293 acres in Kinnelon and Montville. The bulk of those funds, most of which came from the Mennen Co. in a 1988 land swap, captured 180 acres once destined for luxury housing on Pyramid Mountain.

Another crucial development near the top of Pyramid Mountain was halted in 1989 when the state rerouted unused Green Acres bond funds to purchase 80 acres. That tract includes Tripod Rock, a glacial erratic mysteriously balanced on three small boulders and believed to be a sacred place for the Lenni-Lenape Indians who lived on the land 10,000 years ago.

With Boonton's contribution of 98 acres around the Taylortown Reservoir and another 24 acres already owned by

Kinnelon, the nucleus of Pyramid Mountain is established.

The state is about to close on another 62 acres off Miller Road in Kinnelon to create a contiguous Pyramid Mountain preserve of about 428 acres in Kinnelon and Montville. Meanwhile, another 842 acres are being appraised in Kinnelon, Montville and Boonton that would bring the total Pyramid Mountain acreage to about 1,300. To the north, Butler's Kakeout Reservoir property adds another 670 contiguous acres to the refuge; negotiations are under way to include the tract in the parkland, although it would still be owned by Butler.

But the preservation effort is much larger than Pyramid Mountain alone. Since it was first envisioned nearly 20 years ago, the park's future boundaries have spread over four mountain ranges. The Pyramid and Stony Brook mountains were always a part of the plan, but now Turkey Mountain and Rock Pear Mountain to the east of the Taylortown Reservoir are also targeted.

Montville has applied to Green Acres to acquire about 300 acres on Turkey Mountain, while Morris County is moving to obtain another 645 acres. Montville already owns 25 acres in two unconnected parcels that will link the county and Montville takings. A 31-acre glen owned by the Nature Conservancy off Hemlock Drive in Montville will help round out the region.

With each acquisition, Pyramid's miles of well-worn hiking trails, waterways and wildlife become a little more protected.

*By Dory Devlin of Bernardsville, a reporter for the Star-Ledger of Newark*

# Cityscape

## Perth Amboy's Waterfront Comeback



The Perth Amboy pier provides access for boating, fishing or a better view of the bay.

half of Raritan River shoreline. When private financing came up short, the city turned to the state Green Acres Program, which gives a high priority to funding public waterfront areas. The Green

abandoned Naval Reserve Center from the N.J. Department of Defense. Apart from the Raritan Bay Yacht Club, it was the only piece in a two-mile stretch of waterfront that the city did not control. Rosengarten was awarded the option rights and in 1984, in accordance with the city's desire for a commercial venture, opened the Armory. The brick and glass structure houses a restaurant with a decidedly nautical flavor.

The next development phase focused its efforts on the area south of the Armory and north of the Raritan Bay Yacht Club. The city transformed the site into an 800-foot harbor walkway with lighting, trees, benches and additional parking. The outstanding view from the walkway includes the Staten Island shoreline along with vessels of all sizes plying the waters of the bay. Future plans include an 83-slip addition to the marina and a public fishing pier (financed by a recent Green Acres award), a two-mile walkway along the Arthur Kill and additional public and private investment in the Raritan riverscape.

Today, Ambo Point enjoys the same bustle of activity that it did 300 years ago. Though the present-day activity is of a recreational nature rather than a commercial one, the waterfront is once again providing economic benefits for Perth Amboy. During the day, people of all ages fish for flounder, fluke, striped bass, porgies, spots, blues and weakfish, or try their luck at crabbing. Others opt for a party boat. In the evening, restaurants offer seafood fare while cruises take in the natural and man-made illumination of the Raritan Bay. Special events include the Waterfront Festival, the Fourth of July fireworks celebration and the September "Hooked on Fishing Contest" for children.



*By Michael W. Keller, director of Community Development and Environmental Control for the city of Perth Amboy*

The European colonists who came to the New World followed the same settlement patterns that the Indians had practiced for hundreds of years — they situated their towns near the rivers that provided the best mode of transportation. Such was the case of Ambo Point on the Raritan River where the Earl of Perth allowed 200 Scots to settle in 1686. New Perth evolved into Perth Amboy, which served as the capital of East New Jersey until the two Jerseys were joined in 1702. The town became one of New Jersey's major harbors, exporting raw materials and importing manufactured goods. Perth Amboy was the seat of the last royal governor in New Jersey, and the site of the country's first terra cotta factory.

But the city's noted history could not sustain it through difficult economic times. Terra cotta fell out of favor as an architectural feature and, as with many older cities, the job base eroded and the neighborhoods declined. In response, Perth Amboy turned to its original and greatest asset, the waterfront. In 1978 the city reached out to private developers for input and capital to revitalize a mile and a

Acres funds were supplemented by a grant from the federal Land and Water Conservation Fund, a city bond issue and a financial commitment from the state Community Development Block Grant fund.

Though the financing was finally in place, it took seven years of permits, dredging, approvals and construction before Phase I of the Marina Waterfront Park was completed. Sixty-two concrete floating slips were sheltered by a 400-foot public fishing pier. The shoreline was transformed with a walkway, shade trees, lighting, benches and a parking area. A new Perth Amboy Port Authority was charged with administering and overseeing the marina/park operation. The ripple effects of the waterfront revival were soon evident. Barry Rosengarten, a local developer who had constructed townhouses and managed the Harbor Light Tavern, expanded his commitment to the area by building Bay Side Villa, a condominium project. Another private investment resulted in the Crows Nest, a retrofitted vacant industrial structure converted into condominiums.

In 1976, Perth Amboy acquired the

# Volunteers

## Kids Adopt Bayonne Park

It was at a school picnic that the principal of the Vroom Learning Center first noticed that the 100-acre Bayonne Park was in need of attention, and decided his students could do something about it.

Daniel Doyle turned the problem over to a faculty committee at the Bayonne school and five years later, students have planted nearly 3,000 new trees and shrubs in a program that has earned them national recognition and taught them lessons in both environmental awareness and civic responsibility.

Each student at the school for gifted and talented youngsters in pre-kindergarten through the 8th grade is assigned a 50-by-50-foot plot of land in the Hudson County park, which was redeveloped with Green Acres and federal funds. The students plant trees on their parcels every spring and then are responsible for the care of their land for the entire time they attend the school. Thomas Tokar, an environmental science teacher at the school, says the "Adopt-A-Park" program

has succeeded in giving the youngsters "a sense of stewardship toward the environment."

"If you start at a young age, they can appreciate what it's all about and see it's one way to help save the park and help save planet Earth," he says.

The park program is designed to serve as a "hands-on" laboratory experiment that teaches all aspects of a forest ecosystem and is tied in to the school's science curriculum. It is used, however, in virtually all other areas of studies and activities. Students write poems about the park for English class, conduct surveys to count the number of trees for a mathematics course, draw pictures for art lessons and perform plays in the park.

The students' efforts to beautify the park earned the school the National Arbor Day Foundation's Project Award last year, and a semi-finalist ranking in President Bush's "Take Pride in America Awards" in 1988.

"The children richly deserve these awards," says Tokar. "More importantly, it is the depth of understanding regarding global environmental issues that will be the project's true legacy. This unique program empowers these future leaders to

seek creative solutions rather than resort to panicked reactions to environmental problems."

Every spring the students plant a variety of trees and shrubs, including cherry, crab apple, white birch and weeping willow trees, and forsythia. Each youngster is responsible for obtaining 15 sponsors to help pay for the cost of the plantings. Since the beginning, the project has been funded by the sponsorship of more than 30,000 citizens of Bayonne as well as the school's Parent-Teacher Association, merchant associations and the Chamber of Commerce.

Seventh-grader Carla-Marie Mercun, who planted a weeping willow tree three years ago and goes to the park about twice a month to tend to it, says she thinks the project is an important one. "I think it's teaching us we're going to have to help our environment before it's too late," she says, citing her fear of the greenhouse effect, a warming of the planet caused by the increase of carbon dioxide in the atmosphere from fossil fuels.

Eric Ortega, a fifth-grader at the school, shares that fear. "We need these trees because they give off oxygen and take in the bad air," he says.

The students have had disappointments in the project, however, with their newly planted trees sometimes falling victim to vandals. "It's a battle," says Tokar, "but we want it to succeed. Every time a tree is chopped down maliciously we replace it, and the battle's starting to be won. Some of these willows are 10 to 15 feet high by now and there's no way they're going to take those out of the ground."

And school officials think that the lessons from the project will have the same staying power with the students after they leave the school, a belief supported by 10-year-old Ortega. "I'll remember this and try to keep the world clean for my kids," he says. "They'll be able to learn from my experiences, and maybe they'll be able to go down to the park and plant some trees." 🌱

Vroom Learning Center students plant a tree in Bayonne Park.



# Afield

## A Walk in the Pine Barrens



Daybreak. I always arise early. It just makes a man healthy ... I hesitate to complete the saying. Let's just say I knew that a perfect day was in store; I could feel it in my bones. Religiously, I turned on the TV for the early morning forecast. The weatherman concurred with my own prediction, advising of a "super, delightful day, with the mercury going into the 80s."

That was the only stimulus needed to confirm my notion that I had to leave the four walls, and to dress in light clothes. I savor a walk in "the Pines" with as little as possible so as not to constrict the feeling of total freedom. I packed a lunch, also light, but with sufficient nourishment to hold me at least through noon. I tucked away the pencil and pad I usually carry to make notes on plants I find or to record suggestions for a future walk or hike route, but left my usual compass and topographic

map at home. I wanted to travel light, be unencumbered, as today I was going to walk over familiar ground. My only other assist was to wear a pedometer; I'm fairly obsessed with knowing just how far I walk. I must admit that I also wore a watch; I'm a time-conscious person. One never knows when his time will run out, and I'd like to know when mine has come. (I'll miss those walks in the woods.)

The day was shaping up to be just plain glorious; not a cloud in the sky, no wind. Today I chose the area southeast of Atsion, an area seven miles north of Hammonton. I had been there many times in the past, either in organized group hikes or alone with my dog Bruce. I left my car and checked in at the ranger station at Atsion. I then made my way across the dam under Route 206 to a sand road that leads southeast along the

Mullica River. I crossed the abandoned Jersey Central Railroad and passed through a small copse of hardwoods, the last I'd see until the end of my walk. I paused briefly to examine some *Euphorbias* (spurges), identifiable by the white, sticky fluid that oozes from a crushed stem. The plants are not uncommon in these places. I soon left the main sand road in the interest of finding some plants already in bloom and perhaps some to bloom a bit later in the season.

The petite, white-petaled sandwort was soon in sight, typical of dry sandy areas. I stopped to look at this matted-type growth. Sandwort has a long blooming season, unlike the false heather or *Hudsonia*, which I'd see a bit farther down the way.

Leaving the hardwoods I came into the open, desert-like terrain with nothing but sand and pitch pines. Most were small, 3- to 5-feet tall. The young trees were an excellent example of regeneration following several severe forest fires over the past 15 years. The taller trees were for the most part nothing more than charred skeletons 25 to 40 feet above. Sand, young pines and the skeletons predominated the scene, which for some may have lacked aesthetic appeal. Not for me. The stark symmetry of the pine forest "graveyard" with the youngsters climbing skyward was interesting and artistic. After all, charcoal black and forest or pine green do make for exciting color blends. As does blue.

The sky was a rich azure. Although I had eyes and ears alert for bird life, I didn't expect much today. The day was too perfect — great for people, too nice for birds. A few clouds and sprinkles favor bird activity. Any observation this day would be a bonus. But a bonus I had as I spied a small bird perched on the tip of a skeleton pine. It appeared as black as the charred trunk. It soon changed its position and revealed feathers as blue as the sky. A male bluebird! Known to frequent and perhaps favor burned-over Pinelands, bluebirds had delighted me here in the past. That was my first surprise. The second was a wide expanse of *Hudsonia* at

peak bloom! I was lucky, since it is at peak for two or three days at most. To see *Hudsonia* in vast masses at full bloom and covering the sandy ground like a blanket is too difficult to describe. It left me in awe. At this point it crossed my mind how lucky I was to reside in Burlington County; I could enjoy desert beauty and walk at "treeline" as well.

Already satisfied that I was having a wonderful walk, I pressed forward. A fence lizard darted up a pine trunk at roadside. Reindeer lichens and sandwort bordered my path of travel. I headed downgrade just a bit. Elevation variations in the Pines are minimal. As I neared a small ribbon of

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## The taller trees were for the most part nothing more than charred skeletons 25 to 40 feet above

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cedar lowlands, I noticed a short trail leading down into the swamp. Sunlight intensified the lush green of clumps of sphagnum moss. I ran my fingers through the clear water and the moss and smelled the cedars, reveling in ecstasy from the sensations of such a perfect day in nature. Pangs of hunger began nagging me; I hadn't eaten since 6 o'clock. I increased my pace, as the sun was now bright and hot. I was thirsty, too. The little beach where I would stop for lunch wasn't far ahead. A turkey vulture soared overhead, wheeled around and passed farther on, behind a few cumulus clouds beginning to form.

A watersnake slithered into the *Mullica* as I reached my beach. Simultaneously, a great blue heron lumbered off in the opposite direction from which I had come. I spread out my ground cloth,

unnecessary but helpful, particularly if the ground is wet. Today it was dry, but the ground cloth makes it easier to spot unwanted creatures like ants, spiders and ticks. As I lay there nibbling and watching the slowly forming clouds and the stream rippling around the bend and through the waterlilies, I was enjoying the solitude. In a moment I heard a slight rustling behind me as a green frog hopped down to the water. It went right by me. So often a frog will hop into the water virtually unseen. The close-up look was a real treat.

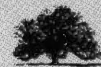
After lunch I meandered around a bit, climbing a slight rise where I spied a small assortment of plants all within a square foot of space. Botanists would call it a micro-community. I made a few notes, including one about the rattlesnake plaintain, small terrestrial orchids that are an unusual find in such an assortment. Such a discovery makes plant communities and a walk in the Pines so intriguing.

Soon it was time to head homeward. Spending the rest of the day in a cool cedar swamp sounded delightful, but chores at home awaited me. I started up the road as it snaked around to higher ground. Before long the masses of *Hudsonia* came into view, again capturing my fascination. Could I ever have chosen a better day? It had been a stress-free outing, full of beauty, fresh air, some physical exercise and many aesthetic observations. I checked my pedometer and found that in five hours I had covered just a bit over four miles! I couldn't call that a hike. I usually hike a 20-minute mile or better. I stopped at the ranger's office to report that I was leaving and had encountered no incidents or observations that would be of interest to the Forest Service.

For the next 45 minutes as I drove home I reminisced about the exhilarating day I had, with one pleasant question echoing in my mind: Where would I go for my next walk in the Pine Barrens? 

*By Bert Nixdorf of Mount Holly, an outings leader for the Sierra Club and the author of "Hikes and Bike Rides for the Delaware Valley (With Emphasis on the Pine Barrens)"*

## Some of the Cleanest Water in the World



The New Jersey Pinelands reserve is a million-acre forest expanse in the midst of the country's most densely populated region. Its vast unbroken forests of pine, oak and cedar make the Pinelands the largest tract of open space on the Mid-Atlantic coast.

Here a visitor can search shady cedar swamps for the rare curly grass fern or hike through a forest of "pygmy" pine trees no taller than a man. Slow-moving streams fed by a huge underground aquifer supply the marshes and bays of southern New Jersey with some of the cleanest water in the world.

The Pinelands region was the country's first national reserve and was designated by UNESCO (United Nations Educational, Scientific and Cultural Organization) as an international "biosphere reserve" where worldwide scientific study will be focused.

Congress and the State of New Jersey passed legislation in 1978 and 1979 to protect the Pinelands and its water resources. To assist in protecting the more environmentally sensitive areas and to add additional recreational lands to our parks and forests, Green Acres and the N.J. Pinelands Commission identified approximately 100,000 acres of land that should be acquired. Since 1981, with Green Acres bond funding and Federal Land and Water Conservation funds, the state has permanently protected more than 65,000 acres of this remarkable resource. Green Acres has submitted applications to the U.S. Department of the Interior, National Park Service, to acquire the additional 35,000 acres.

# Outings

## Green Acres Hikes



You can enjoy a wide variety of hiking experiences on these New Jersey trails, all acquired or developed with Green Acres funds.

### Appalachian Trail

New Jersey was the first state to completely buffer this famous trail with public lands. The trail traverses 70 miles of New Jersey's most rugged terrain while passing through High Point State Park, Stokes State Forest, the Delaware Water Gap National Recreation Area and Worthington State Forest. Side trails lead to local points of interest throughout the region.

- High Point State Park  
(201) 875-4800
- Stokes State Forest  
(201) 948-3820
- Worthington State Forest  
(908) 841-9575

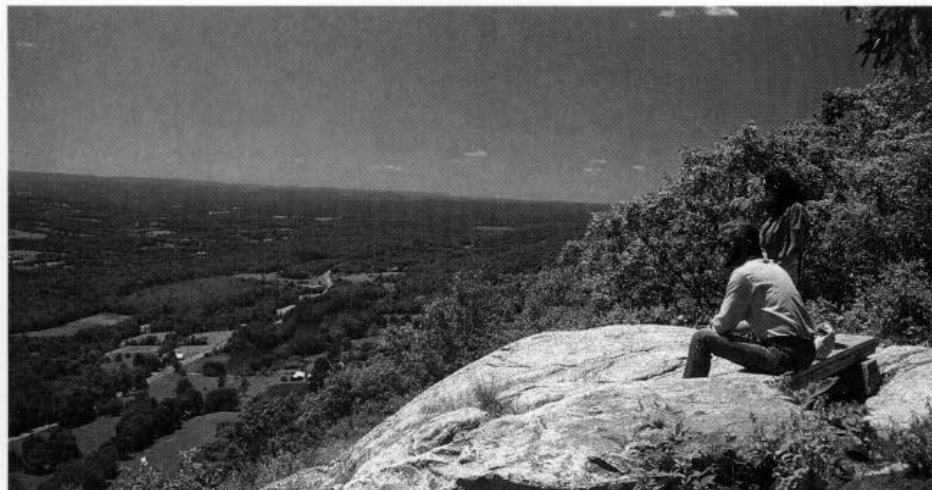
### Delaware and Raritan Canal State Park

The Delaware and Raritan Canal State Park crosses the "waist" of central New Jersey and is recognized as an excellent example of a multi-purpose greenway, a strip of land that connects park areas, protects waterways or is used as a trail corridor. Aside from hiking, the canal park provides for canoeing, jogging, fishing, horseback riding and in some places bicycle riding, as well as cross-country skiing in the winter. Landmarks along the canal park include the historic Millstone Valley with its pastoral landscape, Washington Crossing State Park and the village of Lambertville.

- Delaware and Raritan Canal State Park  
(908) 873-3050

### Batona Trail

The Batona Trail is the best-known trail in southern New Jersey, passing mostly through Lebanon and Wharton state forests and by many well-known



GREG JOHNSON

Two hikers take in the view on Sunrise Mountain off the Appalachian Trail in High Point State Park.

landmarks. Pakim Pond, the Carranza Memorial, Apple Pie Hill and Batsto Village are just some of the high points of a hiking trip on the Batona Trail.

- Lebanon State Forest  
(609) 726-1191
- Wharton State Forest  
(609) 561-0024

### Patriots' Path

Morris County's Patriots' Path offers the hiker the opportunity to explore Jockey Hollow National Historic Park, Speedwell Village and Fosterfields, a historic working farm. The path also travels through several municipal parks.

- Morris County Park Commission  
(201) 326-7600

### Campgaw and Ramapo Reservations

These Bergen County parklands combine to offer the hiker more than 3,000 acres of mountainous terrain with miles of trails. Both reservations are important elements of the Skylands greenway effort.

- Campgaw Mountain Reservation  
(201) 327-7804
- Bergen County Park Commission  
(201) 646-2693

### Additional Information:

- Green Acres Program,  
Bureau of Planning

CN 412

Trenton 08625  
(609) 588-3492

- Division of Parks and Forestry,  
State Park Service  
CN 404  
Trenton 08625  
(609) 292-2772

- Division of Fish, Game and Wildlife,  
CN 400  
Trenton 08625  
(609) 292-6685

Information on local trails may be obtained from municipal and county park departments and commissions.

### Hiking Clubs and Organizations

- New York-New Jersey Trail Conference  
(212) 685-9699
- Ocean County Environmental  
Recreation Hiking Club  
(201) 270-6960
- Monmouth County Outdoor  
Recreation Hiking Club  
(201) 842-4000
- Essex County Trailwalkers  
(201) 429-7670
- Adult Exploring Club  
(201) 429-7670
- Union County Hiking Club  
(201) 527-4900
- Outdoor Club of South Jersey  
(609) 268-2187

# Inside DEP

## Land-Sharers Get Tax Break

Each summer Camp Oak Spring in Franklin Township is home to about 1,300 Girl Scouts who hike along the Delaware and Raritan Canal, canoe, stargaze, make nature crafts and learn to cook outdoors at the 119-acre day camp owned by the Delaware-Raritan Girl Scout Council. It's an outdoors experience in a setting that only these youngsters might enjoy if not for a state Green Acres program that encourages the council and other private property owners to open their lands to the public.

The tax exemption program allows qualifying nonprofit organizations or corporations to receive property tax relief in exchange for permitting public access to their conservation or recreational lands. This program helps preserve open space for public use without the state having to put forth the money to purchase it.

The Girl Scout council's 195-acre Camp Sacajawea in Sparta Township, Sussex County, is also part of the program, as are the Boy Scouts of America camps in Ringwood, Mahwah and Oakland. The Boy Scouts and Girl Scouts combined have opened approximately 4,193 acres to the public.

Camp Oak Spring in Somerset County, which has been in the program since it was created in 1974, is an example of many Green Acres goals at work: It is open space that is available to the public with opportunities for hiking, picnicking, fishing, canoeing, camping and birding; it is valuable conservation land, providing a buffer to the Delaware and Raritan Canal and the Millstone River; it is suitable habitat for several endangered species, primarily grassland birds; its preservation protects freshwater wetlands; it links other open space areas, forming the basis for a greenway; its proximity to the canal makes it a place of history; and it is an effective joint venture between state government

and the private sector.

Dorothy Fisher, executive director of the Delaware-Raritan Council of the Girl Scouts, says her organization is happy to open the area to the public. "It's such a beautiful piece of land and it has so much to offer," she says. "Why shouldn't other people be able to enjoy it?" Individuals or groups wishing to visit the camp must make reservations through the council.

The New Jersey Conservation Foundation, the New Jersey Audubon Society, the Upper Raritan Watershed Association and even the West Cumberland Little League also have made their properties available to the public. Since 1974, more than 23,000 acres of privately owned land in 101 municipalities have been opened to the public through this program. There are now 159 tax-exempt sites in New Jersey, ranging from New Jersey Audubon's one-acre hawk lookout in Montclair to a 4,232-acre Fortesque Wildlife Refuge in Cumberland County owned by the Natural Lands Trust Inc.

Land entered into the tax exemption

program must meet the same goals as other property in the Green Acres program. These include the preservation

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More than 23,000 acres of privately owned land in 101 municipalities have been opened to the public

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of significant natural resources such as endangered species habitat, wetlands and steep slopes, historic sites or land suitable for recreational development.

The 1989 Open Space Preservation Bond Act for the first time offered \$10 million in matching grants for nonprofit groups to acquire open space, creating the opportunity for additional acres to be added to the program. 🐸

Girl Scouts study tadpoles netted from a pond at Camp Oak Spring. The grounds also are open to the public.



MARY HIRSCH

# New Jersey's Savings Program



*"We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."*

Aldo Leopold,  
American forester  
1886 - 1948

## 30 Years of Investing in Green Acres

When Governor Robert Meyner, in his annual message to the Legislature in January 1961, set forth the concept and purpose of New Jersey's Green Acres Open Space Land Conservation Program, he could not have known that he was initiating what was to become the most successful — and durable — state land preservation program in the nation's history. Seven times since that address, the voters of the state have approved bond issues totaling \$940 million in support of the program. As he outlined it on that day, however, the governor's goal was more modest — a 10-year land acquisition program to double the state's outdoor recreational and conservation lands.

This was by no means the first public expression of such a need. As early as 1941, in *A Parks and Public Lands Plan and Program*, the State Planning Board called for the "preserving or returning to the state and its localities many of the recreational prerequisites to a healthful ... modern existence." These included ocean beaches, mountain ridge tops, river corridors and the Pinelands. The plan called for the acquisition of Island Beach, the Hackensack Meadowlands, the Wharton Tract and the Delaware and Raritan Canal. It also suggested the purchase of additions to Stokes and Jenny Jump state forests and High Point, Cheesequake and Allaire state parks, as well as additions to numerous fish and game areas.

The Wharton Tract and Island Beach were, in fact, purchased in 1951. And New Jersey's voters approved a water supply bond issue in 1958 to acquire the Spruce Run and Round Valley reservoir sites in Hunterdon County, providing for the first time an opportunity for multiple use of reservoir sites that incorporated water supply, fish and wildlife management and recreation.

But as the prosperous, development-driven decade of the '50s came to a close, there was the recognition that a more comprehensive and systematic land conservation effort would be needed. That recognition gained public and private support after a 1960 Regional Plan Association report, *The Race for Open Space*, documented that New Jersey was ill-prepared to meet the environmental and recreational needs of a population anticipated to double or triple in the next 25 years.

Legislation authorizing the sale of \$60 million in state bonds to fund a Green Acres program was passed by the Legislature and approved by voters by a 3-2 margin in the general election in November 1961. For practicality and equity, the bond mechanism as a financing tool is admirably suited to this purpose, for only the sale of state bonds can make immediately available the substantial sums of money required to purchase real estate, while fairly allocating the burden of repayment among all citizens, present and future.

Of the \$60 million authorized by the people, \$40 million was to be used for additions to state parks, forests, and fish and game wildlife management areas. The remaining \$20 million established a matching grant fund to local governments. Allocation initially was based on

By Greg Johnson, Howard Wolf and Norman Miller

population under the premise that the more populated counties had a more immediate need for open space. Several county park systems originated under the Green Acres Program. Monmouth County, beginning to feel the pressures of development, was among those counties that first took advantage of the bond monies. Older, established counties and undeveloped rural counties were not as aggressive. In mid-1963, however, the county allocation by population system was dropped, and grants were made available on a first-come, first-served basis.

Under that first bond issue, almost 97,000 acres of land were acquired for the state, including \$10,000 acres for Wawayanda State Park and almost 5,000 acres for the Assunpink Wildlife Management Area. Locally, open space buffered residential areas from business; flood plains and water access areas were established; and the program was able to assist local governments in designing master plans and using open space effectively. The Green Acres Program had taken root.

Green Acres flowered during the next decade, riding a wave of environmental activism, nationally and locally. The Department of Conservation and Economic Development was dissolved and a new Department of Environmental Protection, with a more focused mission, was established on Earth Day 1970. Environmental commissions were authorized, and legislation to protect a wide variety of

resources, including saltwater wetlands, flood plains, coastal areas and the Pinelands, was enacted.

The first of three major Green Acres bond acts to secure public approval in the 1970s passed in 1971. It was for \$80 million, divided evenly between state acquisition of park, forest and natural and wildlife areas, and matching grants to local governments. This time, however, the program required local applicants to apply for federal funding under the Department of Housing and Urban Development's Legacy of Parks Program. Many qualifying municipalities were able to secure combined 100% grants.

The 1971 bond act, while similar in structure to its predecessor, differed in a few significant respects. It provided for payments by the state in lieu of real estate taxes to communities in which state acquisition took place, and provided for "quick taking" in eminent domain actions, which provided payments while condemnation proceedings were finalized. It also included directives from the Legislature to minimize the taking of agricultural land, and specifically provided for urban recreational facilities.

Local open space efforts were complemented by the initiation of the tax exemption program, which provided tax relief to nonprofit organizations that owned tracts of open land. Participation required that the affected area would be open to public use. The tax exemption program was eventually incorporated into Green Acres.



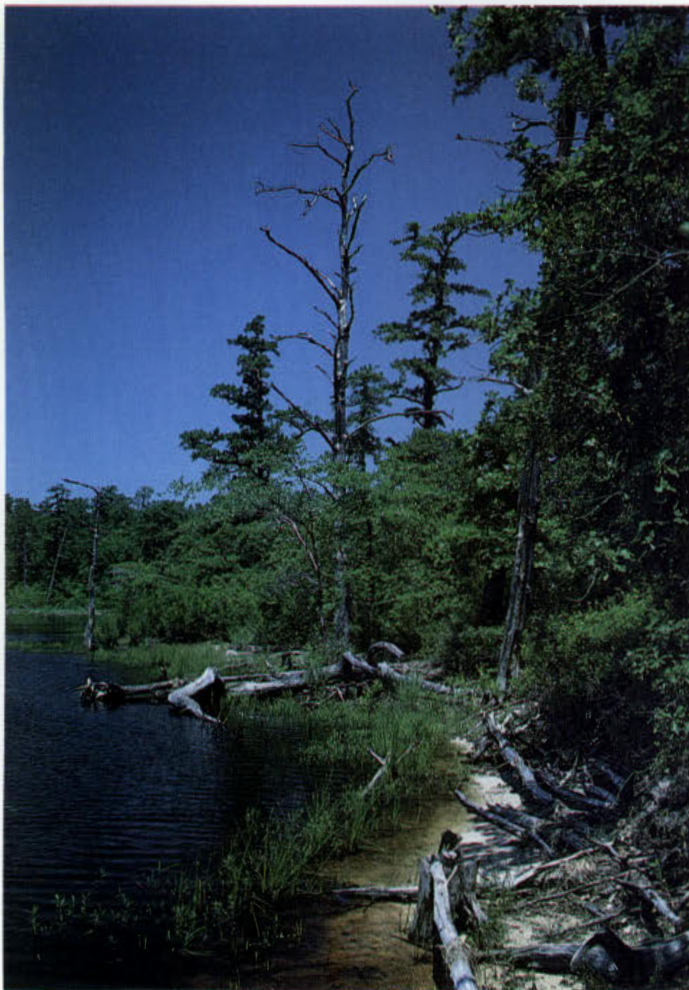
PHOTOS BY GREG JOHNSON

Recreational facilities like Mercer County Park have been developed throughout the state.

Urban parks like Weequahic Park in Newark offer both easy access and a peaceful setting.



The preservation of the Pinelands protects water quality and wildlife habitat.



New Jersey profited handsomely from federally assisted acquisition programs. The Land and Water Conservation Fund and the Legacy of Parks Program were aggressively pursued by the state. New Jersey was second only to California in funds received and acreage acquired through these programs.

Within three years, however, the entire \$80 million had been committed. Land values had soared, reflected by the fact that that considerable sum bought only 30,000 acres. Among the commitments, however, were properties nourishing the Appalachian Trail and the Pinelands, and a site covered with rusting rails and rotting ties in the shadows of Ellis Island and the Statue of Liberty, which was to become Liberty State Park.

By 1974, then, another Green Acres bond issue was proposed, this time for the \$200 million deemed necessary for New Jersey to compete in the open space market. This proposal was one of six public questions on the ballot that year, the most publicized of which would authorize casino gambling. In the face of an Arab oil embargo and a declining industrial base, the Green Acres question was the only one approved.

In addition to the continued acquisition theme, a new direction was carved out by this particular issue: the dedication of \$100 million to the development of recreational facilities, for which local governments applied for grants on a priority basis. Major projects from this bond included the development of previously acquired state park, forest and wildlife management lands and the Spruce and Round Valley recreation areas.

Assistance also was given to county and municipal parks such as Camden County's Wiggins Waterfront, Essex County's Branch Brook and Bayonne's Kill Van Kull.

An awakening interest in the state's urban areas set the stage for the \$200 million 1978 bond issue. The 1974 development funds had been committed and the cities demanded more. The concept of "bringing the parks to the people" was advanced by a citizens committee formed by the New Jersey Recreation and Parks Association and the New Jersey Conservation Foundation.

The bond designated \$100 million for state and local urban park and recreational projects and \$100 million for non-urban projects. The non-urban money was divided into \$50 million for matching acquisition and development grants and \$50 million for direct state acquisition and development. A task force composed of municipal and county officials, conservationists and recreationalists was formed to guide the distribution of the grant funds. Areas that received a high priority were urban waterfronts such as Bridgeton's Cohansy Riverfront Park and Monmouth County's Seven Presidents Park, environmental education centers at the Pequest Fish Hatchery and Liberty State Park, and lands that received a high degree of use. Playgrounds, swimming pools and athletic fields were made accessible to large segments of the population.

The 1970s, then, left behind a dedicated and determined environmental community with a deep commitment to the Green Acres Program. The program had, however, changed its focus from acquisition alone to include recreational development with an urban emphasis.

The 1980s witnessed a robust economy overwhelming an ailing infrastructure. New Jersey paid dearly in terms of open space and farmland as the plodding pace of preservation was quickly outstripped by development. During this period, the state's active farmland was reduced by more than 12%. Correspondingly, the loss of open space was fueled by a dramatic increase in residential permits. In 1980, 22,257 building permits were issued. By 1986, the number had more than doubled to 55,074.

Green Acres continued to fund acquisition and development, but competition for bond money ran high among other public interests such as shore protection, farmland preservation, education and bridge rehabilitation. The state had reached a point where a heavy bond debt was threatening its AAA rating. By 1983, the 1978 bond monies were nearly exhausted, and the prospect of a new bond issue every four or five years seemed bleak. Something new was needed. There-

fore, a \$135 million bond was proposed that would establish a Green Trust for the local portion of the program. The trust made \$83 million available to counties and municipalities as grants or 2% loans, payable over 20 years. The remaining \$52 million was designated for direct state acquisition. Of the eight questions on the ballot in 1983, three were related to environmental protection. All three passed.

When Green Acres celebrated its 25th anniversary in 1986, New Jersey was in the midst of a building boom echoing that of the 1950s. The Green Trust struggled to

*"Buy land! They  
ain't makin' any  
more of it."*


Mark Twain, American  
author and humorist  
1835 - 1910

accommodate local applications, which between 1983 and 1987 averaged \$80 million a year. The Trust, with approximately \$20 million per year to spend, asked the counties and municipalities to scale back requests, but was nevertheless overwhelmed. State acquisition

was equally hard-pressed to make a limited amount of money effective in a marketplace of escalating land values.

By 1987, the program was unable to continue acquiring and developing state and local property. Thus, a "Quality of Life" \$100 million bond issue was proposed. However, for the first time, Green Acres shared the bond with historic preservation (\$25 million) and cultural centers (\$40 million), leaving the program \$35 million. This allotment was designated for the Green Trust, leaving state acquisition to rely on legislative appropriations.

In November 1989, the Green Acres Program shared a successful referendum with the Department of Agriculture's Farmland Preservation Program. The Open Space Preservation Bond Act totaled \$300 million, with \$230 million going to Green Acres. Of that amount, \$140 million would be used for Green Trust loans and grants; \$80 million for state acquisition and development; and \$10 million for qualifying tax-exempt, nonprofit organizations to acquire open space.

The furious competition for land continues unabated to this day. But over the past 30 years, the Green Acres Program has proven to be a salvation for the tiny, crowded piece of the world we call New Jersey, having permanently protected, for public enjoyment, almost 300,000 acres. 

Greg Johnson works for the DEP's Office of Communications and Public Education. Howard Wolf is former director of Program Development for the department. Norman Miller is director of DEP's Office of Legislative and Intergovernmental Affairs.



A view of the Black River Wildlife Management Area

# Each Day an Adventure on Black River

By *David Chanda*

As we unloaded the truck and prepared to move into the tiny cottage, I knew we were in for the experience of a lifetime. Carrying furniture inside, we had to wade through a flock of about 25 adult Canada geese and their young feeding on the front lawn. As one of two families on this tract, we would be sharing our lives with many different animal neighbors.

The area my family would call home for the next two years was the Black River Wildlife Management Area in picturesque Chester Township, Morris County. Using Green Acres funding, acquisition of land for Black River began in 1964. Today, the wildlife management area totals 3,056 acres.

Variety is the key word in describing the wildlife-related recreational activities here. In addition to hunting, this area provides an ideal location for outdoor photography, dog training, nature hikes, bird-watching, fishing, wildlife observation and field trips for outdoor education. We even saw people using the wide open fields for kite flying. Black River also has a training range where people can practice with a bow or trapshoot with a shotgun.



on this area. Winter was a quiet, peaceful time, disturbed only by the chattering of an otter that lived in the pond near the cottage. Other than the otter, the only wildlife we saw were the deer or, more precisely, the deer tracks in the snow that led to the shrubs near our cottage.

As springtime approached, the activity of the area's wildlife increased. In addition to the Canada geese that flocked to a small pond just across the field from our cottage, we enjoyed the morning cackle from a native cock pheasant defending his territory. Later, we would have the opportunity to cross paths with one of the hen pheasants that made up a part of his harem. One spring she was successful in hatching 11 eggs and was busy trying to keep track of her brood.

The small pond provided limited opportunities for panfish and bass fishing. Better fishing, however, could be found along a nearby stretch of the Black River, which was stocked with trout in April and May.

No other sound grabbed our attention more than that of the red fox. It always seemed to happen on a warm spring evening when all the windows were open. As we relaxed after dinner a vixen (female fox) would let loose with a squall that sounded like a child screaming in pain. The first time my wife heard this cry, she was ready to dial 911. Only after the explanation that it was a female fox locating her kits did her heartbeat return to normal and was I able to persuade her to hang up the phone.

Summer was slow and lazy on Black River. The young geese grew to be as big as the adults. Occasionally, we would catch a glimpse of a hen pheasant or two with their young. There was a group of deer that regularly passed by the tiny house, browsing on everything in sight.

Every evening we were treated to a "fireworks" display by the thousands of fireflies that lighted up the fields surrounding the cottage, with musical accompaniment by a group of bullfrogs that lived on the pond. This served as an opening act to the dazzling night sky, illuminated with what seemed to be a million stars. A barred owl hooted from his perch in the tree outside our living room.

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Variety is the  
key word in  
describing the  
wildlife-related



A young red fox

training areas received daily use as sportsmen from throughout the area began to practice on the training ranges for the upcoming hunting seasons.

Cottontail rabbits, ruffed grouse, gray squirrels and woodcock are common in this area. In addition, there is limited waterfowl hunting available during the early part of the season. Although wood ducks are the principal species available, black ducks and mallards are also common. Good pass and jump shooting can be found along the six-mile section of the Black River that flows through the tract. Some waterfowl hunters would drop a canoe in the river and float through the area they planned to hunt.

The Black River Wildlife Management Area is probably best known for its pheasant and deer hunting, however. The native pheasant population is supplemented with several hundred state-stocked pheasants each year. The area is managed for upland game species by the planting of annual food patches and hedgerows. Although the area is very crowded on Saturday mornings, there is ample space among the 3,000 acres and plenty of opportunities for everyone. For those who wish to avoid crowds, weekdays and Saturday afternoons are the best times to



BRECK P. KENT

Black River is known for its pheasant hunting. Here, two ring-necked pheasants.

I always enjoyed successful deer hunting on Black River. I rarely had a day when I didn't see any deer and each time out was a new adventure. A hunt that I will always remember was an early morning one during the extended bow season. It was early November and the area had been stocked with pheasants. When I heard rustling in the leaves behind my stand, I turned to look, expecting to see a group of deer sneaking through the woods. Instead, it was two pheasants coming out of a nearby field just ahead of a group of hunters and their dog. The dog picked up the birds' scent and tracked them, with the hunters close behind. I watched as they all disappeared over the hill into a swamp.

About 10 minutes later, I again heard leaves rustling, coming from the direction of the swamp. Expecting it to be the returning hunters, I was very surprised when a nice buck appeared and walked within five yards of my stand. But I wasn't prepared for him — my bow was still hanging in the tree. Instead of having the shot that most hunters dream of, I was relegated to the role of observer and watched as he walked by, never taking his eyes off of my stand or allowing me the opportunity to pick up my bow. When he left, I sat there feeling sorry for myself.

believe — two great opportunities that weren't meant to be. I never did see those deer again, but to this day I vividly remember that hunt.

Each day on Black River was a new adventure, providing many pleasant memories. Although we outgrew the little cottage, we still live in the area and spend a considerable amount of time on the wildlife management area. Spring is the most fun because my young son enjoys watching the geese on the pond and seeing the goslings running around.

Whatever the use of open spaces such as Black River, New Jerseyans should be thankful for the foresight of those who purchased the first wildlife management area land and for the Green Acres bond funds that allowed new land to be added to the original acquisitions. When visiting these areas, please be considerate and obey the rules of the outdoors. This will help ensure that these areas remain prime wildlife habitats for future generations of our state to enjoy. 🐾

# Green Acres Helps Provide Open Spaces for Public Hunting



Thousands of acres of land have been purchased through the Green Acres Program to help preserve the habitat necessary to support New Jersey's native plant, fish and wildlife species. Many of these areas also provide opportunities for public hunting. Generally, these are large tracts with few improvements that are managed by the Division of Fish, Game and Wildlife, or the Division of Parks and Forestry. To complement these state-owned areas, some county parks systems also have provided public hunting areas with Green Acres funding. These public hunting areas will continue to increase in importance as the supply of suitable, privately owned land decreases and permission for access by the public becomes more difficult.

Following are some state areas open to public hunting, purchased with Green Acres funding:

❑ **Assunpink Wildlife Management Area (WMA)**, Monmouth County — excellent small game hunting on more than 5,500 acres.

❑ **Beaver Swamp WMA**, Cape May County — upland game, wild turkey, deer and waterfowl hunting on more than 2,700 acres.

❑ **Fortescue WMA**, Cumberland County — rail and waterfowl hunting on nearly 900 acres.

❑ **Mad Horse Creek WMA**, Salem County — primarily waterfowl hunting, with boat launch ramp, on more than 7,500 acres.

❑ **Marmora WMA**, Cape May County — rail and waterfowl hunting on more than 7,800 acres.

❑ **Port Republic WMA**, Atlantic County — upland game and waterfowl hunting on more than 750 acres.

❑ **Stafford Forge WMA**, Ocean County — upland game, deer and waterfowl hunting and dog training area on more than 2,700 acres.

❑ **Swan Bay WMA**, Burlington County — primarily waterfowl hunting with boat launch on more than 1,000 acres.

❑ **Turkey Swamp WMA**, Monmouth County — upland game and deer hunting with target range on more than 2,000 acres.

❑ **Whittingham WMA**, Sussex County — upland game and deer hunting with dog training area on more than 1,000 acres, plus 400-acre refuge.

❑ **Winslow WMA**, Camden and Gloucester counties — upland game and deer hunting with target range on more than 6,600 acres.

For further information, contact the N.J. Division of Fish, Game and Wildlife, CN 400, Trenton 08625.

❑ **Allamuchy State Park**, Morris and Sussex counties — deer and upland game hunting on 6,900 acres of 7,276 acres.

❑ **Bass River State Forest**, Burlington and Ocean counties — deer and waterfowl hunting on 22,500 of 23,476 acres.

❑ **Belleplain State Park**, Cape May and Cumberland counties — hunting on 11,100 acres.

❑ **Ringwood State Park**, Bergen and Passaic counties — deer hunting on 3,247 of 4,000 acres.

❑ **Swartswood State Park**, Sussex County — hunting on 400 of 1,700 acres.

❑ **Voorhees State Park**, Hunterdon County — hunting on 475 of 613 acres.

❑ **Wawayanda State Park**, Sussex County — hunting on 10,000 of 11,332 acres.

❑ **Wharton State Forest**, Atlantic, Burlington and Camden counties — hunting on 105,000 of 109,000 acres.

For further information, contact the N.J. Division of Parks and Forestry, CN 404, Trenton 08625.



# Wildlife Find Haven in West Bear Swamp

By Bruce E. Beans

Larry Niles pounded his hand appreciatively on the massive trunk of a broken-off black gum tree still rising 20 feet out of black ooze and a sphagnum moss hummock in the heart of Cumberland County's West Bear Swamp.

"This is the kind of tree barred owls like," says Niles, principal nongame zoologist for the Endangered and Nongame Species Program of the Department of Environmental Protection's Division of Fish, Game and Wildlife. "I like them. I've only seen them twice, but I hear them all the time:

"Who cooks for you ... Who cooks for you ... Who cooks for you all?"

It was late afternoon, a little too early for the chorus of barred, great horned and screech owls, whippoorwills and chuck-will's-widows, and wood and tree frogs to erupt out of the swamp at dusk.

Though Niles would have loved to wait for the concerto, unless you are an endangered barred owl, West Bear Swamp is no place to be at night. It had taken him 90 minutes of rugged bushwhacking — wading through boot-sucking muck and leg-entwining greenbrier — to get to this tall enclave of gnarled black and sweet gum. If you factor in some bothersome mosquitoes, it all adds up to a less-than-ideal human habitat — but a wildlife delight and prime candidate for purchase under the state's 30-year-old Green Acres Program.

Already protected through Green Acres acquisitions are some of the rarest flora and fauna in New Jersey. You can find at certain wildlife management areas in the north, for example, several species listed by the state as either endangered or threatened: timber rattlesnakes in mountainous Wanaque; long-tailed salamanders in Whittingham; bog turtles and barred owls at Black River; barred owls and Cooper's hawks in Sussex County's Bear Swamp; and the state's second-largest great blue heron rookery at Lafayette.

Acquisition of the 1,200-acre West Bear Swamp, with its holly, tall pines and hardwood swamps, would fill a crucial piece of the Green Acres puzzle. Part of it is already owned by the Philadelphia



BRECK P. KENT

West Bear Swamp is home for the barred owl.

Conservationists, who are negotiating to buy the entire tract in conjunction with Green Acres. Under the Green Acres selection system, which gives priority points for, among others, outstanding or unique wildlife and plant species, West Bear Swamp certainly scores high.

"This is the largest bald eagle winter roost site in the state," Niles had said earlier that day as we followed an old logging trail down into the swamp. "There were 18 eagles roosting here this year and 22 last year, and the next-to-last of the original nests, which was last occupied in 1970, was here." The swamp is also just east of the site where Niles' team hacked (raised and released) a total of 56 first-year bald eagles from Canada between 1983 and 1988.

Besides the eagles and barred owls, the swamp also harbors the only known Cooper's hawk nest in the southern part of the state. Niles suspects there are also southern gray and Pine Barrens tree frogs and northern pine snakes as well. In fact, from the piping plovers and black skimmers nesting on the beaches near Great Egg Harbor to the osprey and peregrine falcons patrolling Delaware Bay, Niles estimates 75 percent of all the state's terrestrial



West Bear Swamp harbors the only known Cooper's hawk nest in southern New Jersey.

BRECK P. KENT



Northern pine snakes are believed to live in the swamp. Here, eggs hatch.

endangered and threatened species can be found on public lands in this area.

Before driving across that band of state wildlife management areas, state forest, natural areas and state and county parks that totals more than 60,000 acres, Niles pulled his pickup near the boat launch of the Lester G. MacNamara Wildlife Management Area near Tuckahoe. Looking north across the reed-lined Tuckahoe River, he launched into a layman's lecture on one of the conservation world's hottest topics: island biogeography. The bottom-line message: Just because you preserve a small park or refuge doesn't necessarily mean you have saved all the animal and plant species that live within it.

If you surround that habitat with development, you've essentially created a habitat "island" with limited population numbers, Niles explained. Ultimately, if the animals are unable to get out or others are unable to get in, inbreeding will weaken the genetic pool and, for instance, make those animals more susceptible to disease. Further reducing either the size or the quality of the habitat could also reduce numbers, as could a natural or man-made

catastrophe — a hurricane or an oil spill, for instance. Feeding upon each other, these factors over time can wipe out a species.

If this all sounds too theoretical, consider this: A study five years ago of 24 major western U.S. and Canadian national parks found that the smaller the park, the more mammals it had lost to extinction.

"As habitats get more separated, if you have a naturally occurring catastrophe, a sudden increase in mortality rate or three years of drought, the populations just plummet in small areas and you might lose species," Niles says. "If you have a population of the same species of animal nearby that's healthy, they might fill in where the others have been wiped out.

"But the more these smaller areas become fragmented and isolated, the less it's likely that will happen.

"And as these areas become more isolated, you have animals being run over by cars; houses and back yards being pushed into prime habitat; dogs sniffing out wildlife; and kids playing in ponds that have turtles and salamanders. There are just so many hazards and problems associated with single, isolated sites that, for some species, long-term survival may not be feasible."

It is an extremely complex problem. For example, tiger salamanders and bog turtles require temporary bogs and meadows that, ultimately, will change into woodlands — and then require floods or fire to create new spring runoff pools. "We can protect wetlands, and sites where bog turtles are now, but the way the laws are, the only way we can save the upland woods that could ultimately become those ponds is if the animals are actually present," explains Niles.

And then there's the problem of edge habitats. For years naturalists have been telling the public to create "edge" environments, where woods meet fields. That might be fine for species that favor edges, such as the white-tailed deer, but it could raise havoc with species that favor the deep woods.

Later that day, Niles stands in the middle of an old "log landing," a clearing where cut logs were brought to be hauled out of West Bear Swamp years ago. Brown sedge grass cropped by deer laps at his calves and a wren — an edge species — calls out sweetly, hidden in one of the cedar, pine and red maple trees surrounding the opening.

"This area will attract species that favor edges, like foxes, raccoons and great horned owls, and edge nesters like cowbirds and more aggressive birds like bluejays," he says. "It's small enough

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Just because you  
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and plant species  
that live within it

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The Pine Barrens tree frog is believed to make its home in the swamp.

here that it really isn't a problem, but if these openings get large enough, they can overwhelm true forest species like ovenbirds, thrushes and vireos."

In fact, some wildlife biologists believe part of the significant decline of North American songbirds is directly attributable to this phenomenon. As Niles noted, many nest predators, such as blue jays, crows, grackles, eastern chipmunks and raccoons, like edge environments. But while that type of vegetation only penetrates up to 30 meters into a forest, many of these nest predators probe as much as 100 or 200 yards into a mature woods — which means a woods has to be deeper than that to safely harbor songbirds.


Biogeographic island habitats ... fragmentation ... edge effects. For all these reasons, says Niles, clusters of large, nearly contiguous public landholdings are so critical. He can point to five on a state map, from the Delaware River and Pequannock watersheds in the north to the Pinelands and the Green Acres-aided lands that stretch from Tuckahoe to the Delaware Bay.

"We know these large areas are secure and know we can fall

back on these sites to keep plant and animal species in the state. And they'll help the smaller fragments, the parks and woodlands as well, because these large blocks of forest and wetlands are big enough to send dispersing individuals out to populate the smaller isolated pieces."

Afterwards, driving back to his office at the MacNamara Wildlife Management Area, Niles braked sharply. Perched in a dead tree overlooking the Maurice River, in the very back yard of the Edward G. Bevan Wildlife Management Area office, was a ruffled-looking, 2-year-old bald eagle. Studying the bird, its white-and-brown feathers all askew, through his binoculars, Niles says, "Looks like he tried to get something and lost."

But he knows there's plenty more there for the bird to eat.

"That's the beauty of this area," he says. "There's so much public land, much of it Green Acres, with such diverse habitats — river, marsh, deep forest and fields — that there's enough land to meet the demands of some very demanding species ... like the bald eagle." 

*Bruce E. Beans is a Bucks County, Pa., freelance writer.*

# Jersey a Way Station for Migratory Birds

By Kathleen E. Clark



New Jersey lands are critical links in the migratory journeys of raptors like the red-tailed hawk.



An osprey on its nest  
at a marker in  
Barnegat Bay

An osprey coming in  
for a landing

New Jersey may be one of the smallest states in the country, but its strategic location makes it a critical habitat for many migratory birds. It includes a large chunk — greater than 100 miles — of the Atlantic coast, a superhighway for many migrant species. It also lies between northern harsh-winter states and southern mild-winter states, making it the first stop for birds on a short migratory journey. New Jersey has a diverse habitat ranging from majestic mountains to the Pinelands. Because of the state's unique ecological position, the preservation of open space plays a major role in protecting birds.

The shore birds that migrate through coastal New Jersey are a prime example. By nature, shore birds are residents of the coastal environment; they use beaches, marshes and shallow-water mud flats. They rely on these habitats when they are breeding in the arctic tundra in June or are wintering in South America. But in between the wintering and breeding territories lie 8,000 to 10,000 kilometers of land and water the shore birds must migrate across. To survive this journey and reach the arctic in good condition to mate, they must find food resources of exceptional quality and quantity. In early spring as they reach New Jersey, this might seem like a tall order. On Delaware Bay, however, they find one of the most unusual food abundances: the eggs of more than one million horseshoe crabs using the beaches to spawn.

The public lands along Delaware Bay and the Atlantic coast are critical in maintaining the birds' trans-hemispheric lifestyle. It is this beach-greenway corridor that they rely on



to survive the most hazardous portion of their lives — migration. Biologists from the state Endangered and Nongame Species Program have observed as many as 350,000 shore birds in one two-hour survey of the bay. There are six primary species: the red knot, ruddy turnstone, semipalmated sandpiper, sanderling, dunlin and short-billed dowitcher. Although they can be seen in greatest numbers on the Delaware bay beaches, these birds extensively use the marshes of the Atlantic and Bay coasts. Program biologists have found shore birds using these marshes at high tide for feeding and resting. By mid-June, the crowd on the beaches and marshes is reduced to stragglers heading north, leaving hungry laughing gulls and glossy ibis to feed. By that time, the shore birds are in the arctic, beginning to nest and using energy reserves they accumulated here.

New Jersey hosts another large group of migrants, this time in the fall. Each year tens of thousands of raptors (hawks), songbirds and woodcock funnel along the Atlantic coast and concentrate on the Cape May peninsula. The

raptor migration is estimated to be the largest and most diverse in the country. Raptors from the Northeast and Canada move south in the fall, hurried along by dominant northwest winds. These winds, and perhaps the birds' inexperience with migration, lead them to the Atlantic coast where they must avoid being blown out over the ocean. These birds, including endangered bald eagles, peregrine falcons, ospreys, and red-tailed and broad-winged hawks, funnel down Cape May peninsula to Cape May. There they encounter Delaware Bay, and many pause there apparently waiting for wind conditions that will favor a successful crossing. Many choose to avoid the crossing and fly up the Delaware Bay coast to a safer and sheltered crossing. Biologists have observed major flights of these birds moving north along Delaware Bay, following the edge of forest and marsh. They hunt and rest in the forests of the Dennis Creek Wildlife Management Area, Belleplain State Forest, Heislerville and Egg Island before they finally cross Delaware Bay, continuing to their destinations in the southeast United States and Central and South

Ruddy turnstones and other migratory shore birds rely on public lands along Delaware Bay and the Atlantic Coast.



## Major Migratory Corridors



Each spring, the Delaware Bay hosts the second-largest concentration of shore birds in the Western Hemisphere. Green Acres is involved in a continuing effort to acquire land along the beach, and has purchased many acres of land in each of New Jersey's major migratory bird corridors. These corridors and the Green Acres lands are:

**Kittatinny Ridge:** Stokes State Forest, Worthington State Park, and the Hainesville, Flatbrook and Columbia Lake wildlife management areas.

**Central Highlands:** Wawayanda, Ringwood and Allamuchy state parks, and Hamburg Mountain Wildlife Management Area.

**Atlantic Coast Corridor:** Allaire, Cheesequake and Island Beach state parks, Cape May Wetlands, and the Great Bay Boulevard, Beaver Swamp, Manasquan River and Marmora wildlife management areas.

**Delaware River and Bayshore:** The Higbee Beach, Heislerville, Edward G. Bevan, Fortescue, Mad Horse Creek, Logan Pond, Baldwin Lake and Dennis Creek wildlife management areas, and Cape May Point and Washington Crossing state parks.

Americas. These lands, remnants of a once wilder southern New Jersey, are critical links in the migratory chain extending across the eastern United States into South America.

Not only raptors concentrate on the coastal areas of New Jersey. Each year, thousands of songbirds, or passerines, fly through New Jersey and along the Atlantic coast. These include more than 200 species, such as warblers and sparrows. On some autumn days, songbirds can be found in almost every available piece of habitat along the coast, especially near Cape May Point. They, like raptors, fly to places where they can spend the winter, but for these birds, especially a group known as the neotropicals, the flight will lead them to Central and South America. Songbirds are less visible than raptors and generally migrate at night, so biologists know little about their routes of travel and in-route habitat needs.

However, given their small body size and high metabolism, it is known that they lose body fat quickly if forced to make long flights without suitable resting areas. They rely on fall

Peregrine falcons migrate through New Jersey in the fall.



BRECK P. KENT

foods of fruiting shrubs, the seed of weeds and grasses, and the supply of late summer and fall insects. Because New Jersey has so much undisturbed wild land along its coast, the state is important to many species during migration.

Many of these songbirds are recognized by experts throughout the Western Hemisphere as seriously threatened, but no one is

quite sure why. Some believe they declined because of the severe loss of breeding habitat, which for many is large areas of forest. Others believe they declined because of losses of wintering habitat. The importance of migratory habitat has not been recognized until very recently. This year, the Endangered and Nongame Species Program, the Division of Parks and Forestry's Office of Natural Lands Management, New Jersey Audubon and counterparts in four other states will cooperate in a study to determine which habitats are important for neotropical migrants.

Important migration routes have been traced along New Jersey's coast. Notable among the barrier islands is Island Beach State Park, where banding studies have confirmed its importance to migrant birds. Songbird banders open their

nets each year at the Island Beach State Park Research Area, Cape May Point State Park and the Higbee Beach Wildlife Management Area, where they document the flight path of thousands of the tiny migrants.

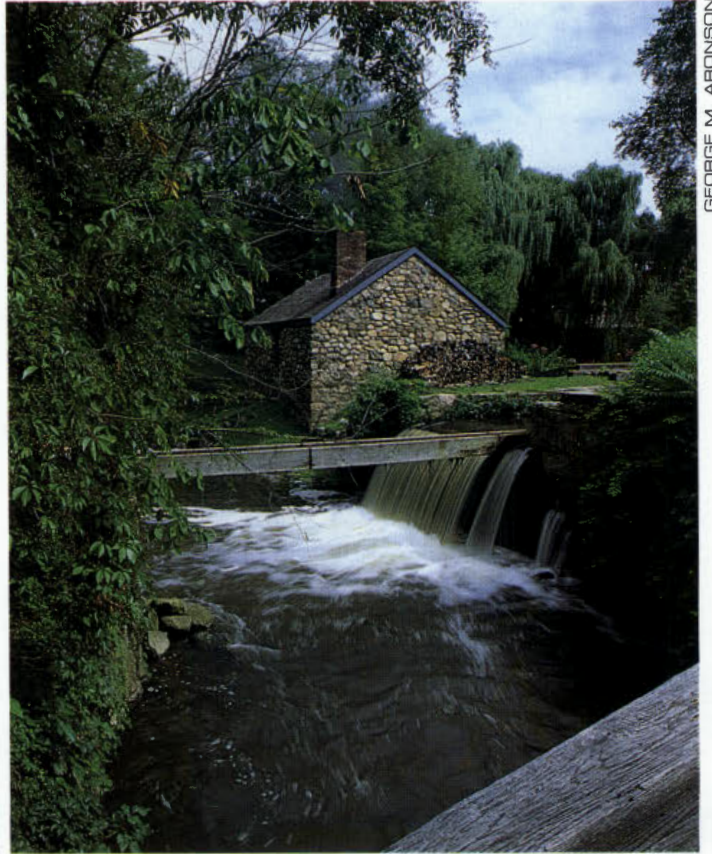
These birds continue to the Cape May region where, like raptors, they apparently congregate before the water crossing. They use Higbee Beach and surrounding lands for much-needed feeding and resting, finding refuge in fields, forests and even wetlands dominated by Phragmites (common reeds). Cover is critical in an area where raptors specializing in songbird consumption also concentrate. Impressive morning flights of warblers have been noted in Cape May, signaling their dispersal into surrounding suitable habitats for the day's food and rest.

It is observations like these, plus banding and long-term studies, that help make us aware of the needs of birds passing through our state on their international travels. The preservation of New Jersey's open space has played a pivotal role in preserving migratory routes they have developed over evolutionary time. 🦅

*Kathleen E. Clark is a senior zoologist for the Division of Fish, Game and Wildlife's Endangered and Nongame Species Program.*



# The Legacy of Green Acres



GEORGE M. ARONSON

MICHAEL A. HOGAN





The rich history and cultural offerings of Waterloo Village (far left) are buffered by Allamuchy State Park.

Visitors to Batsto (left) find this historic site surrounded by natural beauty.

This broad blanket of Pinelands green (below) belies New Jersey's urban image.

GREG JOHNSON





The cloud-shrouded Ramapo Mountains remain much as they were when the Lenni-Lenape Indians gave them their name.

GREG JOHNSON



GEORGE M. ARONSON



This stretch of towpath along the Delaware and Raritan Canal north of Washington Crossing, which once heard the rumble of trains, now presents a soft surface for joggers.

The terrace pond at Wawayanda State Park reflects New Jersey's turbulent geologic history.



The preservation of open space allows uncluttered sunsets to paint the sky, such as here over Goshen Pond in Wharton State Forest.

Areas acquired and developed with Green Acres funds not only preserve the best of New Jersey, but offer stunning views of other states as well. At right, Liberty State Park provides a view of the New York City skyline.



The 78-room Ringwood Manor, once the home of iron magnate Peter Cooper, sits nestled among the trees and lakes of Ringwood State Park.



GEORGE M. ARONSON

# Getting Ready to Go Bicycle Touring

By Bill Feldman

New Jersey offers many wonderful bicycle touring opportunities for both the novice and the experienced cyclist. From the Skylands Region in the northwest corner of the state with its highlands, hills and valleys to the gentle terrain of South Jersey's Pine Barrens and its unique ecology, there are touring options regardless of your level of experience or degree of fitness.

Before heading for the open road, however, a few preparations can help ensure a pleasurable experience. These include making an honest assessment of your level of fitness and cycling skill and selecting your touring route accordingly. It also means having the proper equipment and understanding your rights and responsibilities as a cyclist on our roadways.

If you are a novice or riding with children, you should start with short rides of 10 miles or less on fairly level terrain. Take care to select routes on low-traffic roadways or on bike paths or roadways in parks where traffic speeds are low. As your cycling skill and level of fitness increase, so too can the length and difficulty of the tour. A reasonably fit person with some cycling experience can, with the proper equipment, tackle day tours of 25

miles or more. Experienced and fit cyclists often complete day tours of up to 100 miles (a "century"). Above all, keep in mind that bicycle touring is meant to be enjoyed and not faced as a grueling physical challenge, unless you want it to be. Beginners should go short distances at an easy pace. It's better to feel that you could have gone farther or faster than to have overextended yourself and regret the experience.

## Select the Right Bicycle

There are a number of different types of bicycles available that may be suitable for bicycle touring. Regardless of the type you choose, make sure it is well-maintained. The bike should be of the best quality you can reasonably afford and it should be in proper working order for every ride. A poorly maintained bike is inefficient, may be noisy and is subject to breakdowns, which will lead to an annoying rather than an enjoyable experience, or worse, an accident or injury. Before venturing out, make sure that the tires and tubes are in good condition, all fittings are tight, and brakes and derailleurs are operating properly. If you haven't ridden your bike in some time or if you don't have the mechanical skills or knowledge to put it in proper working order, take it to a bike shop for a tune-up.

The type of bike you have dictates to a certain extent the type of touring you may do. Single-speed bikes and kid bikes are OK for short rides on flat roads and trails. Among the multi-speed (derailleur) bicycles, the so-called mountain bike or "fat-tire" bike is ideal for off-road or trails use and can be used on roadways for shorter day tours. Their higher rolling resistance, upright riding position and straight handlebars with limited handgrip positions make them generally less suitable for day tours of more than a couple of hours, though some experienced cyclists do use them for long day tours, including century rides.

For most day touring, particularly if longer tours are to be undertaken, the bike of choice is the thin-tire touring bike or road bike. This type of bike has high-pressure tires with low rolling resistance, and down-turned handlebars that offer a variety of handgrip positions. It places the rider in a forward-leaning, efficient riding position that may take some getting used to for beginners. But road bikes with very narrow (1 inch or less), very high pressure tires may not be suitable on paths or multi-use trails that do not have a paved surface.

In recent years, a new type of bike, the hybrid or "cross" bike,





Bill Feldman at Batsto



Ringwood State Park offers plenty to see during any season.

has appeared on the market. This bike represents a versatile compromise between the road bike and the mountain bike. This type of bike would be suitable for short or moderate-length day tours on roads and for trail riding, though not on rugged "off-road" terrain. It's an excellent choice for bicycle commuting, too.

Regardless of which type of bike you choose, it should be properly fitted. Generally, you should be able to comfortably straddle the top tube with feet flat on the ground. Saddle height should be set so your leg is slightly bent when the pedal is in the "down" position. Handlebars should be slightly lower than the saddle. The advice of an experienced bicyclist or bike shop mechanic or salesperson can help you judge if the bike is the right fit for you. Proper size is important for children, too. Don't buy a child a bike to grow into. A bike that's too big will be difficult to control and dangerous to ride. One that's too small will be confining, inefficient and also dangerous to ride.

### What to Take and Wear

A variety of other equipment or apparel is either essential or highly recommended for enjoyable and trouble-free day touring. Equip your bike with a handlebar bag or a rear bag. Carry basic

maintenance tools, including a frame pump, spare inner tube, patch kit and tire "irons," and know how to use them. This will enable you to make at least minor emergency repairs. Carry a secure locking device. Use it if you leave your bike out of sight. *Absolutely* wear a bicycle helmet approved by Snell or the American National Standards Institute (ANSI). This will drastically minimize the possibility of a disabling head injury in the rare event of a spill or collision. Padded cycling gloves also are recommended since they protect the hands from pressure as well as from transmitted road shock and vibration. They also protect the hands from injury during falls. Cycling shorts (or tights in cooler weather) increase comfort since they are constructed with flat seams that eliminate chafing. Toe clips and cycling shoes (the non-cleated variety for beginners) improve cycling efficiency by allowing power to be transmitted on the entire pedal revolution. They will take some getting used to and are certainly not essential for shorter tours. Cleated shoes with either toe clips or the new "clipless" pedals are for the experienced rider.

Always carry water with you. You should have at least one frame-mounted water bottle; two or more bottles are advisable for longer rides and in warm weather. You can supplement the water



A hiker asks cyclists for directions at Millbrook Village.

with electrolyte/carbohydrate replacement drinks if you tolerate them. Take along some snack food on rides of more than a couple of hours. Drink before you're thirsty and eat before you're hungry. Stop periodically and rest a few minutes or stretch even if you don't feel tired. The idea is to finish the ride feeling good, not bad.

### Know the Rules of the Road

Many, if not most, roads in New Jersey are suitable for bicycling. But even though some of the roads you travel might be less than ideal for sharing with motor vehicles, you can improve your safety by obeying the rules of the road and following effective cycling practices.

Bicyclists have essentially the same rights and responsibilities as drivers of motor vehicles. This means keeping to the right; riding *with* traffic, never against it; observing all signals, stop signs and yield signs; and using hand signals to indicate intended lane changes or turns.

Use common sense. Bicycle traffic is not always conspicuous, especially when motorists haven't been trained to look for it. Try to anticipate motorists' errors, such as pulling out of driveways and side streets without looking, making turns in front of you, or

opening car doors in your travel path.

Select the proper lane position for the situation. Between intersections or on the open road, keep to the right, but *don't* hug the curb, edge of pavement or line of parked cars. You don't want to be riding in debris or along ragged pavement edges, over drainage gates or where a car door might suddenly be opened in your path. You do want to ride where you will be seen by motorists. Move left to pass slower traffic or obstacles, but check for overtaking traffic and signal first. If the outside lane and shoulder are too narrow for side-by-side sharing with motor vehicles, then move toward the middle of the lane. Overtaking motor vehicle traffic will then have to change lanes to pass. When approaching intersections, select your lane and your position in the lane based on the direction you want to go. If there is only one lane, select a position toward the left, center/right or right depending on whether you wish to go left, straight or right. When there is a choice of lanes, ride in the right-most lane for the direction you wish to go. If the lane you're in serves more than one direction, position yourself in the lane so your intentions are clear.

You also should use traditional hand signals and look over your shoulder to indicate an anticipated change in your position. Use the over-the-shoulder look and make eye contact with drivers to "negotiate" a lane change. If conditions are beyond your ability to negotiate a left turn, you may make a "pedestrian" left turn by riding to the far side of the intersection, dismounting and walking your bicycle across when conditions permit.

### Other Tips

- Plan your rides for daylight hours. Riding in darkness is potentially unsafe. If you ride at night you must, by law, use lights.
- Plan rides outside peak commuting hours if possible.
- Wear bright-colored clothing so that you're easily seen.
- Wear sunglasses.
- Let someone know where you're going and when you expect to return, especially for longer trips. Carry some identification on your person, not just in your bike bag. Take some change for emergency telephone calls.
- Use your gears; that's why they put them on the bike.

Most beginners don't use them enough. Unless you're going up a hill, you shouldn't be pushing hard on the pedals. Try to spin the cranks with a pedal revolution cadence of 60 to 80 revolutions per minute. Select the gear that enables you to do this.

Finally, keep this in mind: Bicycle touring is supposed to be fun. Proper planning and preparation and the right equipment and attitude will help you enjoy the experience and have you venturing out again. 🚲

*Bill Feldman is the bicycle advocate for the N.J. Department of Transportation.*

A cyclist rides through Ringwood State Park.



ARLINE ZATZ



## Great Green Acres Biking Trails

**Estell Manor** — Estelle Manor City, Atlantic County  
**Surface:** paved, 20 miles **Access:** along Route 50 — Egg Harbor to Corbin City **Features:** Nature center, herb garden, historic glassworks, fitness trail

**Ringwood State Park** — Ringwood Borough, Bergen County  
**Surface:** paved road within park (hilly), 10 miles  
**Access:** Route 17, Sterling Mine Road **Features:** swimming, boat rentals, botanical gardens, museum, picnic area

**Wharton State Forest** — Hammonton Town, Burlington County  
**Surface:** paved main road, trails for mountain bikes, 20 miles  
**Access:** Route 542, Exit 52 off New Jersey Parkway  
**Features:** historic village, guided tours, fishing, camping, hiking

**Cooper River Park** — Cherry Hill Township, Camden County  
**Surface:** paved, 3.8 miles **Access:** Cuthbert Boulevard  
**Features:** views of the Delaware River, picnic areas, walking paths, play fields

**Liberty State Park** — Jersey City, Hudson County  
**Surface:** paved roads within park, 3 miles **Access:** off Exit 14B of the New Jersey Turnpike **Features:** ferry to Statue of Liberty, nature center, museum, picnic area

**Mercer County Park** — Hamilton, West Windsor and Washington townships, Mercer County  
**Surface:** designated paved paths, paved roads within park, 5 miles **Access:** Hughes Drive, Edinburg Road, Old York Road **Features:** Mercer Lake, picnic areas, tennis center, boat rental, ball fields, basketball.

**Monmouth Battlefield State Park** — Freehold Township, Monmouth County  
**Surface:** gravel, 1.5 miles **Access:** Route 33 **Features:** historic Monmouth Battlefield, visitors center, pond, picnic areas

**Island Beach State Park** — Seaside Borough, Ocean County  
**Surface:** paved road within park, 2 miles **Access:** Shore Road, off Route 35 **Features:** Nature center, self-guided nature path, ocean bathing, concessions

**Delaware and Raritan Canal State Park** — Franklin Township, Somerset County  
**Surface:** canal towpath, 10 miles  
**Access:** Weston Canal Road, Amwell Road **Features:** Delaware and Raritan Canal, Lock Tender's house, locks, picnic areas; connects with Washington Crossing State Park

**High Point State Park** — Montague Township, Sussex County  
**Surface:** paved roads within park, 7-8 miles **Access:** Route 23 or Decker Town Turnpike **Features:** High Point Monument, eight hiking trails, Appalachian Trail, swimming, boating

**Worthington State Forest** — Pahaquarry Township, Warren County  
**Surface:** paved road (Old Mine Road) within park, 5 miles **Access:** off Route 80 east (Delaware Water Gap National Recreation Area Visitors Center) **Features:** Delaware River, Millbrook Historic Village, Peters Valley Craft Village, picnic areas; connects to National Recreation Area

A fisherman tries for fall stripers in the surf at Island Beach State Park at sunrise.



PETE MCLAIN

# The When and Where of Saltwater Fishing

By *Pete McLain*

New Jersey has some of the best saltwater fishing on the East Coast. There's not a month in the year when an angler can't catch fish somewhere along the 125 miles of the Jersey coast or in the tidal bays and rivers. The open party boats and some charters sail all winter, weather permitting. The private boat anglers find most of the launching ramps open and bank fishermen have more than enough room on the jetties, piers, beaches and sod banks.

Let's talk about the locations, times of the year, kinds of fish and how to catch them.

**January** and **February** are probably the slowest fishing months. In January, however, the white perch school up in Collin's Cove in Atlantic County, just west of the Garden State Parkway bridge over the Mullica River. Collins Cove is accessible by car through the Port Republic Wildlife Management Area. When the Cove freezes in late December and early January, tons of white perch school in the dredged hole in the Mullica River where the water temperature is slightly warmer than in the surrounding river waters.

Hundreds of anglers chop small holes in the ice. Using a No. 6 Chestertown hook on a 6-pound test monofilament line with a bobber on a tip up, or a short spinning rod, they take

large numbers of perch up to a pound in weight. The best bait is fresh grass shrimp or small killies. Bait and tackle can be purchased at the Chestnut Neck Boatyard, east of the Parkway Bridge on the Mullica River near the village of Port Republic. As the river water warms in February, the perch move out of the hole and can be caught up and down the river most of the year. A New Jersey fishing license is not required at Collins Cove.

In **late February** and **March**, depending on the weather, the winter flounder become active and begin to feed on small worms and other invertebrates in the sandy-mud channels of Raritan Bay, the Shark and Manasquan Rivers, northern Barnegat Bay, Great Bay and the bays of deep South Jersey. Flounder fishing is usually slow getting started, but as the water warms in **April**, catches of 50 fish a day are common. The trick is to watch for the fleets of anchored boats and to fish with a chum pot loaded with ground mossbunker or crushed mussels. There are many types of flounder rigs. A good choice is a "spreader," which holds two or more No. 6 long-shank snelled hooks baited with small bits of bloodworms or clams. A good combination is a lightweight spinning rod and 6- or 4-pound monofilament test line with just enough weight to keep your bait on the bottom.

By **late May**, the flounder usually are migrating out of the bays and another flatfish, the fluke or summer flounder, begins to move into the inlets to spend the spring, summer and early fall in our bays and rivers. The winter flounders may go from 3/4 of a pound to a little over a pound, but the fluke or summer flounder run from one pound to over 10 pounds. Both of these fish are excellent table fare.

There are many methods of fluke fishing. Some anglers prefer to fish from a pier or jetty while others bank fish, but most serious fluke anglers fish from boats of from 12 to 40 feet and larger. Fluke or summer flounder prefer to lie in wait for a passing bait fish. Most fluke fishermen drift their boats with the tide or troll, passing their baits along the bottom hoping that a big flat fish will dart out and take it. The best baits are squid, killies, sand eels and spearing bait fish on a 1/0 to 2/0 hook. The secret to fluke fishing is to keep the bait moving slowly along the bottom, keep the hook free of grass and weeds, and "feel" for the strike. When a fluke hits the bait with a sharp rap, drop your rod tip and allow the fish to get the hook and bait back in his mouth. Now strike and strike hard. Always have a landing net, as the big fish is sure to flip off just as he gets to the boat.

Where to fish for the fluke? There is hardly a tidal waterway on the Jersey coast where you can't find fluke from **May to September**. Some days they will be in the channels and the very next day the action will be on the flats or in shallow water.

**April, May** and **early June** are the prime spring months for Jersey inshore saltwater anglers. The striped bass schools move north and hit the Jersey coast in mid-April, followed by the bluefish in May. This is the time of year to take your saltwater angling seriously. As the striped bass move along the beach, they are looking for surf clams, sand and bloodworms, small bait fish and just about any aquatic animal life they can find. The early fishing is best on bloodworms, mullet and cut bait. As the water warms, they will begin to strike lead-head bucktail jigs, metals, and swimming, popping and other plugs. Stripers will range from less than a pound to more than 50 pounds. The legal length limits in New Jersey are one striper over 28 inches and one "Trophy Striper" over 38 inches, if

Author Pete McLain holds up his catch after fly-rod fishing for bluefish in Barnegat Bay.



A family enjoys a day of fluke fishing in Barnegat Inlet.



PETE McLAIN

you first acquire a special tag at any bait and tackle shop.

By **mid-May**, someone will usually rush into a local tackle shop and shout, "The blues are in the surf!" At this point, bedlam breaks out as everyone heads for the beach with their surf rods and handfuls of lures, mostly metals and swimming plugs, to do battle with one of the most exciting fish that swims. They don't call the bluefish "slammers" for nothing. When the schools of feeding bluefish crowd small bait fish against the surf line or offshore sandbars, it can be the fastest and most exciting fishing you'll experience. A lure landing in the melee of feeding blues and frantic bait fish is certain to be grabbed, and you may have a 2- to 18-pound

bluefish hooked. For surf fishing you should wear chest waders and a parka. Surf rods should be in the 8- to 12-foot length with an 8- to 17-pound test monofilament.

As the blues and stripers move along the beach, the boat anglers follow them and cast into the surfacing schools, or troll or jig for the fish resting or moving along the bottom. Here you will want medium action 6- to 8-foot spinning rods with an 8- to 12-pound test line. Bucktail jigs, rubber tube lures, deep diving plugs and metal jigs are all excellent lures. It's always a good idea to check at local tackle shops and see what the favorite lure or bait is, since the choice of lures and baits seems to change every year.

Without question, one of the best public surf-fishing spots is Island Beach State Park, just south of Seaside Park in Ocean County. There is a special fishing area set aside, which draws thousands of anglers from all over New Jersey and the United States. The Sandy Hook beaches, the sandy beaches in Monmouth and Ocean counties, Long Beach Island in southern Ocean County and the beaches from Atlantic City to Cape May Point have good surf fishing. In Cape May County and the Delaware Bay, weakfish from 4 pounds to tide runners over 10 pounds bite in **May** and **June**, and smaller weakfish remain around the jetties in Cape May all summer.

Not to be overlooked by the small-boat angler is the superb bay bluefishing, which usually occurs in **late May** and **June**. Great hordes of bluefish in the 3- to 4-pound class move into the bays and some rivers from Raritan Bay to Cape May to feed on small bait fish and grass shrimp. In my opinion, this is the fastest light tackle fishing you'll encounter. The fish can be found in early mornings and late evenings chasing bait. The terns usually will be dipping and diving for the remains of the carnage the blues leave in their feeding wake.

A No. 8 size fly rod with streamers and surface popper, or light spinning tackle with small swimming plugs, metals or spoons, is guaranteed to catch bluefish like there's no tomorrow. When bluefishing, use a few inches of 20-pound monofilament line or wire leader to prevent the fish's sharp teeth from cutting your 6- to 8-pound monofilament line.

A trailered 12- to 20-foot outboard is excellent for bay fishing. There are a number of fine launching ramps along the coast, and tackle shop owners can direct you to both the ramps and the bluefish. Occasionally, you'll bump into weakfish in the bays and rivers as an added attraction. Some boatmen will anchor up and drift cut mossbunker or mullet.

Excellent areas for spring bluefishing by boat in Barnegat Bay are the grass flats off Island Beach State Park in Ocean County. There are miles of shallows where the bluefish forage on bait fish. Some anglers prefer to wade out into Barnegat Bay and cast for blues and stripers. Using a light spinning or fly rod early in the morning and late in the evening, you'll find some great light tackle fishing, and you'll probably be all alone. Raritan Bay and Great Bay also have excellent spring bluefishing.

The hot summer months of **July** and **August** are when experienced anglers fish the rock jetties and piers for summer stripers, sea bass, blackfish and blues. Early in the morning and after dark the blues frequently hit the beach, but the bright sunlight sends the fish offshore. During the summer, the boat traffic and floating grass can make fishing difficult in the bay. However, the fluke and bluefish are on the bottom, and drift fishing is the way to catch them.

The charter and party boat crowds find good fluke fishing in the ocean along the beach, and superior bluefishing in the ocean from one to 20 miles offshore. The schools of bluefish tend to concentrate in various areas in the ocean, and the party and charter boat captains look for them with sensitive electronic fish-finding gear. Great catches of blues from 4 to 16 pounds are made almost every day. Charter and party boats moor in numerous marinas from Raritan Bay to Cape May, so it's no problem to find and book a day or half-day on an open party boat. The tackle is provided and all you need is a bag to bring the fish home.

If there is a best time of year to fish the Jersey surf, it has to be from **mid-September** to **early December**. This is when the migrating mullet, rain fish, sand eels, spearing and mossbunker schools are heading south. Right behind them come the striped bass and the big bluefish. The striped bass schools arrive in **late September** followed shortly by the hordes of blues in **early October**. The action occurs both day and night, depending on where the blues and stripers find the migrating bait fish. The early morning hours and just at dusk are usually the prime times for both blues and stripers. The bluefish are usually gone by December, but striped bass fishing may last until the end of December.

There is no best surf to fish. Certainly, Sandy Hook, Monmouth and Ocean surf, Island Beach State Park and Long Beach Island in southern Ocean County are among the best.

A four-wheel drive beach buggy is excellent for keeping up with the migrating fish. However, you should have oversized tires and let down the air pressure to provide flotation on the soft sand. Most municipalities require a beach vehicle pass or permit. It's wise to check with the local town clerk or other local officials before driving on any Jersey shore beach.

Fall weakfishing in the bays and rivers can be an exciting sport. The fish seem to bite best at night, in early morning and at dusk. Most anglers will anchor near a tide rip or sandbar where the weakfish are feeding, and drift shedder crabs, shrimp or strips of squid on a light line, which may or may not have a bobber to hold the bait at a predetermined depth. Artifi-

PETE MCLAIN



Jetty fishing for striped bass can be an exciting winter experience.

cial baits like a lead-head bucktail jig and a plastic worm or squid strip are excellent. The weakfish has an ultra-soft mouth, so setting the hook and fighting the fish tenderly are important. Always use a landing net, as most weakfish are lost when they break off as the anglers try to lift them into the boats. Always be certain when you are boating in New Jersey waters that you carry all required safety equipment, that your boat is registered and that you have the required lights if operating the boat after dark.

Remember, there are days when a canoe or small outboard skiff can be used on the ocean or bay, and there are other days when no pleasure boat, regardless of its size, is safe. Check with the U.S. Coast Guard if you are unsure of the weather, tides and wind. If it looks too rough to go out, it probably is.

It's been said and written many times, "God doesn't count the days in your life spent fishing." This may or may not be true, but the days you spend standing in the surf for stripers, chasing schools of bluefish in Barnegat Bay, drifting shedder crabs for weakfish in Great Bay, floating live eels from the rock jetties or following the tide in a rowboat for fluke are certainly not wasted. New Jersey has almost unlimited saltwater fishing opportunities waiting for you. 🐟

*Pete McLain of Toms River, a former deputy director of the N.J. Division of Fish, Game and Wildlife, was host of the "New Jersey Outdoors" TV series.*

## Popular Green Acres Fishing Sites

Public access for fishing and boating is a top priority with Green Acres. The Green Trust has provided local governments with money to purchase beaches, jetties, shorelines and marina sites as well as to construct fishing access facilities, including launch ramps, fishing piers and bulkheads, and the parking and restrooms to support these facilities.

Following are some popular Green Acres-assisted fishing areas:

- Absecon Wildlife Management Area (WMA)**, Atlantic County — bay fishing, crabbing and clamming, with municipal boat launch ramp.
- Dennis Creek WMA**, Cape May County — tidal creek and Delaware Bay fishing, with newly rebuilt boat launch ramp.
- Egg Island WMA**, Cumberland County — tidal creek fishing and crabbing, with boat launch (shell ramp) for Delaware Bay fishing.
- Great Bay WMA**, Burlington County — bay fishing, crabbing and clamming, with car-top launch areas.
- Higbee Beach WMA**, Cape May County — Delaware Bay surf and jetty fishing.
- Mad Horse WMA**, Salem County — Creek and Delaware Bay fishing, with newly rebuilt boat launch ramp.
- Manasquan WMA**, Monmouth County — river fishing and crabbing, with car-top launch area.



- Marmora (Coastal Wetlands) WMA**, Cape May County — bay and estuary fishing, crabbing and clamming.
- Port Republic WMA**, Atlantic County — river fishing and popular ice fishing for white perch at Collins Cove.
- Swan Bay WMA**, Burlington County — creek and river fishing, with car-top launch area.

*For further information, contact the Division of Fish, Game and Wildlife, CN 400, Trenton 08625.*

- Corson's Inlet State Park**, Cape May County — surf fishing, with new boat launch ramp under construction.
- North Brigantine Natural Area**, Atlantic County — surf fishing, with beach buggy access by permit.
- Liberty State Park**, Hudson County — Hudson River bulkhead fishing, with boat launch ramp and Caven Point Pier.

*For further information, contact the Division of Parks and Forestry, CN 404, Trenton 08625.*

# 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.

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| 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 tote bag with canvas hand straps for the beach, a picnic, shopping or just about anything \$9.95                |          | N/A  | White |             |
| Mug with screen-imprinted logo 11oz. ceramic mug, available in white or sand \$7.95  |          | N/A  |       |             |
| Hat with embroidered logo White, 100% cotton twill, adjustable strap at back \$12.95   |          | N/A  | White |             |
| Fanny pack with screen-imprinted logo 100% nylon, main pouch and front pocket, adjustable strap with clasp, 5" high x 9" wide x 3.5" deep, available in white, gray, navy and light blue \$10.95 |          | N/A  |       |             |
| Binder with screen-imprinted logo on cover and spine for storing 12 issues (3 years) of New Jersey Outdoors. A great way to preserve and organize your magazines for future reference \$10.95    |          | N/A  | White |             |

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SUMMER '91

# Bookshelf

**HAZARDOUS WASTE PROGRAM UPDATE FALL 1990, AND 1990 HAZARDOUS WASTE SITE STATUS REPORT**, two publications prepared by DEP's Hazardous Waste Management elements, summarize hazardous site cleanup costs and progress at most major sites in the state, including Superfund sites. The update includes financial information, program accomplishments, progress and issues. The status report includes a state map of active remediation sites, listing of sites by county, index of sites (alphabetically), glossary of terms/explanation of terms used in site descriptions, site status reports and construction activities completed. Cost is \$55 for the two-document set, including postage and handling. *To order, please make check or money order payable to Treasurer, State of New Jersey, and mail to DEP, Bureau of Revenue, Maps and Publications Sales Office, CN 402, Trenton 08625-0402.* Please allow three to six weeks for delivery. For more information, call (609)777-1038.

**POLLUTION PREVENTION: YOU CAN MAKE A DIFFERENCE! 21 TIPS FOR THE WORKPLACE**, by DEP's Office of Pollution Prevention. A free copy is available from the DEP's Office of Communications and Public Education, CN 402, Trenton 08625-0402.



**GREEN ACRES**, prepared by the Green Acres Program, is a colorful fold-out brochure describing DEP's Green Acres efforts to preserve New Jersey's remaining farmland and other environmentally sensitive open spaces. A free copy is available from DEP, Office of Communications and Public Education, CN 402, Trenton 08625-0402.

**DEAR BOATER** is a leaflet that informs boaters of the rules of trash disposal while boating and how to fight marine pollution. The information pertains to vessels ranging from commercial fishing vessels to privately owned boats. A free copy is available from DEP, Office of Communications and Public Education, CN 402, Trenton 08625-0402.

**The 1990 COOPERATIVE COASTAL MONITORING PROGRAM ANNUAL REPORT**, published by DEP's Division of Water Resources (DWR), provides a general analysis of coastal water quality in Atlantic, Cape May, Monmouth and Ocean counties from environmental and public health perspectives. Included are summarizations of water quality monitoring, coastal enforcement, coastal surveillance and program results. The report also includes a discussion and listing of beach closings for the summer of 1990. A free copy is available from DEP, DWR, CN 029, Trenton 08625-0029.

**BENEFICIAL USES OF SEWAGE SLUDGE ... NEW JERSEY'S WASTE TO NEW JERSEY'S PRODUCTS** is three pages of fact sheets defining sludge and its possible beneficial uses. Other information includes the disposal of sewage sludge and a list of contacts including environmental organizations, agencies and associations. A free copy is available from DEP, DWR, CN 029, Trenton 08625-0029.

**NEW JERSEY SHORE, KEEP IT PERFECT...**, prepared by DEP's Office of Communications and Public Education (OCPE), offers information that will assist in keeping the shore "perfect" for everyone. Suggestions include following individual beach rules and being a responsible boater. A free copy is available from DEP's OCPE, CN 402, Trenton 08625-0402.

**A CITIZEN'S GUIDE TO REDUCING SOLID WASTE**, by the Division of Solid Waste Management, Office of Recycling, focuses on how consumers can influence the amount of

waste being generated. The brochure explains how to maximize waste reduction through techniques such as reuse, recycling and composting. A free copy is available from DEP, Office of Communications and Public Education, CN 402, Trenton 08625-0402.

**ENJOYING NEW JERSEY OUTDOORS; A YEAR-ROUND GUIDE TO OUTDOOR RECREATION IN THE GARDEN STATE AND NEARBY**, by Helen Lippman and Patricia Reardon, published by Rutgers University Press. This 150-page book gives information on a range of outdoor sports and recreational activities. It includes places to go, attractions for children, access for disabled people, special annual events, equipment rentals, and recreational facilities. Cost, \$34 (cloth) and \$11.95 (paperback). Available at bookstores. For more information, call toll-free: 1(800)446-9323.

**1989 NEW JERSEY AIR QUALITY**, a brochure prepared by DEP's Division of Environmental Quality (DEQ), provides an overview of DEP's ambient air monitoring program and summarizes 1989 air quality levels. A free copy is available from DEP, DEQ, CN 405, Trenton 08625-0405.

**GEOLOGIC REPORT SERIES and GEOLOGIC MAP SERIES:** Orders for any of the New Jersey Geological Survey publications listed below are to be mailed to DEP, Maps and Publications Sales, Bureau of Revenue, CN 417, Trenton 08625-0417. Please make checks or money orders payable to "Treasurer, State of New Jersey."

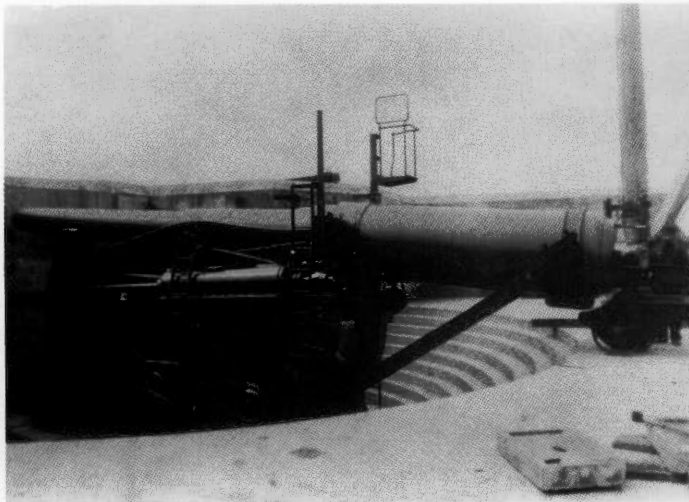
Geological Survey Report (GSR) 22. **RECORDS OF SELECTED WELLS IN ATLANTIC COUNTY, NEW JERSEY**, Lloyd G. Mullikin, 1990, 82 p., 1 plate, 4 tables. Cost, \$10.

GSR 23. **MAPPING DIGEST FOR NEW JERSEY**, Harold J. Barker, Jr., 1990, 30 p., 6 tables, 1 illus. Cost, \$2.

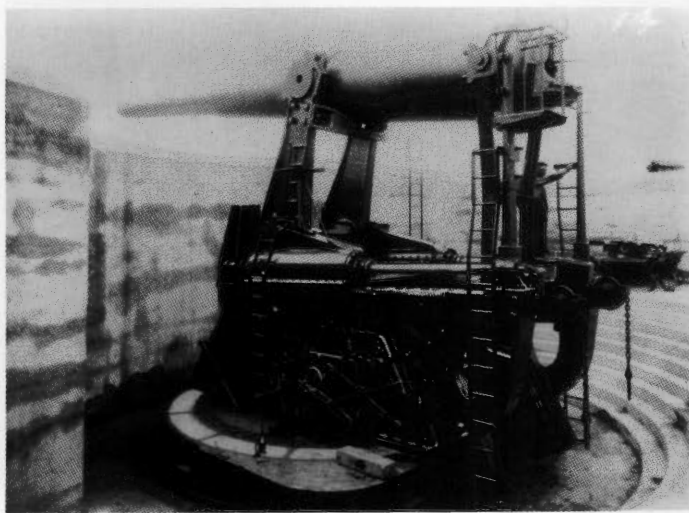
GSR 24. **INDEX OF NEW JERSEY GEOLOGIC MAPS**, Daniel R. Dombroski Jr., 1990, 31 p., 1 illus. Cost, \$2.

# The Guns of Fort Mott

NATIONAL ARCHIVES, WASHINGTON



NATIONAL ARCHIVES, WASHINGTON



Fort Mott gun in loading position (top)

Fort Mott gun in firing position

**F**ort Mott stands on the New Jersey shore near the town of Salem in Salem County. Built as part of the federal government's plan for the defense of the Delaware River, today the area is a state park where visitors can tour the remnants of the historic fortress.

From 1609, when Henry Hudson entered the mouth of the Delaware River searching for a western passage to China, to the present day, the river has served as an important gateway of commerce. Early settlers along the Delaware feared river pirates, but the War of 1812 brought a threat of danger from a foreign enemy. This resulted in the decision to erect a permanent defense on the river to guarantee security.

In 1837, the federal government purchased the original part of Fort Mott's present area. The battery at Finn's Point, N.J., was to supplement Fort Delaware on Pea Patch Island, located a mile away.

The proposal for a permanent battery was submitted in July 1870, on the recommendation of the Board of Engineers for Fortifications. U.S. jurisdiction over the Finn's Point area was completed in May 1872, and active operations began for the erection of a gun and mortar battery. The work progressed intermittently until six gun emplacements were constructed and two 8-inch rifles mounted in 1878. Traces of the original emplacements still are visible in front of the present fort.

In 1885, President Grover Cleveland assembled a special board to review the nation's entire coastal defense system. The board, which was headed by Secretary of War William Endicott, submitted detailed recommendations for revamping old and developing new weapons. For example, guns developed by 1890 could fire a projectile four times heavier than those discharged from the muzzle-loading smoothbore cannon from the post-Civil War period. Also, new Endicott-era structures were constructed with reinforced concrete and earth, and built into the terrain to hide the forts, in contrast to the visible-wall design of earlier ones.

Fort Mott of today dates from 1896. Construction was speeded up at the Finn's Point site because of the threat of the Spanish-American War. The fortification had three emplacements for 10-inch guns and three for 12-inch guns. The guns were built on Buffington-Crozier disappearing

By Edith H. Joseph

One of two control towers still overlooking the Delaware River



GREG JOHNSON

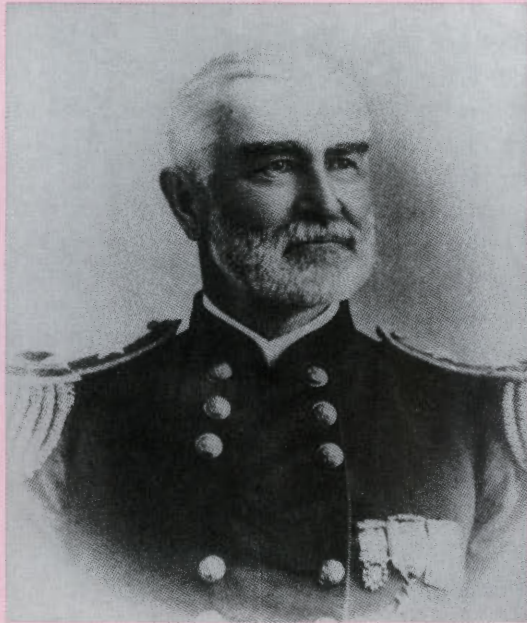
carriages. Chief Ranger Bruce Mathews, park administrator and Fort Mott interpreter, says the disappearing carriages gave the guns a “jump up and back action” that made them hard to see and just about invulnerable from the direction of the river. No matter at what angle the guns were fired, they recoiled to the same angle on the loading platform, making reloading safer and quicker.

The 1896 parapet wall for the six disappearing gun emplacements was built at an angle away from the shoreline, allowing a line of fire farther down river. Specifications called for the erection of an extremely thick embankment made up of earth and poured concrete, which was built up at

an angle to form the parapet wall. Behind the parapet were the six gun platforms, and beneath the platforms were the powder and shell magazines, ammunition hoists and electricity generating station.

The effective range of the guns at Fort Mott was seven to eight miles. Observers in two iron control towers, in conjunction with soldiers in the plotting room, directed the gunfire. The towers still stand at Fort Mott, one near the river, the other near the park office.

With advances in military technology and hardware, the role of Fort Mott changed rapidly. In 1920, Fort Saulsbury was constructed near Milford, Del., and became the princi-



**Major General Gershom Mott** (1822-1884), for whom Fort Mott was named in 1897, was a native of New Jersey who fought in both the Mexican and Civil wars. He led the New Jersey Volunteers in the Civil War and was wounded three times. Mott commanded the New Jersey National Guard from 1873 to 1876. He also served as state treasurer in 1875 and as keeper of the state prison from 1876-1881.

offers picnic facilities, a children's play area, fishing and crabbing, and open fields for walking.

The park is located off Route 49, six miles northwest of Salem and six miles south of the Delaware Memorial Bridge. To reach the park, take Interstate 295 or the New Jersey Turnpike to the "last exit before bridge," to Route 49 east. Stay on Route 49 east through three traffic lights. At the fourth light, turn onto Fort Mott Road. 🐾

*Edith H. Joseph has written about New Jersey's environmental programs during her more than 20 years with the Department of Environmental Protection.*

Changing of the guard at Fort Mott in 1905 (from postcard)



pal defensive installation on the Delaware River.

Troops were regularly stationed at Fort Mott from 1897 to 1922. The federal government maintained a caretaking detachment there from June 1922 to October 1943. Eventually, all the guns were dismounted. Some were shipped to various locations while others were scrapped.

New Jersey acquired the military reservation for a state park in 1947. Fort Mott State Park, which was placed on the New Jersey Register of Historic Places in 1973 and the National Register of Historic Places in 1978, is administered by the Division of Parks and Forestry.

In addition to the fortifications, Fort Mott State Park




Green Acres funds are targeted for the development of a Fort Mott interpretive plan and for the construction of a recreational/interpretive pier. The Delaware Park Commission operates the *Delacort*, a boat docked at Delaware City, Del., which cruises to Fort Delaware on Pea Patch Island. Once the Fort Mott interpretive pier is completed, plans are to have the boat stop at Fort Mott as well. It is hoped the pier will be in place before Fort Mott's centennial in 1996.

## Finn's Point National Cemetery

Only a quarter-mile from Fort Mott is the small, beautifully kept Finn's Point National Cemetery. The federal government first acquired land at Finn's Point in 1837 as part of a master plan to fortify the mouth of the Delaware River. In 1863 during the Civil War, two acres of the site were set aside as a cemetery for Confederate prisoners of war who died while interned at the prison camp at Fort Delaware on Pea

Patch Island in the Delaware River — about 1.5 miles away. In 1875, this burial ground was designated Finn's Point National Cemetery. The names of the 2,436 Confederate dead whose remains are buried here are inscribed on bronze plates affixed to the base of an obelisk-type monument. A marble monument was erected in memory of the 135 Union soldiers buried here. The monument shows the names of 105 individuals; the identity of 30 of the remains couldn't be determined. Other members of the armed forces

buried at Finn's Point National Cemetery include a few of those of the Spanish-American War and World War I, and soldiers who served at nearby Fort Mott when it was an active military installation. Thirteen German prisoners of World War II who died while in custody at Fort Dix are buried in the northeast corner. Finn's Point National Cemetery was entered on the state and national registers of historic places with Fort Mott. The cemetery is administered by the U.S. Department of Veterans Affairs. 



KEN DEBLIEU

## Green Acres Historical Sites



You can tour the following historical sites, all acquired, protected or developed with Green Acres funds.

### The Revolutionary War

- ❑ **War Proprietary House**, Perth Amboy, is where New Jersey's last royal governor was arrested on January 8, 1776. **Phone:** (201) 826-5527
- ❑ **Washington Crossing, the Old Barracks and Princeton Battlefield**, Mercer County, commemorate General Washington's brilliant victories at the first and second battles of Trenton, ending the British hopes of a short war. **Phone:** Washington Crossing, (609) 737-0623; Old Barracks, (609) 396-1776; Princeton Battlefield, (609) 921-0074
- ❑ **Wallace House**, Somerville, served as Washington's headquarters during the Middlebrook encampment (December 1778 to June 1779). **Phone:** (201) 725-1015

### Agriculture

- ❑ **Longstreet Farm**, Holmdel, interprets the mixed husbandry (grain, livestock, potatoes) of 19th-century Monmouth County. **Phone:** (908) 946-3758
- ❑ **Whitesbog Village**, Burlington County, was the largest cranberry plantation in New Jersey in the early 20th century. **Phone:** (609) 893-4646

### Industry

- ❑ **Allaire Village**, Howell Township, was an 1830s model industrial community that refined bog ore into iron castings. **Phone:** (908) 938-2253
- ❑ **Batsto Village**, Burlington County, was a Revolutionary War munitions foundry that became a 19th-century glass furnace town. **Phone:** (609) 561-0024

### Transportation

- ❑ The **Delaware and Raritan Canal** was constructed in the 1830s, bringing prosperity to much of central New Jersey. It now is the state's most important linear park. **Phone:** (908) 873-3050
- ❑ **Central Railroad of New Jersey Terminal**, Liberty State Park, Jersey City, was where millions of immigrants began their journey into America. **Phone:** (201) 915-3411

### Art and Architecture

- ❑ **Emlen Physick Estate**, Cape May City, is a lavish 1879 summer home designed by Philadelphia architect Frank Furness. **Phone:** (609) 884-5404

# Research

## Pesticide Use on Golf Courses


In addition to offering recreational opportunities, golf courses also serve to preserve large tracts of open space, conserve habitat for wildlife and, in some cases, provide sites for winter activities such as sledding, ice skating and cross-country skiing.

The Green Acres Program has helped preserve more than 6,000 acres of golf courses in New Jersey, but the Department of Environmental Protection's interest in them goes beyond their recreational value. Because of their relatively small size, they can serve as models for the study of the effects of pesticides not only on the courses themselves, but on the environment in general. This is the focus of a joint research project by the DEP's Divisions of Science and Research, Environmental Quality, and Fish, Game and Wildlife.

Current methods for maintaining golf courses require the application of substantial amounts of fertilizer and pesticides. The types of pesticides used include herbicides for the control of weeds, fungicides to control molds, fungi and other diseases, and insecticides to control nematodes and grubs. But pesticide-related incidents can have a great impact on both water quality and wildlife. One such incident occurred in July 1989 when fish kills were reported in two lakes in Camden County. An investigation indicated that runoff of an insecticide from a nearby golf course prior to a heavy rainfall was the likely cause of the kill. The Division of Environmental Quality's Pesticide Control Program estimates that there are three or four incidents every year where runoff from a sod farm or a golf course causes a fish kill. And this is not a total picture of the effect on wildlife since only major incidents are reported.

The DEP will survey more than 200 New Jersey golf courses to determine the types and amounts of pesticides used. The results should be available in the fall, and that information will allow researchers to begin planning studies to assess the potential effects of golf-course pesticides on local surface and ground water quality and on wildlife. These studies will include sampling ground and surface water as well as evaluating the health of the ecosystem surrounding each golf course. Ground water samples will be collected from wells located on or near each site and the samples will be analyzed for the pesticides used at that particular golf course. Surface water and sediment samples will be collected throughout the year with particular attention paid to samples collected after

major rainstorms. The Division of Fish, Game and Wildlife also plans to study nonlethal effects of chemicals on fish and invertebrates.

Researchers hope the findings will form the basis for a model that predicts the fate of chemicals applied to turf grass. This model could then be used to improve management of existing golf courses and to better design new ones, thereby helping New Jersey protect both its recreational and environmental interests. 

*By Judith B. Louis, chief of the Division of Science and Research's Bureau of Environmental Exposure, Paul F. Sanders, a research scientist for the division, and LeRoy W. Meyer, a research scientist for the Division of Environmental Quality's Pesticide Control Program*



GREG JOHNSON

The DEP will survey more than 200 golf courses on pesticide use.



The Green Acres Program has long relied on research to improve its funded golf courses. One of the program's requirements is to have an independent third party inspect its courses on an annual basis. Internationally known organizations such as the U.S. Golf Association (USGA) are consulted for their expertise and research techniques. Formal inspections concentrating on greens, tees and fairways are performed and the findings transferred to a turf advisory service report. These reports outline problems and recommendations to improve these golf courses. USGA research efforts continue to show great promise in developing turf grasses that use little water and exhibit pest resistance and stress tolerance.

# Roundup



DIV. OF FISH, GAME AND WILDLIFE

## Eagle's Nest 'Adopted'

DEP Commissioner Scott Weiner (right) and Al Cecere, president of the National Foundation to Protect America's Eagles, study a bald eagle following the foundation's donation of \$5,000 to New Jersey's Adopt an Eagle Nest program. The money from the nonprofit group will help support a nest in Stow Creek, Salem County, one of four that were newly established last year.

The DEP's Division of Fish, Game and Wildlife established the Adopt an Eagle Nest program within its Endangered and Nongame Species Program to provide an opportunity for citizens, groups and businesses to participate in the state's efforts to bring bald eagles back to New Jersey. "Without private support from groups like the National Foundation to Protect America's Eagles, New Jersey's Adopt an Eagle Nest program would not be possible," said Weiner. "We all greatly benefit when private groups like the foundation — and caring New Jerseyans who contribute through the wildlife check-off on their state tax forms — make it possible for bald eagles to find a home in our forests, parks and other open spaces."

For more information, call JoAnn Frier-Murza, chief of the Endangered and Nongame Species Program, at (609) 292-9101.

## Fortescue Marina Upgraded

Fishermen who visit the Fortescue area this summer will find a new aluminum bulkhead and concrete decking for pedestrians at the marina. The upgrading of the 50-year-old marina is part of a \$788,000 joint improvements project by the Division of Coastal Resources' Bureau of Coastal Engineering and the Division of Parks and Forestry's Office of Marina Services.

Fortescue, located on the Delaware Bay just south of Bridgeton, plays host every year to thousands of fishermen who invade the tiny town from May to November in search of the Delaware Bay weakfish. It has bait and tackle shops, restaurants, fuel areas and a party and charter boat fleet. For further information, call the marina office at (609) 447-5115.

## MacNamara Boat Ramp Reopened

The boat ramp at the Lester G. MacNamara Wildlife Management Area has been reopened following major renovation. The boat launch was raised and extended to permit easier access to the Tuckahoe River as well as to the Great Egg Harbor River and Bay. Some of the best sport fishing, bird-watching and waterfowl hunting in the state can be found on this 12,438-acre tract, which includes six man-made lakes and managed areas for many game species. The project cost approximately \$100,000. Of this, about \$75,000 came from the Federal Sport Fish Restoration Program and \$25,000 from the New Jersey Capital Improvement Fund. Located in Atlantic and Cape May counties, the Lester G. MacNamara Wildlife Management Area is just east of Tuckahoe on Route 50.

## 40,000 Big Ones

More than 40,000 big game fish were caught by New Jersey anglers during the 1990 fishing season, according to the Division of Fish, Game and Wildlife,

which surveyed 1,079 big game fishing trips. Caught were 19,543 tuna, 1,902 billfish, 5,103 sharks and 13,688 fish of various other species.

## So That's a PPM!

Many articles on environmental matters mention reducing pollutants in air or water to fewer parts per million (ppm). But just how tiny a unit of measurement is one part per million?

The *Engineering and Mining Journal* more than 10 years ago explained it this way: One ppm is one minute in two years, or one second in 11.6 days, or one cent in \$10,000, or one ounce of vermouth in an 8,000-gallon tank car of gin.

## \$152 Million for Green Acres Projects

A \$152.3 million Green Acres package of four bills signed into law by Governor Jim Florio will help fund more than 100 projects in every county of the state. The money, appropriated from the Open Space Preservation Bond Act approved by voters in November 1989, will be used to preserve more than 18,000 acres of open space. "These bills are a promise to the future, a promise that every generation makes to its children to leave this world better than we found it," said Florio. "We don't want this state to be concreted over. We don't want uncontrolled development."

The state acquisition projects and appropriations are:

**Bear Swamp Wildlife Management Area**, Sussex, \$5 million; **Belleplain State Forest**, Cape May, \$1.1 million; **Cape Island Wildlife Management Area**, Cape May, \$1 million; **D&R Canal Greenway**, Mercer, \$2 million; **Hamburg Mountain Wildlife Management Area**, Sussex, \$500,000; **Higbee Beach Wildlife Management Area**, Cape May, \$775,000; **Historic Resource Areas**, statewide, \$1,850,000; **Jenny Jump State Forest**, Warren, \$1.4 million; **Natural Areas**, Cape May, Hunterdon, Ocean, Sussex and Warren, \$1,125,000; **Norvin Green State Forest**, Passaic, \$3 million; **Peaslee Wildlife Management Area**, Cumberland, \$175,000; **Pequest River Greenway**, Warren, \$50,000; **Recreational Trails**,



JOE MOORE

Governor Jim Florio hands copies of four Green Acres bills he signed into law to Assemblyman Daniel P. Jacobson of Ocean as fellow co-sponsors look on. They are (from left) Assemblymen Edward H. Salmon of Millville, John S. Watson of Ewing, Fred Scerni of Galloway, John A. Villipiano of Ocean and Thomas J. Duch of Garfield.

**Burlington and Cape May**, \$700,000; **Salem River/Mannington Meadows Greenway**, Salem, \$1,250,000; **Skylands Greenway**, Bergen, Morris, Passaic and Sussex, \$8 million; **Water Access Sites**, Cumberland, Mercer and Warren, \$700,000; **Wharton State Forest**, Burlington, \$225,000; and **Whittingham Wildlife Management Area**, Sussex, \$800,000.

The state development projects are: **Sanitary/Administrative Facilities**, statewide, \$700,000; **Swartswood Bath-**

**house/Dredging**, Sussex, \$1.3 million; **Fort Mott Recreation/Interpretive Pier**, Salem, \$700,000; **Fishing Access**, statewide, \$900,000; **Water/Sewer Supply**, statewide, \$1,050,000; **Dam Repair**, statewide, \$1.4 million; **Road Improvements**, statewide, \$500,000; **Health and Life Safety Projects**, statewide, \$1 million; **Demolition of Unused Structures**, statewide, \$125,000; **Historic Sites**, statewide, \$2,367,000; and **Liberty State Park**, Hudson, \$5 million.

## State Awards Grants for Local Cleanup Projects

Nineteen counties and 426 municipalities have been awarded grants ranging from \$4,000 to \$400,000 for litter patrol and neighborhood cleanup activities. The funds, which are available through the DEP's Clean Communities Program, are collected through a tax on 15 categories of litter-producing products — items such as alcoholic beverage containers, soft drink

containers, cigarettes and carry-out foods.

To receive grants, municipalities and counties must appoint a Clean Communities coordinator, certify the adoption of a model program and propose a comprehensive anti-litter program that incorporates cleanup, enforcement and education. Each municipality receiving grant funds must host at least one public lands cleanup

day using local volunteer groups or organizations. The Clean Communities Program is administered by DEP's Division of Solid Waste Management. For further information, write to Sandy Huber, manager, Clean Communities Program, DEP, Division of Solid Waste Management, CN 414, Trenton 08625-0414, or call (609) 530-8593.

## Roundup

### Take Precautions Against Lyme Disease

Summer is here and so is the season for ticks. Contrary to what most people think, the deer tick is the only tick that can transmit Lyme disease. Lyme disease is caused by a bacterium referred to as a spirochete, which is carried inside the infected deer tick. This tick is about the size of a pinhead, smaller than other ticks. Approximately two-thirds of Lyme disease cases are reported during the months of May through August. In the past 10 years, the number of cases in New Jersey has increased from fewer than 20 in 1980 to 1,074 in 1990.

Take precautions when planning outings in wooded areas. Wearing light-colored clothing makes it easier to spot ticks. Tucking your pants into your socks forces ticks to crawl on the outside of clothing where they can be seen. Protection can be increased by the use of repellents. Be sure to follow label instruc-



tions carefully. Some repellents are specifically for use on clothing.

Signs and symptoms of Lyme disease appear in three stages:

- a rash or skin lesion accompanied by flu-like symptoms
- various neurological and/or heart problems
- recurrent attacks of joint swelling and pain and/or more severe neurological problems

All patients will not experience all of the symptoms. For further information on Lyme disease, you may obtain the N.J. Department of Health brochure, "Lyme Disease in New Jersey," from your local health department, or call the Lyme Disease Hotline toll-free at 1 (800) 792-8831.

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

### Hurricane Season: A Time to Be Wary

Hurricanes can pose a deadly threat, but being aware of potential storms and preparing for them could save your life, says Susan D. Halsey, a coastal geologist with the DEP's Division of Coastal Resources.

Hurricane season runs from June to November. Most hurricanes develop just north of the equator and are steered by other weather patterns into various locations, such as the Gulf of Mexico, across Florida or into the Atlantic. Since hurricanes can be very unpredictable, weather experts pay close attention to the tracks and sizes of these storms, which can cause mild to catastrophic damage. The National Hurricane Center closely monitors these storms and issues hurricane "watches" and "warnings" to coastal residents and visitors. The center posts a watch within 24 to 36 hours of approaching hurricane conditions and a hurricane warning for specific areas within 12 to 24 hours of a storm.

"Although the center will try to update predictions as it monitors the storm, in New Jersey, even 24 hours is not enough time for full evacuation of some of the highly populated barrier islands," says Halsey. "There may not be time for all to hear the warning, board their homes, remove valuables, find all the kids and pets, pack the car, get gas, pull the boat out of the water and evacuate the coast for the mainland and higher ground. The key is to be aware of what's happening and to be prepared should it be necessary to leave the area."

The Saffir-Simpson Scale is used by the National Hurricane Center to classify the strength of an approaching storm.

Try tracking a storm on this hurricane plotting map.



JACK SERLETO

**GETTING IN THE SWING** — The 18-hole Spring Meadow Golf Course, adjacent to Allaire State Park in Wall Township, Monmouth County, is part of the state park system. Spring Meadow is a 5,900-yard course with a par of 70. A professional driving range is available at the golf course, with golf balls provided at \$3 and \$5 per bucket. There also is a restaurant. For greens fees, restaurant hours and other information, call the Spring Meadow office at (908) 449-0806.

## SAFFIR-SIMPSON HURRICANE SCALE

| CLASS | PRESSURE (millibars) | VELOCITY (mph)   | STORM SURGE (feet) | CLASSIFICATION |
|-------|----------------------|------------------|--------------------|----------------|
| 1     | 980                  | 74-95            | 4-5                | Minimal        |
| 2     | 965-979              | 96-110           | 6-8                | Moderate       |
| 3     | 945-964              | 111-130          | 9-12               | Extensive      |
| 4     | 920-944              | 131-155          | 13-18              | Extreme        |
| 5     | less than 920        | greater than 155 | greater than 18    | Catastrophic   |

SOURCE: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

## Hurricane Gloria

The last hurricane of significance in New Jersey was Hurricane Gloria, which hit the ocean and bay shores on September 27, 1985. Though designated a "weakening, Class 2" storm on the Saffir-Simpson Hurricane Scale, it resulted in the loss of one life and damage totaling about \$20 million.

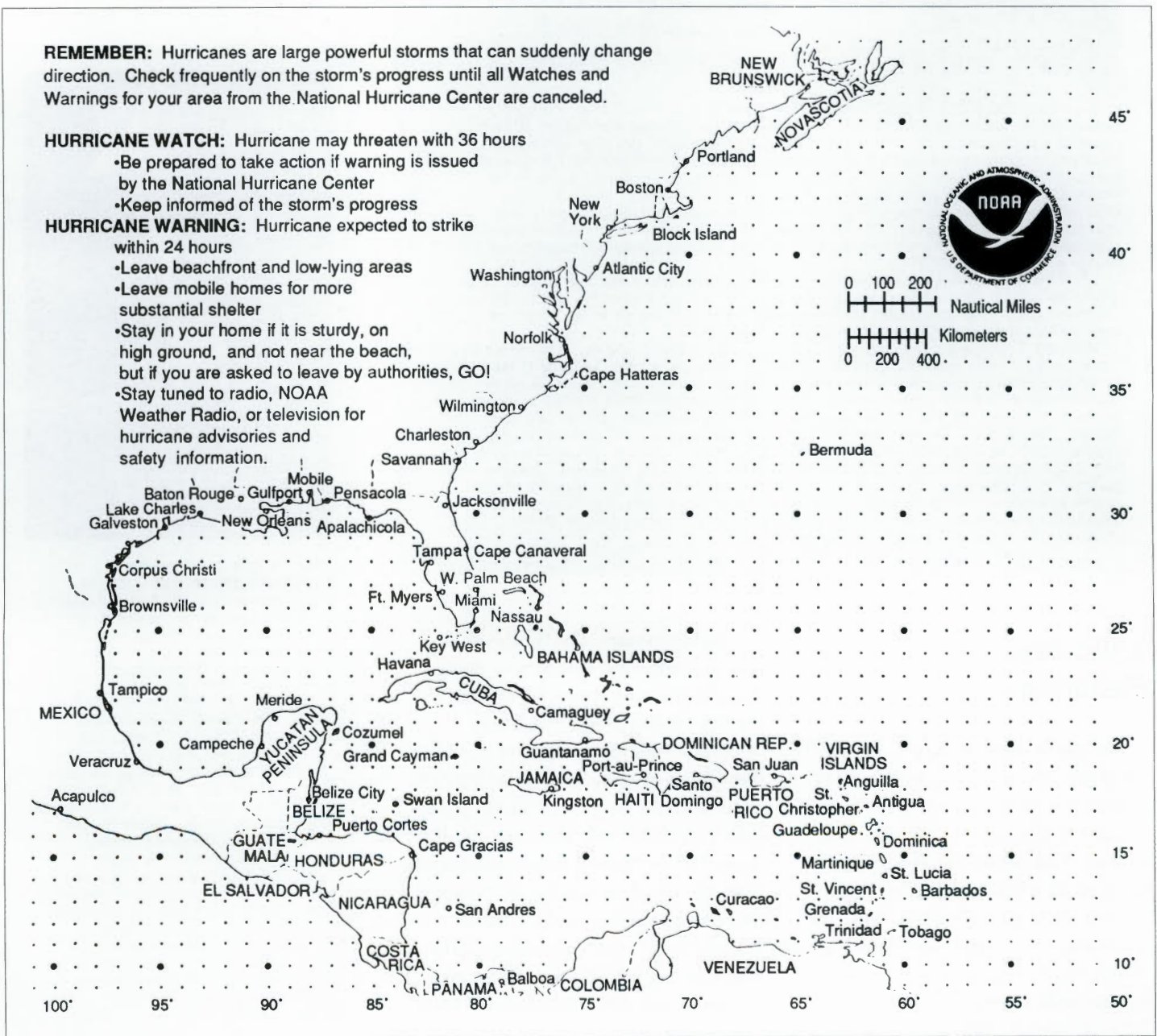
**REMEMBER:** Hurricanes are large powerful storms that can suddenly change direction. Check frequently on the storm's progress until all Watches and Warnings for your area from the National Hurricane Center are canceled.

**HURRICANE WATCH:** Hurricane may threaten with 36 hours

- Be prepared to take action if warning is issued by the National Hurricane Center
- Keep informed of the storm's progress

**HURRICANE WARNING:** Hurricane expected to strike within 24 hours

- Leave beachfront and low-lying areas
- Leave mobile homes for more substantial shelter
- Stay in your home if it is sturdy, on high ground, and not near the beach, but if you are asked to leave by authorities, GO!
- Stay tuned to radio, NOAA Weather Radio, or television for hurricane advisories and safety information.





## Historic Hollybrook Restoration

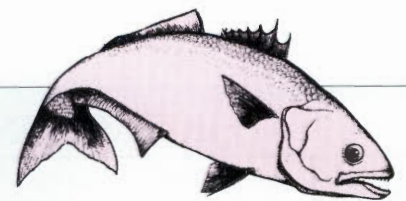
It was on June 23, 1967, that the historic drama of a meeting between President Lyndon B. Johnson and Soviet Premier Alexei Kosygin took place in a house called "Hollybush" on the Glassboro State College campus in Glassboro (Gloucester County). A statement issued by members of New Jersey's congressional delegation at the time expressed hope that the "Glassboro Summit" would enter the two superpowers "into an era of mutual exploration of ways to ease the East-West tension." The house, long the home of the college's presidents, was placed on both the state and national registers of historic places in 1972.

Hollybush, also known as the Whitney Mansion, is being restored as a Victorian house under the direction of the Hollybush Restoration Committee. The mansion is an excellent example of mid-19th century domestic architecture of the Italian Villa style. The house was built in 1849 by Thomas H. Whitney, who founded the Whitney Brothers Glass Plant and was active in banking. He was president and director of the Glassboro-Millville Railroad, and served in the New Jersey Assembly in 1841 and 1842. The house is two-and-a-half stories tall with a four-story tower. The exterior is dark brown New Jersey ironstone (coursed marble) with brownstone trim. Delicate wood brackets support the wide overhanging ends of the gable roofs and the main entry roof, which is partly supported by grape clusters in cast-iron brackets. Grape clusters in cast iron also support the curving metal roofs of the front and rear porches. Hollybush is located just west of Whitney Avenue on the east side of the Glassboro State College campus.

## 'Old Barney' Reopens

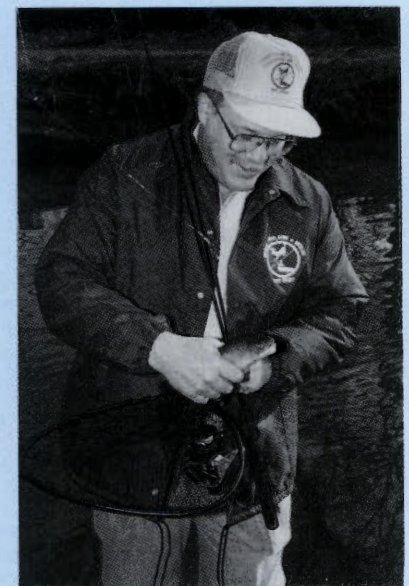
Are you in shape to climb 217 steps? If not, maybe you better start training! The lighthouse at Barnegat Lighthouse State Park in Ocean County will reopen this summer. "Old Barney" has been closed for two years for rehabilitation. The work, which includes a new bulkhead and construction of circular stairs around the eastern edge to hold back the sand and to provide public seating, was funded with \$125,000 from the 1983 Green Acres

Bond Act program. The lighthouse's exterior, safety and structural work was funded with state capital improvement money totaling \$498,080. Of that, \$123,823 was a matching grant from the New Jersey Historic Trust. In addition, a grant from the New Jersey Shore Foundation for \$15,000 will pay for the installation of 21 interpretive signs explaining the construction of the lighthouse, its history and the natural history of the barrier island. The 172-foot tower marking the entrance to Barnegat Inlet and the park are administered by the Division of Parks and Forestry.



## Attention Anglers

The 1991 season limit for taking striped bass from the Delaware River between Pennsylvania and New Jersey, including tidal tributaries, is one striped bass, 36 inches or longer, per day.



**ONE FOR THE NEW COMMISSIONER** — DEP Commissioner Scott Weiner holds a trout he caught on the opening day of trout season in the Delaware and Raritan Canal near Washington Crossing. Weiner, of Ridgewood, Bergen County, took the oath of office as commissioner on Feb. 15. Prior to that, he served as president of the state Board of Public Utilities. A graduate of New York University with a law degree from the New York Law School, Weiner has lectured extensively and published articles on issues pertaining to employment and training programs, regulation of campaign finance and government ethics. He presently serves as vice chairman of the Executive Commission on Ethical Standards.

**NEW JERSEY'S PINELANDS**  
Our Country's First National Reserve

**A PINELANDS PRIMER**

**NEW PINELANDS POSTER** — A new color poster designed by Pinelands artist Glenn Malsbury is available from the Pinelands Commission. The graphite and watercolor painting of a Pleasant Mills bog scene captures the essence of springtime in the Pinelands. A "Pinelands Primer" — facts about Pinelands Indians, the Cohansey aquifer, cranberry growing, Pinelands history and culture, and plant and animal life, along with illustrations — is included on the reverse side. The poster will be especially useful to elementary and secondary school teachers. It was funded by grants from Texaco affiliate Star Enterprise and the Victoria Foundation.

One free copy of this 20-inch by 30-inch poster may be obtained by visiting the Pinelands Commission Office at 15 Springfield Road, New Lisbon, from 9 a.m. to 5 p.m. weekdays. Classroom teachers and school districts wishing to use this poster for educational purposes may obtain two per classroom, free of charge. Additional posters cost \$1 each. To receive a poster description and price list for group and mail orders, write to Elizabeth Carpenter at the Pinelands Commission, P.O. Box 7, New Lisbon 08064, or call (609) 894-9342.

**Follow-Up**

**Somerset Council Active in Cleanups, Conference**

Somerset County schools, businesses and community organizations took part in tree plantings, litter cleanups and environmental awareness programs as part of the county's Environmental Stewardship Week in April, coordinated by the county Environmental Stewardship Council (NJO Spring 1991).

The council, which is made up of business people, government representatives and environmental activists, also hosted a leadership conference featuring state, federal and county officials who focused on land use and transportation issues.

**Follow-Up**

**2 More Towns Picked for Main Street New Jersey**

Downtown areas in North Plainfield and South Orange have been selected as the newest participants in the Main Street New Jersey program — a comprehensive program that provides assistance to older downtown revitalization projects (NJO Spring 1991).

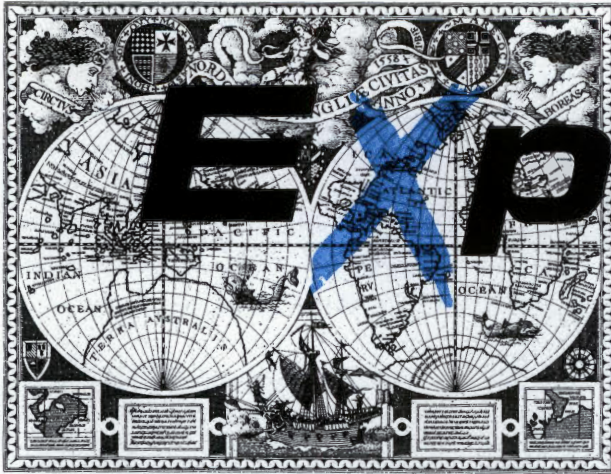
Since New Jersey became the 31st "Main Street" state several years ago, four municipalities have enjoyed tremendous gains and obtained substantial benefits: Bridgeton in Cumberland County, Englewood in Bergen County, Little Falls in Passaic County and West Orange in Essex County. Twenty-one new businesses have been started, 70 new jobs created and 41 building/improvement projects begun.

*Roundup by Edith H. Joseph of the Office of Communications and Public Education*



**Thousands Attend Earth Day Festival**

Visitors to the 1991 Earth Day Family Festival take in the exhibits under a tent at the Garden State Arts Center. The April 21 festival, which featured a concert, more than 100 exhibitors and lectures and programs on topics ranging from Indian folklore to recycling, drew about 8,000 people despite heavy rains. The theme of this year's Earth Day (NJO Spring 1991) was "Making Peace with the Environment." Much of the waste generated during the day was recycled, including paper products, tableware, and aluminum, glass and plastic soda bottles.



# Explorer

## HABITAT, HABITAT Got to Have a Habitat!


This issue of *New Jersey Outdoors* has readers learning about Green Acres. No, that's not the old television show you watch on Nickelodeon. **Green Acres** is a special savings account we all contribute to so that our government can preserve pieces of nature where we can play, swim or watch wildlife. It is a very important way that we save habitat for ourselves and other living things.

Every living thing needs habitat. **Habitat** provides food, water, shelter and space to roam and breed.

Habitat for some creatures, like the earthworm, can be very small, sometimes less than 3 cubic feet or .09 cubic meters. Our habitat is the entire planet. We eat foods imported from other countries and we can travel to foreign lands.

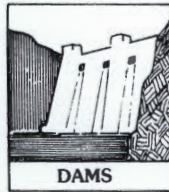
Often, people's needs for habitat do not match the needs of other living things. For example, we may need to build homes to provide people with shelter, but to do so we need to clear a forest. The forest may provide food, water, shelter and space for hundreds of creatures.

At right are two large pictures of habitats numbered 1 and 2, and 8 small pictures. What is happening in picture #1? Using a crayon or marker, draw a line from picture #1 to the smaller pictures that show why we fill or drain wetlands.

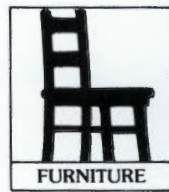
Now, look at picture #2. What is happening? Use a different colored crayon or marker to draw a line from picture #2 to the smaller pictures that show why we clear forests. 

The above activity was adapted with permission from the National Wildlife Federation's *NatureScope, Endangered Species: Wild & Rare.*

A



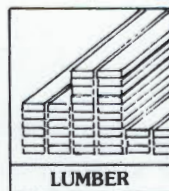
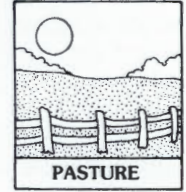
B



C



D



E



F



G



H

Answers on Next Page

# Where Do They Go From Here?

This is a map of 100 square acres (40 square hectares) of forest. It is surrounded by two highways, a housing development and a river. The forest is supporting as many healthy animals as it possibly can. We can say that this habitat has reached **carrying capacity**.

This forest is located in Wildvale Township, a place where many families recently have moved because of the many acres of natural lands. But there are not enough food and clothing stores to meet the needs of the township's residents. Township officials have agreed to let a local developer construct a 15 square-acre (6 square-hectare) shopping plaza

along Highway 172. Look at the map and answer these questions:

1. Where are the animals in the 6 square-hectare tract going to go?
2. How will the health of all the animals be affected?
3. What do you think will happen to the wildlife populations one year after the shopping plaza is constructed?
4. What new species of wildlife may be accidentally introduced or attracted to this tract of land after the shopping plaza is completed?
5. List three ways the needs of both the citizens of Wildvale and the wildlife in the forest could be met.

Explorers, if this is happening where you live, read how one person changed the minds of many people to preserve a habitat where she lived. The story, "She Fights to Save a Mountain," is on Page 6. 🐾

**Answer 1:** Some animals will migrate out of the forest in search of habitat. They may wander onto the highway or into the housing development or cross the river. Whichever direction they decide to go, they are moving into areas where they may not be wanted.

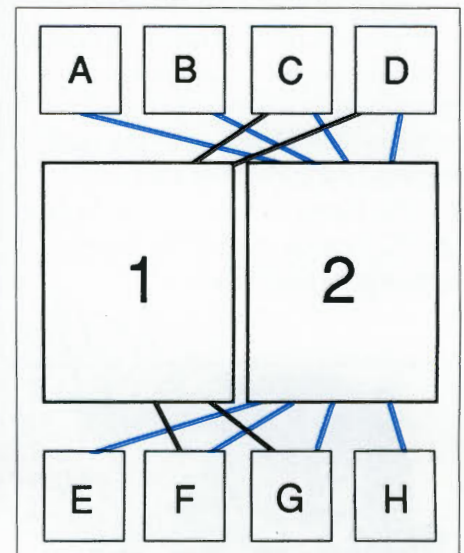
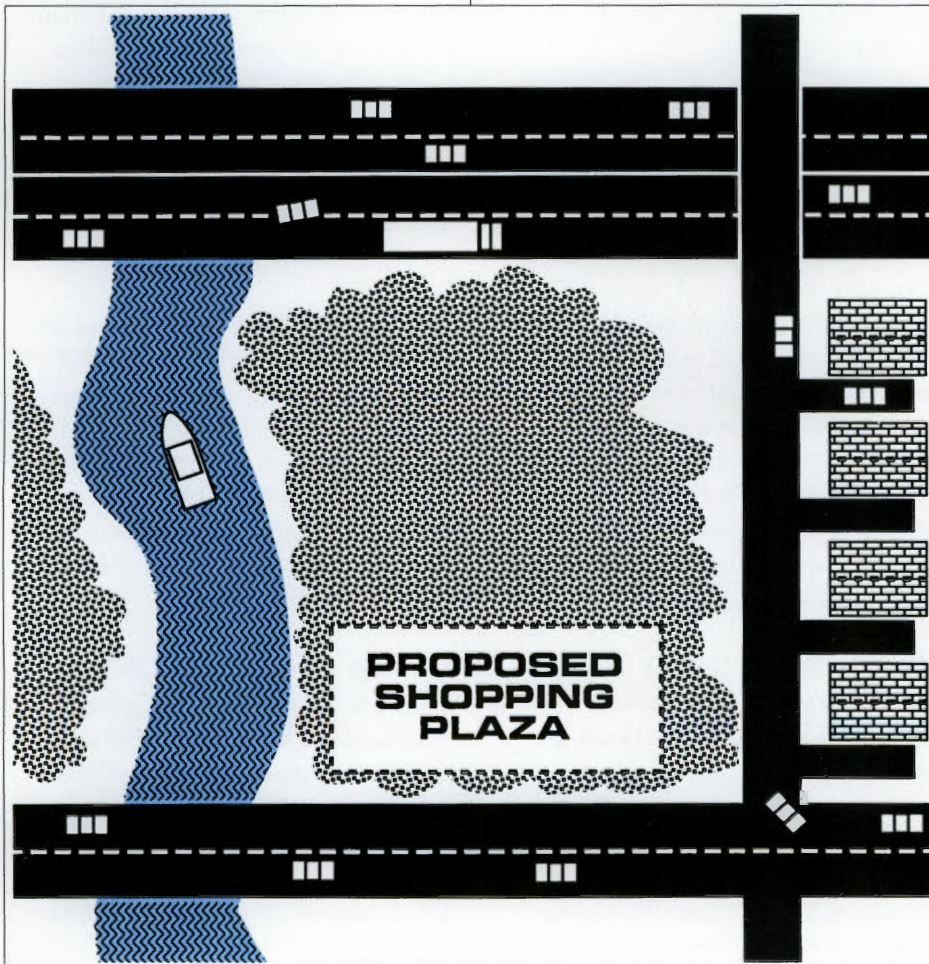
**Answer 2:** There is less habitat to support the same number of animals. Since the forest had reached carrying capacity before the shopping plaza was constructed, the remaining forest has now exceeded its carrying capacity. Some animals will die because there is not enough food, shelter and space.

**Answer 3:** Most likely the populations will decrease. But some animals may adapt, or change their habitat preferences, by finding food, water, shelter and space in the housing development or even at the shopping plaza. For example, raccoons may snatch their food from people's trash cans and bear their young under people's houses.

**Answer 4:** Norway rat, German cockroach, rock dove (pigeon)

**Answer 5:** The town could encourage the developer to build the shopping plaza in the housing development. The developer could preserve some of the forest as a wildlife sanctuary. Use your imagination to think of a third way!

*Explorer by Marlena Gloff-Straw of the Office of Communications and Public Education*



Answers From Previous Page

# Events

## July

**26, 27 "16TH ANNUAL WATER-FOWL AND WOOD CARVING SHOW"** 50 exhibitors display various waterfowl and other wood carvings.

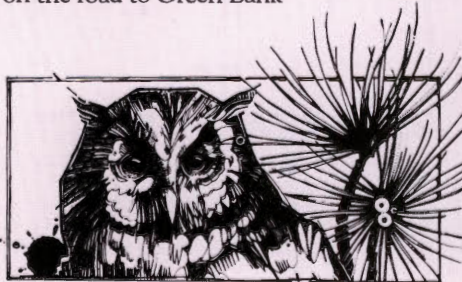
**Hours:** 11:00 a.m. - 10:00 p.m. **Admission:** free **Phone:** (609) 884-9565 **Location:** Convention Hall on Beach Drive, Cape May

**27 MONARCH BUTTERFLIES** You'll have a chance to examine monarch butterflies as naturalists explain their life cycle. **Hours:** 1:30 p.m. - 3:30 p.m.

**Admission:** free **Phone:** (201) 637-4125 **Location:** Pequest Trout Hatchery Natural Resource Education Center, 9 miles west of Hackettstown, Rte. 46

**28 "SEAFOOD FESTIVAL ON THE RIVERFRONT"** **Hours:** 2:00 p.m. - 7:00 p.m. **Admission:** free **Phone:** (609) 451-0040 **Location:** Bridgeton Riverfront, Rte. 46 & East Commerce Street, Bridgeton

**31 DOUBLE FEATURE TUBING; Godfrey Bridge to Evans Bridge Breezeway Beach.** Always a super trip on a hot, sunny day, it'll be 1-1/2 hours to Evans Bridge, a stop for lunch, then another 1-1/2 hours to Breezeway Beach. The entire trip will take about 4-1/2 hours. Bring the usual: sneakers, tube and lunch. Includes a 25-minute walk back to cars and a refreshing dip in the river. Sponsored by the Sierra Club. **Hours:** 10:30 a.m. until completed **Admission:** free **Phone:** (609) 267-7052 **Location:** Meet at Evans Bridge, Rte. 563, 11 miles south of Chatsworth, on the road to Green Bank



## August

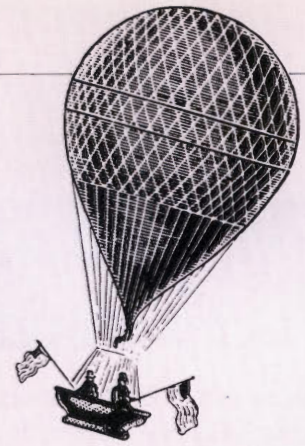
**2 NEW JERSEY STATE FAIR** Rides, attractions, food and exhibits. For more detailed information, call (609) 587-6300

**2, 3, and 4 UP, UP & AWAY** Balloon festival of Hunterdon County. **Hours:** Friday, 3:00 p.m. - 11:00 p.m.; Saturday, 1:00 p.m. - 11:00 p.m.; and Sunday, 1:00 p.m. - 11:00 p.m. **Admission:** \$8.50 for adults, \$3.00 for children 6 - 12, and free for children 5 and under **Phone:** (908) 735-0870 **Location:** Alexandria Airport in Pittstown

**3 BERRY BINGE** Celebrate the soft fruits sought by people and animals alike. Some we love to eat, others are eaten by birds, mammals, reptiles and insects. **Hours:** 1:30 p.m. - 3:30 p.m. **Admission:** free **Phone:** (201) 637-4125 **Location:** Pequest Trout Hatchery Natural Resource Education Center, 9 miles west of Hackettstown, Rte. 46

**3 TUBING THE BATSTO RIVER** in the Pinelands, sponsored by the Sierra Club, for all ages. The first part is only a 1/4-mile walk to a shallow, clear stream; then kids can float 1/4-mile downstream to a natural "bathtub" and "sandbox." From this point, children and adults tube for another 1-1/2 hours in a jungle-like environment perfumed by the aromatic wetlands plant, "Summersweet." Bring sneakers, tube and lunch. **Hours:** 10:00 a.m. until completed **Admission:** free **Phone:** (609) 267-7052 **Location:** Meet at Atsion Ranger Station, Rte. 206, 10.2 miles south of Red Lion Circle

**3 OWLS OF NEW JERSEY** Join rehabilitator Giselle Chazotte for a program on owls that live in the Garden State. This program will give you the chance to see a live owl close-up. **Hours:** 2:00 p.m. **Admission:** free **Phone:** (908) 876-3100 **Location:** Schooley's Mountain Information Center, Camp Washington Road, Washington Township



**3, 4 CAPE MAY COUNTY HERITAGE CELEBRATION** Celebrate the music, dance, food and customs of Cape May. **Hours:** 10:00 a.m. - 4:00 p.m. **Admission:** \$1.50 for adults, \$.75 for children 6 - 12, and children under 6 free. **Phone:** (609) 898-2300 **Location:** Historic Cold Spring Village, 735 Seashore Road, Cape May

**3, 4 8TH ANNUAL PINELANDS FOLK FESTIVAL AND ARTS AND CRAFT SHOW,** sponsored by the Historical Society of Estell Manor. There will be a wide variety of artisans, crafters and antiques dealers, as well as entertainment. Civil War groups and the Black Hawk Indians will camp in the area. **Hours:** 10:00 a.m. - 6:00 p.m. both days **Admission:** free **Phone:** (609) 696-2374 or (609) 625-1742 **Location:** Atlantic County Park in Estell Manor, Rte. 50, 3 miles south of Mays Landing

**3, 4 "HARBORFEST '91"** A nautical festival on the bay with crafts, seafood, sailing ships and entertainment. **Hours:** Saturday, 10:00 a.m. - 11:00 p.m., and Sunday, 10:00 a.m. - 7:00 p.m. **Admission:** \$2.00 for adults and \$.50 for children **Phone:** (609) 348-2880 **Location:** historic Gardner's Basin, 800 North New Hampshire Ave., Atlantic City

**3 through 11 SUSSEX COUNTY FARM & HORSE SHOW** Entertainment, contests, livestock, exhibits and horse show. **Hours:** 11:00 a.m. - 10:00 p.m. daily and 11:00 a.m. - 6:00 p.m. on Sunday **Admission:** \$5.00 for adults, \$2.00 for children 5 or older. **Phone:** (201) 579-2215 **Location:** Plains Road, Frankford Township

**6, 7 39TH ANNUAL ANTIQUES SHOW AND SALE** Art and boutique sales. **Hours:** Tuesday, 10:00 a.m. - 8:00 p.m., and Wednesday, 10:00 a.m. - 6:00 p.m. **Admission:** \$3.00 at the door **Phone:** (908) 892-5926 **Location:** St. Paul's United Methodist Church on Bridge Ave., Bayhead

**7 SEASHORE OPEN HOUSE TOUR** Self-guided tour of eight historical homes on Long Beach Island. **Hours:** 10:30 a.m. - 4:30 p.m. **Admission** \$15.00 **Phone:** (609) 494-1241 **Location:** Loveladies Center on Barnegat Light and North Beach Avenue

**10 TUBING THE BATSTO RIVER** Same trip as August 3.

**10, 11 "12TH ANNUAL HOBOKEN RIVER CITY FAIR"** Waterfront festival held to ensure perpetual open space along the Hudson River in Hoboken. Features environmental exhibits. **Hours:** 10:00 a.m. - dusk **Admission:** free **Phone:** (201) 288-8811 days or (201) 656-3731 evenings **Location:** Fifth Street and the Hudson River

**11 FLY-FISHING FOR BEGINNERS** Learn the basics of fly-fishing from members of East Jersey Trout Unlimited. Topics will include equipment, knot-tying, stream tactics and casting techniques. Must stay all day. **Registration is required.** **Hours:** 10:00 a.m. - 4:00 p.m. **Admission:** free **Phone:** (201) 637-4125 **Location:** Pequest Trout Hatchery Natural Resource Education Center, 9 miles west of Hackettstown, Rte. 46

**17 JUST A HIKE** The bees and butterflies are busy about the bergamot blossoms that clothe the Pequest valley in pink, the leaves are dusty gray, the birds are clustering in anticipation of migration and you have nothing important to do. Then come to Pequest and stroll through the

fields. **Hours:** 10:30 a.m. - 12:30 p.m. **Admission:** free **Phone:** (201) 637-4125 **Location:** Pequest Trout Hatchery Natural Resource Education Center, 9 miles west of Hackettstown, Rte. 46

**17, 18 ANNUAL BIKE TOUR**, fundraiser for the Mid-Jersey Chapter of the National Multiple Sclerosis Society. Choose from either a 150-mile, overnight trip Saturday and Sunday from Freehold to New Hope, Pa., and back, or a 50-mile, one-day trip Sunday from Freehold to Washington Crossing and back. Registration required - deadline for registering is August 12th. You must bring your own bike and helmet. Lunch will be provided. **Hours:** 8:00 a.m. - 4:30 p.m. both days **Admission:** one day, \$20.00, or two days, \$30.00 **Phone:** (908) 681-2322 **Location:** Battlefield State Park, Rte. 33, Freehold

**21 BEARS IN A POPULOUS STATE** A biologist will bring you up-to-date on New Jersey's largest land animal. The black bear is on the rebound in New Jersey, but managing the state's largest mammal amidst our growing population presents a challenge to wildlife managers. **Hours:** 8:00 p.m. **Admission:** free **Phone:** (201) 637-4125 **Location:** Pequest Trout Hatchery Natural Resource Education Center, 9 miles west of Hackettstown, Rte. 46

**23 - 25 "SUSSEX AIRSHOW '91"** World-class aerobatics, comedy air acts, parachute jumps, antique airplanes and other air entertainment. **Hours:** 1:30 p.m. - 8:00 p.m. all three days **Admission:** \$10.00 for adults and children over 12, \$5.00 for children 8 - 12, and free for children under 8 **Phone:** (201) 702-9719 **Location:** Sussex Airport, Rte. 639, Sussex

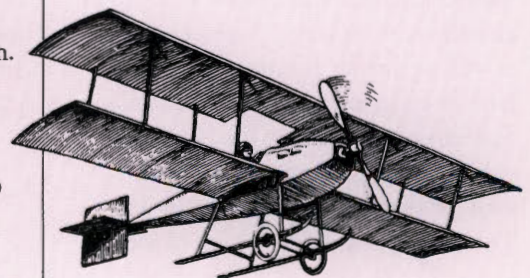
**24, 25 COLONIAL FAIR** Crafts demonstrations, musket-firing, 18th-century games and a Punch & Judy puppet show. **Hours:** 11:00 a.m. - 4:00 p.m.

**Admission:** free **Phone:** (201) 539-2085 **Location:** Jockey Hollow Unit at Morristown National Historical Park

**24 FULL MOON HIKE: LAKE OSWEGO**, Burlington County, sponsored by the Sierra Club. As twilight falls over this pristine lake, you'll begin a 7-mile, always popular walk in the cool of a summer's eve. Bring snacks and a flashlight for an easy lakeside and pine woods hike. Early arrivals may swim, so bring a bathing suit. **Hours:** 7:15 p.m. **Admission:** free **Phone:** (609) 267-7052 **Location:** Meet at Lake Oswego. (Go south on Route 563 from Chatsworth for 8-1/2 miles, then make a left on Jenkins-Penn Forest Road. Continue for 3-1/2 miles to lake.)

**25 NEIGHBORHOOD TREES** Learn to recognize some of the common trees in New Jersey and discover some of the valuable uses trees have for humans and wildlife. Included will be a leaf-printing session. Bring a shirt or other material to print leaves on. **Registration is required.** **Hours:** 1:30 p.m. - 3:30 p.m. **Admission:** free **Phone:** (201) 637-4125 **Location:** Pequest Trout Hatchery Natural Resource Education Center, 9 miles west of Hackettstown, Rte. 46

**28 MOONLIGHT HIKE: LAKE OSWEGO** A repeat of August 24 above, however, the meeting time will be 7:45 p.m.



# Wildlife in New Jersey

## The Bluefish

The bluefish (*Pomatomus saltatrix*) is a widespread species found in the waters of many temperate zones, including the coasts of North and South America, southern Africa, Australia and both the Mediterranean and Black seas.

Bluefish are highly migratory, usually traveling in groups of similar-sized fish. There may be many of these groups traveling together, covering tens of square miles of the ocean. They move northward in the spring and summer and travel southward in the fall and winter. There is some inshore-offshore movement during migration periods, however this primarily involves larger fish.

There appear to be two major spawning areas off the Atlantic coast. From southern Florida to North Carolina, spawning occurs near the inner edge of the Gulf Stream in April and May. The larvae drift north in the Gulf Stream and later enter near-shore ocean waters and estuaries (inlets) of the second spawning region, the Mid-Atlantic Bight. Spawning in this area — from Cape Hatteras, N.C., to Cape Cod, Mass. — occurs from June into August before the bluefish migrate south in the fall. This accounts for the 7- to 8-inch bluefish caught in our back bays in the late summer and early fall.

Any discussion of bluefish must include reference to their feeding habits. They are voracious eaters. Upon examination, at least 70 species of fish, as well as shrimp, lobster and crabs, have been found in bluefish stomachs. Specialized teeth allow the bluefish to eat pieces of their prey, rather than swallow them whole as most fish do. This greatly increases the size of prey

that can be fed upon. Anglers who have reeled in bluefish containing half of a 6- or 8-pound weakfish are familiar with this fact. Attacks on sea birds and even humans (fingers and toes probably mistaken for small fish) have been documented as well. Interestingly, the most common human injury occurs as the unsuspecting fisherman tries to remove the hook from the bluefish's mouth and is bitten on the thumb.


Bluefish rank high on the saltwater angler's list. They are tough fighters and make for tasty table fare. Since the National Marine Fisheries Service began its Marine Recreational Fishery Statistics Survey in 1979, bluefish have been in the top five in number of saltwater fish caught for both New Jersey and the Mid-Atlantic Region (New York to Virginia). In 1990, an estimated nine million bluefish were taken in the Mid-Atlantic Region and of these, approximately 2.5 million were landed in New Jersey waters.

They are sought by all types of fishermen, including surf fishermen and private, rental and charter boat anglers. At times, they are the mainstay of the party boat fleet. Bluefish can be landed by trolling, chumming, casting and jigging, as well as by live-bait, still and drift fishing.

A bluefish may vary in size from a few inches in length to almost 40 inches, and sport a weight ranging anywhere from a few ounces to 25 pounds. The New Jersey record is

currently 24 pounds, 1/4 ounce.

One other reason for the popularity of bluefish is their availability. No other marine sport fish occurs over such a long season, in such great numbers, in such a variety of locations. They can be taken in New Jersey waters from late April through December and are found in our bays, rivers and coastal waters in varying numbers and sizes. The largest fish usually are taken offshore, although big fish (up to 18 pounds) are taken along the beach and in our large bays, most often in late spring.

For those who have never considered bluefishing as a rewarding and enjoyable form of recreation, now may be the time to try your luck. There just may be a giant out there waiting. 

*By John McClain, principal fisheries biologist for the Division of Fish, Game and Wildlife's Bureau of Marine Fisheries*



Green Acres has assisted in the acquisition of several thousand acres of coastal salt marshes in Ocean, Atlantic, Cape May, Salem and Cumberland counties, areas that serve as nurseries for the maturing bluefish.



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Riders and spectators enjoy a day at the Horse Park of New Jersey at Stone Tavern. The 147-acre park in Upper Freehold Township was purchased with Green Acres funds.

## In Next Season's Issue:

**A Turn-of-the-Century Look at the Jersey Shore  
The Attraction of Rappelling • Getting a Line on Fall Trout Fishing  
Organic Farming — A Community Effort**