New Jersey Outdoors

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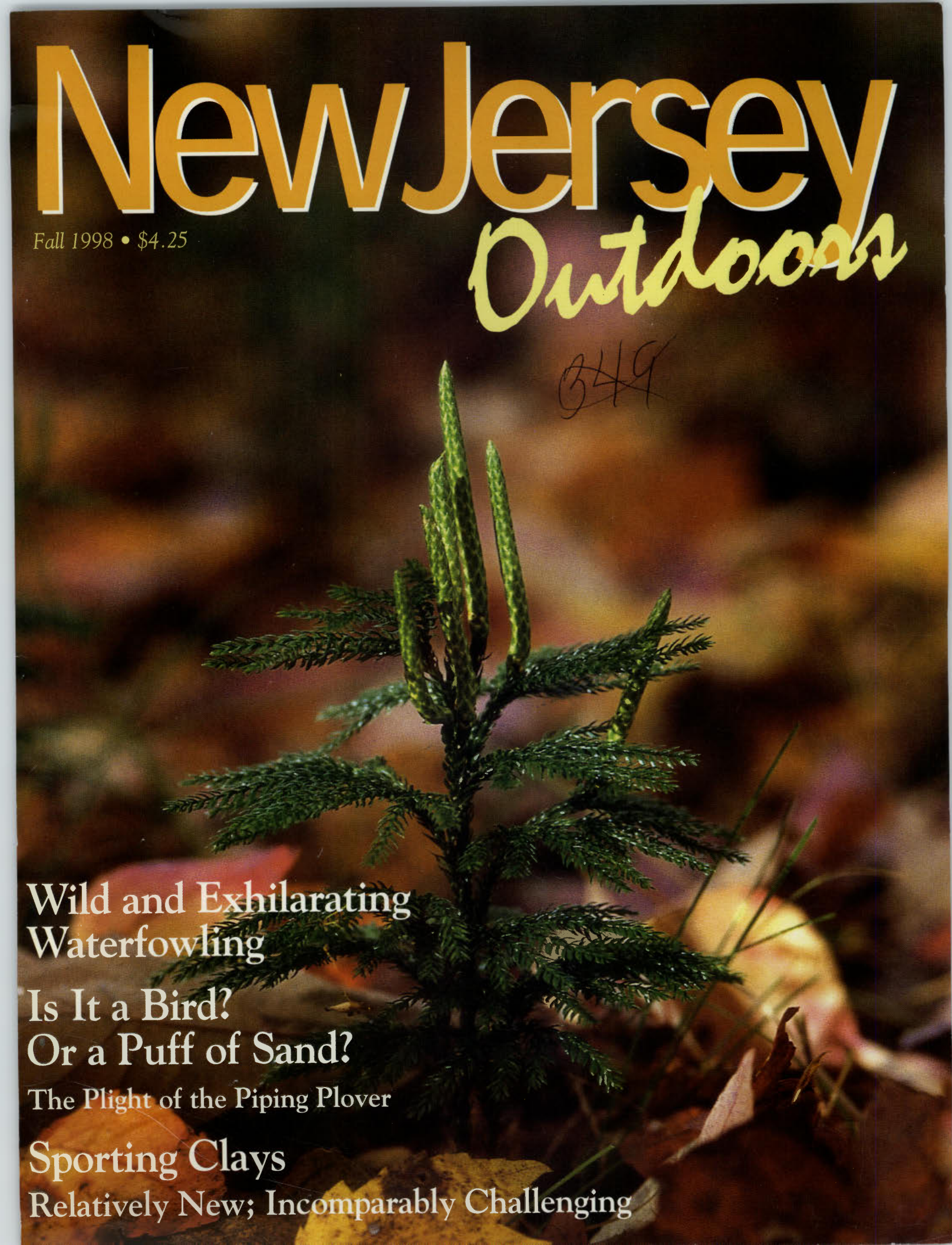


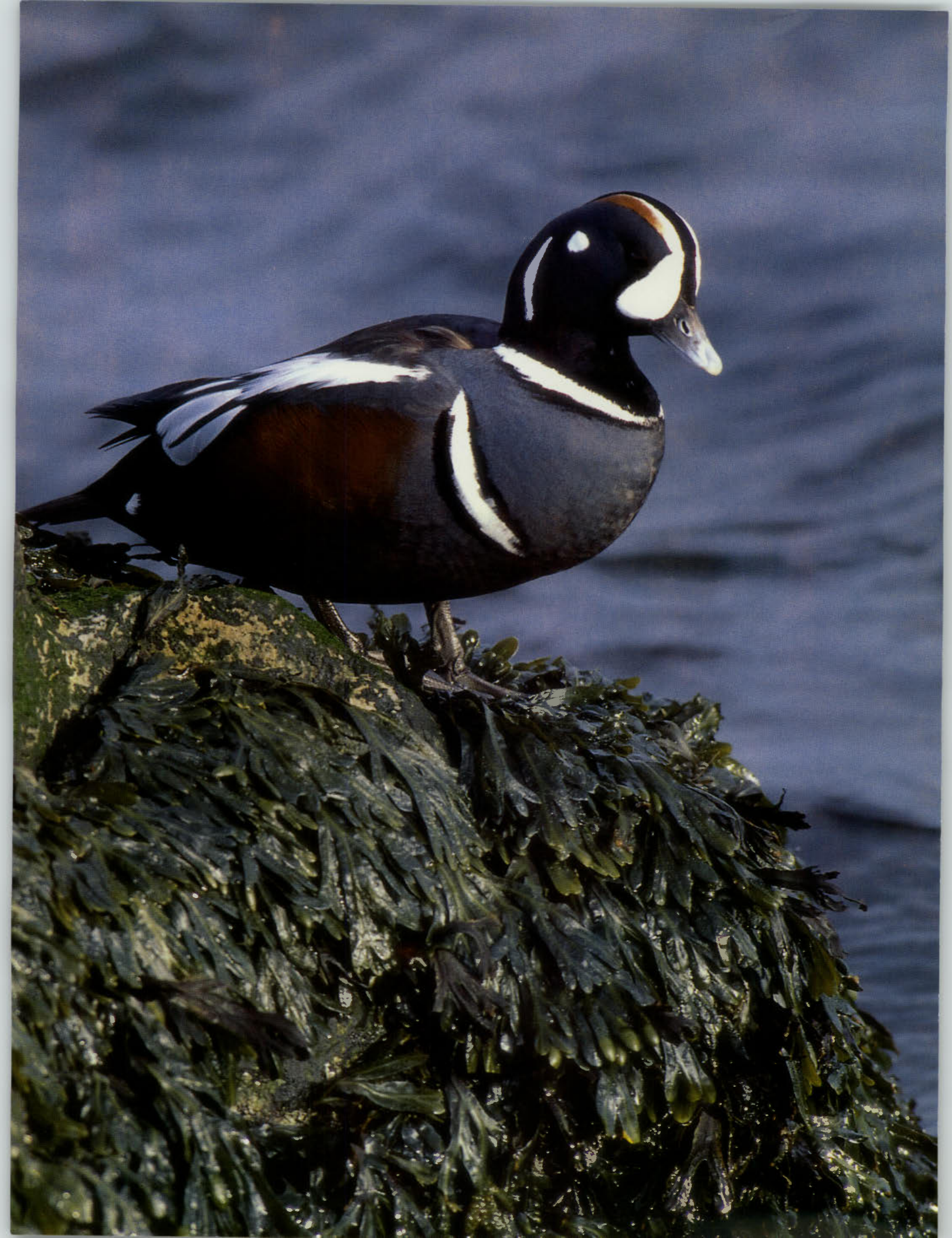
Wild and Exhilarating Waterfowling

Is It a Bird? Or a Puff of Sand?

The Plight of the Piping Plover

Sporting Clays

Relatively New; Incomparably Challenging



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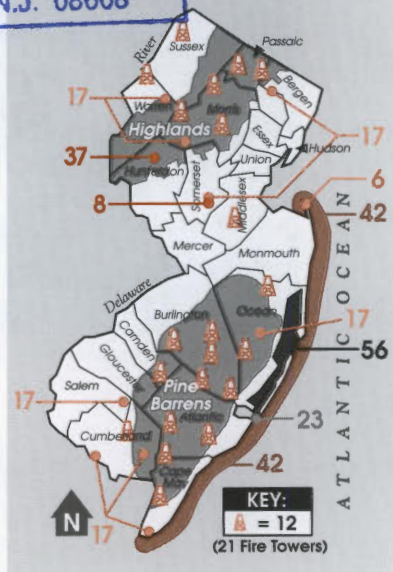


Departments

Front Cover
A tree seedling sprouts up, providing fresh green to contrast with the autumn-hued leaves surrounding it in Worthington State Forest. © Dotty Waxman

Inside Front Cover
A striking harlequin duck (*Histrionicus histrionicus*) rests in Barnegat Inlet. © Joseph Costanza, Jr.

Inside Back Cover
New Jersey's tuna species, depicted swimming in a water column, are (left to right, from top) skipjacks, yellowfins, bluefins, little tunny, albacore and bigeyes. © 1998 Kathy Johnston

Back Cover
In late September and early October, seaside goldenrod turns its namesake color among the dunes, creating a surprise exhibition of color where you might least expect it. This image was captured at Island Beach State Park. © J. J. Raia

From the Governor

Christine Todd Whitman,
Governor

Open space is among the precious resources that, once gone, are forever lost to us. No one appreciates that fact more than New Jerseyans, who have consistently supported our successful Green Acres Program. Since the program's inception in 1961, voters have approved nine bond issues totaling more than $1 billion to permanently protect 380,000 acres.

But New Jerseyans also realize that time is running out. During the past two years, my Governor's Council on New Jersey Outdoors held a series of six public hearings throughout the state to survey public opinion on open space issues. The message the panel heard over and over again is that we are protecting too little open space, too slowly.

That is why earlier this year I established the goal of preserving an additional one million acres of open space and farmland in the next 10 years. The urgency is obvious. We have lost more than a million acres of farmland to development over the past 45 years. About 800,000 acres of farmland remain, with only 32,000 acres protected through the sale of development rights. There is no funding available now for the nearly 90,000 acres of farmland that willing sellers have offered for preservation.

Today, two million acres in New Jersey remain undeveloped. We all have a say in determining how these acres will shape our quality of life for generations to come. Visionary, ambitious preservation efforts are critical. Our actions now will be our legacy to the future.

From the Commissioner

Robert C. Shinn, Jr.,
Commissioner

In a state as geographically, economically, socially and politically diverse as New Jersey, we all seem to agree on one thing: the need to protect and expand our open space.

The immense popularity of the Green Acres Program over the years clearly demonstrates that New Jerseyans regard preservation of their natural resources as a top priority. Undoubtedly part of the program's popularity is that voters enjoy tangible benefits from their financial investment, particularly in those communities where undeveloped fields and forests are all too scarce.

No one disputes that New Jersey's open spaces are fundamental to a clean and healthy environment. Often overlooked, however, is the fact that our open lands support a vibrant economy by drawing visitors and businesses to New Jersey. Last year, 13 million people visited our state parks, recreation areas and historic sites. That's a 50 percent increase in visitors over a decade ago.

The demand for open space has only increased and become more urgent over time. We must act now if we are to achieve a sustainable New Jersey where our children and grandchildren will enjoy the outdoor recreation and natural vistas that we treasure more with each passing year.

Mailbox

Opening Day

My brother, Jordan, and I entered an essay contest sponsored by the Division of Fish, Game and Wildlife. The theme for this year's essay was My *Favorite Fishing Buddy*.

Jordan's essay placed third in the 3rd-4th Grade Division, while another Blairstown student, Dan Seals, placed third in the 7th-8th Grade Division. Winners and their families were invited to spend Opening Day at the Pequest Trout Hatchery.

The day started with coffee and Danish at around 7:15 in the morning. At 8 a.m., we were invited to fish in the Pequest River for an hour, but it was high and muddy, so — while a few die-hards went down to the river — we stayed inside and watched a film about the hatchery.

At 9 a.m., we went down to the Fishing Education Pond. This was the highlight of the day for most of us. The pond was full of huge rainbows — just about every other fish was more than fifteen inches long! They were hitting just about everything from Panther martins to night crawlers, but no one could seem to get much action on a fly.

The largest fish of the day was an 8.5-lb. rainbow. There were a few large browns as well; most looked like they exceeded 4 lbs.

The fish fought like sturgeons on ultra-light tackle spooled with 4-lb. test. They were hard to keep on (especially with a barbless hook). The moment they were hooked, they took an explosive run, barrel-rolling the whole time. After that they usually ran toward you — this is where I lost most of my fish — or leapt high into the air. Some fish jumped 3 feet straight up!

While we were fishing, Governor Whitman walked around the pond to congratulate the winners, and even wet a line herself. After two-and-a-half hours at the pond, we went back to the main building for the awards ceremony and a luncheon.

All of the winners received a plaque engraved with their name, the date, the title of their essay, and what place they finished in the contest. They also got a 5'6" light- to medium-action pole with a Rhino spincasting reel, spooled with about 10-lb. test, along with a bag of goodies such as hooks, Powerbait, magazines and more.

Afterwards, we were offered a VIP tour of Pequest or another hour of fishing in the pond. I would tell you about the tour, but my family and I chose fishing!

When our time was up, we slowly reeled in and headed back home.

A special thanks to everyone at the Pequest Trout Hatchery and the Division of Fish, Game and Wildlife for a great day!

Clayton Apgar, age 12
Columbia

Jordan (top) and Clayton (bottom) Apgar display the fish they hooked on opening day at Pequest.

Back issues of **NJO**, when available, may be obtained at a discounted price of $3. To order copies, call 1 (800) 645-0038.

Something to Celebrate

Last year, millions of Americans in every state and three U.S. territories participated in a first-time national phenomenon that proved to be very successful: America Recycles Day. More than 3,000 events focusing on the need to recycle and buy recycled were held. Hits to the America Recycles Day web site topped 1 million over a 3-month period. The national organizers and sponsors created a very effective program that generated extensive media coverage. In other words, the "buy recycled" message was heard loud and clear.

Pledge cards were distributed so that people could pledge to recycle more and to buy more recycled products. In New Jersey, more than 6,000 pledge cards were received; these were then entered in local, state and national drawings, with prizes being donated by national and local sponsors. The national Grand Prize was an American Green Dream House — a house built primarily of recycled products. This year, another Green Dream House will be the Grand Prize.

In New Jersey, we have more than most to celebrate when it comes to recycling. Here, it's a $1.4 billion industry that employs 14,000 workers. We currently recycle more than 40 percent of the municipal waste stream. Adding recycling statistics for other categories of waste, such as construction debris and scrapped vehicles, brings the portion of the total waste stream that we recycle to 60 percent.

Manufacturing products using recycled — and recyclable — materials saves tremendous amounts of energy and water while reducing air and water pollution attributable to the extraction and use of virgin materials. If we want to protect our environment, as well as the investment we have all made in recy-

Baykeeper Offers Free Brochure

Baykeeper, a program of the American Littoral Society, works to protect and restore the health of the Hudson-Raritan Estuary. Recently, Baykeeper announced the publication of a 12-page, full color brochure that describes the remarkable – and often overlooked – natural system of rivers, bays, beaches and wetlands at the heart of the metropolitan region.

Titled *Improving on Nature Is Impossible, Restoring It Is Imperative*, the booklet uses entertaining language and spectacular photos – many by celebrated New Jersey photographer Herb Segars, whose work often graces the pages of *New Jersey Outdoors* – to tell the estuary's story and describe some of the challenges that still must be met to restore the estuary to full health. Some of the more than 200 species of fish and 300 species of birds that live between the lower Hudson River and Sandy Hook also are described.

The brochure is an extraordinary opportunity for people to learn more about the network of waterways that surround their homes and that are inextricably linked to the region's economic vitality and quality of life.

"This is the first publication that gives the public a feel for what the remarkably rich natural heritage embodied in the Hudson-Raritan is all about," says Andrew Willner, Baykeeper's director.

To obtain a free copy of this beautiful publication, call 732/291-0176 or e-mail a request with your mailing address to nynjbay@keeper.org.

cling, recycling must remain a part of the New Jersey environmental ethic. Choosing to buy recycled products makes good sense, since it encourages manufacturers to use as many recycled materials as possible.

New Jersey will again be participating in America Recycles Day this year. If you would like to participate in a local event, sign a pledge card or just get more information, please call the DEP Bureau of Recycling and Planning at 609/984-3438 or check out our website at **http://www. state.nj.us/dep/dshw/recycle**. And remember this year's America Recycles Day theme: "If you're not buying recycled, you're not really recycling."

A Real Winner

High school students from throughout the state entered the New Jersey Department of Environmental Protection's (DEP) 1998 Arbor Day Poetry Writing Contest. Sponsored by the Community Forestry Program, the contest was open to original poetry celebrating community trees.

Immaculata High School student Katie Pictroski, from Ringoes, was selected as the first place winner. She was honored at the State Arbor Day Celebration on April 24 at Holmdel Park, where DEP Commissioner Robert C. Shinn, Jr., presented her with a $100 savings bond. Following is Katie's winning poem, which she read during the ceremony.

The Willow Tree

Over the years the city has changed,
but the Old Willow Tree has stayed the same.
Many people have come and gone
and I suppose the Tree will have, before long.
But for now in the city, The Willow is a wellspring of life
for every child, every husband and wife.

Beneath the Willow many a child has played
spending time in its wonderful shade.
Under it, students have studied and read
wishing the Tree's wisdom to fill their heads.
Parents have taken time to relax by the Willow
and beneath it, grandparents have watched time flow.

Although the city has changed over time;
the buildings have grown taller and
the streets are less wide,
The Old Willow Tree has been the center of life
the place to go in happiness and in strife.

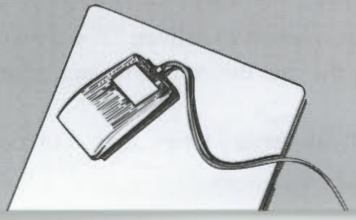
All who saw the Old Willow Tree
will remember forever all of its memories.

Click on These

Take a walk on the wild site – **www.inthegardenstate.com/wildnj**, that is. The new site, called Wild New Jersey, was launched in honor of Earth Day 1998. It provides plenty of information on New Jersey's natural resources and other topics of interest to the environmentally conscious and outdoor enthusiasts.

For some great information about hiking and related interests, follow the cybertrail to **www.nynjtc.org**. It's the Web site of the New York - New Jersey Trail Conference, which maintains many of the hiking trails in New Jersey's state parks.

And if preserving New Jersey's past is your interest, check out the New Jersey Historic Trust's Web site. It can be found at **www.state.nj.us/dep/njht**.



State of New Jersey
Christine Todd Whitman
Governor

Department of Environmental Protection
Robert C. Shinn, Jr.
Commissioner

Peter Page
Director of Communications

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New Jersey Outdoors

Fall 1998, Vol. 25, No. 4

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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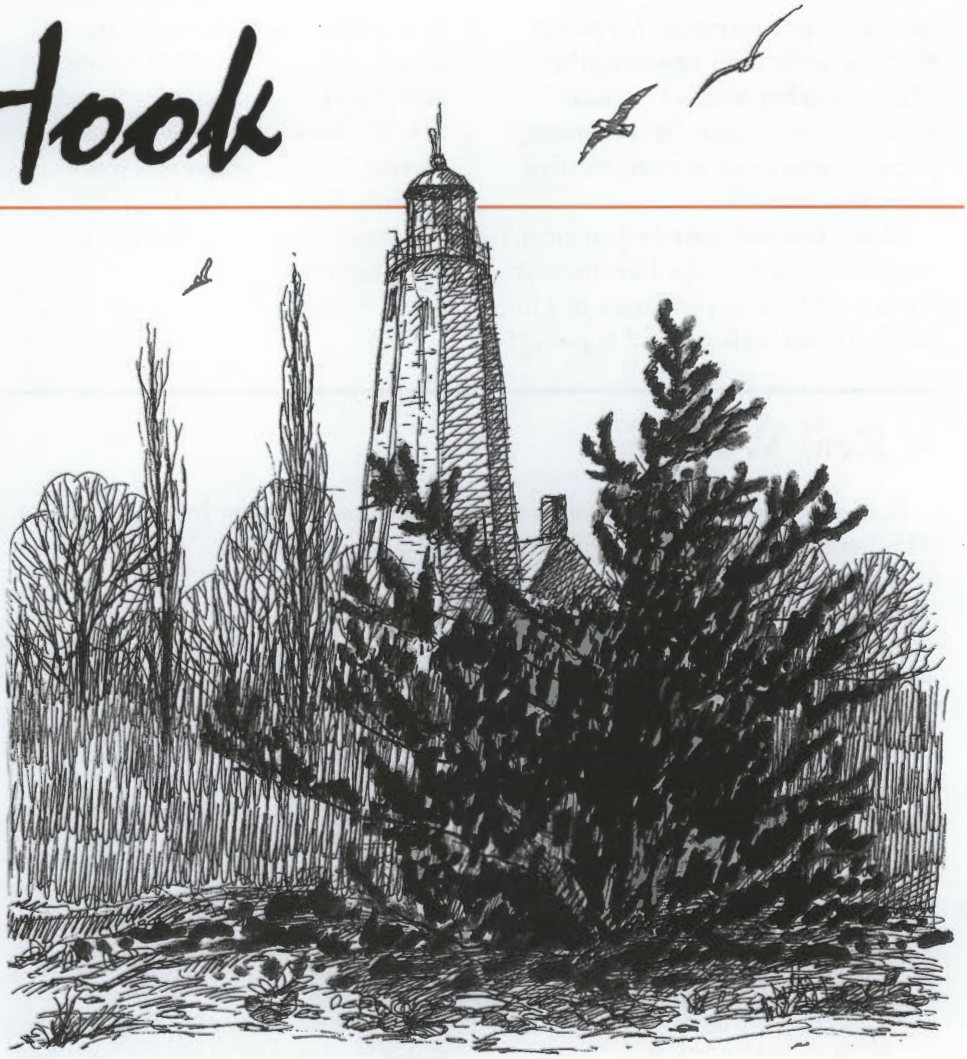
Jersey Sketchbook:

Sandy Hook

Story and illustrations © John R. Quinn



Today, Sandy Hook Light is a mile and a half from the end of the peninsula. Prickly pear cactus is ubiquitous here.

The eminent naturalist and scientist Loren Eisely wrote in his biography, *All the Strange Hours*, that the recounting of a life lived "is always constructed from ruins." Eisely was speaking of the human four-score-and-ten, but his words could as well be applied to the land, to the living environment.

The present environments of the earth in all their complex and wonderful variety are based upon the ruins of countless others that have passed through the inconceivably long erosion of time. The vast earth movements, all the fire and rain and great extinctions of eons that were but a distant memory long before our ken, have delivered the planet to us in its present state. Some places — deserts, badlands, and great, carven mountain ranges — seem to illustrate this ponderous process of destruction and renewal better than others. Seashores do as well, shifting or migrating, adapting or vanishing, according to the whim of the sea and the effectiveness of their own natural resiliencies.

Sandy Hook, that slender, enigmatic appendix of land that graces the northeast seaward corner of New Jersey, strikes me as just such a place. Standing against the will of the sea down a multitude of centuries, the Hook has withstood the Atlantic's determined efforts to destroy it. Contracting, shifting, extending its tenuous terrain when given the chance, it endures as a symbol of the tenacity of sand and soil and the holding power of the roots of a billion plants against the unrelenting surf of ten thousand storms. Environmentally, these are probably the longest odds possible.

Today, this graceful sandpit is a place of contrasts and paradox and has an air of well-earned defiance to it; from the air it appears (if you'll pardon the parallel) as a birdie flipped at the brooding megalopolis looming five miles across the bay as though to say, "I have survived all that the sea can hurl at me and will prevail against you as well." So far, it has, and in the process has become something of a benign and beloved summer playground for city folk, an urban "Gateway" national park filled with the wind echoes of the past, vistas that suggest a distant and far wilder place, and yes, ruins — lots of them. Dr. Eisely knew that ruins — whether lived or built — have a tale to tell us, a lesson to deliver: "You try to see what the ruin meant to whoever inhabited it and, if you are lucky, you see a little way backward into time."

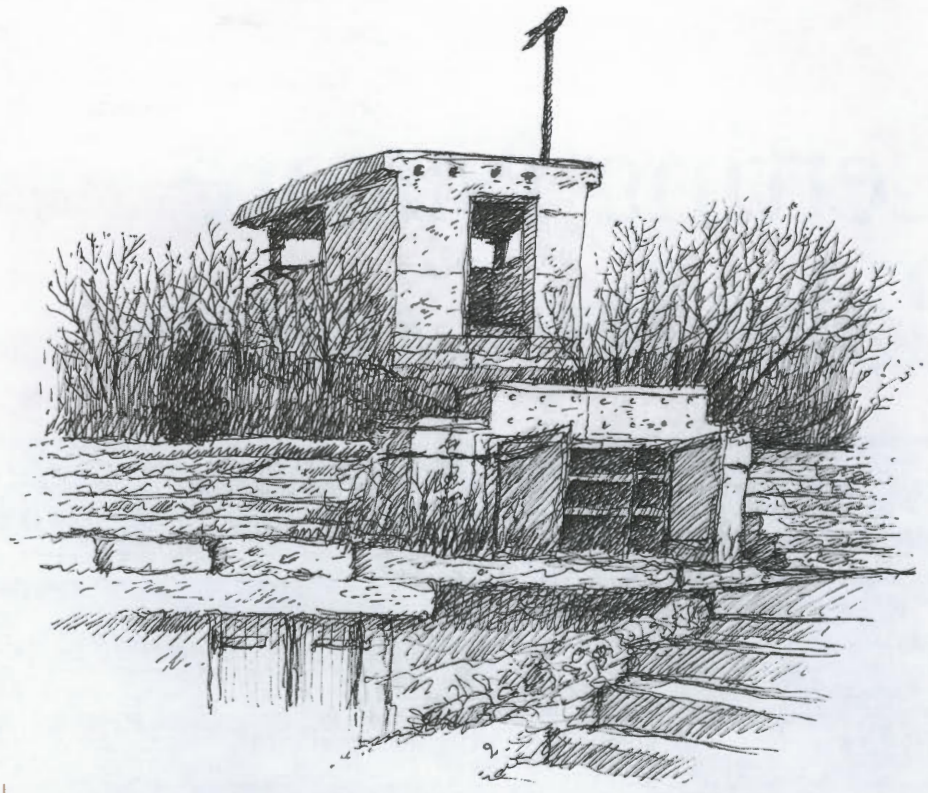
That sense of tenacity, time-travel, and the essence of the survival of wilderness at the back door of the city is why I find Sandy Hook such a grand environmental enigma and fair game for the field sketch approach to recording nature.

Not long ago I walked part of the outer Hook in search of art inspiration in the company of Dery Bennett, the redoubtable leader of the American Littoral Society. He knows a lot about Sandy Hook and is a vocal and eloquent critic of human intervention in what seaside nature does best: building and dismantling beaches. Sandy Hook, he says, is a prime example of just how much big-time sand

moving the ocean is capable of when it wants to do it. When Sandy Hook lighthouse was built in 1764, he tells me, it was located 500 feet from the peninsula's tip. Within 100 years 3,500 feet of beach and dunes had been added to the Hook by the sea; today, two centuries later, the lighthouse stands inland on Sandy Hook, marooned about a mile and a half from the land's end and passing ships.

One of the best vantage points from which to gain a vivid impression of Sandy Hook's timeless yet transient qualities is the Park Service's observation platform at the head of *Fisherman's Trail.* The trail is a meandering path cut through the dunes that leads from the crumbling ruins of the 19th century Battery Peck and gun emplacements to the distant point itself. As Bennett and I stood at the rail, the late-winter sea wind running out of the southeast and the off-season silences wrapped about us, we took in a scene of magnificent desolation.

Dense fog had moved in off the sea and covered the bay and Manhattan to the north so that the expansive dunescape seemed to roll on and on in a tapestried sand-and-heather splendor until it yielded to an infinity of luminescent whiteness. Far away, at the limit of sight, crowds of redwings and grackles streamed in silence between the dune hills, vanishing in the fog over Raritan Bay. Although we well knew that the city and civilization lay around us on every quarter but the eastern one, and that during the summer months the waters around the Hook are dense

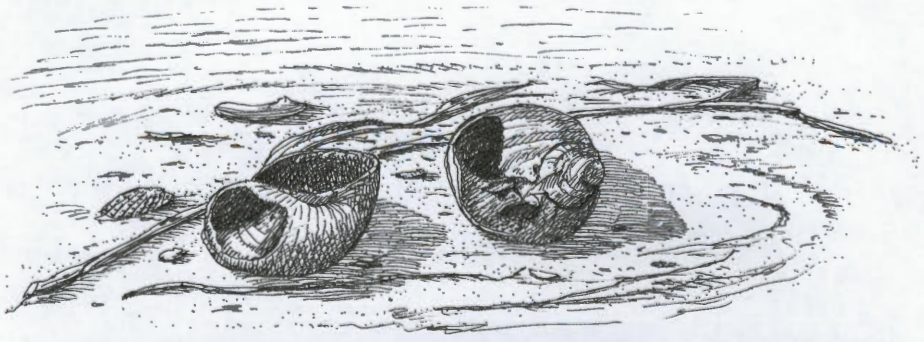


A merlin — a small falcon also known as a pigeon hawk — perches on the pipe at the ruins of Battery Peck and scans the surrounding dunes.

with boat traffic, today we gazed upon an empty and utterly silent wilderness.

With the lighthouse, the new Navy housing, the water towers and the haunted, rusting ruins of war at our backs, not a human artifact intruded. Later on, when sketching along the low-tide bay shoreline and the oceanfront itself, I would be forced to either include or expunge (according to artistic license) the oppressive and omnipresent flotsam that finds its way to every littoral strand ringing one of the busiest harbors in the world. But in the solitude of the dunes the subject was one of clean, unbroken linears and natural textures, the defining parameters of life's celebration and endurance where the sea meets the land. Here, wind and wave had consorted and produced an ethereal work of art in sand and living vegetation; it is a joy to behold and a challenge to record.

Driving off the Hook on an empty roadway, past the shuttered tollbooths and broad parking lots populated by crowds of dozing gulls and the shattered remains of their bivalve dinners, I considered the results of my artistic efforts. On Sandy Hook during the off-season, when the distractions are fewer and the land lies spartan and open to the sky, one may become lost among them, for they lie exposed and seem to be everywhere. They are constructed of moving sand and immovable stone and steel, of wind and water and weather, and they have shaped and reshaped this fragile yet tenacious landscape over thousands of years. During the off-season, the dunes and the sea and the ruins find their voice and they have much to tell us if we have the ear to listen.



Moon shells decorate the shoreline.

Artist-naturalist John R. Quinn has published many books on nature and science. His most recent, ***Fields of Sun and Grass****, was profiled in the Summer 1998 issue of* **New Jersey Outdoors**.

Letting Nature Take Its Course

by Colleen O'Dea

New leaves contrast with a fallen tree on the forest floor (opposite page).

Fallen trees such as this one (right) provide opportunities for research and new growth.

It's nearly impossible to tell that the day is blindingly bright and the temperature tops the 80-degree mark. Inside the William L. Hutcheson Memorial Forest, the high green canopy of oak and hickory leaves keeps the forest floor shady and cool.

Every so often, the sun beams brightly through a hole created when an old tree died, casting a ragged circle of light onto three or four smaller trees. But the beauty and peacefulness of these spots belie the fight-to-the-death conflicts taking place within, as the smaller trees battle for supremacy. Only one can win the prize — sole ownership of the sunlight and a chance to grow to be 300 or 400 years old. As for the other combatants?

"They die," says Edmund Stiles, director of the forest, matter-of-factly.

Stiles, an ecologist and professor of biological sciences at Rutgers University, which owns the forest, calls this forest survival-of-the-fittest "gap dynamics." That's what occurs when an old tree dies, opening up a sunny space in the otherwise thick leaf canopy, and trees sprout and compete for domination of the gap. It's just one of the countless complex natural processes Rutgers researchers study in this unique forest.

The 65 acres at the heart of Hutcheson Forest, which is now 500 acres and growing, have been the site of undisturbed growth and change for at least 300 years. No other stand of trees in Central Jersey, and possibly the rest of the state, has gone uncut since pre-colonial days. And this virgin forest happens to be located off Route 514 in Franklin Township, on the border of Somerset and Middlesex counties, just minutes from Interstate 287 in one of the biggest corridors of development in the state.

Saved!

Hutcheson is part of a 10,000-acre swath that was bought in 1701 by a group of Dutch settlers. They divided the land into parcels, with the Hutcheson parcel going to Cornelius VanLiew. The property passed down through his descendants until 1955, when the owners decided to have it timbered. But a group of conservationists and citizens sought to save the land.

With help from the United Brotherhood of Carpenters and Joiners of America, they purchased 149 acres that included the virgin forest. The entire tract is named after a past president of the union, while the forest is called Mettler's Woods after the last private owner.

Stiles speculates the land went untouched for so long because the family was wealthy and didn't need the timber for income.

The land was given to Rutgers with the strict stipulation that the forest not be cut. If Rutgers harms the land, its ownership immediately reverts to The Nature Conservancy, which made the preservation of Hutcheson Forest its first project in New Jersey. Conservancy members periodically monitor the area to ensure its preservation. (For more information about The Nature Conservancy and its work, see page 17.)

That stipulation has led to some interesting decisions about managing the land, and has contributed to a better understanding of the life of forests.

For instance, when gypsy moths infested every inch of the tract in the mid-1980s, researchers sat back and did nothing, except watch and wait. The pests de-

A massive poison ivy vine (left)climbs a white oak in Hutcheson Forest.

This path leads to secondary successional fields used for research (opposite page).

voured the leaves on the old trees and researchers had little hope for what remained. But the sunlight streaming down to the forest floor for the first time led to the growth of other plants, particularly white ash. And a year after the moths departed, the trees leafed out again.

Jean Marie Hartman, a plant community ecologist at Rutgers, said it's hard to just stand by and observe the damage done by gypsy moths and the encroachment of foreign plant invaders such as honeysuckle vines and Norway maples, but hands off is probably the best course.

"The current management strategy is we really don't know how to manage these things, therefore we don't manipulate anything in the forest," she said. "What looks like a good answer, after a few years of doing it, often turns out to be quite a different answer."

Because Hutcheson old growth is not "managed" — cleared in certain areas, planted in others — as a typical forest, it doesn't look particularly spectacular. Stiles said the average forester would likely term Hutcheson "decrepit." The forest isn't thick with lush vegetation but is actually quite open except for the tall trees — some reaching 80 feet and most without low limbs — and low greenery.

But it's the ordinary that makes Hutcheson so extraordinary. One of the first plants Rutgers professors point out as they conduct occasional weekend tours isn't attractive or exotic, but a massive poison ivy growing up the side of — almost into the bark of — a tall oak. Though the bane of gardeners, the vine in Hutcheson is impressive. Probably almost as old as the 300-year-old oak to which it seems grafted, it's several inches thick and hairy with expansive leaves.

The ordinary leaf carpet is also extraordinary: It contains 45 inches of humus layer.

"It's like a sponge, it just soaks up water," Stiles says. "One of the interesting things that they've found is that, even during heavy summer rainstorms, there is no runoff hitting the stream."

The forest contains some 30 species of trees, but oaks and hickories predominate. Most common are black, red and white oaks and red, mocker nut and shag bark hickories. The oldest are 400-year-old white oaks that can reach 90 feet into the sky and measure nearly three feet in diameter. The trees usually die of old age or are knocked down by storms.

The Tales Trees Tell

When their life is over, these trees that have lived so long impart valuable information. From just one tree downed in a 1955 hurricane, researchers have been able to tell that there were a series of low-intensity fires in the forest, about every 11 years, from 1621 to 1710, said Stiles. They don't know, however, what caused the fires — whether they were natural or set by Native Americans to underburn the land.

In addition to lessons the forest teaches, at any given time Rutgers professors are conducting 20 or more experiments within the forest involving plants, soil, animals and insects.

For instance, Hartman is trying to determine whether she can change the way in which trees and other plants fill in former fields. She is working in one of the croplands that had grown corn, soybeans and wheat and were abandoned beginning in 1958 to study their return to forest. In her eighth planting season,

Hartman has found that by adding mulch, treating the soil with sulfur to draw down its pH levels, erecting shade tents or otherwise changing the conditions of the field, she has been able to improve the growth patterns of certain woody species and native grasses.

"I have trees that are already more than 13 feet high with diameters of three to four inches," she said. "To have trees of such a caliber after eight years — you'd usually expect a tree to be from eight to nine feet high at that age — that's not how it's supposed to happen."

The results of her research could have wide-ranging implications for open space in New Jersey.

"One of the reasons I started the project is because, as land in this area has changed from agricultural use to suburban use, a lot of land is being put aside as open space and people seem to think nature is just going to take its course," said Hartman. "You have to be incredibly lucky for that to happen today . . . But there are things you can do that will favor certain groups of plants."

Consequences Studied

Another experiment on the outskirts of the original forest is studying the impact of large herbivores on the regeneration of old fields. A professor has built a series of enclosures with progressively smaller openings to chart how deer, rabbits and other animals that eat vegetation influence the return of forest plants.

Shortly after entering the forest, Stiles points out the differences in the cedars growing along the edge of one abandoned field: the tops are deep green and thick, the bottoms are lighter green, thinner and spiky. The cedars won't grow as quickly as they could because they have to expend too much energy regenerating the low, light green foliage after deer and other creatures eat it. It's more efficient, and thus preferable, to maintain the tougher dark green growth.

"The impact of the selective grazing of these herbivores is very, very intense," Stiles said. "They will take off dogwoods and red cedars very, very rapidly and prevent their recolonization for longer periods of time."

There's less formal study going on, as well. On nice days, Eugene Varney, a professor emeritus at Rutgers, and volunteer Raymond Fatto don their jeans and long-sleeved shirts and take baskets into the forest searching for mushroom species. So far, they've counted 402 different types. The mushrooms, which obtain some of their nutrients from dead plant material, thrive because of the thick understory and dead wood.

Nuisance tent caterpillars on black cherries also teach a lesson about survival. On a tour of the forest, Stiles points out that the black cherry has nectaries that produce a sugar solution. When the caterpillars eat the cherry, it secretes the sugar. The sugar attracts ants and the ants chase away the tent caterpillars and other insects.

Tours of the property, conducted by Rutgers professors, take place once or twice each month. Because each professor has a different emphasis, each tour will have a little different slant, so it's worth taking more than one. For information on tours, call 732-932-3607 or 932-2077 or write to Hutcheson Memorial Forest, Center of Biological Sciences, Rutgers University, PO Box 1059, Piscataway, New Jersey 08855.

Colleen O'Dea is a freelance writer from High Bridge. Her ***A Piece of Paradise in Morris County****, which spotlighted the Frelinghuysen Arboretum, appeared in the Spring 1996 issue of* ***New Jersey Outdoors****.*

SILENT SENTINELS OF STEEL

by Nina De Santis

PHOTOS COURTESY OF STATE FOREST FIRE SERVICE, N.J. DIVISION OF PARKS AND FORESTRY

Amidst the forestlands of New Jersey, metal guardians stand tall above the treetops, watching over their lush, green charges. Stationed within these steel sentinels, observers scan their surroundings and, ready to respond at a moment's notice, wait for signs of an enemy attack.

Although the above description is *not* one of a secret military maneuver or some high-tech spy equipment, it does depict a valuable weapon in the war against forest fires — a forest fire lookout tower.

While the concept of a fire tower may be foreign to some, the New Jersey Forest Fire Service (NJFFS) maintains a network of twenty-one strategically placed lookouts. These lookouts — and the fire observers who staff them — play an integral role in the timely detection and suppression of forest fires, and provide important services and information in times of actual danger.

Forest fire lookout towers in New Jersey are by no means a recent phenomenon; in fact, their history dates back as far as the 19th century. According to Bob Spear of the Forest Fire Service, what "may be the oldest lookout in the country" was built in Batsto Village in the 1840s. Placed on the cupola of the iron master's mansion, an open platform was used to protect the iron-mining community from fire danger in the highly flammable Pine Barrens.

Rudimentary lookouts of this type slowly evolved into the modern towers currently used. Prior to 1885, there were very few lookouts at all. Then, from that year through 1905, the first modern conservation and forest protection attempts were made.

As the railroad industry in New Jersey developed, and the rich forestlands became a source of wealth to private landowners, the need for forest fire detection and suppression techniques was realized. Fire crews and patrols were started and fire-fighting equipment, such as flatcars with water tanks and pumps, were built.

During this time, modest wooden lookouts were built and placed on top of natural bald rock outcroppings. These

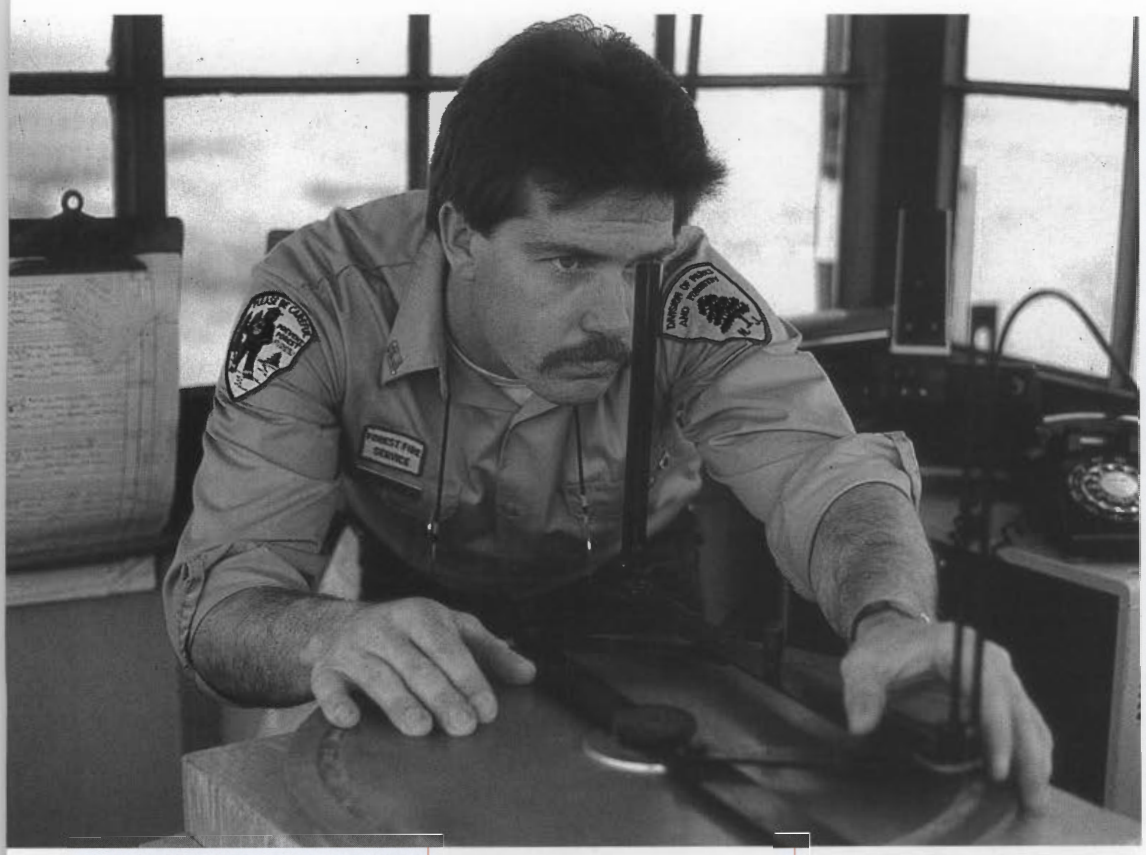
Section Warden Carlton Taylor sits in his truck in front of the Medford Tower in this 1949 photo (opposite page).

Being sited at the highest point in Ocean County allows (right) the Lakewood Tower observer to keep a watchful eye over Ocean and Monmouth counties.

structures consisted of a tripod configuration of poles cut from the woods, with rungs of wooden crosspieces attached, acting as a ladder to reach the top of the lookout. Though they were inexpensive and easy to construct, these early towers were rather unsteady and difficult to access.

Simple tree lookouts also were used. They consisted of a platform mounted within the tree's branches, with slats nailed to the tree to allow for climbing.

Volunteers often manned these early structures, setting up camp near the lookout and staying as long as their supplies and foodstuffs would last. In later years, rural mail carriers were designated by the U.S. Postal Service as "forest watch-



Forest Fire Observer Kevin Drake (left), in the Milton Fire Tower, plots the location of a blaze.

This photo (opposite page, top), taken 90 years ago, shows 30-foot tall Woodmansie Tower. Sited in Burlington County, it was constructed for the whopping sum of $10.

Culvers Station is situated more than 1,500 feet above sea level in Stokes State Forest. A 47-foot high steel tower has replaced the rather squat-looking original, pictured here (opposite page, bottom).

men," and were required to report any fires they encountered along their delivery route.

FROM WOOD TO METAL

Recognizing the importance of conservation and forest protection, federal and state organizations were formed in the early 1900s. Theodore Roosevelt initiated what was to become the U.S. Forest Service during his presidency, and in 1905, the Forest, Park and Reservation Commission was founded in New Jersey. One year later, a law establishing the New Jersey Forest Fire Service was passed and 64 firewardens were appointed, marking the birth of the system that is utilized today.

Four years after its inception, the Forest Fire Service replaced the wooden tripod lookouts and tree lookouts with sturdier, more intricate structures. These wooden beam lookouts provided the observer with an improved vantage point; while earlier lookouts were built no higher than 30 feet, the newer towers stood 40 to 50 feet above the ground.

Forest fire lookout towers underwent the greatest change from between 1917 and 1930, largely due to an amendment in federal law. In 1924, the Clarke McNary Act allocated funds for the purchase and installation of larger, metal lookout towers. Steel towers of 60 to 100 feet in height were built and the current system of forest preservation was organized. Most of the steel towers used today were constructed during this period. They not only are rich in history, but also have proven their durability and efficiency.

Forest fire lookout towers, however, would be useless without an observer. These men and women staff the towers year round, whenever the woods of New Jersey are dry enough to burn. Their shift begins at 10:00 a.m. and ends at 6:00 p.m., and they are not permitted to leave during those hours.

"You pretty much live up there," said Eileen Bethanis, observer at the Bass River tower. "Once you're up there, you're up there!"

While stationed in their respective towers, observers are responsible for the timely detection and reporting of forest fires. They may scan an area of more than 200 square miles each day, watching carefully for the first signs of a "smoke."

If a smoke is discovered, observers use a process called triangulation to pinpoint its location. Using an alidade (a telescopic sighting device used for taking bearings), the observer can obtain a compass bearing of the fire's location, which is plotted on a topographical map. The observer will then contact another tower and get the degree reading from that location. That reading also is plotted. The fire is located where the two points cross.

According to Observer William Love Jr. of the Leba-

non Tower, triangulation is a highly efficient process. "A lot of other states have gone to using aerial detection for reporting their forest fires, but our fires burn so readily and so fast that it really isn't practical," he said. "Triangulation is pretty simplistic, but it works very well."

After a fire is located, the observer contacts the section firewarden, a full-time employee appointed to manage prevention and fire suppression within a particular region. The firewarden and ground crews then extinguish the fire.

MORE THAN JUST A SMOKE DETECTOR

It is obvious that the job of the observer goes far beyond that of smoke detector. According to Bob Wolff, section firewarden for the Forest Fire Service's Division A, the role of fire observer is threefold: "Many states use towers just for detection. In New Jersey, it's detection, dispatch and communication."

Richard Bentz, Division B's assistant division forest firewarden, underscored the importance of fire towers and observers. "Observers provide a continuous report of fire behavior," said Bentz. "They tell the firewarden what he's driving into. Fire towers also serve as communication centers during fires; the observers ensure that the crews know where to report and relay any needs they might have. They also serve as a communication link between the fire fighters and their family members.

In addition, Bentz says, observers maintain a "danger appraisal station" in which the levels of fire danger are ascertained by factors such as weather, visibility, wind speed and drought conditions.

"This information is used to determine staffing levels, so that we know who to put around, how many to put around and where to put them," says Bentz. "Overall, it's a very important role."

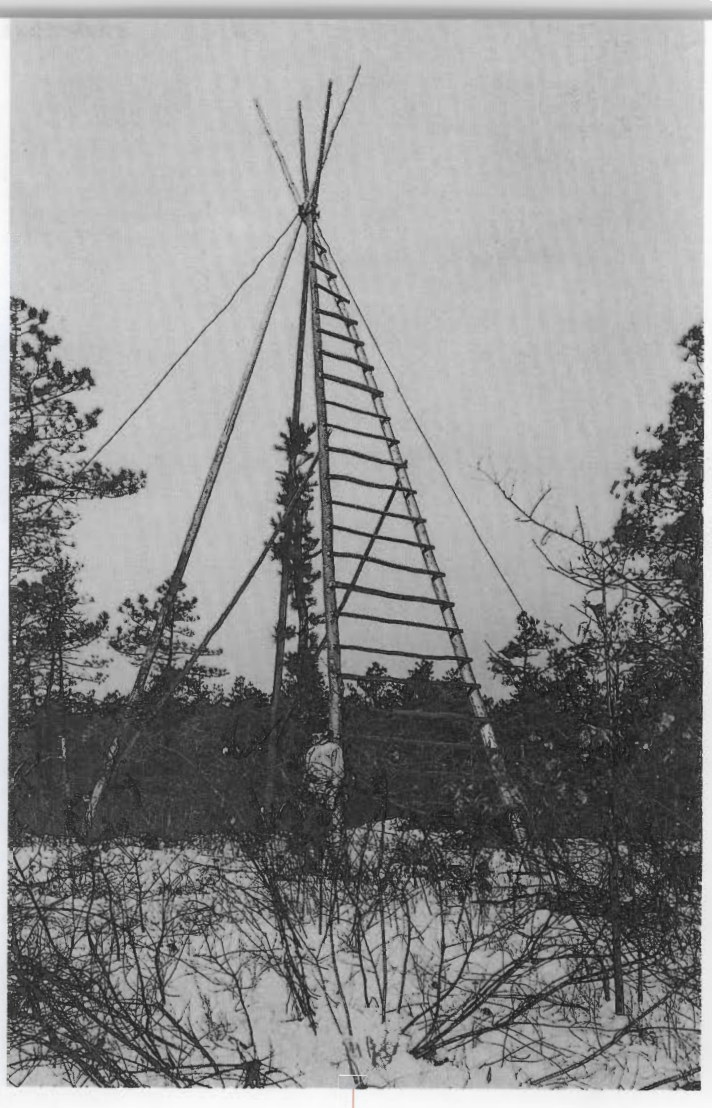
The job of fire observer is not confined to the fire tower, however, and whenever weather conditions make fire detection unnecessary, the observers are still hard at work. Their other duties include maintaining and repairing their respective towers, building and fixing fire trucks, roads, bridges and trails, attending training sessions and in-house classes, and conducting informational programs for schools and various organizations.

"It's very demanding," said Love. "There's always something to do. That's what I like about the job, it's very varied."

But couldn't being stuck inside a 7-foot by 7-foot cabin for hours on end get a little boring? Sometimes, yes, according to observers. However, none will dispute the action and excitement that is also a part of their job.

"It can be the most boring job in the world and the most demanding job in the world (because) everything we do is on the spur of the moment — you can't plan ahead," says Bethanis. Love agrees, saying, "The thing about fire towers is that you really have to be on your toes. Fire can come out of nowhere."

For others, the natural



Workers pause — and pose for a picture — during construction of the McKeetown tower, located in Egg Harbor Township.

splendor of their surroundings alleviates any possible boredom. Says Wolff, while pointing to the rolling forests visible from the Catfish Tower in Warren County, "How can this be boring? It's worth it just for the view!"

VISITORS WELCOME

Luckily for those interested in visiting a forest fire lookout tower, informal tours may be arranged with the division in which the tower is located. During the visit, an observer will explain the history of the particular tower, display some of the equipment used, and describe his or her duties. Some even maintain a visitor's log for those who climbed the tower to sign.

Fire towers are a popular touring site for hikers, organized groups and the general public alike; it is not unusual for a single tower to host as many as 1,000 visitors annually. These tours may be conducted whenever the towers are staffed; however, they may not be held in times when the observer is busy performing fire-related duties and is unable to provide information to visitors.

Due to the practicality — and popularity — of the lookout towers, efforts to preserve them have been initiated. Most other states have abandoned the use of towers in favor of aerial surveillance; in fact, New Jersey is one of the last states to use towers.

To prevent the complete extinction of the towers, the Forest Fire Lookout Association (FFLA) was founded. It has grown into an international organization of nearly 800 members. In addition to maintaining and restoring these structures, the FFLA works in conjunction with the National Historic Lookout Register to list and protect the remaining towers. It also strives to educate others about the purpose and importance of the towers and, according to Spear, the group has succeeded. "Because of the FFLA, people have done a 360," he said.

Rich in history, yet a present means of fire detection, forest fire lookout towers continue to provide immeasurable services to current conservation and preservation efforts, and have proven themselves to be just as — if not more — efficient as modern, technical methods. Wolff, perhaps, best summed up the importance of these structures in saying, "The fire towers work out real well for us. They're interpretive centers, hiking destinations and a good view!" Aside from that, the towers can speak for themselves.

Nina De Santis, a communications major who recently graduated from The College of New Jersey, wrote this article while serving an internship with the New Jersey Forest Fire Service. She obtained the historical information contained in the article from Bob Spear's ***Watchers of the Woods: New Jersey's Forest Fire Lookouts****.*

FOR MORE INFORMATION:

New Jersey Forest Fire Service

- **State Forest Fire Service Headquarters**
  609/292-2977
- **Northern Headquarters** (Division A)
  973/827-6100
- **Central Headquarters** (Division B)
  609/726-9010
- **Southern Headquarters** (Division C)
  609/625-1121

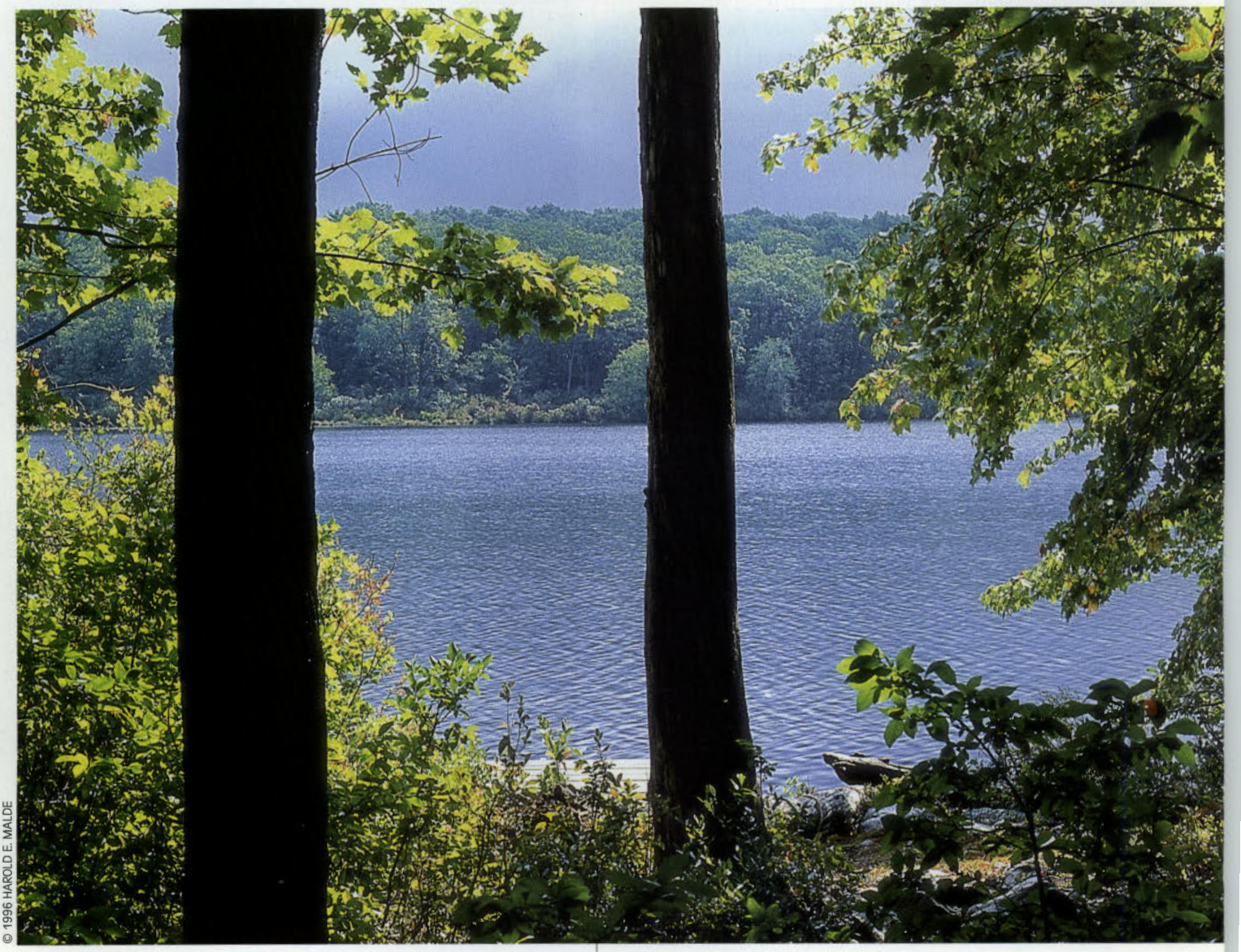
The New Jersey Forest Fire Service will publish a revised Guide to New Jersey's Lookout Towers by the end of this year. For a free copy, call one of the offices listed above.

Forest Fire Lookout Association (FFLA)

www.paulbunyan.net/users/quam/ffla.htm

- **c/o Keith Goodrich**
  RR 01, Box 3230
  Springvale, ME 04083
  207/342-6537

A Decade of Conservation in the Garden State



by Karen Carlo Ruhren

A birthday will be celebrated throughout New Jersey this fall — on the rocky cliffs of the Great Limestone Valley, among the dwarf pines and scrub oaks of the Pine Barrens and along the sun-drenched coastal dunes of the Delaware Bayshores. For the plants and animals that make their homes in these landscapes, the celebration is much more than a milestone. Their habitat might have vanished had it not been for The Nature Conservancy — which, on November 18, will mark 10 years as a chartered chapter in New Jersey, after a long history of conservation work in the Garden State.

The Nature Conservancy's 1,000-acre Mashipacong Bogs Preserve — donated by Doris Duke in 1991 — is one of the best examples of a boreal bog ecosystem in New Jersey. Located in Sussex County, it harbors a number of rare and endangered plants and animals as well as resident black bears.

The Urgency of Conservation

Since its first project in the state — helping in 1955 to secure one of the Mid-Atlantic's few remaining virgin forests, Hutcheson Memorial Forest in Somerset County (see story on page 8) — the private nonprofit group has ensured that 40,000 acres in New Jersey will remain green. At the heart of its work are the endangered plants, animals and natural communities in jeopardy of being lost from New Jersey's natural heritage.

According to targeted tracking by the New Jersey Department of Environmental Protection's Natural Heritage Program — whose biological conservation database is an integral tool the conservancy uses — 706 plants, 320 animals and 63 natural communities are at risk in the state. It is this urgency that drives the conservancy's activity in the country's most densely populated state.

Branching Out with a Growing Staff

Science-based conservation is a hallmark of The Nature Conservancy — an international organization founded 47 years ago by people with a passion to save the land. Throughout the years its mission has remained steadfast: to protect the plants, animals and natural communities that represent the diversity of life on Earth by preserving the lands and waters they need to survive.

The New Jersey Chapter, after its incorporation in 1988, set out with 14,000 members and a staff of three housed in a one-room office along the Black River in Pottersville. At the time, the chapter had already helped preserve nearly 9,500 acres. Ten years later, 26 employees represent science, stewardship, protection, fundraising, administration, communications and outreach. Membership has doubled and acres saved have more than quadrupled to 40,000. Chapter headquarters is based at the Kay Environmental Center in Chester Township, Morris County. As a result of growing protection projects in southern New Jersey, the Delaware Bayshores program was created in 1994; this fall the conservancy opens the doors of the Delaware Bayshores Center at the Eldora Nature Preserve in Cape May County.

"We have much to celebrate," says Michael Catania who, as executive director of the chapter for seven years, has been an instrumental part of its growth. "Safeguarding our state's natural heritage for future generations is an awesome task. But we continue to find that by relying on our strategy of protecting land the 'old-fashioned way' — by buying it — and by working as partners with government, businesses and the community, we meet the challenge successfully."

Making Its Way in the Conservation World

The conservancy carved a place in the environmental arena with each preserve it established. Today, the chapter owns and manages 23 nature sanctuaries, each with its own ecological value. In addition to support from individual donations, land acquisition is made possible with major support from foundations and corporate donors.

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After working with Rutgers University in 1955 to save Hutcheson Memorial Forest, the conservancy grew its reputation as a "quiet saver of the land" during the 1960s and 1970s, securing funding to safeguard ecologically significant habitat throughout the state.

In 1981, the conservancy established the William D. and Jane C. Blair Jr. Cape May Migratory Bird Refuge. Its beaches and wooded uplands serve as a critical stopover for fall migrants such as ospreys, bald eagles and Cooper's hawks. In the spring and early summer, the refuge provides a haven for two endangered species of beachnesting birds: piping plovers and least

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terns. This showcase preserve attracts more than 300,000 visitors each year and has developed into a key site for ecotourism.

Farther north, in the Great Limestone Valley, the conservancy responded to a landscape in jeopardy of development. In 1995, it acquired land and secured the preservation of Johnsonburg Swamp. The Nature Conservancy has continued to expand this stunning preserve — with its exemplary limestone forest and rich botanical heritage in Warren and Sussex counties.

The newly acquired Forked River Mountain Preserve in the Pine Barrens has saved habitat for northern pine snakes and Pine Barren gentian. Donated by the Leone family, which had mined part of the land for sand, more than 3,500 acres (some restored) will be transferred to conservancy ownership over 10 years.

Sweeping beachfront and extraordinary coastal dunes are part of the resplendent landscape at Sunray Beach Preserve, protected by The Nature Conservancy in Cape May (above, left).

Built by Nature Conservancy staff and volunteers, a sturdy birding platform offers visitors a panoramic vantage point at the William D. and Jane C. Blair Cape May Migratory Bird Refuge (above, right).

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Partnerships: The Name of the Game

Projects such as Forked River exemplify the environmental, social and economic benefits that can come from private partnerships. Other cooperative efforts with outside agencies, government and corporations also have yielded the same far-reaching results.

One such active partner is the New Jersey Audubon Society. Its president, Thomas J. Gilmore, attests to the conservancy's vital role in New Jersey: "Time and time again, when ecologically significant land needs to be purchased, The Nature Conservancy springs into action and gets the job done," he says. "Our longstanding friendship with the conservancy has produced marked achievements for the environment."

Currently the conservancy is working with municipal, state and county government as well as the farming community, to save historic Tranquility Farms from possible development. This unique cooperative venture will protect 620 acres of rolling pasture, lush meadows and woodland in Warren and Sussex counties as a working farm.

The conservancy's concerted efforts with the State of New Jersey and Wayne Township led to critical habitat acquisition at High Mountain Park Preserve, a 1,057-acre natural oasis with a magnificent view of the New York skyline. Just uphill from Passaic County suburbs, its endangered plants, such as Torrey's mountain mint, will not be lost from the state's natural heritage.

New Jersey Businesses Get Involved

Corporate partnerships have flourished as well. A groundbreaking partnership with Public Service Electric and Gas Company (PSE&G) has led to the conservancy's management, under contract, of 14,500 acres of natural areas essential to the Delaware Bayshores' ecosystem.

In fact, more than 30 New Jersey companies pledge their annual support, including Johnson & Johnson Family of Companies, PSE&G, The Merck Company Foundation, Tiffany and Co., Union Camp Corporation and M&M/Mars. Other corporations have made contributions vital to land acquisition at crucial junctures in projects.

A land donation in Ocean County saved more than 3,500 acres of vast Pine Barrens wilderness, creating The Nature Conservancy's Forked River Mountain Preserve (opposite page).

Relying on water and fish in the Delaware Bay, the osprey (above) serves as an excellent indicator of the health of its habitat. It is one of several raptor species safeguarded by The Nature Conservancy in southern New Jersey.

© JEFF LEPORE

DuPont, for example, made possible the establishment of pristine Willow Grove Lake Preserve in Salem County. And Waste Management, Inc., sold more than 3,200 acres to the conservancy — for half of the appraised value — as an addition to the Manumuskin River Preserve in Cumberland County.

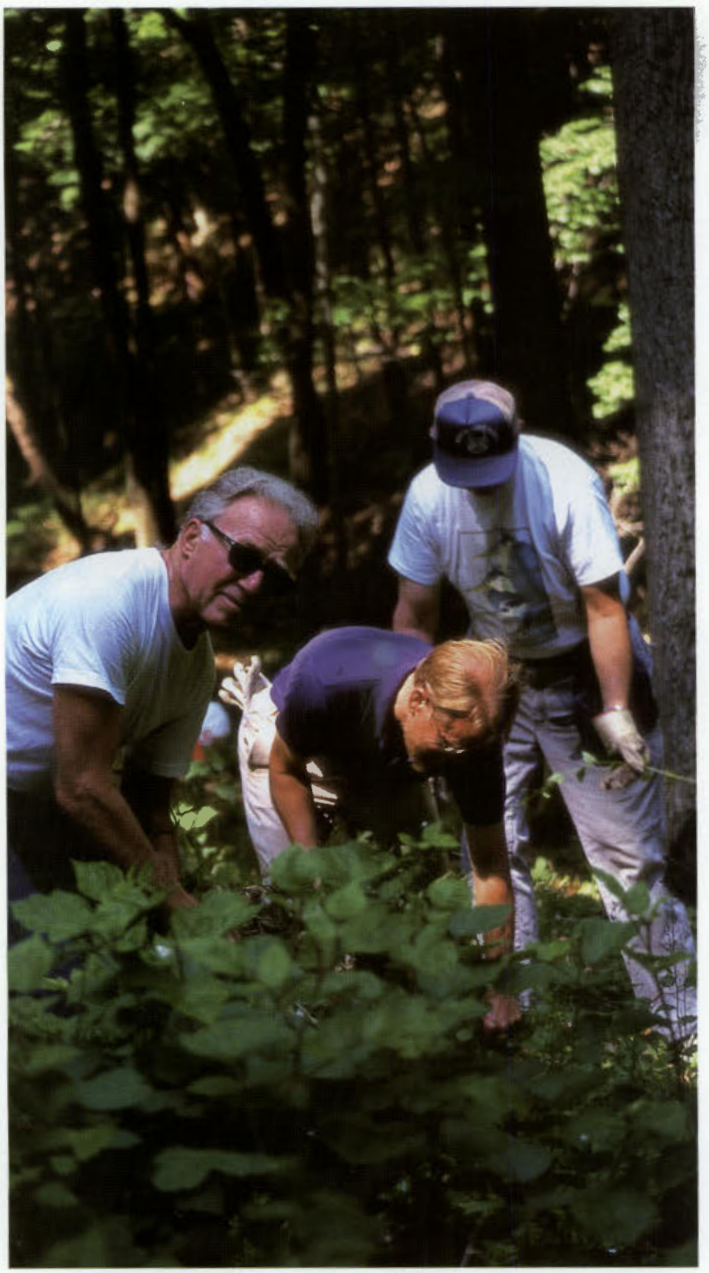
"Companies have an obligation to society as well as to their shareholders," maintains chapter trustee Jerry Jacobs, who serves as vice chairman of Conectiv — a corporate partner of the conservancy in New Jersey. Jacobs believes that companies associate with the conservancy because they "feel at home" with the organization's business-like approach to acquiring land.

"In such a populated state, The Nature Conservancy has played a vital role in preserving land. The conservancy is one of the primary reasons the preservation of land has gotten such visibility in New Jersey," he adds.

Not only have New Jersey businesses made valuable donations for land acquisition, many of their employees have given time in the field and office. Staff members of the Edison-based J. M. Huber Corporation, for example, have tailored company volunteer days to conservancy projects — pitching in with everything from tree plantings on the weekends to membership mailings during lunch hours.

Active Volunteerism

From the beginning, volunteerism has been a cornerstone of the conservancy. Beyond the staff, community and corporate partners, foundations and members are some 250 dedicated volunteers who treasure the state's natural resources and are committed to saving the precious landscape. From filing photos and



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answering phones in the office, to cutting brush and building birding platforms in the field, volunteers have donated their time and talents to making a better environment.

"Volunteering for the conservancy is a way that I can contribute toward protecting wildlife and our natural resources," reflects longtime member Gerda Reimer. She has channeled her concern for the environment and her skills in geology into a multitude of projects — ranging from map making to preserve research — at the chapter office.

"After several years, I'm still very enthused. I like working with the people here and I learn a lot about the sites we protect," she says. "I admire the conservancy's science-based, nonconfrontational approach and the way they coordinate projects with a wide variety of groups, pulling everybody together."

A New Decade . . . A New Millenium

Now, bolstered by state government's initiative for open space preservation, the conservancy is on the brink of a new decade — a new millennium — in conservation. Its sights are on progressive ventures, embracing partnerships with the conservancy in Mexico, for example, to protect migratory bird habitat and embarking on a refreshed view of conservation — ecoregional planning — which considers boundaries of ecosystems, rather than of states.

From the Great Limestone Valley to the Pine Barrens to the Delaware Bayshores, the mission endures. It is an ongoing celebration of the natural world . . . of life . . . of the treasures of the Garden State. And you are invited to be a part of it.

For information on how to join, or to sign up for a hike, contact The Nature Conservancy of New Jersey, 200 Pottersville Road, Chester, NJ 07930; 908-879-7262.

A native New Jerseyan, Karen Carlo Ruhren serves as director of communications for The Nature Conservancy of New Jersey.

Join in the Celebration

The Nature Conservancy's New Jersey Chapter will celebrate 10 years of conservation in the Garden State with a dinner this fall. Proceeds from this special evening will help fund the nonprofit conservation group's land protection work throughout the state.

The Nature Conservancy, with lead sponsor, Johnson & Johnson Family of Companies, will host the gala evening on Wednesday, November 18, at the Johnson & Johnson International Headquarters in New Brunswick.

Individual tickets and tables for this celebratory event may be purchased directly from The Nature Conservancy. Please call Robynne Dinkelaker at 908/879-7262 for details.

At Milford Bluffs Preserve, high above the Delaware River in Hunterdon County, volunteers pitch in to remove invasive plants. Volunteering is a time-honored tradition at The Nature Conservancy.

New Jersey's Coastal Sea-Ducktion!

by Tom Pagliaroli

©TOM PAGLIAROLI

Heedless of waiting hunters, a flock flies over Great Egg Harbor Inlet.

> "They'ez hell . . . then they'ez sea duckin'!"
>
> — Anonymous, Balley's Island, Maine, 1976

Those croaking words from a gnarled Maine lobsterman and sometime waterfowl hunting guide put the extinguisher to a trio of inflamed college sophomores (wise fools, all), cash in hand, who wanted firsthand experience at those exotic wildfowl known as sea ducks. The black ducks, mergansers and goldeneyes from the previous autumn's gunning on Aroostook County's lakes and ponds were old news. And the rocky, island-studded shoreline of Maine was the place for sea ducks.

Someone at the coffee shop on the rise pointed us in his downward direction, where the boats creaked in their bony moorings and eyes from neighboring mariners bored into your back.

"If anyone'll do it, he will. Hunts ducks, ya know. Can yooz the money . . ."

The clean but cluttered vessel and adjoining rowboat certainly looked "duckable" enough, but the old salt

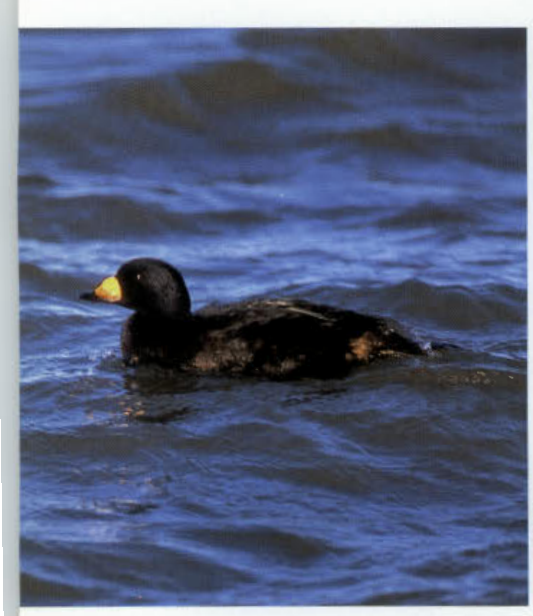
wasn't interested and he didn't know any other guide who was, at least on short notice. We pressed him a bit, but he declined in a rather forceful, Maine-like way. We beat a hasty retreat, reasoning that if this guy wasn't enthused about such a hunt, despite the Franklins made all too obvious, well, maybe he was correct in his initial assessment of the endeavor. I never learned his name and, in retrospect, thanked him for the warning.

A Warning Unheeded

Fast forward 20 years.

I was to sate my hunger for these mysterious migrants off the coast of Ocean City, New Jersey, of all places. The guide was Dave Palmer of Jersey Coastal Outfitters, and the knuckle-whitening, temple-graying, kneecap-smashing, equilibrium-wrecking ride through the tempestuous Great Egg Harbor Inlet incised the Down Eastman's words forever in my memory: They'ez hell . . . then they'ez sea duckin'!

It was the kind of gusting, damp wind that seeped an ache into your soul. More calculating than cold, it gnawed at the resolve and made you wonder, as your entrails began to chill and you scrunched even further into the wonder fabric, why, of your own volition, you were bobbing like a discarded Styrofoam cup on



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autumn's belching, ashen Atlantic.

An insolent swell crisps the starboard bow and delivers a stinging, salty slap. Yet another cleaning of the corrective lenses. A shiver builds in the thickening drizzle, and just when you believe your gums have achieved chattering status, the words ignite the internal pilot light.

"Ducks north, coming south. A little more than a quarter-mile in towards the beach. Whoa! A whole lotta wings!"

Cardiac acceleration to warp mode.

"Oh yeah. Delivery due. Get ready. Ducks ahoy!"

All this said in a tortured, frenzied whisper, if you can imagine such a sound.

Guide Sean Duffield really gets things going by frantically waving the "colors" — a black towel and a black cap.

Ever waterfowling's action seekers, the birds respond to the invitation.

Your stern side vantage point renders you momentarily sightless on the rolling ocean, so you defy the pre-dawn "No Movement" edict and lift your numbing butt a few inches off the seat to sneak a look. What you see wants to make your tongue slap your brains out! By rote you struggle to maneuver your trigger finger from the suddenly recalcitrant insulated shooting glove.

Three undulating black shoelaces of waterfowl, winging a couple of feet above the chop, are winding in unison toward the fanning strings of decoys, oblivious to the deadly 21' wad of white flotsam jutting conspicuously from the whitecapped surface.

A gray roller blanks the screen. It's impossible to see through or around the saline wall . . .

A maniacal rush of feathers arrives. Nearly a hundred or more sea ducks eyeballing, whirling, twisting and settling in between the imposters. In the mayhem, you almost forget to shoulder the smoothbore as you rise off the bench. Wings and whooshes everywhere. Out in front. To either side. Coming in. Coming across. Going out. And, as they spy your lift, overhead. The Atlantic City skyline is a blur.

A fusillade of steel and bismuth loads flame from the whaler, and the encounter concludes in a matter of seconds. Four pairs of webbed feet kick feebly in the chop as independent sashes of scarlet meld in the tidal pull and trail west toward the beach.

You just begin to draw a breath when notice is once again served.

"Another flock. Off the breakers. Coming in. Look at those skunkheads! A candycorn! Load! Load!"

Shells spill and drop to unreachable places as you frantically try to stuff the pump's magazine. A resonance of seafaring wings only adds to the clumsiness. The *click* of your companion's double is amplified as you realize that only one of the three shells has been inserted as the confusion whistles in.

"Now!" is the order.

The driving line is shortened by three as all shots envelop the formation perfectly. Peeling, fragmenting flocks blow down the beach to a safer surfline.

Your pulse gradually decelerates while the pickup is made. The whitewing, common and surf scoters, and the one seemingly misplaced old squaw, are admired and slid into the ice-packed cooler.

One Day Later . . .

It was still a half-hour before daylight and the thermometer was already pushing 55 degrees. Indian summer had yet to depart the southern New Jersey coastline, and the forecast dictated 5-mph winds and balmy 65- to 70-degree temperatures. The inlet could barely spit a two-inch chop, and the sea beyond was as flat as a cutting board.

Not the best harbinger for the waterfowler.

"Don't let the forecast fool ya'," remarked the wild-eyed Johnny Miggs, also of Jersey Coastal Outfitters. Dave Palmer stood silent at the bow.

"Once the main autumn blow goes

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The black scoter (*Melanitta nigra*) is one of several species of dark colored diving ducks that inhabit northern coastal areas (opposite page, left).

The commercial line clip anchors decoys on the main line (opposite page, right).

A male old squaw takes wing (left).

through, like yesterday, the sea ducks are going to be movin'. We'll see 'em all day," Miggs continued.

The master of the understatement, that Johnny.

Punish me for being the Doubting Thomas!

In they came and out they went. And in they came again. Commons, surf and whitewings. And they would not leave, oftentimes circling in a most fatal fashion.

It was the thunder of guns.

A short quarter-hour of silence.

"'Squaws in the suds," reported the ever-viligant Miggs.

He then barked, "Whities comin' in!"

The longtailed old squaw foursome joined the thirty-pack of whitewings that cruised just beyond the breakers and, for whatever reason, circled back towards the decoy spread.

No one else loosed a shot. I was the victim of my own excitability.

The ducks blazed southward, unscathed.

Queried the smiling Palmer, "Do you think you're getting used to sea duck hunting yet?"

You do not get used to sea duck hunting. Rather, one is first seduced, then addicted to this wild and exhilarating type of waterfowling. There is nothing quite like it, and for those accustomed to sitting over puddle duck blocks on heavily gunned inland or estuarine venues where the birds are skittish and scarce, well, the wide open Atlantic and Delaware Bay beckon.

New Jersey's Clan

The sea duck clan includes the eider, old squaw, white-winged scoter, common scoter and surf scoter.

The Garden State is the extreme southern range of the more exotic eider, and few, if any, are seen below Sandy Hook.

The visually stunning old squaw will migrate farther down the coastline, and while the count is fairly strong, its numbers in no way approach those of the ubiquitous and gregarious scoter clan.

For all intents and purposes, scoters constitute the bulk of New Jersey's winter sea duck residents, and they are what gunners will most likely encounter.

These least understood and most underutilized wildfowl begin funneling down the shoreline in late September, with flights intensifying into the Yuletide. Autumn's first significant cold front — usually is a week or so after the late September/early October opening — really gets things percolating. The birds appear in flocks that just don't seem to quit and will give one used to the standard puddle duck procedure a severe case of the shakes.

Unfortunately, sea ducks — scoters in particular — have been the victims of some rotten PR over the years that has discouraged any interest one might have in pursuing them. According to established waterfowling dogma, scoters are poor fliers, do not decoy well, are ugly and, once in the oven, will qualify the neighborhood as a Superfund site.

The fact of the matter is that these ducks are strong of wing and decoy with an avian Jonestown flair. They will oftentimes veer off, regroup and return to the spread even as flock mates lay belly up in the chop, and it is not uncommon to have a second band of birds wave in to the blocks and line of fire as the shooting is going on.

Males of the species certainly rival their shallow water counterparts when it comes to looks. The visually stunning mask of the surf scoter ("skunkhead" in South Jersey waterfowling vernacular) can install an inferiority complex in a drake woodie, and the brilliant yellow bulb adorning the bill of the common scoter drake (candycorn) makes a more dramatic visual impact than the dresswork of the boss ringneck, scaup, baldpate or redhead. The male whitewing sports a more sedate, Nike-like swoosh below and behind the eye and a reddish/orange/burgundy bill. It

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The old squaw (*Clangula hyemalis*), a black marine duck with a white breast, can be found in Arctic and North Temperate regions (left).

Jersey Coastal Outfitters guide Dave Palmer shows off his brace of ducks (opposite page).

©TOM PAGLIAROLI

makes up in size for what it lacks in color: the drake whitewing will tip the scales in excess of 3 1/2 pounds and is rivaled only by the scarcely seen eider for heavyweight honors.

The scoter diet is approximately 90 percent seafood, with the blue mussel a favorite. The ducks will also consume oysters, clams, scallops, crabs and small fish, hence their rumored unpalatability. However, with proper care and a tad of epicurean dexterity, scoters, as well as the eider and 'squaw, provide quite the satisfying repast.

These are true big water ducks, frequenting the inshore expanses of the Atlantic Ocean and Delaware Bay, venturing into the mouths of inlets or the outer reaches of the back bays only during the most severe of coastal storms. Although they will range out to three miles off the coast when the weather is calm, they seem to prefer the softer seas closer in to the beaches. Rafts of birds often can be sighted just beyond the breakers, well within the safe zone dictated by the one-mile offshore mandate for sea duck hunting.

The low flying scoters will keep within a few feet of the surface as they trade up and down the coastline, making them rather befuddling targets, even when barreling towards a spread. This is exacerbated by rolling seas and

Palate Seduction

Wild game gourmand Sam Scanella, of New Gretna, is a master when it comes to cooking sea ducks. His stir fry is eagerly anticipated by gunning companions and guests the evening following a hunt on the salt.

Sam's Sea Duck Stir Fry

Place six sea duck breasts (all orange-colored fat removed), half of a raw onion and a tablespoon of white vinegar in a pot filled with a half-gallon of seltzer water. Refrigerate for 12 hours.

Remove and rinse breasts. Flatten with a cutlet mallet, then cut into 3/4-inch strips and place in a deep bowl. Cover with teriyaki sauce and stir vigorously to coat all pieces. Place in refrigerator and let sit 6 hours.

Chop a green onion, a red bell pepper, a small onion, a carrot, a small head of broccoli (remove lowest inch of stems) and three stalks of celery. Add these vegetables to the bowl containing the duck breast strips and stir vigorously.

Drop a spatula full of the breast/veggie mixture into a wok heated with a light corn or sunflower seed oil, stirring and shifting constantly until the meat turns a dark brown. The vegetables will cook to a proper texture (not mushy) as per the pace of the meat.

Place over a bed of white rice or alongside wild rice. Accompany with a tossed green salad and hot biscuits or dinner rolls. Follow with a sherbet dessert.

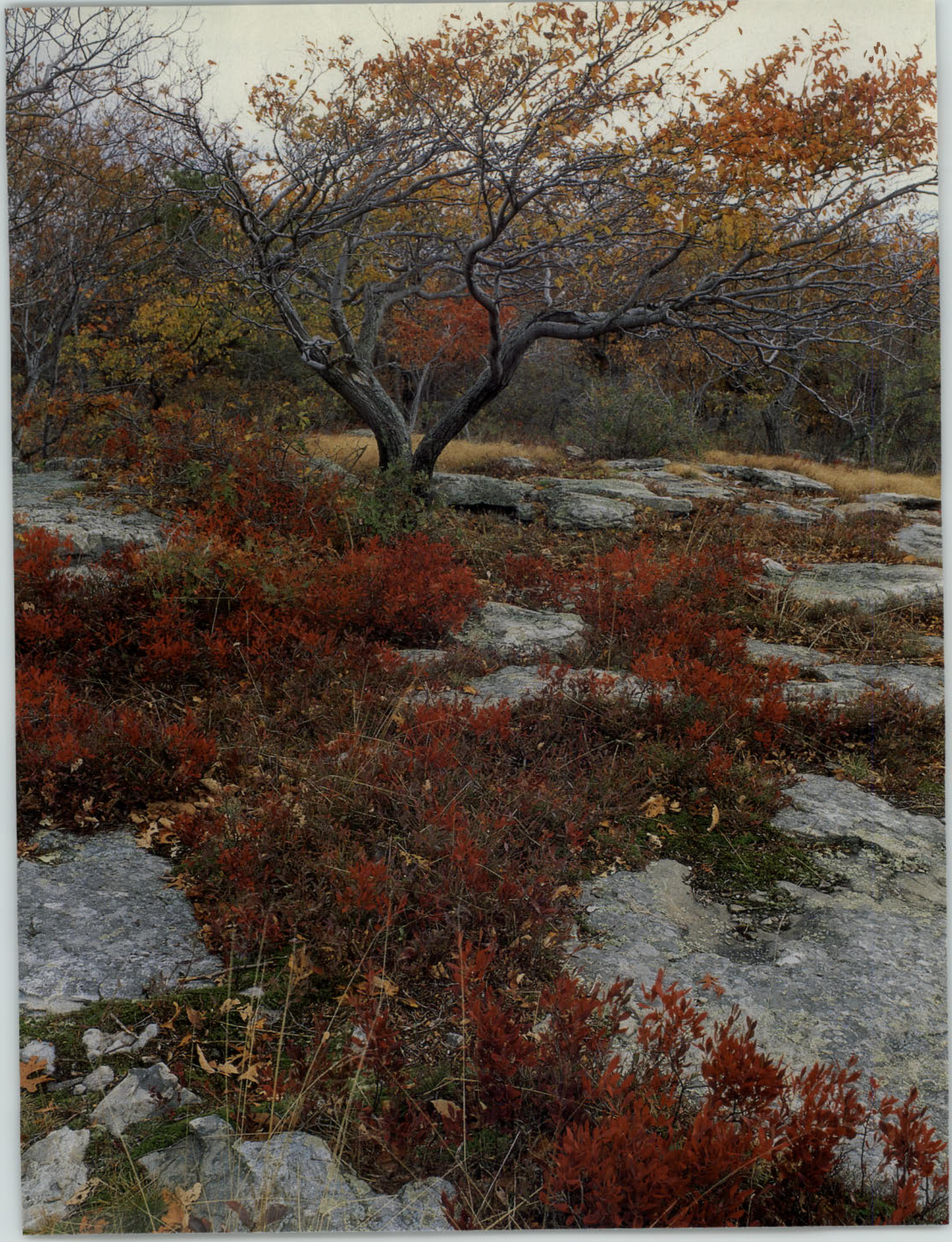
Quiet Corners of Autumn

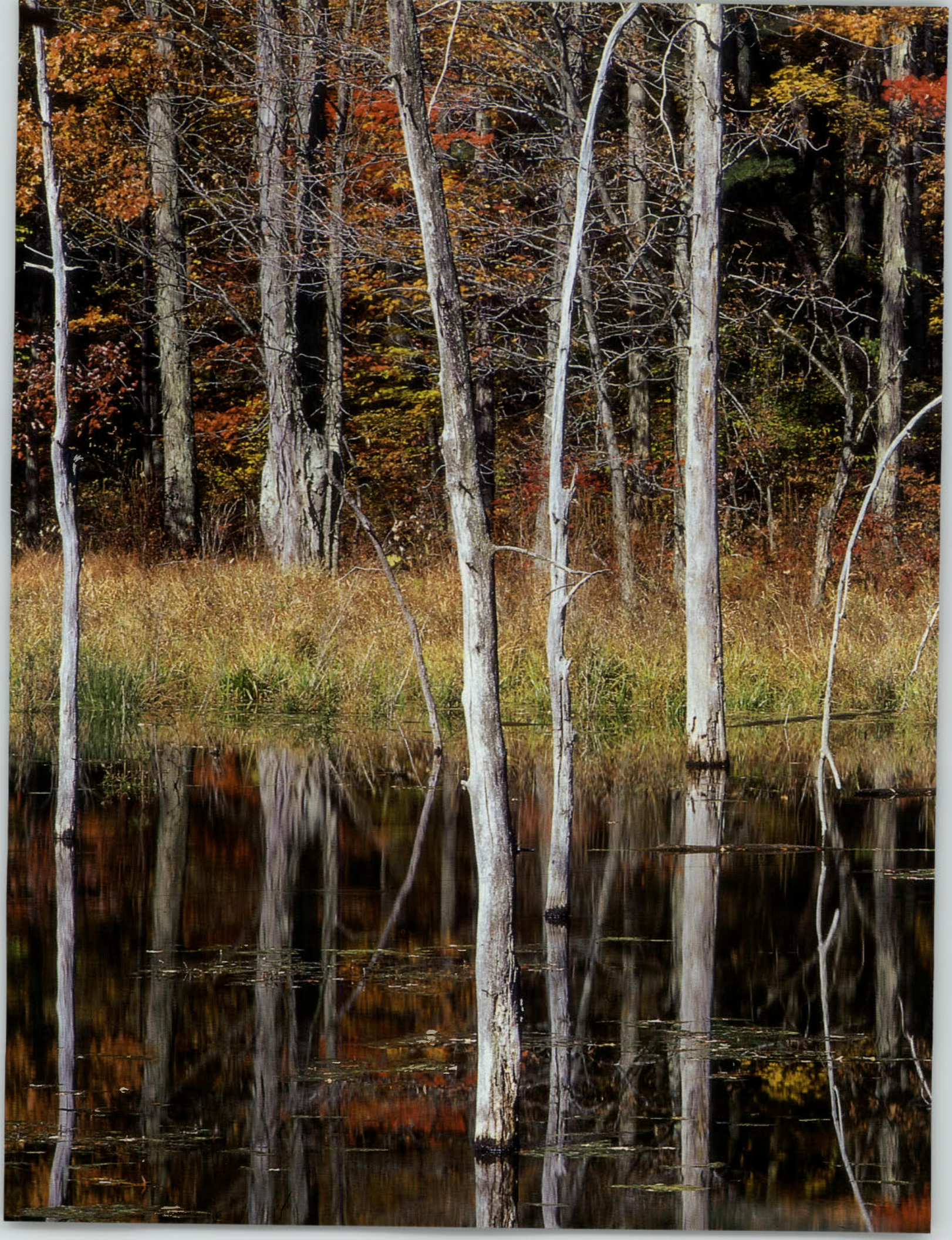
by J. J. Raia

Color has always been the driving force behind my search for images when I'm out photographing, so it should come as no surprise that the annual transformation of autumn leaves is the most eagerly anticipated time of year. Although most of the attention is focused on the treetops, I always strive to find new places and new ways in which the colorful textures of nature unexpectedly weave themselves into the fabric of the landscape. These encounters with the extraordinary among the commonplace provide the sweet surprises that continually encourage my explorations. I hope that, through the images of a few of these special places, I can share the same sense of initial discovery and convey the silent spirit of these quiet corners of autumn.

After a cool night when the air is still, frost forms on leaves and grasses making us truly believe that Jack Frost has passed by. The image above was captured in the Edwin B. Forsythe National Wildlife Refuge.

Huckleberry, growing red in the cracks, creates a road map on the exposed rock along the Appalachian Trail in High Point State Park (opposite page).





Patterns often emerge in reflections along the edge of a lake as they did here with the red maple leaves and white birch trunks. Thunder Mountain Lake, in Delaware Water Gap National Recreation Area, was the scene of these patterns.

If conditions are right, the forest floor of the Pinelands National Reserve turns into a sea of scarlet in autumn (opposite page). It appears even more vivid when set against the vibrant green of new growth on a recently charred black pine.

In late autumn there are times when leaves blow down all at once and in such abundance that they coat the ground like snow in winter, leaving only the paths of a small cascade untouched. This image was captured at Van Campens Brook in Delaware Water Gap National Recreation Area (above).

The iridescence of these leaves will last only a short time as summer fades into fall at Ramapo Mountain Reservation. Yet, though the daily landscape changes may be imperceptible, something new will be revealed in their place (right).

Highbush blueberry leaves turn red in fall. Here, they gently caress a weathered snag at High Point State Park.

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The waters of the South Branch of the Raritan River flowing through Ken Lockwood Gorge are heavily stocked and a favorite with trout anglers.

Ken Lockwood Gorge: Picture-Perfect Fishing Spot

by Oliver Shapiro

The sun is already on the downside of its daily trek through the sky, in that typically clear but hard-edged weather characteristic of autumn. The breeze is causing the trees' gold, red and orange foliage to sway in ever random and unique patterns, while the wind from your car's passage causes those few leaves that have already dropped to swirl briefly as you whiz by.

You're making your way through Tewksbury, a small town in Hunterdon County, en route to the South Branch of the Raritan River. Of particular interest is that well-known section of the river known as the Ken Lockwood Gorge, famed throughout this and other states for its picturesque qualities. Sandwiched between Califon and High Bridge, and just northeast of Voorhees State Park, your destination's proximity makes your pulse accelerate with anticipation.

The Gorge, purchased in 1948 by the Division of Fish, Game and Wildlife (then known as the Division of Fish and Game, under the then-Department of Conservation) with proceeds from hunting and fishing licenses, is unmatched in its natural beauty. "It's one of, no, it's *the* most picturesque location in the state," avers Joseph Penkala, regional superintendent with the division.

"We could have bought twice as much," admits Bob Soldwedel, chief of the division's Bureau of Freshwater

Everyone in the state should visit it at least once.

— Joseph Penkala

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The old steel bridge at Hoffman's Crossing marks the upstream entrance into Ken Lockwood Gorge.

"When mists and shadow rob pool and run of shape and substance, when the voice of the wood thrush stills and the dog trout shakes his lethargy; we will remember, stalwart gentle master of the angler's art, half submerged in the smother, unerringly shooting that long line, watchfully mending the drift. Nevermore will your skilled hand tempt the patriarch of the flood. Farewell old timer."

-epitaph engraved on memorial plaque at the Gorge; written by Henry Schaefer.

Kenneth Lockwood (1881-1948), Outdoor Writer

Kenneth F. Lockwood, born on December 2, 1881, was one of the better-known sports figures in the state during the first half of this century. He served as national director of the Izaak Walton League of America, two terms as president of the Rod and Gun Editors' Association of Metropolitan New York (the first New Jerseyan elected to that position), and as a member of the Atlantic States Marine Fisheries Commission's advisory board.

He also was president of the New Jersey Fish and Game Conservation League in 1922-23, served for six years as president of the Newark Bait and Fly Casting Club (1918-1919 and 1927-1930), and was a trustee of the New Jersey Audubon Society. But he was perhaps best known for his column, **Out in the Open**,

Fisheries. "We didn't have enough foresight." He also mentioned that efforts had been made to purchase additional property along the stream just a few years ago, but they didn't quite work out.

"It's a great area," emphasizes Penkala. "I wish we could accommodate more people without damaging it. Everyone in the state should visit it at least once. In fact, over the years, a few commercials have even been filmed there."

The 2.5-mile stream is the central feature of the area, now known as the Kenneth F. Lockwood Wildlife Management Area (WMA). The area itself covers about 260 acres of steep, hilly woodland that serves as home to a plethora of flora and fauna. Information from the division reports good populations of deer and small game species in the area, and cold weather visitors can expect to catch glimpses of aquatic species like muskrat and mink. Although it is open to all the activities that usually occur on WMAs — hunting, hiking, birding, photography — Penkala admits that they don't encourage much hunting there.

"The area isn't that big, and it's very hilly," he says. "Plus, the access road is very narrow and doesn't lend itself to much traffic." Indeed. Although River Road follows the stream throughout its length in the gorge, it is a rude avenue cut from the surrounding gorge wall, and will allow only one vehicle on its width. Substantial potholes dot the roadway like land mines, ready to ensnare the unwary motorist at a moment's notice.

Like a Magnet

Yet the magnificent vistas and excellent trout fishing nevertheless draw people from all over the state, as well as from neighboring New York and Pennsylvania. The opportunity to immerse oneself in a stream this reminiscent of the great Midwestern waters, chock full of strong, wary trout, is an irresistible pull for most fly anglers. The predominant species are rainbow and brown trout, although the occasional brook trout is seen. So well suited to trout life are these waters, that the stream and some of its tributaries are among the few in New Jersey that allow for natural trout spawning.

"Brown trout reproduce in the river itself," Soldwedel told us, "and rainbows and brookies in some tributaries. Hickory Run and Frog Hollow Brook, especially the former, host pure rainbow trout. The next brook up, Little Brook, is pure brook trout. Those tributaries are outside the area, though — there aren't any coming into the Gorge," he added.

Besides the impressive trout fraternity, a number of other species swim here. Smallmouth bass, rock bass, and sunfish make their way in some sections of the river, and a number of smaller forage species — fallfish, creek chubs, black-nosed dace and others — live there also. It isn't unusual for fly anglers to hook one of these other residents while working small offerings through the current.

Although early-season anglers can use virtually any conventional style of fishing, it reverts to fly-fishing-only within a week

which ran in *The Newark News* from 1913 until his death in 1948, when Henry Schaefer took it over.

An avid outdoorsman, Lockwood's first love was fishing. Although he enjoyed hunting, he often remarked of his shooting skills — particularly after missing a shot — that "as a hunter, I am probably one of the greatest conservationists in New Jersey."

He also was instrumental in two important developments in Garden State outdoors activity: the use of adult trout for stocking purposes and the establishment of public hunting and fishing areas. And he is credited with the creation of a well-known fly pattern, the *Irresistible*.

He died on April 2, 1948, on the way home from WNJR, the newspaper's radio station, after completing his weekly broadcast. A few days later, the Newark Bait and Fly Casting Club petitioned the Fish and Game Council to name Lockwood's favorite stream, the gorge on the South Branch of the Raritan, in his honor. The petition was unanimously approved on April 13, 1948.

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Human anglers aren't the only kind attracted to these fish-laden waters. This blue heron (above) is typical of the avian fishers prowling the area.

This angler, who came from Pennsylvania (right) to sample the fine fishing, prepares to unhook a feisty brown trout he caught using a Muddler Minnow.

after the season opener. This continues throughout the year, until the pre-season stream closure in late March. The vast majority of the time, long wand practitioners are the most numerous visitors to this area, and the angling challenges — although by no means insurmountable — are enough to appeal to all levels of skill, from beginner to advanced.

Piscatorial Ph.D.s

Because of the river's popularity among anglers, those fish that aren't immediately culled from the river during the spring season become highly educated. They've seen endless parades of fur and feather bits, imitating a huge range of forage types, and have probably been hooked by more than one of them. And don't think that a trout's brain is too primitive to learn from its mistakes.

The result? A class of fish with advanced degrees in fake entomology and ichthyology. Until this year, this situation was somewhat mitigated by the release, during the yearly fall stocking, of some hatchery stock left over from the annual Pequest trout production. The autumn angler could always hope to encounter a few naïve trout that would eagerly chase down a marginal offering. But recent word from representatives of the Fish and Game Council indicates that the autumn trout stocking will, along with other measures, be removed from the division's schedule of activities, in an effort to keep costs under control.

As with any trout fishing scenario, the first hurdle to jump is deciding where the fish are — or might be. Don't let the fast water and numerous boulders along the southern half of the gorge throw you; there are numerous trout-holding areas there. As one member of the local fishing group, the Lake Solitude Club (which owns and posts the lower half-mile or so of the Gorge's waters), admits, "There are a lot more fish in here than most people think."

Use the rocks and boulders — some of them admittedly downright monstrous — to your advantage. The area immediately downstream from the larger submerged stones contains enough slack water to give resident fish a rest from battling the current, while the surrounding fast water keeps food supplies coming to them. Hungry fish often will accept offerings carefully worked along both sides of the stream obstruction. Be sure to work the water both upstream and downstream of the current break, as well as the full length of the eddy behind it. This can represent a stretch of water anywhere from a few feet long to 20 or more feet, depending on the size of the obstruction and the water's depth. Often the fish's strike won't be until the very tail end of the eddy, just before it merges again with the main current.

Deep Water Strategies

Along the more northerly part of the Gorge one can find more plentiful pockets of deeper and slower water — although that is a relative statement. Even though your chance of finding trout in these spots is excellent, there is a definite trade-off. The calmer water allows these finned experts a chance to scrutinize your fly very carefully before deciding whether or not to try it. High-quality imitations, small-diameter tippets, drag-free presentations and extreme stealth all come into sharp focus as a result.

One approach that has proven productive is to carefully select an area from the access road, staying a fair distance from the water. Then determine from which spot you'll fish it, and what avenue you'll take to reach that spot. Use the least intrusive route possible. Once you get there, simply stand still for a while — perhaps 10 to 15 minutes — to let the nearby scaled denizens settle down. Use the time to determine your casting strategies — taking into consideration any nearby brush or overhanging tree limbs — and what patterns you'll use, and to start tying on and preparing them (using, smooth, deliberate movements all the while).
If you can see the fish holding, so much the better. Sight fishing gives you the advantage of observing exactly which patterns are eliciting interest, with the added benefit of seeing the strikes themselves — critical when the trout may simply "nose" or mouth your fly, ready to eject it instantly.

To be sure, a number of patterns will turn a trout's head. Start with some of the patterns that served you well during the spring. These can include a variety of dry flies, wet flies and nymphs. Dries that have acquitted themselves well go from general patterns, such as Coachmen and Adamses, to specific caddis and mayfly patterns. (Elk-hair caddises are a personal favorite of mine.) If you want to stay on top but need to go smaller, midges are the logical next step — and don't overlook terrestrials, which can produce some outstanding strikes, especially from cricket, beetle and ant patterns.

Underwater (Al)lure

Nymphs and other sunken flies will likely be your bread-and-butter patterns, and some have shown themselves off better than others in these waters. Patterns like Muddler Minnows, Black Nose Daces, and Woolly Buggers work well, either dead-drifted or twitched occasionally. Once in a while, a very sprightly-worked streamer will excite a trout into grabbing it, but this technique should be tried sparingly unless you've plenty of time on your hands.

Other subsurface offerings worth a go are Woolly Worms, Hare's Ears, Zug Bugs and the like. And, although purists may need some smelling salts after reading this bit of advice, feel free to try what I call "street fighting" flies: salmon egg patterns, Glo Worms and San Juan Worms. Remember that, with the possible exception of that second one, these represent natural trout forage just as much as any of the ones from the entomology club.

A few other points bear mentioning. One is weight consideration. Don't even think of fishing these waters without a supply of small split shot. Remember that if the fish aren't seeing your fly, they certainly won't take it. Experiment with weight until you find the proper presentation depth — often this will be right on the bottom, so keep those flies bumping the substrate. Another is conservation. Except for the pre-season stocking closure, there is a creel limit in force for this stream, so anglers are well within their rights to keep a few trout (each at least 7 inches long) for the frying pan. But try to limit your creel, and consider releasing most of the trout you best. Since fish that are released don't always make it — it's not unusual to see dead or dying fish, the apparent victims of upstream anglers who neglected to revive the exhausted salmonids properly, floating past you — it's important to follow good resuscitation practices (see sidebar) when releasing them.

Do yourself a favor, and visit the Ken Lockwood Gorge. Even if you don't like to fish, the outstanding beauty will reawaken you to the beauty of our Garden State.

Oliver Shapiro, who makes his home in Passaic, is a frequent contributor to ***New Jersey Outdoors****. His most recent article was* ***Talkin' Turkey****, which appeared in the Spring 1998 issue.*

The Essentials of Fish Resuscitation

How does one maximize a released fish's chances for survival? Here are the essentials:

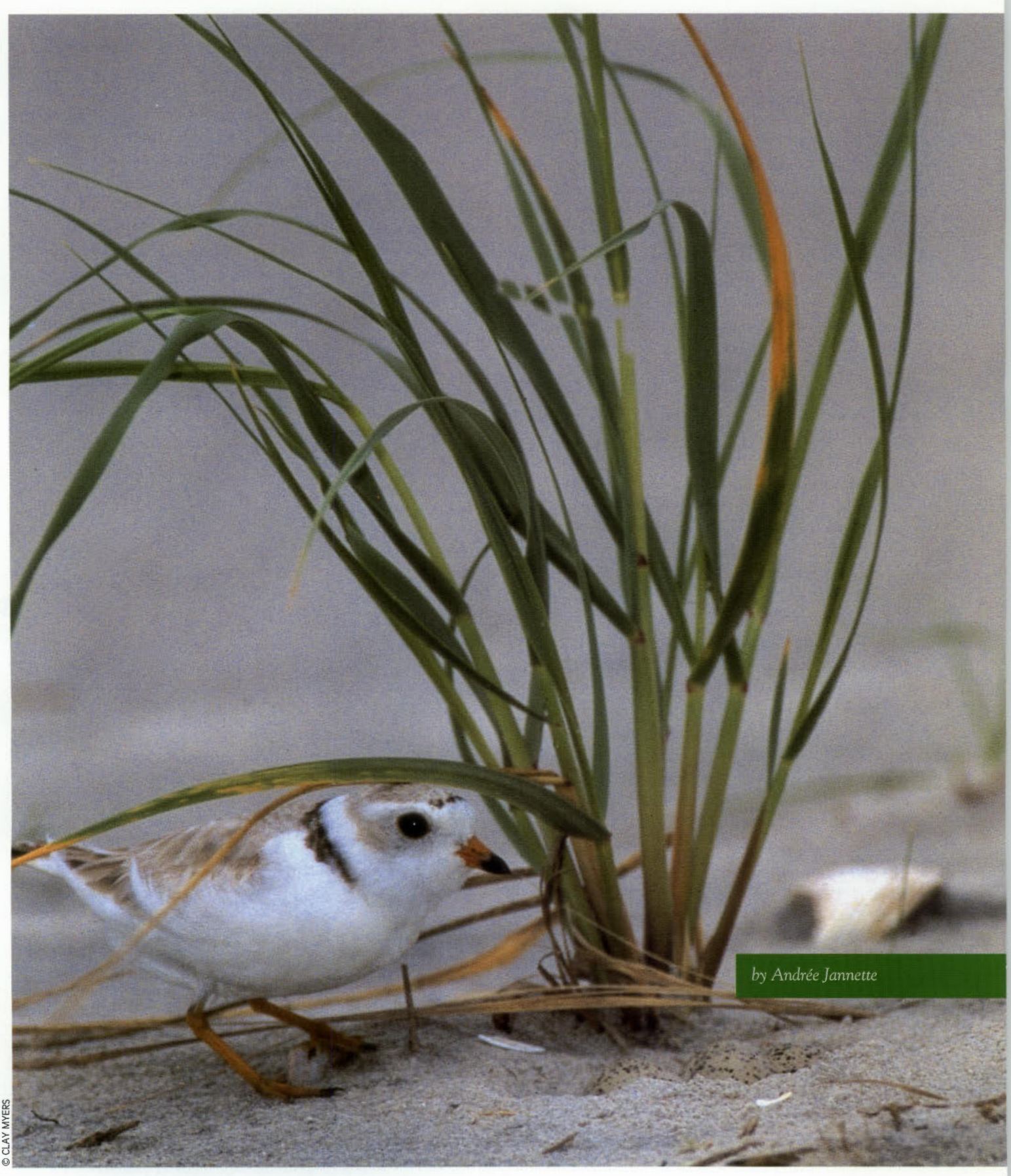
1. Once you've hooked it (hopefully, on a barbless hook), don't play it any longer than necessary. Bring it in quickly, if possible.

2. When it's close enough to handle, do so gently and with wet hands, avoiding the gills. Keep it in the water as much as possible. If possible, unhook it without removing it from the water.

3. If the fish seems lethargic or exhausted, hold it in a gentle part of the current, facing upstream, so that water flows through its gills. If there's no current, gently move it forward and backward to bring about the same results. This can take a few minutes — don't rush it.

4. When it's strong enough to swim away on its own, let it do so. If it scurries away quickly, that's a good sign.

Living on the Edge:



by Andrée Jannette

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The plover's nest is simply a shallow scraped depression in the sand that is virtually indistinguishable from the beach around it.

Piping plover chicks blend so perfectly with their environment that unwary beachgoers may inadvertently trample them.

New Jersey's Piping Plovers

To the casual observer it looks like just another puff of sand pushed about by a wayward ocean breeze. But to federal and state biologists, it's a welcome sight, for what looks like a tiny sandstorm skittering across the beach is actually a baby piping plover, an avian species barely hanging on in its fight for survival.

Despite intensive efforts by the New Jersey Endangered and Nongame Species Program (ENSP), the U.S. Park Service, The Nature Conservancy and the New Jersey Audubon Society to help provide undisturbed nesting areas and protection from predators, the piping plover population is on the decline. In 1997, there were only 114 nesting piping plover pairs along the entire length of New Jersey's coastline, down from 127 the previous year. And these pairs produced only .42 fledglings (a young bird that has reached the stage where it can fly) per nest, a 60% decrease from

1996. It's been estimated that nesting pairs of piping plovers must fledge an average of 1.24 chicks to maintain a stable population.

A Closer Look

The piping plover (*Charadrius melodus*) could not have chosen a more vulnerable time and location in which to breed — the New Jersey shore at the busiest time of the year (from April through July). Protecting this small bird, which is on the Endangered Species List, presents a difficult challenge, pitting those who are trying to save the species against the beachgoing activities of the many thousands of people who visit the New Jersey shore each year.

The piping plover nests directly on the sand of either the berm (flat, sandy part of the beach) or the foredune (dune line) amidst sparse vegetation. Its nest consists of a shallow scraped depression in the sand. To the untrained eye, a plover nest is virtually indistinguishable from the beach around it. The eggs, laid every other day until the clutch reaches the full complement of four, are quite small and are cream- or sand-colored with brown speckles. The nest, given its nature and the sandy coloration of the birds and eggs, blends remarkably well into the surrounding beachscape.

Risks to the Nest

When the adult birds perceive a threat to their nest, they go into a stylized defensive routine, calling their signature *peep* loudly and dragging one wing behind them, mimicking an injury. They also may try to trick a predator into thinking their nest is elsewhere by false brooding. Unfortunately, what they perceive as a threat can be something as innocuous as a person walking a leashed dog down the beach. And, while the adult piping plovers are off the nest trying to draw that threat away from the eggs, the eggs themselves are vulnerable to attack by predators such as foxes, seagulls or crows. That's why field biologists up and down New Jersey's coastline put up what is called symbolic fencing, a system of a few strands of rope or wire, along with signs, to help alert the public to piping plover nesting areas.

"Once we fence off those areas where we've found nests, we've protected them from 99 percent of the human disturbance problems," says Dave Jenkins, a principal zoologist with the ENSP. "During the nest phase, predation is by far the biggest problem, with flooding a distant second."

Once the eggs have been laid, a more stringent preventative measure is put into place. Called an exclosure, it's a wire mesh square that has netting stretched across the top. The size of the mesh is specific to the plovers, keeping larger predators like foxes and crows from getting into the nest, while allowing the birds to move freely through it in order to feed. Although it varies from site to site, foxes are considered one of the top predators of the piping plover. At the Gateway National Recreation Area's Sandy Hook, 30 of 34 nests were lost to foxes in 1997 alone.

The exclosures are a mixed blessing. While they facilitate the successful hatching of more eggs, they also present some unique problems. The smarter predators, specifically foxes and crows, quickly learn that the sight of one means that there is food inside it. Foxes persistently try to outwit exclosures, from digging under them to jumping in through the netting on the top. Sometimes a fox will circle the enclosure repeatedly, trying to fluster the adult birds enough that they leave the nest. If the plovers have not yet bonded with the nest, the adults could indeed, in the face of such ongoing harassment, abandon the nest with any eggs it contains.

After an incubation period of about 27 days, the chicks — tiny bits of sand-colored fluff about as big as a quarter — hatch and soon are able to leave the nest to begin searching for food. The chicks now face a new set of dangers.

Risks to the Chicks

Plovers feed in territorial corridors that run from the dunes to the water's edge. "The chicks will not go past people who are sit-

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Piping plovers (*Charadrius melodus*) are on the endangered species list in New Jersey (right).

Exclosures keep larger predators from getting into the nest, while allowing the birds to move freely through the mesh in order to feed (opposite page).

ting on a beach blanket blocking their way," says Les Frie, a land steward at The Nature Conservancy's Cape May Migratory Bird Refuge. "So they stay back in the dunes; they overheat, get too hungry, and die." Again, human interference, even though it may be unintentional, can make the difference between life and death for these tiny creatures.

The solution — an unpopular one with the beachgoing public — is to block access to the beach to protect the plovers' feeding territories. Sandy Hook is one of the few places in New Jersey where they are able to take this step, because the federal government owns the beach down to 1,500 feet beyond the water line.

"We close the whole area off," says Park Ranger Jeanne McArthur. "Once the chicks are hatched, no one is allowed to walk in that section of the beach."

"Once the chicks hatch, human disturbance becomes much more of a factor," explains Jenkins. "We did a statistical analysis several years ago that looked at how the fledgling rate correlated with different levels of human activities. There was a definite statistically significant correlation: human disturbance and chick survival are negatively correlated."

"It's still the predators that do the birds in," he adds, "but human disturbance causes the adult birds to lose track of the chicks. While they go after the person, who they see as a predator, the real predator — a gull, for instance — comes in and snarfs up a chick."

In 1997, in what sounds like a scene from a 1950s horror movie, Frie observed a ghost crab grab a piping plover chick and drag it down into its burrow after the adult bird was distracted by some people passing by. He immediately dug down after it, but it was too late; the chick was already dead.

What are the chances of a chick surviving (at least 25 days) to fledge? A few days prior to my visit, Frie counted nine chicks hatched from the eight nests on the beach. The day I was there, only two chicks were still alive.

Loss of Habitat

"In terms of where the birds nest, their choices are much more limited than they were 50 to 100 years ago," says Jenkins. "They've had to deal with predators before, but they could just move to another area." They don't have that option now.

Appropriate nesting habitat is a fraction of what it used to be — although, ironically, beach renewal projects actually benefit the plover, as it likes to nest in areas with little vegetation. For instance, in 1995, Monmouth Beach received artificial beach nourishment. In 1997, a pair of piping plovers nested there for the first time.

Then, there is the overall impact of the resort season itself as shore communities shift into high gear for seasonal visitors. Beaches are often groomed and raked.

"Machines now scrape up shells because people don't like to walk on them," says Dr. Joanne Burger, professor of biology at Rutgers University. "This has changed the plover's nesting environment." In addition, says Jenkins, beach rakes, trash trucks, lifeguard ATVs and other official vehicles have a tendency to run over chicks.

Raking the beach also evens out its natural contours. "The piping plover used to pick higher elevations for its nests, which

© PETE MCLAIN

would give them a better eye out for predators. Now, they can't find the higher elevations," Burger says.

The Human Factor

To help people understand why some areas of the beach need to remain free from certain activities, the agencies involved in keeping the piping plover viable as a species use a variety of methods to educate the public. These methods include signs on the beaches, nature walks and media coverage.

"Most people, once we explain what's going on, are receptive and cooperative," says Jenkins. "We're not out here trying to block people's access, we're just trying to protect the birds," adds Sue Canale, an assistant biologist with the Endangered and Nongame Species Program.

However, people have become accustomed to soft, "fluffy" sand, as one homeowner calls it, and some become irate when the various municipalities cooperate with federal and state agencies and do not rake certain sections of beach near plover nesting areas.

And there are the others. Some people simply choose to ignore the signs and symbolic fencing, and walk or let their dogs run unleashed through nesting areas, inadvertently stepping on nests, and scaring adult birds into abandoning eggs.

At the low end of the humanity scale are those who purposely set out to vandalize or destroy nests. At Sandy Hook, says McArthur, "We've had people go into the exclosures specifically to destroy the eggs."

Another way lack of understanding harms the piping plovers is when people either purposely or inadvertently leave food for predators such as foxes. McArthur thinks the increase in the fox population that Sandy Hook has experienced over the past few years is directly due to people feeding them, a growing problem up and down New Jersey's coast.

Foxes are not thought to be a natural predator of the barrier islands; it is believed fox hunters introduced them to the area. But with people feeding them and no natural predators of their own, their numbers have grown dramatically. The fox population is a difficult political issue, yet one that, ultimately, is tied to the long-term success of the piping plover. When the ENSP started trapping foxes a year ago on Brigantine Island, members of the community became upset and exerted pressure to stop the trapping.

A Choice

In 1997, there were 163 known nest attempts along the length of New Jersey's coast. Of these, 110 failed to produce any chicks.

"We're in a real serious situation here," says Dr. Lawrence Niles, chief of the Endangered and Nongame Species Program. "There are such drastic losses that we need to limit predation. We need to develop more effective relationships with the municipalities, with the communities, in which the piping plover occurs. I know we're going to have resistance to solving the fox problem. But everyone has to agree that this is a problem that has to be solved."

"I think the question the people of New Jersey have to face is whether they want to pass this species (the piping plover) down to generations to come," Niles adds.

"The things you lose are the benchmarks. They're the barometers of how well you're taking care of your natural history, how well you are stewarding the things on the planet," says Joan Walsh, director of research for the New Jersey Audubon Society. "The first things to go tend to be the hardest ones to manage. We've learned so much about how to manage things, that the stuff that we lose now, I think we lose for reasons of attitude and a lack of understanding."

__Andrée Jannette__ is a freelance writer who lives in Swarthmore, PA. Her first contribution to __New Jersey Outdoors__ was "Paddlin' in the Pines," which appeared in the Spring 1998 issue.

A piping plover stands guard over its clutch of eggs (opposite page).

A plover pulls a tasty tidbit from the sand (left).

A Shooter's Lesson in Humility

Story and photos © by Robert Brunisholz

Compared to trap or skeet shooting, with historical records dating as far back as the early 1800s, sporting clays is a relatively new wingshooting sport in the United States. Connoisseurs of the game can trace its origins back to England for only 60-some odd years. But, as even experienced scattergunners will gladly tell anyone willing to listen, this is one, frustrating, humiliating game.

Sporting clays has been described as the fastest growing of the shooting sports nationwide, bar none. The reasons for the game's popularity begin with its promoters, who commonly tout sporting clays as a close cousin to golf. The game also has been described as a pleasant walk in the woods marked by genial fellowship.

They — and in this instance, *they* are the men and women tempting us; leading us astray to the extent that shooters infected with sporting clay disease often leave their spouses to fend for themselves for weekends at a time — say the challenge of sporting clays lies in the game's diversity, with no two "layouts" alike. Thus the reference to golf, or golf courses.

Genial fellowship, huh? A pleasant walk in the woods? Bah. I'm here to debunk all of that nonsense.

For openers, sporting clays should never be attempted by those calling themselves gentlemen or ladies. I've seen — and this is the truth — a reasonably mild-mannered editor of an outdoor magazine, who prided himself on his genteel demeanor and command of the King's English, rip off his hat, unaware that his rug — that's a toupee, folks — went with it, and throw the hairy combo in the general direction of the clay target he just missed while saying . . . Well, let's just categorize his vocabulary at the time as rife with *very* bad words.

What It's *Not*

So, what is this comparatively new kid on the block of shotgunning sports? To better explain what sporting clays is, it's best to start by explaining what it is not.

Trapshooting it's not. Trapshooting has been on the scene for nearly 200 years. Trapshooting is a challenging shotgun game of precision-like skill in which the shooter attempts to break a clay bird thrown from a structure called a trap house. The bird flies away from the shooter at various, albeit unpredictable, angles.

Trap shooters stand behind the trap house, usually at a measured distance of 16 yards, though that distance can vary all the way back to what is known as the "27-yard line" for handicap shoots. Despite the extreme challenge of sporting clays, don't mistake trapshooting as one of those "easy" games. It is a game of inches, requiring excellent reflexes and good eyesight. An uncanny ability to out-think a mechanical device — the trap that throws the birds — doesn't hurt, either.

Trap shooters often participate in registered shoots, sanctioned by the Ohio-based Amateur Trapshooting Association. A registered shoot usually comprises what trap shooters call 100-bird races, although some shoots may involve 200 birds. Proficient, practiced trap shooters are capable of breaking 100 straight and a rare few can bust 200 straight. No easy feat, when you think about it.

The second method of shooting clay birds, in which participants try to break clay birds thrown from trap houses on either side of the shooter, is called skeet shooting. The houses are generally referred to as a high-house and a low-house, with the window of the high-house placed well above the shooter's head, while the birds tossed from the low-house generally sail from a port about chest-high.

Skeet shooters are posted in a semicircular walkway at predetermined "stations," from which they try to bust clay birds. *Try* is the operative word. Crossing doubles, where the birds cross over in front of the shooter, one from the left and one from the right, also is a routine part of skeet shooting.

What It *Is*

Finally, there is that confounded method of busting clay birds called sporting clays. Some of my shooting cronies have called it other, unprintable, names — for good reason.

If, for instance, you shot skeet or attended a registered trap shoot in Pennsylvania last week, when you head to a New Jersey skeet or trap range this week, the layout will be precisely the same as it was in the Keystone State. In addition, barring wind and weather, the birds being thrown during last week's trap shoot in Pennsylvania flew a nearly identical pattern (speed, distance and angle) as those tossed in New Jersey, or for that matter, any trap or skeet range nationwide. Oh, if it were only so in sporting clays.

Not to worry, you say? You say your friends stand back in awe just to admire your fantastic wing shooting abilities while hunting pheasant or quail, and your average on the trap range is in the middle to high 90s? Well, hot-shot, if you have yet to try sporting clays, get ready for a lesson in humility. That's Humility with a capital H.

For starters, no two sporting clays courses are alike. Each has its own idiosyncrasies, and instead of a steady stream of crossing birds (skeet), or a flow of birds flying away (trap), clay birds tossed to shooters at a sporting clays course can — and will — do just about anything, including sail directly at you, or zip along the ground hopping and jumping. Sometimes, you'll even get a "quail." Allow me to explain this one, my high-overall-average, never-miss, wing shooting friends.

The automatic devices that "toss" clay birds — some of which cost more than $5,000 — are called *traps*. Electronically operated, they are located deep in the woods on a walk-through course (opposite page, top).

Glen Sapir tries to catch up to a clay "bird" tossed from right to left while shooting five-stand sporting clays (opposite page, bottom). The bird is the fluorescent orange disk on the left side of the picture.

Sporting clays may be shot at ranges with limited acreage by using the five-stand course in which shooters are restricted to stations much like trap or skeet shooting. Because targets are thrown from a wide variety of angles and locations, each participant must remain within the confines of a "cage" for safety purposes (below).

For shooters who want to experience shooting at clay targets, but do not want to become involved in the highly formal competition of trap or skeet shooting, sporting clays offers the best of both worlds. And, if you check out the empties lying at the feet of this sporting clays shooter, you'll find the secret of why sporting clays has become so popular: There are no seasons and no limits. You can shoot until your shoulder falls off and no one will ask to see your game bag.

The standard clay bird tossed to shooters at any of the three courses — trap, skeet, or sporting clays — is, by regulation, a clay disk with a stepped dome. It measures 4 5/16 inches in diameter, and 1 1/8 inch in height. The standard clay bird is of the same size and construction at trap, skeet, and sporting clays ranges, but enough said about so-called regulation birds, as described in the trapshooting rule book. In sporting clays, the only rule is that there are no rules.

It's a Battue

At sporting clays, new entries are often a bit surprised, not to mention a bit baffled, when they call "pull" and, rather than the traditional clay disk, they're confronted with mini, midi and — check this out now, trap shooters — a target called the battue, or quail.

When I encountered my first battue, the clay disk flew, as expected, after calling "pull." As I'm accustomed in trap, I picked up the target and shotgun bead, and swung through the target to establish what I felt was the correct lead. Then the clay bird just dropped from sight. Instead of firing, I slowly took the gun down from my shoulder, put the safety on, turned to my shooting partner, and asked: "What in God's green acre was that?"

"That," said John McCoy, outdoor editor for the Charleston, West Virginia, *Daily Mail*, and field editor for *Field and Stream* magazine, "was a battue and, according to my scorebook, you just registered another lost bird." Translation: a miss. So much for genial fellowship.

To better understand my surprise when the so-called battue flew, one must understand that I've been trapshooting for more years than I care to admit, and trap shooters get somewhat miffed when clay birds don't sail within proscribed limits, speeds and angles.

Sporting clays is a different world, however, and a battue is designed to . . . , to . . . , what? Well, let's say a battue will drive an otherwise sane shooter to the nearest psychotherapist. Depending on wind conditions, air currents and a host of other elements, a battue will sail upward, then do a little flutter, and dip and dive; given the correct conditions, battue targets have been known to actually scribe a figure "S" while sailing through the air. In general, the battue will drive a shooter batty, although that's not the derivation of its name, which actually relates to a type of hunt in which game is driven from cover by the beating of woods and bushes.

Next, there's the mini-target. A disk about half the size of the regulation target, this little chunk of clay often sails at speeds exceeding 50 mph. The folks who design sporting clays fields love to place mini-target traps in a position that allows the tiny bird to sail through a brushy opening or between several trees, offering the shooter only a second or two to see the bird, mount the gun, establish a lead and pull the trigger.

The midi-target is, appropriately enough, between the standard target and the mini-target in size. And you wonder why that rod and gun editor mentioned earlier threw his hat and hair? These courses will cause you to drive home talking to yourself and, worse, answering.

For Variety, There's Five Stand

There is another, more regulated, version of sporting clays called *five stand*. Five stand sporting clays usually is found at gun clubs or shooting ranges with limited space. Because targets come from all angles, including above, below and behind, five stand shooters fire from caged stations with limited side-to-side

barrel movement.

The cage, of course, is primarily a safety feature; nonetheless, five stand sporting clays involves multiple traps, and often double targets, coming from and sailing toward — who knows where? In addition, since five stand shooting eliminates the surprise often found in field courses in which gunners walk from station to station, to make things more interesting, a bird or two (a.k.a. doubles), will fly from behind and overhead of the shooter. Adding to the woes of novice sporting clays shooters, there are what aficionados of the sport call report doubles.

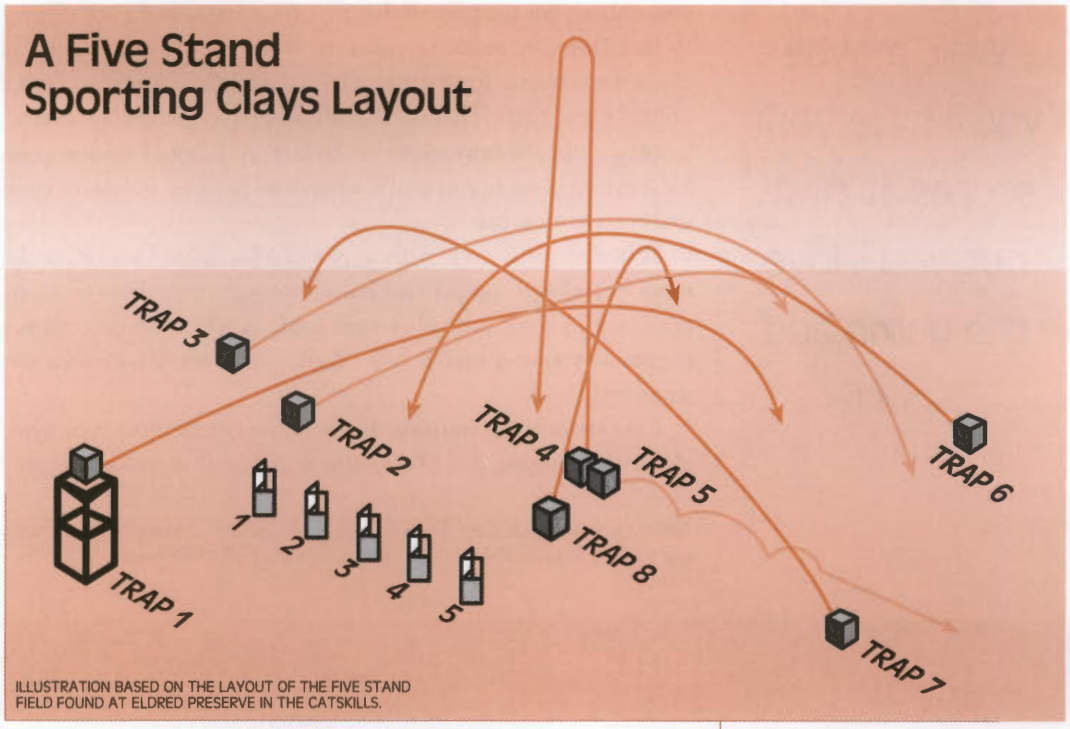


ILLUSTRATION BASED ON THE LAYOUT OF THE FIVE STAND FIELD FOUND AT ELDRED PRESERVE IN THE CATSKILLS.

Unlike trap and skeet shooting, sporting clays targets come from all directions. A variation of the typical walk-through sporting clays range is the five-stand, in which shooters stand in much the same position as in trapshooting, but multiple traps launch clay targets from a myriad of positions, including from in back of the shooter. Each five-stand varies, depending on location of traps.

Report doubles involves sending a second bird sailing from a trap or clay target launcher only after the report of the shotgun sounds on the first bird. The double difficulty in report doubles is, of course, picking up the second bird in your eyesight after firing at the first.

As one of my colleagues so eloquently put it after blowing two shots at the report doubles station when firing his first sporting clays course: "This is nuts."

On average, a proficient, high-scoring trap shooter — one who normally fires in the mid-90s — will initially score between 40 and 50 on a 100-bird walk-through sporting clays range. Certainly such scores increase after one becomes familiar with each individual course or five stand layout but, in general, the 100-straight trap shooters rarely, if ever, "go straight" when shooting sporting clays.

The Good News Is

There is, however, some good news for anyone new to sporting clays, and for those who wish to pursue the sport further.

Trap guns, and many skeet guns as well, can cost literally thousands of dollars. If you're a novice shooter and think I may be exaggerating to punch home a point, check out any issue of *Trap and Field* magazine. You'll see very few trap guns listed for less than $3,000, and from there the price skyrockets up to "use your imagination." In fact, I've seen trap guns wearing a price tag so exorbitant that if one spent the same amount at a marina, they could purchase a fully equipped, center console fishing boat in the 18- to 20-foot class — and I'm not kidding!

And that's where sporting clays lets the casual, weekend shooter off the hook. Sporting clays was designed to simulate field conditions when hunting upland birds. Subsequently, all one needs for sporting clays is the same gun with which they hunt. Granted, there are several firearms manufacturers that have designed highly specialized sporting clays guns, specifically what shotgun target shooters call stackbarrels, or over-and-unders, and O/Us always carry a heft price tag in comparison to field guns.

Despite specialized scatterguns, however, your pheasant, quail or grouse gun will do just fine on any sporting clays course nationwide. Besides, when addressing the price of fine shotguns, a trap shooter standing on the firing line with me once made a rather profound statement after we finished examining an extremely fine and expensive trap gun.

"You can't buy a 100-straight," he said, meaning, of course, that one can own the world's finest

Your pheasant, quail or grouse gun will do just fine on any sporting clays course nationwide.

Well, maybe you'll hate your scores at first, but you'll love the game and sport.

smoothbore, but the price of the gun isn't going to make any difference in the score if you're a poor shot.

In addition to negating concerns about affordable shotguns, not only does one *not* need a specialized scattergun for sporting clays, the truth is, you *should* use the same gun with which you hunt upland game birds. That is, after all, what a sporting clays course is designed for: To make you a better shot in the hunting fields. In fact, you should use the same brand and shot size ammunition for sporting clays as you would when bird hunting unless, of course, you've been bitten by the formal competition bug.

Whether you merely wish to practice for upland season, or decide to pursue sporting clays on a more formal and competitive basis, I strongly urge those who enjoy shooting a shotgun to take a crack at this comparatively recent game in which no two courses are alike. You have my absolute guarantee you're gonna' love it. Well, maybe you'll hate your scores at first, but you'll love the game and sport.

One last word of warning. If you're the competitive type who "gets into" your sports, and you also wear a toupee, don't be tossing your hat after missed targets. It's really embarrassing.

Noted sportswriter Robert Brunisholz lives in Califon. Among his contributions to ***New Jersey Outdoors*** *is* ***Hunting with a Smoke Pole****, which appeared in the Fall 1996 issue.*

For More Information . . .

For a list of sporting clays ranges nearest your home, or to find out more about sporting clays, write to National Sporting Clays Association, 5931 Roft Road, San Antonio, Texas 78253, or call 210/688-3371.

The following is a list of sporting clays ranges in New Jersey. Since ranges often change times and dates when the facility is open to the public, readers are urged to call ahead for costs and to confirm availability of the range.

Big Spring Hunting Club
Sussex • 973/875-3373
Open Wed. through Sun., 8:30 a.m. to 4:30 p.m.
Type: Four walk-throughs with 10 stations

Buckshorn Sportsmen's Club
Salem County • 609/935-9805 (answered only on Sun.)
Open Sept. through May from 9 a.m. to 5 p.m. and from 9 a.m. to 2 p.m. in June. Closed in July and August.
Type: One walk-through with 19 stations

Buttonwood Game Preserve
Phillipsburg • 908/454-7116
Open to the public, but reservation required for sporting clays on Sat. from 9 a.m. to 5 p.m. and Sun. from 1 to 5 p.m.
Type: Walk-through, with 13 stations

Cedar Creek Sportsmen's Club
Cedarville • 609/628-3377
Open all year from 8:30 a.m. to 3 p.m. on Sat. and Sun. and, during daylight saving time, from noon until dark.
Type: Two 50-bird courses

Country Lakes Sporting Clays and Trap Club
Browns Mills • 609/893-9480
Open on the second and fourth Sundays of each month, as well as some weekdays. Calling ahead is recommended.
Type: Two walk-throughs with 20 stations

Giberson's Red Wing Sporting Clays
Port Republic • 609/652-1939
Open from 9 a.m. to 5 p.m. on weekends from September through June.
Type: One walk-through with 20 stations

M&M Hunting Preserve
Pennsville • 609/935-9356
Open Tues. & Fri. from 9 a.m. to 4 p.m., and Sat. & Sun. from 8 a.m. to 4 p.m. Reservations are recommended on weekdays.
Type: Walk-through, with 30 stations; five-stand

South Jersey Sporting Clays
Indian Mills • 609/778-1287
Open on the 2nd, 4th and 5th Sundays of the month.
Type: One portable unit with 13 stations

Thunder Mountain Trap and Skeet Club
Ringwood • 973/962-6377
Open Wed. through Fri. from 1 to 10 p.m., and from 9 a.m. to 6 p.m. on Sat. and Sun.
Type: Five-stand

USANA
Pittsgrove
Open from 9 a.m. to 3 p.m. on Sundays.
Type: Two walk-throughs with 12 stations

How to Get (or give) the Perfect Gift

by Fred Uhlman

HO, HO, HO.
HA, HA, HA.
Hee, hee, hee.

It's Christmas Eve and the kids are finally asleep. As you sit on the edge of the bed, you hear strange noises. *Ka-thunk, ka-thunk, bump, bump, bump*. A few grunts and one loud groan signal that your significant other has just placed your gift under the tree. What could be waiting for you tomorrow morning?

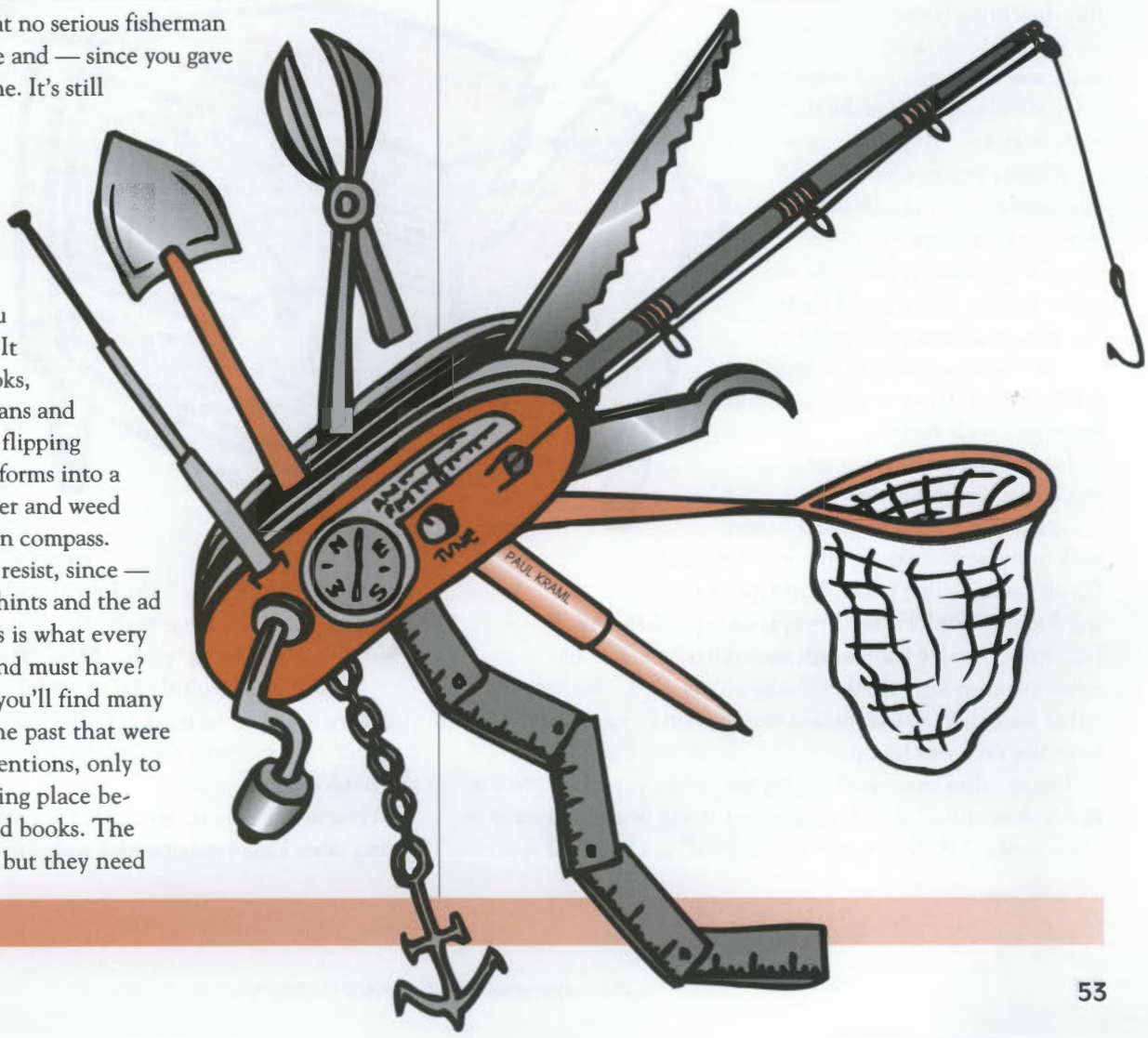
Before you get too involved with speculation, let's take a quick trip with the spirit of Christmas past. It will be a short trip to either the garage or the attic — wherever the skeletons of past years' gifts silently gather dust. Behind a few pieces of old wood (that you promised would eventually be new shelves) hides a pocket fisherman. The commercial convinced your family that no serious fisherman could live without one and — since you gave no hints — you got one. It's still in the box.

Under a pile of old rags is the miracle machine that, again, some sincere voice on the television convinced your family you couldn't fish without. It cuts line, removes hooks, measures fish, opens cans and bottles and, by simply flipping over the handle, transforms into a rod holder, worm digger and weed whacker with a built-in compass. How could the family resist, since — again — you gave no hints and the ad made it clear that this is what every outdoorsman wants and must have?

Keep looking and you'll find many other presents from the past that were chosen with great intentions, only to find their eternal resting place behind bags, rags and old books. The family still loves you, but they need hints. They need solid ideas that only you can give; otherwise, you can expect to find things under the tree that you wish could stay under the tree.

There are two ways for you to communicate gift ideas — passive and aggressive. A passive hint could be an open catalog with an X next to what you want. Or, when you are out shopping, make sure a loved one notices that you are very interested in that new rod or reel.

Aggressive is direct: "I want this and my life will be ruined without it." You also can purchase it yourself and tell someone



to wrap it because it's what he or she is giving you.

I find the passive is much more enjoyable for everyone involved.

On the Other Hand . . .

If it's your loved one who *enjoys* the outdoors and you wish to express your appreciation for all the dead animals and fish they bring home for you to clean, skin and cook, here are a few helpful hints so you don't make the basic mistakes.

When a commercial boasts that an item isn't available in stores, take a minute to think about it. It probably isn't sold in stores because if you could see it "up close and personal," you'd realize just how useless it is. A magic machine that does everything should be given a wide berth.

Never, under any circumstances, think that "it fits right in your pocket" is a good thing. And for Santa's sake, walk away from anything that uses "one size fits all" as its selling point. This type of clothing doesn't shrink for little people or expand for the big ones. It simply has enough material to cover an elephant and enough elastic to hang on a stick, so the wearer either looks like an overstuffed sausage skin or sounds like a large flag on a windy day.

Pretty colors mean nothing for the outdoors person. "Never needs sharpening" usually means that it will be thrown away in a few weeks. "Made of space age material" is a joke; the space age is in its 40th year and "space age material" usually means plastic. "It makes fish strike" is the big lie used to sell whatever they have a lot of; they should say that it makes people strike.

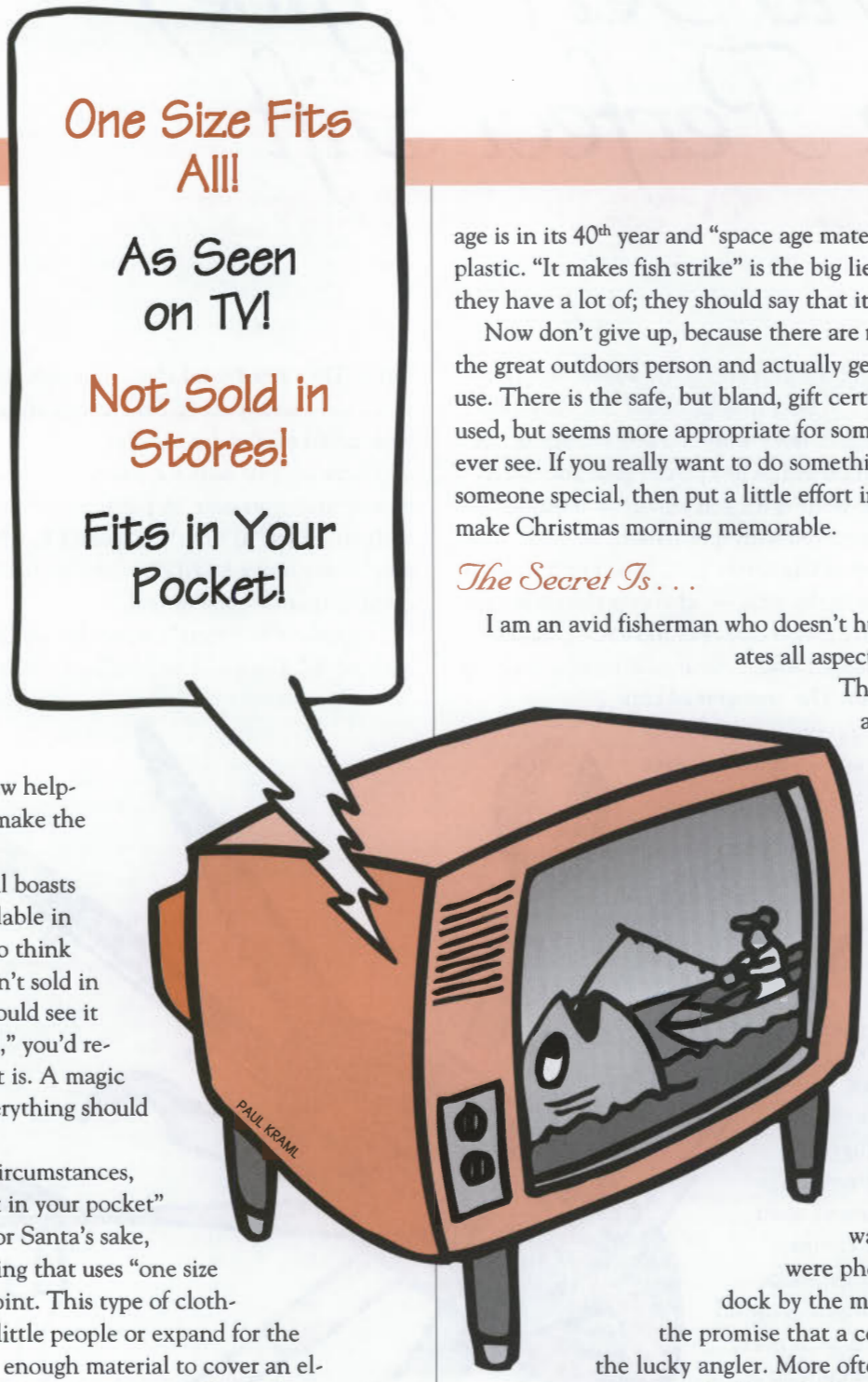
Now don't give up, because there are many ways to shop for the great outdoors person and actually get something they will use. There is the safe, but bland, gift certificate; that will be used, but seems more appropriate for some relative you hardly ever see. If you really want to do something special for that someone special, then put a little effort into shopping and make Christmas morning memorable.

The Secret Is . . .

I am an avid fisherman who doesn't hunt but still appreciates all aspects of outdoor sports. These suggestions are aimed towards those buying for anglers but, with a little imagination, they can be adapted for those with other outdoor interests.

I keep my camera in a plastic bag in my tackle bag for a record of the fun times, big fish and any UFO sightings. I can't tell you how many times I have watched as large fish were photographed at the dock by the marina operator with the promise that a copy would be sent to the lucky angler. More often than not, the photo doesn't find its rightful owner and ends up on the marina wall. The market is flooded with small, versatile cameras — some even are waterproof — that are perfect for the outdoors enthusiast.

Years ago, I gave up buying fishing rods off the rack. No matter what kind I purchased, I ended up thinking of a few



changes that would make it perfect for me. Unfortunately, mass produced rods are made according to the "one size fits all" principle. They do an adequate job, but there is nothing special involved. A great idea for the avid angler is the "makings" — all of the components used to make a finished fishing rod.

The components include a rod blank, which is the fiberglass or graphite shaft, the reel seat, front grip, butt grip, guides and wrapping thread used for holding the guides on. This is an ideal gift because it gives the builder something to do during those long winter months when fishing is but a memory. It may take a little looking around to find a sporting goods store that carries the makings, but it will be worth the effort.

Most stores that sell the components will have someone on staff who specializes in rod building to help with the selections. It is a good idea to take along the intended recipient's favorite rod as a reference. Also, there are many excellent books that take the first time rod builder through the process, step by step. Believe me when I say that there is something special in landing a fish on a rod you made by hand.

For the boat owner, the gift giving area widens. My old boat had the name on the side with the standard black stick-on vinyl letters. It was a wonderful surprise to find out that my significant other made the effort to have a painter sneak over and boldly and beautifully paint the name on both sides. New life jackets also are a great idea, since most of us use equipment from the days of the Ark.

Christmas shopping can be fun if you put a little thought and creativity into the effort. Just think how happy the recipient will be to find out that big bow is hiding more than a bag of bait. (That's not to say that a bag of bait wouldn't be appreciated during the fishing season, but Christmas bait doesn't keep that long.) Make the *ka-thunk, ka-thunk, bump, bump, bump* a sound of anticipation and not intimidation.

A quick tip for the outdoors person who, in turn, might be a little confused on what to give his or her "indoors person" partner: The rules stay basically the same. Stay away from one-size-fits-all. If it slices, dices, mashes, peels, opens cans and bottles and, with a quick flip of the handle, becomes a handy, dandy fire extinguisher, leave it alone. And if the other person doesn't like your sport, don't think that by giving them equipment you will convert them.

Merry Christmas to all and a Happy New Year.

Fred Uhlman, who enjoys peppering his sports writing with humor, lives in Rio Grande. This is his first contribution to **New Jersey Outdoors**.

The Circle of Life Is Launched

Story and photos © Pete McLain

Pump-out facilities at New Jersey's marinas are not a new sight. The facilities — a real boon in the battle against water pollution — allow boaters to pull up and empty their holding tank wastes into a pipe that connects to a sewer system. And now, pumping out has been made even more convenient for many New Jersey boaters.

A pump-out boat, *Circle of Life*, services anchored and moored boats at Tice's Shoal and other bay areas, pumping sewage from their holding tanks. It then transfers the sewerage into the Ocean County Utilities Authority treatment plant on the western shore of the bay.

Nonpoint source pollution is a major problem in trying to keep Barnegat Bay and almost every other waterway in New Jersey clean and suitable for people and aquatic plants and animals. There are many forms of nonpoint source pollution, such as runoff from roads, construction sites, farms and residential properties which drains into the bay carrying pesticides, herbicides, fertilizers, animal wastes, salts and other substances. These pollutants may harm or destroy submerged plants, marine life and the quality of the water for human use.

More than 800 boats visit Tice's Shoal, adjacent to Island Beach State Park on Barnegat Bay, on a busy summer weekend.

Many of these have been known to empty toilet holding tanks and discharge raw sewage into the water, polluting the 500-acre mooring area. There are four land-based pump-out stations with a 15-mile radius that could be used, but research indicates that boatmen do not want to leave their moorings, travel some distance, wait in line and pay at such a station.

This is where *Circle of Life*, the new 21-foot long, 8-foot beam, open skiff pump-out boat powered by a 200-horsepower outboard engine, fills a need. It provides on-the-water boatmen with a way to empty their holding tank wastes without leaving their moorings. An Edson diaphragm gasoline pump and hoses are used to transfer the wastewater from the pleasure boats to the highly mobile pump-out boat's 300-gallon holding tank. Loaded with waste material, the pump-out boat returns to its home port in Seaside Park, where the pump action is reversed and the waste is pumped, via a pipeline, to the Ocean County Utilities Authority sewerage treatment facility on the mainland.

The pump-out boat is operated Friday through Monday — the heavy boat use days at Tice's Shoal — from May to October. There is no charge for pumping a boat.

While 1998 marked the first use of a pump-out boat in New Jersey, Massachusetts — one of the first states to use pump-out boats — started using them in 1995. In three years, the boats removed more than one million gallons of sewage. Had the pump-out boats not been available, much of this probably would have been discharged untreated.

There now are more than 900 pump-out boats in operation in 48 states. Massachusetts has 50, many of which are owned by individual municipalities to keep their harbors clean.

The New Jersey pump-out boat plan was prepared in September 1997 and presented to the New Jersey Clean Vessel Committee. The Ocean County Board of Freeholders, federal Environmental Protection Agency (EPA) and the state Department of Environmental Protection (DEP) all endorsed the plan. The boat was purchased with monies provided by the U.S. Fish and Wildlife Service under the Wallops Breaux Act, a federal aid funding program supported by a small federal excise tax on motor boat gasoline and fishing tackle.

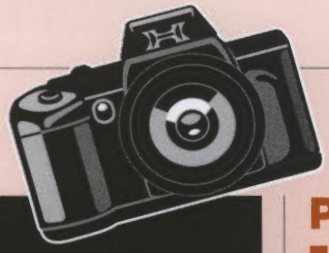
The boat was outfitted in April 1998. It was christened and launched by DEP Commissioner Bob Shinn on May 22, 1998, during a ceremony at the Seaside Park Marina.

Pete McLain, an outdoors writer from Toms River and periodic contributor to ***New Jersey Outdoors****, played a key role in the development and implementation of New Jersey's pump-out boat plan.*

It takes *The Circle of Life* less than three minutes to pump out a 30-gallon holding tank (opposite page).

Captain Jerry Golembeski, of Seaside Park, services a sewerage holding tank (above).

Announcing . . .



New Jersey Outdoors 1998-1999 Photo Contest!

The next *New Jersey Outdoors* photo contest will celebrate our state parks, forests, recreation areas, marinas and historic sites (listed below), so we're looking for pictures of whatever strikes your fancy at these great leisure time spots. For more information about these facilities, call the State Park Service at 609/984-0370.

State Parks

Allaire (Howell)
Allamuchy Mountain (Hackettstown)
Barnegat Lighthouse (Barnegat Light)
Cape May Point (Cape May Point)
Cheesequake (Matawan)
D & R Canal (Central NJ)
Double Trouble (Lacey and Berkeley townships)
Farney (Rockaway)
Fort Mott (Salem)
Hacklebarney (Chester)
High Point (Sussex)
Hopatcong (Landing)
Island Beach (Seaside Park)
Kittatinny Valley (Andover Township)
Liberty (Jersey City)
Long Pond Ironworks (West Milford)
Monmouth Battlefield (Manalapan)
Parvin (Pittsgrove)
Princeton Battlefield (Princeton)
Rancocas (Burlington County)
Ringwood (Ringwood)
Stephens (Hackettstown)
Swartswood (Swartswood)
Voorhees (Lebanon)
Washington Crossing (Titusville)
Washington Rock (Green Brook Township)
Wawayanda (Vernon)

State Forests

Abram S. Hewitt (Vernon)
Bass River (New Gretna)
Belleplain (Woodbine)
Jenny Jump (Hope)
Lebanon (New Lisbon)
Norvin Green (Bloomingdale)
Penn (Bass River; open in summer only)
Ramapo Mountain (Passaic/Bergen)
Stokes (Branchville)
Wharton (Atlantic/Burlington/Camden)
Worthington (Delaware Water Gap)

Recreation Areas

Round Valley (Lebanon)
Spruce Run (Union Township)
Shepherd Lake (Ringwood State Park)

Historic Sites and Districts (Individual)

Absecon Lighthouse (Atlantic City)
Boxwood Hall (Elizabeth)
Carranza Memorial (Tabernacle)
Drumthwacket (Princeton)
Edison Memorial (Menlo Park)
Grover Cleveland Birthplace (Caldwell)
Hancock House (Hancock's Bridge)
Hermitage, The (Ho-Ho-Kus)
Indian King Tavern (Haddonfield)
Lawrence House (Burlington City)
Marshall House (Lambertville)
Metlar House (Piscataway)
Monmouth Battle Monument (Freehold)
Old Dutch Parsonage (Somerville)
Princeton Battle Monument (Princeton)
Proprietary House (Perth Amboy)
Rockingham (Princeton)
Somers Mansion (Somers Point)
Steuben House (River Edge)
Trenton Battle Monument (Trenton)
Twin Lights (Highlands)
Veterans of All Wars Memorial (Manchester Twp.)
Wallace House (Somerville)
Walt Whitman House (Camden)

Historic Sites and Districts

(Located in state parks and forests)
Allaire Village* (Allaire)
Atsion Village* (Wharton)
Barnegat Lighthouse (Barnegat Lighthouse)
Batsto Village* (Wharton)
Blackwells Mills Canal House (D&R Canal*)
Cape May Lighthouse (Cape May Point)
Central Railroad of New Jersey Terminal (Liberty)
Clarke House (Princeton Battlefield*)
Craig House (Monmouth Battlefield)
Double Pond Village (Wawayanda)
Double Trouble Village* (Double Trouble)
Fort Mott (Fort Mott)
High Breeze Farm* (Wawayanda)
High Point Monument (High Point)
Johnson Ferry House (Washington Crossing*)
Long Pond Ironworks* (Long Pond Ironworks)
Morris Canal* (sections in Allamuchy Mountain, Hopatcong, Liberty & Ringwood)
Mule Tenders Barracks (D&R Canal*)
Nelson House (Washington Crossing*)
Port Mercer Canal House (D&R Canal*)
Prallsville Mill (D&R Canal*)
Ringwood Manor (Ringwood*)
Six Mile Run Reservoir Site (Franklin Twp., Somerset Co.)*
Skylands Manor and Gardens (Ringwood*)
Waterloo Village* (Allamuchy Mountain)
Wawayanda Furnace (Wawayanda)
Whitesbog Village* (Lebanon)

Marinas

Farley (Atlantic City)
Forked River
Fortescue
Leonardo
Liberty Landing (Jersey City)

** District*

Photo Contest Rules

- The contest is open to any New Jersey resident or visitor, except Department of Environmental Protection employees and their immediate families.
- Images must have been taken at or of one of New Jersey's state parks, forests, recreation areas, marinas or historic sites. Both interior and exterior shots are eligible, and pictures may have been taken in any season.
- Only 35 mm slides, transparencies and unmatted, unframed prints (no larger than 8" x 10") may be entered. Images must be crisp and in focus, except where depth of field applies. Images should not be under- or overexposed. No entries can be returned, so you might want to send duplicates.
- Each image must be attached to a completed entry form. (The form below may be reproduced as needed.)
- Entries must be received no later than June 1, 1999.
- All entries become the property of the Department of Environmental Protection and may be published or displayed for any purpose, such as illustrating a story or advertising *New Jersey Outdoors*.
- **No entries will be returned**, so please do *not* send a self-addressed, stamped envelope.

NJO 1998-1999 Photo Contest Entry Form

Name _____

Address _____

City _____

State _____ Zip _____

Daytime phone (_____) _____

Title of image _____

Where taken _____

When taken _____

Description _____

_____

Names of any ***identifiable*** people*

_____

_____

** **Note:** A signed release is required when the subject is easily identifiable and a potential for litigation exists.*

Make copies of this form if needed.

Events

Complete name and location information, as well as unchanging details (e.g., times, fees, phone number), are provided here for frequently mentioned event sponsors. The bold-faced name is all that will appear in an event's description.

Albert — Albert Music Hall, 125 Wells Mill Rd. (Rte. 532), 1/4 mile west of Rte. 9, Waretown; 609/971-1593

Allaire — Allaire State Park/Historic Allaire Village/Pine Creek Railroad, Farmingdale; 732/938-2253 (park and village) or 732/938-5524 (railroad)

Batsto — Batsto Village, Wharton State Forest, Hammonton

Cold Spring — Historic Cold Spring Village, 720 Rte. 9, Cape May; 10 a.m. to 4:30 p.m. daily through Labor Day, then only on weekends in Sept.; donation requested; 609/898-2300

Cooper — Cooper Gristmill, County Rte. 513 (1.3 miles west of Rte. 206), Chester; 908/879-5463

Fosterfields — Fosterfields Living Historical Farm, 73 Kahdena Rd. (just off County Rte. 510, 1.25 miles west of the Morristown Green, Morristown; admission charged Thursdays through Sundays; 973/326-7645 (TTY: 800/852-7899)

Great Swamp — Great Swamp Outdoor Education Center, 247 Southern Blvd., Chatham; free; 973/635-6629

Hermitage — The Hermitage, 335 North Franklin Turnpike, Ho-Ho-Kus; 201/445-8311

Howell — Howell Living History Farm, Valley Rd. (just off Rte. 29, two miles south of Lambertville), Hopewell Township (Mercer County); 10 a.m. to 4 p.m., unless otherwise specified; free admission & parking, but a fee is charged for rides, maze and crafts; lunch served 11 a.m. to 2 p.m.; 609/737-3299

Skylands — Skylands Manor and N.J. State Botanical Garden, Morris Rd., Ringwood State Park, Ringwood; fee for manor house admission; 973/962-9534

Space — Space Farms Zoo and Museum, 218 Rte. 519, Sussex; 9 a.m. to 6 p.m.; fee (unless otherwise noted); 973/875-3223

Trailside — Trailside Nature & Science Center, 452 New Providence Rd., Mountainside; fee (unless otherwise noted); 908/789-3670

Wetlands — Wetlands Institute, 1075 Stone Harbor Blvd., Stone Harbor (3 miles east of the Garden State Parkway exit 10B); fee; 609/368-1211

Wheaton — Wheaton Village, 1501 Glasstown Rd., Millville; 10 a.m. to 5 p.m.; fee; 800/998-4552

Whitesbog — Whitesbog Village, mile marker 13 on Rte. 530, Browns Mills (Pemberton Township); fee for non-members (unless otherwise noted); preregistration required; 609/893-4646

Ongoing

Pequest Trout Hatchery Tour the hatchery, which raises trout for stocking in New Jersey's waters; Pequest Trout Hatchery & Natural Resource Education Center, 650 Pequest Rd., Oxford; open seven days a week, 10 a.m. to 4 p.m.; 908/637-4125

Cape May County 63rd Annual Fishing Tournament Fish for fun and prizes year round; Cape May County waters; free entry badge; 800/227-2297

Fall/Winter Nature Classes and Special Events Centered on farm life and wildlife rehabilitation; PAWS Farm Nature Center, Mt. Laurel; call for details; reservations requested for large groups; fee; 609/778-8795

Sundays

Gabreil Daveis Tavern Tour Tour tavern built in 1756 and continuously occupied for 220 years; 1 to 4 p.m. (weather permitting); free; Gabreil Daveis Tavern, Floodgate Rd., Glendora section of Gloucester Township; 609/784-5243

Last Saturday of Each Month

Stony Brook Coffeehouse Folk music; fee; handicapped accessible; Buttinger Nature Center, Pennington; 609/737-7592

Through October 11

The Human Form in Allegory, Metaphor, Myth Exhibit; Gallery of American Craft at **Wheaton**

Through October 25 (Weekends Only) & October 12

The Amazing Maize Maze Find your way through a 4-acre cornfield maze; 10 a.m. to 6 p.m. Saturdays and holidays, noon to 6 p.m. Sundays; **Howell**

Through November 15

Fall Hawk Migration Count Help count migrating raptors; Wildcat Ridge Hawkwatch, Wildcat Ridge WMA, Rockaway Township; http://pw2.netcom.com/~billyg/; 973/335-0674

Through November 30

Hawkwatch Count migrating raptors; dawn till dusk; hawkwatch platform in Cape May Point State Park; free; 609/884-2736 or 609/861-0700

Through December 15

Seawatch Count migrating scoters and other seaducks, loons, cormorants and gannets; dawn till dusk; 7th St. and the beach, Avalon; free; 609/884-2736 or 609/861-0700

Through October 31

Harvest Celebration Haunted barn, corn stalk maze, PYO fruits and, on weekends, music, pony rides, activities and more; Terhune Orchards, Princeton; 609/924-2310

Through November 15

44th Annual Long Beach Island Surf Fishing Tournament Six-week surf fishing competition for bluefish and striped bass; the beaches of Long Beach Island; fee for participants; 609/494-7211 or 800-292-6372

October 31 through January 3

Holiday Exhibition & Sale Gallery of American Craft at **Wheaton**

December

Holiday Mansion Tours Fee; handicapped accessible; call for dates; 609/561-3262; **Batsto**

October

9 to 18

Victorian Week Historic house tours, antiques show, craft workshops, concert and more; fee; Cape May; 609/884-5404 or 800-275-4278 (TTY: 800-852-7899)

10

The Iron Landscape of Mount Hope Historical Park Historian-led walk; 10 a.m.; Mount Hope Historical Park, Rockaway; preregistration required; 973/829-8666

4th Annual Pine Barrens Jamboree 10 a.m. to 6 p.m.; free; Wells Mills County Park, Waretown; handicapped accessible; 609/971-3085

Hike the Hills 2 p.m.; free; meet at the Carriage House at **Skylands**

Hike the Paulinskill Valley Trail (Also on Nov. 7, 22 and Dec. 5) 10 a.m.; Warbasse Junction, near Lafayette; 908/852-0597

Recycle Crafts 1 to 4 p.m.; **Great Swamp**

Cranberry Harvest 5-Mile Cross-Country Run 8 a.m.; **Whitesbog**

Pennsauken Surf Fishing Club Tournament 8 a.m.; N. Wildwood beaches; 609/665-1540

10 & 11

Mountain Man Rendezvous Reenactment of a business and social gathering that celebrated the harvest of pelts; free; cemetery field at **Space**

Fall at Fosterfields 10 a.m. to 4 p.m.; **Fosterfields**

10 through 12

15th Annual Juried American Indian Arts Festival 11 a.m. to 6 p.m.; fee; handicapped accessible; Rankokus Indian Reservation, Westampton Township; 609/261-4747

11

1770s Festival Free; handicapped accessible; Somerset County Park Commission Environmental Education Center, Basking Ridge; 908/766-2489

26th Annual 18-Mile Run From Holgate to Barnegat Light, Long Beach Island; 609/494-8861

American Wheels (rain date: Oct. 25) Car show; **Wheaton**

Cooking in The Willows Living history; 1 to 4 p.m.; **Fosterfields**

Poetry and Jazz; 3 p.m.; free; Carriage House courtyard (inside if weather is inclement) at **Skylands**

Cranberry Harvest Tour 9 a.m.; **Whitesbog**

Atsion Antique & Flea Market 10 a.m. to 4 p.m.; free; handicapped accessible; Atsion Field, Atsion; 609/268-0327

Oldies Fest Fee; handicapped accessible; CRRNJ Terminal and South Field, Liberty State Park, Jersey City; 516/365-9880

17

Kidsparticipate Children's crafts; **Wheaton**

Fall Flea Market 8 a.m. to 3 p.m.; fee; **Allaire**

Pine Cone Workshop 2 to 4 p.m.; fee; pine cones and frame provided, but bring a glue gun; Carriage House at **Skylands**

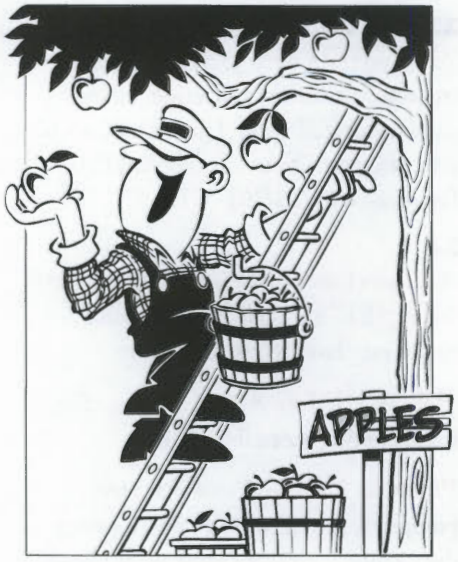
Trail Tales Hike while listening to stories; 5 to 6:30 p.m.; **Great Swamp**

Timberbrook Triathlon Teams and individuals will canoe for 2 miles, mountain bike for 5 miles and run cross-country for 3 miles; 8 a.m.; entry fee; some canoes available for rent; Joseph C. Irwin Recreation Area, Howell Township; 732/542-1642

Wildflowers and Wildlife of the Pinelands Hike (Also on Nov. 21 and Dec. 19) 10 a.m.; free; preregister by phone; 609/567-4559; **Batsto**

17 & 18

Draft Horse Weekend The farm's draft horses plow and disc the fields for winter; 1 to 3 p.m.; **Fosterfields**



Apple Festival 10 a.m. to 4 p.m.; fee; partially accessible; **Cooper**

18

Country Living Fair Free; handicapped accessible; 215/592-2471; **Batsto**

The Hacklebarney Mine Historian-led tour; 1 p.m.; Cooper Mill, Chester; preregistration required; 973/829-8666

Horse Ride (Also on Dec. 13) Paulinskill Valley Trail, Andover; preregistration required; 908/725-9649 or 973/694-5056

American Cancer Society Walkathon Free; handicapped accessible; preregistration required; CRRNJ Terminal, Liberty State Park, Jersey City; 732/297-9043

21

Cape May County Cup Golf Tournament Fee; preregistration required; Cape May National Golf Course, Cape May; 609/465-7181

23 and 24
Zoo Boo (rain date: Oct. 25) Trick-or-treating, a haunted train ride, magic shows, storytelling and more; 6:30 to 10 p.m.; Bergen County Zoological Park, Paramus; fee; 201/262-3771

24
Autumn Lantern Tours of the Historic Village 6 to 8:30 p.m.; fee; advance ticket purchase required; **Allaire**

Halloween Show 8 to 11:30 p.m.; fee; handicapped accessible; **Albert**

Pumpkin Carving 2 to 4 p.m.; fee; pumpkins provided, but bring a heavy-duty knife; Carriage House at **Skylands**

Learn and Look Lecture and sky viewing; 8:30 p.m.; Paul Robinson Observatory, Voorhees State Park, High Bridge; fee; 908/638-8500

Halloween in the Pines Storytelling and hay wagon rides; 7 p.m.; preregister early; **Whitesbog**

7th Annual Pumpkin Festival (rain date: Oct. 25) Halloween parade, games, craft show and pumpkin painting; village buildings will not be open; **Cold Spring**

Let's Celebrate Race Against Hunger Free; handicapped accessible; preregistration required; Flag Plaza, Liberty State Park, Jersey City; 732/443-5438

Harvest Fest Scarecrow building, crafts and more; 10 a.m. to 3 p.m.; **Wetlands**

24 & 25
Civil War Weekend and Cooking at The Willows Encampment and living history; 10 a.m. to 4 p.m.; **Fosterfields**

Four Centuries in a Weekend Self-guided tour of 20 historic houses and sites; free; Union County; 908/558-2550; relay users 800-852-7899

25
All Hallow's Eve in the 1830s Living history; noon to 3 p.m.; fee; **Allaire**

SPUR Hunter Pace Game played on horseback; 10 a.m. to 1 p.m.; Clayton Park, Emley's Hill Road, Upper Freehold Township; 732/842-4000

Communipaw Commemorative Train show; fee; handicapped accessible; CRRNJ Terminal, Liberty State Park, Jersey City; 201/823-4983

26 to November 2
Classic Creations Craft Boutique 10 a.m. to 9 p.m. Mon. and Thurs., 1 to 5:30 p.m. Sun., 10 a.m. to 5:30 p.m. all other days; fee; **Hermitage**

30 to November 1
52nd Annual Cape May Autumn Weekend: The Bird Show Exhibits, field trips, hawk- and seabird watching, workshops and more; 609/884-2736 or 609/861-0700

Halloween in the Pines For teens and adults only; 7 p.m. to midnight; preregister early; **Whitesbog**

31
Devil Bound at Wharton State Forest Search for the Jersey Devil; 609/567-4559; **Batsto**

A Miller's Halloween Stories at 1, 2 and 3 p.m.; fee; **Cooper**

Maze Harvest for Wildlife Help harvest the maze corn for the Mercer County Wildlife Rehabilitation Program; **Howell**

Historic Ghost Outing Hike the Paulinskill Valley Trail; 10 a.m.; Footbridge Park, Warbasse; 908/852-0597

South Jersey Surfcasting Fishing Club Tournament 8 a.m.; N. Wildwood beaches; 609/886-6314

Hike the Paulinskill Valley Trail (Also on Nov. 28 and Dec 19) 10 a.m.; Footbridge Park, Blairstown; 908/852-0597

November

1
Great Pumpkin Sail Pumpkin floats; fee; handicapped accessible; Echo Lake Park, Westfield; preregistration required; 908/789-3670

6 to 8
Victorian Holmes Weekend Tour, performance and more; fee; Cape May; 609/884-5404 or 800/275-4278

Cape May Jazz Festival Fee; Convention Hall, Cape May; 609/884-7277

7
Turkey Trot Race; handicapped accessible; Colonial Park, Franklin; preregistration required; 908/722-1200, ext. 226

Hike the Paulinskill Valley Trail (See Oct. 10)

Landscape/Trails Work Party (See Oct. 3)

Moonlight Walk and Star-gazing 6 p.m.; **Whitesbog**

7 and 8

Wild Bird Feeding Weekend Display of types of foods that attract songbirds; 11 a.m. to 4 p.m.; **Great Swamp**

8

Mineral Club Show 1 to 5 p.m.; handicapped accessible; **Trailside**

National Kidney Foundation Walk Free; handicapped accessible; Flag Plaza, Liberty State Park, Jersey City; preregistration required; 212/629-9770

Arts and Crafts Festival 10 a.m. to 5 p.m.; fee; Convention Hall, Cape May; 609/884-5404

14

Homeplace Gathering Concert; 8 p.m.; fee; handicapped accessible; **Albert**

Hike the Full (30-Mile) Paulinskill Valley Trail 8 a.m.; Sparta Junction

18

Moon & Star Watch Free; 609/627-3043; **Batsto**

20 to 22

Holiday Preview Weekend Tours, concert and more; fee; Cape May; 608-884-5404 or 800/275-4278

Discover Cape May Weekend Tours and more; fee; Cape May; 608-884-5404 or 800/275-4278

21

Wildflowers and Wildlife of the Pinelands Hike (See Oct. 3)

Sled Dog Demonstration 10 a.m. to 1 p.m.; preregistration required; **Whitesbog**

22

One Giant Leap for Mankind: Space Hardware and Models Learn about the U.S. space program; 2 p.m.; **Great Swamp**

Hike the Paulinskill Valley Trail (See Oct. 10)

28

Hike the Paulinskill Valley Trail (See Oct. 31)

December

3 to 6

10th Annual Holiday Open House Fee; handicapped accessible; **Skylands**

4 to 6

12th Annual Holly Walk Historic site tours; **Fosterfields**

4 to 13

25th Annual Festival of Trees Free; handicapped accessible; Somerset County Park Commission Environmental Education Center, Basking Ridge; 908/766-2489

5

Story Telling Native American myths and legends; 2 p.m.; **Great Swamp**

25th Annual Christmas Candlelight House Tour (Also on Dec. 12 and 26) Self-guided tour of more than 30 Victorian inns, homes, churches and hotels; 5 to 8:30 p.m.; fee; Cape May; 608-884-5404 or 800/275-4278

Teddy Bear Tea 11 a.m. to 1 p.m.; **Wetlands**

Hike the Paulinskill Valley Trail (See Oct. 10)

6

Nature Boutique 1 to 5 p.m.; handicapped accessible; **Trailside**

8

Granny's Graham Cracker Cottage Workshop 6:30 p.m.; **Wetlands**

12

25th Annual Christmas Candlelight House Tour (See Dec. 5)

Christmas Open House & Town Tour Tour, music, horse-drawn carriage rides and more; 3 to 9 p.m.; fee; historic Rancocas Village, Westampton Township; 609/267-2641

13

Horse Ride (See Oct. 18)

19

Holiday Show Concert; 8 p.m.; fee; handicapped accessible; **Albert**

Wildflowers and Wildlife of the Pinelands Hike (See Oct. 3)

Hike the Paulinskill Valley Trail (See Oct. 31)

26

25th Annual Christmas Candlelight House Tour (See Dec. 5)

26 and 27

Plays-in-the-Park Holiday Show *Joseph and the Amazing Technicolor Dreamcoat*; 2 and 8 p.m.; fee; handicapped accessible; The State Theater, New Brunswick; 732/548-2884

Tunas of New Jersey

by Bruce Freeman

Six of the world's 13 tuna species occur off New Jersey each year. Among the most beautiful and powerful of sea creatures, the tops of their heads and their upper backs are either solid or wavy lines of dark, lustrous, metallic blue. Their sides are silver or silver grey, often with silvery spots, bands and iridescent hues of purple, pink and gold and silvery-white on the belly. Most young tunas have striking vertical bars along the body flanks, although these disappear with age. The beautiful coloration and patterns serve as camouflage.

Their streamlined bodies are the ultimate in hydrodynamic design. When tunas swim rapidly, all their fins — except two small vertical ones needed for stability and the small finlets used to reduce drag — fold into slots or grooves in the body so as not to interrupt the body's contour. Even their eyes are set flush in the head to form a smooth surface.

Tunas have either very small scales over much of their body or specially modified ones situated just behind the head and along the upper back. These, called corselet scales, are believed to reduce drag by increasing slightly the turbulence of the water flowing around the widest part of the body. The tuna's tail is curved in a crescent shape, providing maximum forward thrust, so it's not surprising that tunas are among the world's fastest swimmers.

Tunas frequent temperate and tropical seas, where the surface water temperature exceeds 64 degrees Fahrenheit, and have developed a unique circulatory and respiratory system. The circulatory system — the heart and blood vessels — is designed to conserve heat during periods of inactivity and to dissipate heat as the activity level increases.

A high metabolic rate enables tunas to maintain a body temperature up to 35 degrees above that of the surrounding water. This may allow sugars in the muscles to break down faster, providing chemical energy for bursts of speed. An elevated stomach temperature speeds digestion, and the brain and eyes may also perform better at a higher body temperature.

Tunas take a larger proportion of dissolved oxygen from the water than do most other fish. The surface area of the gill filaments, the oxygen-gathering organ, approaches that of the respiratory surface area found in the lungs of mammals of similar weight. The concentration of oxygen-transporting hemoglobin is as high in tunas as in humans.

Tunas swim constantly, holding their mouths open to force water past their gills. This also compensates for the lack of the swim bladder, the organ that makes fish buoyant. If they need to swim up or down in the water column, the pectoral fins, which act as hydrofoils, are extended away from the body.

Tunas have two types of muscle tissue: white, for short bursts of speed, and red, which functions in continuous swimming. In tunas, the mass of red muscle is rather large, enabling them to swim for long periods without fatigue.

Their speed and stamina, coupled with their large size, make tunas among the world's most popular game fish. Also highly sought by commercial fishermen, they make up one of the most valuable fisheries in the world. The tuna harvest from the Atlantic Ocean accounts for about 20 percent of the world-wide catch.

Historically, **bluefins** were the most abundant species of tuna occurring within 20 miles of the New Jersey coast. Today, regulations restrict the catch. Bluefins ranging from a few pounds to more than 1,000 pounds occur off New Jersey each summer and fall. Fish weighing up to 100 pounds are known as *school tuna*; those weighing between 100 and 300 pounds are designated *mediums*; those larger than 300 pounds are called *giants*. The maximum size is about 1,800 pounds. School bluefins first occur southeast of Cape May in late June or early July and work their way to off Sandy Hook by mid to late July. Giants occur mostly in the fall and are among the trophies most prized by anglers.

Yellowfin, bigeye and albacore tuna occur close to our ports between June and October and can be found even further offshore, along the edge of the Gulf Stream, year round.

Yellowfins are by far the most abundant of the three. They usually occur within 30 miles of shore, but also are common up to 90 miles out. They are the major species taken by offshore anglers, who annually land between 5,000 and 20,000 yellowfins. In the recreational fishery, their average weight is 50 to 60 pounds, though fish as large as 290 pounds have been taken.

Albacore occur in somewhat cooler ocean waters than do yellowfin, and usually are found from 50 miles out to the edge of the continental shelf (95 miles) and beyond. In years where ocean water temperatures are cool, albacore tend to dominate the offshore catch. Those taken off New Jersey average 40 pounds, with some as large as 75 pounds.

Bigeyes favor oceanic waters more than 600 feet deep. They usually are taken along the edge of the continental shelf and at the heads of submarine canyons. Those taken off our coast average about 150 pounds, although some weigh as much as 365 pounds.

Skipjack tuna occur from 10 miles offshore and over the entire continental shelf in schools numbering from 10 to tens of thousands. Not usually targeted by anglers because of their small size, skipjacks have an average weight of 5 to 6 pounds; rarely do they exceed 15 pounds off New Jersey.

Little tunny (a.k.a. little tuna) occur along ocean beaches up to 30 or 40 miles offshore. They average 8 to 10 pounds but can be as heavy as 50 pounds. Because of their speed and strong fighting characteristics — and the fact that they occur close to shore — little tunny have become very popular with light tackle anglers, who find them challenging to land. Because of their dark flesh, however, they are not favored for eating and those that are caught are released.

Bruce Freeman is a research scientist with the Division of Fish, Game and Wildlife's Bureau of Marine Fisheries.