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NEW JERSEY Outdoors

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Field Testing Hunting Retrievers • Getting to Know (and Love?) New Jersey's Bats
Fishing for Stripers from Jetty or Shore • Celebrating Smokey Bear's 50th
Getting Ready to Go Squirrel Hunting

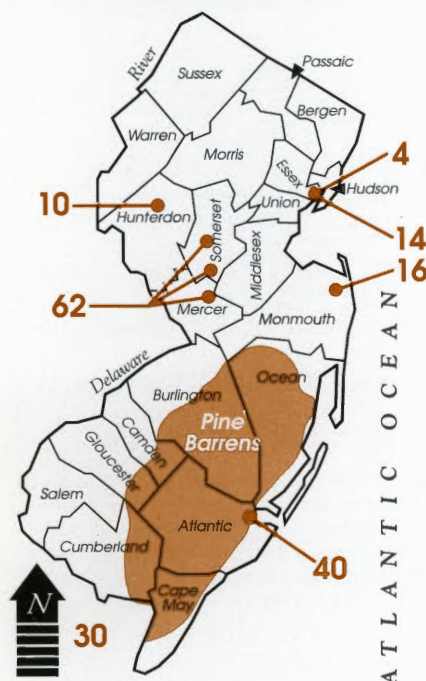


Hoarfrost on leaves, Delaware
Water Gap, Sussex County.

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Looking Good

Parker Printing of Trenton recently took home the Neographics competition's 1993 Benjamin Franklin Award for Excellence for printing *New Jersey Outdoors*. Sponsored by the Philadelphia-based Graphic Arts Association, the annual Neographics competition recognizes excellence in graphics communications disciplines in the New Jersey, Pennsylvania and Delaware region.

According to Neographics' Fred Phillips, winning the award for printing *NJO* identifies Parker as an outstanding graphic communications firm and one of the best print firms in the three-state region, which includes approximately 5,000 graphic arts companies.

We extend our own kudos to our friends at Parker, who help us look good, as well as to the Department of Environmental Protection and Energy's own graphic designer Paul Kraml, who provides *NJO*'s visual virtuosity.

The Editor



Editorials



Jim Florio
Governor

On the Cutting Edge

New Jersey has always been on the cutting edge of new technologies, from the vision and accomplishments of Thomas Edison to Albert Einstein to David Sarnoff. This summer, we created the New Jersey Corporation for Advanced Technology (NJCAT) to expand our research and development efforts and keep our world-class lead. NJCAT will maximize New Jersey's resources and target them to the marketplace by turning ideas into high-tech products, new business ventures and jobs for New Jersey.

NJCAT will coordinate the activities of New Jersey's academic, government, and private research and development efforts primarily in the areas of environmental and energy technologies. Just as important, NJCAT will help bring new products to market by working with start-up companies and entrepreneurs. And NJCAT will link employers with New Jersey's job training programs, so that the high-tech industries we develop in New Jersey stay here. We're going to ensure that our people have the skills to succeed and employers get the qualified workers they need to compete in the world marketplace.

By the year 2000, it is estimated that cleaning up past environmental mistakes and preventing future pollution will be a \$300-billion-a-year industry with tens of thousands of jobs.

Our goal isn't simply to create new jobs, but to create a whole new industry that will improve our economy and our quality of life. Economic opportunity does not have to come at the expense of environmental responsibility. NJCAT is the smart way to develop both.



Jeanne Fox
Acting Commissioner

Nurturing New Jersey Ideas

One reward of my new opportunity to head the Department of Environmental Protection and Energy is the chance to help build on former DEPE Commissioner Scott Weiner's successful efforts to enhance New Jersey's future. A project that holds great promise in this regard is the New Jersey Corporation for Advanced Technology (NJCAT). Through NJCAT we are joining private and public sectors and pooling talents and expertise in unprecedented ways with one goal in mind: to nurture important new ideas and create new jobs by tapping into the burgeoning environmental technology industry.

The concept behind NJCAT is simple. We have formed an independent not-for-profit corporation operating under a board of trustees that will help promising "targeted technologies" develop in several ways. For example, NJCAT will link companies needing research assistance with New Jersey's top-flight technology centers, such as the New Jersey Institute of Technology, Rutgers University or Stevens Institute of Technology. NJCAT will also help developing companies navigate the state's regulatory processes and help link them with marketing and commercialization services.

In addition, NJCAT will help growing technologies find investment capital by bringing together New Jersey businesses and resources, including private, federal and state funding. This year, New Jersey is staking \$300,000 to get NJCAT up and running. This seed money is a tiny investment in comparison with the future dividends that will grow from it.

These dividends will not just be economic. Many of NJCAT's "targeted technologies" will help the environment by providing better ways to prevent or control pollution and clean up the environmental sins of the past.

By nurturing innovative ideas, NJCAT will help build a successful future that will benefit us all.

State of New Jersey
Jim Florio
Governor



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and Energy

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Acting Commissioner

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

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Mailbox

A Qualified "Success"

"The Resurgence of the Brown Pelican," in the Summer 1993 *New Jersey Outdoors*, quotes me as saying that pelicans are "one of the few really big success stories we've had in Virginia." That statement needs to be qualified.

Pelicans are a success story, but wildlife biologists and state officials cannot really take the credit. The credit goes to banning pesticides, which resulted in a population recovery, which, in turn, has resulted in an expansion of the pelicans' range.

In Virginia, we will be monitoring the pelicans each year and expect to see a continued increase in population and breeding success. They used to nest on one or two coastal islands, but have now also established a colony site in the Chesapeake Bay. The habitat in Virginia isn't as suitable for pelicans as it is in the center of their range, but habitat is available here, and we're glad to have them.

Karen Terwilliger
Dept. of Game and Inland Fisheries
Richmond, VA

Picture Perfect

On the back cover of the Spring 1993 *New Jersey Outdoors*, you published a lovely photograph of Lacey Township schoolchildren and their teacher photographed about 1911 and recently hand-colored by Howard Michaels.

I thought your readers would like to know that the Lacey Historical Society, which owns the rights to the photo, is offering 5- by 7-inch copies in order to raise funds for our organization. Each high-quality color reproduction comes in a glass-clip frame and costs \$18.50 plus \$2 for postage and handling. The framed

New Jersey Outdoors welcomes letters to the editor. Please include your name, address and daytime telephone number. Our address is NJO, NJDEPE, CN 402, Trenton 08625-0402. We reserve the right to edit letters for length and clarity.

Order NJO's 2x3 foot Full-color Poster! Only \$3

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Send a check or money order for \$5.50 (\$3.00 for the poster and \$2.50 for shipping and handling), payable to *New Jersey Outdoors*, to: NJO Poster, CN 402, Trenton, NJ 08625-0402. Allow 4 to 6 weeks for delivery. Or use the handy order card inside the front cover.



NEW JERSEY
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MAGAZINE

Picture this issue's cover as a large poster. The photo's autumn pastels complement almost any decor while bringing a bit of the outdoors indoors.

photograph can be ordered by writing to: Lacey Historical Society, P.O. Box 412, Forked River, NJ 08731.

In addition, the Society would be grateful if you would identify the persons portrayed, most of whom have descendants or relatives still living in Lacey Township. The teacher (back row center) is Jennie Hanes, flanked by students Myrtle Camberlain (left) and Ethel Evans (right). Starting at the left and from the back, the students in the next row are: Oscar Taylor, Nola Britton, Martha Penn, Roy Frazee and Ovie Boshier. In the next row are: Frank Britton, Bee Norcross and Walter Frazee, followed by Harold Bunnell, Mary Frazee and Irene Hurley. Across the front row from the left are: Jennie Taylor, Dater Horner, Alvah Horner, Ralph Penn and Lester Worden.

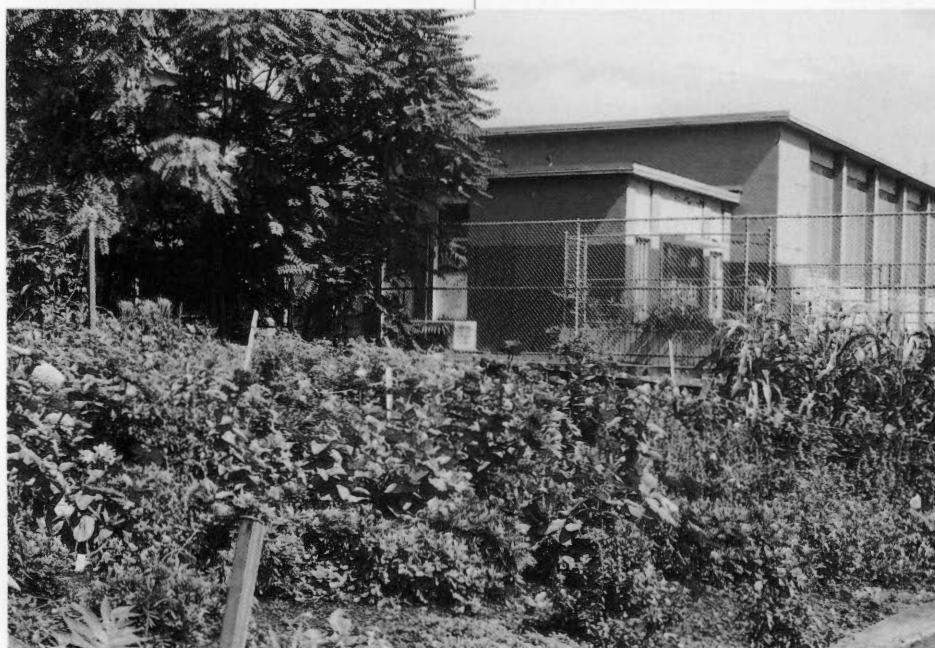
Deborah Tomasulo, President
Lacey Historical Society
Forked River

Clarification and Concern

I read with interest the "Gardens" column in the Summer issue about summer-blooming trees. Readers should be aware that the true chestnut (*Castanea* spp.), with its subtle feathery flowers in July, as described in *New Jersey Outdoors*, is different from the horse-chestnut (*Aesculus hippocastaneum*), with its showy white flower clusters which bloom in May.

Secondly, a concern: I'd like to see more about native plants for gardening, in keeping with a national trend toward preserving biodiversity. Most garden exotics are harmless, but some, such as Norway maple and Japanese honeysuckle, are aggressive invaders when they escape to nature preserves, as we are finding in our research at Drew University.

Sara Webb, Associate Professor
Dept. of Biology, Drew University
Madison



A lot on South Eighth Street in Newark before (top) and after (bottom) the GNC turned it into a vest pocket park.

A GNC participant (opposite page) rallies for the environment.

A stroll through Newark reveals many of the children's efforts to make their city a better place to live.

Turning Eyesores into Oases

As autumn pushes out the last few reminders of summer, bringing with it chilly winds and shorter days, the Greater Newark Conservancy keeps planting away, thinking of the warm weather and sunny skies that will return in the spring.

"In September we really start cooking," says T. Robins Brown, director of development and volunteers. "We're out working until the ground freezes."

It's the infectious enthusiasm of Brown and the other members of the conservancy that binds Newark communities and schools together in a single mission to build a greener and healthier city. Through education and projects, the conservancy spreads the desire for a bit of nature's beauty in an atmosphere sometimes hardened by concrete and steel.

Since the conservancy was founded in 1985, it has helped block groups and schools convert 35 lots to small gardens and parks. Often the targeted lots are eyesores in the community, littered with trash and overgrown with weeds, but after conversion they can rival any garden with their charm and lushness. Making and keeping each park or garden an oasis takes countless hours of hard work and the dedication of the children and adults who participate in the program.

For financial support, the conservancy relies on its members, private and corporate contributions, foundation and governmental grants. Last year it operated on a modest budget of about \$200,000. Materials are contributed from a variety of sources. The city donates soil, and New Jersey Transit provides railroad ties. Shovels, rakes, gloves, seeds, plants and office equipment are donated from businesses or private groups and eagerly accepted by the conservancy's staff. Fencing is often salvaged from areas where new fencing has been installed.

"We're very inventive in the ways we stretch our dollars," says Brown.

Donated supplies and unlimited energy

are put to use in the conservancy's many community development projects such as lot conversions or tree plantings. However, the conservancy acts only as an "enabler" in these projects. It provides community groups with training, plants, seeds, garden tools and rich compost soil. But participants are responsible for maintaining their own trees, parks and gardens. "Help" is the key word at the conservancy which will only assist people interested in building a greener city.

"They have to want to do it," Brown says. "If we came in and did it ourselves, it wouldn't be the community's. They wouldn't care about maintenance. So, when a project's theirs, they've done most of the work and the chance of long-term success is much greater."

Building a strong ongoing relationship with the groups involved also keeps motivation levels high throughout the year or so it can take to convert a single lot, according to Arnita Blacknell, a volunteer with the conservancy.

"People want immediate results," Blacknell says. "But when you are dealing with community redevelopment, that doesn't happen, and that's where the relationship comes in. You stay in contact with these people and become a part of what they are doing for the community."

Blacknell dedicates much of her time to Newark's beautification and is leading the development of a community park in her neighborhood. According to Brown, Blacknell is out completing the new South Eighth Street Play Garden on Saturdays and late afternoons with a crew made up mainly of neighborhood children.

"She's like Mother Goose," says Brown. "Arnita has this vision of having this park, and she's sold her vision to the kids in the neighborhood, and they want it."

Educating children about the environment is another major part of the conservancy's work and, of course, curious youngsters are more than willing to learn. The conservancy works with 10 public and private schools and also helps youth organizations with their greening projects. Eight of the schools have a "living labora-



tory," a lot that has been converted or is in the process of conversion. The living laboratory gives the children a place to eat their lunches or play, and it gives the teachers an outdoor classroom. Children can develop not only their scientific skills, but also their math skills, when they figure how many plants can fit in a flower bed. Their artistic skills come into play as well when they write creative pieces about their experiences with nature. In addition, schools have indoor "grow labs" to keep the children in tune with the environment during the winter months.

Much of the conservancy's work with children is done by Deborah Hadley, the group's youth education director. She meets with the students to explain to them the significance of preserving the environment, so they can appreciate the benefits of planting a tree or reaping a harvest.

Hadley knows the children enjoy the opportunity to "green" the city. Their excitement shows in their willingness to work. The children rush to her when they see her in the halls at school to ask about plans for their lots. At one school, Hadley told the students to meet her at their lot on Saturday at 9 a.m., but some arrived much earlier, ready to start. She also says some of the students who spend a great deal of time in the principal's office are the same ones who come out every Saturday to work.

Students are not the only ones who get excited about participating in projects led by the conservancy. Educators also enjoy it. One science teacher developed his curriculum around the school's living labora-

tory. A principal at another school was so inspired by a tree planting for the Urban Forestry Demonstration Project, a program administered by the state Department of Environmental Protection and Energy, that he brought out all 300 of his school's students for the occasion.

A stroll through Newark reveals many of the children's efforts to make their city a better place to live. Blue fish are stenciled on storm drains, serving as a visual reminder to all that what goes into the drain ends up in the bays and oceans. There are colorful garbage cans that are painted to discourage littering, and other bright artwork including murals that beckon admiring eyes.

The conservancy organizes these and many other projects for the children, and whenever possible, it will link a school with a block group that can help the children with the heavy work on their lot. The block group also cares for the students' lot during summer vacations, so when the students return to school in September, they receive a warm greeting. Either their park or garden is still blooming, or construction has finally been completed and the lot is ready for autumn planting.

The students are lucky to have the support of a block group. A lot can never be left unattended no matter how short the time frame, Brown says.

"Our environment is constantly changing," she says. "And the weeds take over almost immediately."

by Amy Franco, a journalism intern from Rider College

Hoofing It from High Point to Cape May

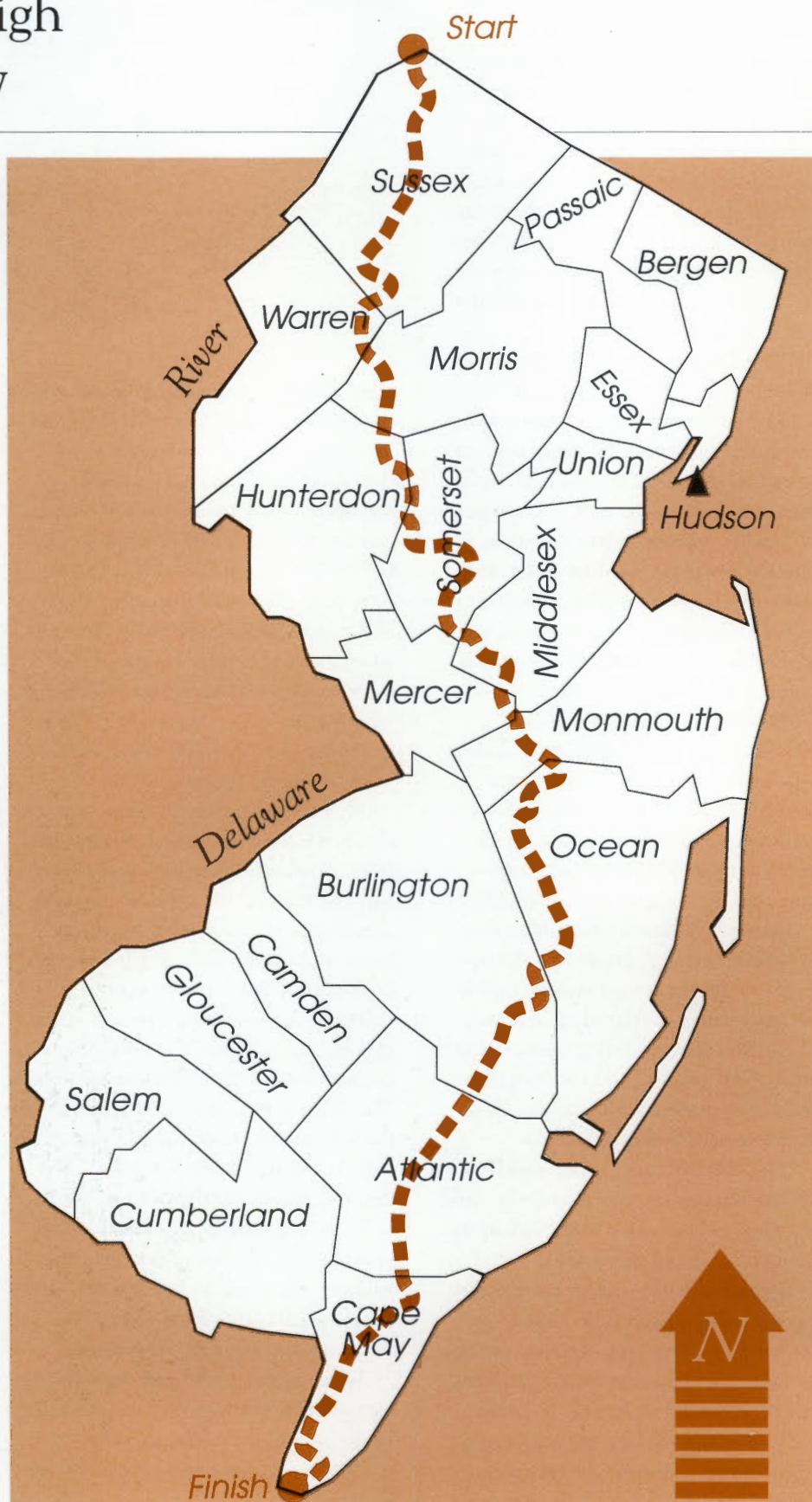
I was awakened from a restless sleep by the sound of voices. I looked at my watch. It was 12:30 a.m.

Still groggy after a two-hour sleep, I shook my head and tried to catch my bearings: I was with the Raritan Valley Road Runners Club, whose members were running a relay from High Point — the state's northernmost tip — to Cape May — the southernmost point, a stretch of 226 miles. Even in my dazed condition, it was dawning on me that I was in the middle of a unique way to experience the Garden State. The relay was in its 17th hour.

I walked to the front of the motor home, which served as mobile relay headquarters and support vehicle and was stopped at an Exxon station just north of Whiting in Ocean County. Among the spandex-clad runners, I found Adam Eyre-Walker, hungry after running about 17 miles in the previous few hours, wolfing down shredded wheat out of a large red plastic cup. Mark Rogalski and Marty Dolphin were stretching their legs and eating Power Bars in preparation for a 21.4-mile run through the pitch-black Pine Barrens.

Rogalski and Dolphin worried if there were enough people on hand to get through the run. In order for them to run through the highways in Jersey Devil territory, someone would have to drive the motor home, while someone else drove the pace car that followed the runners to protect them and take care of their needs. In the dead of night, the pace car also was the only source of light. Rogalski wondered if anyone driving at 7 miles per hour between 2:30 and 5:30 a.m. could stay awake through the miles and miles of unchanging scrub treescape.

The Raritan Valley club, based in Middlesex County, is believed to be the first group to ever run continuously from one end of New Jersey to the other. The



relay means many things to the 30 people who participated. It's a test of will, a fun way to spend a weekend, a sleepless training experience and an unparalleled way to see the Garden State.

The relay started at dawn on an early spring day in High Point, New York. The heavy clouds hanging overhead meant I was going to miss my fantasy photograph of a runner starting the relay on a mountain path, silhouetted by the orange glow of the sunrise. Just photographing the start turned out to be difficult because we were three minutes late, a major sin to Rogalski and co-organizer John Pretzell, who spent long hours preparing detailed charts of the event.

At 6:03 a.m., Dolphin started the relay with a 4.2-mile leg that took him straight uphill to scenic High Point State Park. I hopped in the pace car, while the motor home jumped ahead to the next transition point. The transitions were set up every 5 to 10 miles. When the runners finished their legs of the relay, they would go into the motor home to rest, shower, and eat.

As Dolphin climbed a steep hill on the winding roads just inside the New Jersey border, a blustery snow started. That did not deter his trek to the first transition, a state park ranger station on Route 23. Gradually, the snow stopped as Madeline Bost, Pretzell, and Roger Price made their way past Sussex County farms where silos, red barns, livestock, and dark brown soil dominated the landscape.

I was not scheduled to run, but knowing how thinly the group was spread, I made myself available as a fill-in. As a runner for 17 years, I couldn't help be a bit excited by the event, although I didn't realize how much until about three hours in. That's when the pace car met the motor home at the junction of Routes 519 and 206, and Pretzell ordered me out of the car.

"Sid Auerbach has the flu and he might not be able to make his leg," a 9.4-mile run scheduled for 9:45 a.m., Pretzell explained. I quickly got ready in the motor home, which sped to the point where Auerbach was scheduled to meet our caravan. He was huddled in his car.



PHOTOS BY PAUL FLORILLA



Despite an attempt at subtle discouragement on my part, Auerbach gamely took off. I followed in the pace car, my disappointment growing with each step. But about five miles in, he turned to the car and said, "Have I gone halfway?" That was my cue. I jumped out of the car in a full sprint.

I ran through Sussex's rural Green Township, proudly feeling the stares of the natives who had to be wondering why some runner was being followed down the narrow, two-lane highway by a car with a yellow blinking light on its hood. I kept glancing

Cattle grazing (top) along Route 519 in Sussex County were unfazed by the relay procession.

Heading uphill toward High Point (bottom).



The relay's support vehicle (top) at the first transition point.

Historic Cranbury (middle) seen on the run at night.

Sunrise on the Tuckahoe River (bottom) crossing from Atlantic to Cape May County.

back at the pace car, which made me feel like the lead runner in the Boston Marathon.

Although my stomach was uncomfortable because I had eaten some food before I knew I had to run, I felt an incredible surge of energy. Talking to other club members, I discovered that most everybody felt the same way. We were not just going out on a relay run. We were on a mission.

As the relay wound through towns in western New Jersey, the farmland and rural towns gradually ended around Pottersville in Hunterdon County, and gave way to "progress": the Somerset County suburbs filled with efficient, sterile-looking condominiums and split levels. At Hillsborough High School, several of the original group got off and were replaced by others who would continue to the end. As the day grew dark, Janice Reid and Yvette Hendler ran 10 miles on the soft dirt path along the tree-lined Delaware and Raritan Canal.

Night fell as the relay made its way through rural southern Middlesex County. Cranbury looked like a Colonial city with its historic homes lit up by headlights.

I went to sleep about 10:30 p.m. and two hours later I awoke at the Exxon station. Bill Pape was in the middle of an 11-mile leg — after a night out dancing, no less. None of the 10 or so runners who were around could believe it when Pape decided that after he finished, he would run alone through the Pine Barrens — without any pace car on a road with absolutely no lights — the six miles back to the gas station where his car was parked.

I parked at the next transition, the Chatsworth Fire Department in Ocean County, and tried unsuccessfully to get a few minutes of sleep in the passenger seat. Then the motor home stopped by, and Rogalski and Dolphin took off on their 21-mile run. Hendler sportingly volunteered to drive the pace car. I planned to sleep until 5 a.m., when Mike Burke was scheduled to run the next leg, a 20-miler.

I woke up as Rogalski and Dolphin finished their run in two hours and 52 minutes, at which point they were manic. As usual, time was the issue. After all, 2:52

was 11 minutes more than they allotted for the run. "Maybe we really ran 24 miles," Dolphin said, furiously dividing the average mile pace on his watch calculator.

As Burke ran, I drove his pickup truck and searched for a sunrise through the clouds. I finally saw a small, orange ball peek between the clouds, and I knew I only had a brief window of opportunity. We were on Route 50 near Little Egg Harbor in Atlantic County, passing by a series of strip malls. When I saw Burke running where the road passed over a river, I decided that was going to be my only opportunity to photograph a runner and the sun simultaneously. I parked and ran toward the overpass with my camera bag.

"Can you slow down?," I shouted at Burke, who was on the west side of the road. "I can't break stride," he huffed.

The sun did come out later that morning. By that time, we were in Cape May County, running through picturesque old areas like Dennis Township, filled with old Victorian homes. They looked like Sussex County homes, but surrounded by vast stretches of swampland instead of mountains. Though I've spent my entire life in New Jersey, I'd never been to Cape May County before and I was mesmerized as the sun reflected off the wetland bogs and there were cattails as far as the eye could see.

I ran one more leg, a 5-miler through the city of Cape May with Rogalski, who thought I might be on the verge of collapse. We were both extremely stiff as we took off at a slow pace in the busy shore

town. By this time, we were about 50 minutes behind schedule, a remarkable achievement, but it stuck in the craw of the schedule-maker. About four miles in, Rogalski said, "We're at about 37 minutes, and we have half a mile to go."

To my amazement, we picked up the pace. At the start of the leg, I held back because my road mate was struggling. Now, I struggled to keep up. But not wanting to be outdone, I sprinted the last quarter mile, and even continued another two miles into the next leg. At this point, so all of the remaining club members could run the last two miles to the ocean together, I jumped in the motor home and drove to meet them at the beach.

At Sunset Beach, the wind whipped off

the Atlantic so strongly that I put on two layers of sweat clothing and my winter coat. The group made it there just 29 hours, 18 minutes, and 55 seconds after Dolphin climbed the first mountain.

In less than 30 hours, we had experienced New Jersey — from snowy mountains to windswept beaches — in all its compact and incredible physical diversity. As someone who grew up in one Garden State suburb and now lives in another, I was ultimately struck by how rural so much of New Jersey remains and how much natural beauty there is.

On the beach, we took group photos, then six of the men stripped down to their running shorts and jumped into the frigid ocean. One quick plunge and they all jumped out screaming.

by Paul Fiorilla, a reporter for The News Tribune who lives in Milltown



Nearing the end of the relay in Cape May County (left), one runner dresses for the coming celebration.

Ending a journey that began in snow, jubilant runners head for the Cape May surf (below).



In less than 30 hours,
we had experienced
New Jersey — from
snowy mountains to
windswept beaches.



PHOTOS BY KAREN SERVIS

A Healing Touch for Animals

Tracy Nash knows a thing or two about playing opossum. It's all part of her job and just one of the myriad of roles she plays every day at Woodlands Wildlife Refuge, a care and rehabilitation center for orphaned and injured wild animals.

Since founding Woodlands, Nash, 37, has been a surrogate mother to hundreds of needy creatures from bats to bunnies. But Nash and her corps of 15 volunteers aren't making these animals into house pets.

The goal of Woodlands — a nonprofit, volunteer organization — is to release the

animals back into their natural habitats as free and functioning wild animals. As tempting as it might be to cuddle a baby raccoon or teach a young fox some new tricks, at Woodlands these animals are treated like animals.

As babies, they're fed, weighed and treated for disease or infection. But once they're able to care for themselves, they're transferred from indoor cages to outdoor transitional cages where they have limited contact with humans. Then they are released.

On a typical morning at Woodlands in

Bethlehem Township, Hunterdon County, tiny maskless raccoons huddle beneath a baby blanket, squirrels peek out from behind a maze of branches, bunnies nibble on apples, a red fox chases its tail. And the opossums play opossum. But their game is up as soon as Nash serves breakfast. Once they get a whiff of the formula she's pouring into the saucer at the front of their cage, a litter of 17 opossums springs into action.

"It's a feeding frenzy," Nash laughs as she plucks a straggler from beneath a blanket, so the miniature marsupial won't miss breakfast.



A volunteer "baits" raccoons away from the doors (opposite page) so food can be put in the cage.

One of hundreds of cottontails (left) that arrive at Woodlands each year when their nests are disturbed.

Tracy Nash holding baby raccoons (above).

These opossums have a history typical of the animals that find their way to Woodlands. Their mother died after being hit by a car. The babies were found and brought to Nash when they were just a few days old.

"The thing all of these animals have in common is contact with humans," Nash says. "That is the number one reason why they are here."

People do some really stupid things when they've got a wildlife problem on their hands, according to Nash.

Obviously angry, she points to three

pocket-sized raccoons. The raccoons were smoked out of a chimney where their mother had built a nest.

"Some solution," Nash glowers. "The mother got out, but look at them. They are four weeks old. Do these guys look like they can leave a chimney?"

They don't. The furry siblings can't even see. Their eyes won't open for at least a few more weeks.

"If people would just stop and think, they can always find a common-sense solution to these problems," she says.

So, how do you persuade a raccoon to vacate the chimney? Or how do you evict a squirrel family from the attic?

"Easy," says Nash. "A raccoon will automatically move its litter to another nest after eight weeks, but if you really want to get them to leave, play a radio, leave a light on. If you create a hassle, they'll go."

The road to Woodlands, she says, is also paved with good intentions.

"There are people who really believe they are doing the right thing by rescuing an animal," she says. "But all too often,



An opossum (left) which has been nursed back to health, resting in its sweatshirt den.

A baby squirrel (above) being fed through a syringe.

Three-month old fox (opposite page) recovering from undernourishment.

these are unnecessary rescues.”

She describes the rescue of a fawn as a case in point.

The fawn was safely snuggled in the grass waiting for its doe to return when well-meaning people snatched the fawn away believing it was an orphan. Most likely, Nash says, the doe would have returned in a few hours.

“The best thing you can do when you find what you think is an orphaned or injured animal is to wait. Observe the animal, watch it carefully, gather as much in-

Under no
circumstances should
people take wild animals
into their homes and
try to raise them.

formation about it as you can, then call a wildlife rehabilitator.”

Under no circumstances should people take wild animals into their homes and try to raise them, Nash cautions. In addition to being illegal — only veterinarians or rehabilitators licensed by the DEPE’s Division of Fish, Game and Wildlife may care for wild animals — it will end up as a tragedy for both the people and the animal, she says.

“These animals require specialized diets and care, and no wild animal will ever make a good house pet.”



Staffed entirely by volunteers and depending totally on donations, Woodlands averages 75 to 80 animal residents during its busy season — April through October.

Nash founded Woodlands in 1986 as the culmination of a "life-long appreciation for wildlife and the recognition that there is a great need for this community service," she says. But since Woodlands attracts only non-paying customers, she also runs an orthodontic laboratory.

"It's tough to make ends meet sometimes," she says, shifting into a sincere but well-worn pitch.

"We always need money," Nash says. "And we could always use some more volunteers."

by Buffy Vouglas, a reporter for The Princeton Packet and a freelance writer who lives in Warren

To donate money, volunteer or find out more about The Woodlands Wildlife Refuge, write to:

Ms. Tracy Nash
Woodlands Wildlife Refuge
P.O. Box 5046
Clinton, New Jersey 08809

Getting the Lead Out

Lead has damaged people's health ever since this element was first used by humans. But for many years, lead was a silent and almost invisible danger that went largely unheeded. Although the dangers of lead were generally known years earlier, it took until the 1970s in the United States before laws were passed requiring that lead be removed from such sources as paint and gasoline.

This often invisible threat demonstrates some unfortunately real effects: too much lead in the human body can cause serious damage to the brain, kidneys, nervous system and red blood cells.

Lead that can cause serious health problems — and even severe poisoning — can come from such sources as pottery glazes, pipes, solder and other materials. Workers manufacturing leaded gasoline and paints were often exposed to extreme doses of lead.

Today, lead contamination remains a serious public health problem. Although leaded gasoline has largely been phased out and the use of lead-based paints has been banned, these products have left a legacy in peeling paint and contaminated soil. In fact, it is estimated that nearly three-quarters of all private housing built before 1980 still contains some lead paint. Industries and even tap water also continue to be potential sources of lead. Children are most sensitive to lead and are also most likely to absorb its most concentrated forms by swallowing old peeling paint chips or contaminated soil. Young children exposed to dangerous levels of lead can demonstrate reduced intelligence and other behavior problems.

While overall lead levels have declined since the early 1970s, scientists have found that even low levels of lead in the blood can cause damage to children's nervous systems. These findings make it more critical to prevent lead exposure, even though the sources we need to control or remediate sometimes can seem over-

whelming. To best prevent children's exposure to lead, it is important to know the locations of lead sources and the children at risk.

Fortunately, a new technology called a Geographic Information System (GIS) is helping New Jersey prevent citizens from further lead exposure by identifying high-risk populations which can then be targeted for public outreach, education and medical follow-up. With funding from the federal Centers for Disease Control, the New Jersey Department of Environmental Protection and Energy (DEPE), the New Jersey Department of Health (DOH) and the University of Medicine and Dentistry of New Jersey (UMDNJ) recently used the DEPE's Geographic Information System to identify areas with potentially high lead levels in the environment and map the locations of children with higher than normal levels of lead in their blood.

Young children
exposed to dangerous
levels of lead can
demonstrate reduced
intelligence and other
behavior problems.

The GIS is a computer system that uses spatial data and trained personnel to help DEPE solve complex problems and make better decisions. The GIS maps the location of any given point (such as a well or a discharge pipe), line (stream or road) or area (wetland or park) in the state, and attaches descriptive information or "attributes" to that feature.

With all this information in a computer map form, the GIS can help study spatial relationships by overlaying data of different types, asking the computer to highlight features that meet specific crite-

ria, determining how far various features are from each other, conducting a number of analyses and generating such products as databases, maps or other displays.

Because most reports of high blood levels in children come from urban areas, DEPE, DOH and UMDNJ decided to focus their pilot study on Newark, East Orange and Irvington. A variety of potential contamination sources are found in these cities and the population contains many different demographic groups. (Should more funding become available, the study may be expanded to other areas.)

To demonstrate how GIS can help identify children at high risk of being exposed to lead, data about common sources of lead were identified, collected and mapped together. Since lead-based paint is generally found in older homes, areas containing houses of a certain age can be mapped from U.S. Census data. Soils along major roads may be contaminated with lead from vehicles which burned leaded gasoline and these roads and associated traffic volumes can be identified from New Jersey Department of Transportation data. Hazardous waste sites known to be contaminated with lead or other heavy metals, and industries reporting lead emissions can also be located using DEPE databases.

Each of these lead sources was mapped separately on the GIS. Then the data were combined in one map to easily identify areas where there is a greater potential for lead exposure. To verify that lead levels in the environment are indeed higher in these areas, DEPE staff will collect physical samples and also enter these locations into the GIS.

Census data were also used to determine where children aged five or younger live because these children are most susceptible to the effects of lead poisoning. DOH records of blood tests were entered into the GIS to see how this information correlated with the other factors. Previous to using GIS, manual mapping of individual cases of elevated blood lead levels would have been extremely time consuming. In a matter of minutes, by con-

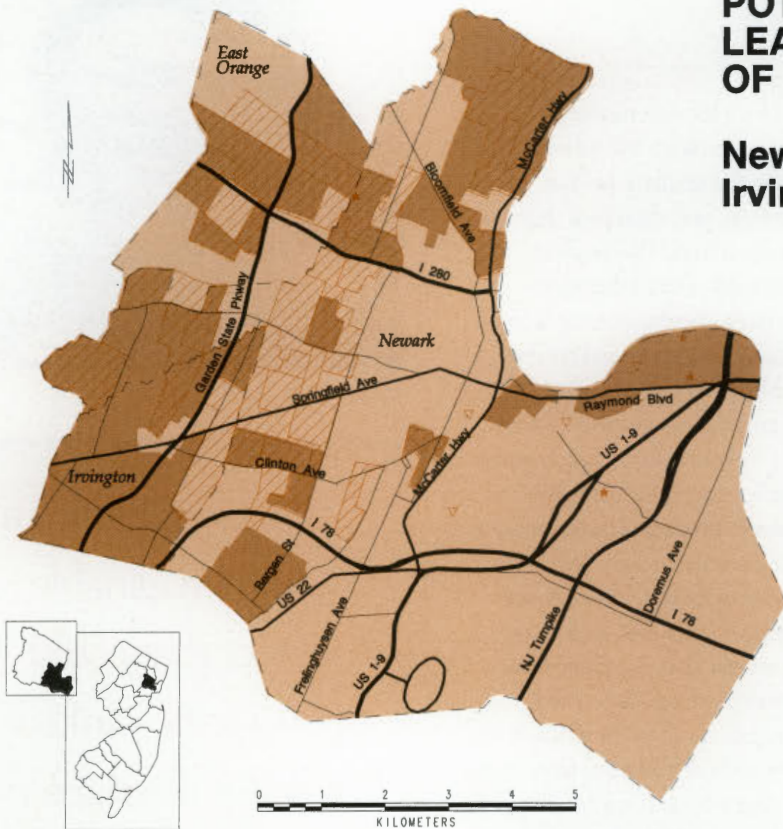
POTENTIAL SOURCES OF LEAD EXPOSURE AND REPORTS OF HIGH BLOOD LEAD

Newark, East Orange and Irvington, New Jersey

- ★ Hazardous Waste Sites with Lead or Heavy Metals
- ▽ Industries that Release Lead
- Minor Arterial
- Principal Arterial
- Interstate Highway
- Census Tracts with 620 or more Structures built before 1940 and with 290 or more Children age five or less
- ▨ Census Tracts with Reports of Elevated Blood Lead Above Average for the Study Area



Produced by the New Jersey
Department of Environmental
Protection and Energy
Geographic Information System



trast, the GIS computer helped indicate areas where high blood lead levels were more common.

In general, areas with a concentration of lead sources and a large number of small children reported more cases of elevated blood lead levels than other areas of the three cities. However, some areas reported more cases of high blood lead levels than expected, while others reported less than expected. These unexpected "blips" in results may raise questions that can possibly provide scientists with new avenues of investigation about lead and lead poisoning. More likely, the small sample of unexpected results will lead scientists and health officials to examine and better assess factors related to how data are collected. It is possible that the small sample of unexpected variations in blood lead levels reported may result from such factors as

the subjects' distance from blood screening centers, the availability of doctors who perform blood tests and the existence of language barriers. Many of these factors can be mapped by GIS and added to the existing data for further analysis.

DEPE is continuing to investigate other ways that lead contamination can affect people, such as through drinking water (which can become contaminated by passing through lead pipes or coming in contact with lead-based solder on copper pipes) and airborne emissions. Results of these efforts will also be entered into the GIS.

Based on this pilot project, DOH, UMDNJ and other health agencies will eventually use the GIS to target populations for further outreach and education, as well to pinpoint areas for increased blood lead level screening where these data are not yet available. DEPE will use

the results of this analysis to target sites for further emission controls or for cleanup.

By pooling resources and program efforts into a common spatial database, New Jersey's agencies will work together with local communities to improve both the health of children and their environment.

by Bill Guthe, a research scientist with the Geographic Information System Unit in the DEPE's Office of Information Resources Management

Profile

Turning Junkyard Scrap into Jurassic Art

Lumbering from the New Jersey landscape, the steel dinosaurs make their way from Freehold to the display halls of institutions or museums as far off as Australia or Japan.

Shunted about on flat-bed trucks, the sometimes brightly colored, sometimes rust-colored creatures trek from town to town, state to state, country to country, playing out their roles as gentle reminders of the increasing importance of recycling.

Were these beasts excavated from deep stony graves by archaeologists? Or produced as paleontological replicas for scientific displays at our major scientific institutions?

No. These dinosaurs arose from junkyards from New Jersey and around the nation.

The junkyard plunderer and beast-master extraordinaire is internationally acclaimed Farmingdale, New Jersey, resident and artist Jim Gary. Gary was born in Colts Neck, and has lived in the vicinity of Red Bank almost all his life. His eight brothers and two sisters have since scattered to the various directions of the compass, but Gary remained in the area to eventually forge an international reputation for his metal sculptures.

Gary found early on that he "could not afford newly manufactured raw material" for his art projects that would someday be seen around the world. Since he began exhibiting his work in 1979, Gary has primarily used recycled metal, from washers to car parts, as his working medium.

His work slowly evolved from "Universal Woman," a three-dimensional torso made solely of metal washers, to the giant, massive dinosaurs, made entirely of used automobile parts. He has also produced noteworthy pieces with bronze and even stained glass and steel. Another unique sculpture, made entirely from recycled railroad spikes, is mounted on the outside wall of his home.

In fact, you know you're in "Garyland" as soon as you pull up in front of his house.

Confronted by a life-size rust-colored stegosaurus, you make a left into his driveway past the mailbox held up by a giant metal man, and then park, right next to the brightly colored Pteranodon.

Of all his work, Gary's dinosaurs remain the most popular, if only because they are large, spectacular and can be appreciated by even those less "art" oriented. Standing next to the 25-foot rendition of a Brontosaurus which graces his front yard, Gary says, "It takes six to eight months to produce a large dinosaur. As a result, I can only do one or two a year."

While from a distance, these metal skeletons appear quite real, a close-up inspection reveals they are made from every imaginable object that could possibly be yanked out of the ruins of an old car — from brake shoes to front ends.

"It takes parts from 10 to 14 scrapped cars to produce one of the larger dinosaur sculptures," Gary says. "Just the legs of the animals require front ends from eight automobiles, while the back plates for a stegosaur are usually cut from the sides of junked garbage trucks." He says that 99 percent of the parts that go into the metal Mesozoic monsters come from junkyard autos. The one percent, Gary says, may be some special part he can't find on an auto that he needs. Gary has assembled more than 150 of the various size dinosaur sculptures, with the moderate-sized animals weighing as much as 2,000 to 3,000 pounds. His favorite is the three-horn triceratops.

To make matters more difficult for the world-renowned sculptor, Gary can generally only use parts from vehicles from the 1960s and 1970s. Gary says, "Cars from the late '80s and '90s started turning into nothing," referring to the fact that modern automobile parts are made from alloys unsuitable for his type of work.

Originally, the dinosaurs were as-

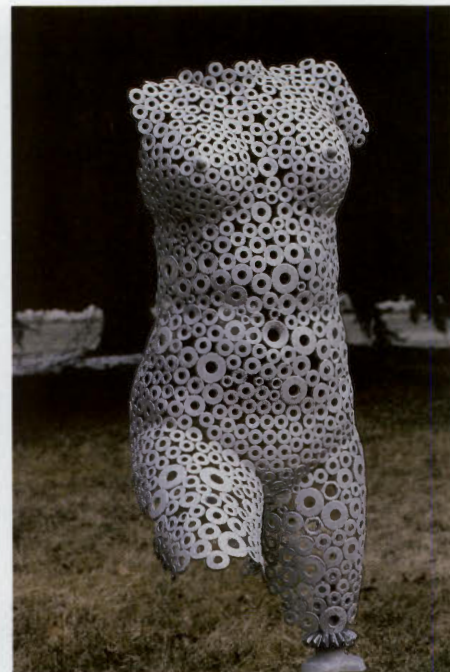
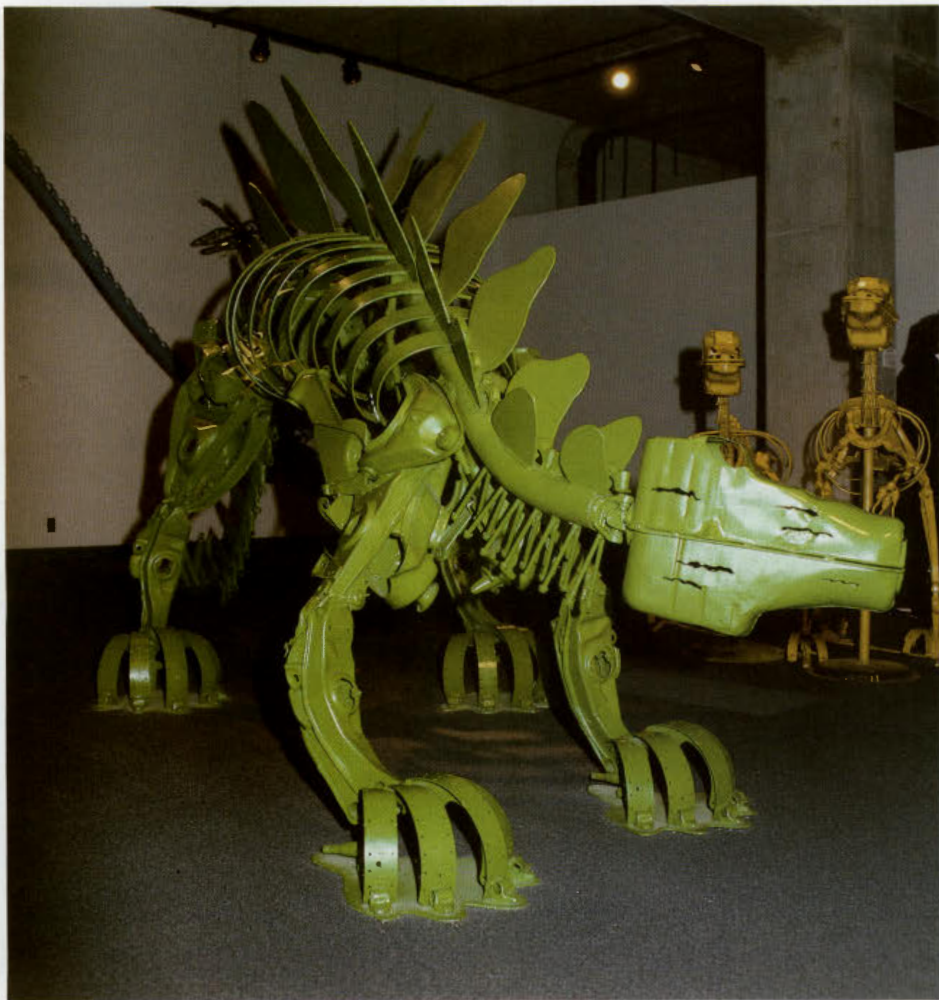


Sculptor Jim Gary.

They are made from
every imaginable
object that could
possible be yanked
out of the ruins
of an old car.

sembled on the grounds of his home — until his property began to draw a sizable volume of drive-by spectators, which eventually grew to include entire school buses of students, curious to get a look at one of the now-famous metal beasts under construction. He has since decided to assemble the impressive creatures in more subtle quarters — a "secret warehouse somewhere in Freehold."

Gary's dinosaurs have gotten together and conspired to form a traveling exhibit which has been displayed in virtually every major city in the United States, and have even graced institutional lawns as far away as Australia and made two trips to Japan. As a result of these "expeditions," Gary spends a great deal of time, not to mention money, on the road. Most shows last three to four months, and he generally does an average of three a year.



PHOTOS BY MARVIN ROSS

Universal Woman (above), a sculpture made solely of metal washers.

A stegosaurus (left) on display at Liberty Science Center: its back plates may have come from junked garbage trucks.

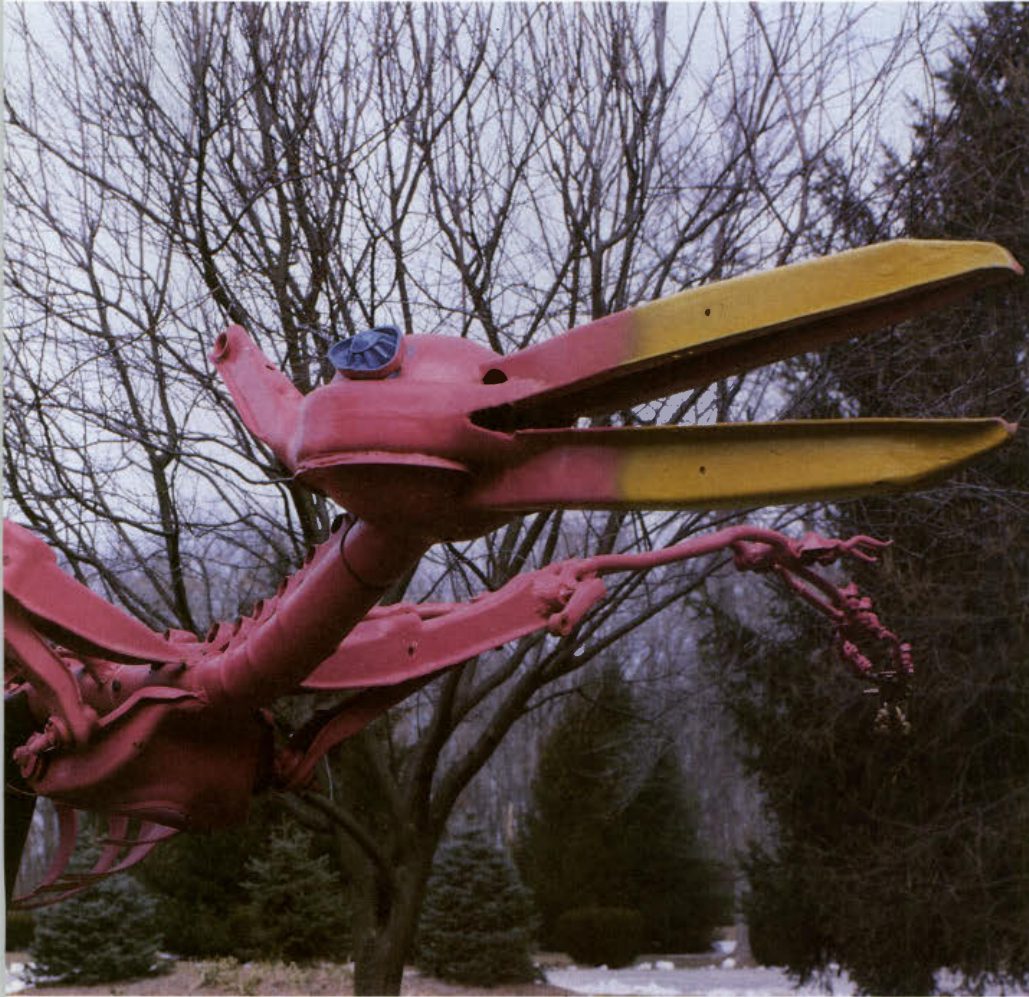
A brontosaurus (below) cranes its neck at Liberty Science Center.

His exhibitions are also acquired by various museums and other institutions through sponsorship. Gary says he could not possibly afford to hire the convoy of flat-bed trucks, as well as assume the other costs, necessary to transport his metal menagerie.

Most recently, his bestiary went on display at the Liberty Science Center in Jersey City. He seemed extremely pleased with the invitation, saying, "New Jersey artists rarely get to display their work in New Jersey until well after they have achieved a fairly high degree of recognition outside the state."

Recognition out-of-state has been no obstacle. His dinosaurian sculptures have appeared in or on the covers of over two dozen major publications, including *National Geographic World*, *Smithsonian* and *Parenting* magazines. His creations have also been featured in more than a





half-dozen textbooks and he has received exposure on the CBS television network, CNN Cable News, NBC's *Today Show* and *Captain Kangaroo*, to name just a few. Also, the Smithsonian Institute gave Gary the entire Evans Gallery to display his work — 6,000 square feet of space.

Perhaps one of the more unusual appearances of both Gary's dino's, and Gary himself, was in the George Lucas movie *Howard the Duck*. While his metal dinosaurs make an appearance in one of the film's scenes, Gary shows up in a cameo performance leaning against a pillar.

Gary's creations are striking in part for their scale and their oversize sense of fun. But perhaps just as importantly, they deliver another important message: that we need to find novel ways to reuse the materials we commonly throw away in overwhelming amounts, and the arts can be an important part of that process.

by Richard D. L. Fulton, a resource interpretive specialist with the DEPE's Division of Solid Waste Management



A fantastic insect (above) with a roadrunner behind it.

A pterodactyl (top left) that graces Gary's yard.

A young art admirer cozies up to a stegosaurus (left).



The rear of this ankylosaur (above) reveals its evolution from a Volkswagon "Beetle."

The ankylosaur's front end (left).

A little brown bat caught in flight by a strobe light (that adds a greenish tint). The bat's not hissing; it's merely using its sonar.



A single little brown bat, a species commonly found in the state, can eat as many as 600 mosquitoes in an hour.

Going to Bat for a Misunderstood Mammal

By Rick Dutko

An energetic bat decided to make an appearance at an aerobics class in Central New Jersey one afternoon, prompting more jumping and arm-waving than the instructor probably had ever been able to achieve. By the time I came on the scene, the unwelcome visitor had made himself at home high up on a wall. Unfortunately, there was no ladder, so I was forced to climb up on a ledge, holding a coffee can as a trap. As I covered the bat with the can, I slipped, the bat fell into the can, and we tumbled to the floor below. Luckily, we both escaped uninjured.

That's not always the case, however, and the bat is usually not to blame. There are many more cases of people being injured by running away from bats or trying to kill them than there have ever been from bats biting or "attacking" people. One man I know of fell down a flight of stairs and broke his leg after taking a swing at a bat.

Flying in the Face of Myths and Misconceptions

Over the past several years, I've taken on a challenge to persuade people that bats are truly beneficial. Unfortunately, this task has been made more difficult by myths, fear of disease and a general ignorance about bat behavior. As a bat advocate, I spend much of my spare time educating people throughout the state and helping them understand these remarkable creatures.

I receive a lot of frantic phone calls about bats trapped indoors. The local police department has my number, and they also refer bat-related calls to me. My basic advice to people who find a bat in their homes is to isolate it as much as possible and leave a window or door open. The bat will eventually find its way out.

Many calls come in during May, June and July, because that's the time when bats are born and the young are learning how to fly. Like a baby bird that falls out of its nest, the baby bat often can be seen flapping around on the ground. A person should never try to pick up a bat. Even though bats don't attack, they will bite in self defense. Bats found on the ground should always be treated with caution, but also with patience. Bats have difficulty taking off from the ground like birds. To begin flight, they usually find a tree, climb up and drop off a branch.

All too often, people who see a bat in their home or out in the open are convinced it is carrying rabies. Wrong. First of all, contracting rabies from a bat is highly unlikely. While bats can carry rabies, a very tiny minority of bats may be rabid. In reality, there



The author's license plate.

Rick Dutko shows a red bat to two curious onlookers.

has only been one human death attributed to bat rabies in New Jersey. Since bats infected by rabies become lethargic and quickly die, they don't have much of a chance of transmitting the virus to people.

In New Jersey the percentage of bats with rabies is very low, compared to other animals. From 1990 to 1992, raccoons accounted for about 81 percent of the total number of rabies cases, followed by skunks at about 11 percent, cats at 3 percent, ground-hogs at 2.6 percent and finally bats at 1.6 percent, according to the New Jersey Department of Health.

Another popular misconception about bats is that the animals like to entangle themselves in human hair. While it's true that bats do fly close to people, it is only because humans attract mosquitoes, a favorite food of theirs. Bats will often skim the water's surface near evening swimmers to snatch up bugs and take an occasional drink of water.

Insect Gobblers Par Excellence

In fact, insect consumption is one of the bat's major benefits to people. A single little brown bat, a species commonly found in the state, can eat as many as 600 mosquitoes in an hour. In New Jersey, bats feed on almost every flying nocturnal insect. Many of these insects are agricultural pests, and bats serve as a natural insecticide, helping everyone, including farmers, by eating tons of bugs each summer.

Highly evolved sonar, called echolocation, makes bats extraordinarily efficient at hunting insects. Bats send out high-frequency ultrasonic pulses and interpret the echoes bouncing off objects in their paths. This allows bats to zero in on their prey in the dark. Research has shown that echolocation in some bats is so precise that they can detect the width of a single strand of hair while in flight. In a matter of seconds, they can discern the size and texture of an insect. And contrary to the old adage, "blind as a bat," bats have excellent eyesight.

Bat Basics

Many people think bats look like mice or rats. Despite their appearance, bats are not flying rodents, but they are the only flying mammals. The oldest fossil record of a bat dates back about 50 million years and closely resembles a modern-day bat. For this reason, bats are believed to have evolved 75 to 100 million years ago from a tree-dwelling, insect-eating mammal. Bats belong to the scientific order called *Chiroptera*, meaning "winged hand."

Bats are widespread throughout New Jersey, and like many wildlife species they have adapted to the state's varied landscape. New Jersey's nine bat species are all insect eaters, but bats elsewhere can feed on fruit, frogs, fish and blood. Rest assured, however, that the three species

of vampire bats, which make small incisions on cattle or chickens to feed on their blood, are found only in Central and South America.

Unlike the vampire bats who live in a naturally warm climate, bats in New Jersey have to worry about surviving winter weather. Some migrate to warmer areas, while others hibernate, waiting for insects to emerge in the spring.

Hibernation methods vary among the different bat species. The colorful red bat, another species found in New Jersey, takes its furred wing membranes and encases itself like a thermal blanket. Red bats are often found hanging on branches in the dead of winter maintaining body temperatures as low as 25 degrees before seeking shelter in tree cavities or migrating to warmer temperatures.

Six of the state's nine bat species use caves, rock cavities or abandoned mines as shelters during hibernation. The air and wall temperatures in these areas remain almost constant year round. The temperature must be cool enough to keep body metabolism low, yet warm enough to keep the bats from freezing and using stored body fats. The ideal temperature range for hibernation is 35 to 45 degrees. Each species has its own preferences for temperature and humidity, but a single mine can often provide enough suitable environments to house more than just one species.

As a bat goes into a state of dormancy, its heart rate and body temperature drop within just a few degrees of the surrounding temperature. If disturbed, it can take a bat several minutes to awaken, because it needs to raise its body temperature before it can move or fly.

Bats can remain in hibernation for as long as eight months by surviving on the body fat accumulated during the few short weeks before entering into their winter shelters. Unintentional disturbances by visitors in the areas where they are hibernating for example, can cause a



A brown bat (left) being removed from a home.

A silver-haired bat (right) shows off its charms.



bat to awaken causing depletion of critical fat reserves. If a bat is disturbed too many times, it will die from starvation before spring arrives.

Perhaps, even more amazing than the bat's ability to survive the cold, is its unusual reproductive schedule. In the fall, bats congregate near cave or mine openings and perform a swarming ritual for a week or two. After mating, the female stores the male's sperm over the winter hibernation period. Delayed fertilization occurs in the spring and begins the gestation period, which can last from 30 to 60 days. During the summer, the males and females become segregated. The females form large maternity roosts while the males remain more solitary.

Most bat species bear only a single young each year. That's why, once bats have given birth and start to roost, it's important not to prevent them from entering homes to care for their young. The newborn weighs up to a quarter of the mother's weight which is similar to a 120-pound woman giving birth to a 30-pound baby. The young grow quickly on their mother's milk and venture out on their own within six weeks after birth.

If a young bat makes it to adulthood, it can lead a long life, unlike mice and similarly sized mammals that have life expectancies

of only a year or two. The Endangered and Nongame Species Program within the New Jersey Fish, Game and Wildlife Division protects the lives of bats. It is illegal to kill or exterminate them.

Opening Minds to the Beauties of Bats

As more people become educated about bats, interest in bats has grown. Bat watching is becoming an increasingly popular activity (though it has not reached the proportions found in Austin, Texas, where watching the evening flight of millions of bats has become a regular tourist attraction). Those interested in bat watching can take advantage of evening tours provided by local nature and environmental centers or view bats on their own. The best time to look for them is an hour before or after sunset. This is the most likely time to find bats emerging for a night of insect hunting. Bat watchers should search for bats near waterways, especially those by wooded areas; at parks with evening hours; while camping; or under the bright lights of a baseball field. Avid bat watchers can even purchase a bat detector, a device that allows them to hear the different echolocation calls of bats.

Another way to encourage bat sightings is to put up a bat



RICK DUTKO

house, which is similar to a birdhouse. A bat house should be elevated between 10 and 20 feet, should face south and get at least six hours of sun. Bat houses can be painted black to absorb warmth, and should be located within a quarter mile of water. These houses have had mixed results in attracting bats, however.

Whether or not bat houses are successful, erecting them shows a concern and interest in bats. Worldwide, bat populations decline, because of silly myths, unsubstantiated fears, and the reckless destruction of bats' natural habitats.

It's too bad that — based on myth and not reality — many people do not like bats or do not think of them as important. Given a choice, people would probably work for the preservation of a species such as the bald eagle than to help save bats. Yet, bats are just as easy to live with and — as avid insect consumers — probably contribute much more directly to humans' well being. And, say what you will about eagles, watching bats is much more fascinating.

Rick Dutko is a senior nongame zoologist with the DEPE's Division of Parks and Forestry.

Hibernating clusters of little brown bats on the left and Indiana bats to the right.

Indiana Bats and the Treasure of the Mine

In winter of 1992 at an abandoned mine in Morris County, a group of bat enthusiasts quietly slipped through the darkness counting the number of bats that were using the mine as shelter during hibernation. The goal of the survey was to count each bat individually instead of making an estimate, but surprisingly it led to much more — the discovery of a rare bat species.

The sighting was made by Rick Dutko, a bat enthusiast who works for the Department of Environmental Protection and Energy. In March 1992,

Dutko gathered a small group of experts to conduct the bat check. As Dutko counted the bats in the mine — which numbered 26,246 — he also identified how many there were of each species. Then he came across a group of 18 bats slightly different from the rest. He thought they resembled Indiana bats, but this federally endangered species had only been seen once before in New Jersey. He called over one of his associates, who confirmed the sighting, and Dutko quickly alerted the Endangered and Nongame Species Program (ENSP) of the DEPE's Division of Fish, Game and Wildlife about the discovery.

Unfortunately, the program was not able to get an expert into the mine until three weeks later. By that time, the group of bats had emerged from hibernation and left.

Dutko and the rest of the program staff had to wait for this past winter, when the bats returned to the mine, before they could arrange an expedition to confirm that the bats were indeed the endangered Indiana bats. In February, Jim Sciascia from the ENSP, Alan Hicks from the New York Department of Environmental Conservation and Annette Scherer from the U.S. Fish and Wildlife Service in Pleasantville joined Dutko in search of the Indiana bats.

As the group of four descended into the mine, they moved along slowly, shining their flashlights on clusters of sleeping bats. Hicks would occasionally pick up a bat almost frozen with torpor to examine it closely, looking for the distinguishing characteristic of the Indiana bat: short hair on the toes. Indiana bats resemble

little brown bats, but the hair on the toes of Indiana bats does not extend beyond the nail, as it does on little brown bats. Hicks, who works with Indiana bats in New York, found an animal that he suspected was an Indiana bat, but he didn't want to make the call with just one as an example.

This time
instead of
the 18
Indiana bats
of the year
before, there
were 24.

Guide to New Jersey Bats

Bat watching is an exciting way to enjoy the outdoors. If you plan to give it try, knowledge of New Jersey's nine bat species is essential. Read on and learn all the traits that make each type of bat special. You can take this list with you on bat watching expeditions.

❑ Big Brown Bat (*Eptesicus fuscus*)

Length 4 1/8 to 5 inches

Weight 1/2 to 5/8 ounce

Wingspan 12 5/8 to 13 5/8 inches

One of two common house bats, the big brown bat probably accounts for any mysterious winter visits by bats, since it is the only bat that regularly hibernates in buildings and homes. It also hibernates in caves as well as abandoned mines or migrates out of state. Generally, this species is more widespread because suitable habitats are found throughout New Jersey.

Insects such as large beetles, wasps, ants, plant hoppers, leaf hoppers, flies and some moths make a hearty meal for the big brown bat.

❑ Little Brown Bat (*Myotis lucifugus*)

Length 3 1/8 to 3 3/4 inches

Weight 1/8 to 1/2 ounce

Wingspan 8 5/8 to 10 1/2 inches

If this is not the most common species of bat in New Jersey, then it is certainly the second after the big brown bat. This is the other house bat that people often find in their attics where the bats form nursery colonies that can include hundreds and sometimes thousands of bats. Nearly all are female that bear only a single young per year. They prefer the warmest sections of the building to raise their young and have been found to survive temperatures as high as 131 degrees. These bats do vocalize, and squeaking between the mother and the infant is often the first sign that bats are in the building. Males are much more solitary living behind shutters, shingles, screened windows, in breezeways and underneath loose bark.

Though discernibly smaller than the big brown bat, the little brown is often mistaken for a big brown bat. It is primarily a northern New Jersey species because of its preference for abandoned mines and caves in more mountainous regions. Little

"So we waited," says Dutko. "And sure enough within 10 feet of the spot where I had seen them previously, that's where we found them again."

This time instead of the 18 Indiana bats of the year before, there were 24. After examining them, Hicks was able to confirm that Indiana bats were

living in New Jersey at least during the winter months.

Once it was officially documented that Indiana bats had taken shelter in New Jersey, the species was placed on (or, rather, returned to) the state's endangered list. (The species was on the list at one time. But since it was based on a single sighting

that could not be validated, it was later removed, explains Sciascia, a principal nongame zoologist with the ENSP.)

The U.S. Fish and Wildlife Service also has become involved with the state's efforts to protect the Indiana bat, and both are raising funds to erect a gate around the mine's open-

ing to prevent trespassing and create a haven for this group of Indiana bats that has decided to make New Jersey their home.

According to Sciascia, constructing this gate also can have a major impact on preserving New Jersey's bat population, since this mine provides shelter to the largest number of bats hibernating in a single area within the entire state.

"The fact that I try to impress upon people is that this mine houses more than 25,000 bats, and you have to look at it as a whole," says Sciascia. "We need to protect them all. At one time the Indiana bat wasn't an endangered species."

by Amy Franco, a journalism intern from Rider College

Bat surveyors in a Morris County mine.



RICK DUTKO

brown bats have been documented to fly up to 300 miles from winter to summer locations. If they are not killed or disturbed during hibernation, they can live long lives. The Endangered and Nongame Species Program found a banded little brown bat in 1991 that proved it was at least 21 years old. Colonies are usually close to water where the bats prefer to forage, but they also look for food among trees and open fields often flying in repeated flight patterns at heights of 10 to 20 feet.

❑ Red Bat (*Lasiurus borealis*)

Length 3 3/4 to 5 inches

Weight 3/8 to 1/2 ounce

Wingspan 11 3/8 to 13 inches

The red bat is the third most common found in the state, but it is seldom seen because it chooses to roost away from people. The red bat is tree-dwelling and found in the state's forests, parks and wildlife management areas. It will live close to developed areas as long as ample trees are nearby.

Unlike the big brown and little brown bats, the female red bat can give birth to four young. She also carries her young while foraging for insects or changing roost sites. As a result, the mortality rate among infant red bats is high, since they often fall to the ground and are not always recovered by their mothers. If left exposed, they can be eaten by blue jays. The male red bat has a more robust bright red color than the female. This form of coloration by gender is relatively rare in mammals.

Beetles and moths are favorites of the red bat, but it will consume a variety of insects. Red bats are often seen flying under street or parking lot lights. They clip off the wings of their prey and eat them in flight. However, their attraction to artificial light can be fatal. Ultraviolet bug zappers electrocute red bats if they get too close.

In the fall, red bats head south. They are fast fliers, but unfortunately their echolocation range is short, causing them at times to collide with tall buildings and radio towers.

❑ Hoary Bat (*Lasiurus cinereus*)

Length 4 to 6 inches

Weight 3/4 to 1 1/4 ounce

Wingspan 14 7/8 to 16 inches

The largest bat in the state and the whole Eastern region, the hoary bat is a top contender with the red bat for New Jersey's most beautiful bat award. The hoary bat has yellowish-brown to mahogany fur, and the hairs are tipped with white giving it a hoary look and hence its name. Its throat has a buff colored ring around it, making the bat easily recognizable. However, the hoary coat allows this species to blend into the bark of many types of trees making it nearly undetectable to the eye. As a result, though the species is the most widely distributed in the United States, it is rarely seen.

Emerging each day much later than other species, the hoary bat comes out during the late evening and eats moths and beetles foraging at heights ranging from 10 to 15 feet in the foliage along edges of clearings. Its echolocation calls can be heard as it searches

DR. PETER J. LEKOS



for food. The big brown bat is the only other species found in New Jersey with an audible echolocation call.

Tree hollows provide winter shelter for hibernating hoary bats, although a recent study in Wisconsin has indicated that they may also hibernate on the outside bark of trees in subfreezing weather by producing their own "antifreeze" to prevent them from succumbing to the cold. Hoary bats also migrate to the southern United States in waves like flocks of birds in late August and September.

❑ Silver-haired Bat (*Lasionycteris noctivagans*)

Length 3 5/8 to 4 1/4 inches

Weight 1/4 to 1/2 ounce

Wingspan 10 1/2 to 12 inches

Another tree-dwelling bat, the silver-haired is widespread throughout the United States and believed to be in New Jersey as well. Once again, little is known about this species in the state because of its solitary lifestyle combined with its preferred habitat, woody expanses. Its fur looks frosted with its silvery-white tips, but it is distinguishable from the more striking hoary bat.

A slow flier, the silver-haired bat forages along woodland ponds and streams in the early evening feeding on flies and moths. It is believed to use dead trees, tree cavities or loose bark to roost during the day.

Little is known about the winter habitat of the silver-haired bat in New Jersey, but it does hibernate in trees, buildings, rock crevices and other protected shelters. There are suspicions that silver-haired bats migrate out of state, because they have been trapped in mist nets at Cape May in the autumn and found on the off-shore islands of other states only during the spring and fall.

❑ Northern Long-eared or Keen's Bat (*Myotis septentrionalis*)

Length 3 1/8 to 3 1/2 inches

Weight 1/8 to 3/8 ounce

Wingspan 8 7/8 to 10 inches

The northern long-eared bat is one of the four species belonging to the genus *Myotis* native to New Jersey. The bat's most notable feature is its long ears. However, the difference in ear length between this species and its cousin, the little brown bat, is only about 1 to 3 millimeters.

This species is not commonly found in New Jersey, but a few have been documented in several abandoned mines in the state during winter over the past two decades. During the summer, these bats prefer to roost under loose bark, behind shutters and shingles and temporarily in caves and mines. They appear to be restricted to the Highlands and the ridge and valley regions of Morris, Sussex and Warren counties.

A red bat literally takes one of its young under her wing.

❑ Small-Footed Bat (*Myotis leibii*)

Length 2 3/4 to 3 1/4 inches

Weight 1/4 ounce

Wingspan 8 1/4 to 9 3/4 inches

The smallest bat of the four *Myotis* species, the small-footed bat is more golden brown. The blackish mask across the face of this bat and its black ears give it the look of a "bandit."

An early evening flier, the small-footed bat feeds on ants and small beetles. Very little is known about its summer habitat. Generally, it is considered rare in the East and normally found only while hibernating. It has been documented from a single abandoned mine in New Jersey.

❑ Indiana Bat (*Myotis sodalis*)

Length 2 3/4 to 3 5/8 inches

Weight 1/4 ounce

Wingspan 9 3/8 to 10 3/8 inches

The Indiana bat species is listed by the U.S. Fish and Wildlife Service as endangered. It resembles the common little brown bat, but is more uniformly pinkish-brown with pinkish lips and nose. In 1992 this bat was discovered for the first time in New Jersey. It is found at only one location in the state and in very low numbers.

During hibernation, the Indiana bats sleep in tight clusters. In other states, where they are more commonly found, these clusters can reach hundreds or thousands of bats within a few square feet. In the summer, they prefer foraging in wooded or semi-wooded areas along streams. They often roost in the space beneath loose bark on hickory or maple trees.

❑ Eastern Pipistrelle (*Pipistrellus subflavus*)

Length 3 1/4 to 3 1/2 inches

Weight 1/8 to 1/4 ounce

Wingspan 8 1/8 to 10 inches

Not much bigger than a moth, the pipistrelle is often mistaken for the insect because of its size and erratic flight pattern. It is the smallest bat in the state and believed to be fairly common. It has been documented from nearly every known mine or cave that houses bats in the winter, and it has been found in buildings during the spring and summer but always in low numbers.

Condensation forms on the fur of the pipistrelle during hibernation giving it a beautiful crystalline appearance. In this state, they are often described as albino or "ghost" bats. At times, the bats will awaken from hibernation to drink the tiny droplets of water that cover their fur to replenish the vital body fluids lost during the long period of reduced metabolism.

An early evening flier, the pipistrelle eats beetles, leaf hoppers, plant hoppers and flies. Frogs and hoary bats will eat the pipistrelle because of its small size.



MICHAEL BAYTOFF

Surf Casters and Jetty Jockeys on the Trail of the Linesider

By Russ Wilson

If it's action you crave, and striped bass are your game, now is the time. And Jersey coast surf and jetty country is the place to be. Between now and the end of November millions of linesiders that summered in New England will be swimming their way south along the Jersey Shore. It is a time of plenty, and anyone — from a first-timer to a grizzled veteran — who happens to be wading the surf or casting from a jetty when a school of hungry bass come charging into the shallows to feed is likely to be treated to the kind of fast-paced action most anglers dream of but seldom find.

This is something relatively new. Mid-Atlantic coastal striped bass stocks were in deep trouble as recently as 10 years ago. However, strict regulations placed upon recreational and commercial fishing throughout the range of these highly prized fighters, and successful spawning efforts of Hudson River and Chesapeake Bay striped bass stocks, have turned things around.

Recent survey data compiled by marine biologists reveal Hudson River striped bass stocks are fully recovered and the Chesapeake Bay's are recovering. What this means to the average guy or gal who wants to catch a striper is that there are more bass available now than at any time in the last decade.

There is a special thrill involved in catching a trophy class striper when standing waist deep in a rolling surf or perched atop a mussel-encrusted jumble of rocks. It is a one-on-one situation, with the fish more often than not holding the trump card.

Casting for stripers in
the rolling surf

With a Little Bit of Luck

I've been at the game for some 40 years. One might suspect that after that much time, a person would have learned all there is to know about fishing for stripers. However, nothing could be further from the truth. Anyone who believes for one moment that he or she has these unpredictable fish figured out is in for a rude awakening.

There is also more than a little luck involved. And some people are luckier than others. I remember all too well a morning when a half-dozen chilled-to-the-bone bass hounds stood shoulder-to-shoulder casting to a school of fall-run linesiders that had invaded the Sandy Hook surf. Each of us had been there before and knew which lures were most likely to get the attention of a bass looking for a meal. But it took a first-timer using a bottom rig baited with a squid head to catch the biggest bass of the day, a 46.5-pounder. In fact, it never fails: if a bragging-sized striper is prowling the rocks surrounding a jetty or grubbing in the surf in front of us, the person with inordinate luck will be the one to catch it.

A good example, one that still haunts me after more than 20 years, was an experience I suffered through while using live bunker (menhaden) as bait from one of the Monmouth County rockpiles. I had spent half the night before attempting to snag bunker that were frolicking under the lights of the bridge connecting Sea Bright and Rumson. At daybreak, with only two frisky bunker finning in my live tank, I packed up and headed south, planning to try a favorite jetty at the north end of Deal.

It was an ideal morning for live lining. A gentle east wind, half tide, and 58-degree water made for near perfect conditions. I knew a BIG bass was hiding among the rocks, waiting to eat one of those bunker and I had the jetty all to myself. It was as close to the perfect setup as one is likely to find. Unfortunately, even the best laid plans often go astray. Before I could get a bunker to swim out and around the front of the rockpile, a man I'd never before seen walked past me, cast a gob of clam into the pocket at the north end of the jetty and literally screamed for help as a monster striper threatened to drag him off the rocks and into the water. No one will ever convince me that wasn't a lucky cast. Being a good sport, I gaffed the big fish and was there when he weighed in what should have been my 58-pounder.

Beyond Luck is Preparation

That is history. More important, is what this fall will bring. On that account the outlook is excellent. Marine biologists say the first schools of stripers arrive in New Jersey waters around the middle of September or at about the same time mullet begin to move out of tidal rivers and bays to the north.

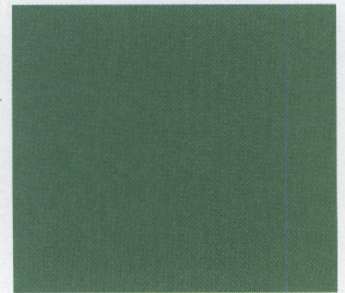
These early arrivals normally set up shop around Sandy Hook and along the Monmouth and Ocean county jetties, and for the next two months, savvy surf casters and jetty jocks are treated to the finest striper fishing of the year.

By mid-October the bunker migration is at its peak and stripers of all sizes including many in the 20 to 50 pound class, are prowling the shallows from the tip of Sandy Hook to the famed Rips at Cape May and all points between to feast on this staple of their diet.

Knowing there are big bass to be had and catching them are not one and the same. Success at this demanding sport requires dedication and above all else, a willingness to watch, listen and learn from the experts.

There is a distinct difference between surf and jetty fishing. Surf casters have to rely on bass that are passing through a specific area. Jetty jocks can cast to resident fish as well as those that are staying in close contact with schools of mullet, bunker, herring, mackerel and rainfish.

Given a choice, I would opt for the jetties, but when the fall run is in full swing, surf and jetty angler alike share the bounty.



He literally
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as a monster
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to drag him off
the rocks and
into the water.

Striped Bass Regulations

Regulations in effect for 1993 allow ocean anglers to catch and keep one striped bass measuring 28 inches or longer per day. In addition, the Department of Environmental Protection and Energy's Division of Fish, Game and Wildlife has a Striped Bass Trophy Fish Program which entitles holders of trophy tags to catch and keep a second bass measuring 38 inches or longer.

Sportsmen and sportswomen wanting to participate in the Striped Bass Trophy Fish Program can obtain information from the division by writing to:

Bureau of Marine Fisheries
P.O. Box 418
Port Republic, NJ 08241

In order for New Jersey to remain in compliance with the Atlantic States Marine Fisheries Commission's striped bass management plan, size limits may increase for 1994. Changes to New Jersey's striped bass regulations require legislative action.

The Tools of the Trade

The beauty of fishing surf and jetty country is that it doesn't require a major investment in tackle. Surf casters, for example, can get by with just one rod, providing it has the muscle to punch a lure or bait to submerged bars and drop-offs lying 75 to 100 yards out from the beach. Experts most commonly use heavy duty spinning or conventional casting rods measuring 10 to 12 feet with enough backbone to handle weights of 5 or 6 ounces.

Most accomplished surf casters also carry a light rod for those all-too-rare occasions when stripers are feeding in tight to the beach or just beyond the first breaking wave. A setup utilizing a medium weight 7- to 8-foot spinning rod, 12- or 15-pound test line and a small popper or sub-surface swimming plug is ideally suited for this close-in work.

Jetty anglers, on the other hand, seldom need to cast more than 30 or 40 yards to put a lure where it is most likely to be seen by a hungry striper. When gearing up for the jetties, it pays to use an outfit that is strong enough to handle big fish but light enough to cast for hours on end without causing excessive fatigue.

Experienced jetty jocks prefer rods measuring between 8 and 9 feet that are rated to handle 10- to 30-pound test line and weights of 1.5 to 4 ounces. Most any midsize revolving spool or spinning reel having a line capacity of 250 yards of 15- to 20-pound test monofilament will match up nicely with rods of this type.

Also considered must-have items for surf fishing are chest high waders and a foul weather jacket. Anyone planning to fish the jetties will have to add cleated boots, such as Walt's Walkers, or Korkers to your arsenal. These will ensure safe footing when negotiating the rocks.

Lures, snaps, swivels and a spare leader or two are carried in a lightweight tackle bag. Experts prefer the type that can be worn over the shoulder or fastened to a belt.

You cannot catch stripers unless you are there when the fish are most apt to go on a feeding binge and you are using lures that closely resemble the foods these fun-to-catch fish normally eat during the tag end of the season.

Now's the time to break out the sub-surface swimming plugs, poppers, metals and leadhead jigs (bucktails). Savvy surf hounds find it pays to have at least one or two poppers plus a couple of Bomber, Redfin, Hellcat, Rapala, Rebel, Mirrolure, Atom, Creek Chub or Danny plugs which can be worked to swim on the surface or as deep as several feet.

Sharpies at the game carry 5.5, 7 and 9 inch swimmers in a variety of fish-catching colors including blue, green, black or yellow on the back, shading to white or silver on the sides and belly. Red and white, all white or solid black are often deadly



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when fished from the rocks at night.

Metal lures can be equally effective when targeting the fall run bass. One of the most popular metals is the Hopkin's. It's a proven favorite, and can usually be counted on to produce a bass or two when all else fails. Select a couple with bucktail-dressed single-tail hooks in weights of 1.5 to 3 ounces, and you should have all the bases covered.

Bucktails are among the most deadly of all artificial lures. Why a hunk of painted lead garnished with a tuft of bucktail hair is so appealing to bass, and for that matter, all predatory species, is a mystery. But, make no mistake, bucktails do catch bass, lots of them and of all sizes.

Although most any color bucktail will garner savage strikes, those painted white or yellow with a strip or two of silver Mylar mixed in with the bucktail to add flash and a strip of pork rind to provide a larger silhouette will usually get results.

Staking Out Linesider Locales

Finding a place to fish the surf or cast from a jetty should not pose much of a problem. The summer tourist season has passed and communities whose beaches and jetties were off-limits now welcome anglers with open arms.

When the action starts at Sandy Hook, bass can be caught along most any stretch of open beach from the park entrance to the Bug Light marking the entrance to the bay.

Jetty access is available in Sea Bright, Monmouth Beach, Long Branch, Elberon, Deal, Allenhurst, Asbury Park, Ocean Grove, Bradley Beach, Avon, Belmar, Spring Lake, Sea Girt and Manasquan, and surf fishing opportunity is virtually unlimited from the south jetty at Manasquan Inlet to Barnegat Inlet's north jetty. If in doubt, check with the local police.

Long Beach Island offers the best of both worlds. Surf casters can walk the beach from Barnegat Light to Holgate and jetty jocks can try their luck from any of the jetties.

Brigantine is a favorite destination of many late season surf casters and for good reason. Each year this desolate stretch of beach yields its fair share of heavyweights.

The world record striper, a 78.5-pounder, was caught from one of the jetties in Atlantic City and each year during the fall run numerous 20-, 30- and 40-pounders are reported.

Ventnor, Longport, Wildwood and Cape May offer equally rewarding late season striper fishing for both surf and jetty fishing enthusiasts.

Anyone contemplating an assault on the Jersey Shore surf and jetty country had best be prepared to give it his or her all. Successful bass anglers put in a lot of time, often at the most inappropriate hours, and usually when the weather is at its worst.

That's what bass fishing is all about: the hunt for big fish. It is what has made the striped bass the number one target among Garden State surf casters and jetty jocks.

If you like to sleep late, fish only when the sun is shining and temperatures are in the 70s, you will have to settle for blues, blackfish, or fluke. Unfortunately, none of these has stripes or attains weights of 50 or more pounds.



Satisfaction is landing a 12-pounder (above) in Neptune.

Assorted lures (left) to entice striped bass



CORNELIUS HOGENBIRK

Speaking Volumes . . . About Autumn in New Jersey

If one picture is worth the proverbial thousand words, these six photographs should speak volumes. Take them in and let their colors and details touch or evoke your own autumnal moods or fall reveries.

Autumn bounty, Ocean County (opposite page).

State line lookout, Palisades Interstate Park, Bergen County (below).



J.J. RAVA





J.J. RAJA



J.J. RAJA

Young white birches (left) in the Delaware Water Gap National Recreation Area, Sussex County

The shore of Lake Ashroe (above), Stokes State Forest, Sussex County.



MICHAEL BAYTOFF



Fall sunset (opposite page), Lake
Wawayanda, Sussex County.

Waterfall (above), Delaware
Water Gap National Recreation
Area, Sussex County.

REMEMBER...



SMOKEY HAS FOR FIFTY YEARS

By Joe Hughes

This upcoming year marks Smokey Bear's 50th year as a symbol of forest fire prevention, and he will be honored for his service with a national celebration. New Jersey also will be joining in to honor Smokey with activities throughout the state.

When the United States Department of Agriculture (USDA) Forest Service embarked on the Smokey campaign in 1944, it probably would not have imagined that Smokey would become one of the most recognizable "characters" in the U.S. In addition to the famous poster campaign, Smokey has made public appearances too numerous to count, has had two bears as his living symbols at the National Zoo, has appeared in many television public service announcements and has even had his own television series.

The bear facts are that it has worked. People not only recognize Smokey, but they respond to his message. The average acreage burned each year since the first national forest

fire prevention program started in 1942 has decreased about 80 percent, despite an increasing population and rising numbers of visitors to national, state and local forests and parks. Over the past 50 years, the Smokey Bear program has been credited with saving more than \$20 billion in natural resources from fire.

There are no two ways about it: "Remember... Only YOU can prevent forest fires."

Joe Hughes is New Jersey's assistant state forest fire warden.

Smokey enlists children (right) in his fight in this 1968 campaign.

This 1971 poster (far right) underscores the fragility of wildlife.



A poster from 1947 (above) casts fire prevention in the context of the post-war building boom



Six years after the start of the Smokey Bear campaign, an actual bear cub (above), displaced by a forest fire in New Mexico, arrives at the National Zoo in Washington D.C. to become the living symbol of Smokey Bear. Pictured with Smokey are N.M. game and fish official Homer C. Pickens and his son.



Cowboy star William (Hopalong Cassidy) Boyd (above) helps a young Smokey learn the ropes of promoting fire prevention.



A 1957 poster stresses the effect of forest fires on wildlife.



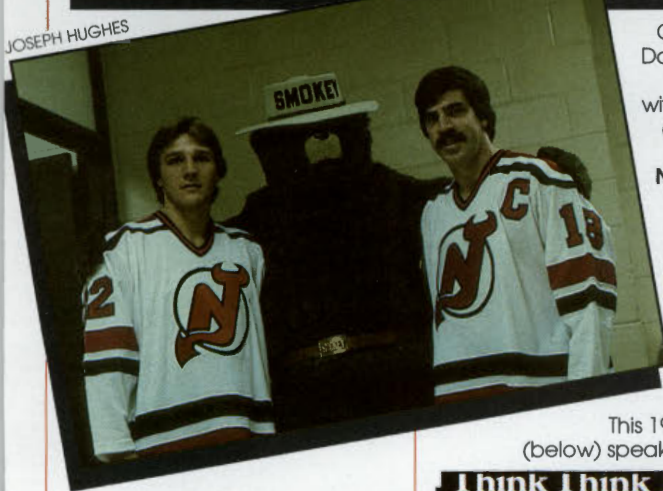
Racing star Richard Petty (right, next page) takes time out from burning up the stock car circuit to help Smokey spread his message in 1990.

Thumbs Up for Fire Prevention

Join Dom Deluise
& Smokey!



JOSEPH HUGHES



Smokey visits with New Jersey Devils hockey players Doug Sulliman (on left) and Mel Bridgman (on right) during celebrations for his 40th birthday in 1984.

RICHARD PETTY and SMOKEY say
"PREVENT FOREST FIRES"



This 1982 poster
(below) speaks for itself.

Smokey and the Garden State

What, you may be asking, do Smokey Bear and forest fires have to do with New Jersey? If you think of the Garden State only as the Urban State, you're very mistaken. About 16 percent of the state's total acreage is protected open space, and nearly half of New Jersey's lands are forests. Smokey helps the state Forest Fire Service protect 3.15 million acres of public and private land. Last year alone, the state recorded 1,410 wildfires that burned 16,650 acres.

In fact, depending primarily on weather conditions, an average of 7,000 acres of New Jersey forests and open lands are damaged by fires each year. To combat this danger, the New Jersey Forest Fire Service employs 75 full-time people and can call on about 1,000 firefighters statewide, 24 hours a day.



SMOKEY'S OUTREACH TO AMERICA

After a half-century of media attention, Smokey's own celebrity is undeniable.

This 1991 poster commemorates the National Smokey Sports Program.



The (Jersey) Devil is in the Details



By Angus Kress Gillespie

Now that autumn is upon us, the air is becoming crisper and cooler. Serious outdoor sportsmen know this is an ideal time to visit the Pine Barrens of South Jersey. The summer tourists have returned to their homes in the suburbs; college students have returned to their campuses. Nothing could be finer than to spend a fall weekend in the Pines hiking and camping without being bothered by hordes of summer visitors. The chill of the air gives us a little extra burst of energy. It also discourages those awful mosquitoes. The woods seem strangely quiet, almost empty.

But experienced South Jersey outdoors people tell us that, just because the Pines are quiet, there is no reason to assume the woods are empty. In fact, the fall season may be the very best time of year to have a chance to see that most elusive of creatures — the Jersey Devil. Residents say that during the summer this legendary creature is frightened by the large number of noisy visitors, especially by all the amateurs who rent canoes to explore the Pine Barrens' tea-colored rivers and streams. And during the winter, the Jersey Devil goes into a kind of hibernation and is rarely seen. Fall is actually the ideal time to look for him.

Mother Leeds' 13th Child

So far, so good. But, then, do you really want to find him? What is the Jersey Devil and what exactly should we be looking for? Since this is a story that has been passed along by word of mouth for more than 250 years, there is more than one version. But most accounts begin with a woman named Jane Leeds who lived with her husband Daniel at the edge of a great swamp near the Mullica River in present-day Atlantic County. Some folks say that she was strange and different; some even said she was a witch. In any event, we do know that she had 12 children. Understandably, Jane Leeds was fed up with cooking and cleaning and child care. Then one day she learned that she was pregnant with her 13th child.

That same night, in a moment of weakness, she prayed: "Lord, I hope this one's not a child. Let this one be a Devil!" Well, we now know that this was a mistake, because nine months later on a terrible winter's night in February of 1735, when Mother Leeds' 13th child was born, something awful happened.

At first, it seemed like a perfectly healthy and normal infant boy with a chubby little baby face and blue eyes. But in the space of less than half an hour, the child grew all too quickly into a creature the size of two full-grown men. It had the hairy torso of a powerful man, but in place of the baby face was the head of a horse with two giant horns growing out of either side. The baby-blue eyes became fiery red — glowing like two burning coals. And growing out of its back were two giant, leathery bat-like wings. In place of human legs, it had the legs and feet of a goat. It also had a long serpentine tail.

Most frightening of all, it had powerful, hairy arms. At the end of each arm were paws, and at the end of each paw were long, bony claws. Each claw was razor sharp. With a single swipe of his right paw, he slit the throat of the midwife in attendance, who collapsed in a pool of blood. The creature let out a blood-curdling scream and flew up the chimney, escaping into the Pine Barrens where he has terrified the citizens of South Jersey ever since.

From Folklore to Popular Culture

When it was first told in the 1730s, this story was of great interest to only a few people in a handful of sparsely settled communities in South Jersey. Now some 250 years later, the story is of casual interest to millions of people throughout the entire state. Thus, the Jersey Devil has undergone a transition from being a creature of folklore to a creature of popular culture and — in the process — has lost some of his legendary mystery.





By definition, a legend is a story in prose that has been handed down orally generation after generation. It is generally regarded by its tellers as true. Unlike myth, which usually deals with something far away and long ago, legend is concerned with the immediate historical past. Legend is sometimes referred to as folk history but, of course, it is history as changed by passing a story orally from person to person.

For many years the legend of the Jersey Devil functioned in just the way the definition suggests. Related from parent to child and from generation to generation, it helped to explain the otherwise inexplicable. A major change took place around the turn of the century, however.

In 1909, several of Philadelphia newspapers picked up the story and reported a number of “sightings.” The quiet, mysterious, rural legend became a media event. However, sophisticated urban reporters did not report the events as straight news. Instead, they adopted a tone of bemusement and condescension. For example, in early 1909, *The Philadelphia Public Ledger* published a drawing of a smiling Jersey Devil, “DRAWN FROM A SALEM FARMER’S DESCRIPTION,” according to the caption, which went on to question the source’s sobriety: “This farmer says he saw the weird animal yesterday cavorting in his backyard, and that he hasn’t tasted applejack since Christmas.” Since that time, when the story has resurfaced in the media, it has almost always been treated with tongue firmly in cheek.

Not only were there “sightings” from time to time — which continued through the decades that followed — there also was at least one celebrated “museum exhibit” staged in Philadelphia. A promoter named Norman Jefferies had rented a large kangaroo from a small zoo in New York State, painted it with green stripes and attached a set of fake wings. He then staged a “capture” of this creature and put it on display. Later, of course, the exhibit was revealed for the hoax it was.

A similar prank, that dates allegedly to 1939, seems to have hoodwinked folklorists and historians. A number of sources mark that year as the point when the New Jersey State Legislature adopted the Jersey Devil as the official state demon. In the course of writing this article, efforts to track down this legislation — or legislative resolution — proved fruitless. Perhaps it is a sign of the still growing strength of the Devil’s legend that this seeming “factoid” continues to pass as truth.

What’s in a Name?

With nearly a century of facetious media treatment, you might wonder why interest in the Jersey Devil has continued to increase. Part of the explanation may lie in the name — the Jersey Devil. Originally back in the 1700s, the story was often referred to as the Leeds Devil or as the Shourds Devil (after another old-time Pinelands family) and only occasionally as the Jersey Devil. (Typically enough, the Leeds family referred to it as the Shourds Devil and vice versa.) But when the Philadelphia newspapers picked up the story, the name became standardized as the Jersey Devil. The new name is actually somewhat misleading since it seems to suggest a statewide demon. But traditionally the Jersey Devil always was identified with a very particular place — Leeds Point, not far from present day Atlantic City — which, of course, did not exist at that time.

Until the Meadowlands-based professional hockey team adopted the name “New Jersey Devils,” most people from North Jersey never had even heard the term — or the story. And North Jerseyans typically make the mistake of calling the creature the New Jersey Devil, something unheard of in his own neighborhood.

But either way, the name *Jersey Devil* does lend itself to statewide identification and recognition. This is no mean feat in a state that struggles at times to maintain a singular identity against the powerful pull of New York City and Philadelphia. One might speculate that if the name had remained the Leeds Devil, the story would not have so readily entered popular culture.

Devilish Questions

The legend continues to flourish in popular culture and diverge from its origins. Every fall, I get a handful of calls from reporters asking me such typically facetious questions as: Does the Jersey Devil exist? What proof is there for its existence? Are there plaster casts of the footprints? Are there verified photographs?

Asking another set of questions might actually put us on the path toward gaining real insights into 18th- and 19th-century life in the Pine Barrens. Who tells the legend of the Jersey Devil? Who makes up the audience for the story? What function does the legend serve? Why has it lasted more than 200 years?

If we focus on the fact that parents passed the legend on to their children, we are pointed toward one possible set of conclusions. As untamed as they are now, the Pinelands of the 18th and 19th centuries were in many ways a truly perilous place. A parent who told a child to be home by nightfall or “the Jersey Devil will get you” was using the legend to serve a legitimate child rearing function — to protect the child from very real dangers of the Pines — getting lost or being attacked by wild animal, for example.

Protection of another sort is also a possible byproduct of the legend. Gladys Eayre of Forked River has suggested to me that the Jersey Devil was used to discourage meddlesome outsiders from keeping too close an eye on what was going on in this particular neck of the woods. Specifically, Eayre suggests that, in the 19th century, with well-policed customs operations in the ports of New York City and Philadelphia, the devil in the Pines may have helped discourage careful scrutiny of smugglers running contraband via the serenity of Barnegat Bay. Similarly, the Jersey Devil may have kept fainthearted “revenueurs” from thinking twice about searching for deepwoods stills set up to brew local “Jersey Lightning” (applejack).

To folklorists, these possible uses of the Jersey Devil are typical in that they show how “insiders” use a common bond to define their “inside-ness” against outsiders. Many people from the Pines continue to see themselves as “Pineys” opposed to outside “city slickers.”

The real legend of the Jersey Devil was — and is — not discussed with outsiders. It’s private rather than public, sacred rather than secular, scary rather than funny. It is a story of awe, terror and mystery.

To this day there are active tradition-bearers who grew up with the story in family, home and community in South Jersey. These are the people who know him as the Leeds Ghost, the Monster of Leeds, the Devil of Leeds Point, or the Leeds Devil. He is part of their legendary heritage. His name is inextricably linked to the swamps, bogs, salt marshes, and lonely stretches of beach to be found in South Jersey. This is the Jersey Devil that has captured imaginations for more than 250 years.

The tradition-bearers’ advice is to take care the next time you go alone into the woods this fall. Late at night, you try to be calm even when you hear strange noises out there. Admit it. Sometimes you’re just a little bit scared. Deep in the cedar swamps on a moonless night, it’s darker than a thousand midnights. Then you’re angry at yourself for being scared. When you hear the wind coming in off the ocean through the pines, your chest begins to tighten. When you hear the sudden crack of a twig behind you, the adrenaline starts pumping. An inner voice says, “Beware!” You just might have an unexpected encounter with the Jersey Devil.





Marks, Blinds and Falls: Testing Your Hunting Retriever

A lab hits the water — and will be judged on the style with which it retrieves.

By Tom McDonough

Donna Byrne waits with her 3-year-old Labrador Retriever, Clancy, in a field at the Colliers Mills Wildlife Management Area in New Egypt. As she stands in the golden straw grass, she's anxious. "No matter what the dog does in practice," she says, "it never turns out that way at a test."

Byrne might be on edge, but Clancy can't wait to quarter the field, looking for birds. When they reach the hedgerow, Clancy is sent to retrieve two downed ducks. A radar-guided missile couldn't find its target more quickly or accurately.

"That was good," Byrne says after the test is over. "It was a marking test, and the judges wanted to see if Clancy saw the birds, went right to them and came right back."

Byrne and Clancy are participating in a Naversink River Hunting Retriever Club field test. Hunting retriever field tests, or hunt tests, have become very popular in recent years, giving retriever owners, whether they are hunters or not, a chance to get out with their dogs and let the dogs do what comes so naturally to them — that is, find birds and bring them back.

According to the *Retriever Field Trial News*, which reports on happenings in the retriever world, the number of American Ken-

nel Club (AKC) retriever clubs sponsoring hunting retriever field tests increased by 123 percent between 1988 and 1991, with some 20,000 dogs participating last year alone. The North American Hunting Retriever Association (NAHRA), which is credited for creating hunting retriever field tests, says more than 10,000 dogs run annually in its events and membership has been growing by 25 percent each year since the association's founding in 1983.

Hunting retriever field tests should not be confused with traditional AKC retriever field trials, which have been around since the 1930s, when gamekeepers on wealthy Long Island estates created them to keep busy between hunting seasons. There are approximately 800 AKC field trials held across the country each year.

A traditional AKC field trial is a fiercely competitive event, with dogs vying against each other. A stake, and there are four stakes in a field trial — derby, qualifying, amateur and open — might have 60 dogs running in it, but only one will receive a field champion title.

The "retrieves" a dog is required to perform at a field trial are also much longer and more complex than at a hunt test. It is not uncommon today for a field trial dog to make a retrieve of 400



TOM McDONOUGH

A handler waits with his dog for the water test and watches a colleague guide his retriever.

yards. That's why field trial handlers and gunners wear white coats, while at hunt tests, the dress is camouflage.

"The retrieves at field trials have become so lengthy," says A. Nelson Sills, an AKC board member and a licensed judge, "it would be impossible for a dog to pick up the gunners unless they are wearing white coats. Also you have blind retrieves (a retrieve in which the dog doesn't see the bird fall and must be directed to it by the handler, using a whistle and hand signals) up to 400 yards long, and if a handler didn't have a white coat, the dog wouldn't be able to see him and take direction."

In fact, dogs competing at field trials are often likened to race horses, with owners hiring professional trainers to run their dogs. "You can't have just an average nice retriever," says a woman from Texas who competes at South Jersey Retriever Club field trials. "You have to have a dog that is so highly trained and specialized that you can't think about anything else. And that's tough. People don't have the time to devote to that type of thing."

"The AKC licensed field trial dog is an unbelievable animal, an absolute perfect machine," says Richard Wolters, a highly-regarded trainer, a founding member of NAHRA, and author of nu-

merous books on retrievers such as *Water Dog* and *Gun Dog*. "Fields trials are the finest obedience work in the world."

Unfortunately, he explains, field trials — unlike hunt tests — have little to do with hunting.

The Hunter and His Dog

"The hunt test movement is only six or seven years old," explains Sills. "The tests were developed because there were an awful lot of hunters who enjoyed working with their dogs. They wanted to show what these dogs were capable of."

Essentially, a hunt test has three levels of competition — a beginner's level, an intermediate or junior level, and a senior level. Unlike the field trials, the dogs don't compete against each other, but against a standard set by the AKC or NAHRA, depending on who is sanctioning the test. That means that if 40 dogs run in a senior event, and meet the standard, all receive points toward working retriever or master hunting retriever titles that will go on their pedigrees. Retrieves are much shorter than at a field trial, being restricted to no more than 100 yards.

According to Bob Van Suskil, who runs hunt tests for the



TOM McDONOUGH

A dog with a bird it has found quickly in an open retrieve.

South Jersey club, scenarios are also created at hunt tests that mirror real hunting situations.

"Basically, what that would be is telling participants something like my co-judge and I are your hunting partners for the day," says Van Suskil. "The three of us, and your dog, are going to walk down to this duck blind at the edge of this point. We have decoys out in front. We've also got some other hunters in our party that are across the way in another blind. As we approach our blind, ducks are coming in from over the trees. What will happen is our hunting companions will get a shot at a duck. You'll hear a duck call, see the duck fly and a shot, and your dog will be expected to pick up the bird. That's the scenario for this part of the test."

NAHRA also requires a dog at the intermediate and senior levels to show its upland hunting ability and a good nose by quartering fields to flush birds and trailing, which is a test that simulates finding a wounded bird.

Compatibility

What judges generally look for in a dog during a hunting retriever field test is how well a dog marks, or remembers where a

bird falls, and the style with which a dog retrieves — its eagerness, alertness, and determination in searching and finding fallen birds, says Dave Tassey, judging the intermediate level at the Naversink hunt test. He is also president of the Naversink Club. At the higher levels, the judges want to see if a trainer has a dog under complete control and steady under all conditions, handling sharply and marking precisely.

"But there is also a working relationship between the handler and the dog that's looked at right from the earliest tests. It's about compatibility, working as a team. Also there is the dog's natural ability. Does the dog want to do it or doesn't he? You can't train that into him," says Tassey.

Preservation

Besides letting hunters and retriever owners work their dogs, hunt tests are helping preserve the natural instincts of these fine animals, says Wolters. "When I wrote *Water Dog* some 30 years ago," he explains, "there were 10,000 Labrador retrievers registered that year. In 1993, there will probably be more than 120,000 registrations. The Labrador is the most popular dog in the country."

Popularity as a pet, says Wolters, often means the end of a breed's ability to hunt. Both NAHRA and the AKC maintain up-to-date information on where you can get retrievers bred from good working stock.

Hunt tests, says Sills, have also become an important conservation tool. By having a good hunting retriever at his or her side, "the hunter is not going out and wasting birds because he can't find them," he says.

Finally, Wolters points out, because hunt tests aren't competitive, they've truly become classrooms for the retriever owners to learn more about their dogs and how to develop their natural instincts. "Since I'm not running against your dog, and you're not running against my dog, I'm not running against you, and you're not running against me, so if I know of something you're doing wrong, I'm perfectly willing to help you."

Tassey agrees. "Hunt tests have really friendly, laid-back atmospheres."

At the Naversink's beginner's stake, all the handlers were women. "These types of things might have been more male-dominated years ago," says Kim Mandrino, who was the marshall for the event, "but now there are a lot of women. Many have gone on to be judges."

Most women, she explains, probably got started by helping their husbands train the family dog or by working at the hunt tests. "It's just more enjoyable to have a dog of your own to run," she says. Even the more competitive field trials have about an equal representation of women and men handling dogs.

"And hunt tests have become very family oriented," adds Mandrino, explaining that her daughter handled her first dog at a hunt test at the age of seven.

"Hunt tests are really geared for the average person who is interested in having a well-mannered hunting dog out in the field," says Ted Eggertson, who was watching the beginner's stake while waiting to run his two black labs, Deke and Lily, at one of Naversink's later events.

Also watching and waiting in anticipation of a later event was Fred Bodine of Franklin Township, who was attending his first hunt test with his 18-month old female lab, Teal.

"I never expected this. I'm glad I got involved. It's a lot of fun," he says. "The people you meet are nice and friendly, the dogs love it, and everyone loves the dogs."

Bodine perhaps hits on the real reason for the boom in hunt tests. "You may start out wanting to train a dog for hunting, but something happens along the way," says Tom O'Brien, president of the South Jersey club. "Hunting is not the primary focus. It's the quality of the work of the dog that becomes the primary focus."

Putting Yourself (and Your Dog) to the Test

AKC and NAHRA hunting retriever tests are open to Labrador, Golden, Chesapeake Bay, Flat-coated and Curly-coated retrievers, and Irish Water Spaniels.

AKC sanctioned tests require dogs be AKC registered. In NAHRA tests, non-registered dogs can run, but because the animal hasn't any papers, it isn't awarded titles on its pedigree.

The best way to get involved in a hunt test or a field trial is to join one of the three clubs in New Jersey. This will allow you to tap into a wellspring of information on training retrievers and to meet people who can help you train your dog.

The Shrewsbury River Retriever Club is the second oldest retriever club in America. It runs only licensed AKC field trials. The South Jersey Retriever Club, largest in the state, runs both AKC-sanctioned field trials and hunt tests. The Naversink River Hunting Retriever Club is a NAHRA-sanctioned club and runs only hunt tests.

If you're in the market for a retriever from good working stock, NAHRA has a computer database that lists all the dogs that qualify in its events. By calling (703) 221-4911, you can receive a printout of breeders in your area. The AKC has a referral service at either (919) 233-9767 or (900) 407-7877 to get information on breeders and AKC clubs.

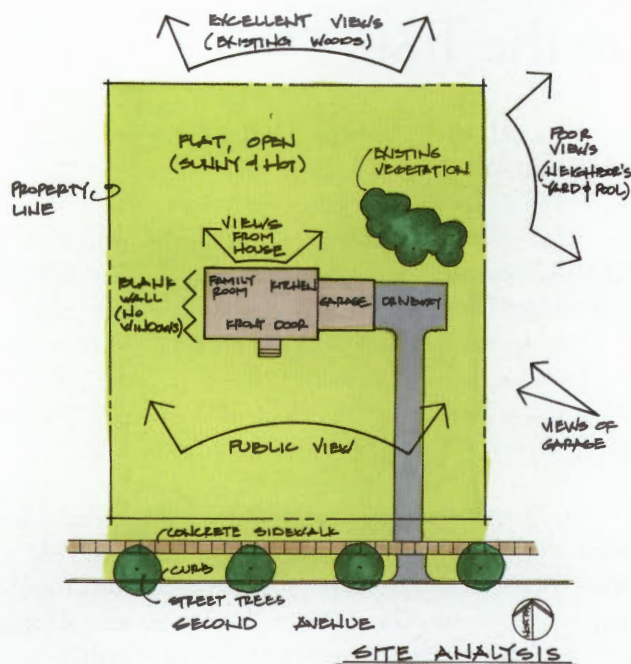
Additionally, the *Hunting Retriever Field Trial News* runs ads on litters and has information on all AKC clubs and events, nationwide. It can be reached at (414) 481-2760.

There are also many excellent books available on training retrievers. Besides Wolters' *Water Dog* and *Gun Dog*, there is James Lamb Free's dated, but still valuable *Training Your Retriever*, Tom Quinn's *Working Retriever*, Rutherford Lundland's *Retriever Puppy Training — the Right Start for Hunting*, and D.L. Wolter's *Training Retrievers to Handle*.

It's easy to get out and see a hunt test or field trial. The New Jersey clubs hold most of their events at the Assunpink and Colliers Mills Wildlife Refuge off Route 195 in New Egypt. For more information about the Naversink River Hunting Retriever Club, call Dave Tassey at (201) 827-3138. To contact the Shrewsbury River Retriever Club, call Alicia Mangels at (609) 667-1328. The contact for the South Jersey Retriever Club is Lynn Budd at (609) 268-3226.

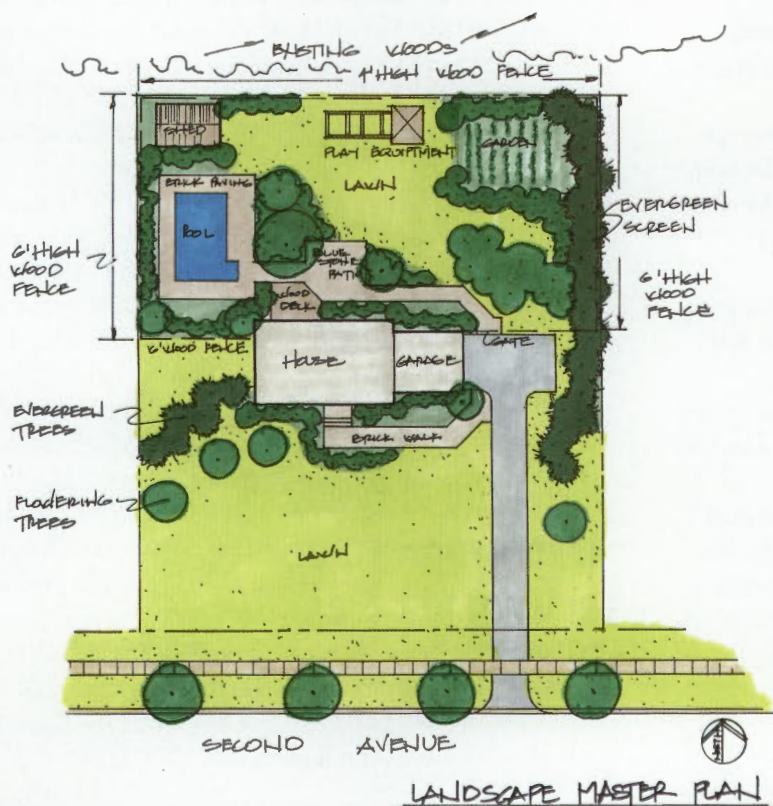
Gardens

Following the Path to Home Landscaping Success



As a first step, you should inventory your property and sketch a site analysis.

After creating a functional plan, you can create your master plan.



I learned about gardening by following my grandfather in his garden. I discovered that if I walked directly in his footprints, I would not step on anything he considered valuable and he would allow me to continue to help. The landscaping of your home should also follow a logical and deliberate path. It should fulfill your functional needs and make as personal a statement as the furnishings inside your home. A properly landscaped house will appear comfortable in its surroundings and, with time, it will mature in beauty and value while providing an ever-changing source of pleasure and satisfaction.

It's never too early to start planning the way you'll landscape your yard and garden next spring. An excellent way to start is to clip or copy photographs and glean ideas from garden magazines and books. This should be accompanied by visiting public gardens and attending garden tours in season. Record the things you like. Make notes of general design concepts, such as the possibility of walking out of your family room onto a deck or patio. Photograph or sketch construction details (such as deck railings and pavement edging) of projects that catch your eye. Keep a log of plants that interest you.

Create a list of things you would like to accomplish on your property. List all your objectives, such as creating a pleasant outdoor eating area or a successful vegetable garden. Try to balance imagination with reality. Ask yourself what you would like to do with the children's sandbox area after the kids have outgrown it. Do you really have enough time to take care of a perennial border? Then put your objectives in priority order. Even if you can't install an entire garden at once, at least plan it in its entirety. This overall design program will become your "plan of action" and allow you to proceed confidently toward your ideal.

After establishing your "program," go outside and walk the property. Pay attention to how the sun moves across the yard at various times of the day and, when possible, through the different seasons. Note where the rainwater flows and the location of poorly drained spots or areas that will bake in the summer sun. Are there eyesores you

ILLUSTRATIONS BY RICHARD BARTOLONE

would like to screen or are there any particularly attractive views to highlight? Consider the views from your property, whether of your neighbor's parked car or of a lovely mountain. Locate any existing vegetation you'd like to integrate into the new design. Record all these observations on a sketch of the property. Paying attention to the constraints and opportunities at this time will help you make the most of your property and avoid costly mistakes.

Based on your program objectives and site inventory, start to sketch the various functional areas you want in the appropriate locations on a diagram (you can use graph paper if you want to try to keep things in scale or an enlarged photocopy of your house survey). For example, sketch in the dining patio near the house, the garden area in a sunny spot, and so on. Don't forget to consider the relationships of your design to the house and to other activities. For example, locate the outdoor dining area near the house, but away from the place where you plan to store the trash. Draw a circle the approximate size of each proposed area on your diagram. Indicate where fencing or plantings should be located to screen unsightly views or provide privacy. During this process, an overall master plan will slowly evolve that will incorporate your program elements into a workable design.

Obviously, more people see the front of your house than will ever see the rest of your property. For that reason, the front yard should be considered a semipublic space. Its design should fit the overall character of the neighborhood and be compatible with the architectural style of your house. Landscape should provide a smooth transition between the property and the house. Frame the views of the house from the street with trees. Keep the vegetation at the base of the house predominantly evergreens to maintain an attractive year-round appearance. Use taller plants at the outside corners to help visually anchor the house to the ground. Pay attention to the height of the windowsills and use lower-growing shrubs under windows. Make sure to plant something special near the front door. Planting around

the foundation can cover the masonry walls and help soften the building lines.

A visitor should be brought to your house through a space that creates a transition between the outside world and your front door. The front yard also presents an opportunity to introduce design elements (materials, colors and textures) that will be used throughout the property.

In contrast to the semipublic sense of the front yard, the back yard should be designed as a private, more personal outdoor living area. Outdoor spaces should be created as extensions of the house. Interior and exterior spaces should flow into one another. Try to bring elements of the interior (color, texture, unique details) out into the yard. Think of the distinct spaces you sketched in your functional diagram as a series of outdoor rooms. Interlock these spaces (e.g., dining patio and garden) to create a unified design. Keep shapes bold and simple. Locate lawn areas adjacent to the patio or deck to serve as overflow entertainment space. Plan garden views from

an important location in the yard or from a significant window or door of the house. This focal point will help you organize the exterior spaces and keep things simple. Once the spaces are well-defined and the overall organization is set, add details for interest. These could include such personalized touches as your favorite flowers, distinctive textures, such as ferns and ornamental grasses and well-crafted structures, such as trellises, fencing or benches.

There are no simple guidelines or guarantees to achieving a successful garden. A successful garden is nurtured; it will change with the seasons and evolve with time. Your original design should keep this change in mind. Making a successful garden in a successful home landscape takes time, effort and step-by-step planning. But it will reward you tenfold. After my grandfather turned 90, he told me that he believed that it was his garden that kept him alive. I believe him.

by Richard Bartolone, a landscape architect who lives in Highland Park

A Plantings Sampler

After completing a landscape plan, you should prepare a list of the optimum characteristics for your plantings, such as growing conditions, ultimate height, shape, texture, color and seasonal interests. For example, if you want a tree near the patio to have an ultimate height of 20 to 30 feet, medium texture foliage, white flowers and seasonal interests during at least three seasons, there are at least three choices: kousa dogwood (*Cornus kousa*), shadblow serviceberry (*Amelanchier canadensis*) and Japanese snowball (*Styrax japonica*). For the selection of evergreen shrubs that can be used at the base of your house, consider the following plants. The selected plants are relatively easy to care for and readily available.

Tall (6 to 12 feet)

Blue girl holly
Catawba rhododendron
Mountbatten juniper
Hicks yew
Dwarf Alberta spruce
Steeds Japanese holly

Medium (3 to 6 feet)

Hetz holly
PJM rhododendron
Compact pfizer juniper
Dwarf Japanese yew
Kurume azalea
Wintergreen barberry

Short (less than 3 feet)

Helleri holly
Ramapo rhododendron
Sargent juniper
Spreading English yew
Coral beauty cotoneaster
Wm. Penn barberry

This list is far from complete, but it can help you get started in your search for the best plants. Remember, you will probably have to make compromises to fit your design criteria.

The Rutgers Cooperative Extension Service is an excellent source of information concerning landscaping and plant materials. Contact your county agricultural agent or the Cooperative Extension Service Publication Distribution Center at Cook College at (908) 932-9306 for more information.

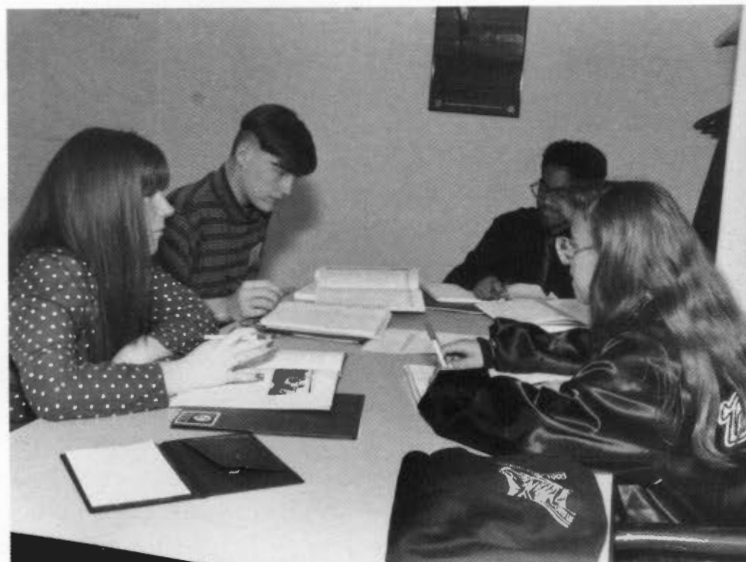
Crafting a Blueprint for Environmental Education

By Janet S. Jackson-Gould

Despite the inclement weather outside my window, Earth Day 1993 dawned brightly for me. I was on my way to Trenton to help present Governor Jim Florio with a broad-based plan for environmental education in New Jersey. For four years, I had worked with members of two state-appointed Environmental Education Commissions. After too many meetings to count, years of research and lengthy debates and discussions, our major task as Environmental Education Commission members was completed. We had crafted *Environmental Education in New Jersey: A Plan for Action* — a blueprint designed to reach into the lives of thousands of New Jerseyans and increase their understanding of environmental issues.

New Jersey's environmental education plan is unique in setting goals and strategies that go far beyond traditional school-centered learning. It has been hailed as a model both nationally and internationally. For instance, Philip Neal, general secretary of the British National Association for Environmental Education, wrote that the New Jersey plan "presents a blueprint for action which could be followed anywhere in the western world."

So what does the environmental education plan ask New Jerseyans to do? First, it calls on families and individuals to seek out information on environmental issues and incorporate it into their daily lives through taking such actions as recycling, conserving water and energy, and involving themselves in outdoor activities. It then addresses a number of groups and agencies with specific recommendations. For example, businesses are encouraged to adopt environmental principles and provide educational programs for their employees and nearby communities; environmental organizations and civic groups are invited to join a network and to assist the general public in gaining understanding of people's impact



High school students work to solve environmental problems during an Earth Day visit to the DEPE.

on the environment; state government is asked to create a permanent environmental education commission and establish an inter-agency work group to coordinate education programs statewide; and the legislature is called upon to pass bills that will ensure implementation of the plan.

A Recipe for Apple Pie?

If you think developing the plan was as easy as "apple pie," guess again. There were heated controversies as the plan was developed, both within the 26-member commission and during three public hearings on the draft version of the plan released in late 1992. Getting consensus among the group was not always easy. After all, the commissioners represented a broad spectrum of interests — coming as we did from the diverse realms of public and private education, government, environmental groups, civic organizations, business and industry, the religious community, and the fields of agriculture and environmental health.

Perhaps the hottest debate was over whether to *recommend* or *require* that environmental education be included in all public school curricula and in New Jersey's statewide testing program. Public comment, which split about 50-50 on this issue, reflected our internal debates. Ultimately, we were swayed by New Jersey's tradition of home rule and the fact that the state does not dictate the way such basics as reading, writing and math are taught. We therefore decided that recommendations rather than requirements would give individual school districts flexibility in adopting environmental programs to meet their students' unique needs. However, the state Department of Education was urged to include environmental studies in its curriculum frameworks and in its standards for the contents of science courses — and it has begun to do

so. The education department was also urged to include questions touching on environmental subjects in the statewide tests all 4th-, 8th- and 11th-graders must take.

Navigating the Broad and Narrow

But the plan goes beyond reaching students in schools. Its broad scope was based on the United Nations' 1977 *Tbilisi Declaration* which proclaimed that "Environmental Education . . . should constitute a lifelong education, one responsive to changes in a rapidly changing world."

This broad perspective raised its own set of issues. One newspaper editorial asked if the action plan was an attempt to "indoctrinate" New Jerseyans to a certain political viewpoint. The commission replied that the plan in no way advocates a political point of view, but rather strives to provide citizens with the knowledge and skills to make informed decisions.

We included religious organizations as one of the target audiences for the plan and this too was questioned. During one of the public testimony sessions, a speaker reminded us of the constitutionally mandated separation of church and state. However, the plan does not advocate any particular religion. It merely recognizes that religious institutions are one aspect of society and play an important role in many citizens' life-long learning.

Money issues can be controversial and we were not immune. The commission was asked whether — at this time of tight budgets — schools shouldn't concentrate on the basics, instead of adding new areas, such as environmental education. Commission member David Nash, who also sits on the Old Bridge Township Board of Education, answered for us. "Environmental education, as envisioned in the action plan, would not be an additional course but would be 'infused' into existing subjects," he said. Including environmental subjects in science, math and even history and English courses, Nash said, would enhance the teaching of both the basics and the higher-order thinking skills needed for the 21st century by providing "real world" examples of abstract concepts. He also pointed out that, ultimately, it was up to the schools to decide between "infusing" environmental topics into existing courses or offering special environmental education classes on their own.

A Positive Reaction

In January 1993, after publishing our draft plan, we held three meetings throughout the state for public testimony and received written comments as well. The commission spent several meetings reviewing all 226 comments received in person or through the mail. Amazingly enough, only 17 of these were not supportive. Many of the comments, however, did contain specific constructive suggestions. In response, we reworked the language of the final plan to reflect a number of these ideas.

Several months after the governor was presented with the plan, I again traveled to Trenton, this time to testify in support of As-



PHOTOS BY JIM CARPENTER

Dr. Louis Iozzi, Chair of the Environmental Education Commission presents the group's plan to Governor Jim Florio as Acting Commissioner Jeanne Fox looks on.

semblyman Ernest Oros' bill to implement the environmental education plan. The bill (A-2438) sailed through the Assembly's Energy and Hazardous Waste Committee with unanimous support. Other hearings remain in the Assembly and Senate, but the plan had cleared an important first hurdle. (*Editor's note: as NJO went to press, A-2438 was still awaiting further consideration by the Legislature.*)

At the hearing, Assemblyman Oros captured the plan's spirit when he emphasized that his bill was "based on the straightforward principle that early environmental training is in all ways superior to environmental remediation." In other words, he continued, "An ounce of prevention is worth a pound of cure. We aim to prevent the Superfund sites of the future."

Anne Galli, director of environmental operations for the Hackensack Meadowlands Development Commission and an Environmental Education Commission member, moved many of us at the Assembly hearing. She recalled a recent return visit to a place she'd known well 20 years before as a college student where she once had seen or heard more than 100 species of birds.

"The sound of silence I heard this spring was deafening and disturbing," Galli said. "It reminded me that the time for environmental education is now."

Copies of *Environmental Education in New Jersey: A Plan of Action* can be obtained free of charge by writing or calling the Department of Environmental Protection and Energy's Environmental Education Unit, at CN 402, Trenton, NJ 08625-0402 or (609) 777-4322.

A former director of education for the Philadelphia Zoo, Janet S. Jackson-Gould, who lives in Tabernacle, was one of several representatives of cultural institutions serving on New Jersey's Environmental Education Commission.

Get Ready to Go Squirrel Hunting

By Paul Tarlowe and Don Wilkinson

If you are just getting acquainted with the sport of hunting, think squirrels. Squirrels are an ideal species to help develop proper shooting skills and a true appreciation for the outdoors. Each fall, more than 23,000 hunters take to the woods in search of the ever-present Eastern gray squirrel. During the 1990-91 season, the last season for which statistics are available, hunters harvested 140,000 squirrels statewide. With an average of almost six squirrels bagged by each active hunter during the season, quite a few squirrel stews were enjoyed back home.

Yet, despite these statistics, squirrels are an underutilized species in New Jersey. In terms of overall population, distribution and availability, the state's squirrel population could support quite a bit more hunting pressure and still remain abundant. In fact, the current daily bag limit is five squirrels per hunter. But with increased opportunities to pursue such game species as deer, turkey and pheasants, many hunters have forsaken the pleasure and challenge of matching wits and skill with the bushytail.

Squirrels can be taken with smaller-gauge shotguns, making them traditionally popular with young hunters. Quite often, a youngster's first gun is a 20-gauge shotgun, which — with its gentler recoil and ease of handling — provides the perfect means for filling the game bag for someone of smaller stature. (A .410 may also be recommended for youngsters, though many experts think its more limited shot dispersal is a distinct disadvantage.) Most hunters prefer size 6 to 7 1/2 shot for best results.

If you are just starting out, your best bet in selecting a shotgun is to consult with a knowledgeable salesperson at a local sporting goods store or to seek advice from members of a local sportsmen's club.

Once you have picked a shotgun, you should practice with it before going out in the field. In fact, all hunters are urged to practice with their firearms prior to the opening of the season and to learn their effective ranges and what size shot "patterns" best. The Division of Fish, Game and Wildlife offers firearm training facilities at seven state Wildlife Management Areas (WMAs). All that's needed for use of these facilities is a current New Jersey firearms hunting license. (There are shotgun and rifle ranges available at the following WMAs: Clinton, Colliers Mills, Edward G. Bevans in Millville, and Flatbrook-Roy in Bevans. WMAs with shotgun range only facilities are: Assunpink in Robbinsville, Black River in Chester, and Lester G. McNamara in Tuckahoe.)

Clothing choices are infinite and depend on weather conditions. Shirts or vests with lots of pockets and pocket space for shells can be very helpful. Sturdy shoes or hiking boots with good support and a tread for traction are also recommended. One piece of clothing is required, however. Squirrel hunters, like all hunters (except bow deer hunters and turkey hunters), must wear a "hunter's orange" hat or display at least 200 square inches of orange somewhere on their person. Again, if you want to outfit yourself as a state-of-the-art bushytail bushwacker, your local sporting goods store is the place to start.

In New Jersey, all first-time hunters must successfully complete a hunter education course in order to buy a hunting license. Applications for hunter education courses are available at sporting goods stores that sell hunting licenses and at division offices. (For more information on hunter education courses, call the education unit in your region: North, 908-735-7088; Central, 609-259-3346; and South, 609-629-0552.)

Preseason scouting is strongly encouraged for a successful hunt. This allows the hunter to find concentrations of bushytails in safe hunting areas. Gray squirrels are usually found not too far away from their food sources. Squirrels are fond of acorns, as most people are aware, but they also enjoy other mast crops such as walnuts, hickory nuts and maple seeds. Many hunters use commercially



available and inexpensive calls that mimic the squirrel's "chuck-ing" sound. One old timers' trick is to attract squirrels by rubbing two quarters (or other coins) together to mimic the sound of the animals cutting nuts. Squirrels can also often be found feeding on the edges of agricultural crops such as corn or lima beans. It is important for all beginners to study the different types of food available and learn to adjust their hunting to changing conditions.

Squirrels are generally active in the early morning and late afternoon. The legal hunting hours vary by hunting range and special zones and are published in the *Fish and Wildlife Digest*. Hunters should refer to the *Digest* for all hunting regulations.

Despite common misconceptions that hunting is a dangerous sport, statistics reveal it is actually far safer than such common recreational activities as swimming or popular ball sports.

Nevertheless, hunters should always remember the three primary safety rules of safe gun handling:

- ☐ Treat every firearm as if it were loaded.
- ☐ Always point the muzzle in a safe direction.
- ☐ Be sure of your target and what is beyond.

There are only a couple more do's and don'ts. It's illegal to shoot into a squirrel's nest. And, like all hunters, squirrel stalkers may not carry a loaded firearm within 450 feet of any building or school playground.

By keeping these rules in mind, doing some scouting and practicing with your weapon, many enjoyable hours afield await any New Jersey sportsman or sportswoman who chooses to pursue the gray squirrel. So, *do* have a good time. And get ready to go squirrel hunting!

Muzzleloaders Ignite a Barrel of Interest

Recently, New Jersey hunters have shown increasing interest in muzzleloading rifles for pursuing game. These traditional front-loading weapons, using a percussion cap or the older style flintlock, are limited to one shot. This requires expert marksmanship and forces the hunter to be selective and sure of his or her target and capabilities. No telescopic sights are permitted and .36 caliber is the largest size allowed.

In recognition of the increase in muzzleloader use, the squirrel muzzleloading season has been extended.

Rather than just a three-week period at the end of the small game season, the entire season is now open to muzzleloaders, but is restricted to designated muzzleloading squirrel areas for safety concerns. These areas are defined in the Division of Fish, Game and Wildlife's *Fish and Wildlife Digest*, which also summarizes all hunting regulations.

Anyone planning to try his or her skill with a muzzleloader for squirrel or other game must possess a special Division of Fish, Game and Wildlife rifle permit in addition to a regular firearm hunting license. In order to obtain a rifle permit, an individual must take a muzzleloading rifle class conducted by the division's Hunter Education Unit.

Squirrel Pot Pie

Ingredients:

1 squirrel
water
pinch baking soda
1 chicken bouillon cube
2 nine-inch pie crusts
(from scratch, mix
or pre-made frozen)
1 cup diced carrots
1 cup potato cubes
1 cup peas (canned,
frozen or fresh)
flour

Procedure:

Add pinch of baking soda and water to cover a skinned squirrel in a large enough pot. Bring to a boil and cover. Lower flame and cook 10 minutes. Pour off the water and add fresh water to cover squirrel. Add 1 chicken bouillon cube and let cook until squirrel is fork-tender. Remove squirrel from broth and let cool. When cool, remove bones and dice meat. Add diced carrots, diced potatoes and peas to broth used to cook the squirrel and cook until done. Return squirrel meat to vegetables and broth and thicken as needed with a flour and water mixture until the consistency reaches that of a thick gravy.

Prepare nine-inch pie crust (or follow directions for frozen). Add pot pie ingredients and cover with top crust. Prick or make slits for steam and place in a 425° oven. Bake for 10 minutes, then turn oven down to 350° and bake until the crust is brown and the pie is bubbling (about 25 minutes). Cut into wedges and serve. Any pot pie mixture that you cannot get into the pie crusts may be served as gravy or can accompany the pie wedges.

Serves 4 to 6 people. Note: This recipe can also be used for rabbit and pheasant pot pie.

Paul Tarlowe is a senior biologist with the Division of Fish, Game and Wildlife's Office of Wildlife Education; Don Wilkinson is a senior biologist and a regional hunter education administrator with the division.

Public Confidence Grows in Environmental Protection

Twice as many New Jerseyans express confidence in state government's efforts to protect the Garden State's environment than did two and one-half years ago, according to a *Star-Ledger*/Eagleton Poll.

In addition, responses to the poll, released by the newspaper and the polling arm of Rutgers University's Eagleton Institute of Politics, indicate that by better than a two-to-one margin, New Jersey residents feel the state's environment has improved over the past three years.

"In terms of polling results, we would consider this a pretty dramatic change," says Janice Ballou, director of the Eagleton poll. "The state must be doing something really noticeable to account for this change."

"The poll is encouraging and shows we're on the right course," says Acting Department of Environmental Protection and Energy Commissioner Jeanne M. Fox. "But we'll continue to build on the department's recent successes in protecting New Jersey's environment and our citizens' health," Fox says.

The poll also indicated that New Jerseyans' confidence about ocean water quality continues to rise. In fact, since 1983, the number of state residents who see ocean pollution as a very serious problem has declined by nearly one-third.

The Eagleton results on ocean quality also were borne out by several other recent surveys. The DEPE's Cooperative Coastal Monitoring Program (CCMP) Annual Report for last year showed there were only 27 ocean beach closings during 1992. This compares with 803 closings as recently as 1988. The state's data were mirrored by a nationwide coastal monitoring report from the Natural Resource Defense Council. This national group's survey also cites New Jersey as the only state to have a mandatory beach protection program and bacteria standard.

Finally, three-fourths of New Jersey's "avid anglers" (those averaging at least one fishing trip every other week) who responded to a survey conducted by the DEPE's Division of Fish, Game and Wildlife said that they thought the ocean quality had improved.

Liberty State Park Renovations On Track

The continuing transformation of Liberty State Park from an abandoned dock and railroad yard to a state-of-the-art park picked up more steam this summer with the opening of a new auditorium in the renovated Central Railroad of New Jersey (CRRNJ) terminal and the dedication of Liberty Walk, a waterfront promenade.

Governor Jim Florio was on hand to flick the switch that lit up the beautiful stained glass ceiling of the restored auditorium in the historic CRRNJ terminal. The Blue Comet Auditorium is named in honor of one of New Jersey's most famous trains, which from 1929 to 1941 provided luxury passenger service between New York City, Jersey City and the "Queen of Resorts" — Atlantic City. In its revived form, the auditorium will feature films and forums for visitors that will enable them to learn about the rich history of immigration and transportation that makes Liberty State Park so vital. For many immigrants "processed" at Ellis Island, the CRRNJ terminal was the point from which they set out on their new lives to cities and towns throughout the United States.

Also dedicated was Liberty State Park's new waterfront promenade, a 1.3-mile walkway of decorative pavestones, redwood benches and ornamental lightposts that stretches from the railroad terminal to the southern end of the park, affording inspiring views of both Ellis Island and the Statue of Liberty, as well as of the New York skyline.

A view of the restored Blue Comet Auditorium in the Central Railroad of New Jersey terminal at Liberty State Park, Jersey City.



KEVIN BIRCH



MARVIN ROSS

Cast and crew take a break from filming.

New Litter-ate Curriculum Available

Just because the long hot lazy days of summer are over, you don't have to stop thinking about the beach. Remember stretching your towel out to enjoy the sun and surf? Remember the smell of coconut oil and sounds of happy people? Remember seeing an occasional cigarette butt, gum wrapper and other odd pieces of debris?

Despite the fact that water quality at the Jersey Shore seemed especially good this year, litter continues to find its way onto our beaches.

The DEPE's Division of Solid Waste Management is attacking this problem by helping educate children that gum wrappers, juice boxes and other litter washed down storm drains and into waterways, ultimately leads to the ocean. This litter is not only unsightly when it washes up on our beaches, but it can pose a serious threat to marine life. Now available is a Clean Streets/Clean Beaches curriculum that highlights "The Adventures of Camouflage Kid" in a video in which a youthful sleuth tracks down young polluters and shows them the potential environmental harm they pose. Complementing the video is a teachers' guide and a newsletter, *Cleaner Times with Camouflage Kid*. Both the teachers' guide and newsletter are available in English and Spanish versions.

Take a Ride on the Cleaner Side

This fall New Jersey launched the second phase of its "Let's Clean the Air" campaign, a 16-month effort to educate drivers about how they can help reduce automobile emissions that add significantly to the pollutants in the Garden State's air.

This second phase of the campaign, which carries the slogan "Drive Clean," encourages drivers to take advantage of options to the solo commute. These include carpooling, using public transportation, commuting by computer, and even bicycling and walking.

This stage of the campaign also provides drivers with suggestions on how to reduce car emissions when they must drive. One effective way is to combine trips. This cuts down on the number of cold starts, the time when the greatest amounts of tailpipe pollutants are emitted.

Motorists should also avoid idling their cars excessively, such as at drive-up windows. Taking advantage of staggered work schedules and driving during off-peak traffic hours also helps cut down on idling time.

The Let's Clean the Air campaign was developed by the New Jersey DEPE in consultation with the Ozone Transport Commission (OTC), which is made up of representatives of 12 northeastern and mid-Atlantic states and the District of Columbia. The OTC, which is

This past spring, Governor Jim Florio, EPA administrator Carol Browner and other officials helped kick off the educational campaign at Liberty Science Center, in Liberty State Park, Jersey City.

The campaign was made possible by funding from the U.S. Environmental Protection Agency (EPA) and by the DEPE's Clean Communities Program. This program supports local and county

Drive Clean

Car Pool, Improve Driving Habits and Use Mass Transit
To learn more, call:
609-292-9-AIR

■ Ozone Transport Commission
■ NJ Governor Jim Florio
■ NJ DEP Commissioner Richard B. Smith
■ NJDOT Commissioner Jim Counts
Printed on recycled paper



running the campaign simultaneously in all its member states, was charged under the federal Clean Air Act Amendments of 1990 with implementing regional strategies to reduce ground level ozone.

Under the Clean Air Act, New Jersey must significantly reduce its levels of ground-level ozone by 2007 and its levels of carbon monoxide by 1995. Ground level ozone can cause coughing, wheezing, shortness of breath, and lead to permanent lung damage. Currently, all of New Jersey's 21 counties exceed federal health standards for ozone. Motor vehicles are responsible for generating nearly a third of the pollutants that make up ground-level ozone.

litter prevention programs with funds obtained through a tax levied on manufacturers, wholesalers, distributors and retailers of common litter producing products.

For information about the video or the curriculum, contact: Sandy Huber, at the DEPE's Division of Solid Waste Management, CN 414, Trenton, NJ 08625-0414, telephone (609) 530-8593.

Helping Preserve Endangered Species ... in Bronze



In New Jersey, we're still lucky enough to hear the nasal *quonk-quonk-quonk* of the Pine Barrens treefrog. That's not the case in any other state between here and North Carolina. Yet the treefrog is struggling for its survival. In fact, it has become a symbol of the fragile beauty of New Jersey's Pinelands wilderness.

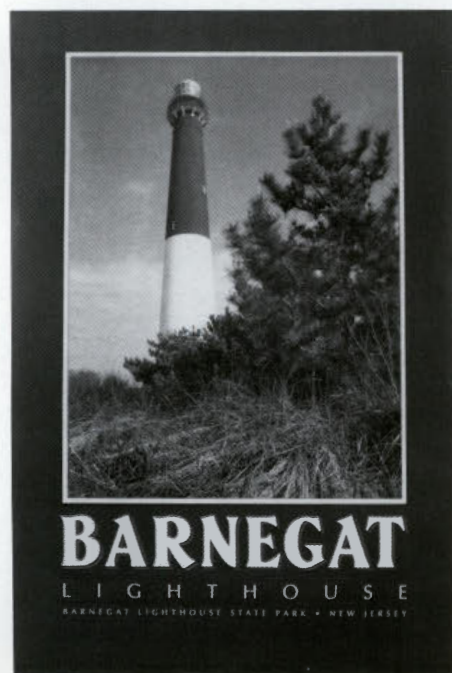
The Division of Fish, Game and Wildlife's Endangered and Nongame Species Program (ENSP) has been working diligently to preserve the state's endangered treefrog population for nearly 20 years.

Now it has preserved an image of the treefrog in a unique way so you can help preserve the real amphibian. The treefrog has been captured in a bronze statue, designed by the nationally renowned sculptor, David Turner, solely to benefit the ENSP.

For each \$325 sculpture sold from the limited-edition of 200, the ENSP will receive \$130 which will be contributed to the state's Endangered and Nongame Wildlife Conservation Fund. The remainder of the purchase price goes to Turner Sculpture.

Each sculpture includes a certificate of origin, a display card with natural history notes and a letter acknowledging your contribution to the Wildlife Conservation Fund.

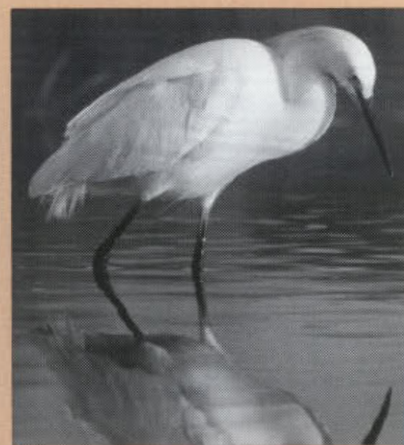
Order your sculpture by sending a \$325 check, made payable to Turner Sculpture, to: Turner Sculpture, Box 128, Onley, VA 23418. For credit card orders, call: (804) 787-2818.



Poster Spotlights Famous Beacon

"Old Barney," the famous red and white lighthouse on Barnegat Bay, can now guide you safely to port within the comfort of your own home.

The full-color, two- by three-foot poster of Barnegat Lighthouse — photographed by regular NJO contributor Walter Choroszewski — is the first of a series of six from the DEPE's Division of Parks and Forestry that will



Detail of snowy egret illustration by Harry Koch.

Are You Ready for Wildlife 1994?

It's never too early to plan for next year. And the DEPE's Division of Fish, Game and Wildlife is ready to help with its 1994 Wildlife Calendar, featuring full-color artwork of 12 New Jersey wildlife species. Every page is also chock full of information about wildlife and wildlife-related activities. The calendar is available for \$5 at the division's Trenton office at 501 E. State St. or the Pequest Trout Hatchery and Natural Resource Education Center in Oxford. It's also available by mail for \$7.50. Make checks payable to the Division of Fish, Game and Wildlife and send to: Wildlife Calendar, CN 400, Trenton, NJ 08625-0400.

spotlight New Jersey's historic and scenic sites.

The poster costs \$5 and can be purchased at many state parks and historic sites throughout New Jersey. To order by mail, send a check for \$8 made out to "Treasurer — State of New Jersey" to: Barnegat Lighthouse Poster, Division of Parks and Forestry, CN 404, Trenton, NJ 08625-0404.

Roundup by Paul Acquaro, a journalism intern from Cook College, Rutgers University

Bookshelf

Best Hikes With Children in New Jersey, by Arline and Joel Zatz, published by The Mountaineers, is a guide to scenic New Jersey that can help adults enjoy the outdoors even more by learning to see nature through children's eyes. Cataloging 75 different outings with hikes from 1 to 8 miles, the book includes complete descriptions, highlights, directions and photos. Cost is \$12.95. Available at bookstores. For more information, call The Mountaineers at (800) 553-4453.

Clean Water Information Series, is a new set of brochures from the Department of Environmental Protection and Energy's Office of Land and Water Planning on how nonpoint sources of pollution, such as pesticides, motor oil, fertilizers, animal waste, and many others affect water quality. The pamphlets explain the impact of the misuse of these pollutants and proper disposal methods for each. For more information or free copies of these brochures (up to 100 of each) contact Kyra Hoffmann of the DEPE's Office of Land and Water Planning at (609) 633-1179.

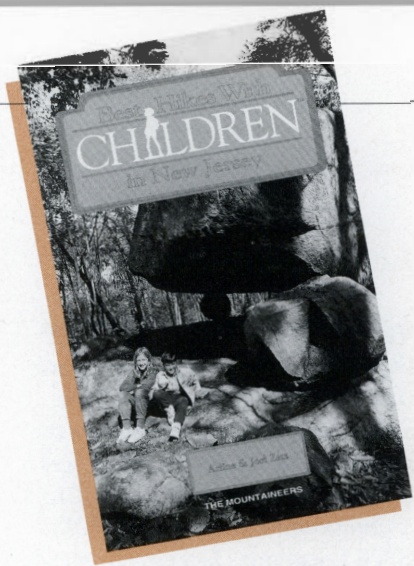
Discover Nature Close to Home — Things to Know and Things to Do, by Elizabeth P. Lawlor, published by Stackpole Books, is a beginner's guide to becoming a knowledgeable naturalist. Whether you are young or old, this book uses captivating activities to broaden your knowledge about plants, animals and their habitats. Cost is \$14.95. Available at bookstores. For more information, call Stackpole Books at (717) 234-5041.

Environmental Education in New Jersey: A Plan of Action, presented by the New Jersey Environmental Education Commission, published by the DEPE, is a comprehensive blueprint for environmental education in New Jersey. It makes recommendations and outlines strategies to help increase public awareness among all segments of the population about environmental education and responsibility. For more information or free copies, contact the DEPE's Environmental Education Unit at (609) 777-4322.

From the Balloon to the Moon, by H. V. Pat Reilly, published by H. V. publishers, is a guide to New Jersey's amazing and central role in aviation history. From the first woman aeronaut landing in New Jersey to the first woman astronaut to walk in space, the book, written by the founder of the New Jersey State Aviation Hall of Fame, contains a detailed account of all of the state's aviation milestones. Cost is \$29.95. Available at bookstores or at the Aviation Hall of Fame's Tower Shop in Teterboro Airport. For more information, call H. V. Publishers at (201) 288-6344.

O'New Jersey, by Robert Heide and John Gilman, published by St. Martin's Press, is an eclectic guide to New Jersey's historical treasures and sometimes eccentric byways. From the Appalachian Trail at the Delaware Water Gap to 65-foot Lucy the Elephant in Margate, O'New Jersey provides an itinerary of day trips, back roads, and funky adventures. Cost is \$13.95 (paperback). Available at bookstores. For more information, call St. Martin's Press at (212) 674-5151.

The Organic Market Guide: New Jersey Region 1993 -1994, co-published by the Northeast Organic Farmers Association (NOFA) and the Stony Brook-Millstone Watershed Association, is an updated guide to organic products available in New Jersey. It includes organic farms, retailers, wholesalers, organic farm suppliers, landscapers nurseries, resource organizations and relevant publications. Cost is \$9.95 plus



\$1.50 postage. Order by mail from NOFA-NJ, 31 Titus Mill Road, Pennington, NJ 08534. For more information, call (609) 737-6848.

Rodale's All-New Encyclopedia of Organic Gardening - The Indispensable Resource for Every Gardener, published by Rodale Press, is every want-to-be organic gardener's guide to the cheaper and safer ways of non-chemical dependent gardening. Topics include choosing types of plants that grow best, managing pests and even grafting plants. Cost is \$29.95. Available at bookstores. For more information, call Rodale Press at (215) 967-5171.

Spring Madness: The American Shad, by J. B. Kasper, is a guide to the popular sport and eating fish and its annual spawning migration in the Delaware River. The author, a 30-year shad fishing veteran, offers insights for both beginning and experienced fishermen. Cost is \$10.50. Available in many tackle shops and by mail. To order send check or money order to: Spring Madness: The American Shad, c/o J. B. Kasper, 400 Hillside Ave., Morrisville, PA 19067.

Seashore Plants by Mail, by R. Marilyn Schmidt, published by Barnegat Light Press, is an index for all the hard-to-find plants that tolerate seaside garden conditions. The 36-page book lists plants by botanical name, common name and provides information about where they can be ordered. Cost is \$5.95. To order send a check for \$5.95 plus \$2 for postage and handling (New Jersey residents add 36¢ sales tax) to: Barnegat Light Press, P.O. Box 305, 26 W. Third St., Barnegat Light, NJ 08006. For more information, call (609) 494-3154.



Events

November

13 WETLANDS ART WORKSHOP FOR CHILDREN Young nature artists will be treated to a presentation on the wetlands to inspire their creativity for the art workshop that follows. Children ages 6 to 10 are invited to attend. **Hours:** 1 to 3 p.m. **Admission:** \$5.50 **Phone:** (201) 460-8300 **Location:** Hackensack Meadowlands Development Commission Environment Center, Valleybrook Avenue, Lyndhurst

13 NATURAL DYES AND NATURAL FIBERS Learn more about the Lenape Indians through displays of their natural resources. A corn grinding demonstration will be held throughout the day. **Hours:** 1 to 4 p.m. **Admission:** Free **Phone:** (201) 635-6629 **Location:** Great Swamp Outdoor Education Center, 247 Southern Boulevard, Chatham

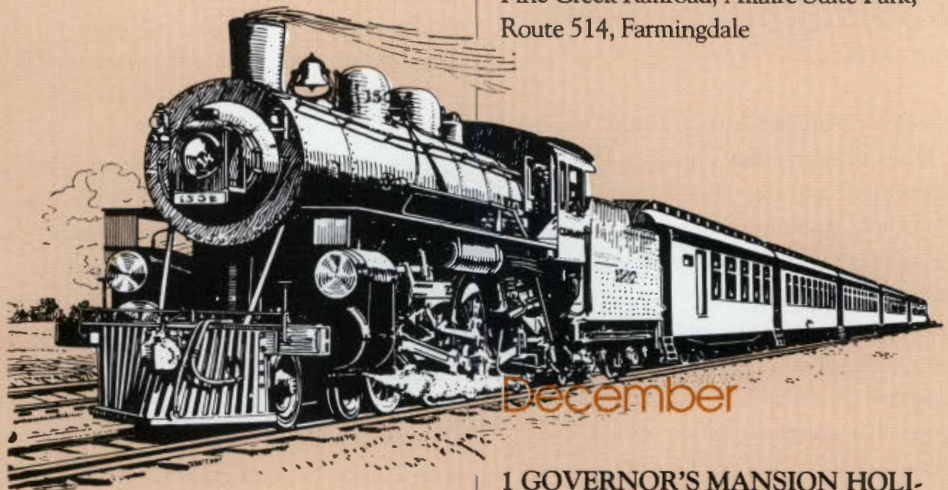


20, 21 FOUR SISTERS WINERY NINTH ANNIVERSARY CELEBRATION Tour the wine cellar and enjoy a large selection of cheeses, breads, crackers and wine. New wine releases will be available as well as limited quantities of Robin Raspberry wine. **Hours:** 11 a.m. to 5 p.m. **Admission:** Free **Phone:** (908) 475-3671 **Location:** Four Sisters Winery, Route 519, Belvidere

21 THANKSGIVING Allaire Village will host a day of cooking and decorating for the Thanksgiving holiday. Refreshments will be available. **Hours:** Noon to 4 p.m. **Admission:** Free **Phone:** (908) 938-2253 **Location:** Allaire State Park, Route 524, Farmingdale

27 JURIED ART AND CRAFT SHOW The Ambassador Christian Academy prides itself in finding some of the more unusual crafts made by New Jersey artists for its annual show. See Norwegian rosemaling, paper-tole, scherenschnitte, and other country and colonial crafts. **Hours:** 10 a.m. to 4 p.m. **Admission:** Free **Phone:** (908) 350-7314 **Location:** Ambassador Christian Academy, 700 Main Street, Toms River

27, 28 CHRISTMAS EXPRESS Santa Claus will talk to all the children aboard the Christmas Express, a steam-powered train of antique passenger cars traveling through historic Allaire State Park. To keep passengers warm, hot cocoa and doughnuts will be available at the railroad station. If you miss the Christmas Express, you can catch the train again in December on weekends only through Dec. 19. **Hours:** Noon to 3 p.m. **Admission:** \$2 fare **Phone:** (908) 938-5524 **Location:** Pine Creek Railroad, Allaire State Park, Route 514, Farmingdale



27 HOLIDAY HOOPLA CHRISTMAS BAZAAR Sponsored by the Wetlands Institute, the annual Christmas bazaar will feature nature gifts including books and crafts. Light refreshments will be available. **Hours:** 10 a.m. to 5 p.m. **Admission:** Free **Phone:** (609) 368-1211 **Location:** Wetlands Institute, 1075 Stone Harbor Boulevard, Stone Harbor

1 GOVERNOR'S MANSION HOLIDAY OPEN HOUSE Get into the holiday spirit and enjoy the festive decorations that adorn Drumthwacket, the Governor's mansion. This event is being sponsored by the Drumthwacket Foundation, Inc. Also, call the foundation to learn more about a candlelight fundraising tour of the mansion on Dec. 3. **Hours:** 10 a.m. to 3 p.m. **Admission:** Free **Phone:** (609) 683-0057 **Location:** Drumthwacket, 354 Stockton Street, Princeton

1 TREE LIGHTING CEREMONY

Enjoy a Victorian Christmas at the Kuser Farm Mansion. Festivities include a Christmas tree lighting ceremony followed by an open house. Hear Christmas tunes of the past, talk to Father Christmas and admire the 1890s dollhouse decorated for the holiday season. Additional open house tours will be held Wednesdays through Sundays through Dec. 12 (call Kuser Farm Mansion for times). **Hours:** 6 to 9 p.m. **Admission:** Free **Phone:** (609) 890-3630 **Location:** Kuser Farm Park, 390 Newkirk Avenue and Kuser Road, Hamilton

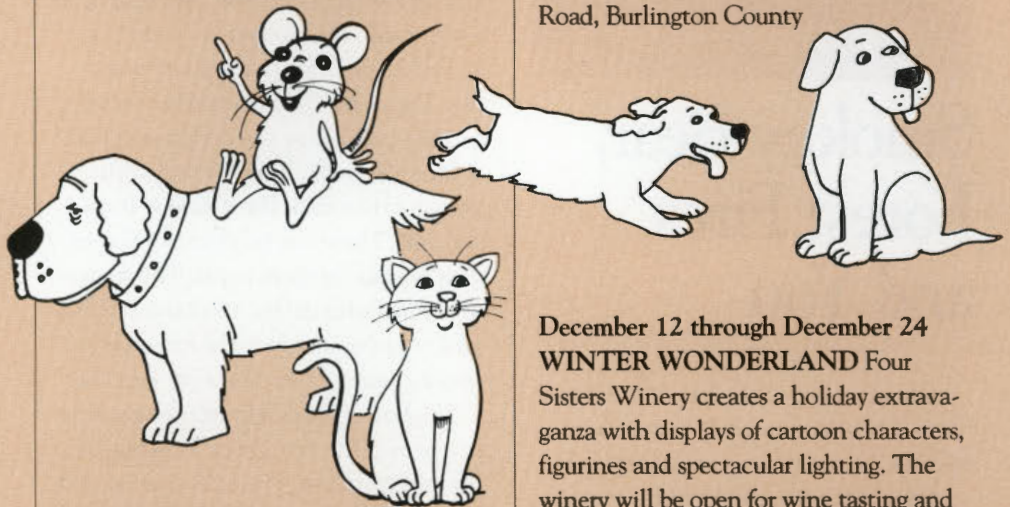
3 CHRISTMAS LATERN TOURS OF ALLAIRE VILLAGE

Step back in time and enjoy Allaire Village's nighttime holiday splendor by lantern light. Advanced ticket purchase is recommended. **Hours:** 7 to 9 p.m. **Admission:** \$5 adults, \$3 youngsters 17 and under **Phone:** (908) 938-2253 **Location:** Allaire State Park, Route 524, Farmingdale

December 3 through December 12
FESTIVAL OF TREES More than 50 trees decorated by individuals and community groups will be on display at the Somerset County Park Commission's Environmental Education Center in honor of the holiday season. Musical groups will perform at the exhibit hall, adding to the festive spirit. **Hours:** Call for schedule **Admission:** \$2 adults, \$1 children **Phone:** (908) 766-2489 **Location:** Environmental Education Center, 190 Lord Stirling Road, Basking Ridge



4, 5 PET PARADE Visit PAWS Farm Nature Center and remember the animals by bringing them holiday treats. Some of their special favorites include apples, dog chow and bird seed. **Hours:** 10 a.m. to 4 p.m. **Admission:** Free **Phone:** (609) 778-8795 **Location:** PAWS Farm Nature Center, 1105 Hainesport-Mount Laurel Road, Mount Laurel



4 PINE CONE WREATH WORKSHOP Adults and older children are invited to spend several hours crafting a pine cone wreath for the holidays. Register today for one of the sessions. This workshop is being sponsored by the Hackensack Meadowlands Development Commission. **Hours:** Session 1 from 10 a.m. to noon; Session 2 from 1 to 3 p.m. **Admission:** \$6 **Phone:** (201) 460-8300 **Location:** Hackensack Meadowlands Development Commission Environmental Center, Valleybrook Avenue, Lyndhurst

5 CELEBRATE THE HOLIDAYS NATURALLY Children ages 6 to 12 and their families will discover more about the needs of wildlife in wintertime during this afternoon of hands-on workshops sponsored by the New Jersey State Museum. Participants also will make holiday decorations and ornaments from natural materials. **Hours:** noon to 4:30 p.m. **Admission:** Free **Phone:** (609) 292-6308 **Location:** New Jersey State Museum, 205 W. State Street, Trenton

5 HIKE TO MANNIS DUCK POND

Follow a winding route 9 1/2 miles to an obscure pond that reflects the beauty of the Pinelands on this hike sponsored by the West Jersey Sierra Club. Bring a lunch and a beverage. Hikers will meet at the Carranza Memorial. **Hours:** 10 a.m. **Admission:** Free **Phone:** (609) 267-7052 **Location:** Carranza Memorial, Carranza Road, Burlington County

December 12 through December 24
WINTER WONDERLAND Four Sisters Winery creates a holiday extravaganza with displays of cartoon characters, figurines and spectacular lighting. The winery will be open for wine tasting and sales. There will be gift baskets and other gift ideas perfect for everyone. **Hours:** 9 a.m. to 9 p.m. **Admission:** Free **Phone:** (908) 475-3671 **Location:** Four Sisters Winery, Route 519, Belvidere





Explorer

Hey, Explorer!

Smokey Bear, Forest Fires and You

Many years ago in the Lincoln National Forest of New Mexico, all the animals who made the forest their home were looking for cool places to rest from the heat. It was a very hot May. The green grass was turning brown from lack of moisture, and the once deep, cool streams were becoming shallow. The shade was so warm that it did not even offer the animals a place to escape from the heat. The wind was hot and dry.

One day a careless person dropped a lit match, left a campfire burning or forgot to crush out a cigarette. This one careless person and a single spark started a fire in patch of dry grass. The wind made the fire burn faster, and it quickly turned into a blazing forest fire.

A ranger in a lookout tower spotted the smoke and quickly called the ranger station. Firefighters rushed to the scene. It was hard for the firefighters to get to the fire. They had to cut down trees and climb over rocks. They used bulldozers to dig a wide fire line, an open area to stop the fire from spreading, but the strong wind blew burning leaves and pieces of wood deeper into the forest.

The blaze seemed unstoppable, but after five days the forest fire was finally put out. One of the firefighters on the fire line heard a squeaking noise. He looked around

and discovered a tiny bear cub clinging to a tree trunk. The firefighter carefully removed the frightened baby bear from the tree. The mother bear was nowhere in sight, and the cub's home was no longer a place of life and beauty. There were no other animals to be found. The trees were burned and ugly. There was no shade for the animals or grass for them to eat. The streams were filled with debris. More than 17,000 acres of timber were lost. The forest was no longer a place for camping or playing either.

The bear cub was left without a mother or a home. The firefighters took him to the ranger station. The little bear needed to be fed. His paws were scorched in the

fire, so his burns were bandaged, and he was nursed back to health. His new friends named him Smokey.

After he healed, Smokey became a living symbol of forest fire prevention. In a small plane, he was flown from New Mexico to his new home at the National Zoo in Washington D.C., where girls and boys visited him until 1977, when he died at the ripe old bear age of 27. However, Smokey's message lives on throughout the country and in New Jersey: "Only you can prevent forest fires."



Protecting New Jersey's Forests from Fire

In New Jersey, Smokey Bear's important message helps the state Forest Fire Service protect 3.15 million acres of public and private lands including 1.1 million acres in the Pinelands National Reserve. The Forest Fire Service started in 1906, long before Smokey arrived. It employs 75 full-time people and about 1,000 firefighters. These dedicated people are on-call 24 hours a day, seven days a week to fight New Jersey's forest fires.

Each year, an average of 7,000 acres of New Jersey forests and open space lands are damaged from forest fires. Some leading causes of forest fires are arson, children, careless smokers, burning debris, campfires, railroads and lightning. Arson caused 717 of the 1,410 forest fires reported in 1992. This type of fire is intentionally set for revenge, personal gain or to satisfy an urge to destroy.



The original living Smokey (1950).

The primary forest fire seasons in the state are from March 15 to May 15 and Oct. 15 to Nov. 15. The Forest Fire Service maintains forest fire danger signs to alert the public to the differing conditions for fires. During extreme emergencies, such as a very dry and hot spell, the service can recommend that an area be closed. In addition, the service will set fires on purpose but under careful conditions to reduce the accumulation of fuel (leaf and tree litter) on the forest floor or to promote other benefits such as managing wildlife or making it easier to get into a particular area.

Be a Part of Smokey's Golden Anniversary!

From now until August 1994, Smokey is celebrating his 50th Anniversary as the national symbol of forest fire prevention (see the related article on page 38). Please join us in helping to make this a successful celebration by attending one or more of the various Smokey anniversary celebrations and by participating in the poster contest described below.

Enter Our Poster Contest!

Theme: In honor of Smokey Bear's 50th anniversary, the theme of your poster must reflect the importance of preventing forest fires in New Jersey.

Objectives: To promote fire prevention and encourage fire safety awareness in New Jersey.

Who can participate: You. If you're a public or nonpublic school student in New Jersey, you can participate *through your school* in one of the following categories:

- **Division #1:** K through third grade
- **Division #2:** Fourth through sixth grade
- **Division #3:** Seventh and eighth grade
- **Division #4:** Ninth through twelfth grade

Prizes: There will be a state grand prize winner and winners in each of the four divisions selected from the regional division winners entries. The grand prize winning design will appear in an upcoming issue of *New Jersey Outdoors*. The grand prize winner will receive a \$500 United States Savings Bond and Smokey Bear Medallion. The statewide division winners will receive \$50 United States Savings Bonds and Smokey Bear Gifts. The first-place winner in each division in each of the three regions will receive a Smokey Bear Gift. All regional winners will receive honorable mention certificates.

Deadline: Your school must submit no more than one entry in each division to the appropriate regional office of the New Jersey Forest Fire Service. Entries must be postmarked no later than November 15, 1993, and submitted to the New Jersey Forest Fire Service as follows:

Northern Region - Bergen, Essex, Hudson, Hunterdon, Morris, Passaic, Somerset, Sussex, Warren and Union counties
Route 23, Box 999, Franklin, N.J. 07416
Phone: (201) 827-6100

Central Region - Burlington, Mercer, Middlesex, Monmouth and Ocean counties
P.O. Box 239, New Lisbon, N.J. 08064
Phone: (609) 726-9010

Southern Region - Atlantic, Cape May, Camden, Cumberland, Gloucester and Salem counties
5555 Atlantic Ave., Mays Landing, N.J. 08330
Phone: (609) 625-1121

First, second, and third place winners for each division will be chosen for each region and sent to the state for judging by December 15. If hand delivering your entries, please call the appropriate New Jersey Forest Service Office for drop-off procedures.

Criteria: The following criteria will be used to judge the designs:

- **Theme Depiction**
- **Color and Design**
- **Overall Appearance**
- **Originality**

Judges: Representatives from various forestry, educational, environmental and art organizations throughout the state will serve as judges for both the regional and state judging.

- Rules:**
1. Your poster must be original in idea, execution and design. Photographs or copyrighted cartoon characters — other than Smokey Bear — may not be used.
 2. Your design must be at least 11 by 17 inches but no larger than 18 by 24 inches.
 3. Your design must be submitted on poster board, matte board or cardboard. It must be flat; not folded, matted or framed.
 4. Crayons, oil paints, watercolors, colored pencils, pastels, charcoal, pencil, pen and ink, or marker pens may be used. Sorry, computer art is not permitted.
 5. Only one poster can be submitted for judging for each division per school.
 6. The student's name, grade level, mailing address, phone number, school name, county, region and division category must be supplied. This information should be on a separate piece of paper and attached to the back of the poster in the lower left hand corner on the rear.
 7. Posters become the property of the New Jersey Department of Environmental Protection and Energy, Office of Environmental Education, and may be used for displays and exhibits and reprinted in *New Jersey Outdoors*.

by Jenn Coldren, a Trenton State College intern with the DEPE's Division of Parks and Forestry, and Colleen Thomas, an environmental education specialist with the DEPE's Environmental Education Unit

Outings

On the Trail of the Revolution

A simple drive through central New Jersey can take you back to an early American garden, a historical children's "hands-on" museum, and an outstanding collection of Revolutionary War weapons and artifacts. In fact, located within only a half hour's drive from each other are the Johnson Ferry House, Rockingham, the Clarke House, the Wallace House and the Old Dutch Parsonage. Each of these distinguished sites tells fascinating stories about Colonial America and the Revolutionary War.

The Ferry House and Colonial Garden

Located at Washington Crossing State Park along the Delaware River in Titusville, the Ferry House was built around 1740 by Rutger Jansen, a Dutchman from Flatbush, New York. His son, Garret, inherited the house and property in 1748 and built up a thriving plantation and ferry business. During this time the Dutch name Jansen was anglicized to Johnson.

At the time of the American Revolution, Johnson's Ferry was rented and operated by James Slack, a ferry master and tavern keeper. The Ferry House is best known for the role it played during the 1776 Christmas crossing of the Delaware River by the Continental Army preceding the Battle of Trenton. The house served as a meeting place for the generals who coordinated the crossing.

At the back of the house is a Colonial American garden containing historic varieties of vegetables and plants. (The actual Johnson garden would have been large enough to feed about 20 people — 12 of them children of Garret Johnson.) In season, you will find perennial medicinal plants with raised inner beds of small fruits, cabbages, greens and other northern European vegetables. Native American staples such as maize, beans, squash and gourds are grown and incorporated with other produce into an Early American foodways



PHOTOS: NJ DIV. OF TRAVEL & TOURISM



The Old Dutch Parsonage (top). Somerville, Somerset County. Weaving (above) is one of the crafts highlighted at New Jersey's historical sites.

program. All attempts are made to plant varieties known in the mid-18th century.

The Clarke House

Ten miles to the east of the Ferry House in Princeton Battlefield State Park on Mercer Road in Princeton Township, the Thomas Clarke House is a restored 1770s Quaker farmhouse. Thomas Clarke lived in the middle of his 200-acre farm with his sisters, Hannah and Sarah, and a black slave woman whose name has been lost. They attended the Stony Brook Friends Meeting

which remains an active meeting house, only a two-minute walk from the farm.

On January 3, 1777, the Battle of Princeton propelled this site into history as Gen. George Washington led his soldiers to victory over well-trained British forces. The heaviest fighting occurred on and around the Clarke's farm. Afterwards, the house became a hospital for American and British wounded. It was in this impromptu hospital that Gen. Hugh Mercer died. He had been treated by both British and American physicians, including the

American doctor, Benjamin Rush, but Mercer died of his wounds nine days later. Mercer County was subsequently named in his honor.

Today, visitors will find the Clarke House surrounded by several of the original farm buildings. Inside the 18th century main house, the three rooms on the first floor and the four on the second are furnished in a style befitting a successful farmer. Much of the original flooring, moldings and windows remain, including a corner cupboard located in the parlor bedroom where Mercer died. In the 1830s wing of the farmhouse, several exhibit rooms display weapons, artifacts, maps and paintings that tell the history of the Battle of Princeton and the Revolutionary War. A reference library also is available for teachers, students and researchers.

Rockingham

Located about four miles north of Princeton and a mile east of Rocky Hill on Route 518 is Rockingham. Moved twice in its long history, the 18th century dwelling was Washington's last wartime headquarters. He occupied the house from August 23 to November 10, 1783. It is here, in the upstairs study, that he wrote his "Farewell Orders to the Army," dated November 2, 1783.

The original owner of the site was John Harrison, a wealthy land proprietor from Perth Amboy. Sometime before 1710, he built a two-room two-story structure on the property. In 1735, John Berrien purchased the building and some land. When he died in 1772, he left a mansion with approximately 20 rooms and 360 acres of land.

Today, Rockingham contains many authentic furnishings. The newly created Children's Museum allows young people to explore life in the 18th century through such hands-on activities as trying on vintage clothing, playing the game Fox and Geese, weaving on a loom, handling a horn cup and making paper silhouettes.

The Wallace House and the Old Dutch Parsonage

Twelve miles to the north of Rockingham is Somerville, home of the Wallace House and Old Dutch Parsonage.

At the Wallace House, completed in late 1776, visitors can enjoy one of the best examples of Georgian architecture in New Jersey. Although it is well-known for having been Washington's winter headquarters during the Middlebrook Encampment of 1778-79, recent research has produced a fascinating image of the Wallace family which occupied the structure for the first three decades of its existence.

John Wallace, a wealthy Philadelphia merchant, built this home — reportedly the largest one built in New Jersey during the Revolutionary War — for his retirement. Apparently, he did not get to enjoy it, living there only one year before Washington moved in. Wallace seems not to have been satisfied with the compensation he received from the Colonial Army. Even toward the end of his life, he was still seeking a settlement.

Visitors to the house can experience the ongoing process of restoration. This includes a recent repainting of the house's interior with bright colors typical of the period. The colors were determined by a thorough analysis of the interior's original paint.

Located 200 yards west of the Wallace House is the Old Dutch Parsonage, which, between 1758 and 1781, was home to the Rev. Jacob Hardenburgh. He served as pastor of several congregations in the Raritan Valley and founded Queen's College, now Rutgers University, in 1766. To shed light on the building's past, the Old Dutch Parsonage also had the paint on its walls, moldings and window frames analyzed in order to help determine when various sections of the house were built and what the original colors were. Like the Wallace House, the Parsonage is a restoration work-in-progress. In addition, a historically representative garden is being constructed behind the house.

Throughout the year, special events are held at all the sites which are open Wednesday through Saturday and Sunday afternoons. For further information call: the Ferry House (609) 737-2515; the Clarke House (609) 921-0074; Rockingham (609) 921-8835; and the Wallace House and Old Dutch Parsonage (908) 725-1015.

Rockingham in Somerset County.



by Peggi Carlsen, a historic preservation specialist with the DEPE's Division of Parks and Forestry, who is the curator at Rockingham

Wildlife in New Jersey

The Striped Cusk-eel

Even if you're an avid angler or diver, chances are you've never seen a striped cusk-eel, despite the fact these fish play a key role in the ecosystem and are extremely abundant in New Jersey's bays, estuaries and ocean zones near the shore.

In fact, striped cusk-eels (*Ophidion marginatum*), which are not true eels at all, can be found in waters from New York to northeast Florida. They can be found, that is, but only in the dark.

Cusk-eels are essentially nocturnal, spending most of the night hours searching for food with extended barbels, or feelers. Their diet consists primarily of grass shrimp and other small invertebrates. Around sunrise, most probably to avoid predators, these sleek creatures burrow tail first into the sand. The burrowing motion is snake-like and graceful, with strong tail undulations propelling the fish vertically into the sandy substrate. During the day, all evidence of the cusk-eel vanishes except for a slight depression in the sand or a tell-tale snout extending ever so slightly into the water.

Although you may not have seen a cusk-eel, you may have heard one. These fish produce loud clicking sounds, which can sometimes be heard above shallow water and resemble the sound of a spinning roulette wheel. Sound is produced mainly by males of the species and is thought to be related to spawning behavior. The sound-producing organs in male cusk-eels are contained in a prominent head bump or "nuchal" crest that develops when the fish reach maturity. Females lack nuchal crests, since their sound-producing organs are located toward their tails. Scientists do not know at this point whether female cusk-eels actually produce sounds.

The spawning season for striped cusk-eels extends from mid-June through early September. Around

sunset, male cusk-eels will begin to emit clicking sounds, or croaks, presumably to attract females. Once a female is enticed from her burrow, she will engage in courtship behavior with the male, allowing him to swim directly above her. After several minutes, the two fish rise in unison to the water's surface, with the female releasing a buoyant, gelatinous egg mass which is externally fertilized by the male. Egg masses are about one-inch in diameter by two and one-half inches in length (depending on the size of the female), and contain hundreds to thousands of striped cusk-eel eggs. One female striped cusk-eel observed in a laboratory produced a large egg mass every night for 60 consecutive nights. A male observed under similar conditions engaged in spawning behavior with three different females, fertilizing three egg masses in five minutes. Interestingly, male cusk-eels stop producing sounds immediately after spawning occurs.

Striped cusk-eels, which grow to about 10 to 12 inches long, may play an important role in redistributing bottom sediments as a result of their burrowing activities. They also are thought to be an important food source for many fish of the Middle Atlantic region, including striped bass and summer flounder. However, one study demonstrated that, when swallowed whole by a striped bass, the cusk-eel can use its burrowing skills and kill its predator by digging through its stomach lining into its body cavity. (In these instances, the cusk-eel also dies.)

So, the next time you are down the shore on a summer night, standing near the water's edge, don't look — but listen. If you happen to hear a strange clicking sound, you might very well be hearing the call of the striped cusk-eel.

Although you may
not have seen a
cusk-eel, you may
have heard one.
These fish produce
loud clicking sounds,
which can
sometimes be heard
above shallow
water and resemble
the sound of
a spinning roulette
wheel.

by Jeanette Bowers-Altmann, an assistant zoologist
with the Division of Fish, Game and Wildlife's
Endangered and Nongame Species Program





Children skating at Lock 16 East on the Morris Canal at Warren St., Newark, circa 1900.

In Next Season's Issue

Searching for New Jersey's "Lost" Canal
Tracing Family Traditions of Hunting
Getting Ready to Go Ice Fishing