


New Jersey

Winter 1999 • \$4.25



Outdoors



Slithering Snakes
and Leaping Lizards

The Sourland
Beauty Amid the Boulders

Casting a Fly Line
in Salt Water



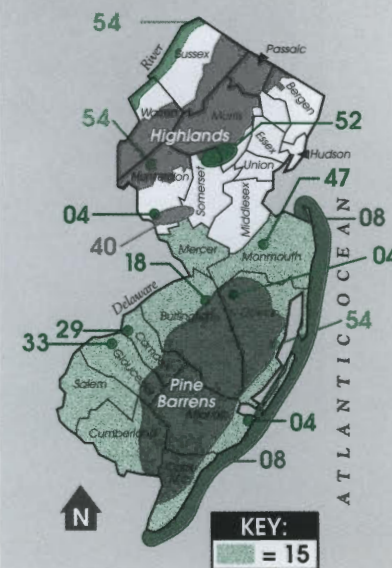
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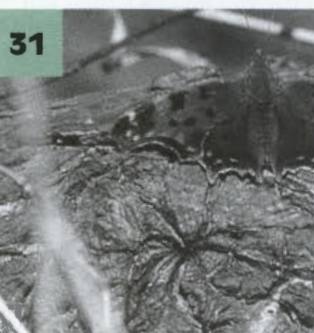
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Front Cover

American toads, such as this baby, are not endangered here — but we shouldn't wait until a species is in a state of decline before we act on its behalf. Find out what's being done to ensure the survival of all our herptofauna; read *In Search of Herps* on page 23. © Clay Myers

Inside Front Cover

Cady, a field spaniel that has been trained to sniff out guns and ammunition, is one of several dogs that help their owners enforce our fish and game laws. Meet Cady, her canine cohorts and their handlers in *A Nose for Trouble* on page 18. © David G. Gilliss

Inside Back Cover

A red fox searches the snowy landscape for fine dining opportunities. © 1998 Mark Schriber

Back Cover

A squirrel peeks out at the world from his Sourland Mountain abode. To learn more about the natural treasures of this seemingly inhospitable spot, see *The Sourland* on page 40. © Phil Moylan

New Jersey State Library

From the Governor



Christine Todd Whitman,
Governor

In the November election, New Jersey voters — by a nearly two-to-one margin — approved funding for my goal of preserving a million acres of open space in the next 10 years. If it were possible, I would thank every voter individually for supporting this ambitious initiative. I can't, but New Jerseyans for generations to come will thank the voters of 1998 for preserving the natural legacy of the Garden State for all time.

When this million acres is permanently protected, we will have taken a long stride toward a sustainable society — one in which we protect the resources we have today to ensure they are here for us tomorrow. Since all New Jerseyans have a stake in this, I pledged that we would establish ways to measure our quality of life and report to you on our progress. With the publication of New Jersey's first state of the environment report later this month, we will be living up to that promise.

New Jersey's Environment 1998 is a comprehensive look at the quality of our environment, measured and explained in understandable terms. For example, the report shows that New Jersey exceeded the federal air quality health standard for ground-level ozone, or smog, on 10 days during 1997. In contrast, prior to 1989, the number of unhealthy days for this pollutant was always 20 or more. While the report illustrates this trend of improvement, it also notes the challenge New Jersey and other states will face in meeting an even tougher ozone health standard in the future.

This report highlights our successes over the years, our challenges for the future and — most importantly — the measures by which you can evaluate our progress in meeting those challenges. This not only makes government more accountable to you, but also provides the information you need to play an informed role in ensuring that New Jersey's natural treasures will be enjoyed for generations to come.

From the Commissioner



Robert C. Shinn, Jr.,
Commissioner

To successfully protect our environment, we must be able to assess its current state in ways that are scientifically sound and easily understandable. We then must evaluate past efforts to determine what worked and why. And we must develop specific goals and strategies for the future that will be met by working as partners with all who have a stake in a clean and healthy environment.

New Jersey's Environment 1998 is one of a series of documents that will help our staff at the Department of Environmental Protection do just that. The report presents a variety of indicators that measure the quality of our environment — from the amount of pollutants emitted into the air to total acres of protected land. These indicators also serve as a baseline so that you will be able to chart future progress through subsequent reports.

Detailed plans for how we will achieve that progress can be found in two other important documents: our Strategic Plan and our Performance Partnership Agreement with the U.S. Environmental Protection Agency. The former outlines the major strategies we will emphasize over the next four years and the milestones we intend to achieve. The latter, a two-year agreement developed under the National Environmental Performance Partnership System, is a detailed planning document that outlines the major activities we and the EPA will jointly undertake for continued environmental improvement.

New Jersey's Environment 1998 is must reading for citizens interested in developing a better understanding of the current state of our environment and the challenges we face in protecting and improving it. I encourage you to request a copy and to join the partnership working toward a sustainable environment for New Jersey.

Editor's Note: To request a copy of New Jersey's Environment 1998, call 609/984-6071.

NJO News & Notes

Check These Web Sites Out

Whether you're an armchair traveler or one who likes to read up on sites before you visit them, you'll love the National Park Service's New Jersey Coastal Heritage Trail web pages (www.nps.gov/neje). The site provides an overview of the trail, details about three of the five themes: Maritime History, Coastal Habitats and Wildlife Migration (the Historic Settlements and Relaxation & Inspiration themes are under development) and links to theme sites and destinations, as well as information on special events and activities.

Monmouth County Audubon Society's site, www.audubon.org/chapter/nj/monmouth, debuted recently. It offers information about upcoming programs, events and other topics of environmental interest. Membership information, instructions on how to handle an injured bird, and a full copy of the current issue of the group's newsletter, *The Osprey*, also can be found on the site.

If you are an outdoors woman (or are interested in becoming one — or even in reading about them), check out the New Jersey Outdoor Women's League page, www.njo.com/njowl. It's one of the Community Connections pages hosted free for clubs, civic organizations and not-for-profit groups by New Jersey Online. For more information, visit www.njo.com.

Kudos

Congratulations to State of New Jersey Duck Calling Champion Keith Heinrichs, of New Gretna. Heinrichs captured first place in the competition, which was held in early fall at the Ocean County Decoy and Gunning Show in Tuckerton, and will represent New Jersey at the national competition in Arizona.

Another great new site is Air Victory Museum's www.airvictorymuseum.org. The site features pictures of the museum (currently under construction at the South Jersey Regional Airport in Medford), vintage and model planes, the annual air show and more. It also provides a lot of great information, including aircraft specifications and links to other aeronautical sites.

Though the harvest is in and spring planting is still a few months away, you can immerse yourself in things agricultural by visiting the New Jersey Museum of Agriculture's informative Web site, www.agriculturemuseum.org. There you'll find plenty of information about the museum's history, programs, exhibits, collections and more.

Finally, if you're looking for a garden to visit in the middle of the winter, check out the Grounds for Sculpture site at www.groundsforsculpture.org. The Web site introduces you to the sculpture garden, which is located in Hamilton (Mercer County), and offers information on current and upcoming exhibits, artists, the museum collection, the shop, and the café. It also provides a map of the 22-acre sculpture park and museum.

Correction

Rodney Murray, of Ocean Township (Monmouth County), was the first reader to say the "tree seedling" that appeared on the cover of the Fall 1998 issue actually is a member of the *Lycopodium* genus known as ground pine. The erect branches of this ground cover — which has long creeping stems — virtually ensure that it is frequently mistaken for a seedling.

Thanks go to him and to the other alert and horticulturally knowledgeable readers who pointed out the misidentification. Fortunately, as George Dreitlein, of Little Falls, said, "None of this takes anything away from the picture. A rose by any other name..."

State of New Jersey
Christine Todd Whitman
Governor



Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

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Director of Communications

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New Jersey Outdoors

Winter 1999, Vol. 26, No. 1

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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Growing Yuletide Traditions

by Cheryl Baisden

For most people, the biggest challenge when it comes to Christmas trees is untangling last year's balled up strands of lights. But for several hundred New Jersey farmers, the challenge runs far deeper — struggling to raise enough healthy evergreens to meet the state's annual holiday needs.

Peppering the New Jersey landscape are approximately 600 Christmas tree farms, some postage stamp-sized plots squeezed between ever-encroaching housing developments and others sprawling as far as the eye can see. Each year, between Thanksgiving and Christmas, New Jersey farmers harvest an average of 600,000 evergreens from their fields, making Christmas tree farming an \$18 million business, according to the New Jersey Christmas Tree Growers' Association.

"When you just look at it on the surface, Christmas tree farming looks like an easy way to make a living," admitted John Perry, the association's executive secretary. "But believe me, it's not."

While it's a seller's market during the holiday season, producing a dozen evergreen varieties, from Douglas firs to white pines, is actually a rather risky business, growers across the state agree.

"People think you plant a bunch of trees and then you just watch them grow and rake in the money," said Perry, who



PHOTOS COURTESY OF JOHN PERRY/N.J. CHRISTMAS TREE GROWERS' ASSOCIATION

established the 20-acre Yuletide Christmas Tree Farm in New Egypt two decades ago. "Well, there's a lot of challenges involved in growing a healthy, good looking Christmas tree, and you have to remember that for the first 7 to 10 years, depending on the species of tree you're growing, you're not going to see a single penny. Add to that all the things

that can go wrong, and it's not so simple."

Silvia and Tony Bariles, owners of Bariles' Edelweiss Christmas Tree Farm in Port Republic, can speak firsthand to the trials and tribulations of Christmas tree farming. They launched their 45-acre Atlantic County farm a quarter of a century ago with little more than a plot of land, a few hundred saplings and a dream.



Anticipation of the upcoming holiday season brightens the faces of these young people who joined Governor Christie Whitman and Secretary of Agriculture Art Brown (opposite page) for a tree cutting ceremony at Anne Ellen Christmas Tree Farm in Manalapan Township, Monmouth County.

A family (left) searches for the perfect Christmas tree.

"The first real planting we did was 500 white pines. We were so excited to be raising those trees," Silvia recalled. "But we had no experience. We didn't know that with all the deer around here the white pines, with their soft needles, would make a very nice meal. Every day we'd go out and find more trees eaten down to the ground. We never sold one of those trees we planted that first year."

Their only option, Silvia explained, was to bow to Mother Nature in round one. "The deer won that year, but we outsmarted them the following year — we stopped planting trees they liked to eat."

Growing a Great Tree

Selecting the species of Christmas tree to grow depends on several factors, from the amount of time and land the grower is willing to invest to the property's soil conditions, according to workers at

Beaverbrook Tree Farm, which raises 7,000 trees on its Hampton Township property.

But once the species is selected, whether spruce, fir or pine, virtually all New Jersey Christmas trees boast the same beginning — Christmas trees raised in New Jersey first take root in nurseries, carefully tended and protected from the elements for up to two years. Once they have established themselves well in the nursery, they are transplanted in a protected bed designed to build their hardiness. In a few more years, the trees are planted in open fields until someone takes them home for the holidays.

Most farmers, like the Barilese, purchase nursery-grown trees as seedlings and raise them on into maturity.

"For us," Silvia explained, "it would take too much work, too much land and too much time to start them ourselves. This way we can take care of trees that

already have a healthy start."


By growing trees in cultivated stands, Christmas tree farmers make their jobs easier but, during the 5 to 16 years a Christmas tree is growing to its optimum height of 6 to 8 feet, it faces a plethora of hazards. Evergreens can suffer from too little — or too much — sun or rain, face destruction from insects and disease, become overgrown with brush, vines and weeds, or be stolen by Christmas tree thieves.

Each year the young trees are shaped or sheared. By withholding rapid growth, the trees are encouraged to branch quicker, thereby gradually achieving the traditional full, bushy Christmas tree appearance. For farmers, the process is a constant battle against Mother Nature.

"People only think of Christmas trees when the holiday season rolls around," said Perry. "But we're out there taking care of those trees year-round. Unless it's really freezing out in January and February, we're always busy taking care of something."

A Changing Tradition

For many of New Jersey's Christmas tree farmers, tending evergreens has its roots in family. The Barilese began farming Christmas trees because of their two children, who 25 years ago were in a 4-H group that Silvia led.



Here, a Norway spruce is surrounded by white pine.

"We were looking for a project for the kids and we had some land, so we decided each child would plant a Norway spruce and it would be their tree to take care of," Silvia recalled. "Well, the land was in Port Republic and we lived in Northfield, which wasn't right around the corner for these kids. So we ended up taking care of the 50 trees. The next year we planted our first real crop at the farm. You know, the ones the deer enjoyed so much."

Today the Bariles children still maintain an interest in nature, although neither has chosen to pursue their parents' business. "Our daughter raises animals on a farm and our son works with computers but his real love is landscaping," Silvia said.

The number of Christmas tree farms in New Jersey has held steady for the past decade, according to Perry, but the rising demand for buildable land and the rising age of many farmers will likely take its toll.

"A lot of the farmers out there are like me, gray-haired and getting a little tired," Perry said. "A lot of the kids don't want to pick up where their parents leave off, so the price developers are willing to pay starts looking better and better."

Silvia Bariles readily agrees. "It's a lot of work for an old man and his wife," she said with a smile. "What people don't see is the loss they face if these farms start closing."



Environmental Impact

Artificial Christmas tree makers assert that chopping down a Christmas tree is just one more of humanity's strikes against nature. Nothing, according to Perry, could be further from the truth.

"You know, people eat hamburgers, which requires that you kill a steer," said Perry. "When you want another hamburger, there's another steer. Christmas trees are the same way. We grow them because you're going to cut them down. They're a crop, not an irreplaceable resource."

While growing, Christmas trees provide tremendous environmental benefits, says Duke Grimes, owner of the Rosemont Tree Farm in Rosemont. Christmas trees serve as wildlife habitats for rabbits, songbirds, foxes, skunks and snakes. They also help increase soil stability, serving as anchors during rainy and dry seasons.

Additionally, the state's Christmas tree farms serve as greenbelts in the nation's most densely populated state. Christmas trees consume huge amounts of carbon dioxide and reintroduce large amounts of oxygen into the atmosphere, thus cleansing the air. One acre of Christmas trees, according to the state association, produces the daily oxygen requirement for 18 people.

"It's true that letting our trees grow

without cutting them down would still provide oxygen," says Perry, who holds a degree in forestry. "But younger trees produce more oxygen, so our process really is environmentally sound."

Once the holiday season is over, Christmas tree growers recommend that buyers contact their local or county public works department to locate a tree recycling program. Some communities, noted Ron Good, a New Jersey Department of Agriculture spokesman, collect the trees at curbside and grind them into mulch, which is later made available to residents free of charge. Seaside communities often collect evergreens to create dunes to control beach erosion.

On an individual basis, a dried out tree can be used in woodworking; the branches can be ground into garden mulch; and the needles can be used to stuff aromatic pillows. In fact, the whole tree can be placed in the yard and used as a feeder for birds and squirrels.

Finding a Farm

The New Jersey Christmas Tree Growers Association publishes an annual guide to Christmas tree farms around the state. The booklet is available at state parks and forest offices, county extension service offices and online at <http://nj5.injersey.com/~njctga>. The guide is broken down into counties, listing farms in all but the densely populated counties of Bergen, Essex, Hudson, Passaic and Union. A description of each farm includes the address, phone number, hours, directions, and tree species available. You will also find a host of other facts, from whether saws are provided onsite to whether Santa visits on the weekends. Handicapped accessibility is also listed.

The association's website also includes a brief history of the Christmas tree tradition. According to the association, the Christmas tree became part of Christian tradition about 400 years ago in Germany and spread to most of northern Europe by the 19th century. The Hessians brought the tradition to America during

the Revolution. Franklin Pierce installed a Christmas tree in the White House in the 1850s, but it wasn't until 1923 that President Calvin Coolidge established the National Christmas Tree Lighting Ceremony on the White House lawn. Today, 30 million American households haul a lush evergreen indoors and decorate it for the holidays.

The Final Cut

Selecting your own Christmas tree on the farm, rather than swinging by the holiday tree stand sprawled across a local vacant lot, can be a pleasant adventure. Open daily during daylight hours, many farms open the entire field to buyers, who select the tree they want and then either ask a caretaker to saw it down or reach for one of the farm's saws themselves. At other farms, the growers tag the trees that are available for the season.

"It's such a wonderful thing to watch families come out and find exactly the right tree for their house," said Silvia Bariles. "Every time we watch someone pick out a tree and take it home, it's like reliving simpler times, when you trimmed the tree with love as a family and picking a tree was all part of the fun, not something you did like stopping at the dry cleaner."

Of course, every tree isn't destined for a place of honor in a Christmas home. Regardless of how much tender loving care farmers lavish on their evergreens, some will invariably not make the grade. These misshapen trees ultimately become wreaths or mulch, according to Perry.

"In the end, Christmas trees are no different than people," he concluded. "No matter how much you do for them, some are just destined to turn out bad. I mean, if it were easy everyone would be out there doing it. Now wouldn't they?"

A Collingswood resident, Cheryl Baisden's work appears frequently in New Jersey Outdoors. Her recent contributions include Reaping What Others Sow (Spring 1998) and When S.E.E.ing Is Believing (Winter 1998).

Top Tree Tips



Everyone who heads to the Christmas tree farm or neighborhood tree stand has every intention of bringing home the perfect evergreen, its full green boughs tapering off into a sturdy stub of a point just made for the antique angel that has been in the family for generations. Yet, just like Charlie Brown, once face-to-face with a sea of trees in every shape and size, from short, squat torpedoes to scruffy, hourglass-shaped six-footers, we've all occasionally returned home with what seems like little more than a handful of excuses and a puddle of pine needles.

Christmas tree selection doesn't have to be a hit-or-miss proposition. Here are some tips from the experts on selecting a quality tree that's right for you:

- Check for freshness in both pre-cut and cut-your-own trees by inspecting the tree's needles and branches. Healthy trees have flexible needles that stay on the branch when it is pulled lightly with a cupped hand. Branches should bend, not break, when carefully manipulated.
- Note the tree's overall tone. In a healthy tree there should be no hint of brown.
- Keep in mind the space allocated for your tree. Don't be taken in by a lush seven-footer when you have a six-foot ceiling and plan to tuck the tree into a cramped corner.
- Visualize what the tree will look like once indoors. Remember, the branches will relax somewhat once it has adjusted to the indoor temperature.

A pre-cut or self-cut tree should last a month indoors if properly cared for. These tips should guarantee your tree a long life:

- If you will not be bringing the tree inside for a day or two, place the trunk in a pail of cool water and store the tree in a sheltered area protected from the wind.
- Before placing the tree in the stand, make a fresh cut in the bottom to help the trunk absorb water more readily.
- Keep the tree well watered. A fresh-cut tree will absorb anywhere from a pint to a quart of water each day, so be sure to check and replenish the water daily to prevent needle drop and preserve the tree's color.
- Place the tree in a cool location, away from any drafts, to keep the branches from drying out.

A balled tree, which is carefully mined for indoor decorating during the holiday season followed by outdoor planting later, requires special care. Before purchasing a balled tree, make sure the root ball has been wrapped in burlap, then:

- Condition the tree to the shift in temperature and humidity between the outdoors and the indoors by placing it in an unheated, protected enclosure or on the northeast side of the house for several days before moving it indoors.
- Just like cut trees, balled trees require between a pint and a quart of water each day. Check the root ball for moistness daily.
- A balled tree may be kept indoors at 65 to 68 degrees for no more than a week before the health of the tree is affected.
- Reintroduce the tree to the outdoors slowly, by placing it in a sheltered area for several days before planting.

Regardless of the type of tree you bring home, remember there are certain safety precautions that should be taken:

- Keep trees away from heat sources such as heating vents, fireplaces and ovens.
- Use only U.L. approved lights on trees.

Story and photos © by Paul Kerlinger, Ph.D.

Fly-Rodding the Salt

"You can't catch fish on flies in salt water," he told his wife.

Although it was not meant to be heard, it was clear that he was referring to me, the dimwit with the fly rod. It didn't faze me as I walked past him and his wife on the jetty. As I flailed away at the water with a chartreuse deceiver, an imitation of a small baitfish, he had his laugh and left. Within a few minutes, I felt the sharp strike of a 2-pound bluefish. It made a nice run and even put on a nice surface show. With a fly rod, it seemed larger than its true weight. A quick turn of the hook, a clean release, and I was casting again.

Adherents of fly-fishing in salt water are quickly becoming accepted features of the saltwater fishing landscape. Anglers have used fly rods in the salt for many decades, but only recently has the sport taken off. People are no longer laughing and the number of saltwater fly-fishers has increased dramatically in the past five years. It's no longer unusual to see fly-fishers on the beaches, back bays and even open ocean. It is the new frontier in saltwater angling, offering a challenge that may be more rewarding than any other type of fishing.

New Jersey is an ideal state for saltwater fly-fishing. Primary game in our state includes striped bass, bluefish and weakfish, although many other species are regularly caught on flies. For marine fly-fishers, bonita, various tunas, dolphin (the fish) and other pelagic species are available. Inshore, summer flounder are suckers for deep running flies (with lead eyes or bead heads) when fished slowly along the bottom. Sea bass are not usually considered targets, but they sometimes inhale flies that get close to the bottom. And, there are various "trash" fish that are caught while fishing for game species. I've hooked northern stargazers, sea robins and needlefish, and accidentally foul-hooked skates and tautog. Like birders, some saltwater fly-fishers keep life lists of the different types of fish they catch.



Shown are a saltwater fly rod and reel with saltwater flies. The white and red deceiver, two Clouser deep minnows and yellow deceiver (shown on the rod, top to bottom) are for daytime fishing, while the black snake flies above are for night fishing.

The more bizarre and unusual, the better.

Different Gear; Different Skills

The transition to saltwater fly-fishing may seem insurmountable because the tackle is so different and because it entails learning to cast a fly line instead of a lure. However, for the dedicated angler seeking a new challenge, it isn't that difficult.

Having the right tackle is the first step. For most fly-fishing in New Jersey, a 9-weight, 9-foot rod is best. The rod should be matched to a similar or slightly heavier line (8-weight rod goes with 8- or 9-weight line; 9-weight rod goes with 9- or 10-weight line). A 9-weight will suffice for most conditions. These weights will cast flies in the windy conditions often found at the shore. A few anglers use lighter 7-weight rods for smaller fish in calm conditions.

Reels can be very expensive, running to more than \$500, although there are some old standbys that continue to serve well and do not require a second mortgage. Reels needed for most saltwater fly-fishing are simple, single action reels that hold 50 to 100 yards of backing, 100 feet of running line, and a 30-foot shooting taper. The backing is needed for stripers greater than 20 pounds or if you expect little tunny, bonita or larger fish. Fancy drags are available, but for most reels the palm of your hand serves you better than mechanical drags. Simply use light pressure with your palm as a fish runs line off your reel. When you feel it getting tired, apply more pressure, but if it wants to run, back off. You may get your knuckles "busted" a few times as the handle spins, but the bruises will be your badge of success.

Perhaps the trickiest part of saltwater fly-fishing is choosing the right line. The actual casting end of the line includes either a full fly line of perhaps 100 feet or a 30-foot shooting head fly line with 100 feet of running line. Most salt anglers prefer the shooting head because it saves energy and your shoulder — you can cast 70 to 100 feet with relative ease by casting the 30-foot "head" and letting it drag

40 or more feet of the running line. Shooting head fly lines are available in various sinking qualities: floating for poppers and surface work, intermediate or slow sinking for 1 to 4 feet down, and fast sinking for more than 5 feet below the surface. All are appropriate at different times, so it pays to have a variety of lines. As a starting line, choose an intermediate, then add either a floating or fast sinking when you learn where the fish are.

A leader is attached at the end of the shooting head. These are sections of monofilament line that can be tapered or untapered. A tapered leader allows a very light fly (like those used in freshwater trout fishing) to turn over. With large saltwater flies, the weight of the fly makes even an untapered leader turn over. Without a tapered leader, very small freshwater flies just stall in the air and don't lay out in a straight line.

Leader length should be between 4 and 10 feet, with 6 to 7 feet usually being adequate. Leader strength should correspond to the type of bottom you are fishing over and the type of fish you're after. An 8- to 12-pound leader is great for fishing over sandy or muddy bottoms for most fish. Go to a heavier leader over rocks, around pilings, and over mussel or oyster beds. Bluefish have sharp teeth and require a heavier monofilament (30+ pounds) or wire leader.

A Washtub?

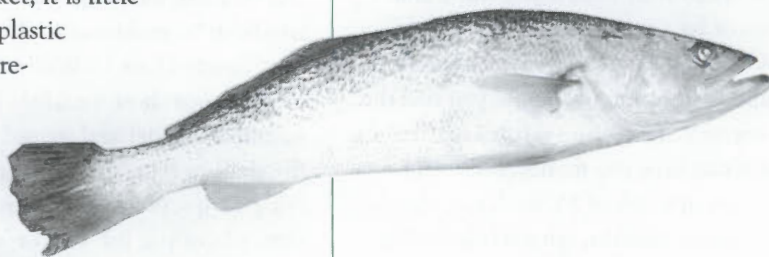
The last piece of equipment you will need is the most ridiculous. In the old days, saltwater fly-fishers tied a peach basket around their waist to hold their line as they stripped it in. Now called a stripping basket, it is little more than a plastic washtub. Store-bought, they cost \$20 or more but, for a few dollars, a bungee

"You can't
catch fish on flies
in salt water,"
he told his wife.

cord and a washtub will work. It hangs at just below the beltline and you simply strip your line into the washtub so it doesn't get hung up in the jetty, washed with the tide, or tangled around your feet. When casting, the basket serves to let your running line rip through the guides without getting tangled, at least theoretically.

Learning about fly-fishing tackle and casting in salt water may seem daunting. It is part science and part art, and takes commitment. If you are serious about venturing into the salt with a fly rod, you may wish to consult one of the many good books now available. Several books on fly-casting are available from authors such as Lefty Kreh and Ed Jaworowski. Two excellent books by Lou Tabory and Ed Mitchell will help the novice or even experienced angler learn more about tackle, casting and fish.

Once you are ready for the water you need to consider what fly to use. It is the same dilemma confronted by spin fishers choosing a lure. For salt water, the term "fly" is a misnomer. Unlike the tiny insect imitations



This weakfish made a tasty meal.

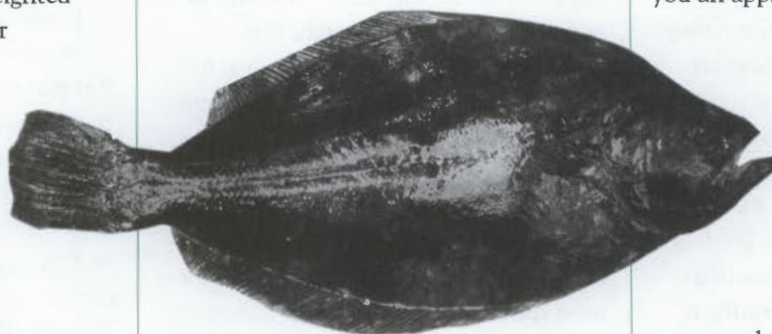
used by freshwater trout anglers, saltwater flies almost never imitate insects. Instead, they imitate small fish-like sand eels, mullet or bunker, as well as shrimp, crabs and a few other types of animals. They range in size from less than an inch to more than 7 inches. A starting collection should include three basic types of flies: *poppers* that imitate baitfish on top of the water; *unweighted streamers* that resemble baitfish below the surface of the water; and a *weighted streamer/bucktail* that looks like baitfish, shrimp and maybe a crab on or near the bottom. Colors used include the rainbow, although chartreuse and white, olive and white, green and white, and yellow — and combinations of these — usually work best. Black can work well at night. The most popular streamer pattern is the Lefty's deceiver and the most popular weighted streamer/bucktail is the Clouser deep minnow. The latter has small lead or bead-chain eyes that makes the fly dive for the bottom between jerky strips. They can be devastating on striped bass, weakfish and summer flounder because these fish usually feed right on the bottom.

Poppers may be the most fun to use of all flies because you see the fish coming and you see the strike. Bluefish and striped bass often feed on the surface and can stop your heart when you see them moving up behind your popper or when the water explodes without warning. Many a bluefish has missed my popper and cleared the water by more than a foot. Sometimes a popper is a good fly to start with if you think that blues or bass are around.

Catching fish on a fly is even more challenging and rewarding if you tied the fly yourself. Tying flies is fun, creative and it can save you money. Saltwater flies cost upwards of \$5, so during the long winter months, tying a hundred or more for the coming season is an investment. Most anglers who convert to fly-

Poppers may be the most fun to use of all flies because you see the fish coming and you see the strike.

rodding the salt end up tying their own flies. Not only do they save money and have fun, but they also design creations that often are more effective than store-bought flies.



Catching this summer flounder was no fluke!

Pick Your Spot & Go Fish!

Once you have your tackle, where do you go? New Jersey is blessed with some of the finest salt water for fly-fishing. Start with the places you now fish. The ocean itself, from jetties and the sand, can be great, although heavy surf and wind can be problematic. The back bays from Sandy Hook to Wildwood, including Barnegat, host weakfish, bluefish, summer flounder and striped bass. Fish the shallow flats, sodbanks and around bridges, rips, points and narrows: the same places you fish bait or lures. The back bays are a maze of fishable waters that take exploration and patience.

Other treasures are the Delaware and Raritan bays, where you can fish jetties, shorelines, tidal creeks and their mouths, or even in deeper water.

After getting the right equipment, finding a place to use it, and learning the fundamentals of how to cast, you are ready to really start to learn. Saltwater fly-fishing will bring you closer to the fish and its biology than you have ever been before. You will at first feel awkward and your line will fall limply at your feet or around your shoulders. An occasional fly will lodge in your jacket or hat. But if you keep at it, you will catch fish. In the right hands, a fly rod will often catch more than other types of fishing. Learning how to outwit a weakfish or a summer flounder with a few feathers and fur tied to the end of your line will also give you an appreciation for how the fish

feed and where they feed.

This appreciation will also make you want to release more fish.

Saltwater fly-fishing is the next frontier. It offers an aesthetically pleasing experience. It also offers a challenge that bait fishing or plug fishing doesn't. This is not meant to sound elitist. For many of us who fly-fish in salt water (and fresh water), there has been a progression from bait fishing when we were kids to spin fishing with lures as we grew older, and finally fly-fishing. To make a smooth, 75-foot cast with the right fly to the right place and outwit a decent striper or weakfish is an incomparable feeling. However, the real reward is after you have gently unhooked the glistening, beautiful fish and watch it swim away!

Paul Kerlinger lives and fishes between New York City and Cape May. He works as an environmental consultant for the wind power industry and various environmental organizations. His writings include scientific papers on bird migration, popular articles on fishing and birding, and a book on bird migration (How Birds Migrate, Stackpole Books).



PHOTOS COURTESY OF THE N.J. DIVISION OF FISH, GAME AND WILDLIFE

Back on the Bobcat Trail

by James C. Sciascia

As leader of the bobcat research project in New Jersey, I get to speak to most of the people who call the Division of Fish, Game and Wildlife to report a sighting of a bobcat. Many callers start by saying something like, "You're probably not going to believe me but I'm pretty sure I saw a bobcat."

That's because many people are surprised to learn that bobcats still exist in New Jersey. And results of our Endangered and Nongame Species Program's research efforts during the past four years, along with a growing number of sightings by the general public, indicate the population may be growing.

Bobcats were once widespread and common in New Jersey, probably occurring in all counties. European settlement brought hard times for bobcats; they were hunted relentlessly, as were all of our large predators. The greatest blow to the once large population was the massive deforestation that occurred here at the turn of the century. As forests were cleared for lumber, fuel and charcoal, and land was converted to agricultural use, bobcat habitat was fragmented. Populations became isolated and plummeted.

Although scattered reports of bobcats being seen or killed continued throughout the 1950s and 1960s, bobcats were thought to be extinct in New Jersey by the late 1970s. This prompted the division to initiate a restoration project. From 1977 through 1982, 24 bobcats captured in New England were released in northern New Jersey. The public submitted consistent sightings of bobcats and kittens after these releases that suggested some of the released cats were successful in reproducing.

Interestingly, a road-killed male bobcat was recovered in 1982 that was not one of the released cats and was too old to be the offspring of the released cats. This confirmed that at least a remnant

Free at last! Here, one of the bobcats captured in New England is shown as it was being released in Sussex County in 1979.

The most exciting sightings during the past several years have come from South Jersey, where the bobcat was thought to have been extirpated long ago.

population of bobcats still existed in New Jersey at the time of the releases. Surprisingly, the cat was recovered near one of the Passaic Basin wetland complexes, which is well outside of the northwestern and north-central part of the state where the most suitable bobcat habitat is found.

The bobcat was listed as a state endangered species in June 1991. Since that time, regular sightings have been submitted from an increasingly larger area of the state. In an effort to determine the general distribution of bobcats in the northern part of the state, the division's Endangered and Nongame Species Program conducted a scent post survey in 1995. (Scent post stations are 3-foot circles of ground that are cleared of foliage and covered with a smooth, level layer of sand. A cotton swab, soaked in urine from caged cats, is set in the middle of the circle.)

Sightings Increase Statewide

This survey, which recorded the number of times a bobcat came in contact with a scent post on a survey route, was successful in documenting the range expansion of the species in New Jersey. A total of 11 animals were documented on nine of the 26 routes sampled in the northern half of the state.

The survey confirmed the continued existence of bobcats in Sussex, Warren, Morris and Passaic counties and documented the extension of their recent range into Hunterdon County. Since the scent post survey was completed, sightings in Mercer, Somerset and Bergen counties have been recorded, indicating an even further range expansion in North Jersey.

The most exciting sightings during the past several years have come from South Jersey, where the bobcat was thought to have been extirpated long ago. We now have reliable sightings of cats in Burlington, Ocean, Atlantic, Cape May, Cumberland and Salem counties, indicating that remnant populations in these areas may be growing and expanding.

Determining the distribution of bobcats in the state is relatively easy. The difficult part is estimating the population size and determining home range size and habitat requirements. Radio telemetry is the most common method for studying the home range sizes and habitat preferences of large, free ranging animals so, in March 1996, the division set out wire cage live traps to capture bobcats that could be collared, released and tracked. (See **Tracking the Elusive Bobcat** in the Winter 1997 issue of *New Jersey Outdoors*.)

In February 1997, Preston Haney and Brad Holloway from the Wildlife Control Unit captured our first bobcat in a wire cage live trap. During the next two weeks they captured two more cats and recaptured one of those two cats after it had been collared and released. Amazingly, all four captures occurred in the same trap at the same location.

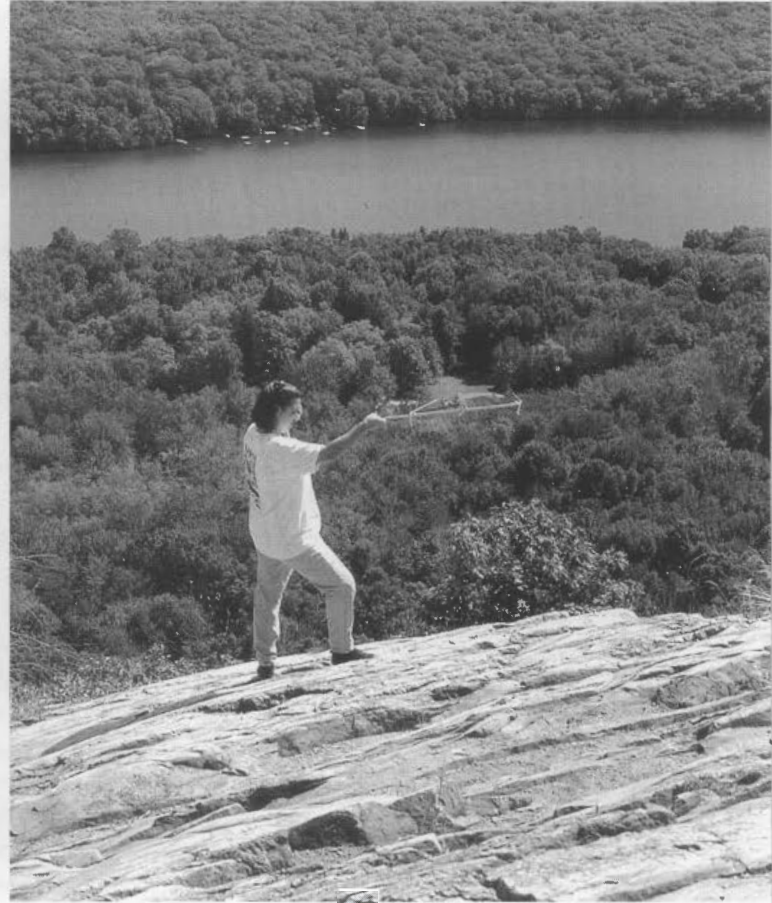
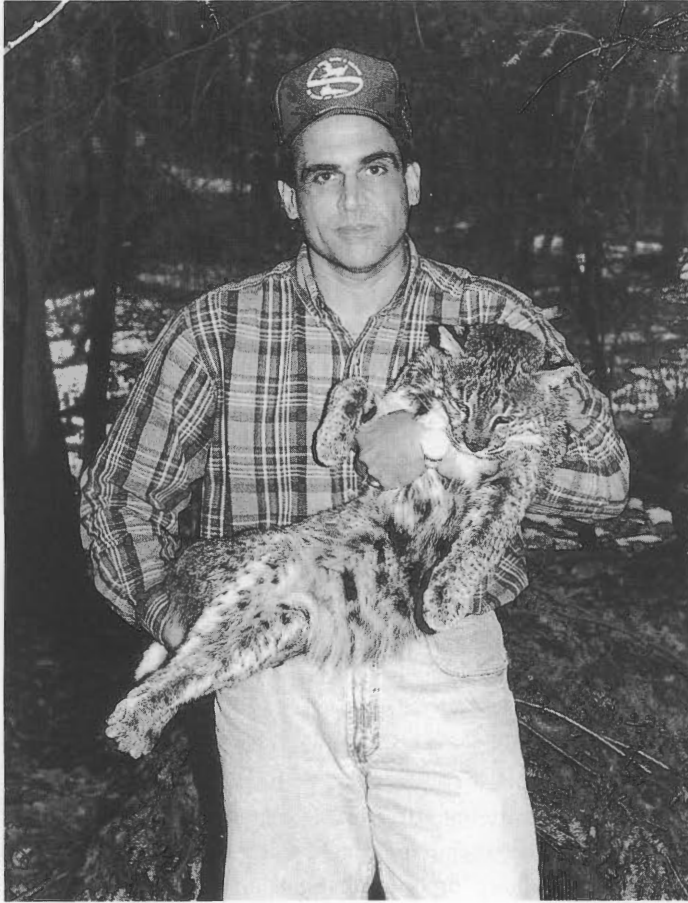
The three bobcats captured were adult males ranging in weight from 25 to 30 pounds. Except for females with kittens, bobcats are usually solitary animals. Although home range overlap is relatively common between females and males, there is usually a smaller degree of overlap between adult males. However, male range overlap is more common during the breeding season when multiple males will seek and compete for a single female.

The fact that these three adult males were captured at the same location over a short period and during the breeding season leads us to suspect they were all drawn to the area by an available female. Radio telemetry later confirmed these three males appeared to have little home range overlap outside of the breeding season.

The radio telemetry data was obtained by placing radio collars on the cats after they were anesthetized, weighed, sexed and measured. This was done at the point of capture and all the cats were released the same day they were caught in Stillwater Township, Sussex County. The radio collars have a 24-month battery life and contain a mortality switch that activates a distinctive radio signal if the animal is motionless for 12 hours.

Unfortunately, two of the cats died during the study period. Fortunately, the mortality switches in the radio collars allowed quick recoveries of the bodies, which enabled the cause of death to be identified for each.

The necropsies performed by division pathologist Doug Roscoe suggest that humans either directly or indirectly caused both deaths. Bobcat #5, named for its radio frequency, was found dead



just two months after its initial capture. The postmortem examination revealed the bobcat died of feline distemper. This is a deadly viral disease that is transmitted to bobcats via exposure to the feces of infected domestic or feral house cats. The virus is very hardy and can persist up to six months in the environment. In addition to the incredible number of small animals and birds killed by free roaming house cats and feral cats, the distemper threat to bobcat populations provides another reason why house cats should not be allowed to run free and proliferate in the wild.

Bobcat #7 was recovered 13 months after its initial capture. In this case, the autopsy revealed the cat died from internal injuries suffered as a result of a severe fall or from being struck by an automobile. The abrasions noticed on the right hind leg were thought to be more typical of an auto strike than an injury from a fall. Radio telemetry data showed this animal frequenting two habitat patches separated by a county road. Based on the telemetry locations, it is likely this animal routinely crossed this road, making it susceptible to an auto strike.

Building a Data Base

Dr. Jane Huffman, at East Stroudsburg University, provided a graduate student and equipment to monitor the cats' movements. Using radio telemetry equipment, Linda Buono tracked the cats for approximately 10 months. The telemetry data she gathered has provided some preliminary information on home range and habitat use.

Bobcat #7 and the other surviving collared cat were monitored long enough to provide enough data to estimate home range size. These male home ranges, of approximately seven square miles, appear significantly smaller than reported home ranges in Massachusetts, Minnesota and Maine where male home ranges averaged between 22 and 32 square miles. Bobcat home range size is affected by the availability of food and cover. The diverse and abundant food supply and the many

The author (above, left) holds the anesthetized bobcat #7, the first of the three captured. The 3-year-old — its age was determined by sectioning a tooth — was recovered 13 months after being radio collared. It apparently had been struck by a vehicle.

Graduate student Linda Buono is shown above locating radio signals from a high point overlooking bobcat habitat.

To an animal,
habitat does
not end at
property lines.

rocky ledges and swamps the cats use for cover in the study area allow the cats to find everything they need in a relatively small area.

With data from only two animals from a relatively small study area, no conclusive statements can be made on the home range sizes of the bobcat in New Jersey. Now that we know we can capture cats and have an idea of the pitfalls and limitations of radio tracking, we plan to expand the study to include from four to six additional cats along the Kittatinny Ridge, from the Delaware Water Gap to High Point.

If funding allows, we would like to expand the study to include South Jersey cats that use habitat quite different from that of the northern population. Home range and habitat use may be significantly different between the northern and southern populations. The data from these studies will help us identify habitats critical to bobcat populations and play a valuable role in preserving enough open space to secure the species' future in New Jersey.

This information will be added to a pool of data the Endangered and Nongame Species Program has been collecting over the past three years as part of the Delaware Bay Landscape and Highlands Landscape projects. Information about endangered and threatened wildlife habitat is being combined into a computer database with other natural resource information to define critical ecosystems. Geographic Information System (GIS) technology is being used to produce composite maps delineating critical habitats. In the past, land management and protection has been handled on a site-by-site basis. To an animal, habitat does not end at property lines. Our Landscape projects were created to provide the regional perspective needed to preserve ecosystems that cross many land boundaries, management objectives and human uses.

The information from the Landscape projects will be made available to land planners, zoning boards, environmental commissions, state land managers and regulators. It will also be a valuable asset to developers who will know critical areas before investing time and money in a project. If we can provide a clear picture of rare species habitat requirements, land managers, planners, developers and regulators will have the tools they need to keep important habitats intact. Loss of habitat is the biggest problem facing the bobcat and all endangered and threatened species.

James C. Sciascia is a principal zoologist with the New Jersey Division of Fish, Game and Wildlife's Endangered and Nongame Species Program and has been involved with this bobcat research project since its inception.

Adopt-A-Species

You can help the Endangered and Nongame Species Program learn more about New Jersey's bobcats through Adopt-A-Species. For a \$15 contribution, you'll receive a handsome decal (pictured here), a summary of the bobcat project and periodic updates. Since the program receives no state funding, contributions such as these are needed to

maintain and expand crucial research and protection efforts. If you would like to help, send a check or money order for \$15 to Adopt-A-Species, Endangered and Nongame Species Program, PO Box 400, Trenton, NJ 08625. Other species and groups that can be adopted are shorebirds, ospreys and herptiles (reptiles and amphibians); see page 62.



Winter Bobs in the Garden

by Tom Pagliaroli

It never, ever fails. Just as sure as the main flight of woodcock arrives *en masse* the evening the season closes, it's my turn on quail singles in cover that could make a chainsaw seize from sheer trepidation.

"Your shot," was Rocky Vertone's almost gleeful reminder.

His small but tougher-than-bullhide Brittany had already squirmed and squeezed its way to a crouching point in the bullbriar jungle; the only indication of locking on was the sudden silence of the bell and glint of the orange collar through the vines and low slung branches. I already had a latticework of thorn-borne welts rising on the forehead from an earlier sortie, but there was no deviating from the agreed upon rotation.

Minutes earlier, at the edge of a bordering weedfield, the dog had pinned a covey of bobwhites, with the escapees from the ensuing avian eruption scattering like, well, quail. A trio of birds fanned open and picture perfect in front of my companion's 20 gauge over/under, and the #8 deliveries had the Britt bringing his boss a matched pair of bob cocks.

I barely had a chance to shoulder the gun, much less snatch off a shot as those quail flushing to the right banked low and tight into the thickets from hell. Just to the other side of the tangles the cover thinned and opened up to a broadening expanse of brittle, withering stalks. The bird, or birds, knew the getaway game well.

A sudden whir of wings told of a clean escape without so much as a glance. Opportunity forfeited.

Judiciously combing the edges, fields and brush lines over the next two hours left us with rapidly tiring leg muscles and the spaniel with a scratched and bleeding muzzle. The quail seemed to have disappeared into the biting January air. Since it was approaching noon, we decided to wrap up the flatland rodeo.

I swear they could not have choreographed it any better. With the van in sight, my gun was already broken and on shoul-

der, the shells safely ensconced in the vest's pocket holders. The Britt veered suddenly and froze, quaking, in front of a patch of weeds not much bigger than a kiddie pool. For a radius of a hundred yards, the vegetation was knee high at its tallest. I looked at Rocky, disbelieving. He smiled back. The dog whined softly.

"Your shot," I mumbled.

Natives: A Challenge

We ended up with a half-dozen bobwhites for the morning and did not see another bird hunter, despite being on a rather popular Ocean County wildlife management area. And on a Saturday, to boot! A return during the week yielded similar results, as did subsequent visits to Cumberland, Atlantic and Cape May county tracts over the next five weeks until the season closed in mid February. Rarely did we encounter bipedal interference.

That South Jersey's native bobwhite quail resource offers a quality hunting experience is quite the understatement. *Native* is the operative word here, as game farm bobs, left to their own devices, just can't cut it outside the pen and rarely, if ever, last more than a week after being stocked. And, unlike the 5,000 look-alikes liberated during November on the Greenwood Forest and Peaslee tracts for put-and-take gunning, native quail are well muscled and blindingly fleet of wing, and possess finely tuned instincts.

Not only are these wild bobwhite populations stable, but the vast amounts of acreage in the form of wildlife management areas and state forests grant liberal access to outstanding quail hunting opportunities. What's more, these lands sit vacant come early January, thus providing hunting in as isolated a setting as one could expect within the confines of the Garden State.

A most diminutive gamebird, especially when compared to the ringneck pheasant and ruffed grouse, the cock bobwhite is approximately 10 inches in overall length and tips the scales at a meaty 7 to 8 ounces, with the hen coming in only a smidgen less in length and weight. Both have black eyes, legs and feet. They are most eas-

© TOM PAGLIAROLI



Hunters take aim at their elusive quarry.



ily told apart by the cockbird's white throat patch and the white sash that stretches from the bill to the back of the neck. The patch and stripe of the more conservative female are distinctly yellow in hue. Both sport a reddish brown back, wings, tail and upper breast; the layered appearance of the lower breast and abdominal area is caused by a brownish-black edging of the white feathers.

The range of the Jersey bobwhite quail extends from Monmouth County southward through Cape May County. (While there are several scattered coveys in lower Middlesex County, this population faces a daily onslaught of suburban and commercial sprawl, and its ultimate survival is in question as the carving of vital habitat continues.) Save for the bowels of the Pine Barrens, the southern tier counties boast the strongest populations of self-perpetuating quail. Not coincidentally, this region is where the largest tracts of open public land are situated. Camden, Ocean, Burlington, Gloucester, Atlantic, Cumberland and Cape May counties offer both birds and elbow room. The exception to this is Salem County, where public hunting land — at least at it pertains to quail — is at a critical premium.

Suited for Survival

Although subject to an annual mortality rate that hovers close to the 75 percent mark, the native bobwhite is a most resilient creature, with survival guaranteed as long as there is suitable habitat to hold it over until springtime. It is an "edge" bird and prefers those locations where two distinctly different types of cover collide. Ideally, this is an overgrown weedfield or picked cropfield that is but a wingbeat or fast legwork from a thick stand of woodland. However, there are those coveys that eke out a living in forested environs because edge habitat is not readily available. These "wood coveys" are less predictable than "field coveys" and — because of the vagaries of their bailiwick — represent a supreme hunting challenge.

Late season bobs make do with whatever provender is available. Possessing quite the catholic diet, the birds will

consume just about anything they can cram into their crops, including acorns, weed seeds, pine mast, waste grain (especially corn), poison ivy berries and any bits of greenery they can find, including the first nibs of winter wheat. The hardy and nearly indestructible bicolor lespedeza, which has been planted on many southern New Jersey wildlife management areas, serves grandly in both food and cover capacities, and quail eagerly seek it out.

Winter bobs are a gregarious lot and roost on the ground facing outward tail-to-tail in a circle so as to conserve warmth and watch out for predators. Prime roosting areas are generally inside field edges or on the border of low hanging woodland cover. Usually a half-hour or so after first light they will get up, stretch, preen and either fly or scamper to nearby feeding areas, returning to cover as soon as their crops are filled. Should the sunshine promise warmth and the temperatures remain moderate, they will hang out and soak up the rays and then dust themselves before returning to the sanctuary afforded by the brush and thickets. The activity is repeated about an hour prior to sunset, before they return to the roost location. The covey will usually choose a new roosting site every few weeks.

Besides loss of habitat, the greatest threat to bobwhite survival is weather, not predation. Cold, soaking, spring rains wreak havoc with chicks and, come the winter season, it is the ice storm that will cut quail counts to the quick. Primarily a "scratch" feeder, the bob is able to dig through a few inches of snow for food. Once the snow cover and vegetation become sheathed in ice, however, the birds find it nigh impossible to obtain sustenance; after a few days, starvation becomes a stark possibility. A prolonged cold snap accompanying such a freeze can further stress the quail to the point where die-offs will occur. This dark period is also when predators such as foxes and feral cats take their toll on bob populations. These are the unpleasant realities of quaildom, and they alternate in severity from season to season, year to year.

This is no reason to ignore winter's quail hunting potential. Bear in mind the anomaly disguised as the winter of 1997-98, when snow was non-existent in the southlands and rarely did the temperature dip below the 35-degree mark for more than a couple of days in a row. Bob survival was excellent, and despite the copious amounts of precipitation in the early spring of '98, hatches were overwhelmingly successful.

"The hens pull the broods off the nests in late June and early July, and things were drying up really well by then," remarked Ray Porutsky, the Division of Fish, Game and Wildlife's central region superintendent of land management. Porutsky, whose passion for upland bird hunting is matched only by his manic quest for trophy striped bass, keeps a watchful eye on gamebird populations, especially South Jersey quail. He continued, "On the overall, barring any unforeseen calamity such as a blizzard or an extended deep freeze, things look good for South Jersey quail into the next winter season."

To Dog . . .

There are basically two types of bobwhite hunting: with and without a dog.

The former is the procedural norm, with a disciplined English setter, German shorthaired pointer, English pointer or Brittany spaniel all serving well. Flushing breeds such as the Labrador retriever and springer spaniel are also up to the task at hand, although it is incumbent upon the hunter to keep up and be close when the birds go airborne. (Actually, any well-trained dog with a penchant for bird scent will find and flush winter bobs. Cape May quail catechist and outdoor scribe Lou Rodia hunted bobwhites for decades with beagles, and the photos tell of fairly successful forays on southern management areas and state forests.)

Whoever coined the phrase *pocket rocket* was no doubt a quail hunter or, if not, must have witnessed at least one small covey launching. Nothing, and I mean *nothing*, in upland/small game hunting is comparable to this bobwhite blowout, a tandem flush of grouse included!

Few things, save for electric shock treatments, can prepare the hunter for that specific moment when quail burst skyward. What is so exasperating is that, with the dog on point or gruffing for a flush, *you know the birds are there*. But it doesn't matter — the thundering liftoff still is cause for cardiac infarction.

The open or improved 20 gauge or 28 gauge, either double, O/U or semi-auto stuffed with #8 and #9 loads, is the ordnance of choice. Unless the birds have been exposed to any type of substantial gunning pressure, they will hold tight before flushing, often getting up within 20-30 feet, if not closer. The shot(s) will range between 15-25 yards, predicated, of course, on reflex and recovery as well as the type of surrounding cover.

Be it field or forest, the focus must be on the solitary bird. Believe me when I tell you, this is easier said than done. To "covey bust" (shoot at the whole bunch of flushing bobs) invariably ends in a jaw-dropping miss. Yeah, it defies modern physics how all those quail can escape a spreading swarm of shot unscathed, but they do — and it can get real frustrating real fast until you steel the resolve and pick out, follow and lead one bird in the rise. Then worry about scoring a double!

. . . Or Not to Dog

Hunt winter quail without a dog? At the risk of being branded an upland heretic, it can be done, but you have to pick your days. Not being a bird dog owner, I do it more often than not and have enjoyed more than a few close-to-limit outings when conditions were right.

This is when a dusting (up to a 1/2") of snow proves a pure predatory advantage. Not only do bobwhite tracks show up against the bright backdrop, but the birds' innate instincts tell them they are vulnerable, and they will stick white-on-rice tight to the hide, being reluctant to run and thus expose themselves

should they sense danger. This being the case, locating and busting through the cover will put the quail up. After the shot, it is imperative to follow the flight of one or, if possible, two birds, then mark where they land. The bobs will hit the ground running, but they will not go far. They are confused and panicked, wanting no more than to find a companion or two to get together with. There's safety in numbers, and Gentleman Bob knows this.

But can these skittish singles be found without a dog? Sure, and locating them is not all that difficult with a bit of patience. Within three to five minutes of the flush one of the birds will hit with a hesitating *whirlee-ee*, *whirlee*, *whirlee-ee* "Where are you?" call in the hopes of drawing a response from an equally confused and misplaced covey mate. (Don't quote me exactly on these notes as I'm tone deaf, but they're reasonably accurate.)

How do you get close? Responding in kind with a quail call will get you an immediate response, thus giving you a better idea where the bird is located. If not sure of the spot, give it another minute or two before calling again. When the bob responds, and you have it more or less pinpointed, give a blast with a hawk call. This will literally freeze the bird in place, as instinct mandates, and — nine times out of ten — it will not flush until you are well within shotgun range as it tries to figure out which threat poses the more immediate danger.

Both quail and hawk calls are available at outdoor sporting goods shops and through mail order catalogs.

Where to "Go Get 'Em"

While good to excellent bobwhite hunting can be found throughout most of southern New Jersey's wildlife management areas (WMAs) and state forests, some of the better tracts include: Assunpink and Turkey Swamp WMAs (Monmouth County); Buckshutem, Bevan, Dix, and Peaslee WMAs (Cumberland County); Greenwood Forest/Pasadena, Colliers Mills, Forked River, Manchester, Stafford Forge and Whiting WMAs (Ocean County); Winslow WMA (Camden County); Glassboro WMA (Gloucester County); Makepeace, Port Republic, Maple Lake and Gibson Creek WMAs (Atlantic County); Beaver Swamp and MacNamara WMAs and Belleplain State Forest (Cape May County).

The daily bag limit stands at seven quail; if hunting on any of the aforementioned tracts that receive state reared pheasant or quail (check the *Fish and Wildlife Digest*), possession of a current Pheasant & Quail Stamp is mandatory.

South Jersey bobwhites provide an adrenaline injection at this most lethargic time of year and, with the season running through February 15, there are many invigorating days afield waiting!

Tom Pagliaroli, who penned the article on sea duck hunting that appeared in New Jersey Outdoors' Fall 1998 issue, is a freelance writer and photographer who resides in Ocean City. His articles and photos appear in state, regional and national magazines.



A Nose for Trouble

by Loren Spiotta-DiMare

Nose to the ground, Cady charges through the underbrush — a brown streak, focused and determined. Moments later she stops suddenly, sits and barks. Deputy Harley Simons sweeps aside the leaves and branches beneath his dog and finds her quarry — a sawed-off shotgun. He tosses a yellow tennis ball to Cady, praising her lavishly. The 40-pound field spaniel prances happily around him, squeezing her treasured reward.

Simons is a volunteer deputy conservation officer with the New Jersey Division of Fish, Game and Wildlife's Bureau of Law Enforcement. Taking advantage of her breed's hunting heritage, he has trained Cady as a guns and ammunition detection dog. She has worked more than 40 cases in her five-year career, proving her worth the first time out.

Fleeing the scene of a shoplifting spree at a local mall, four suspects ditched their .22 caliber semiautomatic rifle in a nearby field. After three police officers with metal detectors spent two days unsuccessfully searching for the missing firearm, Cady was called in. She located the loaded weapon in just 18 minutes.

"When we first arrived, the officer in charge was very skeptical," Harley recalls. "You should have seen the look on his face when Cady found the rifle in such a short time."

Another Talented Nose

Lifelong animal lovers, Harley and his wife Cheryl, of Pemberton, own two cats, Sam and Diego, and two bloodhounds, Pumkin and Missy, in addition to Cady.

Taken with the bloodhound's forlorn looks, Harley purchased Pumkin seven years ago as a pet. But with the encouragement of a fellow bloodhound enthusiast, Phil Wendt, he was soon using Pumkin as a search and rescue dog.

"In the beginning, patients from the local mental hospital would wander off and I'd get called in to help find them," Harley says. "Soon the local police would ask us to help with their cases, whether it be missing kids or convicts."

At first, Harley just enjoyed training Pumkin under Wendt's tutelage and sharing an exciting activity with his canine companion. But the work soon became more than that. "It's always a challenge and a rewarding experience," he explains. "Especially when you find a missing child or an Alzheimer's patient. You know you have really made a difference in that individual's life."

Because of their long personal and professional relationship, Harley and Pumkin have formed a strong bond. Although Cheryl loves Pumkin too, she wanted a smaller dog she could show and call her own.

"I'd always wanted a cocker spaniel," Cheryl says. "But they're very tough to owner-handle in the show ring because there are so many of them and you're competing with professional handlers. Plus, they have a very heavy coat, which requires a lot of grooming."

Still, smitten with the spaniel temperament, Cheryl and Harley began to research related breeds. When they discovered the field spaniel, one of the rarest dogs recognized by the American Kennel Club (the largest purebred dog registry in this country), they were taken with its smart looks, shorter coat and reputation for having a very docile, laid-back temperament.

"I've enjoyed the novelty of owning a bloodhound, which is also a rare breed,"

Deputy Conservation Officer
Harley Simons with Cady
(opposite page).

Cady checks out a shell
she located (below).



© DAVID G. CILLIS



Harley says. "And I knew Cheryl would have a chance to win in the show ring with a field."

After researching breeders, they tracked down a litter in Rhode Island and selected their liver (brown) colored pup. Cheryl showed Cady for about a year. But they soon realized that, due to some minor physical flaws, Cady's star was not going to shine in the show ring.

Cady's Career Change

By this time, Harley had joined Fish, Game and Wildlife's volunteer corps as a deputy conservation officer. Although they are in unpaid, part-time positions, deputy conservation officers have the power to enforce state hunting and fishing laws and are authorized to carry a 9-millimeter pistol. During his 10 months of training on weekends, he studied search and seizure laws and learned how to handle a gun, defend himself in a volatile situation, and administer first aid.

Harley assists Conservation Officer Mark Dobelbower, who began the wildlife law enforcement K9 unit in 1993. Dobelbower and Simons, with their dogs, comprise the entire canine corps.

"I noticed that guns were being tossed in a lot of our cases," Harley says. "I thought it would be a good idea to train Cady to find them." And since Cady's show career was short-lived, he also felt she'd be happier with a job to do. Cheryl agreed with the plan.

With assistance from Mount Holly police officer John Miller, who had experience training drug dogs, Cady's lessons began. Field spaniels have a passion for carrying something around in their mouths — for some, the desire is so strong they'll carry their ears if nothing else is available. Cady's obsession is her tennis ball. Harley played fetch with her endlessly, then

Cady and Harley are hot on the trail.

switched to a gun powder scented ball. Soon he began "faking her out" by pretending to throw the ball and hiding it behind him. Cady had little trouble sniffing the scent on the ball and locating it.

Next, Harley would hide an unscented ball next to some shotgun shells and command Cady, "Find the gun." A field spaniel is nothing if not determined. Cady quartered the field (running back and forth in a zigzag pattern) with as much enthusiasm as one of her canine cousins would hunt for a bird. She found the ball and shells in no time. Eventually, the ball was removed altogether.

The toughest part of Cady's training was for her to alert Harley of her find. Previously taught not to bark too much, she now had to bark when she discovered guns or ammo. With lots of encouragement, she got the idea. Sitting came naturally. Now she has the routine down pat. Find the quarry, sit, bark, and wait for Harley to toss the tennis ball. "She does it all for the ball," Harley explains. "Her joy is to get that ball."

The Secret Weapon

Harley and his dogs can be called at a moment's notice and asked to help with a case anywhere in the state. The work is sporadic. Sometimes he'll get called several times a week and then he'll have several quiet months. A heavy equipment operator employed by Robert T. Pondish and Sons, Harley says, "I have a very understanding employer — he's never given me a hard time about leaving the job."

Although Harley and Cady still are asked to assist the police, most of their cases deal with illegal hunting activities. News of Cady's exploits has spread. She's been referred to by poachers as a "secret weapon" and is believed to have deterred certain offenders.

Sometimes Cady and the bloodhounds team up to get their man. Cady finds the illegal ammo. The suspects are asked to form a lineup. Then Pumpkin or Missy smells the bullets and picks out the hunter whose scent is on the ammunition. This procedure leaves the offenders incredulous, especially when they find out the evidence is admissible in court.

Cady has also worked undercover. Harley, in plain clothes, will approach a group of hunters suspected of hunting with illegal ammunition. Since he looks like a regular hunter out with his bird dog, the hunters often take him into their confidence — and then are quite surprised when they're handed a summons.

Off-duty, Cady is Cheryl's beloved house pet. Although she is bonded to Harley, Cheryl is definitely her "person." And she may be a tad spoiled. Despite Harley's *no dogs on the furniture* house rule, "Cady curls up in my lap whenever we're alone," Cheryl says with mock confidentiality. "As soon as she hears Harley's truck pull in the driveway, she leaps to the floor and lays down as if she'd been there all along." You can almost see her wink.

*Loren Spiotta-DiMare is a freelance writer who lives in South Orange. She first reported on Cady in an article that appeared in **Pet Life**.*

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Harley uses Cady's favorite toy, a tennis ball, as a training tool.

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A Brief History

by Mark Dobelbower

In 1993, the New Jersey Division of Fish, Game and Wildlife established, on a trial basis, the first state wildlife law enforcement K9 unit, consisting of two handlers and their four dogs. Detective Lieutenant Mark Dobelbower brought to this new program his bloodhound, Ruby, and his golden retriever, Cheyenne. Cheyenne, who was featured in a brief article about the unit in the Summer 1994 issue of *New Jersey Outdoors*, has passed away since then, and Dobelbower's German shorthaired pointer, Bo, has joined the team.

The other handler, Deputy Harley Simons, joined with his field spaniel, Cady, and his bloodhound, Missy. Both officers volunteered the care, maintenance and equipment expenses involved, as well as most of the necessary training time, in order to get the program started.

Expert training and advice on program development was offered by Patrolman John Miller, of the Mount Holly Police Department, and Detective Gary Pippin, of the Delanco Township Police Department. Patrolman Miller, a highly qualified police K9 instructor, also provided the necessary certification of the new K9 team.

Dogs are used by New Jersey police officers to perform a variety of tasks, including officer protection, criminal apprehension, drug and bomb detection, and arson investigation. Others are trained for missing person and cadaver searches. Uses have changed over the years, as have some training methods, but law enforcement canines are not some-



Detective Lieutenant Mark Dobelbower poses proudly with Bo (on left) and Ruby.

thing new. In fact, dogs have been used for this task for centuries.

Bloodhounds, especially, have a rich history in criminal apprehension. They and their ancestors have been bred for centuries as scenting dogs. They are best known for their ability to follow very old trails and to discriminate between one person and another. Beginning in medieval times, bloodhounds were used to trail thieves and poachers. This valuable application of the breed's scenting capabilities has continued to be refined and used to the present day.

The Division of Fish, Game and Wildlife uses bloodhounds mainly to catch law violators who have fled the scene to avoid apprehension. However, the division fully recognizes the unique capabilities of these hounds in locating missing persons, recovering evidence and providing a legally accepted link between evidence of a violation and the perpetrator. Missy, for example, has answered close to 50 calls from West Jersey Search and Rescue in the past two years.

To date, Ruby and Missy have aided conservation officers in locating hunters in illegally baited tree stands, placing suspects at crime scenes, and recovering

evidence. In one particular case, Ruby trailed a deer poacher and located hunting bows and arrows which the suspect and his companion had hidden along the way. This provided the municipal court with the critical evidence necessary for the conviction. The two men paid a penalty of \$1,750.

The other breeds are used for firearm and ammunition detection. Guns and/or ammunition often are the key evidence that must be located in a case involving the illegal taking of wildlife. Bo and Cady may be the only dogs trained specifically for this purpose in the state. These dogs and their handlers have been involved in the recovery of important evidence in a variety of cases.

While not every search is productive, these dogs continue to be a valuable asset in the ongoing effort to protect wildlife resources in our state.

For more information, call Detective Lieutenant Mark Dobelbower at 609/259-2120.

Lt. Dobelbower is a graduate of Cook College, Rutgers University, and has been with the division for more than 14 years. Ruby and Bo are owned by Lt. Dobelbower and reside with him, his wife and their two children.

A red-spotted newt (*Notophthalmus viridescens*) in its eft stage



IMAGES © CLAY MYERS

In Search of Herps

by Eric Stiles and Steve Paturzo

With steam rising from the rain-soaked road surface, a spring thunderstorm having just passed through, Margaret Attack pulls to the shoulder near her favorite roadside swamp. She is charged with anticipation, the effect of the warm, early evening rain. The thunderstorm has done little to relieve the humidity, which weighed heavily on her earlier but now seems reassuring as she pulls a pair of well-worn waders up to her waist. She straps an equally worn headlamp around her head and almost trips over herself in her eagerness to get into the swamp.

For most people, a thunderstorm that doesn't relieve the humidity is not worthwhile. Not so for Attack. It infuses her with excitement and energy, just as it appears to breathe life and the will to spawn into the frogs she seeks in the swamp.

Her expectations are more than met. All is quiet as she makes her way into the shallow water; her movements cause the inhabitants to quell the proclamation of their readiness to breed. Only moments pass, with Attack waiting in stillness, before the Northern spring peepers (*Pseudacris c. crucifer*) resume their calling. The sound builds until she is facing a din she couldn't have imagined. The vibrating noise makes her dizzy and she searches her pockets for help. The answer found, she rolls up a piece of tissue for each ear and muffles the sound to a manageable level. This, to Margaret Attack, is bliss.

"I go out there for myself," she says when asked why she's collecting data on some denizens of the marshlands. "I'm concerned because I've noticed a decline in frogs and want to include my observations

A juvenile five-lined skink
(*Eumeces fasciatus*)



if they can help define the whole picture.”

A Unique Mix

New Jersey is blessed with a diverse assemblage of reptiles and amphibians, also called herpetofauna. It is home to a unique mix of southern and northern species whose distribution ends in the rich mosaic of diverse landforms lying between the Kittatinny Ridge and Cape May. From the northern mountains to the acidic Southern Atlantic white cedar (*Chamaecyparis thyoides*) bogs, New Jersey’s resplendent herpetofauna offer the nature enthusiast and casual observer phenomenal viewing opportunities.

Imagine the surprise and excitement of seeing your first Pine Barrens treefrog (*Hyla andersonii*). At first glance, Pine Barrens treefrogs might look out of place,

as if someone relocated some tropical Costa Rican treefrogs. These striking frogs are found in small breeding pockets along the coastal plain of Georgia and the Carolinas, reaching their northern terminus in New Jersey’s Pine Barrens. Normally cryptic (concealed or in hiding), they emerge from surrounding woodlands to acidic pools every May when the males begin vocalizing. Their nasally *wonk* chorus, which sounds like an old Model-T car horn, seems strikingly out of place with their pristine breeding sites. While many frogs are quite wary of humans, Pine Barrens treefrogs don’t hesitate to show off, continuing to broadcast their love melody to nearby listeners.

The pine snake (*Pituophis m. melanoleucus*) is another rare New Jersey resident. This

upland snake requires vast contiguous tracts of pine-oak forests for its survival. At first glance, it may appear intimidating but — like most New Jersey snakes — this gentle, fang-less giant is quite content avoiding its greatest predator, people. The pine snake eats small vertebrates and overpowers prey through constriction. Common in the West, these beautiful white and black snakes are scarce here, even in the Pine Barrens. Only the dedicated (or lucky) volunteer comes across these scaled wonders.

The 79 species of reptiles and amphibians that can be found in New Jersey come in a variety of shapes and sizes, from the 1-inch spring peeper — a small frog found statewide — to large offshore Atlantic loggerhead turtles (*Caretta caretta*). The Division of Fish, Game and Wildlife’s Endangered and Nongame Species Program (ENSP) is charged with ensuring the future of these critters in the state.

State biologists require a lot of information on the distribution and abundance of herpetofauna species in New Jersey. Such data helps drive conserva-



This Pine Barrens treefrog (*Hyla andersonii*) is a member of an endangered species.

A Northern pine snake
(*Pituophis m. melanoleucus*)



tion efforts, including the listing of endangered and threatened species and the guiding of land management practices in the nation's most populous state. It also gives the public an insight into population fluctuations over time.

Surveying Species

The task of accurately "capturing" population sizes for 79 species would be impossible by staff alone. Consider the U.S. Census. Every decade, tens of thousands of people are hired to tally the U.S. population. The data take over a year to assemble and their accuracy is constantly in question. Now, imagine the job of surveying species that are difficult to find and have no known mailing address!

To meet the challenge of surveying New Jersey's herpetofauna (a.k.a. herps),

ENSP biologists initiated two ambitious, volunteer-based projects: the New Jersey Herptile Atlas and the Calling Amphibian Monitoring Program. The projects' success rests on the Herculean effort of an army of volunteers whose job is to scour the state in search of herps. Thanks to training seminars, informational materials and, most importantly, their shameless pursuit of wild adventures, these participants are doing groundbreaking work to conserve New Jersey's cold-blooded reptiles and amphibians. Without their incredible energy and dedication, this desperately needed information would remain unavailable to guide efforts for species conservation.

The ENSP implemented the Herp Atlas project in 1994. Its goal is to establish, over a 5-year period, baseline data from

which to draw inferences about population trends and status for New Jersey's reptiles and amphibians. These data will become a valuable resource to wildlife managers, land use planners, educators and the population as a whole.

Volunteers make numerous trips into the areas of their choice within their designated block — a block is equivalent in size to one-sixth the area of a topographic quadrangle (just under 10 square miles) — to make an intensive survey of that block. Aside from their passion, they carry maps of their area, binoculars, field guides, flashlights and, sometimes, cameras or tape recorders. Several trips are necessary throughout the year to determine what species reside there, since different species will be observable in different seasons and at different times of the day.

A Northern two-lined salamander
(*Eurycea bislineata* b.)



Once at their location, the volunteers explore the site for herps. Their usual first step is to scan the area through binoculars, since several of the species sought are very fast and retreat at human approach. Next, they might turn over rotting logs and abandoned boards or other debris to search for any of several species that would use such cover. Care, of course, is taken to return the area to the condition in which it was found. Logs turned over to check beneath are turned to their original position before the volunteers leave.

A Base for Decision Making

When this multi-year project is complete, it will provide the kind of information needed to make decisions about land use and conservation. It is impor-

tant to remember, however, that our mission should never be to wait until a species is in a state of decline before we act on its behalf. The ENSP is working toward rare wildlife conservation on a regional scale. Results from this project will render information about herpetofauna in precisely that context, enabling communities to make intelligent choices about their land. These choices, it is hoped, will address the needs of all the inhabitants regardless of their status.

One Atlas volunteer, a retired airline captain named George Coulter, combines his passion for herptiles with his strategy for exercise. Typically, Coulter will make a 5-mile trek through various habitat types, always on foot and alert to the possibility of spying a lizard or snake basking on a log in the morning sun.

He is an integral part of the land he surveys. When he speaks of the species he sees, they are clearly an extension of his spirit. With a reverent voice, he describes the vivid beauty of a young coastal plain milk snake — an intergrade of Eastern milk snake (*Lampropeltis t. triangulum*) and scarlet kingsnake (*L. triangulum elapsoides*) — he found under a board during his travels.

“Scouting around in the summer in the Mount Misery area, I went to a cedar swamp where some selective cutting was taking place,” Coulter says. “I was milling around the site. I picked up a piece of cedar bark that was a few feet long and found a coastal plains milk snake underneath. Its colors were brilliant and I suspect that it had just shed. I covered it back up and left. That was the only one I have ever seen.”

A Fowler's toad
(*Bufo americanus*)



Despite his extensive world travel, George Coulter's deep appreciation for the diversity of New Jersey's herp species is almost infectious in the way that it resonates in his voice.

Recently reported declines in frog and toad populations led to the creation of the Calling Amphibian Monitoring Program (CAMP). While the Herp Atlas encompasses all reptiles and amphibians, CAMP is seeking to detect change only in the frog and toad species group. Like birds, these species are easily surveyed during mating season as males vocalize in the hopes of attracting a mate. CAMP, which was started in 1998 by the ENSP, is part of a nationwide effort to monitor frogs and toads in the Northern Hemisphere.

Help Wanted

Volunteers are needed for the Herp Atlas and the Calling Amphibian Monitoring Program. To volunteer or to obtain more information about either project, please write to:

- Herp Atlas (or Calling Amphibian Monitoring Program)
New Jersey Division of Fish, Game and Wildlife
Endangered and Nongame Species Program
2201 County Route 631
Woodbine, New Jersey 08270

Or e-mail:

- estiles@algorithms.com

If you'd like to help the Endangered and Nongame Species Program learn more about New Jersey's amphibians and reptiles, you can, through the Adopt-A-Species program. For a \$15 contribution, you'll receive a handsome decal (pictured on page 62), a summary of the Herp Atlas Project and periodic updates. Since the program receives no state funding, contributions such as these are needed to maintain and expand crucial research and protection efforts. Just send a check or money order for \$15 to Adopt-A-Species, Endangered and Nongame Species Program, PO Box 400, Trenton, NJ 08625. Other species and groups that can be adopted are shorebirds, ospreys and bobcats.

Counting Croakers

After completing a training seminar, participants — armed with a call tape and project materials — select one of New Jersey's 25 roadside survey routes. Three times a year, on warm, humid nights, volunteers stop at their 10 pre-set roadside survey points and listen for calling frogs and toads. Spring peepers and wood frogs (*Rana sylvatica*) begin calling in late February, while the mammoth bull frogs (*Rana catesbeiana*) may remain silent through early May. Just like the singing American robin (*Turdus migratorius*) heralds winter's end and Punxatawney Phil lets folks know of winter's longevity, the banjo-like chorus of the greenfrog (*Rana clamitans*) signals the true beginning of spring!

By surveying the same locations at the same time every year, CAMP participants



A Northern fence lizard
(*Sceloporus undulatus*
hyacinthinus)

Here, an Eastern box turtle (*Terrapene carolina*) enjoys a tasty meal of fresh beetle.



are collecting data that will allow biologists to detect changes in populations. Like the Herp Atlas, this project is designed to afford biologists long-term data sets offering a powerful tool for detecting population changes.

One of the main attractions of these volunteer projects is the excuse to adventure in the great outdoors. Our volunteers may be shocked by an encounter when they least expect it — even when they're taking a break from project work.

For example, the minnow had barely hit the surface of the Maurice River when Mark Resciniti felt that familiar tug. There was a strong fish on the end of his line. He was fishing for channel catfish (*Ictalurus punctatus*) and wasn't anticipating quite the fight at hand. Concentrating on the far end of his line, blanketed in the

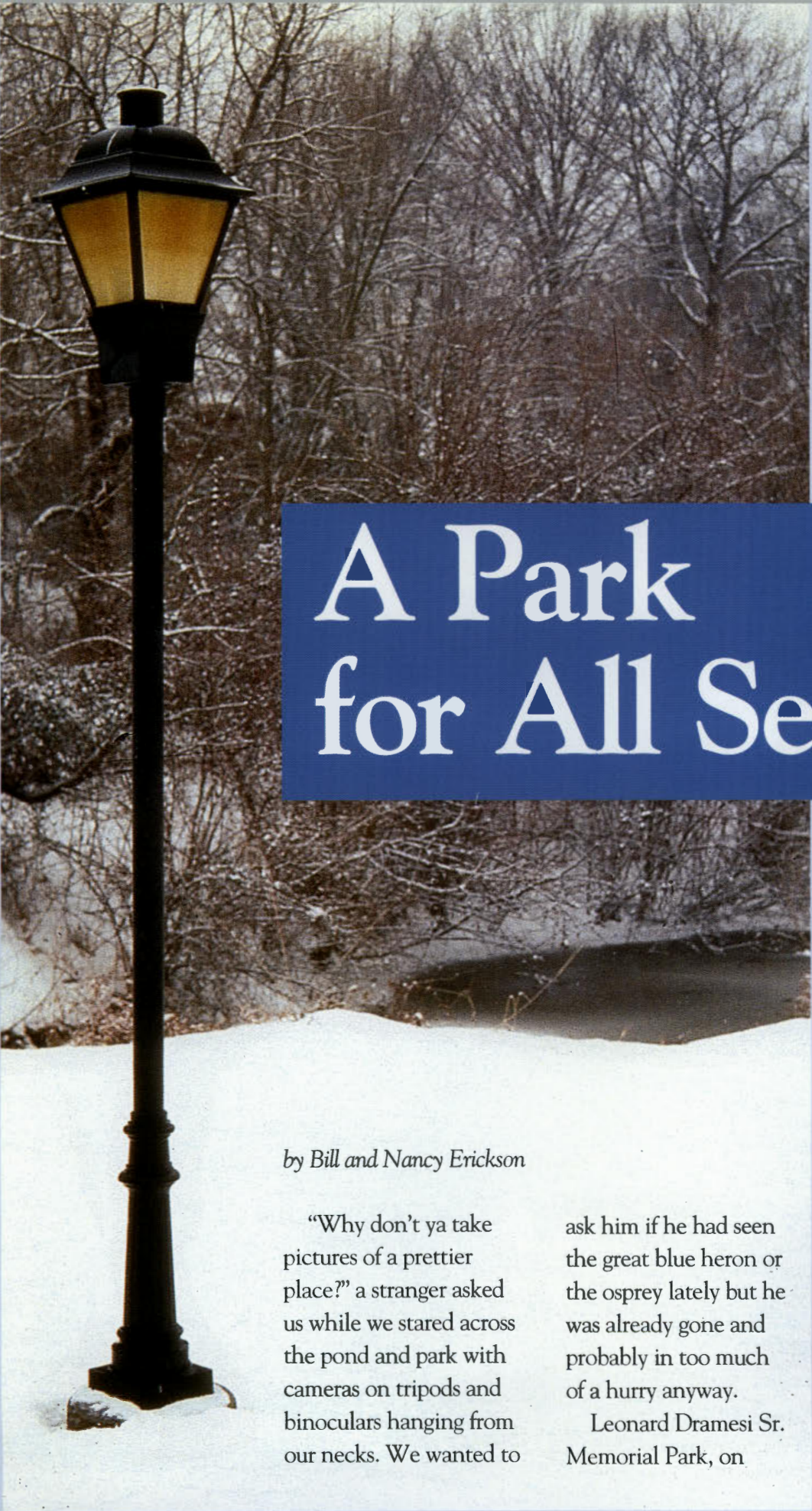
strong summer sun with a cool breeze mixing his long dark brown hair into his bushy black beard, creating a wreath around his very intense eyes, he was ready for anything. Almost anything, that is.

Resciniti wrestled with his catch and it broke through the dark water's surface, where he managed to slip his net under the fish to lift it aboard. It was a channel cat and one worth keeping. He decided to gut his catch there and pack it in his ice chest. As he slit open the three-pound fish's belly and the contents spilled forth, a northern water snake (*Nerodia s. sipedon*), half again the length of the fish, rushed out at him.

"I yelled, 'Oh man, what is that?' and jumped back when this massive creature rushed out of the fish at me," he says. For this he was not prepared.

Actually, the snake only appeared to rush at him. Intact and still undigested, the water snake was dead in the digestive tract of the catfish — testimony that you never know where you will find the next reptile or amphibian.

Eric Stiles is an assistant zoologist with the New Jersey Division of Fish, Game and Wildlife's Endangered and Nongame Species Program. Steve Paturzo is a wildlife biologist with the Conserve Wildlife Foundation.



Snow falls and quiet covers the park (left).

A great blue heron flies overhead (below).

A Park for All Seasons

by Bill and Nancy Erickson

"Why don't ya take pictures of a prettier place?" a stranger asked us while we stared across the pond and park with cameras on tripods and binoculars hanging from our necks. We wanted to

ask him if he had seen the great blue heron or the osprey lately but he was already gone and probably in too much of a hurry anyway.

Leonard Dramesi Sr. Memorial Park, on

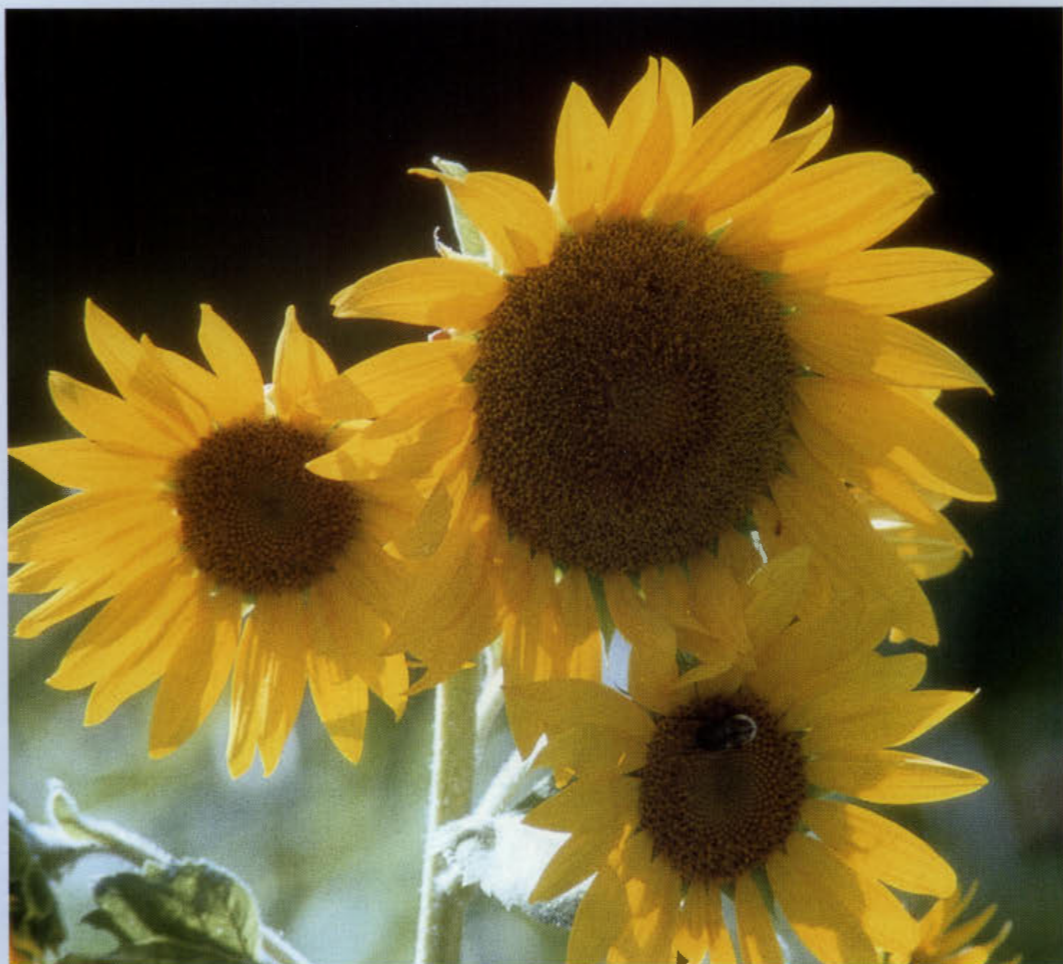


Sunflowers brighten the day (right).

Small boats and canoes are taken out onto the pond (below).

Colorful trees surround Dramesi Park (opposite page).

Along a hiking trail, a comma has found a perch to catch the sun (opposite page, inset).



© NANCY L. ERICKSON

Hider's Lane in Gloucester Township, Camden County, is a 10-acre park that was built in the 1970s. It isn't much to look at — there are no waterfalls, no snow-capped mountains, no giant redwoods. Mulberry bushes, black willow trees and dogwoods grow along its edges. A few apple trees, the remnants of a large orchard that once blossomed there, are mingled in. It's a typical neighborhood park and easily overlooked.



© WILLIAM C. ERICKSON



© WILLIAM C. ERICKSON

INSET: © NANCY L. ERICKSON

A Canada goose flaps its wings soon after landing on the pond at Dramesi Park (below).

Both man and wildlife can share the park (right).

Parents show their daughter a Canada goose (bottom).

Another visitor to this local park is the great egret (opposite page).



© WILLIAM C. ERICKSON



© WILLIAM C. ERICKSON

But linger for awhile and you'll find an oasis for the avid fisherman, the budding birdwatcher or the amateur naturalist. It is a place where bass, pickerel, sunnies and bluegills swim in the murky waters. It is a place where parents can bring their children to feed the ducks and geese, or listen and watch for the wildlife that call Dramesi home. It is a place where each season holds its own memorable moments.



© WILLIAM C. ERICKSON



Delicacy & Detail



The Paperweight Magic of Paul Stankard

by Carol Baldwin

In 1739, when German immigrant Casper Wistar discovered some of the finest silica sand in the world right here in New Jersey, he began an industry that would still be alive more than two centuries later: glassmaking. In fact, Wistar's successful enterprise enabled New Jersey to become an important supplier of useful and ornamental household items to the emerging American colonies.

Over time the New Jersey glass industry has ebbed and flowed, changing with the introduction of automatic machinery and responding to different market needs. Although production peaked at the turn of the century, glass still is produced in many locations throughout southern New Jersey.

Glass as art was an afterthought. Originally it was a luxurious necessity; window glass panes were not common in America's households until the mid-1800s. In 1852, American glassblowers



Mountain Laurel Botanical,
1997 (opposite page)

Pineland Pickerel Weed,
1998 (left)

Below, Stankard is shown
flameworking a flower.

For Reference
Not to be taken
from this library

began experimenting with a new form of European art glass: paperweights.

In the early 1900s, Millville produced an extraordinarily skillful and memorable glassblower. Ralph Barber, in his spare time and using his own tools, began making glass rose paperweights. By using the innovative crimp technique, in which a metal tool is inserted into molten glass to form a three-dimensional image, Barber created the famous Millville rose paperweight.

Innovation and Inspiration

That paperweight brought heightened national attention to New Jersey art glass. It also generated interest in two other fine glass craftsmen, Emil Larson and Charles Kazium. Their rose paperweights built on Barber's legacy and inspired many glass artists, including Paul Stankard. Stankard, a paperweight artist for almost 30 years and a resident of Gloucester County for more than 40, has work displayed in



"Paperweights are the crown jewel of New Jersey glass making."

— Paul J. Stankard



museums around the world.

"Paperweights are the crown jewel of New Jersey glass making," Stankard says. "I hope my paperweights draw attention to the South Jersey glass tradition and from there to the work of other glass studio artists.

"People are looking to me as an example of someone who is successfully producing glass in my own studio — outside of a factory — just like their grandfathers and great-uncles did. People that I meet in the community think that glassblowing is a lost art. When they see what I'm doing, they're proud to be connected with an ongoing South Jersey tradition."

Stankard, whose own background includes blowing scientific glass for Andrews Scientific Glass in Vineland, is dedicated to making his work accessible to the individual. Each paperweight draws the viewer into a personal world of perfectly crafted flowers, berries and insects.

Stankard uses the lampwork technique, in which glass rods are manipulated over the flame of a gas torch. (An oil lamp was used originally, hence the technique's name.) Working with three assistants (his two daughters, Christine Kressley and

Kathryn Stankard-Campbell, and Dave Graeber), he painstakingly forms the individual components.

The result? The bee nuzzling a mountain laurel blossom looks fuzzy and blueberries beckon with a "come eat me" glow.

"That's my magic," Stankard chuckles at the initial astonishment of a viewer when told that each component is glass. "It is delicacy and detail."

Communicating in Glass

Stankard doesn't claim to be a botanist or entomologist. He doesn't boast about his scientific background. But he loves flowers. "I don't sculpt scientific models," he comments. "I have striven for botanical credibility, not accuracy."

Stankard recreates each flower from memory after studying it for hours in the woods under a magnifying glass. He tries to communicate his deep appreciation of nature to the viewer through his work; it is as if glass is his personal language.

"Part of the magic of the creative process is that I transfer my love for flowers to this inorganic material. I hope each viewer connects with the

mysteries of nature when they are invited inside a paperweight."

Many of New Jersey's wildflowers, such as wood violets, wild geraniums and prickly pear cactus, adorn his five-acre lot in Mantua; not surprisingly they also find their way into his paperweights and botanicals. (Botanicals are rectangular glass blocks that measure about 6 inches high, 4 inches wide and 3 inches deep. The glass flowers are presented three-dimensionally, suspended in crystal.)

Over the years Stankard has also freely used plants native to the Pine Barrens such as the water lily, mountain laurel and blueberries. "I often revisit early designs and invent techniques to interpret nature in a fresh way," he says.

"I've created the water lily in four different series over 15 years. My first effort represented the technology that was current at that time. Since then I have incorporated high temperature enamels into making the lily pads to create new types of shading. I've also used different color combinations to mimic water."

But typical to Stankard, exquisite is not enough. "I am still working to rearrange the colors and presentation; to

Three paperweights, 1997
(opposite page)

*Tea Rose Bouquet with
Ants*, 1998 (top right)

Pollinating Mosaic, 1997
(bottom right)



suggest something more spiritual and mysterious."

Stankard goes to the Pinelands for inspiration as well as relaxation and renewal. "I go to the Pine Barrens to recapture my sanity," Stankard says. "As I experience the inter-relationship of wildlife within the plant kingdom I leave with awe and peace."

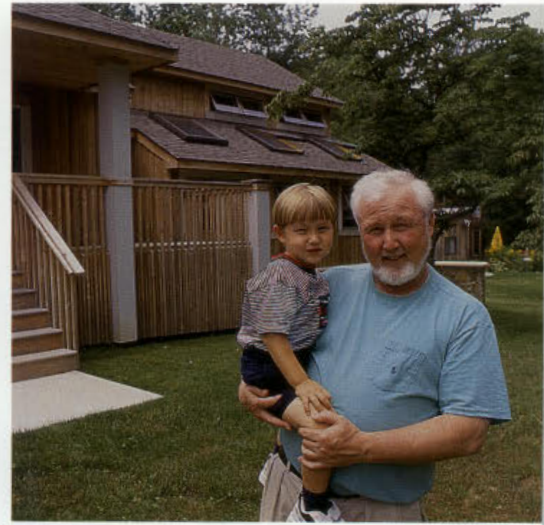
The Paulsboro Bouquet

Stankard's first major corporate installation was unveiled in the summer of 1998, at the technical center of Mobil Oil in Paulsboro. "It was extremely satisfying to have my most ambitious work commissioned by a corporate neighbor," Stankard says.

The *Paulsboro Bouquet* is the equivalent of 12 separate efforts and took Stankard a year to construct. "It was a challenge to put so much of my creative energy into a master work that is now permanently displayed in New Jersey," he says.

The 35-pound sculpture commemorates the original site of the Socony Vacuum Oil Company, Mobil's parent company, in the East. A brick from the original 1927 building is incorporated





into the sculpture's marble base.

"I wanted to interpret the history of the company as well as to pay tribute to New Jersey's wildlife such as mountain laurel, blueberries, raspberries, brown-eyed Susan, honeybees, and damsel flies."

Root people, a part of Stankard's work for the last 15 years, are entwined into the taproot of the sculpture. "I enjoy the idea that at first appearance they are roots. As you study them and look at them from different angles, you discover human forms," Stankard explains.

He likes the element of surprise and myth, which the root figures bring to his work. "There is a certain ambiguity about them. Everyone will relate to them differently."

Mosaic word canes are an even more recent addition to Stankard's glass repertoire. Using millefiori, an Italian technique that is about 2,000 years old, Stankard inserts words into many of his paperweights and botanicals.

In *Paulsboro Bouquet*, you can easily find *seeds, fertile, moist, scent and decay*. Viewers will have to closely inspect the sculpture to find other camouflaged word canes that are closely related to Mobil Oil.



Sunflower Botanical, 1998
(opposite page)

Stankard holds his grandson, Sebastian Kressley, outside his studio (opposite page).

Stankard's new studio (left) is located in Mantua.

"When the word canes are discovered and read, it's a wonderful surprise," Stankard chuckles. "I want the words to stimulate an intellectual response which will blend together with the emotional 'Wow!' experience. Then I know that my work is a success."

For someone who loves nature as much as Stankard does, it goes without saying that he is interested in preserving the environment. "I can remember as a child the endless woods and fields of wildflowers. Unfortunately, we are losing those grand views," he observes.

In the Future . . .

Stankard's paperweights record nature and he hopes they will be relevant for future generations. "I would love for my work to symbolize woodland preservation," he says, sharing a personal dream. But when asked if he is making a statement about the environment, Stankard responds, "That's not for me to answer. It's the viewer's call."

Active on Mantua's local environmental commission for years, Stankard also studies plants such as bog asphodel, a rare species native to the Pine Barrens, and swamp pink, which is on the endan-

gered list. "Who knows? Maybe one day they'll end up in glass," he says.

Stankard's most recent illusions include colored glass spheres that he calls *orbs*. Many of the spheres split open in the middle revealing berries, insects and flowers nestled inside. "I want my work to show me what I have not known," Stankard says. "The orbs are mysterious. They suggest the unknown healing virtues of the plant kingdom and the wonders of pollination."

Wherever Stankard travels, he promotes glass. At Rowan University, where he received an honorary doctorate in fine arts in 1997, he is helping Dr. Don Gephardt, dean of the Fine and Performing Arts College, to plan a glass program that will enroll students next year.

For the past three summers Stankard has enjoyed teaching Contemporary Glass Art at Rowan and challenging the creativity of the students. "Paul Stankard has broken down the barrier between art and craft," Gephardt says. "One marvels at the quality of his work and his artistic sense."

More than a year ago, Stankard built a new 3,000-square-foot studio adjacent to

his home. He installed a kiln, which allows him to build large pieces such as *Paulsboro Bouquet*. Although the individual components are on a small scale, when grouped together they will "tell a story, not just paint a picture." But you can be sure, no matter how big the final work is — each sculpture will still be an amazing world of delicacy and detail.

And to think it all began over two hundred years ago with tiny pieces of New Jersey sand. Casper Wistar would be pleased.

Carol Baldwin, a native of South Jersey who now lives in Charlotte, North Carolina, is intrigued by the magic of glass and has written on the subject for both adults and children. She is currently writing a book for children on glass and hopes to one day try her hand at glassmaking.



The Sourland



Fallen leaves surround moss-covered
diabase boulders (opposite page).

Rue anemone (opposite page, inset)



Cardinal flower (above)

Snow-covered beech trees
(left)

Story and photos © by Philip Moylan

With a deliberate pace, my heart rate pulsing quickly, I climbed toward the summit, finally relaxing at a plateau about 500 feet above sea level. This is not a grassy knoll on the way to the Three Brothers Mountains of Yosemite National Park or a climb up Mount Joe, a small mountain in the Adirondacks. It is a secretive parcel of higher elevation in the middle of New Jersey — more a large hill than a mountain. Yet, they call it the Sourland Mountain.

Although offering abundant mature hardwood trees, argillite stone and bedrock, ventures in lumbering, agriculture, ship-building and various stone industries were short-lived. Over the many years since colonization, the land has sustained only a few scattered communities, offering limited livelihood. In fact the Sourland defies habitation, since drinkable water can be reached only by drilling through 95 feet or more of rock. And yet, this resistance to human intrusion has been its salvation — its sav-

ing grace — in this, its current state as a protected land.

Like a river, the Sourland Mountain meanders from its source, south of the Watchung Mountain valley, to its intersection with the Delaware. Yet, while reaching no higher than a common hill, this modest land holds a distinctiveness and continuity.

Its name lends little to our understanding of its past. Dutch colonists are believed to have named it, but the original meaning and its derivation have been lost. We do know that the land was not fruitful, particularly in higher elevations. Produce farmers had difficulty subsisting, while dairy farmers could not sell the sour-tasting milk produced by cows that fed on the wild onion grass and dogbane plants so abundant in these nutrient-poor soils. Some have attributed its name to the profusion of sorrel, a small yellow woodland flower, that grows there.

The Sourland is a curved slope of diabase-embedded boulders, littered with trees and embroidered with small streams. The streams, usually bone dry by mid summer, run mostly north to south. Greater than sixty miles long, and five miles at



Shadbush (above)

Moss-covered diabase rock and fern (right)

Polyporus fungus and red oak leaf (opposite page)



its widest, its tallest point is more than 560 feet above the sea.

It is aged beyond easy comprehension — weathered, deformed and encrusted with recent plant life hiding centuries of soil-producing erosion. Lichens — an algae/fungus hybrid — abound as green, yellow or even red circular growths on rocks and trees. With rain, ice and heat, they are the natural causes of their degradation into soil.

It's easy to ride by the Sourland — on routes 601 and 518 on its east and south, respectively — without even a second glance in its direction. One wonders why it's called a mountain at all. These slopes are the foothill remnants of powerful glacial movement that left behind fields of volcanic rock — diabase — the most prominent element within this forested park.

A mix of private and public lands, Sourland Mountain crosses the counties of Somerset, Hunterdon and Mercer. The first two, most notably Somerset, have acquired private lands on and adjacent to the mountain to expand and preserve open space. This has been accomplished with Green Acres assistance and the contribution of properties by individual estates.

Some Natural History

Following the first significant frost in late autumn, the tiny yellow ribbon-like petals of the witch hazel tree explode from their brown seed pods; in early spring, the shadbush pushes forth tiny white petals while snow still carpets the land. They, with the maple-leaved viburnum and the lanky ironwood tree, manifest understory courage among the oaks and tulip poplars that displace them by sheer stature. Yet these two niche opportunists, famous for bold displays of small, numerous flowers along thin, spindly branches, bloom when frost and snow are close by, offering us subtle views of the remarkable survival of diverse species amid those more commandeering.

Winter is a quiet time. Occasional flocks of pine siskins and purple finches feed on white ash and box elder seeds high above the gray traprock, trilling their warbly songs. Below, the trickling of rejuvenated streams, refreshed by early December rains and the melt of January snows, sounds a gentle calmness to an otherwise dead silence. As winter gives way to spring,





Icy winter stream (opposite page)

Red sumac fruits provide
a spot of color (below)





the frog-like chorus of snow geese adds song to the wind as they migrate from Delaware Bay waters towards breeding grounds on matted tundra within the Arctic Circle.

Early May brings color thrusting through the soil as spring beauties, bloodroot and trout lily find comfort in the warmth of the sun, unshielded by summer's massive leaf growth above. See beech drops and squawroot — the parasites of the flowering world — on the floor of a beech grove and under the shade of aged white oaks.

The Sourland has a surprising number of unusual and rare plants, amphibians and reptiles, among them fumitory (allegheny vine) and the wood turtle. Look among the knee-high green foliage for the delicate maidenhair fern which, while preferring alkaline soil, is just at home in the rich soils on the south slope, north of the gas line trail.

The remains of primitive stones, some massive in diameter and treacherous to maneuver among, can be found in Devil's Half Acre and Roaring Rocks, both in the Somerset Preserve. Streams run, hidden, beneath diabase rock. Local caves served as Revolutionary War hideaways and as nesting cavities for turkey or black vultures.

The rapid-paced song of the winter wren, a nondescript brown bird of Sourland streams and uplands, is incongruous enough from such a tiny finger-sized creature; yet its constant energy, as it pokes around in every crevice in its path for insect larvae and other edibles, belies its fragility. This is true of all small birds as they burn calories at a rapid and feverish rate, their temperatures well above 100 degrees Fahrenheit. The Sourland offers


us many exquisite nesting birds, some threatened in our state.

Worm-eating, black and white, and chestnut-sided warblers can be found nesting, in season, along the gas line path where it intersects with the Ridge Trail. Towards sunset, the harmonic overtones of the wood thrush and the rhythmic call of the pileated woodpecker can be heard. One rarely sees this red-crested beauty, yet its mark is quite evident in the deeply excavated oval cavities found in old sassafras trees.

The Sourland's meandering streams, gigantic boulders and subtle beauty offer adventure amid the urban sprawl of the most densely populated state. The terrain is rugged but not impenetrable. Whether it is biked, climbed or simply meandered, this land has been left a sanctuary (courtesy of private and public protection) for our enjoyment.

Allowing the Sourland to exist uninhabited, undeveloped and accessible will protect bio-diversity and sensitive ecosystems that deserve refuge from competing human demands.

*Philip Moylan is no stranger to the pages of **New Jersey Outdoors**, nor to various **Audubon**, **National Geographic** and **National Wildlife Federation** publications. A resident of Pennington, he currently is producing a coffee-table book of Sourland Mountain photographs.*



Discovering Yesterday's Front Line

by Helen Henderson

Among the artifacts selected for conservation were a hammer from a Model 1861 Springfield Musket (top) and a 2-tine fork that was found by Deep Search member Tom Henderson. Both are believed to be from the (Civil War) Camp Vredenberg era of the park.

Monmouth Battlefield State Park's many views include woods, cornfields and rolling hills. This field, with its split rail fence, is located across the road from the Region 2 office of the State Park Service.

On June 28, 1778, almost 20,000 British troops, commanded by General Sir Henry Clinton, engaged 1,000 New Jersey militia and the main Continental Army — about 15,000 men under the command of General George Washington — in what was to become one of the largest battles of the Revolutionary War. Today, a battle is being waged on that same ground where American and British troops fought more than 200 years ago. And, thanks to a group of dedicated volunteers, the story of the Battle of Monmouth is being uncovered, one artifact at a time.

The term archaeology brings different images to mind. Portrayals of an archaeologist range from the bearded professor



Perhaps the rarest discovery found at the park was the Sons of Liberty button. There are only two known excavated examples in existence, both of which were found by Deep Search members — one by Bob Hall, the other by Mary Ann Billings.



© HELEN HENDERSON

painstakingly uncovering an Egyptian tomb with trowel and brush to the whip-toting, swashbuckling adventurer, Indiana Jones. More recent pictures taken from the evening news feature objects recovered from the underwater graves of the *Lusitania*, the Civil War ironclad *Monitor*, and *La Senorita Nuestra de Atocha*. Battlefield archaeology generates pictures just as diverse and vivid as those imagined by Hollywood and captured by news cameras.

And on the front lines of helping create the image of today's archaeology are members of the Central Jersey-based Deep Search Metal Detector Club. For the past eight years, with special permission from the state and as part of a research project designed in accordance with National Park Service standards, about 50 members of the club have been metal detecting the site of the battle that occurred on that long-ago Sunday.

Merging Tradition, Technology

A traditional archaeological "dig" involves systematically marking off squares of earth. Once the layer of grass is removed, the dirt and contents of the square are slowly and painstakingly removed using a trowel and brush. Once the dirt is removed from the excavation, it is put through a fine mesh screen to recover any small objects that may have been missed in the first search. This approach, however, is not effective on a battlefield, where the area to be searched can cover acres of land. Battles are not restricted to a small area.

Tracing troop movements during the ebb and flow of battle can require covering large distances. Even before the inception of today's mechanized army, soldiers could still cover several miles in a day. The problem facing archaeologists on a battle site is more than how to manage the expanses of land. Sometimes there is little visible physical evidence to indicate the

Gathered around the screen at a dig at the parsonage site are members of the Deep Search team and the 3rd New Jersey Infantry Volunteers.



COURTESY OF DAN SIVILICH

intensity of the conflict that occurred there and to pinpoint the exact position of various units.

Now, modern technology is being used at Monmouth Battlefield State Park in Monmouth County to overcome the limitations of traditional archaeological methods. Battlefield archaeology as practiced at the park combines features of the traditional dig with a new technique called "Bag-Flag-Tag" by members of the club that uses metal detectors as the primary search tool.

Although metal detector hobby magazines have included stories of cooperative efforts between archaeologists and metal detectorists since the 1970s, as a rule relic hunters, including metal detectorists, have been the bane of archaeologists. Relic hunters (or pot hunters, as they also are known) have been accused by professional archaeologists of such crimes as trespass and theft. And the penalties for unauthorized use of metal detectors on state or federal land can be severe. Under the terms of the Archaeological Resource Protection Act, unauthorized use of a metal detector on National Park Service land can lead to a \$500,000 fine and/or 5 years imprisonment and/or the confiscation of both the person's car and metal detector.

According to Richard Barker, assistant director of the New Jersey Division of Parks and Forestry, the penalty for unauthorized use of metal detectors on state land is up to a \$1,000 fine

Mike Hurtak Sr., one of the oldest members of the Deep Search archaeology team — and one of the most active — is shown checking out a signal.

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(as determined by a judge), plus court costs. All work by Deep Search club members on state property is performed under the supervision of Garry Wheeler Stone, Ph.D. Stone, who has 30 years of experience as a historical archaeologist, is the historian for the shore region of New Jersey's State Park Service.

Gaining Acceptance

Underscoring how the use of metal detectors is becoming more of an accepted practice by professional archaeologists is the fact that papers on the work at Monmouth using metal detectors have been presented to professional organizations by Stone and project leader Daniel Sivilich. Among the organizations they've addressed are the Society for Historical Archaeology, the New Jersey Archaeological Society, the Council of American Revolutionary Sites and a national conference on battlefield preservation.

New Jersey is not the only state in which professional archaeologists have teamed up with avocational metal detectorists. Other such cooperative battlefield projects are taking place at the Little Bighorn National Monument in Montana, the Battle of Fallen Timbers in Tiffin, Ohio, Stone's River National Battlefield in Murfreesboro, Tennessee, and the Battle of Kennesaw Mountain, in Georgia. However, Deep Search was the first group in the country to excavate a battlefield using metal detectors, starting

their excavations a full year before the project at the site of General Armstrong Custer's last stand.

Among the central archaeology tenets are research, documentation and conservation. Not only is the terrain of a site both above and beneath the surface of the ground recorded, but so, too, is the artifact's relationship to physical features of the site, types of soil and other artifacts. Relic hunters were not necessarily known for documenting the items they dug, or for making them available for display and research.

The Bag-Flag-Tag technique used at Monmouth Battlefield addresses a number of the archaeologist's objections to the use of metal detectors. Once items are located, they are left in situ (where they were found) and a flag is placed next to the find spot. At the end of a session — usually the end of a day — each artifact is assigned a number and placed in a bag. The location of each artifact is plotted, using a measuring tape and surveyor's transit, and recorded in a register. Each artifact is then cleaned, measured and cataloged into the battlefield collection.

Uncovering Facts; Conserving Artifacts

The preservation of artifacts is also an important part of the work at Monmouth Battlefield. In fact, Deep Search received an \$8,000 grant from the New Jersey Historical Commission

Archaeology entails more than just recovering artifacts. Once they are recovered, they need to be cleaned, documented, evaluated for conservation, and carefully researched. Part of the research involves attempting to determine how a specific artifact was used. Although this 18th century stirrup was found in the area of several cavalry charges, it is impossible to know how it came to be in the ground. It could have come from a fallen cavalry horse or dropped off the saddle during a troop movement.

Bob Hall poses with the cannonball that he recovered as part of the Deep Search archaeological team. Although artillery was used heavily during the Battle of Monmouth, in the nine years of work at the park, only three cannonballs have been recovered. One reason so few balls have been found is that many cannonballs were picked up over the years by relic hunters and by local farmers as they worked the fields.

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for the conservation of 86 ferrous artifacts found at the park. Representative artifacts or those of historical significance were selected for professional conservation. Grant funds were used to hire the services of John Milner and Associates, Inc., and Louis Berger & Associates, Inc.

The artifacts were desalinated and the rust was removed by chemical treatment and mechanical abrasion. Then the artifacts were treated with tannic acid to inhibit future rusting and a protective acrylic coating was applied.

Archaeology "contributes significant factual information to our body of knowledge for a particular site," says Barker. "The study of remains, artifacts and related materials improves our restoration plans and interpretive story themes."

At Monmouth Battlefield State Park, the same value gathered by traditional means at other historic sites is being obtained through the use of metal detectors in conjunction with computer-aided design (CAD) programs, computer inventory methods and analysis, and traditional archaeological excavation.

According to Stone, the most significant impact of battlefield archaeology is not in the recovery of a single object, but the information that is uncovered. One of the areas in which the Deep Search club pioneered battlefield archaeology was the processing after the artifacts were recovered. Computers are used to assist in the interpretation to uncover patterns. Once the location and type of artifact is entered into a data-base, graphical images of ordnance distribution can be generated by using a plotting program. Stone notes that the work at Monmouth is "adding an entire new layer of knowledge."

In addition to providing a new view of the battle, club members are unearthing physical evidence to support the existing documentary information of troop and artillery movements. By analyzing a



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topographical map overlain with the locations of a certain type of ordnance, the location of specific military units can be determined by calculating trajectories. According to Stone, it is not just the recovered ordnance that is informative; as an archaeologist, he also considers patterns valuable "whether it is fused musket balls showing where the Royal Highlanders were being shelled or the stray impact codes of 3 oz. grapeshot." Patterns show an archaeologist how the battle was fought, says Stone.

And There's More

But the patterns uncovered by the Deep Search project team at Monmouth Battlefield State Park relate to more than troop movements. One pattern pertained to a farmhouse that had disappeared from the landscape. Although the existence of the building was documented, no physical evidence remained of the structure until the distribution of the recovered artifacts — which included brick fragments, window glass, nails, ceramic shards, bottle glass, buttons, kaolin pipe fragments, and even oar locks from a rowboat — was plotted and revealed an unusual pattern. Instead of the random patterning that normally would be expected, the plot showed artifacts laying along the outside perimeter of a square. It is now theorized that the artifact pattern indicates the position of the house.

Fired from a cannon, lead canister shot was an effective anti-personnel projectile.
© Helen Henderson



Sivilich notes that not all objects found by the members of Deep Search relate to the Revolutionary War. In conjunction with the 3rd New Jersey Infantry Volunteers, a Civil War reenactment unit, club members are continuing efforts to locate and reclaim a Civil War training camp. Also located on the site of the Revolutionary War battle, Camp Vredenburg was one of 10 military training camps in New Jersey during the Civil War. The 25-acre camp was dismantled in 1864 after only two years of use. While the actual locations of specific identifiable sites, such as the tent rows and target range, have yet to be determined, finds such as infantry buttons and nails provide insight into the camp construction.

Because several Native American sites — including a camp dating from 1,000 to 350 years ago — also have been found at the park, club members working at the site need to be able to recognize Native American material that might turn up during the excavations. Lending his extensive experience and knowledge in the area of prehistoric relics and artifacts is Ralph Phillips, co-chair of the Deep Search archaeology team.

Battlefield archaeology at Monmouth, and at other sites in New Jersey and throughout the United States, is not without its controversy or obstacles. Pot hunters, past and present, are not the only obstacles to uncovering the buried secrets. Encroachment by development or demands to leave sites undisturbed and the artifacts in the ground can generate controversy and hold up research. According to Sivilich, the high nitrogen fertilizers used by today's farming community can eat away at pewter, lead and copper items as they lay in the ground. Stone describes a lack of funds for artifact conservation and the lack of a central curatorial facility with professional curatorial staff as other impediments.

Supported by various technologies, today's battlefield

More about Deep Search

Members of Deep Search, which was founded in 1982, are avocational historians and archaeologists, as well as metal detectorists. They come from all walks of life, drawn together by their love of history and the hobby. Their professions range from executive to artist, registered nurse to carpenter; some even are members of the armed forces.

Their contribution to the preservation of our history is significant. In 1997 alone, Deep Search members worked 756 "field" hours on the archaeology project at Monmouth Battlefield State

Park. This does not include time cleaning, logging and analyzing artifacts and plotting data in the computer.

The club has worked on historical sites with recognition from local, county, state and national officials and has helped develop legislation for the protection of those sites. Members also have volunteered their time and talents to other historic sites in New Jersey.

In addition to their work with historic sites and battlefield archaeology, club members hunt for coins, participate in organized treasure hunts, run an open beach hunt every fall, and have helped people recover lost rings and jewelry.

The club meets the third Monday of the month at the East Brunswick Public Library, in East Brunswick. For information on membership, the club hunt or the archaeology project, call 732/390-0867.

archaeologists are uncovering previously hidden secrets of the past. Without this work, many of the recovered objects would cease to exist within the span of a few short years due to the effects of weather, agriculture and other human activities. As the marriage of old techniques and modern technology becomes more widespread, more of our national heritage will be identified and preserved. Battlefields will be saved from development and our honored dead remembered, as battlefield archaeologists discover yesterday's front line.

Author's Note: A special note of gratitude is given to Daniel Sivilich, Garry Stone, and the members of the Deep Search Metal Detector Club for their help in researching this article.

*Helen Henderson is a correspondent and feature writer for several national and regional publications on the topics of antiques, military history and New Jersey local history. She is also the author of **Around Matawan and Aberdeen**, in the Arcadia Press **Images of America** local pictorial history series.*

Jersey Sketchbook: Great Swamp

Story and illustrations © John R. Quinn

My introduction to the Great Swamp came as a child, when I visited my mother's uncle in Chatham Township. Then, in the late 1940s, Chatham was still a distinctly rural municipality. Uncle George Schwartz owned a 35-acre dairy farm located off Southern Boulevard, in the bucolic little valley just down the road from the historic Red Brick Schoolhouse.

Most of the farm consisted of rolling hayfields and pastureland that ended at the wild and wooly boondocks of the Great Swamp on the farm's western boundary. The farm included another 15 acres of uncleared, wooded land that lay within the swamp itself, then regarded as a vast, impassable wilderness.

My interest in nature was just beginning to flower and one of the farm's attractions was its hay-scented, flower-bedecked fields, populated in summer by veritable blizzards of butterflies. I had already started a butterfly collection, so I spent most of my time at the farm in hot pursuit of the winged gems.

Uncle George encouraged my interest in the local wildlife and had no problem with my roaming the hayfields, but he warned me about venturing into the swamp. "It goes back for miles," he'd say. "You could get lost out there."

Not the rebellious type, I tended to obey adult dictates scrupulously. But one day, while sprinting through the grass on the heels of a particularly attractive wood satyr, I was brought up short at the fence at the end of the pasture. I watched mournfully as my quarry flitted under the wire and vanished into the dense woods beyond. For the first time, I took notice of the mysterious, shadowed green world.

From the safety of the hayfield, the lushly wooded swamp didn't look all that

dangerous. Slipping cautiously through a break in the barbed wire, I took my first hike in a place that would, in less than two decades, become a national wildlife refuge.

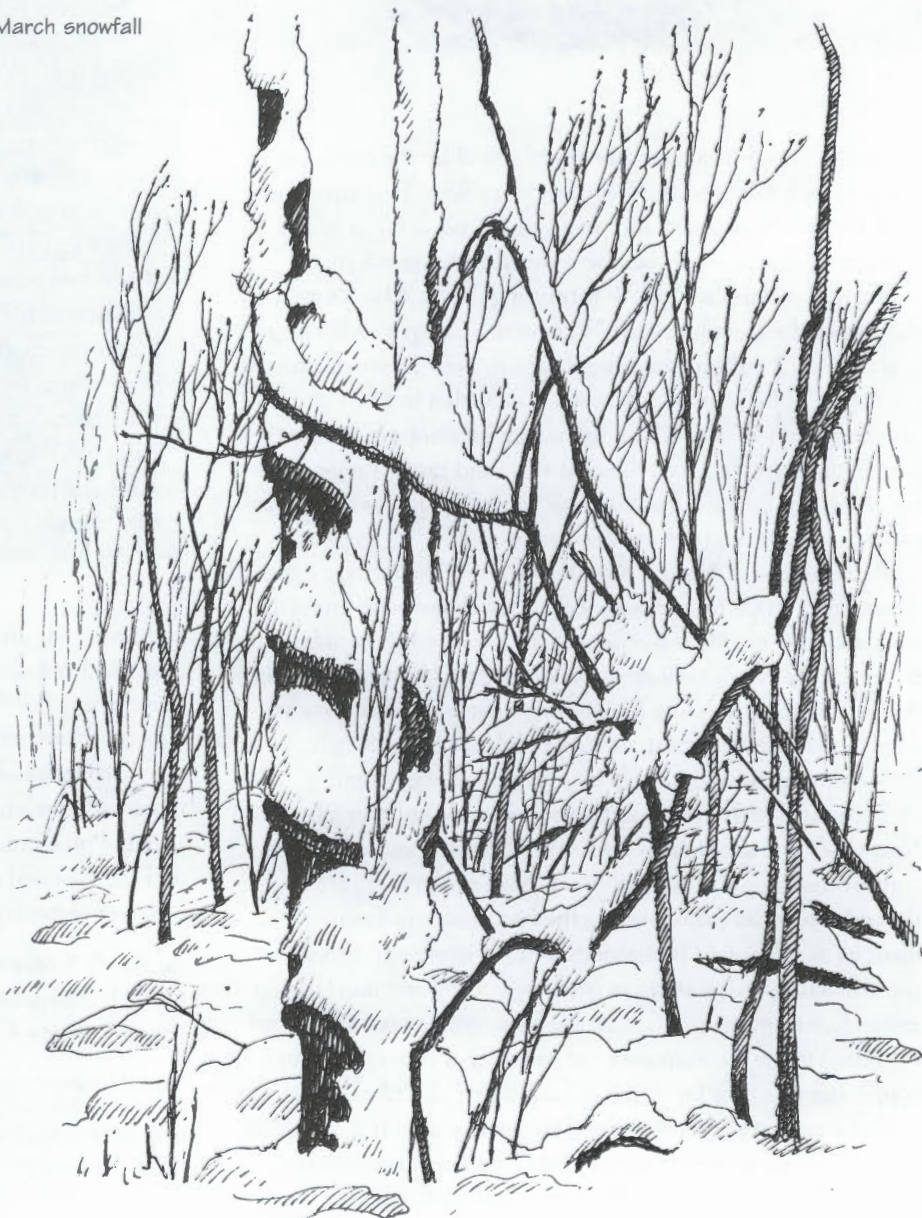
My memories of that day are relatively few, but I remember the ventriloquistic sounds of frogs and hidden birds, the ancient scents of water and green growing things, unruly ranks of grassy

hummocks and a wild "garden" of skunk cabbage. It was all quite new to me, and it projected a feeling of intense, unconstrained vitality.

I made illicit forays into the Great Swamp on subsequent visits to the farm, and was about 15 when I hiked through the boggy bracken for the last time — a few years before the farm was sold and upscale suburban homes were built on the site. Today, you'd never know there had ever been a farm there.

My great-uncle passed away in 1960, nine years before the farm was sold and suburbia supplanted the sunny, flowered, butterfly fields. As for me, life went on and, in its all-too-swift passage, I never found the time to go back to Great Swamp — until recently.

March snowfall



The Great Swamp today is a 7,000-acre national wildlife refuge located 26 miles southwest of New York City. When I studied a map of the refuge not long ago, I found that the boggy and froggy woods I first explored at the end of my uncle's hayfield were now a part of both the 44-acre Morris County Outdoor Education Center and the refuge itself. Beyond that lay the refuge's extensive Wilderness Area. According to the informational brochure, venturing into this great wetland-forest offers visitors "a more primitive outdoor experience." So Uncle George had probably been right — I could have gotten lost out there, maybe for days.

Given the considerable size of the refuge I was sure it would offer me a surfeit of field sketch subjects. Its history alone paints an intricate and fascinating picture: Great Swamp had its genesis in the retreat of the Wisconsin Ice Sheet 12,000 years ago and was part of the former bed of Glacial Lake Passaic. For thousands of years Paleo-Indians were the region's only human residents and it wasn't until the European arrival that things began to get complicated for Great Swamp.

In 1708, English investors conned the resident Delaware Indians out of a 30,000-acre tract that included the swamp "for a barrel of rum, 15 kettles, 4 pistols, 4 cutlasses plus other goods and 30 pounds of cash." As settlements spread, farmers cleared the forest and began draining sections of the swamp. As smaller farming operations gradually became less profitable, much of the altered habitat reverted to a reasonably natural state.

In the 20th century, various flood control and drainage projects altered the swamp, but it was the specter of the huge Morris County Jetport, proposed in 1959, that threatened to do it in altogether and sparked determined grass roots efforts to save it. A small army of volunteers called The Great Swamp Committee, an arm of the North American Wildlife Foundation, managed to raise a million dollars and purchase nearly 3,000 acres of the swamp. This acreage, presented to the U.S. Department of the Interior, formed the nucleus of the present refuge.

Great Swamp has an extensive network of trails and rustic boardwalk at

the Wildlife Education Center in the Wildlife Management Area. Visitors are asked to avoid bushwhacking and stay on the trails (ticks are abundant). I found that the trail network traverses some of the refuge's more attractive scenery and forested wetlands and offered plenty of grist for my sketchpad.

The refuge does not offer the "Big Sky" vistas found at sprawling coastal sanctuaries, so observable wildlife is not as — well — observable. Nonetheless, I encountered a good number of its feathered denizens and got a feel for its timeless appeal.

As I pondered the reflections of the primeval in the still waters, the "critter tracks" scribing the snow, and the vernal promise of spring peepers, I thought, "Gee, you really could get lost out there."

And today, so many years after my first foray here, that prospect held an odd — yet entirely reasonable — appeal for me.

Author's Note: Great Swamp Refuge headquarters (973/425-1222) is located on Pleasant Plains Road in Basking Ridge. Call the Outdoor Education Center (973/635-6629), located on Southern Boulevard in Chatham, for information on natural science programs and guided tours. The Somerset County's Environmental Education Center (201/766-2489), located on the western border of the refuge in Lord Stirling Park, offers various programs, environmental education courses, guided field trips and self-guided trails.

*Artist-naturalist John R. Quinn has published many books on nature and science. His initial contribution to **New Jersey Outdoors** — "Jersey Sketchbook: Sandy Hook" — appeared in the Fall 1998 issue.*

The boardwalk, Wildlife Observation Center





SURVIVING *the Wilderness*

by Sandra Koehler



THE 10 ESSENTIALS

1. COMPASS
2. MAP
3. FLASHLIGHT AND BATTERIES
4. EXTRA FOOD AND WATER
5. MATCHES
6. SUNGLASSES AND SUNSCREEN
7. FIRST AID KIT
8. FIRE STARTER
9. KNIFE
10. EXTRA CLOTHING



See the sidebar above for a list of the essentials shown at top — and don't leave home without them!

Today's camper can enjoy a variety of tasty meals (left) without concern about the ill effects of spoilage.

You and your friend Bob embark on a weekend backpacking trip in the Pine Barrens. It's cool and sunny, but you get a late start.

No problem. Hefting your packs onto your shoulders, you hike at a fast pace, trying to make up time.

Everything seems fine until you notice the lengthening shadows. You haven't reached your intended campsite, but you should have by now. That's when you realize you're lost.

Things get worse. In the dim light, Bob doesn't notice a slight hole and steps into it, pitching forward, the weight of his pack wrenching him off his feet. Between Bob's moans, you discover he may have sprained his ankle — or worse. Walking is not an option for him.

What do you do?

Whether you're planning an afternoon jaunt or a weeklong expedition, you should be prepared for any situation before setting foot on the trail. Hence, there is a need to develop wilderness skills — even in New Jersey.

BRING — AND KNOW — THE RIGHT STUFF

One important step is bringing a first-aid kit with useful supplies for backcountry emergencies.

Jay Koperwhats, who coordinates units of the Civil Air Patrol in Union, Essex and Middlesex counties, recommends carrying a kit that includes small and medium-size bandages as well as treatment for blisters — a common trail malady.

In a pinch, some unorthodox items can be used as first-aid tools. "Duct tape is great," says Koperwhats, "particularly for splinting broken bones." A walking stick that separates into two pieces is perfect for splints. Tent poles or even branches would work, too.

"But you have to know what to do with (the kit)," says Koperwhats, who aids in search and rescue missions.

Dewey Wilmot, manager of the Eastern Mountain Sports store in Woodbridge, urges potential wilderness explorers to sign up for basic first aid and cardiopulmonary resuscitation training.

For about \$40 to \$65, American Red Cross chapters throughout the state offer courses in adult and child CPR and standard first aid, as well as a class called *When Help Is Delayed*. The first-aid course teaches methods for treating cuts, burns, bruises and broken bones, says Jim Gencauski of the Capital Area Chapter.

No matter how long you plan to be outdoors, things can happen. That's when you'll be glad you packed the right gear, especially the 10 essentials (see previous page). You may expect to be out for only a few hours, but a wrong turn could mean walking back in the dark. Just as with the first-aid kit, hikers must learn to use a map and compass for them to be useful.

Eastern Mountain Sports stores and the Appalachian Mountain Club's Mohican Outdoor Center, located within the Delaware Water Gap National Recreation Area, are just two of the many New Jersey places that teach these skills and offer other wilderness classes year-round.

Packing the right gear also means wearing the right clothing — and preparing for all kinds of weather. “No cotton” is Wilmot's mantra before every Eastern Mountain Sports trip. Unlike synthetics or woolens, cotton absorbs water, leaching body heat. Not only can it get uncomfortable, it also can lead to hypothermia (when the body's temperature drops below normal due to prolonged exposure to cold and/or wet weather).

A common misconception is that hypothermia is only a threat in winter. Not so.

The Trailside Guide Series book, *Hiking & Backpacking : A Complete Guide*, paints a picture of the person most at risk of hypothermia: “A hiker on an exposed windy slope. It's August, the

temperature is 45 degrees and there's a slight drizzle.” One reason the summertime hiker is more at risk than a skier in colder temperatures is that the hiker is more likely to underestimate the weather and be unprepared, offers author Karen Berger. The best prevention is knowing when you are vulnerable to hypothermia, Berger continues. People work up a sweat all day, which is no problem while hiking, but when you stop, immediately put on a hat and an extra layer of clothing.

BEYOND SURVIVAL

Those who desire not only to survive the wilderness, but also to become part of it can learn from Tom Brown, Jr. He runs The Tracker, a wilderness survival school with facilities in Bethlehem Township (Hunterdon County) and in Waretown (Ocean County).

Students in the standard course will spend a week learning how to observe nature, track animals, build a shelter, make fire and find food and water.

Brown says he has found that many new students need to unlearn improper techniques. Some, for example, have told Brown they believed certain animals, such as worms, could be eaten raw. Everything should be cooked, he states. That goes for water, too. Boil it if you don't have a purifier.

“There's a lot of misinformation out there,” he says. “We teach them from experience, not theory.”

You left your stove at home or it broke on the trail? Not to worry. Brown shows his students how to make a wooden bowl to collect water, 23 different ways to build a fire (three are learned in the standard course), and how to purify water by *rock boiling* —

SNAKES AND SKUNKS AND BEARS, OH MY!

Although being prepared for the weather and possible emergencies is important, wild animals and even other hikers can pose a potential threat to the outdoor enthusiast.

“When watching wildlife, always remember that no matter how cute, stupid, slow, attractive, cuddly, harmful or oblivious they may seem, wild animals are — above all — wild,” cautions Karen Berger

in her Trailside Guide Series book *Hiking & Backpacking : A Complete Guide*.

Her number one rule is: don't feed the animals.

Human food upsets their natural cycle, inspires animals to become beggars and encourages them to lose their fear of humans, which could make them a threat to you or future hikers, Berger writes.

Additionally, animals that

show no fear of humans could be rabid. About 90 percent of rabies carriers in the United States are wild animals, according to Victoria Logue, author of *Backpacking in the '90s: Tips, Techniques & Secrets*. Common carriers are skunk, raccoons, bats, cattle, cats and dogs.

Encounters with snakes could result in a poisonous bite or, at the very least, a painful one. Copperheads, usually found in groups, are generally found in the East and rattlesnakes are found throughout the country.

To avoid confrontations with snakes, remember to

make a little extra noise when walking through brush, deep grass, dead leaves or anything that blocks your view of the path, Logue says. Many species of poisonous snakes prefer areas near rocky outcrops and can often be found among boulders that border rocky streams.

Although a copperhead bite is rarely fatal, it is dangerous and requires immediate medical attention.

Discoloration and swelling in the bite area, weakness and rapid pulse are the signs of a poisonous bite. Other symptoms could include nausea, vomiting, fad-

heating a rock until it becomes red hot, then placing it in a water-filled bowl so it boils the water.

Probably the greatest misconception of all, Brown says, is the belief that survival is difficult.

"Survival is very easy," he says. "My students have actually gained weight in survival situations."

A course, costing between \$600 and \$700, consists of 16- to 18-hour days of lectures and outdoor workshops for one week. But Brown's school, which also teaches Native American lifestyle and philosophy, may not be for everyone.

"If you are looking for a survival school that concentrates on just hard-core survival, don't come here," says Brown, who instructs more than 3,000 people a year. "But if you're looking for a closer attachment to Mother Earth and the skills and philosophy that will help you live in harmony and balance with Creation, then come join us."

WHO'S IN CHARGE?

Although the right clothing, gear and knowledge of first aid will help, people may still find themselves in tough situations and they must be prepared to handle them, Wilmot says.

If there is a problem such as an injury during a group outing, Wilmot stresses the need for "somebody who's going to step up and take charge." That person has to be a leader who will prevent a panic, Wilmot says. During one of the many trips Wilmot has led, a group member pulled a groin muscle 40 feet from the summit of a mountain. Making matters worse, it was getting dark, it had started to rain, and the man had a fear of heights.

ing vision and shock.

The best treatment is to reduce the amount of circulation, optimally by keeping the victim immobile, applying a cold wet cloth to the area or using a constricting band (but it should not cut off blood flow to the limb).

A nonpoisonous bite can still be dangerous if the wound is not properly cleaned. Ideally a tetanus shot should be given to prevent serious infection. Nonpoisonous bites will cause a moderate amount of swelling.

"Keep in mind that more people die each year from in-

sect bites than they do from snake bites," Logue writes.

Bees, wasps, yellow jackets, hornets, ants and black flies all can cause anaphylactic shock, which is an extreme allergic reaction in some people. This occurs when the body produces too much histamine in response to a bite or sting. The skin turns red, itchy hives appear and the airways begin to close, eventually causing asphyxiation.

First-time cases can be treated with an antihistamine that should be part of your first-aid kit and medical help should be sought immediately. Those

who know they could suffer from this reaction should carry an Anakit, which contains epinephrine injections and antihistamine tablets.

Whenever hiking in tall grass and underbrush, wear a hat, long-sleeved shirt and pants with cuffs tucked into socks to discourage ticks. Lighter clothing will make ticks easier to spot. Deer ticks, the approximate size of a pinhead, are the ones that carry Lyme disease.

No-see-ums — irritating gnats that tend to swarm around backwoods travelers — can be avoided by camp-

ing away from running water, ensuring tent netting is a very fine mesh, and using insect repellent.

There are other "nuisance critters" to watch out for such as skunks, raccoons, porcupines and mice, said Dewey Wilmot, manager of the Eastern Mountain Sports store in Woodbridge.

Wilmot found out the hard way that these animals will lick or eat your clothing to get the salt from sweat. He emerged from his tent to learn a skunk had chewed about two inches from the ankle of his boot, which forced him to

Learn Outdoor Skills via . . .

■ The Tracker, Inc., in Asbury

Phone 908/479-4681 • E-mail TrackInc@aol.com

Web site <http://members.aol.com/trackerinc/index.html>

■ Appalachian Mountain Club's Mohican Outdoor Center

Phone 908/362-5670 • E-mail dvamc@enter.net

■ Eastern Mountain Sports stores

❑ Bridgewater Commons Mall

(Bridgewater, Somerset County); 908/725-7255

❑ Freehold Raceway Mall

(Freehold, Monmouth County); 732/409-2424

❑ Route 1 North (Paramus, Bergen County); 201/670-6464

❑ Princeton Marketfair

(Route 1, Princeton, Mercer County); 609/520-8310

❑ Rickles/Union Plaza

(Route 22, Union, Union County); 908/688-0404

❑ Woodbridge Center,

(Woodbridge, Middlesex County); 732/634-8787

■ Princeton University's Outdoor Action Program

Web Site www.princeton.edu/~oa/oa.html

"He was pretty nervous," Wilmot says.

Wilmot stopped the group and immediately put an ice pack on the injured area. With the group equipped for a backpacking trip, they were prepared to spend the night if necessary. Fortunately, the man was able to walk back to the trailhead, which was mostly downhill.

What would Wilmot have done if he had been the only one



with the injured hiker? "If you need to leave this person, you need to leave them in as good a position as possible," Wilmot answers. "That's in a tent, in a sleeping bag with food and water readily available."

If the person is unconscious and has not suffered head or back injuries, Gencauski recommends propping the victim on his or her side to prevent suffocation should vomiting occur.

Leave the patient as comfortable as possible and seek help at a ranger station. This means knowing where and how to contact rangers before the trip starts, Wilmot says.

Tents provide shelter and a great place to wait for a search party. Just be sure to leave your itinerary with a friend, relative or ranger and keep to established trails.

If people wish to try to attract help without leaving a friend behind, there are some traditional and modern methods. There are a variety of distress signals understood internationally in the form of three – such as three whistle blasts, three tarps lined up in a row and three smoking fires. Gencauski adds two more signals: a large X on the ground and reflecting sunlight off a mirror. Koperwhats says he always carries his cellular telephone when hiking alone, and he also recommends two-way radios.

MORE DO'S (AND DON'TS)

Getting lost can happen to anyone, even in a large group. Koperwhats recalls his Boy Scout days, and one trip in particular. He and 21 others were hiking and camping near the Delaware Water Gap in Worthington State Forest. Everything went smoothly until the second day, when two boys got separated from the group during a day hike from camp. The pair gradually got ahead of the group and took the wrong path.

"The best thing they should have done was to stop and see where they were," Koperwhats says. "If you can't identify where you are, the safest thing to do is stop and minimize the damage."

But they kept moving. That was a big mistake, increasing the distance between themselves and the group and fatiguing them, Koperwhats says. The boys eventually found a road, where a passing motorist reported seeing them to a ranger. They were later reunited with their fellow scouts without serious consequences, but Koperwhats learned several valuable lessons from their mistakes.

Getting ahead of the group and continuing to follow the wrong trail were the first missteps. Another error exacerbated

wrap tape around the boot to hold it together.

"It's just a matter of putting your stuff out of reach," he said.

If you are in a shelter or lean-to, you can hang your boots and pack out of the way, but Wilmot recommends tying a tuna can on the string to keep mice from crawling down the rope to reach your footwear. If the pack is left on the ground, open all pockets so the animals can get into them without chewing their way through.

While smaller creatures can be irksome and in some

cases dangerous, the larger ones require even more careful attention.

Bears are not only relegated to the big screen or the zoo; they can be found in the wilderness and knowing what to do could save your life.

Brown bears, including grizzlies, and black bears are found in the contiguous United States, but the more common black bear is what a hiker is likely to find in New Jersey.

Black bears are common along the Appalachian Trail in the western part of the Garden State, Wilmot said. Hikers have a 50 percent

chance of spotting one along that trail in the Delaware Water Gap Recreational Area, he said.

Mutual avoidance in bear country is the key. Wilmot recommends wearing a bear bell and talking loudly to warn bears of your presence.

If you encounter a bear, the most important thing to remember is: Do not run. Running invites the bear to chase you as prey. And you won't be able to outrun a black bear, which can run at up to 25 mph, according to the *World Book Encyclopedia*. Berger writes that an adult grizzly can

reach a top speed of 40 mph.

Black bears in New Jersey have grown accustomed to seeing people and don't tend to run away, Wilmot says, but it doesn't mean they are any less dangerous.

"He didn't pay any attention to us. He was just digging out a tree," Wilmot says of the one he encountered. "We just looked at him and kept walking."

A bear charge often is a bluff, according to Berger. If there are two or more people, stand together to look like a bigger target. Wilmot also suggests raising your hands above your head and yelling

the situation. Every pair or group of three should carry a map and compass and appoint a leader, says Koperwhats. Following this advice could have helped the boys rejoin their friends. Unfortunately, no one thought to designate who should carry equipment because it was only a day hike, he says.

"It always seems that the first mistake leads to the second, and so on," he says.

If people don't want to stay put, they can try to reach high ground to spot any landmarks that will help identify one's position, he says.

"Most adults will head downhill instead of uphill because that's where people are," says Koperwhats, pointing out a common misconception.

Another belief among hikers that can't always be relied upon is that following water downhill will lead to civilization.

Getting lost or stranded, whether in a group or alone, can be nerve-racking, but it doesn't have to be a hopeless situation. Koperwhats remembers a man who broke his leg on the first day of a three-day solo trip in Stokes State Forest.

"He understood he wasn't going to get anywhere," Koperwhats says, "so he climbed into his sleeping bag and crawled into his collapsed tent, which his injury prevented him from pitching. There he relaxed and waited for help. He knew people would eventually look for him because he had left a trip plan at a ranger station before setting out."

After the man failed to check in at a ranger station on the afternoon of the third day, two search parties were sent out that night to the beginning and end of his proposed route. The man

was found quickly, in pain but otherwise okay, because he had left his itinerary and kept to established trails. People shouldn't just rely on the rangers, though, says Koperwhats. They also should leave a copy of their route with a family member or friend.

"Tell someone you're going to call them when you get home," he adds.

So how are you and Bob doing?

If you received training in first aid and wilderness survival, Bob is now snuggled inside his sleeping bag and tent, waiting for you to cook dinner. Ice and an Ace bandage, as well as some Ibuprofen, have helped.

Because the injury does not appear to be serious, you both feel comfortable waiting until morning to re-evaluate Bob's condition. Then you'll try to determine where you are — using your map and compass, of course. If Bob still can't walk and you remain lost, you brought plenty of food and water to get you through the weekend, whether you decide to go for help or wait.

Waiting won't be a problem, because you left a trip plan with a ranger and Bob's sister. She knows how clumsy he can be, so she won't hesitate to call a ranger if you're overdue.

Who wanted to get to the campsite anyway? This is more of an adventure.

Sandra Koehler, who lives in Highland Park, is a reporter and writer who enjoys hiking, camping and other outdoor pursuits. This is her first contribution to New Jersey Outdoors.

at the bear, which should scare him off.

The last resort: Play dead. Roll yourself into a ball. Draw your knees to protect your torso and cover your neck with your hands. And stay very, very still. If you see a cub, with or without its mother, get out of the area, Wilmot said.

"Bears that are surprised are dangerous," Berger writes. "Mother bears with cubs are dangerous. Bears protecting a food source are dangerous, even if it's yours."

Berger offers other tips if you encounter a bear:

■ Stay calm and keep your distance.

■ Watch the bear's reaction without looking him in the eye, which is perceived as aggressiveness.

■ If the bear sniffs the air (standing on all fours or hind legs) he is aware of you and checking you out.

■ If he exhibits signs of stress, perhaps by turning sideways to make himself look bigger, or popping his teeth and yawning, he is probably inviting you to leave. Do so quietly and slowly.

To avoid a late-night visit to your tent, cook at least 100 feet away, according to

Berger. You also should stash all food and anything with an odor — such as deodorant, toothpaste and sunscreen — in a bag that should be hung from a tree limb at least 10 feet off the ground.

In addition to wild animals, the wilderness traveler occasionally will encounter other people who pose their own threat.

Berger offers some tips for the lone traveler:

■ Don't appear to be alone.

"My husband's waiting for me, I've got to catch up" is a line she offers.

■ If camping alone, avoid ob-

vious and frequently used sites.

■ Leave an itinerary.

Hikers should be wary of theft from their cars or even what they carry, warns Berger. She cautions against leaving valuables in the car and advises keeping a close watch on your pack, especially near road crossings.

Before you decide backpacking is too harmful for your health, remember that most outdoor trips do not include bear attacks and broken bones.

So fill your pack with the right gear, observe nature from a safe distance and enjoy the journey.

Events • Ongoing

Complete name and location information, as well as unchanging details (e.g., hours of operation, 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 Route 9, Waretown; 609/971-1593

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

Howell — Howell Living History Farm, Valley Rd. (just off Route 29, two miles south of Lambertville), Hopewell Township (Mercer County); 10 a.m. to 4 p.m., unless otherwise specified; lunch served 11 a.m. to 2 p.m.; 609/737-3299; \$ for rides, maze and crafts

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

Trailside — Trailside Nature & Science Center, 452 New Providence Road, Mountainside; 908/789-3670

Wheaton — Wheaton Village, 1501 Glasstown Road, Millville; closed on New Year's, Easter, Thanksgiving and Christmas, and on Mondays and Tuesdays in January through March; 10 a.m. to 5 p.m.; 609/825-6800 or 800/998-4552; \$

Whitesbog — Whitesbog Village, mile marker 13 on Route 530, Browns Mills (Pemberton Township); 609/893-4646; ☞

Ongoing

Pequest Trout Hatchery Tour Pequest Trout Hatchery & Natural Resource Education Center, Oxford; 908/637-4125

Cape May County 64th Annual Fishing Tournament Year round; free entry badge; Cape May County waters; 800/227-2297

Nature Classes and Special Events PAWS Farm Nature Center, Mt. Laurel; 609/778-8795; \$; ☞ for large groups

Saturdays and Sundays

Guided Walks Parvin State Park, Pittsgrove; 609/358-3105

Sundays except Christmas, New Year's and Easter

Planetarium Show Trailside \$

Sundays, January through May and September through December

Family Nature Program Trailside

Wednesdays

Governor's Mansion Tours at Drumthwacket Princeton; 609/683-0057

Wednesdays through Sundays

Environmental Interpretive Programs at State Parks and Forests Call for schedule and other details: Cheesequake, Matawan,

732/566-3208; Island Beach, Seaside Park, 732/793-0506; Liberty, Jersey City, 201/915-3409; Parvin, Pittsgrove, 609/358-8616; Washington Crossing, Titusville, 609/737-0609; Wharton, Hammonton, 609/567-4559 or 609/561-0024

Saturdays and Sundays, January 2 through February 28

Maple Sugaring Demonstration & taste test; Great Swamp

January 23 through March 7

Curator's Choice Exhibition Museum of American Glass at Wheaton

January 30 through February 21

Collage: 4th Annual Student Art Exhibit Gallery of American Craft at Wheaton

February 27 through March 28

Classic Creations Craft Boutique The Hermitage, Ho-Ho-Kus; 201/445-8311

March 1 through April 18

Glen Rudderow & Carol Barnett Exhibition & Sale Gallery of American Craft at Wheaton

March 22 through May 4

Carving and Wildlife Art Preview Somerset County Environmental Education Center, Basking Ridge; 908/766-2489

Note: Information listed was accurate at the time it was submitted to *New Jersey Outdoors*. Before traveling to an event, readers are advised to call the number listed to confirm the information provided and obtain any additional information desired.

Events Symbol* Key:

☞ Preregistration required

♿ Handicapped accessible

\$ Fee or donation

* Symbols are shown where information was provided by event sponsor.

January

1

14th Annual New Year's Day Hike on the Paulinskill Valley Trail Beginning at Footbridge Park, Blairstown; 908/852-0597

Horse Ride on the Paulinskill Valley Trail Bring your own horse; 908/725-9649

Through January 3

Holiday Exhibition & Sale Gallery of American Craft at Wheaton

9

Albert Music Hall 2nd Anniversary Show (snow date: Jan. 16); Albert; \$

Ski Fest '99 High Point Cross-Country Ski Center, Sussex; 973/875-4800

17

Hike (or Cross-Country Ski) the Paulinskill Valley Trail Beginning at Warbasse Junction; 908/852-0597

24

Native American Storytelling & Craft Skylands; ☼; \$; ☞

Stellar Evolution Made Easy Observatory, Voorhees State Park, Glen Gardner; 908/638-6969

30

Sled Day Sleigh rides and hayrides; Howell; ☼

Annual Open House Rutgers University Geology Museum, New Brunswick; 732/932-7243; ☼ except for exhibit area

31 and February 2

The Great Environmental Magic Show One show will be ASL interpreted; schools and other organizations may call in advance to schedule attendance at group shows, which will be offered Jan. 26 through Feb. 5; Somerset County Environmental Education Center, Basking Ridge; 908/766-2489; \$; ☞

31 through February 2

New Jersey Special Olympics High Point Cross-Country Ski Center, Sussex; 973/875-4800

February

6

Ice Harvest Howell; ☼

6 and 7

15th Annual Toms River Wildfowl Art & Decoy Show Brick High School, Brick; 732/341-9622, ext. 214; ☼

Mid-Winter Antiques & Collectibles Show & Sale Wheaton

7

10th Ocean County Bluegrass Festival (snow date: Feb. 14) Albert; \$

Hike (or Cross-Country Ski) the Paulinskill Valley Trail Beginning at Footbridge Park, Blairstown; 908/852-0597

Horse Ride on the Paulinskill Valley Trail Bring your own horse; 908/725-9649

13

Signs of Spring Garden Walk (snow date: Feb. 20) Skylands

Valentine's Day Rides Sleigh rides and hayrides; Howell; ☼

20

Tundra Swan Tour (also on Feb. 27) Whitesbog; \$

Sugar Tree Tapping Howell; ☼

Winter Trails '99 High Point Cross-Country Ski Center, Sussex; 973/875-4800

21

Washington's Birthday Event Washington Crossing State Park, Titusville, and Rockingham Historic Site, Princeton; 609/921-8835

27

Tundra Swan Tour Whitesbog; \$

Full Moon Hike (also on March 27) Whitesbog; \$

28

Hike (or Cross-Country Ski) the Paulinskill Valley Trail Beginning at Footbridge Park, Blairstown; 908/852-0597

Astronomy Sunday Trailside; \$

The Eclipse of the Century Observatory, Voorhees State Park, Glen Gardner; 908/638-6969

March

7

Horse Ride on the Paulinskill Valley Trail Bring your own horse; 908/725-9649

13

Propagation Workshop Skylands; ☼; \$; ☞

30-Mile Full Paulinskill Valley Trail Hike 973/728-0110

14

African Violet Program Skylands; \$

20

New Jersey Songwriters Show Albert; \$

Hike the Paulinskill Valley Trail Beginning at Warbasse Junction; 908/852-0597

21

Water Gardening Program Skylands; ☼

25

Ikebana Program Learn Japanese flower arranging; Skylands; ☼; \$; ☞

27

Spring Cleanup Volunteer Day Whitesbog

Full Moon Hike Whitesbog; \$

Easter Egg Hunt Fort Mott State Park, Pennsville; 609/935-3218

27 & 28

Doll Show Wheaton

28

Tree Walk Skylands; ☞

The Size of the Universe Observatory, Voorhees State Park, Glen Gardner; 908/638-6969

Great Gift Ideas



Tired of buying clothes the recipient probably won't wear, or another dust catcher for someone's already overcrowded shelf? No time to run out to the mall to pick up a few last-minute gifts? Hate to venture out in the ice and snow to buy something for the person who already has everything? Following are some great gift ideas.

Adopt-A-Species

Why not, from the comfort of your own home, give the gift that has two recipients? If someone on your gift list just loves cats (or birds, or frogs, or wildlife in general) you can "Adopt-A-Species" in their name. Your gift of \$15 will go directly toward projects designed to monitor and preserve populations of shorebirds, bobcats, ospreys and herptiles (reptiles and amphibians). The person in whose name the donation was made will receive information about the program's efforts to help protect the species and a handsome color decal. (The bobcat decal is shown on page 14; the others are

pictured here.) Since the Endangered and Nongame Species Program receives no state funding, contributions such as these are needed to maintain and expand crucial research and protection efforts.

So give a gift that's sure to be appreciated (or Adopt-A-Species for yourself). Just send the recipient's name, address and species preference, with a check or money order for \$15, to Adopt-A-Species, Endangered and Nongame Species Program, PO Box 400, Trenton, New Jersey 08625.

Reef Wear, Charts and Marine Prints

T-shirts, reef charts and full-color reproductions of marine oil paintings are being sold to benefit the Artificial Reef Association. The tees, which depict either saltwater fish or an underwater scene, come in a variety of colors and materials and are available in adult sizes S through XXL. Cost ranges from \$14 to \$16, depending on material.

Reef charts are available for only \$5 each. Charts are available for Atlantic City, Barnegat, Cape May, Garden State North, Garden State South, Great Egg, Little Egg, Ocean City, Sandy Hook, Shark River, Sea Girt and Wildwood.

The 1998 marine print by nautical and wildlife artist William Hopkins, *Yellow Fins in the Canyon*, depicts a school of yellowfin tuna attacking squid in the waters of New Jersey's offshore canyons. Unframed, it costs \$60; framed in walnut, it's \$150; and framed in oak, it's \$160. The first three marine prints — *New Jersey Reef*, *Blues on the Beach* and *Stripers on the Rocks* — also are available, although the supply of *Stripers* is limited.

Call 609/292-9450 for additional information and to order.

More for the Wildlife Enthusiast . . .

Outdoor enthusiasts, birders, hikers, photographers, teachers, students and just about everyone else on your gift list will love the hot-off-the-press *New Jersey Wildlife Viewing Guide*. The soft cover, 160-page book contains fabulous species photos and detailed information about 87 wildlife viewing sites. It's available for \$10.95.

Looking for a real bargain? Buy one copy of *New Jersey Wildlife Profiles* at \$23.95 and get a second copy absolutely FREE!

New Jersey artist Carol Decker has signed a number of copies of the hard cover, 112-page, coffee table book that features 52 full-color reproductions of her wildlife paintings, so order yours while supplies last.

Purchases of the *Wildlife Viewing Guide* and the *Wildlife Profiles* benefit wildlife conservation efforts in New Jersey. Call 609/292-9450 for additional information and to order.

A Plethora of Parks & Forestry Gifts

If someone you love is planning a winter break in warmer climes — or is anxiously awaiting the return of summer — treat them to a *New Jersey State Parks and Forestry* beach towel. The white, all cotton towel features silk-screened trees in forest green and costs only \$14.

Teddy bear lovers of all ages will be thrilled with the 10-inch high, plush black bear sporting a gold T-shirt emblazoned with the official NJ State Park Service logo. Teddy also is available for only \$14.



Call for Entries . . .



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, 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.

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.

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 at left 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.

■ **Mail entries to:**
New Jersey Outdoors
P.O. Box 402
Trenton, New Jersey 08625-0402

Beautiful posters of the Barnegat Lighthouse and the State Botanical Gardens at Skylands, in Ringwood State Park, are available for \$5 and \$6, respectively. They'd make great gifts for students who want to add a touch of "home" to their dorm rooms or anyone who's decorating on a shoestring.

The Guide to New Jersey's State Parks and Forests, priced at only \$2, is not only a terrific source of information about the natural, historic and recreational resources offered at these facilities, but also is a wonderful stocking stuffer!

The above items are available at New Jersey state parks and forests. They also may be purchased by mail; for information, call 609/984-0370 or

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The Red Fox

by Dave Chanda

No animal has ever enjoyed a reputation quite like that of the fox. In Europe, the red fox is known as Reynard. It is a title of respect. Recognized as an intelligent and cunning animal, the fox is well known for its ability to outwit both foxhounds and sportsmen.

The fox has long been an important part of sporting history. It is a favorite quarry not only for sportsmen, but also for those who run fox hunts socially. The traditional fox hunt conjures up a picture of red-coated hunters mounted on horseback, galloping after foxhounds and shouting *Tally Ho!* Social fox hunts, in which the fox is pursued but not killed, are still popular in rural parts of New Jersey. Traditional fox hunting and trapping also are pursued.

The red fox is found throughout the state. Males and females look alike, although the male is slightly larger. Many people find it hard to believe that the fox is one of the smallest members of the dog family. Usually standing about 15 inches tall at the shoulder, the red fox weighs only 8 to 10 pounds and is approximately 40 inches long, including its 15-inch bushy tail. Although color can vary, the red fox typically has a red phase. In addition, black-tipped ears, black cheek patches, white throat parts, a lighter underside, and black "leg-stockings" are characteristic on most red foxes. The tip of the tail will always be white. The red fox is the only fox to have this white tip on its tail.

Red foxes prefer habitat consisting of open hardwoods and field edges. It has a very broad diet. It is basically opportunistic, and what it eats depends on the season and the food available. Small rodents, such as mice, are the mainstays of the fox's diet. However, it also eats grasshoppers and other insects, frogs, small birds, an occasional rabbit, and turtle and bird eggs. The

red fox also favors mast crops, such as beechnuts, and berries such as wild grapes (also known as fox grapes).

The red fox does most of its hunting at night, sometimes ranging as far as 10 miles. The distance it covers depends on the availability of food and how hungry it is. Its sense of smell is extremely keen and is by far the fox's most important tool in hunting. It will use its nose to trail prey over a considerable distance. The fox's sense of hearing also is well developed, and is most useful in tracking prey at close range. It has been said that a fox can hear a mouse squeak in a field at 100 yards.

As with other wild dogs, the red fox is colorblind. However, this does not mean it has trouble seeing, because its eyesight is excellent. But even if it were blind, a red fox would still have a chance of surviving because it can rely on its senses of smell and hearing to locate food.

There is a limit to what foxes can kill and eat. Seldom are they able to catch an adult turkey or beaver. Even game birds such as grouse, quail and pheasant, while taken occasionally, are not important staple items in the red fox's diet, and the fox has no effect on their populations.

When breeding season approaches, the female selects the den and readies it for a family. The den may be in an abandoned woodchuck burrow, a cave or occasionally a hollow log. The female will line the den with grass and give birth to a litter of about five young in April. The nearly hairless young, born with their eyes shut, weigh only 3 to 4 ounces at birth. For the first few weeks, the female remains with them almost constantly, while the male hunts and brings food back to the den.

At about five weeks, the kits begin to make brief trips outside the den. Although foxes do not have many natural enemies, hawks or owls may kill the young at this stage, so they don't

wander far from the den. Most of their day is spent exploring every new object that presents itself, and wrestling with siblings. At about two months, the kits are left alone frequently while the female hunts. When they are about three months old, they begin to hunt with their parents.

During the fall, the red fox begins to roam and the family unit breaks up. The fox may move as much as 40 miles during this fall period because there is less food available. Another purpose of the fall roaming season is the establishment of individual territories. Though territories will overlap and a fox will not be a total loner during this period, the strong mating bonds are gone until the next spring.

The winter is the most stressful period for a red fox. This is when the population is most susceptible to disease, starvation and predation. Some common diseases the red fox suffers from are mange, heartworm, distemper and rabies. All of these diseases may be transferred to domestic animals. Although distemper and mange pose little threat to people, rabies can be transmitted to humans.

Habitat destruction is by far the greatest threat to the survival of the red fox in New Jersey. Fortunately, New Jersey has an aggressive open space policy that should protect much of its remaining habitat and secure the continuation of the red fox and New Jersey's other wildlife species into the next millennium.

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