

NJRB

# NEW JERSEY Outdoors

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Winter 1996



Blazing NJ's Trails • Snowboarding • Duck Hunting • Cross-Country Skiing  
Bulldog of the Winter Sea • Preserving a Piece of History • Frontier Days  
Geese of the North Wind • Hosts of Christmases Past



High Point Monument  
overlooks New Jersey's  
snowiest cross-country  
ski center, located at High  
Point State Park in Sussex  
County.

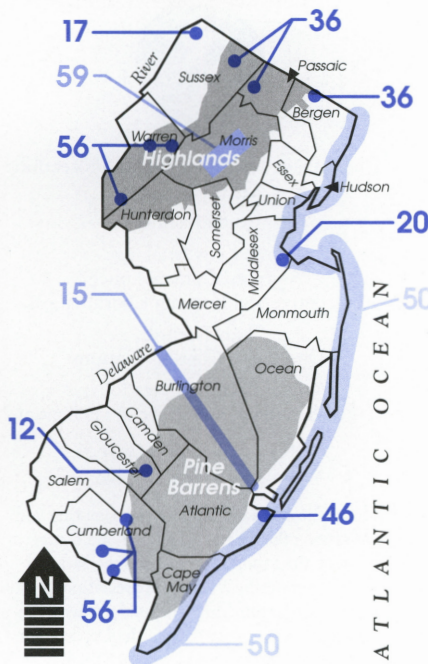


HIGHPOINT CROSS COUNTRY SKI CENTER

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Open the door to historical holiday decorations. See photo essay beginning on page 30.

JIM CARPENTER



# Editorials



Christine Todd Whitman, Governor

## Looking at the "Big Picture" in Watersheds

Fertilizers on the lawn. Pesticides used to protect crops. Animal waste and litter dropped in the gutter. Discharges of wastewater from factories.

What do all of these things have in common? Many of them may wind up in local waterways, contaminating drinking water supplies or killing off fish and aquatic plant species.

While environmental regulations have stopped factories and sewage plants from dumping toxic materials into our streams, rivers and bays, water pollution still persists. The newest threat comes not from corporate America, but from the nonpoint source pollution created by ordinary citizens in their everyday lives.

That is why we need to revisit our efforts to stop water pollution in the state. Through a pilot project called watershed based planning, we hope to find ways to reexamine all the elements that threaten our waterways and develop a comprehensive plan to deal with them. This could include efforts at the federal, state, county and local levels, as well as support from citizens and businesses.

The Whippany Watershed Project is our first venture into planning on a broader level. That project will help identify all sources of pollution and the latest technology to deal with them. In addition, it will examine improved management techniques and public education campaigns to combat the problem.

The lessons learned from the Whippany will help us develop plans for other watershed areas in the state. By working with governments, business and industry, the building trades, land use planners, environmental groups and environmental consultants, we will be able to build a better New Jersey — one where the water is cleaner and our other natural resources are better managed.



Robert C. Shinn, Jr., Commissioner

## Measuring Progress in the Environment

After decades of environmental regulation, how is the state of New Jersey doing? Is our air cleaner, our water more drinkable, our wildlife more abundant or the quality of our wetlands better or worse?

The Department of Environmental Protection is trying to answer these and many other questions using a new approach, called "environmental indicators," that will measure in real terms the state of our environment.

For too many years, we have relied on the number of permits issued and the amount of fees and fines collected to measure our success. But what have these actions really accomplished? That is what we want to find out.

The DEP is in the process of developing indicators on which to rate the success of our efforts. In other states or regions—such as Florida and the Chesapeake Bay—these indicators have included such things as the percentage of abandoned artesian wells that have been plugged, the number of homes participating in curbside recycling, the population of alligators, the levels of phosphorous and nitrogen coming from factories, the acres of bay grass, the stream miles opened for migratory fish and the amount of land using Integrated Pest Management. One test in the Chesapeake Bay even measures the clarity of water by determining how far one can walk into the bay and still see his or her sneaker underwater.

In New Jersey, we will find those factors significant in our environment — our species populations and growth rates, the clarity of coastal waters, the cleanliness of our air. These and other environmental indicators will help us to preserve and enhance environmental quality, as well as show us where more work needs to be done. They will help us set priorities and guide us in the decision-making process.

Our citizens deserve—and need—to know the state of New Jersey's environment. Environmental indicators will allow us to show where we have been and where we are going in protecting our precious natural resources.

State of New Jersey  
Christine Todd Whitman  
Governor



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

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# Mailbox

## Huckleberry's Fine

In your splendid article on Wild Blueberries in Summer 1995 issue, I missed a reference to "huckleberries."

When I was a kid in Forked River, my grandmother used to take me huckleberrying. Are blueberries and huckleberries the same?

Congratulations on your excellent magazine.


Eugene G. Clayton  
Lincroft

According to Al Murray, chief of Market Development and Product Promotion at the NJ Department of Agriculture and a member of the Blueberry Advisory Council, blueberries and huckleberries are the same — basically. However, blueberries have been cultivated through cross-breeding and various farming techniques and are usually grown in fields, while huckleberries grow wild and the seeds inside tend to be larger than those of the blueberry.

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

## Missing an Issue of New Jersey Outdoors?

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



# CALL FOR ENTRIES

## New Jersey Outdoors

### 1996 Photo Contest

### Calling All Shutterbugs

- **What:** The *New Jersey Outdoors*' 1996 Photo Contest welcomes black and white or color images (prints, 35mm slides and large format) of New Jersey — from scenery and historic sites to wildlife and outdoor activities — regardless of the season. There will be 21 first place winners — one featuring each of the state's 21 counties — one of which will be the grand prize photo. Prizes, which will include photographic equipment, NJO subscriptions and more, will be detailed in a future issue of *New Jersey Outdoors*.
- **Who:** The contest is open to any New Jersey resident or visitor, except *New Jersey Outdoors* employees and members of their immediate family.
- **Where:** Only photos taken in or of New Jersey (including its territorial waters and air) will be eligible.
- **When:** Only photos taken between September 1, 1995, and August 30, 1996, will be eligible.
- **Why:** To spotlight the wonders of our beautiful state and ways to enjoy them. Winning photos will be featured in the Winter 1997 issue of *New Jersey Outdoors*.
- **How:** Each entry must be accompanied by the photographer's name, address, daytime phone number, caption (including location and description of shot, date taken, and names of any people featured in the photo), and signed release from each person featured. All entries become the property of the Department of Environmental Protection and may be published/used for any purpose, such as illustrating a story or advertising NJO; photographer credits will be given.

## Enter as Often as You Like!



# On New Jersey's Frontier

Story and Photos  
by Pete McLain

Before the Revolutionary War in 1776, New Jersey was a frontier in the New World, and its men were called upon by the British government to protect the colony from Indian attacks.

These were the days of the early fur traders, the organized provincial armies, colonial militias, the New Jersey ranging companies and the Frontier Guard. Settlers lived the simple life, and many volunteered six months a year to travel the Northeast to fight for their territorial rights.

Today, the New Jersey Muzzleloading Association steps back in time to relive the early days of American history, from the French and Indian War through the Civil War. Part of their reenactments focus on the mid-18th century in New Jersey, when settlers donned primitive uniforms to fight for the colony, and the eastern longhunter, who traveled the unexplored wilderness for extended periods, depended on the woodlands for food.

Their provisions are simple — they sleep on bedrolls under rock outcroppings or a canopy of trees; they eat meat, such as venison, taken from the woods; they start campfires with flint and steel; they hold contests in tomahawk and knife throwing.

"We go and do it because we love to do it," says Frank Willis, past president of the 650-member organization and an avid eastern longhunter reenactor. "The public comes and watches us have fun. . . It would be a lost art if groups like ours didn't keep it alive."

Life was hard on the New Jersey frontier, when the area beyond the Appalachian Mountains was still undeveloped and unexplored, and upstate New York and eastern Pennsylvania were just beginning to be settled. Loose knit military groups were formed to protect the colony from Indian attack. And many settlers took to the wilderness to hunt for their food.

Most of the hunters traveled by foot, since much of the state was then blanketed in thick forests and few horses were available. They took little with them on their expeditions — perhaps a bedroll, gun and gun powder, a fire starting kit and some dried salt pork or parched corn. They supplemented their meager provisions with game from the land and fish from the waters.





## French & Indian War

During this same time, two nations — France and England — had laid claim to the New World. The British wanted to use the land and its coast for agriculture and fishing. France sought the bountiful territory for fur trading. The French enlisted the aid of Native Americans to help claim the territory. In turn, the King of England called upon his colonial governors to drive the French out of North America.

The resulting French and Indian War lasted from 1754 to 1761. And part of the British army was drawn from settlers in New Jersey.

The governor of the colony of New Jersey responded to the king's demand by rounding up 650 volunteer residents; they became the first organized and uniformed troops in the colonial army. They were dressed in blue uniforms and quickly became known as the "Jersey Blues."

Between 1755 and 1757, New Jersey ranging companies, the colonial provincial armies and the Frontier Guard were formed to fight the French and Indians in the Northeast.

Between October 1757 and April 1758, more than 2,000 men, under the command of British Colonel Peter Schuyler, marched on Fort Oswego, New York, where they were overpowered by 5,000 French and Indian troops.

## Ranging Companies

Traditionally, the British army consisted of highly regimented professional soldiers, who marched in tight ranks and fired by volleys in open field battles. The British were not accustomed to French and Indian warfare, which used hit and run surprise attacks in the woodlands. They needed the help of the frontier-wise Americans who knew these tactics.

One New Jersey ranging company, under the command of Captain Hezekiah Dunn, consisted of a hundred men on a six-month tour of duty. They traveled by boats from New Jersey up the

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Life was hard  
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Jersey frontier,  
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Mountains  
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Frontiersmen and women lived a rough life in the 1700s. They dressed in available clothing, most of it homemade, and hunted and fished for their food.





Hudson River to near Albany, where they walked westward to the Mohawk River area. This company acted as scouts and front line observers for the British.

There were four ranging companies from New Jersey during the French and Indian War, each serving a six-month enlistment under the command of the British army. But unlike their British counterparts, the ranging companies were issued their own brand of primitive, basic equipment.

## The Basics

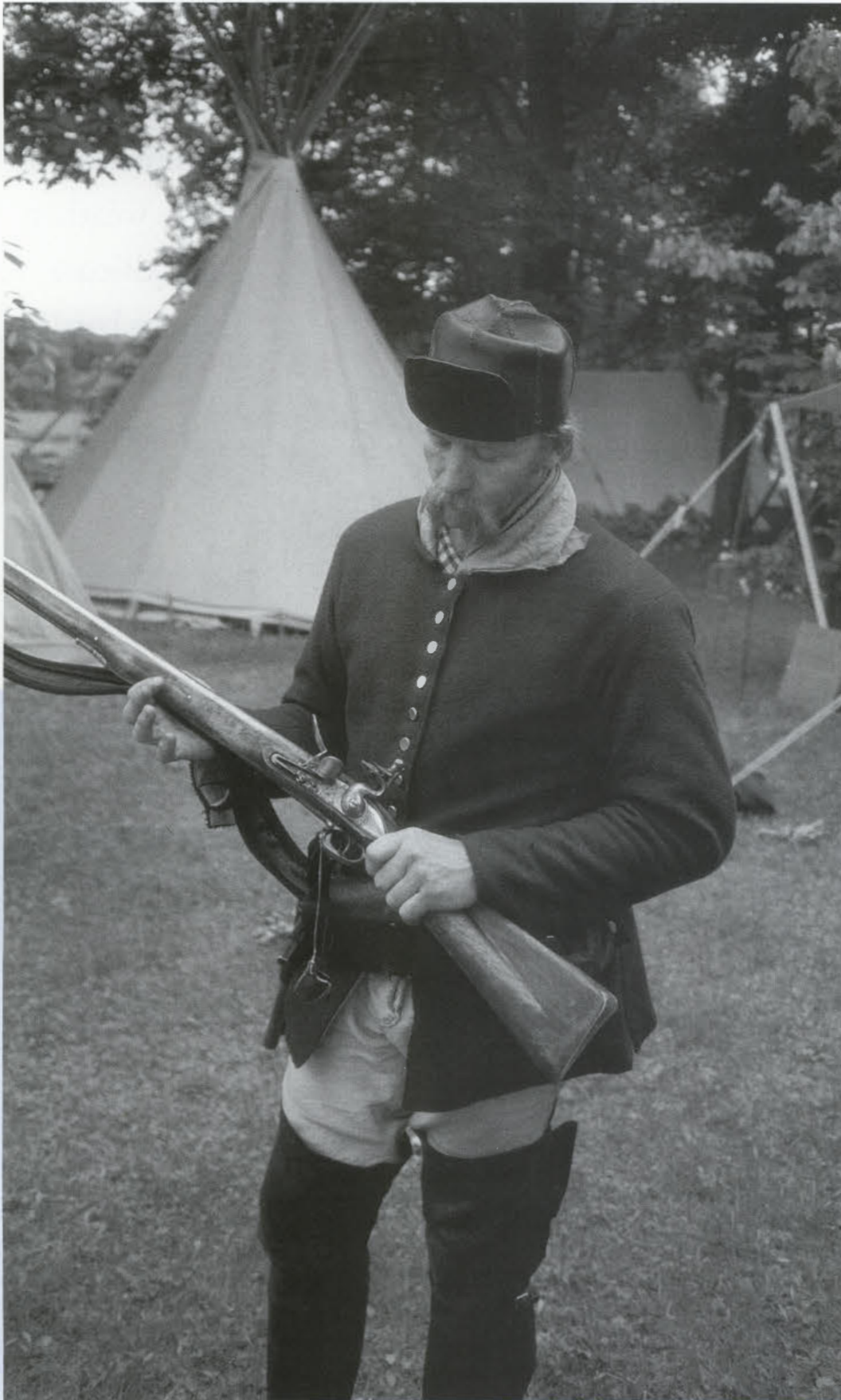
Before going into battle, each man was issued a single blanket, a canteen of rum mixed with water, some deer jerky and hardtack. Their uniforms consisted of a green, heavy wool waistcoat; a leather, jockey-like cap with the bill turned up; deerskin britches; a pair of center-sewn moccasins; knee socks; and blue and white linen shirts. They carried a 10-pound, 75-caliber "Brown Bess" smooth bore, flint-lock muzzleloader; belly boxes of ammunition, hatchets, knives and flint.

The five-foot Brown Bess musket played a major role in the French and Indian War. Armed with pre-wrapped, paper-enclosed ammunition in their cartridge pouches, the soldiers loaded their muskets by tearing the end of a paper cartridge with their teeth. The black powder was then sprinkled on the musket's pan under the flint-tipped hammer and a load of powder was poured down the barrel of the musket. A lead ball — usually about  $\frac{3}{4}$  of an inch in diameter — was placed atop the powder. When the gun's trigger was pulled, a spark from the hammer's flint ignited the powder in the musket's chamber and fired the ball. Three shots could be loaded and fired in a minute, and each was accurate up to 60 yards.

By necessity, the ranging companies had to travel light and spent the nights under the stars or in the rain, wrapped in blankets and huddled against tree trunks for shelter. They carried everything on their backs, including their food. They survived by living off the land, shooting







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Before going into battle, each man was issued a single blanket, a canteen of rum mixed with water, some deer jerky and hardtack.

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Fur trappers, frontiersmen and their families lived in the wilds (opposite page).

A New Jersey ranging company soldier (at left) with his .75 caliber Brown Bess which weighed 10 pounds and was five feet long.



deer, birds and other animals and eating wild plants. They traveled for miles wearing deerskin moccasins. In winter, some were lucky and traveled on snowshoes; others simply slogged through the deep snow. Their wool blankets served as overcoats, sleeping bags and raincoats.

Many more men died of exposure to the harsh weather and disease than in battle.

## The War at Home

While the ranging companies traveled far afield, some of the military served closer to home. During the war, New Jersey had a citizens' militia. Ranging in age from 16 to 60 years of age, this army trained every summer, acting to protect the home front from attack.

Another group was the Frontier Guards, which constructed and manned nine house-like forts on the upper Delaware in Warren and Sussex counties from Belvidere to Port Jervis. From 1756 to 1758, these soldiers watched the Delaware River, ready to intercept and repel any Indians intent on attacking local settlers.

The French and Indian War ended in 1761, and the treaty was signed in 1763.

Ironically, the colonial American troops, many of them veterans of the French and Indian War, reorganized 15 years later to fight the British in the American Revolution. The tactics learned during their earlier service may have helped to turn the tides of freedom.

Each year, the New Jersey Muzzleloading Association portrays early American life, including the period around the French and Indian War, during several encampments throughout the state. For more information on these events, call club president Pete Troncone at (908) 521-3475.

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*Pete McLain is an outdoors  
writer from Toms River.*







HERB SEGARS

# The Bulldog of the Winter Sea

by Jim Campbell

It's easy to see why the tautog is known as a brawler.

Perhaps the tautog should have been named the brawler, due to its tenacious, bulldog fighting ability. Once hooked, it will try to run back into crevices or holes, wrapping the angler's line up in snags or cutting the line on sharp debris.

Tautogs (*Tautoga onitis*) have many nicknames in the Garden State. Often referred to as taugs or togs, this species of saltwater fish also goes by the names slipperies and blackfish.

According to one old-time angler, tautogs earned the moniker slipperies because they are extremely difficult to pick up out of a bucket of fish due to their lack of scales and smooth, thick skin. Their coloration of predominantly black or, at times, deep brown gave rise to the name blackfish.

Tautogs are found the length of the New Jersey shoreline and are considered by many the prime winter species in terms of eating and catching. The best times for fishing for tautogs are early and late winter.

Blackfish spend their lives moving inshore and offshore throughout the year in search of food and their favorite temperature zone, which ranges from 40 to 60 degrees Fahrenheit. The state record blackfish was taken in 1987 and weighed 21 pounds, 8 ounces. But fish in the 11- to 14-pound range have been winning state contests for the last few years.

No fishing license is required in New Jersey in saltwater, and there are no official seasons or bag limits for this species. However, there is a size limit on those that can be kept; tautogs must be at least 12 inches in length.





JIM CAMPBELL

These blackfish, which weighed up to 15 pounds, were caught off Barnegat Light in October 1994

Togs are found most often on wrecks or lumps having cover in which they can hide; rarely are they found on open bottom.

## Charter Boat Fishing

While many recreational fishing boats are hauled out of the water for maintenance during the winter months, there are still several boats available to fish for cold water species, such as blackfish, cod, ling, mackerel and pollock. Wreck fishing boats, either party boats or those hired for charter, are the best ways to fish for tautogs, since the boat captains know where to find them and how to properly anchor over the location. Charter or party boats often are listed in fishing magazines or in ads in local newspapers.

Togs are found most often on wrecks or lumps having cover in which they can hide; rarely are they found on open bottom. In spring, they move inshore, finding shelter in deep holes on wrecks, bays or inlets or around bridge pilings near warmer water.

Wrecks are host to some of the tautogs' favorite foods, such as barnacles, mussels and sea worms. They also eat crabs, oysters, clams and even lobsters. Commercial lobstermen and women have found dead tautog in their pots, unable to escape after entering and eating the trapped quarry.

Although having a diverse diet, tautogs are more finicky than other popular species when it comes to water temperatures and weather conditions. A drop of a couple degrees can turn them off when the tide changes. A big decrease in temperature affects their feeding, cutting off any bites to fishing lines. While a south wind will bring cold water and a north wind brings in warmer water, fish can be turned on or off as fast as if a switch were thrown.

A heavy storm of wet snow is the fastest way to chill the water, ruining fishing for those on overnight excursions. Melting snow also feeds cold water into streams and rivers that empty into the ocean, dropping temperatures on inshore locations.

Fishing can vary from year to year due to the amounts of cold weather and snow. This, along with ice, can keep boats dockside until a thaw.

## The Equipment and Bait

Before planning an outing for blackfish, you also may want to consider the weather's impact on you. Remember to dress warmly as temperatures on the ocean are much cooler than on land because there are no trees or buildings to break the wind. Full length coveralls or bibs, that do not expose your back when bending or lifting, generally are warmer than a jacket and pants. Rain suits also can double as windbreakers and protect you from spray and rain.

The right bait, too, is critical for catching these fish. Green crabs are a favorite bait for many anglers, but fiddlers, blue claws, sand fiddlers and sand fleas commonly are used, most often during the summer when they easily are found. Clams are available all year long where tackle shops are open, as they are commercially harvested.

Greenies are the preferred bait in the crab family. Crabs two to three inches across the back can be cut in half or quarters. First, cut off the legs and then pull off the top shell. That way, you can insert a hook in a leg opening, making sure the barb is outside the shell.

Cut up several crabs at one time, placing the pieces in a plastic container. If kept cool or on ice, they will remain fresh and steep in their own juices, creating a natural fish drawing scent.

The best tackle to use for this type of fishing is a seven- to eight-foot length rod, of medium to stiff action, with a conventional revolving reel. Do not use spinning reels because their softer tips, greater flexibility and line stretch make setting a hook on this tough-mouthed fish extremely hard. In addition, the softer action of the spinning reel makes it difficult to turn a fish's strong run for cover.

One method to try if your fish makes it into the cover is to open your bail or free spool line out,



making the fish think it is free. It may swim out on its own, but this works only part of the time.

Otherwise you have to break off your line and put on a new rig, sinker and bait. You can expect to lose lots of rigs if you are in a wreck or reef. Save time by having several tied up in advance, allowing you to fish longer.

Lines should be of at least 20-pound test with 30 or 40 being those most often used. Lighter lines can be used on shallow water wrecks, while in deeper water heavier test is better. A nick in the line from any sharp object will reduce its strength greatly.

Many anglers fish multi-hook rigs to cover all bases, but the true tog enthusiast uses only a single hook rig. This eliminates the chance of a free hook snagging an obstruction, causing a lost fish or complete rig.

An easily tied rig to use is made with a three way swivel. Tie off a one-inch piece of line lighter than what is on your reel. Then, put a loop on the end large enough to hold a heavy sinker. Next, put a hook on a foot-long leader and tie the reel's line to the last swivel.

Hooks should be at least 1 or 1/0 for small baits and 2, 2/0 or 3 for medium to larger sized baits. Double hook rigs can be used with whole crabs. Change baits frequently, as washed out baits are poor lures.

Sinkers should be heavy enough to go straight down and hold bottom. At times, a strong current will carry your bait off the wreck and away from the fish. Make sure that your bait remains on the wreck or in cover, or you will not be successful. When baiting up or after each fish, check your line for nicks or abrasions; cut out any and retie. This will save losing fish and rigs on a strike.

Also inspect hook points for any dings or a dull point and stone or file any nick, as this can impede setting a hook. Hooks can break when caught on the bottom or when pulled with any force setting up on a bite.

## The Strike

Blackfish don't hit crabs hard. A "tap tap" is the first indication that something is interested in your offering. A short, sharp tug means you should strike hard, lifting your rod up.

This motion will start the fish up and away from its lair before it can tangle your line. Here a rod with backbone is needed when turning a decent sized fish. Tautog have muscle and can move quickly, requiring fast reaction.

Certain days, these fish may not turn on for some time, even when baits are dangled in front of them. A juicy piece of crab most often starts them biting. Then the action can be hectic, and they'll even take clams when they are feeding.

As with all fishing, have patience. Keep your rod pointed at the fish and place a finger on

the line to feel even the lightest movement or pull. If you snooze, you lose.

Set your reel drag up tight; a light drag on this fish can mean lost fish. Because they run to cover when hooked, any slack will allow them to wrap up your line in the structure.

Blackfish are a challenge to catch, particularly as you fight the elements of wind and weather on the open sea. But once you have lured this fighter from its underwater lair, you are sure to be hooked on the bulldog of winter.

## A Tasty Mid-Winter Treat

Tautogs are known as one of the best tasting fish of the winter sea. The flesh of these fish is firm and white-colored, and it is excellent when fried, baked or broiled.

Tautogs are a non-oily fish that is very low in calories — only 89 for a 3-1/2 ounce serving.

One of the easiest ways to cook this fish is as fillets. Bread with your favorite crumb mix, either plain or already seasoned, and pan fry with olive or peanut oil.

Baking is another good and healthy way to eat fish. Just place it in a pan or dish and stick it in the oven or on a grill. Be careful not to overcook, as it will dry out and lose much of its flavor. You can add a little tomato sauce or salad dressing to stop pieces from drying out. Or you can cover the pan or dish and add sliced tomato, onion and seasoning to keep it moist and flavorful.

Tautogs have no scales and are generally dark in color.

*Jim Campbell is a freelance outdoors writer from Toms River.*



HERB SEGARS



# From Barren Landscape to Environmental Paradise

Every evening for nearly two years in the mid-1980s, Ted Sowers slept draped precariously across a swaying tree branch, curled up on the coffee-stained seat of his pickup truck or scrunched in a shallow ditch wrapped in a blanket of leaves.

The Monroe Township man wasn't homeless, although at times, he recently recalled, he certainly felt as though he was. The real reason for Sowers' unconventional sleeping arrangements was that it was the only way he could think of to protect his 75-acre tract of prime Pinelands property.

A sprawling, water-filled crater surrounded by a desolate moonscape of

sheer 35-foot high cliffs and mounds of windswept sand, the former Bethart Quarry, a sand and gravel mining operation in Gloucester County, had become a round-the-clock hangout for local residents. Its growing popularity was turning what had been an environmental dream into Sowers' worst nightmare.

"I was trying to restore the property to what it was before the mining," says Sowers. "But everything I did, they undid just as fast. Sometimes I'd come in on a weekend, and there'd be hundreds of people here with umbrellas and blankets and portable grills. Even if I laid the deed out in front of them, they didn't believe I owned the place."

## Arrowwood is Born

Sowers was able not only to save the land from the ravages of human encroachment, but also to transform the land into a botanical refuge, where native Pineland plants are raised for displays throughout the East.

Sowers purchased the sand and gravel pit nine years ago, just as the New Jersey Pineland Commission began mapping out reclamation requirements for the oldest sections of the Malaga Road property. (Sowers was required by the Pinelands Commission Comprehensive Management Plan to reclaim the areas that had been mined.) His plan was simply to restore the land to its natural state, but inspiration pushed him to take the project much further. Today, the once-ravaged grounds accommodate a thriving nature preserve, revered by the Audubon Society as a birdwatcher's mecca, and a top-notch nursery specializ-

PHOTOS BY CHERYL BAISDEN





ing in Pine Barrens vegetation.

An estimated 300 different plant species pepper the property. Everything from black chokeberry and broom sedge to silky dogwood and sweet pepper bush laces the sandy soil surrounding the two azure lakes and a carefully-tended duck pond. More than one hundred of the species are cultivated for resale in 18 on-site cold frame greenhouses and dozens of outdoor bedding areas.

In the past few years, Sowers' Arrowwood Nursery even has begun furnishing trees, shrubs and wildflowers to landscapers tending Central Park and Van Courtland Park in New York City and DuPont properties in Delaware, as well as dozens of regional nature preserves and arboretums. The decision to sell indigenous plants to others germinated rapidly, as word-of-mouth spread that regional seedlings were being painstakingly raised in a small greenhouse behind his nearby home.

"I had no intention of going into business," says Sowers, who runs the operation with the help of a single part-time employee. "I just wanted to give back to the land what I had disturbed for all those years. But when the nursery started taking off, we just went right along with it."

Under the tutelage of his father-in-law, Arthur Powell, who had managed the mining operation, Sowers had spent 18 years uprooting decades-old pitch pines, plowing under pallets of pastel wildflowers and luring more and more of the region's crystalline aquifer to the surface. But following his father-in-law's death in 1986, he decided the time had come to set aside the property's remaining 30-year mining certification and restore the land to its natural state.

Some of Arrowwood's greenhouses lay at the base of the former quarry's largest lake (opposite page).

Ted Sowers inspects a pile of topsoil (right), made from local leaves and sand.

"See, my father-in-law had hoped to buy the place, fix it up and then sell off the pieces to developers," recalls Sowers from the battered kitchen table that serves as a desk in his weathered shed of an office. "I started out wanting to fulfill his dream for him, but as I got into things, I sort of redesigned the dream into my own vision."

## Pinelands Protege

With the help of a childhood friend, environmental consultant Joseph Arsenault, Sowers began re-grading so that he could replant indigenous trees, shrubs and wildflowers. Unfortunately, he quickly discovered the project would take thousands of dollars, a substantial knowledge of botany and a lifetime of work.

"I was already paying off the the property in installments," says Sowers, his soil-stained hands absentmindedly fingering the seams of his ever-present

red suspenders. "We didn't have a lot of money to spend as it was, and then we discovered that you couldn't even buy the plants we needed."

Bound by the reclamation plan he had submitted to the Pinelands Commission, Sowers had to find a source for the saplings he had vowed to reestablish on the site. The solution, taking to the surrounding Pine Barrens and gathering seeds to raise his own vegetation, spawned the nursery and transformed Sowers' financially motivated business plans into a passion to resuscitate his surroundings regardless of the cost.

Arrowwood Nurseries is one of New Jersey's few operations dedicated to hand-collecting seeds and cuttings from the surrounding Pine Barrens. Drawing from a diverse genetic pool, according to Arsenault, increases the odds of plants surviving in the Pinelands' harsh conditions, since the same genetic de-





## Profile

fect is not bred into every seedling.

"I'd say 99 percent of our stock is what we collect and grow ourselves, which makes us pretty unique," says Arsenault, a former environmental specialist with the Department of Environmental Protection and a partner in the business who dedicates evenings and weekends to the property. "These days we get just about all that we need from our own property, things have come back so well, and we come across an average of two new species on site each year."

Over the past few years, Arrowwood has grossed an average of \$50,000 in sales annually, which includes plant sales and wetlands restorations.

"Most of the money we earn goes right back into the business and the property," says Sowers. "Bringing the place up to what I want it to be will take a lifetime, because my vision keeps changing. But as long as we can pay the bills to keep the place going, I'll be happy."

### Wildlife Haven

Once the former quarry's rebirth began taking hold, Sowers found himself facing a potential financial windfall. As many as three developers a week were calling to offer him up to \$30,000 an acre for the property. But, by that time, bluebirds, kingfishers and even an occasional eagle would call Arrowwood home. Deer foraged in the tender, new underbrush, and Sowers was so attuned to the envi-

ronment that he could often spot new saplings as soon as they popped through the sandy soil. Selling the property, even if he could earn \$2.25 million in the deal, had become an impossibility.

"I used to look at the woods and see a wall of green," he says. "But by the time the phone calls started, it was broken down into so many parts for me, and I was so content to contributing to the creation, that I couldn't give up even one acre. This is what I've been looking for in life. In the quarry business, what you take away doesn't grow back. With this, everything I take away, I can put right back. Then I can watch it take hold and grow. What more can a person ask for?"

An active sand and gravel quarry for 98 years, the ravaged property responded slowly to regenerative efforts. From the start of the project, man and nature worked to thwart them, Sowers recalls.

"Everything was against us," he says, a chuckle punctuating words that once represented a painful reality. "Kids on motorcycles would wipe out a new crop of seedlings. Deer, chipmunks and mice would break into the barn and eat the seeds that we'd collected. One time, we went out with our kids and collected maybe 300 pounds of acorns and scattered them on the slopes. Hundreds of geese came up right behind us and sucked them up. That year, out of all those acorns, we got maybe eight trees."

But for every roadblock they encoun-

tered, Sowers and Arsenault managed to devise an ingenious solution.

### Natural Roadblocks

When the steady stream of sun worshippers and motorcyclists trampled the new plantings, they laid logs across pathways, planted the waterfront with shrubs and laced the underbrush with poison ivy.

"I learned quickly that people won't push their way through vegetation once it's in place," says Sowers. "I also learned that if you can't get them with the obvious, you set a trap. When they break out with poison ivy a few days after they've been going somewhere, they stop going."

When bank swallows started nesting in the leaves and dirt he temporarily piled along the waterfront, Sowers left a little in place for the birds and shifted the rest to a less appealing storage site.

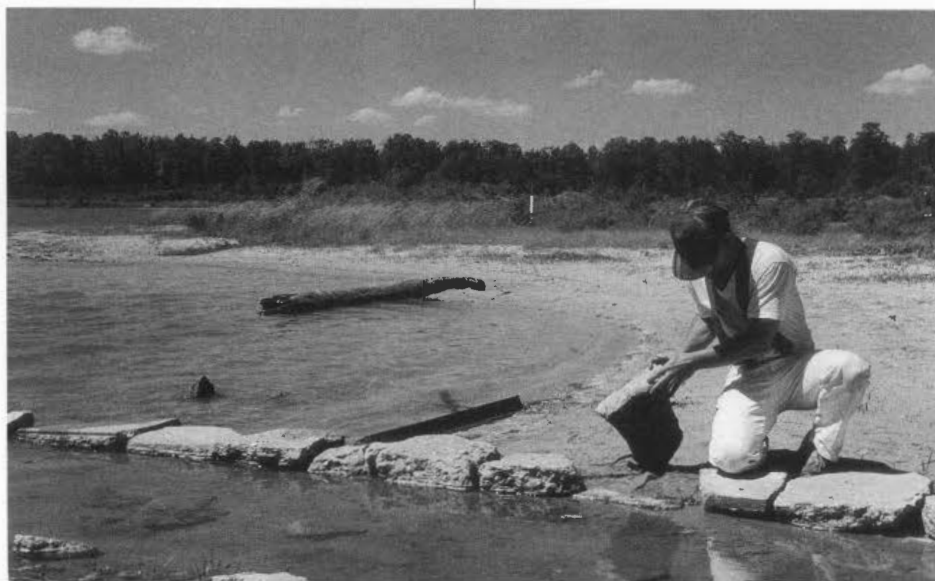
When he calculated that top soil alone would cost \$45,000 a year, Sowers decided to make his own. Granting the township permission to dump residential leaves on the property, he mixed the material with sand by pulverizing it with a Rototiller up to eight times before gathering it into mulch piles, where it rapidly could decay into a rich soil.

Reconfiguring the stark pit into two lakes and a duck pond was accomplished using 73,000 yards of organic material. Neighbors and local landscapers contributed to the operation by donating their grass clippings and brush for mulch and small animal habitats.

"Really, this property is the ultimate in recycling," says Arsenault. "We're recycling the property itself. We're using recycled materials on it to grow plants. Those plants are then being used to recycle other properties. It's a perfect arrangement from an environmental standpoint."

*by Cheryl Baisden, a freelance writer from Collingswood*

One of the three waterways at Arrowwood Nursery.





## From Sea to Shining Sea

Burlington is New Jersey's largest county by far, as big as Bergen, Essex, Passaic and Union counties put together, with plenty left over for the giant Fort Dix and McGuire Air Force Base complexes. The mysterious Pine Barrens occupy much of the county, and large portions of the county are swamps or blueberry and cranberry farms. It is the only county that extends across the entire width of New Jersey, from the Delaware River to the waters of the Atlantic Ocean. That appealed to my imagination. I wondered if I might cross Burlington's seventy-five miles under my own power, "from sea to shining sea" so to speak.

I planned my trip for January largely because that's when I had a long weekend free. Winter didn't worry me because I find it easier to keep warm when it's cold than cool when it's hot. I also rather like the off-season aspect of the trip. There is nothing quite like an adventure or a vacation when nobody else is taking one.

After studying innumerable maps, charts and pamphlets, I figured I could bike across most of Burlington County in two days. But the maps showed the Atlantic end of the county as inaccessible marshland, with no roads, no inhabitants, no nothing — more like Louisiana bayou than the ordinarily built-up New Jersey shore. There was no way to bike into those far reaches. There was no way even to hike there.

I called a friend, Phil Herbert, for advice. "Sea kayaks," he said. "We can get there with sea kayaks."

I knew it was a rationalization, but I felt better about the mixed aspect of the trip when I imagined it as a three-day biathlon. I would pedal up, jump off the bike and, without pausing, push off in the sea kayak. This wasn't just an adventure; it was a sport. With that fantasy fixed in my mind, I arranged a rendezvous with Phil for the third day of the trip near the Atlantic Coast.

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I began the trip in Burlington City Friday morning, in a park alongside the Delaware River. In the park, sea gulls wheeled and landed. Just downriver was the bridge to

Pennsylvania and just upriver Burlington Island, the site of the first European settlement in New Jersey in 1624. But I was cold, so I didn't tarry by the river but pedaled the ten-speed up High Street into town.

Burlington City still has an old-time feeling, heightened by the diagonal parking on High Street and the tracks on Broad Street on which freight trains occasionally lumber through the center of town. I pedaled along the brick sidewalk, stopping to have a look at 457 High Street, the row house where James Fenimore Cooper was born. Next door, at 459, James Lawrence, naval hero of the War of 1812, once made his home. He was the guy who said "Don't give up the ship." I thought Lawrence's motto just might prove inspiring during the water part of my trip.

Carefully crossing Route 130, a major truck highway that roars through the middle of Burlington, I headed east on bucolic Route 541. As the road strip gave way to a welcome bit of open country, I experienced a key difference between cars and bikes. Seeing the countryside from behind an automobile windshield is like watching television; you're part of the audience. On a bike, you're a key actor in the show.

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The moment I pedaled across the northern limits of the Pine Barrens, which occupy fully one-fourth of New Jersey, the trees became dwarfed and the soil beside the highway gave way to sand. It was as if someone had drawn a line across the land.

The Pine Barrens were once under



Burlington is the only county that extends across the entire width of New Jersey.



the sea and will be again, no doubt, when the polar ice caps melt and the ocean rises. But my problem was more immediate: it was getting dark, and I hadn't seen a motel since Mount Holly. I knew that up ahead, at a place on the map called Red Lion, Route 70 crossed Route 206. If there was no lodging at that intersection I was in trouble.

Luck was with me: there was a Red Lion Motel whose neon sign advertised, "In Room Movie, Waterbeds, Special Day Time Rates, Room Phone, Cable T.V., H.B.O."

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At a sign announcing Wharton State Forest, I passed the first of many lovely streams. These copper-colored waterways meander through the Pine Barrens, taking their time reaching the sea. They bubble out of the sand with water so pure it's drinkable on the spot. At the very center of the eastern megalopolis, in the most densely populated state in the nation, I stopped at a creek called Robert Branch and, reaching down with my cupped hand, quaffed some of its icy goodness.

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Half an hour later, I reached a fork in the road. My map showed the thick line going off to the right, but the road to the left was wider and had some remnant of paving. Slavishly, I followed the road to the right, because — well, aren't maps always correct?

Not in the Pines.

I had heard how easy it is to get lost in

the Pine Barrens. Two hundred yards farther along, the sand drifted over the road in dunes. Then, what was left of the road split into three roads, paths really, along one of which a large deer, antlers and all, stood looking at me. The deer did it. I decided to return to the fork and pick up the other road. And pray.

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Sunday morning, I met Phil as we had agreed — near New Gretna at an abandoned oyster shack on the Bass River. We pushed off into the Bass River. The sea kayaks skimmed over the water, and in no time we had covered the mile to Doctor Point, where the Bass flows into the vast, wave-capped estuary of the Mullica. The Mullica begins as a quiet Pine Barrens stream, no bigger than the one where I stopped for a drink the day before, but now it was a big river, tidal and mostly salt water. The main channel was a mile wide, with countless secondary channels coursing among the low marsh grass islands. These islands were more like great patches of mud than real islands; they were treeless and couldn't have been more than two feet above sea level.

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After two more miles of hard paddling, Phil checked the charts and announced that we were at the entrance to Great Bay, where

Burlington, Ocean and Atlantic counties meet, and the ocean begins. "This is the end of Burlington County," Phil said. "Satisfied?"

"Not quite," I answered back. Before beginning the long, arduous paddle back to the van, I wanted to actually set foot on the last piece of Burlington County land, so we steered over to the left bank.

We found the spot, which is where Ballanger Creek — originating far to the north in some cranberry bog — empties into the sea. We paddled up to the tiny spit of land at the mouth of creek, and I asked Phil, "What's this spot called?"

Phil consulted his map and said, disappointedly, "No name."

"Well then," I said, "you're in luck." Unfastening my neoprene skirt, I stepped out of the kayak onto the muck that passed for land thereabouts. The marshland sucked at my booties. There were shards of paper-thin ice in the low areas, and it felt colder standing up in the wind.

"I hereby name this place Phil Herbert Point," I shouted.

*excerpts from Snowshoeing through Sewers,  
by Michael Aaron Rockland,  
published by Rutgers University Press*

These copper-colored  
waterways meander  
through the Pine  
Barrens, taking their  
time reaching the sea.





# Outings

PHOTOS PROVIDED BY HIGH POINT CROSS COUNTRY SKI CENTER



The lodge at High Point Cross Country Ski Center overlooks Lake Marcia with High Point Monument in the background.

Children are taught cross-country skiing on the Lil' Hammer Trail under the watchful eye of Hans Karlson.



## Scenic Vistas Await Cross-Country Skiers

Sparkling snow, great views, hearty food and a sliding and gliding workout that can't be beat — that's what a day at the High Point Cross Country Ski Center has to offer.

Located at High Point State Park in Sussex County, the center is now in its second season. It's the brainchild and passion of Hans Karlson, a former Norwegian cross-country ski champion who came to the United States for the 1980 Winter Olympics in Lake Placid and stayed.

Karlson is striving to "make the center the best cross-country facility in the area, similar to what I grew up with in Norway. Over there, everyone is in-

involved in winter sports, and the facilities are really great."

Under a 15-year agreement with the New Jersey Department of Environmental Protection's Division of Parks and Forestry, Karlson and his staff are allowed the use of the center's lodge and trail system during the colder months.

The center, nestled on the shores of beautiful Lake Marcia, serves as a bathhouse during the summer. But in winter, the building welcomes visitors with hot, Norwegian-style food, a huge crackling fire and ski equipment rentals for all ages. Adding to the beauty of the site, the majestic High Point Monument sits atop the

park's highest peak, just north of the lake.

Karlson, who ran ski centers in Massachusetts and New Hampshire, believes that High Point rivals anything he's seen in the Northeast. Because of the elevation — at 1,800 feet it's the highest point in New Jersey — it's usually the snowiest spot in the metropolitan area.

Karlson and his staff keep more than nine miles of trails well groomed, operating the same equipment as that used during the 1994 Olympics in Lillehammer, Norway. The Prinoth T2, or Snow Cat, first levels and grinds the snow to a powdery consistency and then lays up to four sets of ski tracks into it.



The Snow Cat, similar to the one used in the 1994 Olympics, grinds and levels the snow and lays ski tracks.

Karlsen and his staff keep more than nine miles of trails well groomed, operating the same equipment as that used during the 1994 Olympics in Lillehammer, Norway.



"The equipment is state-of-the-art, as good as I've seen in any race," says Robert Schutz of Sparta, an experienced cross-country ski racer. "The trails, the lodge, everything about the place is just beautiful. I visit High Point again and again, whenever there's snow."

And when Mother Nature refuses to cooperate, the staff makes snow from the waters of Lake Marcia and spreads the white stuff over four miles of trails. This is the longest cross-country trail system in the United States covered by snowmaking. So, as long as the temperature is below freezing, there's always skiing at High Point.

"I think it's great," says Walter Morse of Jersey City, another High Point regular. "Since they make their own snow, it's often the only good cross-country skiing area around. It's really convenient."

Morse enjoys following animal tracks in the snow and has spotted many white-tailed deer on his jaunts through the park. Skiers who are quiet (and lucky) also might catch a glimpse of more elusive species such as bobcat, porcupine, red fox or raccoon. More common residents, such as squirrels, rabbits and chipmunks, are all around.

The center's three main ski trails of-

fer varying challenges, for beginners to advanced skiers. And the scenery at High Point varies as well.

### Cedar Swamp Trail

Without a doubt, this is the best trail for beginners. Almost the entire length (approximately four miles) is nice and flat. The first half is covered by snowmaking, if necessary.

After passing to the west of Lake Marcia, the course follows a closed-off section of road. Soon the road gives way to a wide trail, which drifts downward to a cedar swamp. The only hill of any merit is a short, sharp drop that deposits you at the edge of the swamp. A sign warns approaching skiers of the drop. Here, the course loops around the swamp, which is quite spectacular. Among the deciduous trees, you'll find many hemlocks, white pines, black spruces, and Atlantic white cedars. Around the perimeter of the swamp, rhododendron bushes are in abundance.

The swamp becomes particularly wet halfway around the loop. A series of planks are nailed side by side over logs, forming a bridge for access during warmer weather. You're bound to encounter patches of ice in this area, so be careful.

If you like, you can venture past the cedar swamp for another quarter mile or so, where the trail ends near a foot-bridge going over a stream. There are a few logs from fallen trees nearby — a great place to rest before heading back.

You'll also find benches scattered along the Cedar Swamp Trail and nice views of the monument along the loop.

While this course is rather tame, the pristine beauty of the swamp makes it a must for anyone visiting the park.

### Scenic View Trail

This trail travels along Scenic Drive, a fairly steep, narrow roadway that the park closes off to automobile traffic in winter months. Its two-mile length is entirely covered by snowmaking.

The Scenic View Trail more than lives up to its name. It lacks the stunning array of conifers found on the Cedar Swamp Trail, but makes up for it in scenic overlooks. On the southern half, which follows a high ridge just above the Appalachian Trail, you'll enjoy unobstructed views of distant mountains, lakes, farms and communities. On the northern half, the view changes to beautiful scenes of Lake Marcia and the High Point Monument.



Schutz enjoys this trail in particular for what it lacks — noise. “I was skiing the Scenic View one windless day when, pausing at one of the overlooks, I experienced the most amazing sound of silence I’ve ‘not’ heard in years . . . a deafening silence,” he relates.

This trail is tougher than the Cedar Swamp, as much of the skiing is either up- or downhill. There are picnic tables along the way, however, that provide an opportunity to stop and rest. All in all, the Scenic View Trail is moderate in difficulty.

## Steeny Kill Trail

This trail is definitely the toughest at High Point and only for experienced cross-country skiers in good condition. There is no snowmaking, so it’s only open when adequate natural snow blankets the park.

While the Cedar Swamp and Scenic View trails are notable for their striking beauty, here the attraction is the physi-

cal challenge. Sure, Steeny Kill is pretty too, but the trail with the ominous black “most difficult” signs is both beauty and the beast.

The Steeny Kill Trail starts just south of the lodge, with a steep, winding downhill run on what the park calls “Old Trail.” The downhill section makes up about one-third of the course, which in total forms a two- to three-mile loop. The second third is flat, traveling along the eastern shore of Steeny Kill Lake. About this time, you’ll begin to wonder what’s so difficult about this course. But you won’t wonder for long, for now the real “fun” begins.

You’ll come across a cabin that the park rents out to campers during the warmer months. Behind it is the same mountain you came screaming down earlier. Now you must beg every muscle in your body to help you inch your way back up. Near the top of this grueling

stretch, you’ll notice a nice view of Steeny Kill Lake and far-off mountains behind you, but you’ll probably be too exhausted to appreciate their splendor.

You will, however, appreciate your resourcefulness and resolve after successfully completing the Steeny Kill Trail.

## Lil’Hammer and More

And that’s not all!

In addition to the three main trails, there’s also a short loop for children, aptly named the Lil’Hammer. Located right outside the lodge, it’s a great area for parents to work with their kids without straying into the wild.

There’s also the Monument Trail, beginning and ending at the north end of the monument parking lot. This trail is much narrower than the others, making it appropriate for snowshoeing or hiking only. It winds for about three miles through woodlands and hugs the Cedar Swamp Trail for a short stretch.

Karlsen and his staff provide individual and group instruction at the center and also conduct educational programs off-site. They work with school systems and ski clubs in the area, giving presentations when asked.

Visitors to the ski center will see more and more activities offered as time goes by. The ski education program, under the able guidance of Assistant Director Tom Gorman, is expanding all the time, and the staff plan to host more races and step-up snowshoeing activities.

No matter what your winter sport, a trip to High Point on a cold, crisp day is the perfect remedy for the winter doldrums. And topped off with hot cocoa, Norwegian stew, and a toasty fire . . . the place just can’t be beat!

The High Point Cross Country Ski Center is open from 8 a.m. to 4 p.m., seven days a week. There is a fee for using the trails and for equipment rentals. For more information, call (201) 702-1222.

by Art Lackner, a freelance writer and media consultant from Eatontown





# Preserving a Piece of History



MICHAEL RUNYON - FORD FAREWELL MILLS AND GATSCHE, ARCHITECTS

by Judy  
Finman



Among New Jersey's treasures is its legacy of centuries-old buildings, many of which have been carefully — even lovingly — restored to preserve their historic value. Colonial and Victorian homes, historic mansions-turned-museums, state park structures, the New Jersey State House: all are proud reminders of our social, political and artistic past.

"It is human nature to want to preserve our past," says Annabelle Radcliffe-Trenner, an architect and historic buildings consultant in Princeton. "It is our responsibility to be involved in preserving. . . It has to be a way of living, a way of thinking. Some (structures) are not worth saving, so we document them and take them down.

"You have to be very careful in understanding old buildings, how they breathe, the materials. We need to understand history. The landscape and site (of a building) are critical; there are very skilled landscape conservators in the United States along with archeologists; they dig in the ground to see what's there."

For example, during the restoration of the 1765 Bainbridge House, home of The Historical Society of Princeton, old Dutch tiles and creamware pottery shards were discovered, she says. They are now on display at the building, remnants of past occupants of the house.

Radcliffe-Trenner says she feels "like a detective" when working on historic buildings. She does a survey of all the details, taking mortar samples from seven or eight locations in a building; she finds they may be from different times. "Our paint analysis has gotten much more sophisticated," she adds. "We find murals, wallpapers, frescoes and tempuras under the white paint we've covered everything with since the 1960s."

The paint production in the nineteenth century was quite sophisticated, with major manufac-

Exterior (above) of the  
Buccleuch Mansion in  
New Brunswick.





turers in Newark and New York City. The paints were linseed-oil based, and the color determined whether natural or other materials were used. Paint experts can tell the dating of various layers of paint through microscopic analysis.

The recognized paint expert in this area is Frank S. Welsh of Bryn Mawr, Pennsylvania, who specializes in the microanalysis of old and modern coatings such as paints, varnishes, wallpapers and fabrics from buildings and historic artifacts. "You scrape off a chip, send it to Frank, and he'll give you a Benjamin Moore color that's pretty close to the original," Radcliffe-Trenner says.

## Buccleuch Mansion

Decorative wallpaper — presented in a series of murals — is the first thing a visitor notices upon entering Buccleuch Mansion in New Brunswick, built in 1739 and recently restored. Lining the first-floor hallway walls are renderings of Parisian monuments; on the second floor are scenes of Indian life. Printed by Joseph Dufour et Cie in Paris between 1815 and 1820, the now darkened and faded colors of the wallpaper were once vibrant pastels, as revealed in a protected sample upstairs.

Despite two restorations — by Winterthur in Delaware and the Metropolitan Museum in New York (which has reproductions of the murals in its collection) — as well as touchups over the years and the addition of climate control, the wallpaper is past the point of restoration. Sotheby's sold an identical set of the 22 panels — in good condition — for about \$35,000, according to Susan Kenan, curator of the Buccleuch Mansion Museum. She would like to have the funds to purchase such a replacement set for Buccleuch, should one become available.

The mansion, originally called White House Farm, is full of New Jersey and American history. Its first owner, Anthony White, married the daughter of Governor Lewis Morris. Their son, Anthony Walton White, was George Washington's aide-de-camp and later Colonel Commandant of the 1st Regiment of the Continental Army. A subsequent owner, Colonel John Stewart, entertained President George Washington, Alexander Hamilton and John Hancock at the house.

Buccleuch (pronounced buck-clue) was named for the Duke of Buccleuch, a Scottish ancestor of Colonel Joseph Warren Scott, who bought the house and part of the property in 1821. His grandson, Anthony Dey, deeded the house and grounds to the City of New Brunswick in 1911 as a public park.

Preservation of Buccleuch is managed through a partnership of the City of New Brunswick, which restored and maintains the exterior, and the Jersey Blue Chapter, National Society Daughters of the American Revolution (NSDAR), which assumed the care of the interior and its furnishings in 1914. The house, opened to the public as a museum in 1915, is listed on the National Register of Historic Places and the New Jersey Register of Historic Places.

The preservation plan for Buccleuch Mansion, prepared in 1989 by Heritage Studies, Inc. of Princeton, details the architectural history of the house. "It remains one of the finest early Georgian houses in New Jersey. . . The alterations. . . largely date from the early nineteenth century and are of high quality. They have architectural significance in their own right." Considering time and budgetary constraints, the plan recommended "preservation of existing historical material, rather than restoration to an earlier period." Hence, the exterior is that of a nineteenth century, rather than an eighteenth century, house.

The Historic Preservation Office (HPO) of the New Jersey Department of Environmental Protection awarded the city of New Brunswick and Ford Farewell Mills and Batsch, Historic Architects of Princeton, a 1995 Commendation for Excellence in Historic Preservation for an exemplary restoration of the exterior of Buccleuch Mansion, including the provision of improved access for those individuals who are disabled. Through paint analysis and the restoration of the paint scheme to that of 1850, the time at which the mansion reached its present configuration, the building has been brought to life.

In the submission for the commendation, the architectural firm wrote:

"The overall object of the project was to secure the building's exterior envelope and to restore historic exterior elements that were missing, severely deteriorated or poorly repaired or replaced. . . restoration of the exterior would help preserve the recently restored interior which was suffering from moisture intrusion."

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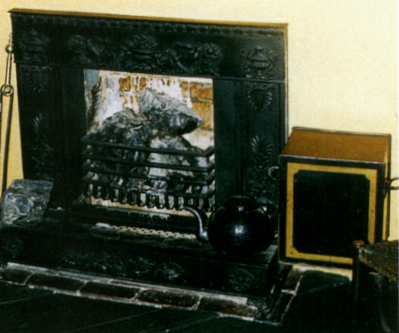
The Buccleuch Mansion, originally called White House Farm, is full of New Jersey and American history.

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Buccleuch's Federal Dining Room also features a tabernacle mirror, bulls-eye mirror, and door to the kitchen in the adjacent wing.







In the restored Buccleuch Mansion, this room has mustard-colored walls and a dark green floor, the colors in the room when Colonel Scott used it as a law office with his son.

Restoration of the roof was the biggest exterior job. The roof drainage system, which included a system of metal-lined, ornamental wood gutters and metal down spouts, was also restored. Missing balusters and railings were replaced, and inauthentic material were removed and replaced. Work was done on the cornice and soffit, decorative woodwork along the edge of the roof, and the fascia, the flat board below the cornice. Many of the materials used matched the original exactly.

Windows were re-puttied and made operable. Most of the shutters were rebuilt to match the original. Historic hardware was reproduced. Historic scored stucco was restored on the north facades, and masonry work, including re-pointing of the foundation and porch piers, was done. Following paint analysis, the exterior was repainted to reflect the period around 1850. A ramp was constructed for accessibility and was designed to be visually compatible with the historic building.

Through private donations, the NSDAR has overseen major renovations and restoration of the mansion's interior. These include stabilization of the staircase, a climate control system and security and fire alarm systems.

Besides evidence that was uncovered as work progressed, the Historic American Building Survey blueprints done in 1935, photographs taken by Isaac Van Derveer in 1914-1918, and contemporary writings and illustrations were used for references. Paint analysis of several rooms determined original paint colors, which have been reproduced, as was the wallpaper in one bedroom. The rest of the rooms have been painted and prepared according to the period of furniture in each. These reflect various styles popular in the 172 years the mansion was occupied, including fine examples of eighteenth-century Queen Anne and mid-nineteenth century Belter styles.

Noteworthy are the mid-eighteenth century green-and-black checkered pattern floor in the Colonial parlor and the painted carpet pattern on the stair risers. These were discovered during restoration and have been repainted in colors that match the originals. A clock and a desk made in New Brunswick in the second half of the eighteenth century are of particular local interest.

## Creating a Historic Masterpiece

While Buccleuch Mansion was an extensive project, many New Jersey residents have dabbled in restoring part or all of their own historic dwellings to an earlier age. The HPO office in Trenton, created for the purpose of identification, evaluation, protection and treatment of historic properties, can help you embark on your own project with a series of publications, both from its own office and other national organizations.

If you want to know about terra cotta, metal windows, historic concrete, barns, how to make historic properties accessible and dozens of other preservation-related subjects, HPO has the information. A useful starter is an 11-page booklet for amateur historians, "How to Research the History of a House."

Terry Karschner of the HPO says "We have practical information available. We provide general guidance on how to do it — if it needs painting or a new roof. Also, we tell people to get in touch with *Old House Journal*, a (Boulder, Co.-based) magazine that focuses on the how-tos of re-habilitating an old house. If you want to buy a property, get the issue on purchasing an old house.

"If you want to see your neighborhood preserved — a step beyond the individual property — we will assist you in pursuing historical designation. Because of the complexity of historic district proposals, you are encouraged to contact Preservation New Jersey," he adds. This private organization, based in Perth Amboy, supports preservation in the state with free technical support, conferences and publications.

The New Jersey Register of Historic Places is the official list of New Jersey's historic resources of local, state and national interest. The National Register of Historic Places is the official list of the nation's historic resources worthy of preservation. One of the benefits of being listed on the registers is a degree of protection from public encroachment. Inclusion on the national register may lead to some financial benefits.

To be eligible for listing on the New Jersey and National registers, a property must:

1. Be at least 50 years old, unless it is exceptionally important;



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Noteworthy  
are the  
mid-eighteenth  
century  
green-and-black  
checkered  
pattern floor in  
the Colonial  
parlor and the  
painted carpet  
pattern on the  
stair risers.

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2. Be historically or architecturally significant on the national, state or local level; and
3. Possess "integrity" from the period in which it earned its significance. Integrity can be defined as a high degree of retention of character-defining features that permits a property to convey a strong sense of its historic qualities.

Besides inclusion on the New Jersey and National registers, New Jersey's historic properties can be protected through local historic preservation ordinances, which have been enacted in more than 90 municipalities.

To protect your historic property in perpetuity, you may donate a preservation easement to the New Jersey Historic Trust. The easement prohibits demolition and restricts changes to your property. A semi-autonomous state organization set up to distribute money for preservation work, the trust's funding is limited to preserving buildings accessible to the public.

If you are thinking about undertaking a historic preservation project, Terry Karschner points out that, "There are issues to be cognizant of: costs, people to do the work. It is all a labor of love, but if you're not in love, think twice about it."

For more information on historic restoration in New Jersey, contact the Historic Preservation Office at the New Jersey Department of Environmental Protection, CN 404, Trenton, New Jersey 08625 or call (609) 292-2023.

*Judy Finman is a freelance writer who lives in Princeton.*



# Garden State Duck Hunting

Story & Photos by Pete McLain

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There are more than 250,000 acres of state-owned wildlife management areas, all open to public duck hunting.

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Lying back in my Barnegat sneakbox on Foxboro Point on the Great Bay Wildlife Management Area near Tuckerton, I waited for the sun to peek over the Atlantic Ocean, signaling the start of the duck hunting day. A dozen black ducks already had buzzed my decoys. Now my thoughts turned to the hundreds of other waterfowlers who had set up on this very point over the decades, and I realized how lucky I was to be out on this tidal marsh of several thousand acres, enjoying this fine old sport on Barnegat Bay.

New Jersey may be one of the smallest Atlantic coastal states, but it has more easily accessible, public duck hunting and high quality, publicly-owned wetlands than any other coastal state. There are more than 250,000 acres of state-owned wildlife management areas, all open to public duck hunting. In addition, there are many thousands of acres of privately owned marshes, bays, rivers, ponds and streams where ducks can be hunted with permission from owners. Duck hunting is an old tradition in New Jersey, and one which provides many enjoyable days of outdoor recreation each year.

Duck hunting in New Jersey can be as simple or as complicated as you care to make it. The casual duck hunter might walk the stream banks or canoe small rivers and “jump shoot” duck caught napping. Other hunters maintain duck hunting boats and decoys and travel to distant waterfowl hunting areas. Still other hunters hire professional waterfowl hunting guides by the day. Some duck hunters even join clubs or own hunting cabins on or near the marsh, spending considerable time and money on this sport.

## Duck Hunting Basics

New Jersey's duck hunting season extends from early October in northern New Jersey into January in southern New Jersey. The U.S. Fish and Wildlife Service and the state Division of Fish, Game and Wildlife (DFG&W) divide the state into three well-defined zones — the northern, southern and coastal — each with its own season to allow duck hunters to take advantage of waterfowl when they are most abundant in the area. So no matter where you live in New Jersey, there







A hunter lucks out with a flock of mallards (below).

Women (right) are taking up duck hunting in increasing numbers.







Duck hunting is often done from a boat.

Breaking ice on a bay (below) is an excellent way to attract ducks.

is duck hunting within an hour's drive of your home.

If you are serious about duck hunting, you will want to consider either a car-top boat, a canoe or a trailered boat and motor to get you out on the marsh. Many hunters like the lightweight aluminum flat bottom John Boat, a 12- to 17-foot skiff or a Barnegat sneak box hunting boat with its round shallow bottom and nearly fully enclosed deck. An outboard engine from 4 to 25 horsepower is a good choice, depending on the type of boat you select and where you expect to hunt. A boat trailer allows you to tow your boat to hunting areas and helps transport your decoys, blinds and other equipment.

Unless you walk and jump shoot along streams or on the marsh, you will need duck decoys. Decoys replicate feeding or resting waterfowl and help to attract others to the area. A spread of 12 to 18 black ducks and mallards is sufficient. When hunting diving ducks, such as scaup, a larger decoy spread is needed, especially on open water. Duck decoys cost \$5 or more.

Most duck hunters prefer the 12-gauge shotgun in an autoloader, pump action, a double barrel or over/under style. A

shotgun barrel length of 28 or 30 inches with a modified or improved cylinder choke is fine. Many of the newer shotguns have individual, screw-in choke tubes that can quickly alter the choke of a shotgun. When shooting steel shot, it's best not to use the full choke.

Steel shot is used in New Jersey since lead shot has been banned because it causes toxic contamination in ducks. No. 2 steel shot is a good choice for larger ducks, while Nos. 3 or 4 are fine for the smaller teal and buffleheads. Some hunters prefer the big T-shot for the larger ducks in cold weather when the birds are heavily feathered.

As for clothing, you will need quality rain gear that is waterproof and comfortable. If hunting in cold weather, a down or other insulated parka in a camouflage design is a must. Gloves, mittens and insulated hip boots or chest waders also are necessary.

Other items a duck hunter needs are a lunch kit to hold a vacuum bottle and sandwiches, a waterproof bag with a complete change of clothing, a water repellent shotgun case, binoculars, a waterproof copy of the game laws and special regulations, a reliable flashlight, maps of the area you plan to hunt, a compass, outboard repair tools, boat safety equipment, the boat registration required by the U.S. Coast Guard and the New Jersey Marine Police and a trailer and boat lights. A waterproof bag will keep your gear and equipment dry.

## A Hunting Ground Guide

Armed with these necessities, the next step in finding someplace to hunt. *A Guide to New Jersey's Wildlife Management Areas*, available from the DFG&W, provides the location, description and a map of all 65 wildlife management areas in the state.

Among the best areas for duck hunting in south Jersey are the Great Bay Management Area in Ocean County, the L.G. MacNamara Management Area near Tuckahoe in Cape May County, the Dennisville Management Area along the Delaware River on Route 47 near Dennisville in Cape May County, the Egg Island Wildlife Management Area near Fortescue in Cumberland County and the Mad Horse Creek







Blinds are built of materials that blend into the surrounding environment.

Wildlife Management Area south of Cantor in Salem County. In northern New Jersey, the Saw Mill River Creek Management Area in the Hackensack Meadows in Bergen County and the Whittingham and Black River wildlife management areas in Fredon, Sussex County and Chester, Morris County, respectively, each offer good duck hunting. Finally, in central Jersey, waterfowl are plentiful at Spruce Run in Hunterdon County, Assunpink Lake in Monmouth County and Colliers Mills and Success Lake in Ocean County.

The best time to hunt ducks is when they are numerous in a particular area of the state. This is determined by the habits of the ducks and the weather. Generally speaking, in northern New Jersey, the best hunting is in October. Later in the season, when migration increases and northern waters freeze over, waterfowl move southward. In the central part of the state, early November into early December is usually good. Along the coast, the best hunting for ducks is mid-November to January and along the Delaware River, the early flights in late October and November are good and the later flights in December provide some excellent duck shooting opportunities. There are also hundreds of beaver ponds, small lakes and streams that offer good duck hunting during the early fall before freezing weather.

## Ducks Unlimited

In New Jersey, the black duck, mallard, wood duck, scaup, pintail, greenwing teal, bufflehead and shoveler are the more common ducks a hunter can expect. Black ducks and mallards are the largest huntable species in the state. Wood ducks are found mostly in freshwater streams and lakes. Scaups travel in smaller flocks. Pintails can be found along

the Delaware, particularly in Salem and Cumberland counties, and teal inhabit the southern wetlands. Buffleheads are found in tidal waters throughout the state, while shovelers

prefer ponds and tidal wetlands in the south.

Before you head out for duck hunting, federal and state laws require that you study waterfowl identification guides and learn the male and female color patterns of the various species of ducks. There are certain species of ducks that may not be hunted or for which the season may be closed.

Duck hunting requires both federal and state duck stamps. Don't forget you must have a current DFG&W hunting license (\$22.50), a federal duck stamp (\$15) and a state duck stamp (\$2.50) in your possession and signed in ink. All migratory bird species are covered by federal regulation, and the New Jersey Waterfowl Stamp Program allocates all income from the stamp and print sales to acquire wetlands for waterfowl. To date, more than \$2.8 million dollars has been used to purchase more than 10,000 acres of waterfowl wetlands in New Jersey.

To bag ducks, other than by jump shooting while walking or canoe drifting, you will need some sort of a blind or hide from which to hunt the birds.

When it comes to a blind, the idea is to use or construct one that blends in with the local grass, shrubbery and back-ground. Some hunters will construct more or less permanent blinds, which can hold as many as five hunters. Others prefer to carry collapsible blinds, covered with brown burlap or grass, to be assembled at the hunting site. Sneak boxes and gunning coffins can be pulled up on the marsh bank and covered with local grass. Some hunters build blinds on or around their boats and hunt from them.

Decoys are placed in front or upwind of the blind or shooting position and within 30 yards of the shooting location. Waterfowl tend to land into the wind, and the trick is to set the decoys to pull the birds as close to the blind as possible.



The decoys should be set to look like naturally feeding birds.

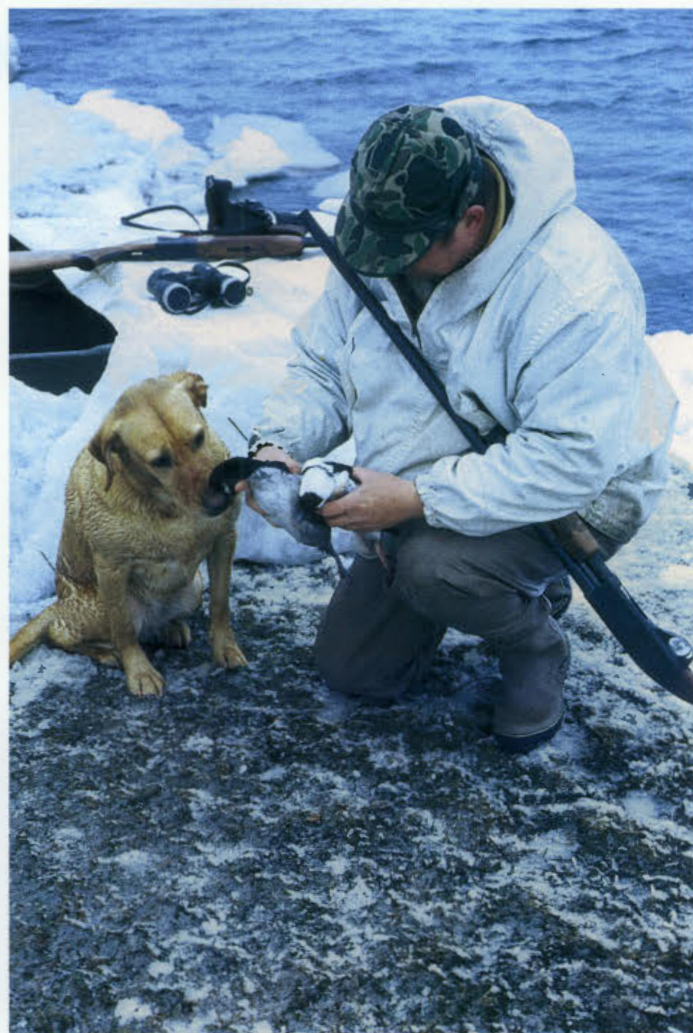
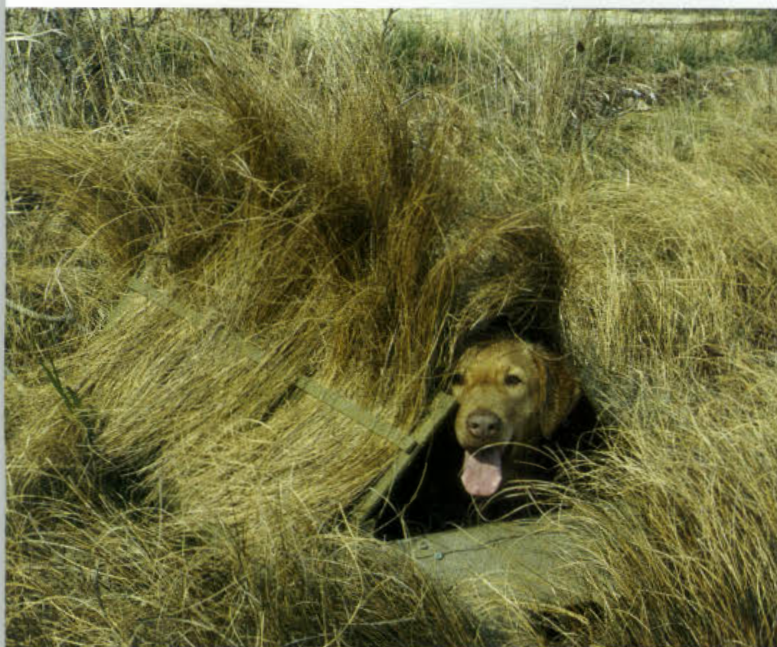
You may want to consider a camo mask to break up the face outline and any shine or reflections from the sun. Avoid cigarette smoke as it can be seen a long way on a windless day.

Once you are camouflaged and your decoys are in place, sit quietly and don't move when ducks are approaching. Wait until the birds are in range before you shoot. Even with the largest steel shot, you should limit your shooting range to 40 yards.

## Retrieving the Catch

One of the real thrills in duck hunting is watching a trained retrieving dog. A retriever, such as a Labrador, golden or Chesapeake Bay, adds to the thrill of duck hunting. Just watching a dog retrieve ducks is a major part of a duck hunting day.

Most serious waterfowlers enjoy training their retrieving dogs both prior to and after the hunting season. Dogs are taught to be steady and quiet before the duck is shot and then to be ready to go out and retrieve the waterfowl using a series



Even retrieving dogs use special blinds (top left).

A fallen duck hits the water (bottom left).

A good retrieving dog (above) is key to duck hunting.





of hand signals to guide them on their way. Retrievers help to save 25 percent of the ducks that might otherwise be lost to such things as dense marshes and tides.

Duck hunting is an expensive sport; boats, motors, decoys, boots, guns, shells and other equipment represent a considerable financial investment. However, if you split this initial investment with a couple of other hunters, it discounts the cost. If you take care of quality duck hunting equipment, it will last a long time.

There is an exhilarating feeling about being out on the marsh before daylight and ready to hunt just as the sun starts to rise and the ducks circle overhead. Some may drop toward your decoys. Perhaps you down a bird, but even if you miss, it's just a great experience. Mix in the companionship of a friend and the joy of watching your retriever work, and the thrill of duck hunting will keep you returning often to the duck marsh. There are many of us who think a good duck hunting marsh is just this side of heaven.

*Pete McLain is an outdoors writer who lives in Toms River.*



Joe Hautman (above) painted the artwork (left) for the current duck stamp.

## About the Artist

Creating wildlife art comes naturally to Joe Hautman. A Ph.D. physicist who grew up in Minnesota, he can trace his artistic talent and love for wildlife to his mother, an accomplished painter, and his father, who hunted and painted ducks. Not surprisingly, two of his six siblings are also wildlife artists.

Disturbed by the gradual disappearance of natural areas, Hautman — who now calls Jackson, New Jersey, home — became increasingly concerned about the impact of development. Since designing the 1992 Federal Duck Stamp, he has spent much of his time researching and painting realistic portraits of wild animals in their native habitat. His commitment to the environment, as evidenced by his art, will now be reflected in the habitat preservation and restoration made possible by the sale of his New Jersey duck stamp design.

## Stamps for Conservation

Since 1984, duck enthusiasts and stamp collectors have helped preserve 9,590 acres of wetlands in New Jersey — and they got magnificent stamps and prints of waterfowl in the process.

To date, the New Jersey Duck Stamp Program has raised \$2.8 million for the purchase and enhancement of wetland habitat in the state. The program also has used some of the funds to increase public access to these areas.

"It's been a really great pro-

gram," says Frank Tourine, administrator of the program at the Department of Environmental Protection's Division of Fish, Game and Wildlife. "It is appreciated by print and stamp collectors, waterfowlers, conservationists and duck lovers."

The 1995 stamp features a pair of widgeons flying near Sandy Hook Lighthouse. The painting is available as stamps, souvenir cards and prints. A state resident's stamp costs \$2.50, while a non-resident's stamp sells for

\$5. (While a stamp is required for hunting, it also may be purchased for collections.) The full-color, 8 by 10 inch souvenir card, which costs \$16.50, features a resident and non-resident stamp as well as a brief explanation of the program. Limited edition prints, which sell for \$142.50, measure 9 by 12 inches and are signed by the artist.

For more information about the program, or to purchase the 1995 edition, call Tourine at (609) 292-9480.



# Hosts of Christmases Past



ELBERTUS PROL

Visit some of the state's historic sites this December, and step back in time to a good, old-fashioned holiday.

Victorian Christmases featured an explosion of decorations. Houses such as **Ringwood Manor**, in Ringwood State Park, would come alive with rich colors, beautiful decorations and, of course, a Christmas tree. Pine cones would be gilded or painted; dried flowers would be woven into wonderful displays, and poinsettia plants — discovered in Mexico during this period — would adorn the rooms, while ribbons and garland streamers decorated the walls. Wonderful scents also were a part of the holiday during this era. Oranges, stuck with cloves and rolled in cinnamon, were hung throughout the house.

A Victorian Christmas tree likely would have been a red cedar tree because they did not burn as easily as other species. Twelve candles would be placed in the tree and — to minimize



ELBERTUS PROL



Victorian Christmas decorations of greens, gauzy bows and poinsettias draw the eye to the Ryerson stairs in Ringwood Manor (left).

The room's color scheme of white, gold and green sets the theme for Ringwood Manor's Victorian Christmas tree (lower left).

Lush boughs, lavishly decorated, spill over the mantle in Ringwood Manor's music room (right).

the possibility of a fire — only lit periodically. Angels made of lace and paper mache and crocheted snow flakes dipped in sugar were hung on the tree. Angels, in fact, are the theme of this year's holiday decorations at Ringwood Manor, which is decorated annually by the West Milford Women's Club. It will be open on December 2, 3, 9 and 10 from noon to 5 p.m. There is a fee for admission (adults, \$5; senior citizens and children, \$3). For more information, call 201-962-7031.

The **Wallace House** in Somerville celebrates the holidays as they probably were in the late 18th century, featuring sparse decorations for the 12 days of Christmas. In that era, the house would have been set up only for specific parties and festivities. A kissing bough, an old English tradition, and other greens would adorn the house, and sprigs of holly with two or three leaves would have been affixed to each window pane.

ELBERTUS PROL





In Skylands' library (below), a profusion of poinsettias, pinecones, greenery, bows and lights creates a magical counterpoint to the frigid snow outside.



JOYCE GRAZEOIA



The Wallace House is open Wednesday through Sunday, 10 a.m. to noon (except Sundays) and 1 to 4 p.m., December through January 6. Admission is free.

**Rockingham**, a headquarters during the Revolutionary War, celebrates the holiday season by borrowing practices from the last 200 years. Greens are brought in from the surrounding yard for decoration. Winterberry, with its beautiful red berries, help to ring in the season. Boxwood, a lush bush with tiny green leaves, releases a fresh, clean scent. Holly abounds. Rockingham is open on December 10 from 1 to 5 p.m. Admission is free.

**Skylands Manor**, in Ringwood, is decorated by local garden clubs. Each decorates a different room, rotating room assignments annually, using the bounty of their own and the manor's gardens, as well as donations, such as this year's 500 white paperwhites, a lightly scented narcissus-type flower. Holly,





JAMES KURZENBERGER

white pine and white cedar are used extensively. In years past, milkweed pods and dried hydrangeas and artichokes were sprayed gold and used to adorn the manor. The holiday theme for this seventh annual open house, which runs from November 30 to December 4, is "Home for the Holidays." The manor house will be open from noon to 7 p.m.; group tours will be conducted from 10 a.m. to 3 p.m. The fee for adults is \$5, senior citizens pay \$4 and children under 12 are admitted free. For additional information, call 201-962-9534.

A Victorian kissing ball and other decorations — mostly handmade — will fill **The Hermitage**, representing the holiday decor of the 1880s and 1890s. Set on five acres of wooded land in Ho-Ho-Kus (Bergen County), The Hermitage also features mannequins, garbed in the clothing of the era, in the front parlor. This year's decorating theme is "Under the Mistletoe." The Hermitage will host "Candlelight



DIVISION OF PARKS AND FORESTRY

Sprigs of holly on the window provide the only decorative touch for a holiday repast at the Wallace House (center).

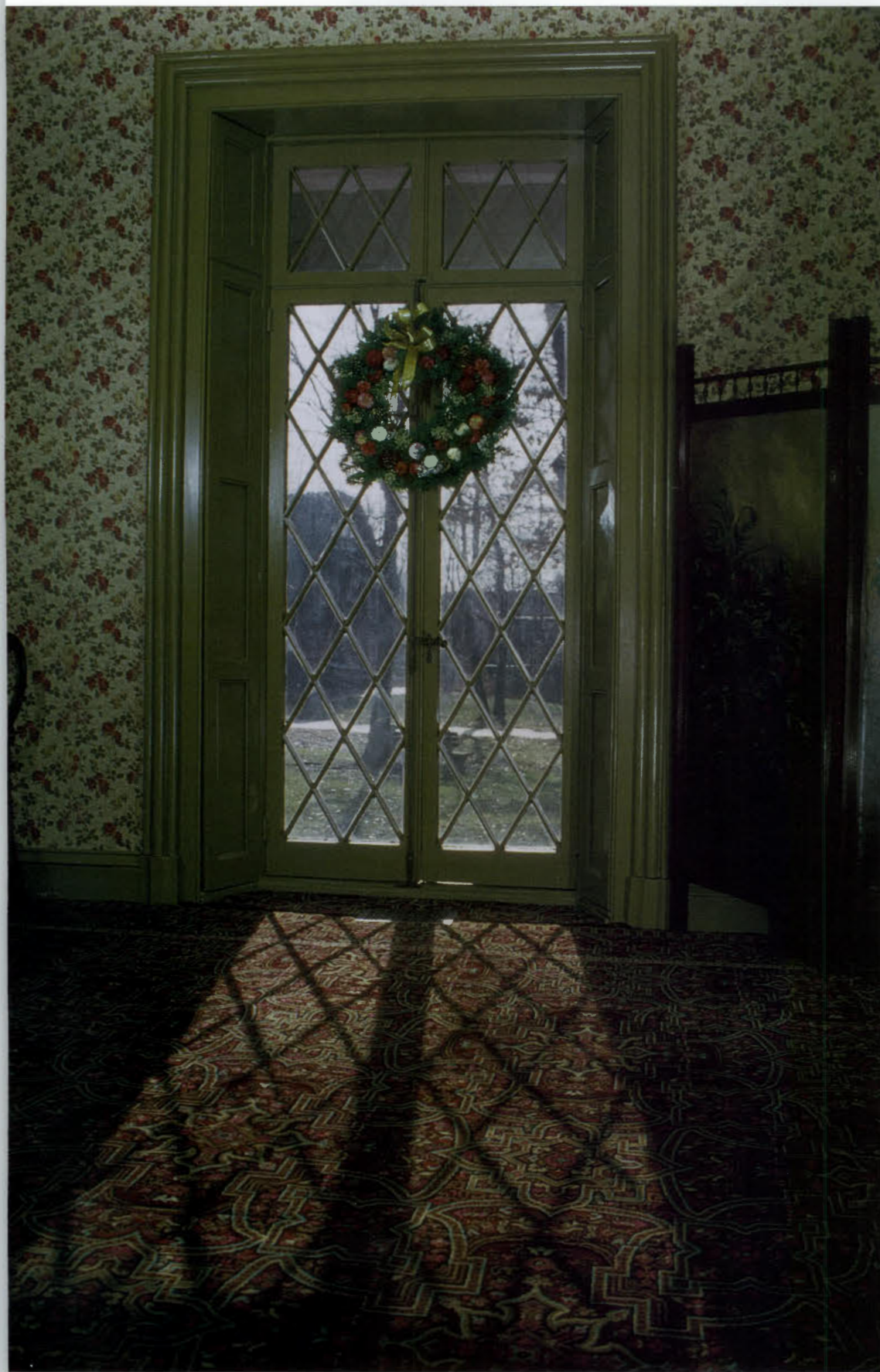
At Rockingham, a fire is stoked as preparations for a holiday feast get underway.

The breakfast room (below) at Skylands Manor entices late risers to open their eyes to the beauty of long-ago Christmases.



JOYCE GRAZIOIA





JIM CARPENTER



JIM CARPENTER

and Carols" from 6 to 9 p.m. on December 15 and from 4 to 7 p.m. on December 16 and 17. The \$5 fee (children under 12 are free) includes refreshments. Tours will take place from 1 to 4 p.m. on December 6, 13 and 20. For additional information, call 201-445-8311.

A Jersey Dutch Christmas — the cultural conduit through which much of what became an American Christmas passed — is celebrated annually at the three historic homes, including the **Von Steuben House**, in River Edge. The table setting in the dwelling room recreates the festive ritual food, decorations and figures of a 17th century Jan Steen painting. This year, a 16th century kissing bough, traditionally made of greens, especially those which bore fruit or berries in the winter, will be featured, as will a tree decorated with paper roses, gilt paper stars, and sand dried flowers. A yule log, intertwined holly and ivy, was-sail and old ornaments also



Sunlight streaming through diamond paned French doors (far left) frames a wreath at The Hermitage.

A candy centerpiece (left) graces The Hermitage's dining room table.

At The Hermitage, flowers decorate the front parlor chandelier (right).

Dried flowers adorn The Hermitage's front parlor fireplace (below).



JIM CARPENTER

are a part of the Jersey Dutch Christmas tradition. Cookies and candies, some of which are used as tree decorations, are made in the working kitchen, where candy molds dating as far back as the Civil War are on display. The Dutch Sinterklaas (Santa Claus) holds court in the Campbell House.

The Von Steuben House is open Wednesday through Saturday, from 10 a.m. to noon and from 1 to 5 p.m.; on Sundays, it's open from 2 to 5 p.m. During the holiday season, Linda Russell and Company, an ensemble of period musicians dressed in costumes of the era, perform twice daily (on December 8, 9, 15 and 16 at 7 and 8:30 p.m. and on December 10 and 17 at 4 and 6 p.m.). Tickets, which must be purchased in advance, are available at the Von Steuben House; the fee of \$10 includes the concert and a tour of all three historic homes. For additional information, call 201-487-1739.



JIM CARPENTER



# Get Ready to Go . . .



Hidden Valley's first half-pipe was regulation length: 80 meters long; it was 30 feet wide and boasted 15 feet high walls, the tallest on the east coast.

## Snowboarding

For R.J. Almalfa, snowboarding is like free falling — dropping down a mountainside, but being in control at the same time.

Scott Donahue describes the sport in three words: "Free. Natural. Flowing."

Combining elements of skateboarding, slalom water skiing and surfing, snowboarding is the fastest growing sport in the country, according to the National Sporting Goods Association of Chicago. In 1993, there were 1.8 million snowboarders nationally, twice as many as in 1992. And more and more ski resorts in the United States — including Hidden Valley in Vernon,

Vernon Valley/Great Gorge in McAfee, Campgaw Mountain in Mahwah and Craigmeur in Newfoundland — are welcoming this unique downhill sport. Other resorts even are catering to the new breed of athletes with special trails and "parks," featuring high, curved walls or obstacles to slide, glide, jump and bump over.

"I have been skiing all my life, but once I picked up the snowboard, I haven't skied since," says Jim Weinbrecht, coach of the competitive snowboarding team at Hidden Valley Ski Resort. "There's nothing that describes making a turn on a racing board."

Snowboarding, which is very popular with the under 30 set, also comes with its own language and outrageous clothing.



It is not unusual to see snowboarders swishing down the mountain wearing bakers' hats or those resembling octopuses or sharks as they "bonk," "tweak" or "jib" through the trail.

## From Snurfing to Snowboarding

Snowboarding had its origins in the 1960s with a product called a "snurfer." This molded plastic board, which featured large staples for footholds and a rope for balance, was ridden down a mountain while standing up.

But it was not until the 1970s that two designers, Tom Sims and Jake Burton, working separately on opposite coasts, included binding and boots and created the snowboard. Ironically, Sims' early snowboard had its origin here in the Garden State, but it was not until years later, when he moved to Santa Barbara, California, that he perfected the idea and began manufacturing it.

Sims' father, Paul Sims, recalls taking eight-millimeter film of his 12-year old son Tom on the new invention — a

wooden board with an aluminum sheet tacked to the bottom — in 1962 or 1963. Tom, a champion skateboarder, only built the device "when there was too much snow in front of the house in Haddonfield." He spent the rest of his winter days in search of hills to ride.

Burton and Sims led the way in the snowboarding business throughout the 1970s and today remain the two best known manufacturers of snowboards, says Paul Sims, now the president of Sims Sports Inc., of Santa Barbara, Ca., a firm that designs and distributes snowboards, skateboards, roller skating wheels and clothing.

In the early days, snowboarding was the "rebel thing" to do since no ski areas allowed the boards on their slopes. Finally, some ski areas opened their trails to the new sport in the early 1980s and, by the late '80s and early '90s, amateur snowboarding competitions began.

Now snowboarding has hit the mainstream and is permitted in about 85 percent of ski resorts throughout the country, says Sharon Harned of U.S.

*In the early days, snowboarding was the "rebel thing" to do since no ski areas allowed the boards on their slopes.*

Anticipation (below left)!

New Jersey native and national competitor Michael Tallone grabs some air (below).







The half-pipe event brings out the daredevil in all. The 15 foot high walls allow for awesome flights in the air

Snowboarding, an arm of the United States Skiing Association (USSA), the national governing board for competitions recognized by the U.S. Olympic Committee. By the year 2002, it will be a sport in the winter Olympics.

There are about 500 competitions in seven regions throughout the United States annually, culminating in the nationals at June Mountain in Mammoth Lakes in southern California.

### Get on Board

Snowboards have undergone some changes since the early days and now feature several special varieties, as well as boots and bindings. There are two types of snowboarding equipment: alpine and freestyle, or free-ride,

according to Paul Alden, co-chairman of the Snowboarding Competition Committee at the USSA and owner of Hot and Hammer Snowboards, an equipment manufacturer.

Freestyle boards, which encompass 95 percent of the sport, generally range from 145 to 155 centimeters in length. They are symmetrical in shape and have matching tips and tails. These boards are softer to provide more flexibility. The boots also are soft, and the bindings are more maneuverable.

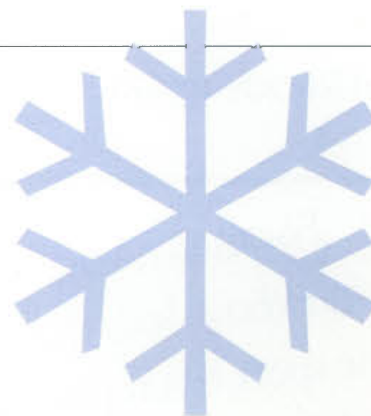
Alpine boards, which are used in racing, are generally longer, ranging from 150 to 175 centimeters in length. These boards are stiffer and ride flatter on the snow. Their edges have severe side cuts, or indentations, for a better grip in turns. Alpine boots, like downhill ski boots, are harder and are designed to have lateral flex, unlike ski boots.

Unlike traditional skis, the bindings on snowboards do not release. Once you put your feet in the binding, you are strapped to the board.

Snowboarding and skiing are different in many other ways. While your feet are positioned parallel to skis in downhill skiing, in snowboarding,

Snowboarding has hit the mainstream and is permitted in about 85 percent of the country's ski resorts. By the year 2002, it will be a sport in the winter Olympics.





your feet are perpendicular to the side of the snowboard. And, unlike skiing, snowboarding uses no poles.

The basic elements in snowboarding are to turn, using the shifting of weight, and to stop, using a side slide down the mountain. Harned compares it to learning to ride a bicycle.

"The first few times you fall down and then something clicks, and you can do it," she says.

Donahue describes the sensation of snowboarding as like "surfing on the mountain." It also features many of the moves used in skateboarding, Harned says.

Alden claims snowboarding is actually safer than skiing. While broken limbs are common injuries to alpine skiers, in snowboarding upper body

injuries and sprained wrists are the types of injuries that occur most often.

### The Tricks of the Trade

Once the basics are mastered, many riders will tackle tricks. Some moves require the construction of special trails and features at ski resorts. Most snowboarding, however, is generally performed on regular downhill trails.

Some ski resorts, including Hidden Valley, have built a "half pipe," a trail resembling a pipe with the top half cut off with high banked walls of snow at its sides. This feature helps snowboarders gain momentum. Others resorts host "snowboard parks," which are special sections where obstacles such as park benches, table tops and rails are placed

Snowboard competitors (above left) are as young as 11 years old.

As snowboarding grows so do the competitors. Females are edging their way into the sport and standings (above).



For many avid snowboarders, this new sport has replaced alpine skiing. For others, it is a way to continue surfing, skateboarding or water skiing in the off season.

Taking flight during the 1995 USSA Eastern Regional Snowboarding Championships at New Jersey's Hidden Valley Resort



✱ on the slopes to be used in maneuvers.

✱ Snowboarding comes with its own slang and set of tricks.

✱ Once you begin the sport, you will be a "newbie" or a novice snowboarder.

✱ You may find that you are "goofy foot" (that you put your left foot forward on the board) or that you have a "duck stance" (where your feet are turned outward for freestyle snowboarding).

✱ Learning the equipment is also important. A "rail" is the side edge of a snowboard; the "tail" is the back of the snowboard.

✱ With the basic language and maneuvers in tow, you are ready to attempt the tricks.

✱ To "jib" is to ride over obstacles such as logs or handrails on the trail; "olley," is to jump over an object in your path; "bonk" is to tap something as you go over it.

✱ Spinning in the air is another pastime. There are 360s, 540s or 900s, referring to the degrees you revolve in the air before landing.

✱ Want to strike a pose in mid-air? Just grab your board when you are airborne for a "palmer." To "tweak" is to become

✱ as distorted as possible.

✱ A "McTwist" is when a snowboarder comes to the wall of a half pipe, flips and then continues his or her run further down the pipe.

✱ "Sliding" is also a popular activity. It involves jumping on a rail or log on the course and sliding across it. For a bigger thrill, some parks feature "kickers," big, steep jumps for the snowboarding crowd.

✱ In addition to this cool, new lingo, snowboarding offers its own fashion. Loose-fitting clothing in drab earth tones and unusual hats are the basic uniform, although "you can wear just about anything," Almalfa says.

## ✱ Places to Jib

✱ Nearly all of the ski resorts in New Jersey permit snowboarding on their trails. Hidden Valley constructed a half-pipe trail for the first time in 1995 for a snowboarding competition. The response by snowboarders has been overwhelming, says Laura Merolle of Hidden Valley. "It's like that saying 'If you build it, they will come'," she says.

✱ Vernon Valley/Great Gorge, Hidden Valley, Campgaw Mountain and Cragmeur have snowboarding classes and rentals. Hidden Valley also has its own competitive snowboarding team.

✱ This year, for the second year in a row, Hidden Valley will be hosting the "no excuses" Eastern Regional Championships on March 1 - 3. During this competition, 150 to 200 snowboarders from east of the Mississippi River will compete in three events — slalom, giant slalom and half-pipe. The slalom and giant slalom are timed events. Slalom is a downhill course featuring single gates that require snowboarders to make sharp, quick turns, and the giant slalom is a downhill course featuring dual sets of gates spaced further apart. In the half-pipe event, snowboarders perform maneuvers and tricks.

✱ Spectators may view the event for free; non-competitors on skis or snowboards are required to pay the lift fees.



## Surfing on Snow

Following is a list of organizations, clubs and facilities involved in the sport of snowboarding.

\* **Campgaw Mountain Ski Center**  
Fyke Road  
Mahwah, N.J. 07430  
Ski resort, lessons, rentals

\* **Craigmeur Ski Area**  
1175 Green Pond Road  
Newfoundland, N.J. 07435  
(201) 697-4501  
Ski resort, lessons, rentals.

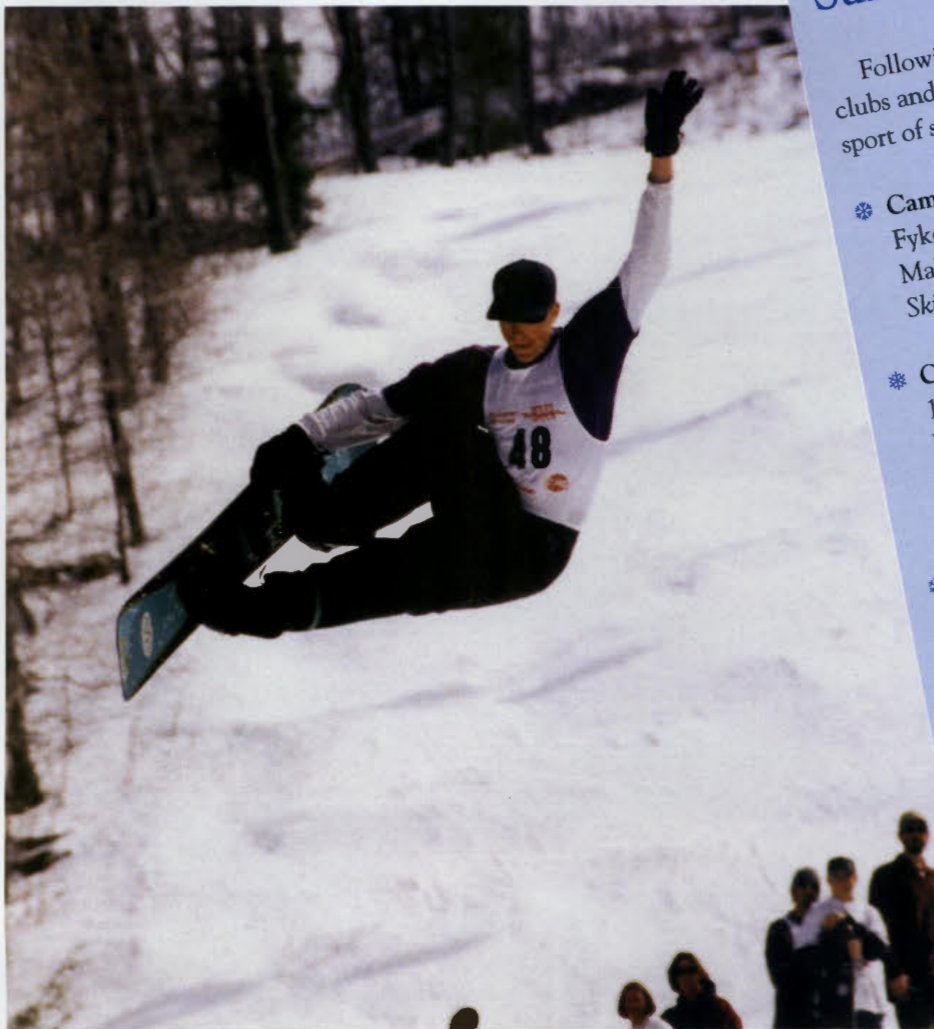
\* **Hidden Valley Ski Resort**  
Breakneck Road  
P.O. Box 433  
Vernon, New Jersey 07462  
(201) 764-6161  
Ski resort, lessons, rentals,  
club, competitions

\* **U.S. Amateur Snowboarding Association**  
P.O. Box 2100  
Frisco, Colorado 80443  
General information, competitions

\* **U.S. Snowboarding**  
P.O. Box 100  
Park City, Utah 84060  
(801) 649-9090  
General information, competitions,  
National Governing Board

\* **Vernon Snowboarding Association**  
46 Cedar Ridge Drive  
Vernon, New Jersey 07462  
(201) 827-9484  
Club, competitions

\* **Vernon Valley/Great Gorge**  
Route 94  
McAfee, N.J. 07428  
(201) 827-3900  
Ski resort, lessons, rentals



For many avid snowboarders, this new sport has replaced alpine skiing. For others, it is a way to continue surfing, skateboarding or water skiing in the off season.

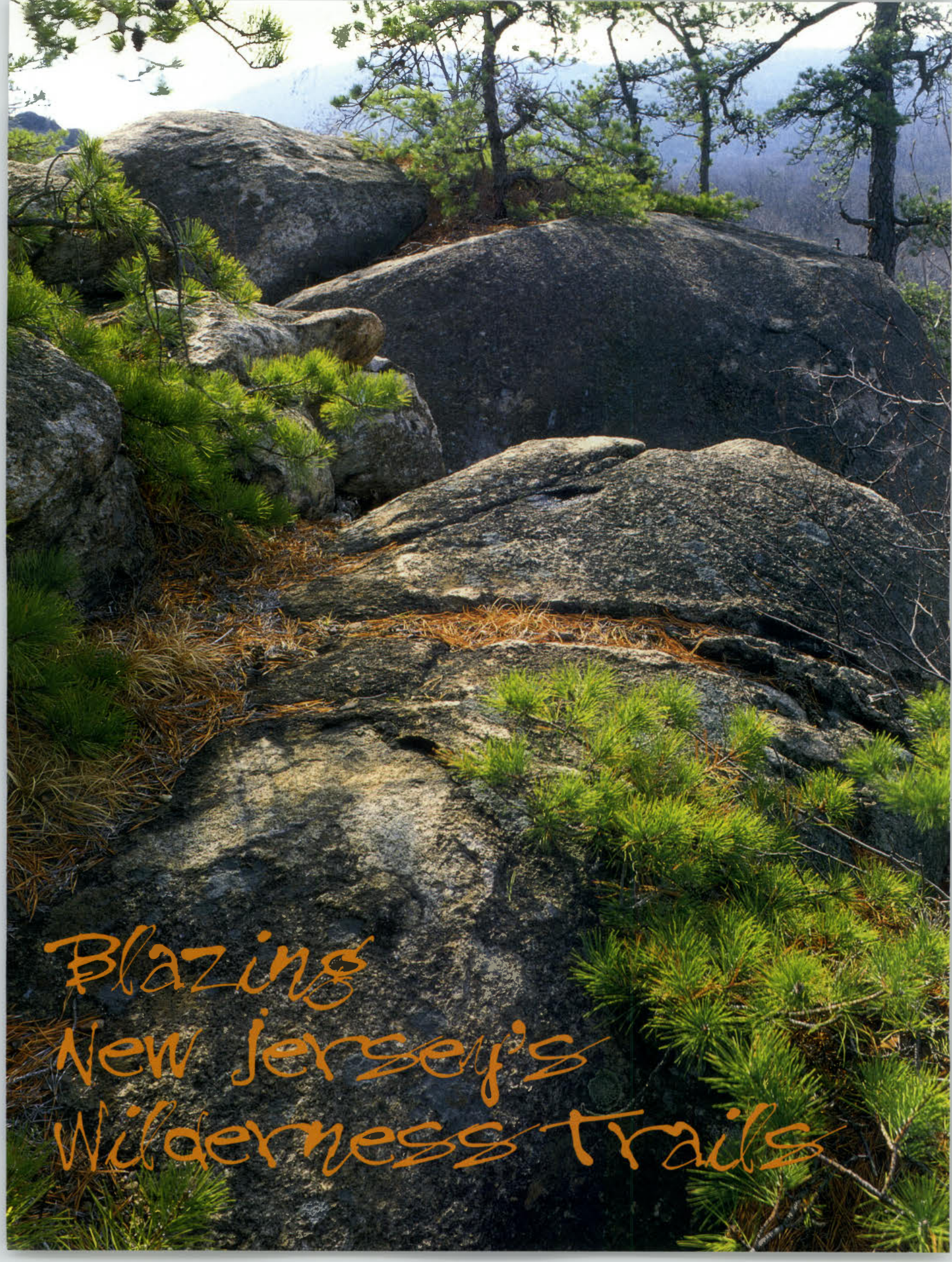
(It is) "the future of skiing," says Donahue. "An eight-or ten-year-old will pick up a snowboard and will never have looked at skis."

With this kind of air, this competitor is not a "newbie."

by Melissa Morgan, an intern for the  
Department of Environmental Protection's  
Office of Communications







Blazing  
New Jersey's  
Wilderness Trails



by Cheryl Baisden

The midday sky is painted azure, its vast serenity breached only by the occasional pale, white strokes of a distant cloud. Closer to earth, deep green pines and countless leaf shades of autumn reds, yellows and oranges dance silently along the horizon line.

The 360-degree vista is breathtaking from atop the granite summit of Wyanokie High Point, which rises 900 feet above the hardwoods of Norvin Green State Forest in Passaic County. With a panoramic view of Wanaque Reservoir and Sterling Forest in Passaic County and New York State, Wyanokie juts up along a newly completed section of New Jersey's Highlands Trail. Among hikers, the somewhat challenging climb is a hands-down favorite.

"The view from the top makes your jaw drop," notes Anne Lutkenhouse, projects director of the New York-New Jersey Trails Conference, an organization which has been building and preserving trails for 75 years. "You're standing there, and you just want to open your arms and do one of those 'Sound of Music' opening scene things where you twirl around and take it all in. It really is that spectacular."

The majestic mountaintop is just one of countless scenic spots along New Jersey's network of overland trails and navigable waterways. Lacing the state's woodlands and mountains are more than 1,000 miles of marked trails and more than 500 miles of canoeable streams and rivers, according to a recent survey for the trails plan conducted by the Division of Parks and Forestry (DP&F). These trails are used for everything from hiking, camping, backpacking and jogging to horseback riding, biking, snowshoeing and dog sledding; waterways are popular for canoeing, rafting, tubing, sailing and motorboating.

The updated plan, known as the New Jersey Trails Plan, is the first step toward designing a statewide trails system, notes Celeste Tracy, supervising planner for the DP&F's Office of Natural Lands Management. Trails designated as part of the statewide network are eligible for federal grants, available through the National Recreation Trails Act, that can be used to maintain and upgrade them.

"To qualify for the state trails system, a trail has to be on public land, or there has to be an easement that guarantees that it will remain accessible to the public," Tracy explains. "That way, we can apply for funding for parking lots, shelters, signs and other necessities along these trails and for maintaining existing stretches."

This also will help to preserve open space throughout the state for generations to come.

The pressure to preserve New Jersey's varied network of trails, from the 73 rugged miles of the Appalachian Trail in the north to the paved nine-mile pathway that wraps around suburban Cooper River County Park in Camden County, has become more urgent in recent years, outdoor enthusiasts agree.

"There are more and more people coming out and enjoying the trails, and that means we need to increase our effort to build more and protect what we have," says Bob Moss, a member of



WILLIAM C. ERIKSON

Some Batona Trail sections require a good sense of balance.

the Highlands Trail Committee, which slowly has been planning and developing the state's newest marked pathway.

## Hikers' Delight

Hikers, who have access to 98 percent of the state's overland trails, are exploring New Jersey in ever-increasing numbers, according to Lutkenhouse. (Two percent of trails in the state have been set aside for special uses, such as bridle paths.)

"It's understandable," she explains. "New Jersey may be a small state, but people are discovering that it has a tremendous network of trails, and it's right in their own backyards. The other great thing is that the difficulty of the hike and time spent on a trail can be tailored to an individual's needs. So you can take a half-hour stroll or a two-week trek — it's up to you."

For beginning hikers, and for those looking for a few rolling hills at the most, the Batona Trail is a well-marked, easily traversed pathway, notes Bob Raine, a member of the Batona Hiking Club. Weaving its way through the Pine Barrens, the sandy 50-mile trail through Lebanon and Wharton state forests in Burlington and Atlantic counties crosses tea-colored cedar streams and passes through forested areas that were once small towns.

"It's a great place to hike," Raine says. "The treadway is sandy, which makes it a piece of cake to walk, and it's about as flat as you can get. The highest point is Apple Pie Hill, and that's only about 205 feet."

For a more challenging climb, hikers head to New Jersey's stretch of the Appalachian Trail. An interweaving of farmlands,





Mud covered competitors cycle along one of Ringwood's mountain bike trails.

## The Diversity of Trails

Winding through miles of classic rural countryside, past rolling hills, pastures, marshlands, forests and small towns, the Paulinskill Valley Trail also beckons some of the state's less obvious outdoor enthusiasts. Horseback riding, cross-country skiing, snowshoeing and even dog sledding are popular along the pathway, Tracy says.

In the southern part of the state, Lebanon State Forest near New Lisbon attracts snow sport enthusiasts. But since Jack Frost often fails to blanket the region with enough flakes to make traditional dog sledding possible, sleds easily can be outfitted with wheels for the season, Tracy says.

"A lot of people don't realize just how many things go on along our trails," Tracy says. "They think there's nothing more than a few hikers out there on a Saturday or Sunday. Actually, our trails are used for an amazing amount of activities year-round, every day of the week."

Motorcyclists like Lindsay Pirie take to the sandy trails that weave through the Pine Barrens regardless of the season. The sandy soil makes riding a challenge, and the crisscrossing trails provide an almost endless number of touring options.

"I've been riding those trails...for about 25 years, and I know maybe half of the area," says Pirie, a member of the East Coast Enduro Association and the New Jersey Trails Council, an advisory council to the state Department of Environmental Protection. "The whole area is full of trails that go back to the Revolutionary War. If you know what you are looking for, you can find the remains of old towns out there too."

Several trails are accessible for people with disabilities. Wheelchairs can be accommodated on 60 miles of pressed gravel along the Delaware and Raritan Canal towpath, and a few miles of asphalt pathways are open at Mercer County Park and Parvin State Park in Elmer.

"We hope to increase that figure at some point by looking at the surface materials used on some of our trails," says Tracy. "Of course, many of the routes themselves simply pass through terrain that is just inaccessible by wheelchair."

## Water Trails

But exploring the state's outdoor pathways involves more than just traversing overland trails. For canoeists, New Jersey's waterways offer an impressive variety of scenery and satisfy a wide range of paddling skill levels.

The slow-moving Wading River that winds gently through the Pine Barrens' grass marshes is perfect for beginners or those yearning for a leisurely cruise, according to Christian Nielsen, vice president of the Mohawk Canoe Club and a member of the New Jersey Trails Council. Experienced canoeists will enjoy the rocky courses of the Pequest and Musconetcong rivers in the northern part of the state.

"I remember my first trip down the Pequest very well," says Nielsen. "I was scared to death about all of the rocks and the

forests, wetlands and steep slopes, the trail is part of the 2,155-mile path snaking through 14 states from Georgia to Maine.

The best view along New Jersey's section of the Appalachian Trail can be found near the Delaware Water Gap Visitor's Center, just south of Blairstown, according to Raine.

"That little section is about as nice as it's gonna get, and that's pretty nice," he says. "The climb to get up on the ridge is a little tough, and you go through a lot to get up there, but once you reach the top, you're speechless — it's so amazing."

## Biking Up the Mountain

The newest and most rapidly growing trail use in the state is mountain biking. Already, New Jersey has opened more than 400 miles of trails throughout the state to mountain bikes.

"It's really the up and coming trail sport because you can get out of doors, see things and get some exercise in less than half the time it would take you to hike the same distance," says Tracy. "It fits into busy schedules, and that's pretty important today."

The Delaware and Raritan Canal State Park, a 60-mile stretch along the waterway's old towpath and an abandoned railroad passage, is one of the most popular mountain biking locations for central and southern New Jersey riders. For those in the north, the Paulinskill Valley Trail, a 27-mile stretch along an abandoned railroad right-of-way in Kittatinny Valley State Park, is a favorite. Both trails, along with the Sussex Branch Trail in north Jersey, were bought with funds from Green Acres bond issues and are being developed with funds from a Federal Highway Administration program.



fast-moving water. Of course, I didn't have great canoeing skills at the time. I still make that trip a lot today. I love the beautiful scenery and running the river is still a great thrill."

The Pequest is at its best in the early spring, when the snow begins to raise the water level, he says. Too little water will leave canoeists scraping the rocky river bottom. A particularly rainy period could make it impossible to safely squeeze beneath the river's numerous bridges.

"The best thing about being out on the water or on a trail is that you can really get to the heart of New Jersey," Nielsen explains. "You can be paddling down the Ramapo River and pass right through congested Bergen County and never really know it. You can always find a way to touch nature if you know where to look. The key is to care for what we have so we don't lose it."

## A Labor of Love

Constructing and maintaining the state's extensive network of trails is a time-consuming and exacting task performed almost exclusively by park staff and volunteers, notes Tracy.

"People don't realize that most of these trails are not just old American Indian trails we've continued to use," explains Moss, who has been known to dedicate up to four days a week as a volunteer trail worker. "You have to get out there and go inch by inch over the land to figure out how you're going to get from one point to the next."

Along with the field work needed to determine exactly where a permanent trail should be set up, volunteers need to locate and contact every individual property owner along the proposed pathway to obtain an easement to the grounds.

Later, detailed plans are drawn up to determine the trail's drainage patterns, slopes, surface requirements and other special needs. If there's a stream, volunteers erect a bridge over the waterway. If they discover wetlands, they painstakingly protect the property with boardwalks. And, just like any other private citizen or business, they are required to get permits from the DEP.

"Believe me, it's a lot more than just clipping a few branches and painting a couple of blazes on trees," says Lutkenhouse. "A good trail is very sophisticatedly constructed, but looks like it's totally natural."

## A Path to the Highlands

The Highlands Trail, New Jersey's newest trail project, will one day link the Hudson and Delaware rivers. The 150-mile route will weave through scenic ridge lines, rugged slopes and narrow valleys in both New Jersey and New York. In May, following three years of planning and development, the first 20 miles of trail opened to the public.

"It's a challenge pulling something like this together, and the section we opened was probably the easiest part of the project," predicts Moss. "There isn't a lot of public land in many of the other areas, so we'll probably be dealing with a lot

of individual landowners. If one person says no, we may have to reroute an entire section."

Once a trail is in place, a whole new volunteer army is required to maintain the pathway. The waterways regularly are left littered by weekend canoeists and people who picnic along the banks, Nielsen says. The same problems, along with the need to remove fallen trees, cut back vegetation from the paths and preserve the walking surface, are faced by overland trail volunteers, adds Raine.

The golden rule for anyone making use of the state's trails and waterways is to take nothing but photographs and leave nothing but tracks. Failure to follow this simple philosophy could jeopardize the future of the state's wilderness trails, outdoor enthusiasts say.

"We tread a fine line between enticing people out to the trails and bringing so many people out that they love the place to death," Lutkenhouse concludes. "There is a necessary preservation ethic we have to instill in people if we expect to keep what we have and if we hope to make it even better in the future."

For more information on the New Jersey Trails Plan or the many uses for trails in the state, contact Celeste Tracy at DEP, Division of Parks and Forestry, Office of Natural Lands Management, CN 404, Trenton, N.J. 08625.

*Cheryl Baisden is a freelance writer from Collingswood.*

Padding a placid waterway provides time for reflection.



HERB SEGARS



# Geese of the North Wind

by Adam F. Turow

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Paying no attention to the  
presence of humans,  
the birds pass directly overhead  
less than 100 feet off the ground,  
turning the dark blue  
November sky white.

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Snow geese in flight.

At first, the snow geese appear as a blizzard of unrecognizable white dots on the horizon. Their honking almost becomes deafening as the flock, containing thousands upon thousands of geese, begins its final approach for landing into the nighttime resting area.

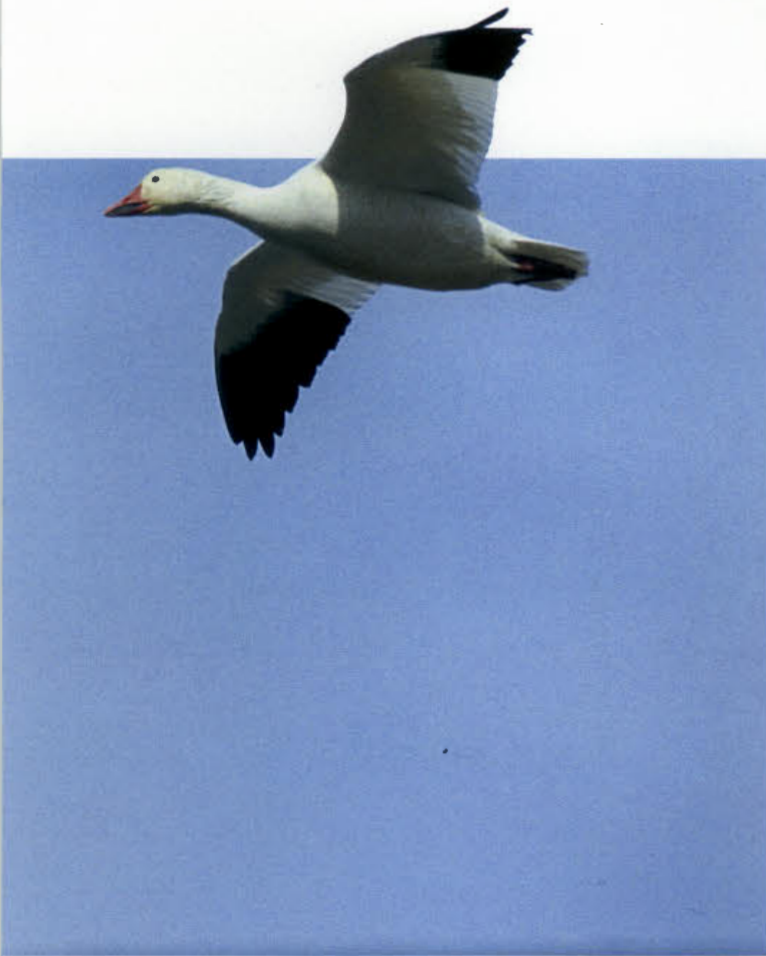
Paying no attention to the presence of humans, the birds pass directly overhead less than 100 feet off the ground, turning the dark blue November sky white. As they approach the landing area, they drop down in waves, one group after the other, hitting the water with a flurry of activity as they brake to a stop.

I stood there in awe, gazing at what appeared to be a blanket of snow upon the water, grateful for being given the opportunity to view this remarkable sight. The snow geese had arrived, coming for days on end in flocks that contain as many as 10,000 birds.

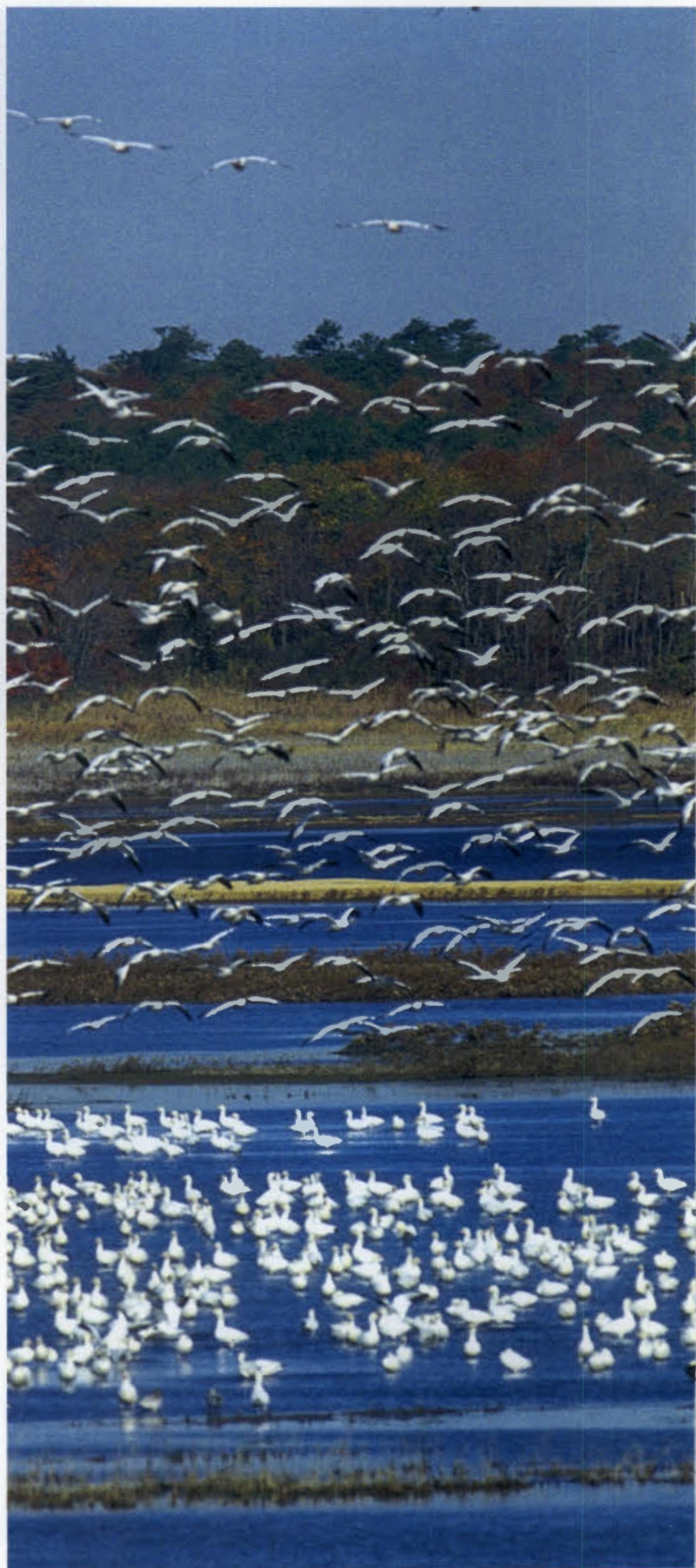
The Edwin B. Forsythe National Wildlife Refuge, Brigantine Division, is well-known by naturalists, bird watchers, photographers and serious outdoor enthusiasts as one of the best places on the eastern seaboard to see great concentrations of waterfowl, wading birds and shore birds. But, surprisingly, this area remains relatively unknown to many New Jerseyans.

The federal Fish and Wildlife Service estimates that more than 200,000 people pass through the area annually, making it one of the most heavily visited refuges in the nation. But





PHOTOS BY CLAY MYERS



As many as 60,000 snow geese converge on the Edwin B. Forsythe National Wildlife Refuge in Brigantine during the winter months.

despite these numbers, it remains a relatively isolated enclave. During a recent mid-week visit, there were fewer than 10 cars on the only public road through the refuge, an eight-mile tour road.

## Fall Migration

From mid-November to mid-December, Brigantine is home to the fall migration of snow geese. Every year, as many as 60,000 geese converge on the 20,197-acre refuge. And every year, this migration is followed avidly by hunters, who converge on Brigantine during the duck season.

There are two sub-species of snow geese that inhabit North America. Greater snow geese reside on the Atlantic coast, while lesser snow geese reside elsewhere on the continent. Both are almost entirely white, but the lesser snow geese turn a blue-gray at various points in their life cycles, leading to their other common name, blue geese. Both species have black primary flight feathers, which make the wing tips appear black in flight. The neck is short compared to a Canada goose, and its head is a light reddish-brown color. The legs and feet are pinkish red with black claws.

Snow geese usually weigh between six-and-a-half and seven-and-a-half pounds. They measure 25 to 31 inches in length and have a wing span of 53 to 60 inches. Males and females are similar in appearance.





Snow geese wade in the water at sunset.

A snow goose feeds in the mud flats at Brigantine.



## Family Ties

Snow geese nest in colonies — some in concentrations of 1,200 pair to a square mile — beginning in May in the Canadian Arctic along the northern shores of Baffin Island, Canada and on numerous islands to the north. They remain close to the sea on flat tundra marsh grasses and sedges. Four to eight eggs are laid in each nest and, after a 22- to 24-day incubation period, the young are born in June and July. The goslings are preyed upon by gulls, raptors and Arctic foxes.

At the end of their first year, juveniles are gray. During the winter and spring, they gradually change color, becoming white with the summer molt.

Geese are among the few birds in which the family does not break up at the end of the breeding season. Parents and young raised during the summer establish strong family bonds and stay together almost a year. Like the common Canada goose, snows mate for life and are extremely devoted to one another. They migrate together in the fall in flocks that contain other family units on their way to wintering grounds. During the journey back in spring, only the adult pairs will return to the nesting territory established in the previous years.



## North American Flyways

Although there are an estimated 1.8 million snow geese wintering in North America on four major flyways — including the Atlantic, Pacific, Central and Mississippi — only 200,000 can be seen along the Atlantic Coast. In the fall, during the months of September and October, snow geese begin moving south from their spring and summer ranges to their wintering grounds. Wintering grounds are concentrated in Chesapeake Bay, Maryland and Pea Island, North Carolina.

During migration, snow geese fly at very high altitudes, skimming along using as little energy as possible in U-shaped formation, extended curve lines or irregular masses. They seldom fly in the V formation used by the Canada goose. Wildlife biologists speculate that snow geese do not use the V-shaped formation because of the larger flock sizes.

Because of extensive development and the loss of habitat along the Atlantic, there are very few areas left to provide the safety, food and cover needed by such large flocks. Since 1955, Brigantine has become a major stopover point for the migrating waterfowl. The key factor that attracts snow geese to the refuge is the number and size of freshwater and saltwater impounds created by the federal Fish and Wildlife Service in the 1950s through a series of dikes. Two large pools, totaling 1,600 acres, provide ideal habitat for food, water and shelter, says Vincent Turner, a refuge biologist.

## Feeding Time

During the early mornings and late afternoons at Brigantine, snow geese feed on marsh and salt grasses, preferably in locations where the grass grows in shallow salt or brackish water. They plunge their powerful bills deep into the mud and sand and tear the grass out by the roots. In a short time, a feeding area is void of vegetation and becomes a bare, unsightly, muddy flat that may take years to regenerate. The Fish and Wildlife Service is considering the use of fences in the future to help keep the vegetation in place.

Between feedings, snow geese rest on open water, sand bars and mud flats, where they are safe from disturbances and most predators. By mid to late afternoon, they return en masse to the inner boundaries of the refuge to sleep.

One of the best times to see large flocks of geese in flight is on cold, cloudy, windy days when they are more active and constantly in flight. For the best view, remember that birds land and take off into the wind. In addition to weather conditions, tides play a role in determining the number of birds you will see. During low tide, geese may be too far out in the salt marshes to view; at high tide, they may be observed in the dikes right next to the road.

Snow geese are not the only spectacle at Brigantine in the fall. Green-winged teal, black ducks, pintails, widgeons, mallards, shovelers and even eagles visit the refuge at this time

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Wildlife biologists speculate that  
snow geese do not use the  
V-shaped flight formation because  
of the larger flock sizes.

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of year. Five to ten eagles migrate through the Brigantine area in winter from November to February. Although eagles are basically scavengers and prefer to eat mostly fish and dead animals, they will take geese and ducks, especially when the freshwater impound freezes, making fishing difficult. Another magnificent sight on the refuge is when eagles dive down on resting geese, scattering sometimes as many as 15,000 birds into the air at once. In addition to eagles, snow geese are preyed upon by red fox, raccoons and, occasionally, a peregrine falcon.

## Photographer's Paradise

You can have a field day with photography at Brigantine. All you need is a 35 mm camera and a lens in the 100 to 300 mm range. For flight shots, an 80 to 200 mm zoom lens may be the best choice to provide the great depth of field needed to capture flocks of geese in flight. Use films with speeds of 200 to 400 ASA to keep shutter speeds and depth of field to a maximum. This is one of the most challenging, yet rewarding, forms of wildlife photography.

New Jerseyans are fortunate to have such a unique place as Brigantine Natural Wildlife Refuge in their backyards. This area is home to a variety and number of species that can be observed year-round right from the comfort of your vehicle. Be sure to catch the big spring migration of waterfowl in April and May and the fall migration in September through December. It is surely a sight to behold.

The Forsythe National Wildlife Refuge, Brigantine Division, is located 11 miles north of Atlantic City in the town of Oceanville. Take Exit 48 to Route 9 South and travel 10 miles to Oceanville. For further information or to obtain a calendar of events, call the refuge office, (609) 652-1665, between 8 a.m. and 4 p.m., Monday through Friday, or write to:

Edwin B. Forsythe National Wildlife Refuge, Brigantine Unit  
Brigantine and Barnegat Divisions  
P.O. Box 72, Great Creek Road  
Oceanville, New Jersey 08321

*Adam F. Turow is a freelance writer and photographer from Parsippany.*



## Harbor on the Rebound

A view across the Hackensack Meadowlands (above).

A wooded bank of the Hackensack River, Teaneck (opposite page).

Hike along the sheer cliffs of the Palisades or a waterfront walkway along the Hudson River. Canoe on the Passaic River. Photograph an unsuspecting heron feeding in the Arthur Kill or glimpse a peregrine falcon flying to its nest atop the Verrazano Bridge. Trip over a muskrat as it dives into a Kearny marsh. Take in the panoramic vistas of the Hackensack Meadowlands, fringed by the New York skyline.

All this and more is available amidst the 20 million people who live in the New York-New Jersey Harbor Estuary, also known as the Hudson-Raritan Estuary or the Jersey shoreline of the Atlantic Ocean. The estuary, where fresh water from rivers mixes with salt water from the ocean, covers 10 coastal counties in New Jersey from Bergen to Cape May; important rivers, including the Hackensack, Hudson, Passaic, Raritan, Arthur Kill, Kill Van Kull, Navesink, Shrewsbury and Raritan; and

coastal shores and bays. These tidal areas provide rich, productive habitats for a diverse array of living organisms, as well as important cultural, recreation and economic resources for people.

Through the NY-NJ Harbor Estuary Program, federal, state and county governments and the public have been working for seven years to protect the economic and ecological value of the estuary. A Comprehensive Conservation and Management Plan (CCMP) was drafted to devise ways to prevent loss of habitat and resources, to reduce floatables and other contamination from point and nonpoint sources, and to develop a dredged material management plan. A public outreach and educational program is promoting public involvement in estuary protection.

### An Area of Contrasts

The harbor estuary is an area of contrasts. Valuable habitat areas supporting a rich diversity of species are located in close proximity to heavily industrialized and populated areas.

Like other estuaries, the harbor has endured environmental degradation. Although overall water quality has improved markedly in the last 20 years because of management efforts and pollution source controls, there still are continuing pollution problems and a reservoir of pollutants in the sediments and biota. Nowhere is reconciling multiple uses through strategic planning to maintain natural resources and economic viability more challenging than in the harbor estuary.

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Nowhere  
is reconciling  
multiple uses ...  
more challenging ...

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## Thousands of migratory birds stop to feed on their journey to the Arctic.

The harbor estuary and the New York Bight are located along the Atlantic flyway, where thousands of migratory birds stop to feed on their journey to the Arctic. However, these feeding areas are vulnerable to pollution and ecological stress.

Historically, some fish-eating birds have not multiplied, due to residual levels of pesticides, such as DDT, PCBs and dioxins, in their food source. Some bird species nesting in the Arthur Kill and Kill Van Kull, the shipping lanes between New Jersey and Staten Island, have not been reproducing in normal numbers, while some fish species have developed pollution-associated diseases, tumors, developmental abnormalities and behavioral impairments.

Yet, even with these threats, there is still unparalleled beauty and diversity to be seen in these urbanized pockets. And with the help of the CCMP and other projects, efforts are underway to restore and preserve these unique regions.

### The Raritan Bay

According to a 1993 inventory, the urban waters and shores of Raritan Bay support large populations of bluefish, fiddler crabs, killifish, migratory birds, shorebirds, raptors, waterfowl and other species. Loggerhead turtles and harbor seals also have been observed regularly.

The Raritan Bay is famous for its historic oyster beds. Although these areas now are restricted for shellfishing, and there are numerous fish consump-

tion advisories due to toxic contamination, people can still see large oyster shells, full-grown living blue crabs and horseshoe crabs washing ashore onto the numerous municipal beaches in areas such as Perth Amboy.

Sandy Hook, a narrow peninsula with its variety of habitat including beaches, mud flats, dunes, thickets, fresh- and saltwater marshes and holly forests, is the premier site for migratory birds with more than 300 species finding nourishment there. To the south, in the confluence of the Navesink and Shrewsbury rivers, northern harriers are often sighted, and huge concentrations of greater scaup can be found.

### Harbor Herons Complex and Shooters Island

The Harbor Herons Complex, replete with open space, tidal and freshwater wetlands and wildlife habitat, is in the northwest quadrant of

Staten Island along the Arthur Kill, one of most heavily urbanized and industrialized areas in the region. Yet, this complex is the single most important water bird rookery in New York. It contains about 29 percent of the entire colonial water bird breeding populations along the Long Island-New York Atlantic shoreline. Isolated by the surrounding heavy industrial area in New Jersey, the heron complex has thrived, but is very vulnerable to encroaching pollution.

Shooters Island is another example of a resource isolated by an industrial center. Located at the confluence of Newark Bay, the Kill Van Kull and the Arthur Kill, Shooters Island has a prominent role in establishing water bird populations in the harbor and in the region and therefore is important to aquatic wildlife communities.

Driftwood from derelict piers, floating in large chunks, appears to





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250 species of  
native and  
migratory birds  
now can be seen  
in the  
Meadowlands.

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protect the wetlands on Shooters Island, although it poses a potential danger on beaches and to ships. Surprisingly, the areas buffered by driftwood support larger fish populations and are used by water birds, especially immature ones, to a greater extent than natural marshes.

### Arthur Kill Greenway

Approximately 690,000 people live in the 31 New Jersey municipalities along the industrial shore of the Arthur Kill. Although the area is densely populated and is a major industrial region, there are significant natural areas along the six tributaries including the Elizabeth, Rahway and Woodbridge rivers and the Morses, Piles and Smith creeks. (For more information on this unique area, see "A Stroll through the Urban Jungle: The Arthur Kill Greenway Project" in the Fall 1994 issue of *New Jersey Outdoors*.)

The Arthur Kill Greenway Project, an environmental mitigation program, is seeking to connect important habitat sites through the region to create open space along the tributaries. This effort would help to protect diverse habitats and stream corridors as well as the 195 species of birds and wildlife that depend on them. It also hopes to preserve recreational fishing in the area.

### Liberty State Park

Some of the best birding in the state can be found in the estuarine and upland habitats of Liberty State Park, located on the western shoreline of the harbor in Jersey City. Herons nesting in the Arthur Kill regularly feed in the salt marshes, which provide important habitat for approximately 95 bird species.

The number of bird and plant species sighted in the park have reportedly increased over the last 20 years; today, approximately 210 types of birds are sighted annually. In addition, the park offers scenic views of the New York City skyline, the Statue of Liberty and Ellis Island.

### Barnegat Bay

One of the gems to be found along the New Jersey shore is this 75-square-mile shallow back bay ecosystem with its aquatic vegetation, shellfish beds, fin fish habitats, waterfowl nesting grounds and scenic views.

Barnegat Bay has been subjected to continuing land use changes causing significant degradation of water quality. The NJDEP's Barnegat Bay Watershed Management Plan, developed in 1992, provides a series of actions to preserve its values and resources. In fact, the bay recently was recognized as a national estuary, a designation that will provide thousands of dollars in federal funding annually for research and preservation of this area.

### Hackensack Meadowlands

The Hackensack Meadowlands represents a severe contrast between open space and development in the metropolitan area in northeast New Jersey. The district, comprising parts of 14 municipalities in Bergen and Hudson counties, has suffered at least a 50 percent loss of wetlands since the turn of the century and severe alteration and degradation of most of the remaining wetlands. Through decades of human activities, the area has been altered from a freshwater swamp to a saltwater marsh.

But as a result of the environmental reclamation efforts implemented by the Hackensack Meadowlands Development Commission since its inception 25 years ago, 250 species of native and migratory birds now can be seen in the Meadowlands. With improved water quality, fish species that once had disappeared have returned. And parks have replaced landfills. The open space lands in the Meadowlands are now well-known for resources and habitats.

To save this rich resource, a Special Area Management Plan is being developed to target pollution, remediation, natural resource protection and economic growth in the area.

No matter where you live in New Jersey, the NY-NJ Harbor Estuary is an important resource for all residents. Good water quality and healthy ecosystems are critical to maintaining both the economical and ecological benefits to the state.

The millions of people who live in or visit the area expect good water quality at our beaches and fish and shellfish that are safe to consume. Boating, hiking and other outdoor activities help to enrich our lives. Many of these activities are centered, in one way or another, in the harbor estuary.

For now, at least, the NY-NJ Harbor Estuary is alive and well. Let's keep it that way.

For more information on the CCMP or what you can do to help this region, call (609) 292-1895.

*by Mary Gastrich, Ph.D., the state coordinator of the National Estuary Program at the New Jersey Department of Environmental Protection*



# The Library

**The Clean Water Book: Lifestyle Choices to Protect Water Resources**, published by the DEP's Office of Environmental Planning, is a 94-page booklet dealing with various potential sources of water pollution around the home and how to prevent them. It covers such topics as lawn and garden care, underground storage tanks, animal waste, septic systems, car care, boating and household hazardous waste. The cost is \$4 (\$2 if purchasing 12 or more). Available from DEP's Maps and Publications Sales Office at 609-777-1038.

**Doing Their Share to Save the Planet**, by Donna Lee King, published by Rutgers University Press, is a book that explores environmental problems through the eyes of children. Through interviews with children and analysis of their drawings, this book discovers who is trying to influence children and why, and seeks to explain children's hopes and fears for the future. The cost is \$15. Available from bookstores or from Rutgers University Press at 1-800-446-9323.

**Eastern Coyote: The Story of Its Success**, by Gerry Parker, published by Nimbus Publishing Limited, is a book that examines the origins and population patterns of the eastern coyote, as well as the species' controversial encounters with humans. The coyote, also known as the "wolf-dog," or "wild dog" has spread throughout North America and even is found in parts of New Jersey. The cost is \$18.95. Available in bookstores or from Nimbus Publishing at 902-455-4386.

**Fish Painting: A Guide for Carvers and Artists — Freshwater and Salt-Water Gamefish**, by Anthony Hillman, published by Anthony Hillman, is a follow-up painting guide to *Fish Carving Patterns*. This book features illustrations for 33 species of fish and instructions on sealing, priming, brushes and painting carved eyes. The cost is \$19.95. Available from Anthony Hillman at 609-465-8234.

**How Birds Migrate**, by Paul Kerlinger, Ph.D., published by Stackpole Books, is a guide to the hows and whys of bird migration in the United States. This book includes information on the hawk migration in Cape May, as well as sea bird migrations along the Jersey coast. The cost is \$16.95. Available from New Jersey Audubon Society bookstores and from Stackpole Books at 1-800-732-3669.

**Hunting Big Whitetails**, by Bruce L. Nelson, published by Buck Publishing, is a guide to bagging the biggest bucks. This book discusses traditional tactics, unique hunting angles and new ideas for pursuing the trophy deer for serious whitetail deer hunters. The cost is \$17.95. Available from Buck Publishing, P.O. Box 35552, Fort Wainwright, Alaska 99703.

**New Jersey 1996 Wildlife Calendar**, published by the DEP's Division of Fish, Game and Wildlife, is a full-color, 12-month calendar featuring photographs of the state's wildlife by professional and amateur photographers. Among the species highlighted are the great blue heron, harbor seal, barred owl, black bear, robin, white-tailed fawn, ruby-throated hummingbird, large mouth bass, bottlenose dolphins, chipmunk, snow

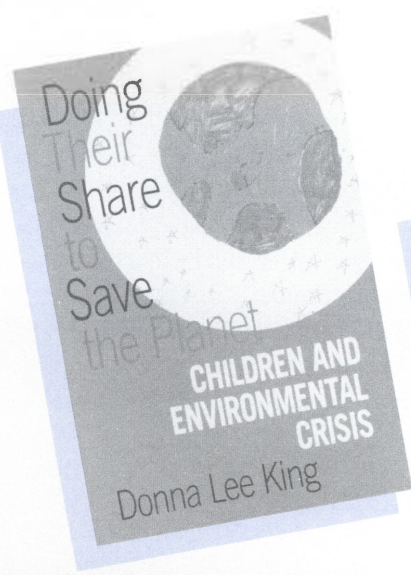
geese and little green heron. The cost is \$7.50, plus a \$2.50 mailing fee. Available from the DFG&W at 609-292-9450, 908-637-4125 or 609-629-7214.

**New Jersey's 1995 Choose and Cut Christmas Tree Guide**, published by the New Jersey Christmas Tree Growers' Association and the DEP's Bureau of Forest Management, is a booklet listing farms that provide cut and live Christmas trees during the holiday season. This county-by-county guide features the name, address, phone number and directions for each farm, as well as the number and types of species and products available. Free. Available from the New Jersey Christmas Tree Growers' Association at 1-500 390-2521 (call toll free until Dec. 17) or the Bureau of Forest Management at 609-292-2531.

**The Old Barn Book**, by Allen G. Noble and Richard K. Cleek, published by Rutgers University Press, is a comprehensive guide to American barns and farm structures and their general geographic locations. The cost is \$29.95. Available at local bookstores or from Rutgers University Press at 1-800-446-9323.

**SEEDS**, published by the Department of Environmental Protection, is a guide to the many environmental education resources available at the DEP. This guide, which includes listings for programs, workshops, seminars, publications, events, contests, and volunteer and internship programs, can help cultivate environmental education in schools, the workplace and the community. The guide is free. Available from the DEP Public Access Center at 609-777-DEP-3.

**The Summer City by the Sea: Cape May, New Jersey — An Illustrated History**, by Emil R. Salvini, published by Rutgers University Press, is a book that examines the 200-year history of this fascinating resort. From its early beginnings as a coastal getaway for middle-class Philadelphia families to its designation as a National Historic Landmark in 1976, Cape May has earned its moniker "Queen of the Seaside Resorts." The cost is \$27.95. Available at bookstores or from Rutgers University Press at 1-800-446-9323.





# Events

## January

**1 Pine Creek Railroad First Run of the Year** Start 1996 off right with a ride aboard a train. **Time:** Noon **Fee:** \$2 **Phone:** 908-938-5524 **Location:** Allaire State Park, Route 524, Farmingdale

**1 Eleventh Annual New Year's Day Hike** Greet the new year with your choice of a 5, 7, 9 or 10 mile (one way) hike along the Paulinskill Valley Trail in Kittatinny Valley State Park; carpool provided. **Time:** 10 a.m. **Fee:** None **Phone:** 908-852-0597 **Location:** Footbridge Park, Blairstown

**3 Battle of Princeton Observance** Sponsored by the Princeton Battlefield Area Preservation Society **Time:** 11 a.m. **Fee:** None **Phone:** 609-921-0074 **Location:** Clarke House Historic Site, Princeton Battlefield State Park, 500 Mercer Road, Princeton

**6 Maple Sugaring** (Also every Saturday and Sunday through Feb. 25) Discussion and demonstration of how to find and tap a maple tree and make maple syrup. **Time:** 2 p.m. **Fee:** None **Phone:** 201-635-6629 **Location:** Great Swamp Outdoor Education Center, Southern Boulevard, Chatham

**6-7 Super Science Weekend** A hands-on festival of science, featuring demonstrations, exhibits, talks and more. **Time:** 9 a.m. to 4:45 p.m. (Jan. 6); noon to 5 p.m. (Jan. 7) **Fee:** None **Phone:** 609-292-6308 **Location:** New Jersey State Museum, W. State Street, Trenton

**8-12 Hawks, Owls and Winter Waterfowl** A week-long program examining the salt marsh habitat and wildlife that attracts snow geese and other waterfowl, as well as raptors, hawks and eagles. **Time:** Call for information **Fee:** Members, \$425; non-members \$450 (field trips only) **Phone:** 609-884-2736 **Location:** Cape May Bird Observatory, E. Lake Drive, Cape May Point

**13 Winter Activities** (Also every Saturday through February) Ice cutting, maple sugaring, wood cutting and woodstove cooking demonstrations. **Time:** 1 to 4 p.m. **Fee:** None **Phone:** 201-326-7645 **Location:** Fosterfields Living Historical Farm, Kahdena Road, Morristown

**13 Whodunit Murder Mystery Dinner** (Also Jan. 20 & 27 and Feb. 3 & 4) Sponsored by Friends of the Hermitage, Inc. **Time:** 7 p.m. (Saturdays); 6 p.m. (Sundays) **Fee:** \$45 **Phone:** 201-445-8311 **Location:** The Hermitage, 335 North Franklin Turnpike, Ho-Ho-Kus

**20 Mid-Winter Antiques & Sale** Sponsored by Allaire Village, Inc. **Time:** 10 a.m. to 4 p.m. **Fee:** Call for information **Phone:** 908-938-2253 **Location:** South Wall Fire Co. No. 1 Station, Rte. 34 & Atlantic Ave., Wall Twp.

**20-28 African American History Celebration** An exhibition of artifacts and memorabilia, dance performances, lectures, concerts and live theater. **Time:** Call for information **Fee:** None **Phone:** 908-842-4000 **Location:** Tatum Park Activity Center, Red Hill Road, Middletown

## February

**7 Evening Tour and Video Evening** Tour Kuser Farm Mansion at night and see films on America's castles and the Emlen Physic House in Cape May. **Time:** 6 p.m. **Fee:** None; reservations required **Phone:** 609-890-3630 **Location:** Kuser Farm Mansion, Newkirk Avenue, Hamilton

**11 Hike the Hills** (Also Feb. 24, March 3, 16 and 24) Guided hike of this 392-acre farm, followed by lunch and wine tasting. **Time:** 1 to 4 p.m. **Fee:** \$20 (includes lunch) **Phone:** 908-475-3671 **Location:** Four Sisters Winery, Matarazzo Farm, Route 519, Belvidere



## CALL FOR ENTRIES

NJO 1996

### Photo Contest



See page 3  
for details

### Win a Camera

**17 February Festivities** (Also Feb. 19-23) Special planetarium show and other programs are scheduled for children during this week off from school. **Time & Fee:** Call for information **Phone:** 908-789-3670 **Location:** Trailside Nature & Science Center, New Providence Road, Mountainside

**18 1830s George Washington's Birthday Celebration** Sponsored by Allaire Village, Inc. **Time:** 1 to 3 p.m. **Fee:** Call for information **Phone:** 908-938-2253 **Location:** Allaire Village, Allaire State Park, Route 524, Farmingdale

**18 George Washington's Birthday Celebration** Sponsored by Rockingham Association, Inc. **Time:** 1 to 5 p.m. **Fee:** None **Phone:** 609-921-8835 **Location:** Rockingham Historic Site, 108 County Route 518, Princeton

**21 Video Evening** Enjoy two videos on the art of dining and flower arranging **Time:** 7 p.m. **Fee:** None; reservations required **Phone:** 609-890-3630 **Location:** Kuser Farm Mansion, Newkirk Avenue, Hamilton

**25 Maple Sugaring** (Also March 3) Lectures and demonstrations of how to collect sugar maple sap and process it into sugar. **Time:** 1:30 to 3:30 p.m. **Fee:** None; reservations required **Phone:** 609-737-0609 **Location:** Washington's Crossing State Park, Route 546, Titusville

## March

### 2 Winter Celebrations at the Swamp

Meet a live hawk, learn about the Lenape Indian culture with Lone Bear, experience maple sugaring and visit the wildlife display **Time:** 1 to 4 p.m. **Fee:** None **Phone:** 201-635-6629 **Location:** Great Swamp Outdoor Education Center, 247 Southern Blvd., Chatham

**3 Todd Half-Marathon** A 13.1-mile run through scenic Colts Neck, Holmdel and Middletown townships. **Time:** 9 a.m. **Fee:** Call for information **Phone:** 908-842-4000 **Location:** Brookdale Community College, Newman Springs Road, Lincroft

**3 Kaleidoscope Kids Family Day** Hands-on workshops explore "Science and Technology Month" with a focus on the plants, animals and geology of New Jersey **Time:** Noon to 5 p.m. **Fee:** \$2 per workshop **Phone:** 609-292-6308 **Location:** NJ State Museum, 205 W. State St., Trenton

**9 Bats** Slide presentation on the habits, habitats and necessity of bats in our ecosystem. **Time:** 2 p.m. **Fee:** None **Phone:** 201-635-6629 **Location:** Great Swamp Outdoor Education Center, 247 Southern Boulevard, Chatham

**9 St. Patrick's Day Parade** Annual parade honoring the patron saint of Ireland. **Time:** 1 p.m. **Fee:** None **Phone:** 201-831-1845 **Location:** Skyline Drive, Ringwood

**10 Capital Music Festival — Millenium Concert** Concert and talk that explore visual art and music concepts, such as tone, value and color, expressed in each art form; performance by Canadian pianist Marc Couroux **Time:** 2 p.m. **Fee:** None **Phone:** 609-292-6308 **Location:** NJ State Museum, 205 W. State St., Trenton

**11 1830s St. Patrick's Day Celebration** Sponsored by Allaire Village, Inc. **Time:** 1 to 3 p.m. **Fee:** None **Phone:** 908-938-2253 **Location:** Allaire Village, Allaire State Park, Route 524, Farmingdale

**11 Classic Creations Craft Boutique** (Monday to Saturday through April 6) **Time:** 10 a.m. to 5:30 p.m. **Fee:** \$5 **Phone:** 201-445-8311 **Location:** The Hermitage, 335 North Franklin Turnpike, Ho-Ho-Kus

**16 Preposterous Potato Party** Learn more about the potato in this St. Patrick's Day party featuring games, contests, crafts and food. **Time:** Call for information **Fee:** None **Phone:** 609-645-5960 **Location:** Atlantic County 4-H Grounds, Route 50, Galloway Township

**16 Grover Cleveland's Birthday Ceremony** Sponsored by the Knights of Columbus and the Masons **Time:** 10 to 11:30 a.m. **Fee:** None **Phone:** 201-226-1810 **Location:** Grover Cleveland Birthplace Historic Site, 207 Bloomfield Avenue, Caldwell

**20 Video Evening** Enjoy videos on Shirley Temple dolls and memorabilia, and Raggedy Ann and Andy. **Time:** 7 p.m. **Fee:** None; reservations required **Phone:** 609-890-3630 **Location:** Kuser Farm Mansion, Newkirk Avenue, Hamilton

**24 Lyme Disease — Prevention and Treatment** Video and discussion sponsored by the Lyme Disease Foundation of Hartford, Connecticut **Time:** 2 p.m. **Fee:** None **Phone:** 201-635-6629 **Location:** Great Swamp Outdoor Education Center, 247 Southern Boulevard, Chatham

**30-31 Pequest Open House** Celebrate the arrival of the spring trout season with tours, displays, exhibits, a living history encampment, a BB gun and archery range and more. **Time:** 10 a.m. to 4 p.m. **Fee:** None **Phone:** 908-637-4125 **Location:** Pequest Trout Hatchery and Natural Resource Education Center, Route 46, Oxford



# Fishy Business in New Jersey



PHOTOS BY AL IVANY

Wildlife worker Dominick Mecurio stocks the Pequest River with trout.

There is something fishy going on at Sheppard's Farm in Cedarville. There is a new crop sprouting among the cucumbers, green peppers and other plants on the family-run farm.

For four years, Pat Sheppard has been "growing" hybrid striped bass in a small

portion of a 16-acre irrigation lake on the property. These fish, the result of breeding white and striped bass, are destined for Philadelphia fish markets and restaurants.

At Musky Trout Hatchery in Asbury in Warren County, Vern Mancini learned fish psychology the hard way, and now he practices trout suicide control.

When his fish started jumping into water spouts in their tanks, Mancini installed metal grates under the spouts — both to capture leaves and to block any escape attempts from the concrete fish pools.

"(The trout) thought they were going upstream to spawn, but it would be too late before they realized it wasn't a waterfall," says Howard Metzgar, Mancini's brother-in-law and fellow fish farmer at the Warren County business.

## A Fishy Business

Both Sheppard's Farm and the Musky Trout Hatchery are part of a little known, multi-million dollar industry in the state of New Jersey. Aquaculture and its saltwater cousin mariculture, are the farming of aquatic organisms, such as fish, mollusks and aquatic plants, through the use of technologies to raise, feed and protect these organisms from predators. The resulting products can be found in stocked lakes and streams, supermarkets, restaurants, medicines and outdoor water gardens.

Aquaculture takes life forms that naturally develop in the state's lakes, bays and streams and "grows" them in a controlled environment, free from drastic changes in nature and unwanted human intervention, such as pollution and over-harvesting. As a result, fish and shellfish, along with the people who eat them, are better protected.

Water farming also protects the entire ecosystem, both in retaining open space and producing fish to replenish depleted populations. Waterways that lack fish can be stocked with fingerlings, or young fish. And the controlled use of land and water for these farms helps to protect wetlands, says Kurt Powers, an



18-year veteran as supervising biologist in fish hatcheries at the Department of Environmental Protection's Division of Fish, Game and Wildlife.

Not only do aquaculture operations raise fish for stocking, they also raise fish and aquatic plants for food or outdoor water gardens. Water plants also serve as additives in medicines, cosmetics and food. One emerging technology uses aquatic plant extracts as biological indicators, much like barium "milkshakes" are used in x-ray procedures, according to Linda O'Dierno, coordinator of the Department of Agriculture's fish and seafood development program.

"The aquaculture industry in New Jersey has the potential of earning \$750 million and employing about 7,000 people in the next 10 years," says Tim Jacobsen, an industry expert and instructor at the state's only aquaculture certification program at Cumberland County College in Vineland.

Armed with this economic potential, Gov. Christine Todd Whitman recently adopted a plan by the Fisheries and Aquaculture Technologies Extension Service to help the budding industry. This plan would develop regulations, protect the environment, expand the economic incentives and provide education and training programs for the industry.

## A 100-Year Old Industry

The aquaculture industry is more than 100 years old in New Jersey, dating back to at least 1865, when Dr. J. H. Slack raised salmon and trout in clay-lined raceways and pools at the Troutdale Fish Farm in Asbury. Some of Slack's fish were raised in a hatchery, where workers hand-picked dead embryos from among fertilized eggs to prevent the spread of disease. Others were allowed to breed naturally in pools on site, where gravel was provided for nesting crevices.

Many of Slack's methods are still followed today by Mancini, who began renting the Troutdale property in 1958. His

business, Musky Trout Hatchery, is named after its location on the banks of the Musconetcong River, which divides Warren and Hunterdon counties. Today Mancini raises rainbow, brook, brown, golden and tiger trout, as well as large mouth bass, bluegills, catfish and crappies.

Mancini still breeds his stock by "stripping," much the same way as Slack did in the 1800s. When the fish are sexually mature, usually in late September, the females take on somber dark colors, while the males' bodies display more brilliant pink and red hues. The fish are then gently squeezed down their lower lateral sides with the thumb and index finger, expelling the sperm and eggs into a pail.

The mixture then is stirred and poured into ventilated plastic trays. Fresh spring water is trickled through to sustain the growing fish. After 28 to 40 days, the baby trout have entirely eaten their egg sacks and need nutrition.

While Slack used chopped liver and ground meat to feed his growing stock, today's fish are fed processed fish pellets, which resemble rabbit food and contain the necessary oils, proteins and vitamins.

When the fish are five to nine inches long, they are placed in outdoor raceways, which are draped with nets to guard against birds. As they grow, trout are transferred to round concrete pools based on their size and maturity to prevent predation by the larger fish.

## One-Woman Show

Some "farmers," like Pat and Tom Sheppard of Salem County, have found a way to combine agriculture and aquaculture. While Tom and his two brothers tend to the family vegetable farm, Pat operates a one-woman fish farm on part of an irrigation lake. Pat Sheppard's site raises about 7,000 fish in submerged metal cages along docks in the lake.

"Some farmers have a little bit of water on their land and want to do something with it," says Pat Sheppard, who began her business with a \$5,000 start-up grant from Rutgers University's Cook

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The aquaculture industry is more than 100 years old in New Jersey, dating back to at least 1865.

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College in New Brunswick and lots of advice from experts. "I tell them that they have to know what they're getting into. You can't just throw fish in the water and grow them."

Pat Sheppard now opens her fish farm to classes from nearby Cumberland County College to supplement its new program in aquaculture. In addition, she has invited farmers, Brownies and local middle school students by for tours.

## Public Stock

Most of the state's freshwater aquaculture activity is concentrated in the two state-run hatcheries in Warren County — Pequest Hatchery in Liberty and the Charles O. Hayford Hatchery in Hackettstown. These state fish hatcheries distribute young fish to public areas, such as Stokes State Forest, Round Valley Recreation Area, Merrill Creek Reservoir and other public lakes, rivers, ponds and reservoirs.

The Hayford Hatchery, established in 1912, raises northern pike, tiger muskellunge and muskellunge, hybrid striped bass, channel catfish, lake trout, large and small mouth bass and crappies. The hatchery also supplies sunfish to children's fishing derbies and larvae-eating mosquito fish to county mosquito control units. The Hayford Hatchery is closed to the public.

Pequest Hatchery, opened in 1984, raises brook, brown and rainbow trout. It



has a visitor's center, which educates about 50,000 people a year on New Jersey natural resources and the hatchery itself.

### The Sea's Bounty

Most of New Jersey's commercial aquaculture is concentrated in the salt-water business. Begun in the 1970s in response to the overharvesting of shellfish from area waters and a lucrative market for young little neck clams, some farmers began lining the beds of bays with clay to form cement-like walls to prevent water from seeping into the porous ground.

"Most people do not know that it (salt-water aquaculture) is putting a couple million dollars into the New Jersey economy," says John Kraeuter, associate director of the Haskin Laboratory near Port Norris.

But shellfishing is not without its own setbacks. Oyster fishing has been restricted in New Jersey because of a protozoan disease that makes it impossible for farmers in the Chesapeake and Delaware bays to survive. The lab is currently developing a disease resistant strain of oyster for the New Jersey industry.

### State Aquaculture Plan

To help spur the industry, the state has developed an "action agenda" for aquaculture in New Jersey. The plan, proposed by the Fisheries and Aquaculture Technologies Extension Center (FATEC), addresses regulations, environmental protection, economic incentives and education and training.

To promote orderly development in the state, O'Diemo explains, the plan had to set up a system in which to codify issues. While many existing regulations could apply to aquaculture, these new rules would set up one clear set of regulations for the industry.

Regulation will, in turn, serve to protect the environment. If permits are properly obtained, the industry could be monitored and controlled to preserve resources.

The plan also cites the need for state supplied loans and funds to help

set up aquaculture businesses. It usually takes five years for a new operation to operate in the black, making traditional investors leery.

Education and planning are also key components of the plan. Cumberland County College (CCC) has been operating a certificate program in aquaculture since 1995. The program addresses the three Bs: business, biology and building. Classes are targeted both at people interested in building an aquaculture operation and at bankers who finance such operations, says Jacobsen.

Like the industry itself, CCC's aquaculture program is growing. In addition to the certificate program, a new aquaculture wing is being added to the college's agriculture/horticulture building. Funded by the Education and Technologies Job Bond Act of 1988, the former Commission of Higher Education and a few other groups, the first two phases of the project — classrooms and some aquarium lab space — were expected to be completed by the fall of 1995. Phase three of the construction with more production labs will begin in December.

Eventually, says Jacobsen, CCC and Cook may offer a four-year degree in aquaculture.

In addition to the educational aspects of the policy, there is a provision for aquaculture research in the plan.

"Because this industry is on the cutting edge of technology, the state's draft will change as we move on," says O'Diemo.

And for continual updates on emerging aquaculture technologies, the state relies primarily on Haskin Lab and the two state-run hatcheries for research.

A joint venture between Cook College and the Haskin Lab, funded by many public and private contributors, may result in a demonstration facility in the next few years. Land in Cape May already has been purchased from the Delaware River Authority, and construction contracts are being sought. The facility, which will house indoor and outdoor aquariums, can serve as an internship site for budding aquacultur-

Craig Lemon at the Charles O. Hayford State Fish Hatchery (Hackettstown) with channel catfish broodstock.



ists and as an education site for other interested people. It will be the first of its kind in both the state and the Mid-Atlantic region.

Meanwhile, Haskin and Cook are assisting farmers in the developing aquaculture industry by providing advice, financial support and limited water and soil testing.

That assistance has allowed Pat Sheppard and others like her to enter the exciting — and at times risky — new enterprise.

"I think we've hit every snag we possibly could in the last four years," says Pat Sheppard, referring to bouts with bacterial infections and temperature shocks. "If I didn't have the backup from them (Cook College and the Haskin Lab), I wouldn't have the farm right now. . . . I'm still hanging in there, but I'm not running out and buying a big house or anything."

*by Michelle Carvin, a journalism intern from Trenton State College*



# Managing a Watershed: Lessons from the Whippany

Flowers bloom on  
the banks of the  
Clyde Potts Reservoir  
in Mendham.

In the early 1980s, Rutgers University environmental researchers George Van Orden and Chris Uchirin would break from their work to watch sewage sludge — dark and pungent — burp from the depths of the Whippany River. “Good old-fashioned pollution,” they joked, knowing full well there was nothing “good” about it.

At the same time, Pat Matarazzo, then with the Hanover Sewage Authority treatment plant, was working to stop the pollution — and the jokes.

With the financial support of the federal Environmental Protection Agency and the state Department of Environmental Protection (DEP) as well as the regulatory mandates of the federal Clean Water Act, treatment plant managers in the Whippany watershed in north Jersey and across the state tightened controls at their facilities. The best available treatment technology was purchased and installed. In addition, industrial pre-treatment programs were initiated to neutralize toxic waste before it flowed into sewage plants.

All in all, the upgrades worked. In many cases, the water coming out of treatment plants was cleaner than the Whippany itself, Matarazzo says.

Today, visitors look at the river and see fish instead of feces. Canoeists paddle the river below Route 10. Portions are stocked with trout, and there is a natural trout hatchery in Mendham Township. Walkers and cyclists enjoy the scenery along the 27-mile Patriot's Path greenway that runs next to the Whippany throughout Morris County. Picnic blankets and



PHOTOS BY KYRA HOFFMANN



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A key concept  
of watershed  
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minor events, affects  
the water.

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beach blankets vie for space on the banks of Sunrise Lake in Mendham. There are more than 160 species of animals living in the 68-acre watershed surrounding the river and its tributaries.

What a difference a decade makes. "Scientific studies by the DEP and others show that the Whippany River is recovering from years of misuse," says Van Orden, now the Hanover Township health officer.

### The Next Step

There is no doubt that tightening controls of wastewater discharges through government intervention, environmental regulation and tax dollars improved water quality in the Whippany River and the quality of life for its neighbors. But these tried and true solutions won't take the Whippany, or any other river, to the next level of improvement. That is where the Whippany Watershed Partnership comes in.

"Comprehensive watershed management is the next step," says Barbara Harris, chair of the Whippany Watershed Partnership, a pilot program that will help define the state's approach to watershed planning.

Van Orden, Uchirin and Matarazzo

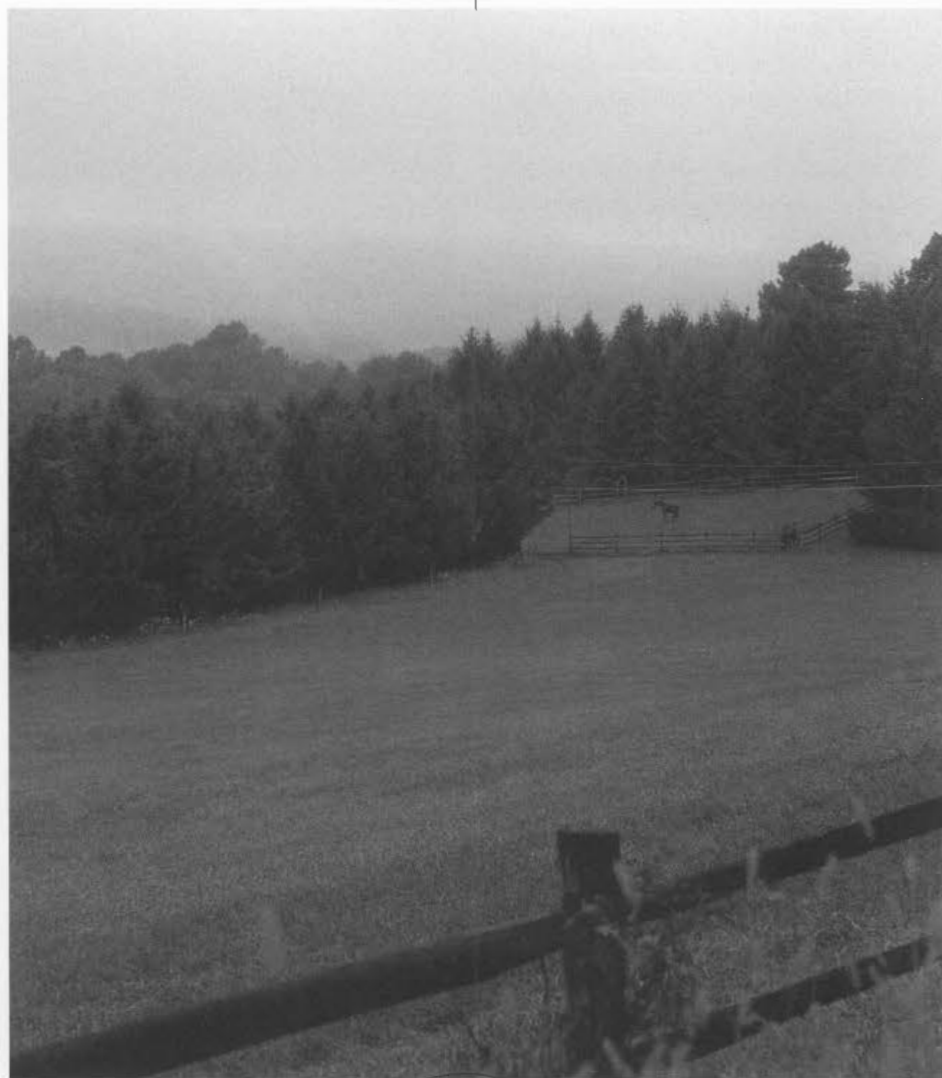
are also members of the partnership. It is in the second year of a five-year planning process to identify all sources of water pollution and to apply the latest technology, improved management techniques and public education strategies to maintain the watershed.

The lessons learned from the Whippany project will help devise management plans for watersheds throughout the state, says Sandra Cohen, project manager for the DEP's Whippany Watershed Project. The DEP simultaneously is developing a statewide watershed strategy, a way of managing watersheds based on ecosystems rather than along political lines, such as town, city or county boundary lines.

The Whippany Watershed Partnership includes representatives from state, county and local governments, business and industry, the building trades, land use planning, environmental activist groups and environmental consulting firms. These sometimes adversaries sit at the same table with DEP staff, sharing ideas and concerns; together they are developing a plan that not only will protect the environment, but is one with which they can all live.

### Watershed Planning

A watershed is an area of land that drains into a specific body of water. The Whippany Watershed includes all or parts of 16 municipalities in Morris





County, including Boonton, Boonton Township, Denville, East Hanover, Florham Park, Hanover, Harding, Madison, Mendham Borough, Mendham Township, Morris Plains, Morris Township, Morristown, Mountain Lakes, Parsippany-Troy Hills and Randolph.

A key concept of watershed management is that everything that affects the land, even seemingly minor events, affects the water.

When most people think of pollution, they think of "good old-fashioned" untreated sewage or exotic chemical waste. Today's pollution is pretty common; it's not likely to vaporize, bubble, sizzle, smell bad or ooze out of the ground in Technicolor swirls. While toxins always will be a concern, today's pollution can be found on residential lawns, in street gutters and storm drains, on farm fields, in shopping mall parking lots and on the eroded banks of the river itself. This is called nonpoint source pollution, or people pollution, because the source is people. It includes such common items as fertilizers, pesticides, grass clippings, animal waste, litter and dirt.

"We have to broaden the way we look at and deal with pollution to include these familiar items," says Martin Bierbaum, administrator of the DEP's Office of Environmental Planning.

While not everyone agrees on every point, partnership members speak with one voice on the issue of government controls. "Environmental regulations on industry alone won't solve the problem," says Matarazzo.

If every sewage treatment plant, most of which handle industrial chemical waste as well as residential organics, discharged drinkable water into the Whippany, "it would have a negligible

## We have to broaden the way we look at and deal with pollution

effect on the river," says Matarazzo. These days, Matarazzo is head of the Verona sewage treatment plant, where he indeed does clean the waste to drinking water standards before pouring it back into the Passaic River.

### New Problems & Solutions

As rivers get cleaner, unexpected problems develop, and traditional techniques have no impact. Some sections of the Whippany River are now so crystal clear that sunlight sparkles through the water and reflects off the sandy river bed. Sounds great, and it is, except that all this light contributes to another environmental problem — algae blooms.

Algae, a microscopic aquatic plant, needs certain amounts of water, light and food to grow. The more light available, the more food the algae can eat, the more it can grow or "bloom." A growth spurt depletes the dissolved oxygen in the river, suffocates fish and generally causes a big, smelly mess.

"You can't just tell the sun to stop shining," says Matarazzo. And taking away the water is a bit unrealistic, as is re-polluting the water to block the light.

"But you can limit the food," he says. Some favorite foods for algae and other green plants are phosphorous and nitrogen found, not surprisingly, in lawn and garden fertilizers. When fertilizers are overused or misused, they can be carried by rainwater into the river. Creative watershed management includes educating people in the proper use of lawn and garden chemicals and

the potential effects of their misuse.

Another algae-thwarting option is lining the river banks with light-blocking leafy trees and densely-spaced plants to filter out food-filled storm water.

Such a project is underway in downtown Morristown. The Morris County Natural Resource Conservation Service, the Whippany Watershed Partnership and the DEP are working together to restore a section of the Whippany River along Center Street where, centuries ago, the first settlers stepped out of their canoes into a largely untouched landscape.

Today, it is in the shadow of Headquarters Plaza. In fact, Center Street is little more than two aging parking lots built to store heavy equipment during the construction of this multi-story office complex. Here the river banks are eroded, and storm water rushes freely from the pavement to the river, carrying dirt and other contaminants.

The restoration will remove some of the pavement, repair the river banks and plant water-slowing grasses and shrubs. Exotic plants that do not shade the river, including the so-called Tree of Heaven with its lacy leaf cover, will be replaced by native, thick-canopied North American plants that do the job.

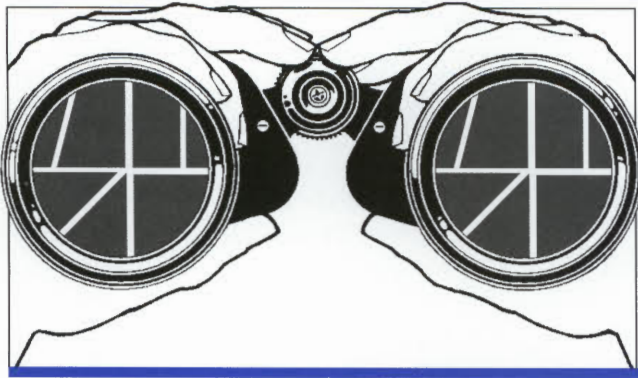
"And while no one expects the Whippany watershed to look as it did when those first settlers made landfall, today's residents can enjoy a cleaner river if everyone continues to work together," Cohen says.

For more information about the Whippany Watershed Project, call Cohen at (609) 984-0058.

*by Laurel Van Leer, a program assistant with Rutgers Cooperative Extension working for the Whippany Watershed Partnership*

A hilltop view of the Whippany headwaters.





# Explorer

## Hey, Explorer!

### Be a Frontier Kid!

Imagine if you lived in the colony of New Jersey before the American Revolution. After your school work is finished, you move on to the household chores: feeding the chickens, bringing the water from the well, cleaning the house and other duties.

But what could you do for fun? There were no televisions, no telephones, no radios or any other electronic devices. With no malls, no pizzerias and no local hangouts, where could you go?

You'd have to depend on your mind to supply creativity and your environment to supply materials for fun and games. Here are a few examples of the games children may have played at that time. Some of these games and toys came from items collected, such as corn cobs or sticks on the farm or in the fields and woodlands around their homes. You can try some of these colonial toys with your friends on a rainy day. All you need is a few supplies and your imagination to be a frontier kid. (This is a great way to reuse and recycle, too, since many of these materials are biodegradable and can be composted.)

Find out more about how New Jerseyans lived during the French and Indian War, in "On New Jersey's Frontier," beginning on page 4.

by Heatherlyn Herrick of the Department of Environmental Protection's Environmental Education Unit

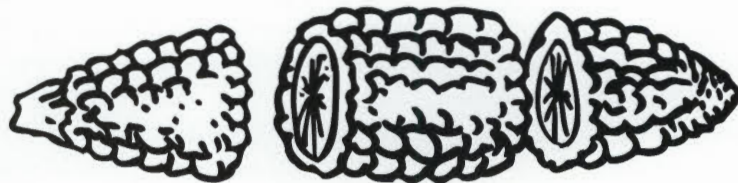
## Corn Cob Animals

Here is a great craft for you to try. You can make a whole barnyard full of animals. You can create horses, cows, dogs, cats, pigs and many other animals. Let your imagination run wild; the possibilities are endless.

### You will need:

- |                                       |                                     |
|---------------------------------------|-------------------------------------|
| <input type="checkbox"/> Corn cobs    | <input type="checkbox"/> Corn husks |
| <input type="checkbox"/> Knife        | <input type="checkbox"/> Markers    |
| <input type="checkbox"/> Small sticks | <input type="checkbox"/> Glue       |

1. Cut a dried corn cob in three pieces as shown below.

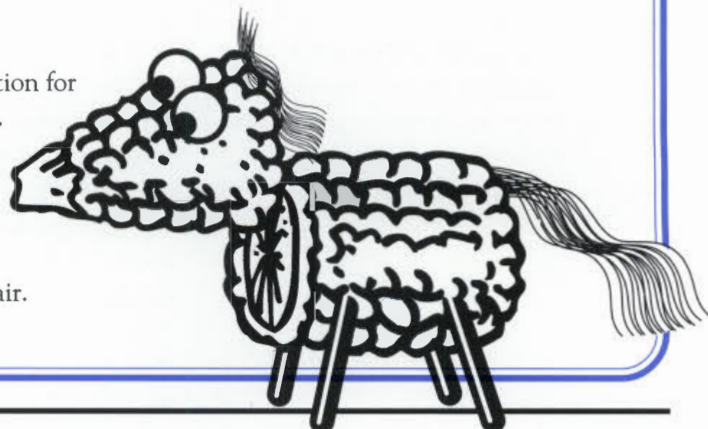


2. Force four small sticks into the body for legs as shown at right.



3. Glue on a neck and head or attach them with sticks or toothpicks.

4. Use your imagination for the face and body. You can use corn silk for a mane and/or tail. You can use the husk for ears or hair.





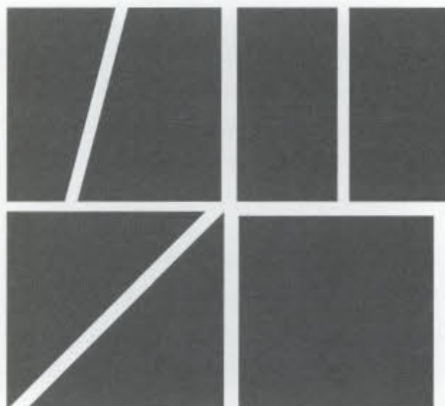
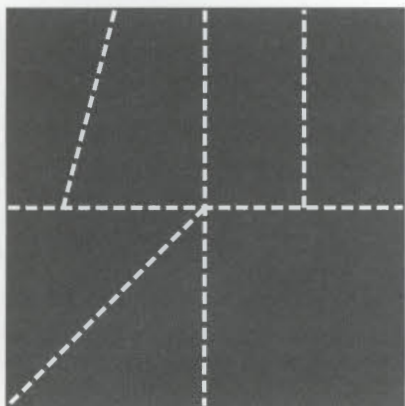
## Tanagrams

Unlike jigsaw puzzles, tanagrams make many different pictures and shapes instead of just one. Create pictures by yourself or with your friends. Just use your imagination.

You will need:

- ☐ Scissors
- ☐ Crayons
- ☐ A large piece of cardboard
- ☐ A pencil
- ☐ A ruler

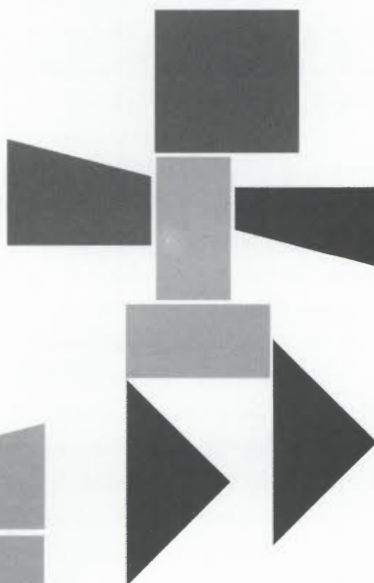
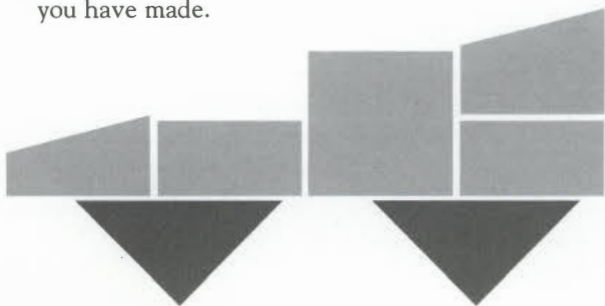
1. On a square piece of cardboard, draw various straight lines with a ruler and pencil, making seven shapes, similar to those shown below.



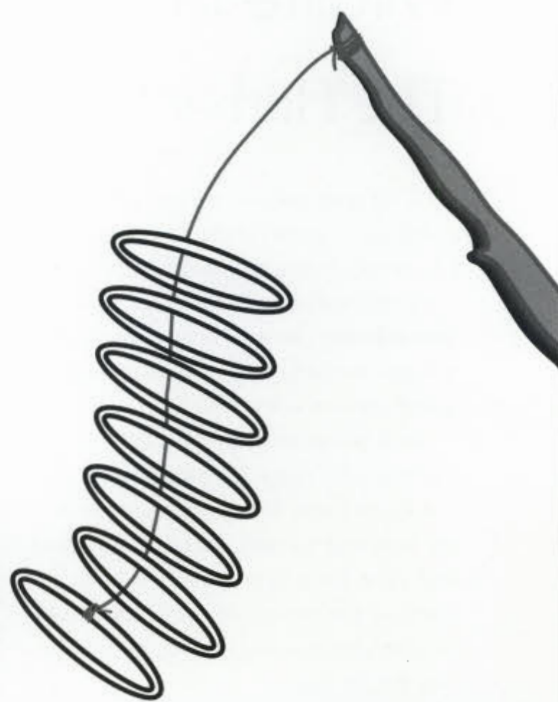
2. Color both sides using different color crayons.

3. Use scissors to cut out your pieces.

4. Each piece is called a "tans." Create different puzzles by arranging the shapes into different pictures. A good puzzle to start with is to assembly the pieces back into a square. Make different pictures by moving the pieces. Be sure to make sure that all seven pieces are used and that the pieces do not overlap. See if your friends and family can guess the pictures you have made.



5. Once you have mastered the game using one tanagram, try it with two large squares and see what you can create.



## The hOOop Game

The object of this game is to swing several hoops so they land on a stick. Each player should be given two or three tries. The winner will be the one who scores the most "ringers."

You will need:

- ☐ A foot-long straight stick, stripped of bark and sanded until smooth
- ☐ Three feet of cord or string
- ☐ Seven large hoops (Hoops can be made by taking the ends of very flexible branches and tying the ends together with string or yarn.)
- ☐ Scissors

1. Tie one end of the string to the top of the stick.
2. Thread the string through six hoops and tie the other end of the string to the seventh hoop.
3. Each player is given several tries to swing the stick to get "ringers," or the hoops over the top of the stick.



# Wildlife in New Jersey

## The Harbor Seal

Wild seals conjure up images of northern or even Arctic climates. But few people know that more than a hundred harbor seals call New Jersey home during the winter months, coming ashore into isolated estuaries and even upstream into a few rivers.

New Jersey is near the southern limits of the range for harbor seals on the East Coast. However, these seals are frequent visitors offshore in winter and even have been reported as far south as the mouth of the Chesapeake Bay in Virginia and off the coast of North Carolina.

The winter seal-sighting season runs from December through March. Seals generally leave the New Jersey coast by the second week in April, probably responding to rising air and water temperatures and the increase in human activity.

The harbor seal, *Phoca vitulina concolor*, is found in both the North Atlantic and Pacific oceans and their adjoining seas. Here in the East, the population is about 10,000, concentrated mostly in the Bay of Maine, the Bay of Fundy in southern Canada and the Canadian Maritimes, where they come to land in summer to molt and have their pups. A single pup is born and nursed for up to six weeks, reaching up to 50 pounds and having a full set of teeth by the time it finally is weaned.

Harbor seals grow to an adult length of about six feet for males and five feet for females and weigh up to 250 pounds. They reach maturity in three to five years and have been known to live up to 35 years in captivity.

The color of harbor seals varies from light gray to tan to reddish brown, and some are spotted or blotched with black. Each summer, they sport a new coat following the molt. Harbor seals have no external ears.

Their body shape, while looking

bulky and awkward on land, is very efficient for life in the water. The shape is rounded out by a layer of blubber, which is effective in holding in body heat. They swim propelled by the side-to-side motion of their rear flippers, gliding gracefully through the water between power strokes. A great way to examine seal locomotion is to watch them through the glass walls of their enclosure at the Thomas H. Kean New Jersey State Aquarium in Camden.

Seals are avid swimmers and have been recorded down to 600 feet in depth with dives lasting up to a half hour.

In the more northern waters, seals often come ashore on rocky ledges as the tide falls and feed in open water during high tide. In New Jersey, isolated sand bars, exposed during low tides, may serve as resting areas. But at least one large group of seals in this state does the opposite, apparently because the sod banks of the salt marshes are hard to scale during low tide. This group feeds at low tide and comes out onto the marsh or salt hay at high tide.

In New Jersey waters, harbor seals feed mostly on herring and related fish, but they also are known to eat octopus, squid, shrimp, crabs and mollusks. These items are swallowed whole or ripped off in large chunks. Seals can eat up to 15 percent of their body weight each day.

Seals are protected species in New Jersey and are regulated by state nongame laws as well as the federal Marine Mammal Protection Act of 1972. Today, the species are on a comeback and can only be taken by permit from United States waters. But they were nearly exterminated at the turn of the twentieth century after a bounty was offered to reduce the seal population in an effort to increase fish stocks.

Prior to the 1972 federal law, seals also were used for mink food, skins, leather products, biomedical research

and public display. Today, they still fall victim to storms, abandonment by the mother, disease, parasites and predation by sharks and orcas.

The Marine Mammal Stranding Center, a refuge for injured or orphaned marine life in Brigantine, reports an increase in seal strandings along the New Jersey coast in the 1990s. More than a dozen seals, including harbor seals, harp seals and an occasional gray seal, wash up on shore every year. This compares to just a few seals found each year during the 1970s and 1980s. One theory as to why many seals are turning up on New Jersey's coast is that the world's fishing stock has been so depleted that many seal species are traveling farther and farther afield in search of food.

Most of those stranded on the beach are yearlings. All of them have parasites, and most suffer from respiratory problems. When the seals have regained their health at the center, they are tagged or numbered with a bleached marking and released. The data gained in these encounters could provide useful information on their habits and habitats in the long run.

Seals generally are shy when encountered in their resting areas. But when they are in open water, they may exhibit curiosity towards humans and come quite close to boats. In some cases, this curiosity has been hazardous as the seal becomes entangled in plastic lines, ropes and fishing gear.

Seals in the wild should not be approached; even the young can deliver a nasty bite. If you find a seal in distress, contact the Marine Mammal Stranding Center at (609) 266-6300.

by Larry Sarnier, a biologist specializing in marine, coastal and aquatic education programs with the New Jersey Division of Fish, Game and Wildlife





ACRYLIC BY ANTHONY CIALONE

New Jersey State Library





Bears, although seemingly cute and cuddly, are part of (wild) life in New Jersey. Catch a glimpse of these fascinating creatures in the next issue of NJO.

## Coming Soon

Turkey Hunting  
Life on New Jersey's Artificial Reefs  
The Garden State Glass Industry  
Freshwater Fishing for the Big One  
On the Trail of the Black Bear  
The Natural Side of the Barnegat Bay  
Rafting the State's Rivers