

# New Jersey March/April 1984 Outdoors



# New Jersey Outdoors

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*NEW JERSEY OUTDOORS CREDO*  
This publication is dedicated to the wise management and conservation of our natural resources and to the fostering of greater appreciation of the outdoors. The purpose of this publication is to promote proper use and appreciation of our natural, cultural, and recreational resources, and to provide information that will help protect and improve the environment of New Jersey.

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

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# FROM THE EDITOR

## Parks '84

*A guest editorial by Helen C. Fenske, Assistant Commissioner for Natural Resources, Department of Environmental Protection.*

In his State of the State Message on January 9 Governor Kean proclaimed 1984 "Year of the Parks" to recognize New Jersey's fine system of parks, forests, and wildlife management and natural areas. We are calling the program "Parks '84 ... from the mountains to the shore." We want to celebrate 50 years of development of one of the finest state park systems in the country.

Two major forces drove that development. One was the establishment of the Civilian Conservation Corps (CCC) in 1933. The heritage of their work at State parks and forests like Stokes, Parvin and Voorhees remains today as cabins, trails, dams, campsites, and roads.

The other force grew out of "The Race For Open Space," an important Regional Plan Association report that documented the long term impacts of urban sprawl. Public concern over the report's implications spurred the passage of five Green Acres Bond issues since 1960, the last in November 1983. No state has committed so much to preserve open space for its citizens, their children and their grandchildren. As a result, we have today over 650,000 acres in State, county and local parks, forests and wildlife management areas.

There are increasingly solid economic reasons why protected open spaces are important to New Jersey. One of the greatest challenges for state government to attract and keep business and industry in the state is to provide recreational and cultural resources which encourage employers and employees to locate their families here. Recreation, integrally tied to good health, has become an essential component of most people's lives. And permanently protected open spaces are essential for recreation and for the clean air and water critical to life itself.

"Parks '84" has two goals and we are hoping you will play a part in both. Next fall, a conference to examine New Jersey's future recreation needs will be held. Emerging from the conference will be recommendations on how to meet those needs.

Our other objective is to strengthen public appreciation of open space areas through special events, working with organizations such as the New Jersey Audubon Society, and the New Jersey Recreation and Parks Association. Activities include a 10 kilometer "Governor's Race for Open Space," the State Council on the Arts' "Art in the Parks" programs, a statewide birdwatch, the year long 150th Anniversary celebration of the Delaware and Raritan Canal, and a statewide golf tournament.

I hope you share our sense of excitement in the months to come in *New Jersey Outdoors*.

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## IN THIS ISSUE

*The Best Yet!* by fisheries biologist Bob Soldwedel is a prospectus of the 1984 Trout Season, which opens on April 7. The trout stocking photographs are by Emil Williams, a photographer/sportsman from Williamstown.

More on trout. Outdoor writer Ron Jacobsen, from Budd Lake, writes about the people and the programs at the *Pequest Trout Hatchery*.

Frequent contributor Paul E. Taylor from Vineland, writes about *Fort Mott State Park: A Brief History*. The author is also the photographer.

Roger Locandro, Dean of Students at Cook College, Rutgers University, teaches a very popular course titled "Interesting and Edible Meats." The author, Gary Ann Lewis, was one of 26 accepted of the 200 who signed up for the course. She wrote *Cook Course: Unusual and Tasty*. Try it, you'll like it.

Ginger Wallace, from Short Hills, writes about Milburn Township's *Cora Hartshorn Arboretum*, which she describes as "nature's

classroom." The photos are by the author.

The last word on *New Jersey's Turtles* was written by Karl Anderson, Director of the N.J. Audubon Society's Rancocas Valley Nature Center. Most of the photographs were provided by Herpetologist Robert Zapalorti. Others were provided by R.J. Stein, Curator, N.J. State Museum, Breck P. Kent, and Michael P. Gadomski.

Author Robert S. Leap, of Oaklyn, lists eight reasons for *Why Fish?*, and some answers too. The author is the illustrator.

For the dedicated bass angler, A.W. Schaefer, from Middlesex, writes about *Pre-Spawn Largemouth Bass*. The illustrations were provided by the author.

Pinelands resident Bert Nixdorf writes about hiking and history in the article, *Wickecheoke and the Hills of Hunterdon*.

*Smokey Bear Turns "40."* That's what author Joseph R. Hughes, from DEP's Bureau of Forest Fire Management, tells us.

*Happy Accidents in Sussex* is about a kiln located in Peter's Valley. This kiln or "anagama" is the creation of Kalsuyuki

Sakazume, a ceramist and master kiln builder. The article was written by William Zander; photographs by Dr. Steven Okeson.

Author Tim Faherty writes about *Ocean City's Unique Dune-Building Program* which uses discarded Christmas trees as dune builders to help protect the beach during severe coastal storms.

DEP's Natural Resource Education and Interpretive Studies Programs are discussed in two short articles: *Liberty Park Interpretive Center* and the *Natural Resource Education Center at Pequest*.

Author/photographer Cornelius Hogenbirk writes about *Shooting Wildflowers*, and he lists the 11 items required to do the job.

The Carol Decker illustration on the inside back cover introduces the *Wildlife in New Jersey* article titled, *The Yellow Perch and Eastern Chain Pickerel*. The author is Wildlife Biologist David Chanda.

*Steve Penne*

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# THE BEST YET!

*a prospectus for the  
1984 trout season*



BY ROBERT SOLDWEDEL  
PHOTOGRAPHS BY  
EMIL WILLIAMS

Spread the word, far and wide, that the brook trout are back. Production of brook trout, once the mainstay of the early season trout fishery, was discontinued in 1971 because of disease problems at the Charles O. Hayford Fish Hatchery in Hacktystown. Since that time, those brook trout which did find their way into New Jersey streams were obtained from other States, the U.S. Fish and Wildlife Service or purchased from commercial fish hatcheries. Virtually all of these brookies were stocked in the acid water streams and ponds of South Jersey, as this is the only species which will survive there during the early portion of the stocking season. Very few brookies went north over the last dozen years. Well, all that has changed. With the

Pequest Trout Hatchery now on line, over 200,000 brook trout will be available for stocking in 1984. "Why will this improve fishing?" you ask. It will improve fishing because, of the three species of trout used in our spring stocking program, it is the brook trout which is most easily caught from the cooler waters of April. This means that the average angler, who may only get the chance to fish a few times a year (opening day being one of them) will have a better chance of not having to go home to face his family emptyhanded. Of course we can't guarantee a trout in every pot, but we feel the brook

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*Prepare your tackle box,  
600,000 trout being  
stocked in New Jersey's  
streams this spring.*

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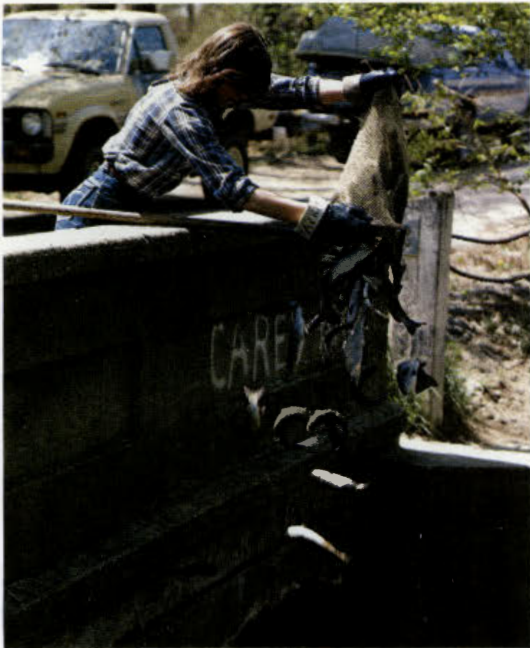
*Pictured above,  
Conservation Officer  
Hershel Beebe  
overseeing trout  
stocking at Hopkins  
Pond in Haddonfield.*

*Right, fisheries  
wildlife worker  
Jackie Murray with a  
net-full of trout.*

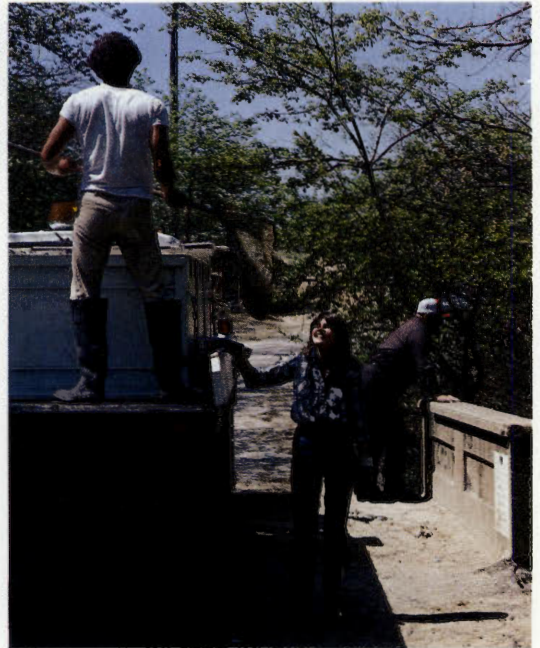
trout will bring the odds down in the angler's favor.

Joining the 200,000 brook trout, will be relatively equal numbers of brown trout and rainbow trout for a total of about 600,000 trout to be stocked in the spring of 1984. This was the figure that the Pequest Trout Hatchery was designed to produce and it is living up to its designed capabilities.

All of the trout to be stocked in 1984 will be yearlings. Previously, it had been necessary to hold a percentage of the hatchery's annual trout production for two years in order to bring them up to the size desired for stocking in the state's major waters. There were many problems and waste connected with holding trout over an extra year at the old hatchery and this has now been eliminated. However, the fact that we will no longer have two-year-old trout to stock does not mean that we will be stocking smaller fish. In fact, the average size of the trout to be stocked will be about half an inch larger than what it was in 1983 (i.e. 10.0 inches). The improved facilities at the new hatchery have resulted in a more favorable conversion rate of fish feed to trout growth than we had at Hacktystown.



Jackie Murray waiting for a net-full of trout.



Releasing trout into stream in North Jersey.

At Pequest we can now grow a trout to a size in one year which used to take us two years.

The trout to be stocked in 1984 will be more uniform in size than what Jersey anglers have grown accustomed to. There will no longer be designated "medium" and "large" stocked waters and anglers may do well to seek out the previously ignored smaller streams for their trout fishing. About 99% of the trout stocked will be between 9 and 12 inches in length (in 1983 about 23% of the trout released were less than 9 inches while about 8% were over 12 inches). About the only negative connected with the '84 season will be the absence of the "sugar" trout, but when you read the next paragraph you'll

see why we feel there may be quite a few exceptionally large trout available this spring.

In 1983, New Jersey had its first massive fall trout stocking program as all of the trout at the Charles O. Hayford Fish Hatchery were released as well as the excess from the Pequest Trout Hatchery. In all, about 340,000 trout were stocked in the state's major trout waters. Included in this total were all of the old hatchery's brood stock. The pictures in the local newspapers of fishermen with stringers containing several or more trout over four pounds apiece attest to the quality of trout making up some

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*99% of trout will be between 9 and 12 inches in length.*

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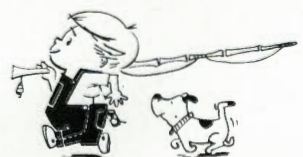


of the stockings. Many of the fall stocked trout have been caught and many more will be lost over the winter, but some will remain to surprise some lucky fishermen in April.

Despite all of these optimistic projections, if the weather on April 7 is anything like it was on the opening days of 1982 and 1983, all bets are off. If you recall, in 1982 we had 18 inches of snow and brutally cold temperatures, and in 1983 streams were at flood stage. It is difficult, if not impossible, to catch many trout under these conditions no matter how many were stocked. But after two bummers in a row, the odds are we're due for a nice day this time around. If we luck out and get it, 1984 could be the best yet.

**New Jersey State Library**

CO Beebe netting trout from fisheries truck at Hopkins Pond.



# Pre-Spawn Largemouth Bass

BY A.W. SCHAEFER

Pre-spawn is that time when the bass start to move from late winter locations to spawning locations (when bay water temperatures reach about 50°). Bass will tend to group in the early part of pre-spawn, filtering in and out of spawning locations in search of a suitable nesting area.

The pre-spawn period can be one of the most thrilling times of the year for the bass fisherman. Bass can be taken in large numbers and a variety of ways. It is also the most important time for releasing those bass you catch. The consequences are clear: We can wipe out entire generations of bass and hurt a lake for many years. There is no harm in catching the pre-spawning bass, but they must be released unharmed in the same location.

## PERIODS OF PRE-SPAWN

### EARLY PRE-SPAWN

Water temperatures (50°-54° in bay) or spawning areas

Most bass will be found in the 5' to 15' range

## Baits and Presentation

Jigs, spoons, and tailspinners are the most effective methods for working dropoffs, deep flats, and channels at this time of the year. The bass are still very sluggish. One must think "slow." A strike may be nothing more than a slight tap.

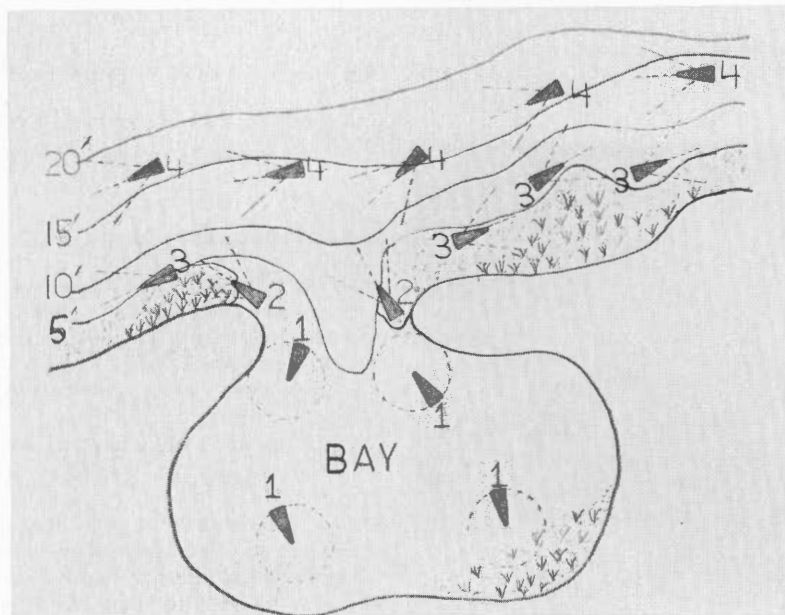
## Presentation of Bait

Quarter-ounce jigs are probably the most effective at this time, but I also like the eighth-ounce for a slow drop when fishing along dropoffs or shallower water. Cast and allow your jig to reach bottom. Using a "lift and drop retrieve method" work the jig back slowly. You should not lift more than 12 to 13 inches. On occasion, I have found that a small twitching action has tricked a strike. Varying size and color may be effective if you cannot get any action.

## Spoons

With spoons I use the same method as with the jigs, but I like to use a much higher lift, 2 to 3 feet.

## SEARCHING FOR THE EARLY AND MID PRE-SPAWN LARGEMOUTH BASS



1. We start by fan-casting the bay. A quick trip will tell us whether bass are present. A spinnerbait would be the best choice.
2. As we progressively move out of the bay, I like to keep the boat close to the shore. Experience has shown me the inside break line can be more productive at this time.
3. Now working along the inside breakline, I like to work up the shoreline, usually no more than 50 yards or so from the mouth of the bay. If we have

not caught any fish by now, it's time to get the spoons and jigs out and move to deeper water.

4. As we now get into deeper water, we must start to slow down our fishing speed. We have to start systematically working the 10' to 20' depth. Since the water is usually fairly clear at this time, always spend a little more time at any deep water cover you can find. Remember that bass are traveling in "schools" now, so stick with a spot once you find it.

I think the fluttering vibration can trigger strikes. When fishing in 15' or deeper water, a "vertical jigging method" can be used. A slow lift and drop seems to work best.

### Tailsinker and Spinner Bait

These two baits can also catch the pre-spawn bass on their more active days. You still have to think "slow." Work your bait as slowly as possible to get the action out of it. Always remember—the smaller the bait, the more action you will get out of it at a slower speed.

### MID PRE-SPAWN

Water temperatures (55° to 59° in bay or spawning areas)

In the mid pre-spawn period, you will find the bass in the channels and starting to move on the flats. It seems that they run some reconnaissance missions, checking out their spawning grounds. There is no clearcut pattern, but they are becoming more active. This period marks the blending of the early and late spawning periods, and depending on the weather fronts, it will have the characteristics of each.

### LATE PRE-SPAWN

Water temperatures (60° to 64° in bay)

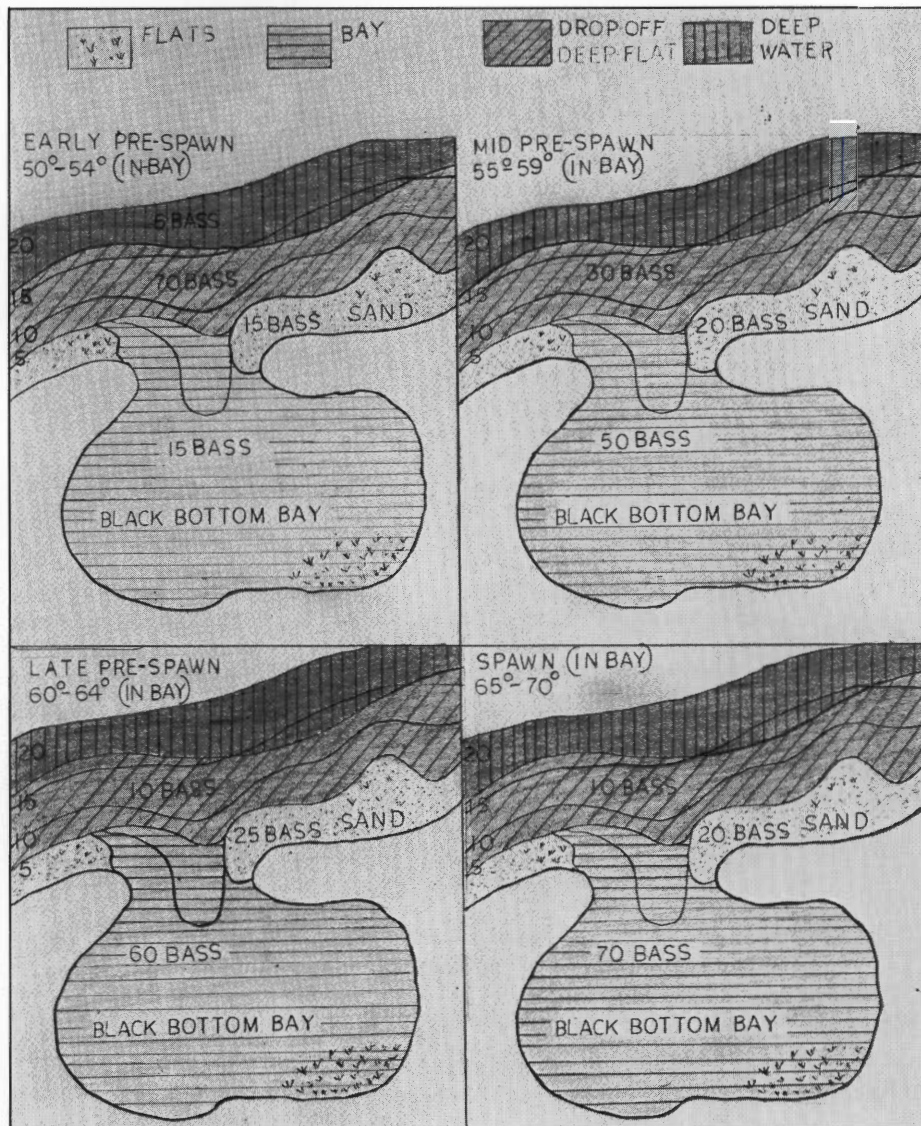
The water temperatures have now risen to the 50° mark. Most of the bass are now out of the channels and on the flats in less than 5' of water. At this time the schooling tendencies are done, and the bass start to scatter for cover and are staking out their bed locations. The fishing area you must cover is now becoming large. Fortunately, the warmer weather is making the bass extremely aggressive. Cover now becomes the key factor in catching bass. A wide range of bait now comes into play.

### Crank Bait

Fishing the shallow-running crank bait now becomes a good method. Having a large selection of sizes and colors in the two- to five-foot running range can help you catch fish. I believe that the bluegill, shad, and crawfish patterns are the best. One of the retrieves I find most successful is the "bump the structure." This is when you throw the bait past the structure and crank it into a log, stump, brushpile, or bottom, and let your bait rise a bit before starting to wind again.

### Surface Lures

The Rapala S-13 or "Devil's House" are my favorites in late pre-spawning period. They seem to work best in early morning and evening hours or when the bass are very active. The presentation I like to use is the "Wounded Minnow Retrieve," which involves a series of small twitches and then letting the lure stand still in the water for a few seconds before starting over again.



### Spinnerbait

In the late pre-spawn period 85% of my fishing is done with spinnerbait. It is the most versatile lure made for fishing cover. Spinnerbait can be worked in many ways for different conditions. It can be crawled over logs and brushpiles, fluttered down along standing timber, and fished with a fast or slow retrieve.

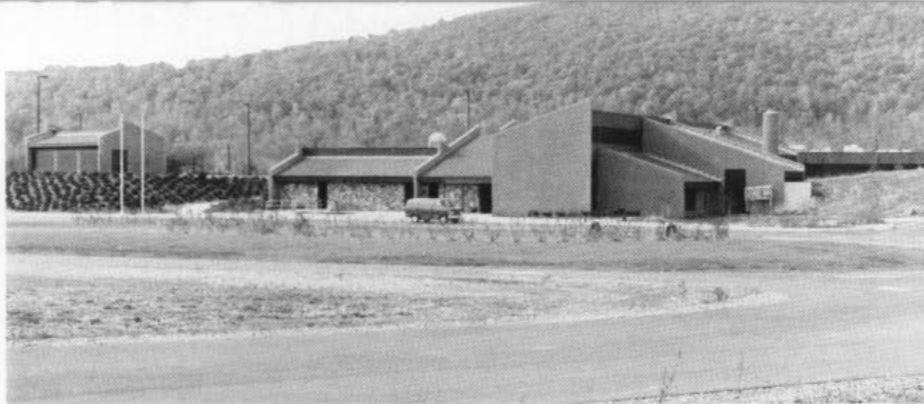
### COLD FRONT TACTICS FOR LATE PRE-SPAWN BASS

Most anglers cannot pick the ideal days for bassin'. Many times we are confronted with cold fronts, at which time the bass will drop back to the deeper water or bury themselves in heavy cover. Look for depressions, heavy cover, or creek channels near the spawning flats—potential congregating areas for bass.

A slower presentation will now be necessary since the bass will generally lose their aggressiveness at this time. You must now get that one lure down into the cover, not just on the edges.

A method I have found successful for the cold front is the "Texas-rigged worm" with some good heavy tackle. Also, a weedless jig has produced under these conditions.

# Pequest Trout Hatchery



An historic event happened at New Jersey's new \$11.8 million Pequest Trout Hatchery on October 8th, 1982. It was on that date that a network of six 60 to 80 foot deep wells began pumping high quality ground water to the surface on a 24-hour-a-day basis. After long years of planning and several years of construction, pure 50 degree water began flowing through miles of pipeline and 6,400 feet of 10-foot-wide concrete raceways. At last, Pequest was on line and ready to rear trout.

Another milestone was reached on October 13th, when Kurt Powers, Pequest Hatchery superintendent, received a shipment of 50,000 fertile and disease-free Rainbow Trout eggs from White Sulphur Springs, a federal fish hatchery in West Virginia. An additional shipment of 100,000 Wythville strain Rainbow Trout eggs were received from the same hatchery on October 19th.

Two shipments of Brook Trout eggs arrived at Pequest late in October. These eggs were obtained from the North Attleborough federal fish hatchery in Massachusetts. More than 550,000 disease-free Brook Trout fry have since been hatched under the attentive care of Kurt Powers and his staff.

In mid November, 550,000 Nashua strain Brown Trout eggs were received from the North Attleborough hatchery. The Brown Trout eggs were also successfully hatched at Pequest. The basic brood stock requirements of the most modern trout production facility in the nation are now filled.

Upon arrival at the hatchery all of the eggs were carefully placed into incubator trays under running water inside the Incubation and Nursery building. Within two weeks the eggs hatched into "sac-fry," tiny trout with an attached sac of concentrated food material.

*Natural Resource Education Center and administrative offices for Hatchery and Information-Education Center.*

By RON JACOBSEN  
PHOTOS BY AUTHOR



*Stacks of incubation trays inside the Incubation & Nursery building.*

After hatching, the "sac-fry" were transferred into especially designed rearing troughs in the same building which houses 48 big fiberglass rearing tanks. The troughs are suspended over the tanks into which the fry are flushed after mouth parts and digestive systems develop to a functional stage. The free swimming fish are then fed a scientifically formulated diet from automatic feeders 18 hours a day. These fish will stay in the rearing tanks until they grow to at least three inches in length.

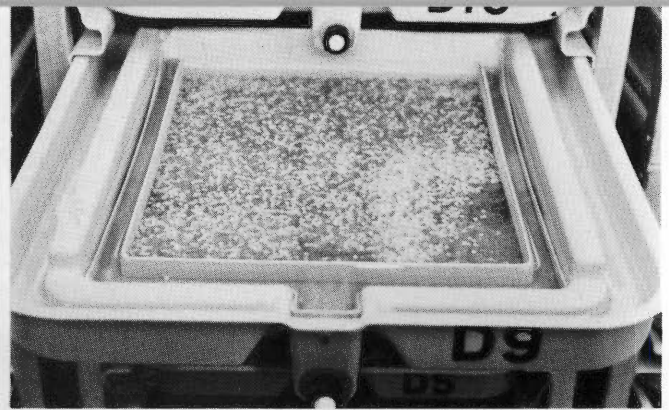
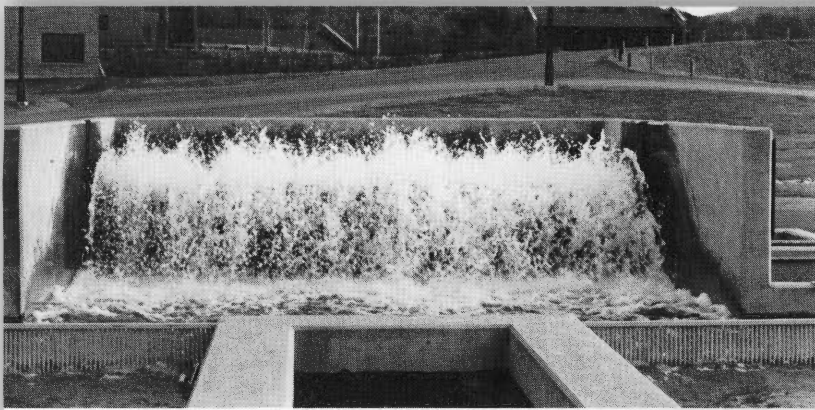
During the summer of 1983, the first fingerlings reared at Pequest were moved outdoors to the upper concrete raceways where they were reared to sizes large enough for stocking. Hatchery Superintendent Powers' goal to produce at least 600,000 robust trout for stocking this spring has been met. Pequest trout production is expected to provide 4.5 million recreational days of trout fishing. Some trout will continue to be raised at Hackettstown including Lake Trout for stocking Round Valley Reservoir.

Selected trout raised at Pequest will be retained there as brood stock. These fish will provide the eggs from which future generations of trout will be reared. The current inventory of fry should produce some breeder fish by late 1985.

Unique brood stock facilities include raceways and a lighthouse. The lighthouse is not the kind found along the seacoast, rather it is a large square building built of concrete blocks and containing raceways with flowing water. It is light-tight for controlled lighting within. Fish can be fooled into spawning earlier than normal simply by manipulating the number of hours of exposure to artificial lighting. The end result will be uniform production at reduced cost.

Perhaps the most important room inside of the





Pequest administrative complex is a modern, well equipped fish pathology laboratory with the capability to diagnose and recommend treatment for most fish diseases and parasites. Fish diseases, though harmless to people, can cause devastating losses of hatchery fish. The parasites, bacteria, or viruses that cause fish diseases can be transferred on wet hands or on shoes. If, even though inadvertently, contaminants enter the water with hatchery fish, serious diseases can occur. So serious in fact, that an entire years production could be destroyed.

It is very possible that diseases could be transferred by visitors from the Hackettstown hatchery to the now disease-free Pequest station. Care was taken not to use the same equipment at both sites. Workers observe strict personal decontamination procedures. Also, the nursery and rearing areas at Pequest will be closed to the general public. Pequest visitors, however, will be able to see plenty of fish from an observation platform over-looking the upper raceways and in special display pools. Visitors will also be able to see the inside of the Incubation and Nursery building through viewing windows.

In the past, disease losses at Hackettstown have been a very serious problem. Countless Brown Trout were lost because of Furunculosis, a bacterial disease. Whirling Disease, caused by a spore, inhibited the growth of Rainbow Trout after affecting their nervous systems. Rearing Brook Trout at the old fish hatchery became nearly impossible due to several viral diseases. Brook Trout were devastated by Intraperitoneal Necrosis (IPN) which attacks the membrane lining the walls of the abdominal cavity and enclosing the viscera. Intrahepatic Necrosis (IHN), which kills liver tissue, also took its toll of



brookies. Kidney Disease accounted for untold numbers of brookies too.

Edmund Washuta, fish pathologist, hopes that he will never diagnose any of the aforementioned diseases at Pequest. Any manifestation of such diseases there would certainly spell disaster for the trout stocking program. To prevent such a calamity, preventive decontamination procedures will be carried out on a regular basis through the nursery and rearing areas.

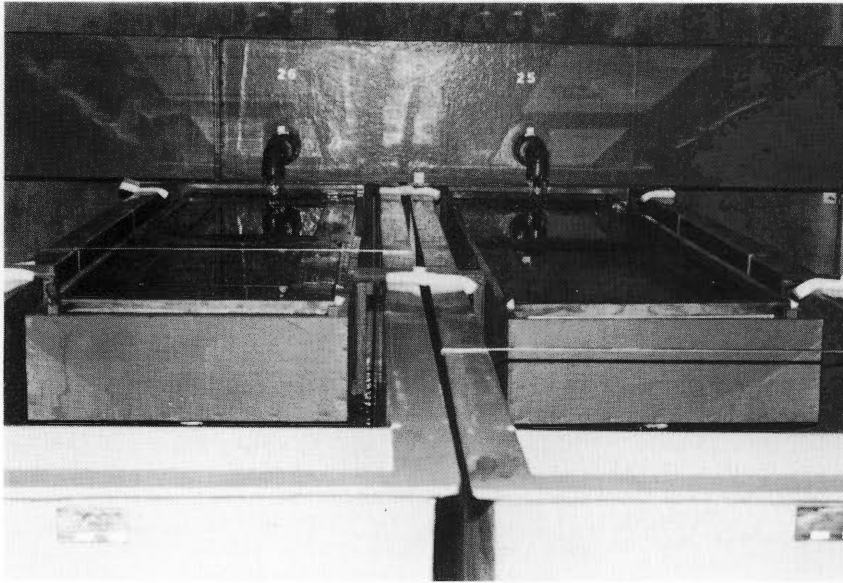
To insure maximum trout health and growth, the water supply is aerated as high a dissolved oxygen concentration as possible. After being pumped to the surface, the water is run through a cascade aerator to charge it with oxygen and to remove harmful gases. The water is then circulated through

*Clockwise, Brush aerator recharges with oxygen at brood stock raceways. An incubation tray containing thousands of hatching trout eggs. Brood stock raceways inside the Lighthouse.*



*Left to right, a bird's eye view of the upper and lower raceways. A view of the upper raceways from the administrative building.*

the system at a rate of 4,000 to 6,000 gallons per minute and re-aerated at strategic locations to maintain a dissolved oxygen concentration of not less than 7.0 mg/l. A large brush aerator churns new life into oxygen depleted water before it enters the brook stock raceways at the end of the system. It then flows through a pipe to the Fish-for-fun Pond and finally to an on-site wastewater treatment plant.



*Especially designed troughs containing "sqc-fry" are suspended over fiberglass rearing tanks. The Incubation and Nursery building houses 48 such units.*

The Pequest Trout Hatchery is a modern marvel of engineering. State-of-the-art technology and equipment is used throughout the facility. It is designed to produce healthy, robust trout at minimum cost. It cost approximately \$4 per pound to raise trout at Hackettstown. At Pequest the cost will be somewhat lower. The key to optimum production, however, is in the hands of a highly educated and thoroughly trained hatchery staff.

Hatchery Superintendent Kurt Power, 33, is very fortunate to have a young and highly motivated staff working with him. The Powers team includes: Fish Pathologist, Edmund Washuta, 30; Fisheries Foreman, Jeffrey Matthews, 29; along with Senior Fisheries Workers George Tilton, 34; Bill McNeel, 25; Robert Olsen, 25; George Wojnar, 30 and Wayne Martka, 23. Each staff member holds at least one college degree, and the others are in the process of completing their college studies. An intense interest in their chosen work sustains these college graduates in their relatively low-paying civil service positions. And New Jersey's trout fishermen are fortunate to have such people working for their benefit.

Public visitation to the Pequest Trout Hatchery and Natural Resource Education Center will probably be permitted sometime in the fall of 1984. The State's original timetable called for the multi-million dollar facility to open in the spring of 1983. Opening day, however, was delayed until a bridge spanning the Pequest River and an access road from Route 46 were constructed. Once open, the Center is expected to attract some 500,000 people each year. The complex, situated in Liberty Township, in Warren County, may be reached by traveling about seven miles west on Route 46 from Hackettstown.



*Kurt Powers, hatchery superintendent, views a trough containing the first trout hatched at Pequest.*

## Open House at the Hatchery

This year the traditional Open House at the Hatchery will be different in two ways. First, it will be held in the fall rather than just before the spring opening of trout season. The second difference is that Open House will be held at the new Pequest Trout Hatchery and Natural Resource Education Center.

Access road construction to the new hatchery is scheduled for completion in the fall of 1984. However, the exact date of the opening will be announced late in the summer.

## Attention Party and Charter Boat Anglers

A booklet that will help organize your party and charter boat fishing trips is now available from DEP's Marine Fisheries Administration. The 12-page booklet, entitled "New Jersey's Party and Charter Boat Directory", contains basic information on how to charter a boat; tips on party boat fishing and a port by port listing of over 200 party and charter boats. For each boat, the size, passenger capacity, captain's name, address and phone number, the species fished for and operating season is listed.

To obtain a copy send a stamped (37¢), self-addressed #10 envelope (or larger, the booklet will not fit in a small envelope) to:

Boat Directory  
Nacote Creek Research Station  
Route 9  
Absecon, NJ 08201

## Branch Brook Park Cherry Blossom Celebration

This April, East meets West in Branch Brook Park, Newark, when spring becomes alive with 2,700 blooming Japanese cherry trees. Visitors will be amazed by the display of 28 varieties of cherry blossoms which creates one of nature's most breathtaking scenes and draws 500,000 visitors each April to Branch Brook Park.

The Cherry Blossom Celebration began well over 50 years ago and continues to be the largest tourist attraction in New Jersey's largest City, Newark. A trip to see the cherry trees is not only a beautiful experience, but a historic one as well. Branch Brook Park is the first and possibly the finest county park in the United States and has many historic sights to admire. The historic structures in the park were designed by the firm of the world renowned landscape architect, Frederick Law Olmsted.



Gun Fire Control Tower, north end of the fortifications.

# Fort Mott State Park: A Brief History

BY PAUL E. TAYLOR  
PHOTOGRAPHS BY AUTHOR

Most of the people who now come to romp on the neatly mowed fields of grass, to enjoy a picnic lunch under the pavilion, or to play hide-and-seek among the storage areas of the old fortifications, have little knowledge of the history of what is today Fort Mott State Park.

Back in 1794 the newly formed Department of Engineers recommended that defenses be set up for the Philadelphia area. Fort Mifflin, built before the Revolutionary War, lay just south of Philadelphia, but it was decided with the outbreak of the War of 1812 that further defenses were needed for Philadel-

phia and for the duPont powder works in Wilmington.

The fortification of Pea Patch Island, located in the middle of Delaware River at the point where the river makes a bend, was begun in 1814. Different phases of the construction continued until after the Civil War.

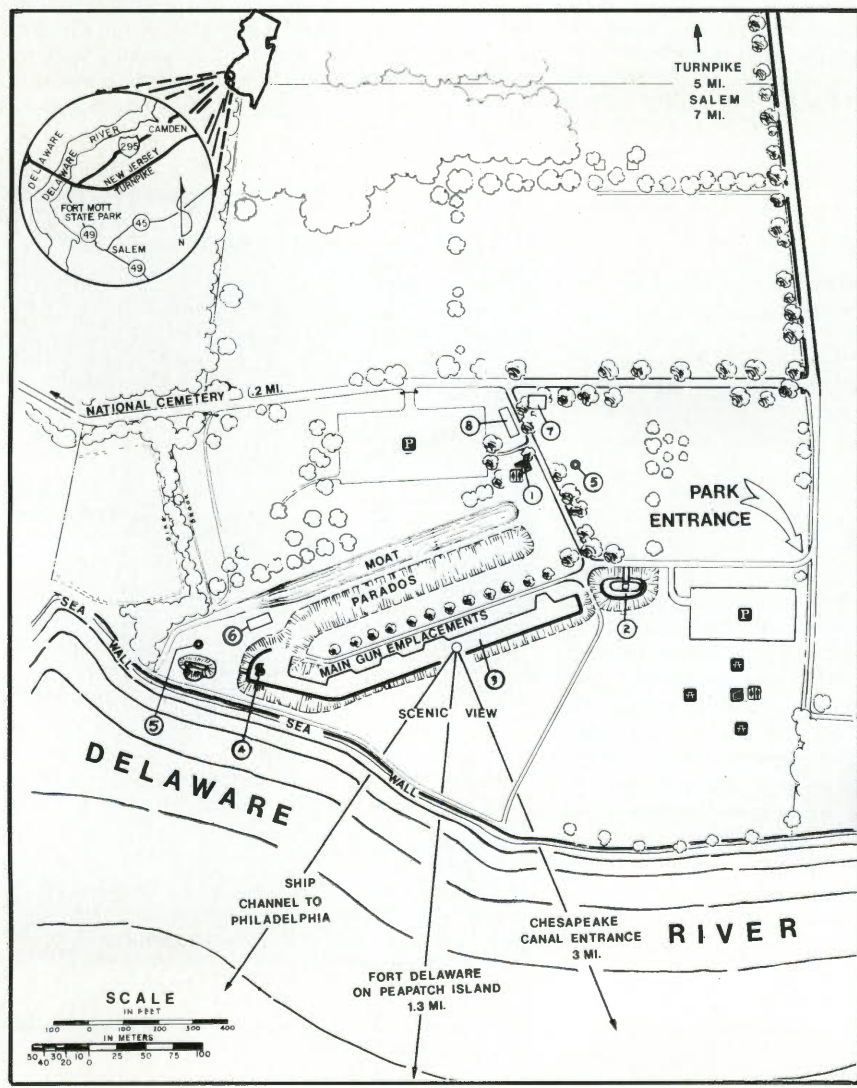
In 1838, Finn's Point, a tract of 104 acres along the Jersey side of the Delaware opposite Pea Patch Island, was purchased by what was then called the War Department. At first, part of the ground was farmed. In 1866, during the Civil War, a cemetery was established at the northern end. More than 2,400 Confederate soldiers who died while prisoners of war on Pea Patch Island are buried there, along with 300 Union soldiers.

During this war between the states steam-powered vessels came into prominent use. No longer was it necessary for boats to tack close to either the Delaware or New Jersey shore. It was then decided that a gun battery was needed at Finn's Point.

Plans for the fortification were completed in 1870, but work was not begun until 1872. The original plans called for 11 gun emplacements with 20 guns, and 6 emplacements for mortars. By 1875 only a few had been completed. A great storm damaged the seawall and the battery in 1878, but little was done in the way of repairs.

It was not until 1892 that the Army made plans for new construction. The work got underway in 1896 and by the end of 1897 the project was completed—three 10-inch guns and three 12-inch guns with concrete magazines were in place in an embankment located farther from the river than the former one. Both the guns and the ammunition hoists were operated electrically, the electricity being supplied by a generating plant located between the old and the new batteries. Raw materials were brought in by boat. Work was also begun on an extensive "parapet wall" using concrete over large granite stones. This wall varied from 21 to 25 feet thick and was fronted with a 30-foot thick

*continued on next page*



## Legend

- Park Office (Guard House) ..... 1
- Gregg Battery ..... 2
- Main Battery ..... 3
- Chief's Battery Station ..... 4
- Gun Fire Control Towers ..... 5
- Main Ammunition Magazine ..... 6
- Headquarters Building ..... 7
- Ordnance Building ..... 8
- Parking Area ..... P
- Picnic Area ..... A
- Picnic Shelter ..... S
- Restrooms ..... R



*Author's wife and "Rags" at Fort Mott.*

earthen embankment.

Moisture was a concern, so drains and air spaces were designed for the first three magazines, but when no water leakage was observed, the fourth was built without an air space, and seemed to present no problem, at least at first.

Steel I-beams were used as supports. The doors were made of three thicknesses of yellow pine boards bolted together.

Part of the 1870s battery was modified in the summer of 1897 to include two emplacements with five rapid-fire guns. Finn's Point was now a sizable fortress, and the decision was made to rename it after Major General Gersham Mott of New Jersey.

Attempts were made to obscure the seawall by planting a row of trees, and trees were also planted around the border and along the road.

By the end of 1898 water seepage had begun to be a problem, and various attempts were made to correct it. The tops of the traverses and loading platforms were coated with a mixture of naphtha and linseed oil, and tar was applied to all the outside walls. Even this did not solve the problem, so one-inch-wide slots were cut into some of the walls, metal flashings were installed, and other changes were made. The Corps of Engineers reported the problems solved, but a year later, the moisture reappeared. This time suspended ceilings were installed in the magazines, and again the problem was supposed to be solved. It is interesting to observe that although the Corps of Engineers kept reporting

solutions, messages to the Adjutant General kept reporting problems with moisture. Keeping the stored powder dry was a constant concern.

Emplacements for two five-inch rapid fire guns were constructed in 1900. The whole project was completed around the end of 1902, but no guns had actually been mounted in some of the emplacements. Those that were installed were mounted on disappearing carriages which could be quickly raised for firing, and lowered for loading and aiming.

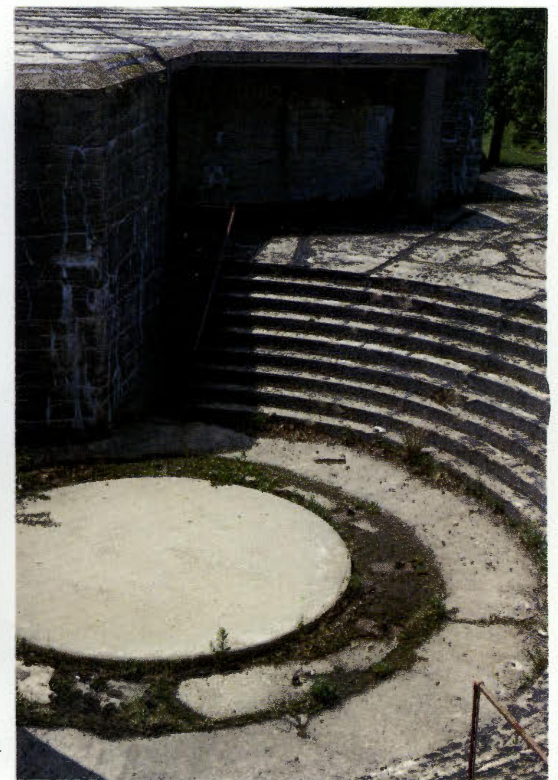
The work finished by the Corps of Engineers included not only the emplacements, mounts, and magazines, but a stone seawall along the river, a moat, and a wharf, which was serviced by a road and a railroad.

Different artillery and infantry units manned Fort Mott until 1899, when it became the responsibility of Battery H, a situation which continued until 1922. Ironically, Fort Mott was completed too late for the Spanish-American War, and was obsolete by the time of the First World War. Finn's Point Cemetery remains under federal jurisdiction, but on October 1, 1944, Fort Mott itself was declared to be a surplus fortification. In 1947 it was turned over to the State of New Jersey, and developed into a state park.

Moisture, human use, and the passing of time have, of course, shown their effects on the fortifications. Recently, interest in repairing and rehabilitating the fort, has revived and the possibility of stabilizing some of the fortifications has been



*Children at play in one of the grassy fields.*



*Twelve inch gun emplacement.*

studied.

Recreational opportunities at Fort Mott State Park include picnicing in the newly renovated picnic area complete with playground, fishing along the banks of the Delaware River, or just casual exploration of the old fortifications. The large open fields are ideal for football, softball, or just kite flying. The fort itself offers unique photographic opportunities, and the unobstructed view of the Delaware River Ships Channel makes possible an uncommon view of some of the largest, and most interesting sea going vessels afloat. Fort Mott was a prime viewing area during the tall ships visit to Philadelphia and for the passage of the aircraft carrier Saratoga to and from the Philadelphia Navy Yard.

Fort Mott can be reached by taking Interstate 295, or the New Jersey Turnpike south to Interchange 1. Proceed south on State Highway 49 through Pennsville, then turn right on Fort Mott Road. From the east and south, take Route 49 to Salem or, Route 40 to Woodstown, turn onto Route 45 south to Salem. From Salem, proceed on Route 49 two miles north to Lighthouse Road on the left, and follow the signs to Fort Mott State Park.

For more information, call (609) 935-3218, or write to:

Fort Mott State Park  
RD #3  
Salem, NJ 08079



*Pretty visitor.*



## **The Outdoor Club of South Jersey Presents GO '84 AN INVITATION TO THE GREAT OUTDOORS**

A full day of activities for the outdoor enthusiast:

- Seminars—Cycling, canoeing, backpacking, orienteering and more...
- Exhibits by leading equipment suppliers throughout the Delaware Valley
- Hospitality Suite—where you'll meet other outdoor enthusiasts

Location: Mt. Laurel Travel Lodge, Rte. 73 at Exit 4 of New Jersey Turnpike.

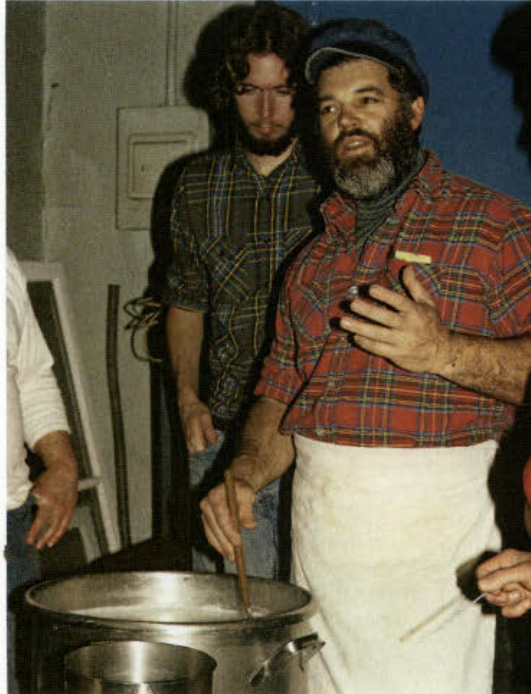
Date: Sunday, March 25, 1984, 10 a.m. till 8 p.m.

Admission: \$5.00—\$3.00 for Outdoor Club of South Jersey Members

*Novice or expert, there's something for you at GO '84  
It's a learning experience, an equipment show, ...  
It's a social ... It's GO '84*

# Cook Course: Unusual and Tasty

BY GARY ANN LEWIS  
PHOTOS BY AUTHOR



Roger Locandro  
stirring the milk



Art Wolfe, in red vest,  
displays the cheese.

For the past ten years, Roger Locandro, Dean of Students at Cook College, Rutgers University, has taught a one-credit course called "Interesting and Edible Meats." No ivory-tower professor, Dean Locandro, who has his doctorate in ecology and is a deputy conservation officer in Hunterdon County where he lives, has long been interested in bringing his students closer to the outdoors. Despite his heavy duties concerning student life he keeps his fingers in the academic pie by giving this course as well as a sister course entitled "Interesting and Edible Plants." More than 200 seniors signed up but only 26 were accepted—plus one, the author.

During those 10 weeks students learned to "jerk" beef, make cheese and sausage, carve up a deer and hog, "fist" a lamb, and—after a 3 a.m. excursion to the Fulton Fish Market—fillet fish.

Classes were held in the slaughterhouse (abattoir for the squeamish) located at the animal farm on the Cook campus in New Brunswick. The university is licensed by the state to conduct these classes.

It was very much a "hands-on" course, with samples of class work frequently eaten at the end of the two-hour sessions. Larger portions were packaged for the "organolyptic exam" (food evaluation) held at Dr. Locandro's 200-year-old farmhouse. He was occasionally assisted in the classes by Dr. Rex Gilbreath of the Animal Science Dept.

During the first class we all received a 5" boning knife and were shown the proper way to use a whetstone and the ceramic sharpeners we would each be carrying. We received mimeographed notes on bacterial contamination and that was thoroughly discussed. Notes were handed out at the beginning of every class to detail the work of that day. Everyone was expected to help in some capacity in the preparation and cleaning up process. "It's not done until it's all done" was Professor Locandro's motto for the course.

In the second class we made "Formaggio Locandro." One-hundred twenty gallons of raw milk, obtained from Rutgers dairy cows, was heated up in two stainless steel containers. At 95°, *guaglio*, (enzyme extract from a cow's stomach—rennet tablets may also be used), was stirred in to curdle the milk. After six minutes of stirring with a long wooden paddle a pudding effect occurred. Roger, with swift sweeping motions, created one-inch cubes in the curd. In 25 minutes it had set completely. It was then repeated to 110° and after it cooled Roger squeezed the liquid fraction (whey) from the protein fraction (curd). He pointed to his fingers and said that they should be held like webbed feet. "Worry it out. It's like making a snowball." He gently tossed the curd within the confines of a small Sicilian basket, handed down through his family, and



"Final Exam" Author is seated in bottom row, second from right

G. DAVID LEWIS



"Sausage Day."

shaped the cheese. The outside was rubbed with coarse non-iodized salt to cure it and help extract the moisture. It "rested" on the table while we all tried some aspect of the cheese-making process. At the end of the day we had ten "basket" cheeses. We also tried the whey. By the end of the class the cheese had "aged" for half an hour. It was sliced and served on Sicilian bread topped by honey (from the "Apiary at Pumpkin Hollow," Roger's former home) and chopped walnuts. The cheese "squeaked" when chewed. Someone said, "This must be what that stuff manna was like in the Bible." No one disagreed.

In the next class Roger brought in a deer he had obtained that had been hit by a car. As deputy conservation officer he is often called in when such an accident occurs. That day we learned about different cuts of meat.

The following week Roger placed 30 pounds of top round beef on one of the formica-topped tables. It was beef jerky day.

"Cut across the grain along the tiny muscle striations. If you cut along the grain the meat will be tough, chewy. Notice my knife handle is off the table at all times so my cutting is even. The strips should be one to two inches wide and no more than a quarter of an inch thick." We sharpened our knives constantly and cut up the meat with varying degrees of skill. The snacks that day were Delaware River Herring, caught and smoked by our professor, on Sicilian bread.

The strips of meat were marinated and put in the smoker for six hours at 180°. Volunteers checked on it until it was able to be "jerked."

The next week we tasted the results of our labors. The 30 pounds of top round had dried down to almost five pounds of meat. Now I know why it's so expensive in the store, and why it's sold by the ounce!

One day both professors were wearing long black rubber aprons and boots. We were all nervous because we knew we were going to see two lambs slaughtered. Roger explained what was going to happen and invited anyone to leave if desired. No one did.

Dr. Gilbreath opened the body cavity after slaughter and identified all the body organs—a revelation to a liberal arts major such as I. Then he began "fisting," separating the skin from the carcass; this has to be done very carefully if the hide is to be usable. The organs were saved for biology class. He

pointed out the similarities between cows and sheep; both are ruminants and have four compartments in their stomachs. He noted that where the hooves had been removed the tissue was red, still cartilage. In an older sheep it would have ossified and become bone.

In the back room the liver was cooked. Dr. Locandro explained "Liver has glycogen (sugar) and that degrades quickly. The only reason they smother it with onions and bacon in a restaurant is to hide the taste." "But that's the way I like it," protested one of the students. Dr. Locandro just smiled and shook his head.

Everyone was bleary-eyed in the next class, following a 3 a.m. excursion to the Fulton Fish Market for the most hardy members. We rolled up our sleeves nonetheless because there was a lot of flounder to fillet.

After several demonstrations by our instructor—"Teaching someone how to fillet fish is like trying to show someone how to tie their shoes, it's easier done than said"—we all managed to slit down the sides and hold the tail while we pulled the outer skin off. The fish weighed in at 66½ lbs. when we weighed the fillets. Some was fried up in a batter of corn meal and flour for the snack, some was taken home, and the rest was packaged for the much anticipated final "exam."

In April, two days after a surprise snowstorm, the professors were again suited up in aprons and boots. It was "Hog Killin'" day as the notes said. The procedure was the same as for the lambs. It was swift and the animals felt no pain, but it was still disturbing. The usual joking was at a minimum on both those days.

After the two hogs were slaughtered they had to be submerged in hot water (148°). One pound of Red Devil lye had to be added to the 75 gallons of water to help loosen the hair and remove the epidermal layer of the skin. After the carcasses were placed on the de-hairing machine some students took bell-shaped scrapers to further clean the skin surface. Dr. Gilbreath eviscerated the hogs and we had another anatomy lesson.

That day we had what Professor Locandro described as "some of that soft grey tissue contained in the cranial cavity." The brains were mixed with scrambled eggs and stir-fried. Some of the students blanched at the thought of eating them. "Why you'd

*continued on page 30*

# Cora Hartshorn Arboretum

## Nature's Classroom

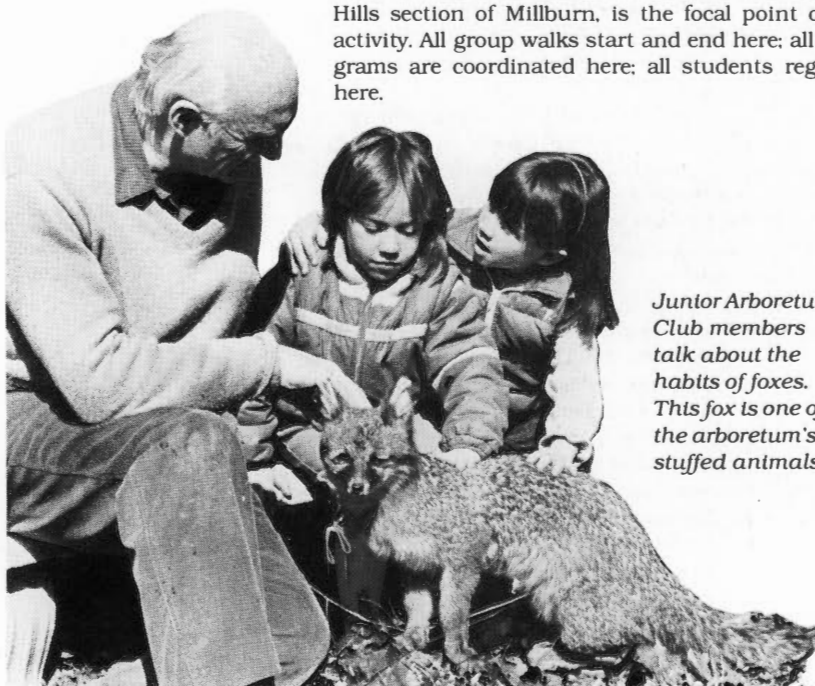
BY GINGER WALLACE  
PHOTOS BY AUTHOR



*Stone House, center of all arboretum activity.*

Three miles of hiking trails. More than 80 species of wildflowers. A miniature zoo. A nature museum. Numerous varieties of identified trees and shrubs. Sixteen and a half acres of wilderness set like a jewel in the middle of blacktopped suburbia. This is nature's classroom, Millburn Township's Cora Hartshorn Arboretum and Bird Sanctuary, where every year more than 1500 youngsters from pre-kindergarten to scouting age, and countless adults, learn to identify, appreciate, and care for the world around them.

Visitors to the arboretum find that Stone House, located at the entrance on Forest Drive in the Short Hills section of Millburn, is the focal point of all activity. All group walks start and end here; all programs are coordinated here; all students register here.



*Junior Arboretum Club members talk about the habits of foxes. This fox is one of the arboretum's stuffed animals.*

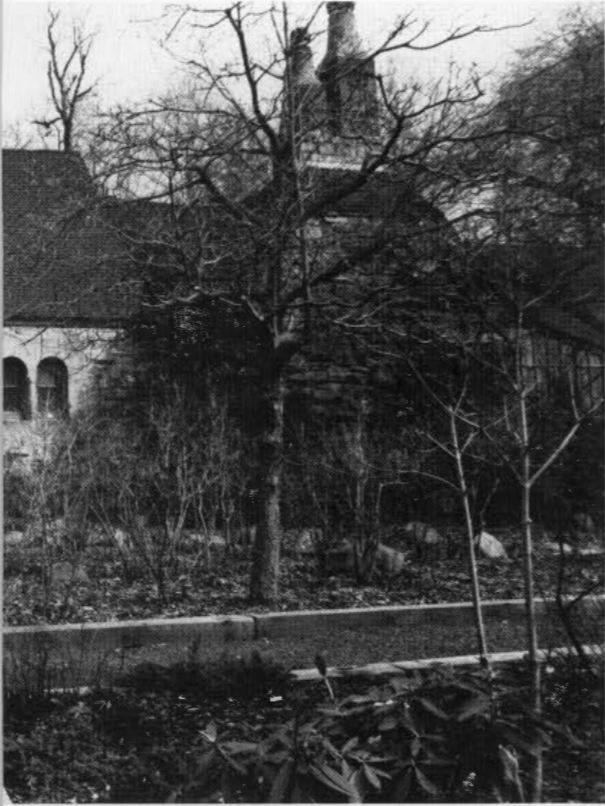
Step inside Stone House some afternoon and you may see a den of Cub Scouts mixing boiling water with oatmeal, fat, and sunflower seeds to make seed pies to feed the birds. While they are mixing, Youth Program Coordinator Richard Vitzthum explains the birds' needs and nesting habits and the Scouts examine the owls, Blue Jays, and other stuffed birds from the arboretum museum collection. Many Scout groups meet at the arboretum to hold general meetings or to work on special badges.

Visit Stone House on a Saturday morning and you may find members of the Junior Arboretum Club watching a ferret roam in his cage or cuddling a tame rabbit. These animals, along with toads, frogs, mice, gerbils, and land and water turtles, make up the arboretum zoo. Museum Coordinators Mrs. Frank U. Naughton III and Mrs. D.G. McCarren, Jr., explain that many of the animals are representative of ones the youngsters might see in the surrounding woods. The animals were chosen because they are easy to get along with, are good teaching tools, and each represents a different step in evolution. The arboretum also owns stuffed animals such as skunks and foxes. Its nature exhibits, which include shell and butterfly collections, are changed periodically.

If Junior Club members are not learning about these animals, they are discussing wildlife in other parts of the world or planting dish gardens with material found locally. The club is open to all elementary school children.

Second-graders who wish to may taste honey straight from the hive when they study wild flowers, pollination, bees, and wasps. They see live bees in action as they watch the buzzing activity in the arboretum hive. Millburn schools use the arboretum as part of the elementary natural-science curriculum.

Skeptics who think maple sugaring isn't a



Youngsters hike along one of the trails. They will learn to identify some of the trees.

suburban activity will be surprised if they visit the arboretum in March, for then they will see youngsters, who in the fall learned to identify a maple tree, watching the sap run into buckets hanging on tapped trees. Later they will learn how maple syrup is made, perhaps even sample some on pancakes, and will discuss other signs of spring. This too is part of the school curriculum.

Adults also benefit from the arboretum program. They may attend classes in dried flower arranging or learn how to make moss baskets. They may take an arboretum-sponsored trip to places such as Shaker Museum in Old Chatham, NY, or the New York Botanical Garden.

But not all arboretum activity is structured. Some nearby residents depend on the emerging snowdrops and Christmas roses to tell them spring is on the way, as in the fall they look for the New England asters.

Botanists from around the state come to examine the abundant trillium, bloodroot, Dutchman's breeches, lady slippers, and other orchids.

Bird watchers from near and far come with their binoculars strung around their necks, hoping to spot a Ruby-crowned Kinglet, a Ruby-throated Hummingbird, or various migrant warblers or hawks.

And people who want to treat themselves to a hike in the woods follow the paths along the hills and gullies of the arboretum, finding it easy to escape for a while free from pressures and cares.

The arboretum was founded in 1923 by Miss Cora Hartshorn on land given her by her father, Stewart Hartshorn, prime founder of Short Hills. Stone House was built in 1931 of traprock from the Hartshorn quarry in Springfield and oak timber from the Hartshorn property. When Miss Hartshorn died in 1958, she donated the arboretum to Millburn Township. In 1961 the Arboretum Association was created to oversee development, planning, and



programming. In 1962 Stone House was renovated and a nature center established.

Out-of-town groups with reservations are welcome to visit this suburban arboretum, and this nature's classroom. Stone House is open Tuesday, Wednesday, and Thursday from 2:30 to 4:30 P.M., Saturday from 9:30 to 11:30 A.M. and Sunday in October and May from 3:30 to 5 P.M. The trails are always open during daylight hours.

For information write the Cora Hartshorn Arboretum, 324 Forest Drive South, Short Hills, N.J. 07078, or call (201) 376-3587.

*Cub Scouts learn about the feeding and nesting habits of birds. These cubs made seed pies to feed the birds this winter.*

**New Jersey State Library**

“The instructors  
are qualified  
and interesting ...”

# wildlife workshops for teachers

**Marine and Estuarine Wildlife—May 4, 5,  
and 6, 1984 at the Marine Consortium,  
Seaville, New Jersey**

**Upland and Freshwater Wildlife—June 1,  
2, and 3, 1984 at the New Jersey State  
School of Conservation in Stokes State  
Forest, Branchville, New Jersey.**

These workshops are sponsored and conducted by the Department of Environmental Protection's Division of Fish, Game and Wildlife. These weekend workshops are designed to give teachers the background to teach environmental concepts using the wildlife resource. Rutgers University will award one graduate-undergraduate credit for those working on advanced degrees or wanting in-service training credit.

The courses are taught in the field by professional wildlife biologists. The May 4, 5 and 6 workshop will be held at the Marine Consortium in Seaville, New Jersey in Cape May County. It will concentrate on wildlife resources in the marine environment. The workshop on June 1, 2 and 3 will be held at the New Jersey School of Conservation and will emphasize upland and freshwater wildlife.

These wildlife workshops have been in operation for the past eight years and in that period over 1400 student (teachers) have taken the course.

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**For further information and  
registration forms contact:**

**N.J. Div. of Fish, Game and Wildlife  
Wildlife Education Unit  
Pequest Rd., R.R. 1, Box 389  
Oxford, N.J. 07863**

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GRADE \_\_\_\_\_

SUBJECT \_\_\_\_\_

Which workshop would you like more information on?

\_\_\_\_\_ Marine & Estuarine

\_\_\_\_\_ Upland & Freshwater

**Phone: 201-637-4125**

# Turtles

## the reptiles of New Jersey

BY KARL ANDERSON

What's a turtle? Even though almost everybody recognizes a turtle when they see one, it's still worth mentioning that turtles are reptiles, as are snakes, lizards, and crocodilians. Of course, they share many characteristics of the group: they have scaly skins and clawed feet, breathe air, and are "cold-blooded," or more accurately and technically, "ectothermic." This means that their bodies take on the temperature of their environment, unlike the "warm-blooded," or endothermic mammals and birds, which maintain a constant, optimum body temperature through internal processes.

Since life processes take place more slowly at low temperatures than high temperatures, the daily and seasonal activity of turtles is temperature dependent. Turtles can not remain active at really low temperatures—but on the other hand, temperatures as low as 105° F can kill them. In the wild, turtles will try to maintain an optimal body temperature of 80° to 90° F by basking in sunlight to warm up or by staying in water to keep cool.

During the winter, all New Jersey turtles must hibernate, usually by burrowing into the mud at the bottom of the waterways in which they live. A hibernating turtle uses so little oxygen that it can satisfy its needs by direct absorption from the water, through mouth, throat, and intestinal linings. In summer, when ponds dry up, turtles may either travel overland to more permanent water, or they may again burrow into the mud and remain inactive until the conditions improve.

The most obvious feature of any turtle is its shell. No other living vertebrates have one like it. The shell is usually made up of two principal layers: an inner body structure, and an outer covering of large horny scales, or scutes. The upper part of the shell is called the carapace; it consists of about 50 bones, including the spine and ribs of the turtle, covered by about 38 scutes. The lower part of the shell is called the plastron, and consists of only about nine bones, covered by about a dozen scutes. Some species of turtle have a plastron that incorporates one or more joints, or hinges, that allow the shell to be more tightly closed against predators.

Turtles, like most reptiles, reproduce by shelled eggs that are laid and buried by the female in soil, sand, or leaf mold. They are hatched by the heat of the sun, and no parental care of the young or protection of the nest site is given. The number of eggs in a clutch varies from two or three to as many as eighty, depending on the species. Female turtles may lay some fertile eggs for several years after a single mating. In New Jersey, the peak season for egg-laying is in June. The time required for the eggs to hatch varies with the species and the temperature, but is usually 80 to 90 days. Eggs that are laid late in the season, and caught by early cold weather, may not hatch until the following spring.

Turtles eat a variety of foods, although most of our species are more carnivorous than herbivorous. Generally, their animal food consists of whatever is easiest to get in their particular environment: insects, worms, snails, fish and fish eggs, amphibians, and carrion. Turtles are toothless, but their jaws are modified into sharp, shearing beaks, edged with horn. Aquatic turtles usually have to feed underwater, though they may drag food into the water from the land nearby.

Populations of most kinds of turtles are declining in New Jersey, largely because of human activities. Filling, draining, and dredging of wetlands destroys turtles and their habitat. Human development of shorelines restricts egg-laying opportunities and makes the eggs that are laid even more vulnerable to predation than they normally are. Automobiles kill many turtles. Collecting, much of it rather casual but almost all of it illegal, is an important threat. Water pollution is also a factor.

Turtles are the most primitive of the reptiles—there were turtles around long before the days of the dinosaurs, and they looked pretty much as they do now. Today, there are about 211 different species of turtle in the world, of which 48 are found in the continental United States or in the waters off its shores. Here in New Jersey we have ten native and three introduced turtle species, not counting the sea turtles.

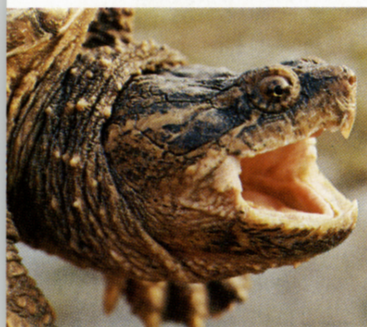
### SNAPPING TURTLE (*Chelydra serpentina*)

This is New Jersey's largest freshwater turtle, and size alone will often identify it. Shell length for adult Snappers is usually from 8 to 12 inches, with weights from 10 to 35 pounds; but there are records of 18-inch individuals, and weights of more than 70 pounds. In addition to the size, the massive head, the long neck, and tail, and the uniformly dark carapace with a serrated rear edge make this turtle easy to recognize.

The Snapping Turtle is one of our commonest reptiles. It is found in almost every body of fresh water in the state, and even enters pools and ditches in saltmarshes. However, since it rarely suns itself on exposed objects as other turtles do, its presence is often unsuspected. It prefers waters with mud bottoms and abundant underwater cover. Snapping

Turtles prefer animal food, and this may include occasional small mammals and young waterfowl; but at some times and places, half their food may consist of aquatic vegetation.

Snapping Turtle eggs are spherical, and about 1½ inches in diameter. The number of eggs in a clutch varies from 10 to 80, but is usually 20 to 30. Snapping Turtles are believed to reach an age of 60 years. These turtles should be handled very carefully; although many stories about their ferocity are greatly exaggerated, they do react aggressively when molested on land, and can inflict a painful, tearing bite. They are usually docile when submerged, though, and more than one wader has probably stepped on a Snapping Turtle and never known it. The flesh of Snapping Turtles is said to be delicious.



ROBERT T. ZAPPALORTI

## WOOD TURTLE (*Clemmys insculpta*)

Adults of this species range from six to nine inches long. Their keeled, brownish carapace is rough, with each scute supporting a flat, irregular pyramid formed by a series of annual growth ridges and grooves. The plastron is yellow, with a pattern of dark blotches on each scute. The skin is brown to almost black, washed with orange on the neck and forelegs.

In New Jersey, the Wood Turtle is found mostly in undeveloped places in the northern and central part of the state, usually in small colonies in or near swamps, marshes, and wet floodplains. It is absent from the Pine Barrens and the coastal strip. After the Box Turtle, this is our most terrestrial turtle. It spends much of its time foraging on land, often quite far from water. Its food consists of both plants and animals. Wood Turtles do swim well, however, and their lives are tied to water, in which courtship, mating, and hibernation take place.

Wood Turtle eggs are elliptical, whitish, and about 1½ inches long by almost an inch wide. The clutch size is from four to twelve, with seven or eight being usual. The hatchlings are gray-brown, rough-shelled, and lack any orange color on the legs and head. Their tails are about as long as their carapace—a feature that makes them easy to recognize, since the only other long-tailed hatchlings one finds in New Jersey are the very different young of Snapping Turtles.

At one time this turtle was marketed as food, under the name of "redleg." It is a relatively alert turtle, and tests suggest that it has considerable learning ability. The longevity record for a captive individual is 58 years. Unfortunately, the habits of this turtle make it vulnerable to collecting, fire, automobile traffic, land development, and stream degradation. The Wood Turtle is a treated species in New Jersey.



ROBERT T. ZAPPALORTI

## STINKPOT (*Sternotherus odoratus*)

This is a small turtle, 3½ to 4½ inches long, with a smooth, narrowly oval shell. The carapace is gray-brown to black, usually unmarked, and often covered with algae. The plastron is yellowish to brown, and has a single hinge that permits motion of the forward third. The head is marked on each side by two yellow lines, which begin at the snout and extend backward, passing over and under each eye.

Stinkpots are common throughout New Jersey, particularly in ponds and shallow, slow-moving streams. Like the Snapping Turtle, this species rarely basks in the open; it suns itself while floating or

while resting in sun-warmed shallow water. It is a bottom feeder and a scavenger, and prefers animal food.

Stinkpot eggs are elliptical, with a thick white shell, and are about 1½ inches long by ¾ of an inch wide. The normal clutch is two to five eggs. Nest sites are usually close to water, and are often dug in rotting wood. Some Stinkpots will bite when handled, but their main defense is a strong-smelling musk produced from glands located near the edges of the plastron. Individuals have lived for up to 53 years in captivity.



ROBERT T. ZAPPALORTI

## NORTHERN DIAMONDBACK TERRAPIN (*Malaclemys terrapin*)

This small to medium-sized turtle, five to nine inches long, has scutes that are very strongly ridged with concentric growth rings. The carapace has a low keel and is variable in color from light tan to almost black; if it is light colored, the scutes are generally marked with darker rings. The plastron is broad, usually yellowish, and often marked with dark blotches or spots. The skin is grayish, with fine light spotting. The jaws are prominent, and the upper jaw is often bordered with a dark "moustache" mark. Females are larger than males.

This turtle is found naturally only in coastal saltmarshes and estuaries, where the water is salt to brackish. With the exception of occasional Snapping Turtles and Mud Turtles, and sea turtles, it is the only turtle that is regularly found in salt water. In such a setting, it is often seen in warm weather, basking on mud flats and peat banks at low tide.

Diamondback Terrapins appear to be primarily carnivorous.

Diamondback eggs are about 1¼ inches long and about ¾ of an inch wide, and have thin leathery shells. The nest is dug in the sandy edges of the saltmarsh, dunes, and road banks; the clutch size ranges from four to twelve. Diamondback Terrapins are believed to live to be 40 years old. These turtles were once esteemed highly as a table delicacy, and by the 1930s populations from Louisiana to New England had been greatly reduced by commercial collectors. Various factors have reduced demand for the species, however, and since that time the wild population has recovered somewhat. In New Jersey, the future of the Diamondback Terrapin is intimately connected with the preservation of unpolluted saltmarshes and disturbance-free nesting sites.



ROBERT T. ZAPPALORTI

## MAP TURTLE (*Graptemys geographica*)

The name of this turtle is said to derive from the resemblance of curved, light markings on its shell to contour lines on a map. Better recognition characters, in New Jersey at least, are the brownish shell with an obvious but low keel, and finely striped yellow-on-brown skin on the head and legs. Mature males are four to six inches long, but females can reach a length of almost eleven inches.

This turtle's presence in New Jersey is a bit of an enigma. It is evidently an introduced species, and is

found only in the Delaware River north of Trenton. It is a carnivorous species, and feeds mostly on aquatic insects and molluscs.

The eggs of the Map Turtle are about 1½ of an inch long by about ¾ of an inch wide. Clutch size varies from 10 to 20, with 12 to 14 being more typical. Hatchlings are patterned like the adults, but as is usually the case with young turtles, are more brightly colored. Map Turtles of this species have lived for 25 years in captivity.



ROBERT T. ZAPPALORTI

### PAINTED TURTLE (*Chrysemys picta*)

The medium-sized turtles that are seen basking, on sunny days, on emergent objects in almost any body of water in New Jersey, are likely to be this common species. Adults are usually five to six inches long, with females larger than males. The carapace is black, with the larger scutes edged with greenish-yellow. Along the margins of the carapace, the scutes are marked with red bars and crescents. The skin is black, the head is striped with yellow, and the legs and tail are striped with yellow and red. The plastron is yellowish. Adult male Painted Turtles have elongated foreclaws.

There are actually several races of the Painted Turtle—ours in New Jersey are usually Eastern Painted Turtles, but this meets the range of the Midland Painted Turtle along the upper Delaware River, where individuals may combine characters of the two races. In the Eastern Painted Turtle, the

large scutes of the carapace are in almost straight rows across the back; in the Midland, the central scutes are staggered with respect to the lateral scutes. Both races of Painted Turtle prefer slow-moving, shallow waters, with soft bottoms, abundant basking sites, and plentiful aquatic vegetation. When not basking, they are usually foraging for food, which is about two-thirds animal matter.

Courtship among Painted Turtles consists of the male's stroking the female's head and neck with his elongated foreclaws; receptive females reciprocate in kind. Painted Turtle eggs are elliptical, white, and average about 1¼ inches long by ¾ of an inch wide. Clutch size is two to eleven. Hatchlings grow rapidly; they may be almost four inches long by their fourth year. Painted Turtles are believed to live for about 20 years.



MICHAEL P. GADOMSKI

### MUD TURTLE (*Kinosternon subrubrum*)

This is another small turtle, with a carapace that is three to four inches long, smooth, unpatterned, and some shade of olive to brown. The plastron is yellow to brown, usually unmarked, and has two hinges—one in front of, and one behind, the bridges that connect the carapace and plastron. The skin is brown to olive, with some yellowish spotting or mottling on the head.

The Mud Turtle is a southern species that ranges from Florida and Texas north only to southern Connecticut and New Jersey. In New Jersey, it is confined to the coastal plain. As its name suggests, this is a

reptile of shallow ponds and slow-moving streams, where vegetation is abundant and the bottom is soft and muddy. It shows considerable tolerance for salt water, and may be common along the inner edges of tidal marshes. It is primarily a bottom feeder.

Mud Turtle eggs are brittle-shelled, elliptical, and about one inch long by ¾ of an inch wide. The normal clutch is two to five. Hatchlings resemble the adults, but their carapaces bear three longitudinal ridges, or keels, and their plastrons are orange or red, irregularly marked with black. There is a record of a Mud Turtle living 38 years in captivity.



ROBERT T. ZAPPALORTI

### RED-BELLIED TURTLE (*Chrysemys rubriventris*)

This is a big turtle, averaging 10 to 12 inches long, with the females larger than the males. Full-grown specimens are easy to recognize as they bask on hummocks and logs in south Jersey ponds. The shell is rather high domed, and the carapace is dark, often almost black, with vague yellowish stripes and reddish markings. Old individuals often appear almost all black; but their markings are visible at close range, especially if the shell is wet. The plastron is light reddish-orange, with grayish blotches along the midline and out laterally along the edges of the scutes. The skin is dark, and the head bears fine longitudinal yellow lines.

This is a southern turtle, and except for an isolated population in Massachusetts, it reaches its northern range limit in New Jersey, where it is found only on the coastal plain. It is a typical turtle

of lakes in the Pine Barrens, where large specimens, through difficult to approach closely, are often seen from a distance. The food habits of the Red-belly are not very well known, but it is believed to eat large amounts of aquatic vegetation in addition to animal food.

Courtship has not been described in detail for this turtle, but since males have long foreclaws, some kind of neck-scratching, as in the Painted Turtle, is probably involved. Red-bellied Turtle eggs are about 1¼ inches long and ¾ of an inch wide. The normal clutch is 10 to 12 but large females may lay as many as 35 eggs. Hatchlings are greenish, and have a reddish plastron with a central dark marking. Red-bellied Turtles were once commonly sold as food, but this practice has long since stopped in New Jersey.



ROBERT T. ZAPPALORTI

### EASTERN SPINY SOFTSHELL (*Trionyx spiniferus*)

This is the only species of softshell turtle in New Jersey; and it is easily recognized. The carapace is leathery, flat, and flexible, without scutes. Its color is light brown, rimmed with a narrow dark line and bearing a variable pattern of small round spots or irregular blotches. The head is long and the nose is pointed, with the nostrils at the tip. Males are five to seven inches long, and females are seven to eighteen inches long.

This turtle is widespread in the southern and central United States, but in New Jersey it is found only in a few ponds in Salem County, where it was introduced in 1910. The species seems well established, but is not spreading. Softshell Turtles are primarily carnivorous. Their eggs are spherical, brittle-shelled, and a bit more than an inch in diameter. A clutch may contain as many as 32 eggs, or as few as 4.



ROBERT T. ZAPPALORTI



ROBERT T. ZAPPALORTI

### BOG TURTLE (*Clemmys muhlenbergii*)

This is the smallest North American turtle, with adults reaching a length of only 3½ inches or so. The shell is brownish, unmarked, rather high-domed, and has an inconspicuous keel; usually, concentric growth rings are visible in each scute. The plastron is brown or black, with a few irregular light markings. The head is brown, with a large orange or yellowish blotch behind the eardrum on each side.

This turtle has a restricted and discontinuous range in the eastern United States, from Connecticut south into Delaware and Maryland, and it is rare throughout its range. In New Jersey, it exists in scattered colonies in sedge bogs, swamps, and marshy meadows in Warren, Sussex, Morris, Passaic, Union, and Monmouth counties. Even in its

habitat, it is elusive, burrowing, and hard to find. The Bog Turtle is omnivorous, and feeds both on land and in the water.

Bog Turtle eggs are elliptical, white, and about 1 ⅜ inches long by half that in width. Normal clutches are believed to be four or five eggs. Bog Turtles were probably never very common, and they have been declining for many years, mostly because of habitat loss—including draining, land filling, and dredging and flooding, as well as the natural tendency for wetlands to become dry land. Collecting pressures have been significant; the removal of even a few mature, breeding individuals from a local colony can destroy it. The Bog Turtle is an endangered species in New Jersey.

### EASTERN BOX TURTLE (*Terrapene carolina*)

Adult Box Turtles are usually between four and six inches long. The carapace is high-domed, weakly keeled, and tan to dark brown with a variable pattern of radiating orange or yellow lines, spots, or blotches on each scute. The plastron is likewise tan to brown, variously blotched. The most conspicuous feature—and the one that gives the turtle its name—is a flexible hinge on the plastron, just behind the forelegs, which divides the plastron into two independently moveable sections.

Box Turtles are found throughout New Jersey, though they may be a bit more common in the southern part of the state. They are land-living, and are primarily inhabitants of open woodlands, though they are also found in marshy meadows and

fields. They often soak in pools and puddles. They are omnivorous, but their food preferences vary with age; young Box Turtles are largely carnivorous, but adults eat a wide variety of fruits and leaves, as well as animal food.

Box Turtle eggs are elliptical, and quite large for the size of the animal: about 1¾ inches long by ⅞ of an inch wide. The usual clutch is four or five. Individual Box Turtles occupy home ranges, which they rarely leave. They have been known to live for a century. Adults, with their heavy, tightly-closing shells, are fairly immune to animal predation, but they are vulnerable to collecting, and of course are often killed by automobiles. The species seems to be declining.



BRECK KENT

### SPOTTED TURTLE (*Clemmys guttata*)

This is one of our most easily recognized turtles; in brief, it has spots. Adults are usually no more than 4½ inches long. Their color is basically black, with small yellow spots sprinkled over the carapace and head, and sparingly on the legs. The amount of spotting varies among individuals, and occasional specimens are spotless. The plastron is yellow or orange, with large black blotches at the edges.

Spotted Turtles are widespread in New Jersey, inhabiting shallow ponds, ditches, cranberry bogs, and temporary woodland swamps. They are also quite at home on land, but they swim well, despite the fact that their feet are almost without webs. They eat a variety of plant and animal food, some

of which is probably found on land. They are fond of basking; and individuals have favorite basking sites to which they regularly return.

Spotted Turtle eggs are about 1¼ inches long by about half that in width, and are white with flexible shells. A normal clutch contains from three to five eggs. Hatchlings usually have just one spot on each scute of the carapace. These attractive reptiles are frequent targets for casual collecting; and they are also particularly subject to destruction by the draining and filling which is a frequent fate of the shallow waterways it prefers. An individual has been known to live for 42 years in captivity.



ROBERT T. ZAPPALORTI

### RED-EARED SLIDER (*Chrysemys scripta*)

These are the little green turtles that were once so common in the pet trade. As adults, they become fairly large—five to ten inches long—with females larger than males. The shell in most adults is brownish, swirled and blotched with yellow and black. The red spots on the sides of the head are the best field mark, but not all individuals have them; in old males, especially, they fade to yellow. Some old individuals become very dark-skinned, with little or no pattern.

This turtle is widespread in the southern and central United States, but its presence in New Jersey is the result of the release of unwanted pets in convenient ponds. They can turn up almost any place

in the state, but they are perhaps most common in park and cemetery ponds and other “urban” habitats. The food preferences of this turtle vary with age; young are primarily carnivorous, but adults feed freely on both plant and animal food.

The eggs of the Red-eared Slider are about 1¼ of an inch long by ⅞ of an inch wide, and are white, with flexible shells. The usual clutch size is from six to eighteen eggs. Egg-laying has been observed in New Jersey. The hatchlings have a green carapace with yellow markings, and show the prominent red “ear” markings that give the species its name. Captive Red-ears have lived to be 30 years old.

continued on page 30



R. J. STEIN



BY ROBERT S. LEAP

More than 193,000 resident licenses for freshwater fishing were purchased last year by New Jersey sportsmen, statistics show.

And just what, you astounded nonfishing citizens might ask, would motivate such a widespread rush to freshwater fishing?

Well, as a longtime member of this angling fraternity, I have thoughtfully compiled a list of the more popular reasons, as proffered by dedicated fisherman in a recent poll:

**IT'S EXCITING...** True. Once, on a cold April morning, I was fishing for trout on Iona Lake from my eight-foot pram. While taking time out for a coffee break, I suddenly noticed the unattended starboard oar making a swift exit through the oarlock into the water. I grabbed out strenuously for the oar, the pram tipped viciously, and before you could say "pathetic" I was scrambling around in six feet of frigid lake water.

As may be discerned, I didn't drown, but that little affair churned up about as much excitement as I'll ever need.

Another time, while fishing from the shoreline of a pond in Florida, I was attacked by a small army of fire ants. Believe it when I say these hostile little fellows are rightly named, because for five minutes or so after their biting, burning assault, I did a superlively dance that would've put "Bojangles" Robinson to utter shame.

**IT'S UNPREDICTABLE...** A mallard duck once swooped down upon my floating bass plug, which he seized in his bill and commenced to shake vigorously. Had I tried pulling the lure from him, there was the chance the sharp hooks might penetrate his bill, or worse yet, his tongue, and I certainly wanted no part of that potential calamity. Thus, there was nothing to do but sweat it out.

Finally, after several long and anxious minutes—for me, anyway—the mallard stopped shaking the lure, dropped it, eyed it, then paddled off quacking to himself, unscathed by the hooks and apparently satisfied he'd killed the thing. Unpredictable, and proving that ducks can be a lot nosier than most fish.

**IT'S HEALTHFUL...** Along with obvious benefits of sun and air, the fisherman gets plenty of exercise through rowing, casting lures, lowering and hoisting anchor, and swatting energetically at swarms of mosquitoes, bees, flies, and gnats.

**IT HAS ITS HUMOR...** Countless times I've watched fish taking tailwipes at my lures, or snapping playfully at knots on the line;

such tricks are always good for a chuckle. And when they're noisily slurping up live insects all round my unmolested artificial bugs, well, these goings-on can be excruciatingly funny, but mostly to the fisherman who's been watching furtively from a boat nearby.

**YOU MEET INTERESTING PEOPLE...** Like the faintly smirking boat liveryman, waiting to tie your boat to the dock, who tells you that the fishing, while evidently not so good today, was spectacular yesterday and the day before; or some garrulous idler, hanging around the dock, who—to listen to him—must easily be one of the world's foremost authorities on the sport. Then there's always that smug, secretive fellow, whose string of absurdly large fish provides visual proof that your time might be more sensibly spent in some other line of endeavor.

**IT'S EDUCATIONAL...** You learn, for instance, that:

1. Nearly all rented rowboats leak.
2. Snagged lily pad roots are more than a match for *any* fisherman and his gear.
3. Rain squalls can dump on you with amazing suddenness—especially when you happen to be out in the middle of a lake.
4. Despite wild claims by manufacturers of "can't miss" lures, most fish couldn't really be less impressed by these products.
5. When your rowboat suddenly finds its bow sticking up at a crazy angle, you'll realize that the submerged stump wasn't nearly as submerged as you'd thought.
6. When you try fishing deep, you'll have ample opportunity to study the various specimens of underwater plantlife that appear in abundance with every retrieve.

**IT HAS CHANGE OF PACE...** If the fishing is slower than usual, lay your rod aside and feast your eyes on the great numbers of large bass as they leap energetically from the water, feverishly chomping their jaws at a myriad of darting dragonflies; or enjoy the antics of other, speedier fish, as they gaily chase each other all over the lake's surface.

What's more, if huckleberries happen to be in season, just row in and tie the boat to shore. You'll fill your lunch box in no time, with visions of huckleberry muffins in the offing.

**IT'S RELAXING...** Along about late afternoon, you probably can hear my snoring clear across the lake.



# **Liberty State Park Interpretive Center**

COMPILED BY KEN ORAVSKY  
PHOTOS BY KEN ORAVSKY

Since 1968 Liberty State Park has painstakingly evolved through a variety of stages: acquisition, land and harbor clean-up, restoration of the Railroad Terminal, and now, finally, the development of public use facilities and their accompanying programs. Of great appeal to the hundreds of thousands of people who visit the Park will be the Interpretive Center, scheduled to open this summer.

The educational opportunities of the Center are remarkable and exciting. With ready access to adjacent salt marshes, upland fields, a fresh water pond, and a dramatic view of the Statue of Liberty and the New York skyline, the Interpretive Center is the perfect place to translate the story of man's interaction with the earth's natural resources—the land, the water, and the air—from the earliest times to the present. Visitors will find exhibits and information that trace the area's evolution since the early 17th century. They'll see the pristine, sparsely populated bay that Henry Hudson found when his "Half Moon" first dropped anchor in 1609. They'll learn how the Dutch and English settled the region, and how an oyster harvesting industry developed in the 17th and 18th centuries. And they'll see the bustling, crowded port that took in millions of immigrants

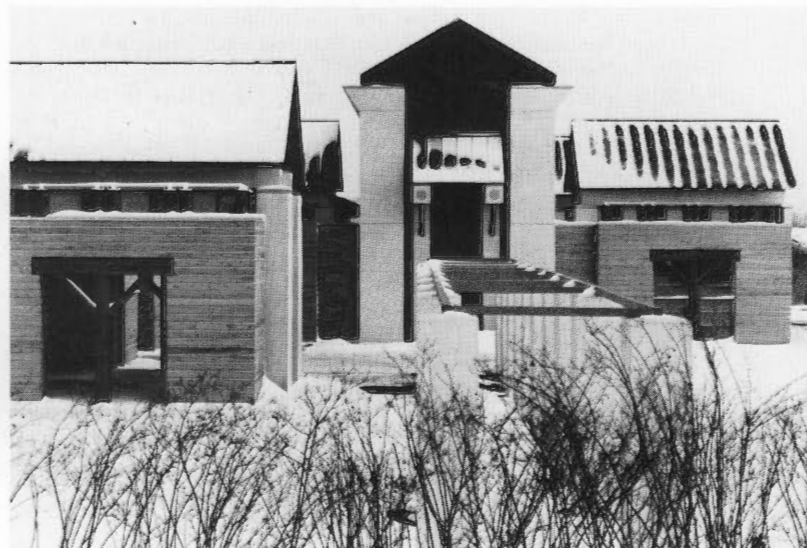
and became one of the nation's primary transportation centers in the 19th and 20th centuries with hundreds of ships and trains passing through every day.

Through programs explaining the reclamation of abused land and water to allow the development of Liberty State Park, the casual visitor and the serious student can become aware of how man and the environment have interacted in the past, and how man can learn from the past to better manage his resources in the future.

Initially, the Center will house temporary displays. It will also have room for revolving exhibitions of outstanding photographers and artists. Eventually there will be a full schedule of nature and historic tours, lectures, slide shows, and special workshops.

As the Center develops, student interns will be accepted from New Jersey colleges to work on special projects, from wildlife studies and urban land use planning to historic preservation and program preparation.

Additional information can be obtained by writing to the Director of Interpretive Services, Liberty State Park, Jersey City, New Jersey 07305.





# Natural Resource Education Center at Pequest

BY ROBERT MCDOWELL

When the new Pequest Trout Hatchery opens for public visitation in the fall of 1984, a great number of New Jerseyans are expected to visit this most up-to-date fish hatchery. Not only will the hatchery demonstrate the most modern approach to fish raising, but visitors will be presented with a different form of environmental education. A positive approach to the use and enjoyment of our state's natural resources will be the focus of seminars, workshops, tours, displays and field trips that will eventually evolve at the Pequest Natural Resource Education Center.

The educational program will be de-

veloped in stages as staffing and funding permit. However, the first visitors will be able to see how fish are raised through a self-guided tour, view exhibits on our state's resources and hike a trail illustrating people's relationship with soil, forests and wildlife. Also, picnicing, fishing and birdwatching will be available on the education center grounds and hunting on the surrounding Pequest Wildlife Management Area.

In the future, the education program at Pequest will be expanded to provide field trips for school groups, seminars and workshops in subjects dealing with forestry, soil

conservation, outdoor recreation, wildlife and water resources. All these programs will focus on the benefits of proper natural resource use to the economy and the social and cultural aspects of New Jersey.

Visitors will be charged a small fee when entering the Hatchery-Education complex. This fee will be used to maintain and expand educational programs and facilities.

We hope that future generations of New Jersey citizens will appreciate and benefit from what Pequest, in rural Warren County, has to offer: fish, fun and education.

# WICKECHEOKE *and* *the Hills of Hunterdon*

BY BERT NIXDORF

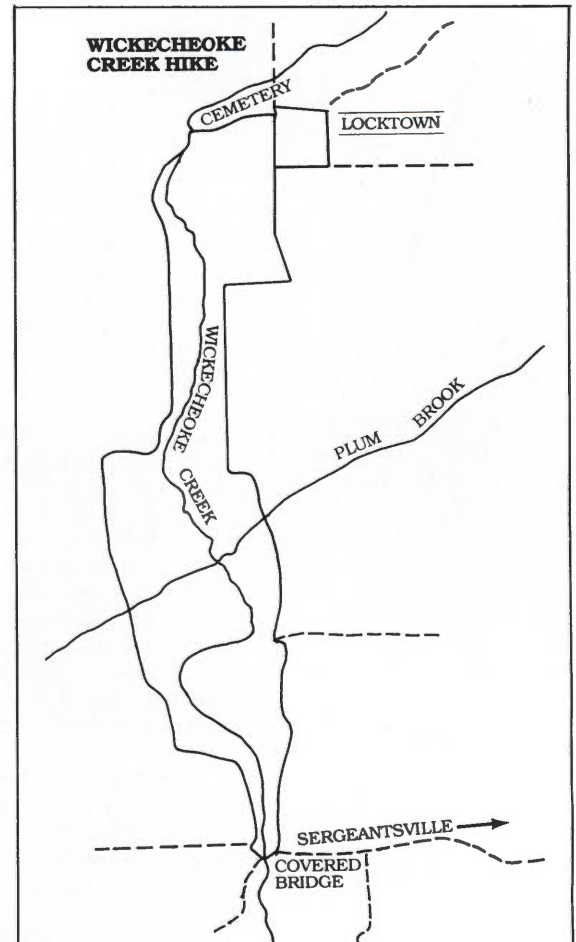
In the hills of Hunterdon County beauty spots abound—tucked away in coves, in valleys, on hill-tops and along every bend in the road. Most roads are paved, while some are hard gravel, for ever escalating and descending. Some seem to go only up, others only down. You can enjoy hiking in God's country, an artist's paradise, a section of the state where many notable personages of recent American life had chosen to make a home, a home to get away from the pressures and hustle-bustle of their individual hectic schedules of public service. Within a very few miles of the last remaining covered bridge, near Sergeantsville, Chet Huntley, late newscaster; Paul Whiteman, the jazz king of the 30's and 40's; and the president of the Singer corporation, all saw the beauty, charm and serenity of the peaceful countryside on both sides of the Wickecheoke Creek. It is a place where the creative person has time to relax and at the same time contemplate innovations for his individual career. Write music, write news stories or make plans to expand the versatility of the sewing machine—here's the place to do it. President Truman once came here for dinner, to the home of one of his advisors, the late Hugh Fulton, an attorney.

Stone fences enclose the fields and edge the winding roads which ribbon their ways through "tunnels of trees." It all adds up to an environment for a spectacularly pretty seven-mile hike. Let's call it the Wickecheoke Hike. The Wickecheoke Creek meanders downhill from the tiny hamlet of Locktown, perched on the highest knoll in the immediate area. A glistening white church with an impressive steeple marks the center of the community. Water in the Wickecheoke is shallow. The stream bed is composed of shore-to-shore rocks; and in dry seasons the water is scarcely visible. You could walk, stepping-stone fashion, from Locktown to Stockton in the creek without getting wet. Four miles below Locktown, at Stockton, the Wickecheoke (Indians called it "house by the big tree") empties into the Delaware River. It was at this point where the original grist mill was established in 1702. It came under the ownership of Pralls in 1794; it became the Prallsville Mill, as the buildings are known today. Water for the grist mill was harnessed from the waters of the creek as they tumbled down over the rocks and towards the Delaware.

As I sat along the creek in a refreshing early

*Wickecheoke Creek during a late fall drought.*

SHARON COX



Park your car at the Locktown Christian Church and follow these steps:

1. Walk downhill to Locktown-Kingwood Road (Old School Baptist Church ahead on left).
2. LEFT, past old "Heath" cemetery (on right) to iron bridge. Take first road on left over bridge. This is Wickecheoke Road (or Upper Creek Road), unmarked.
3. LEFT. Follow road for about 1½ miles to fork and small concrete bridge.
4. RIGHT. Go uphill to next fork, taking left.
5. Continue uphill; then descend along old stone fences to Sergeant's Covered Bridge. Stop for lunch.
6. Cross bridge to first road on left, Pine Hill Road (unmarked).
7. Follow this uphill along the tall hemlocks on the creek side to Pavlicard Road (about ¾ mile, and unmarked).
8. Stay LEFT (due north) for another ¾ mile to Old Mill Road (on left). Continue north on Pine Hill Road to a right-angled turn to RIGHT (+.6 mi.)
9. RIGHT to first left, LOCKTOWN ROAD.
10. LEFT. Return to starting point. You'll see the steeple come into view, welcoming you back to this tranquil villa in the hills of Hunterdon.

Maps: USGS Quadrangle for Stockton  
Hunterdon County Road Map

*The writer will personally conduct the 7-mile Wickecheoke Creek Hike on Saturday, April 28 at 10:30 a.m. Meet in the flat area alongside Prallsville Mill Historic Site, Route 29, north end of Stockton, just before Rt. 29 joins with Route 519. Bring lunch. For information, call 609/267-7052.*

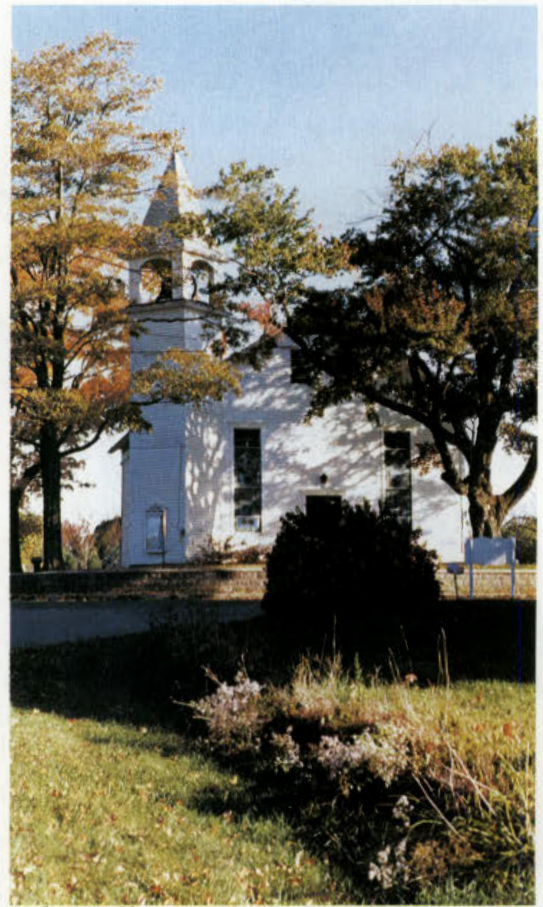


Prallsville Mills. (Delaware River Mill Society)  
BERT NIXDORF

autumn breeze, a kingfisher flew out across the rocks in front of me. It uttered its watchman's rattle call, as dry in tone as the creek itself on that day. After interviewing all morning and while having a well-earned respite, the moment and the beauty of the place allowed time to clear my head and sort out details from all my notes.

Locktown, with its glistening white church and tall steeple, is an impressive sight. The steeple almost looks out of proportion from the main part of the building, as you approach it uphill from the south side. There are two churches in Locktown. One lacks a congregation. According to the former mayor of Delaware Township, Milton Smith, the last surviving member of the Old School Baptist Church passed on "about ten years ago." Smith offered many valuable comments and a few stories in his large house which once served as a general store and post office. Smith told me that the Old School Baptist Church, formed in 1819, was established due to "differences" within the congregation at the adjacent township of Kingwood. One faction decided to "break away" and came a few miles east to build a church of its own. He continued to say that, reportedly, each faction literally "locked the other out of its respective church with (honest to goodness) padlocks. And that's how Locktown got its name." Since the last member of the red sandstone church died the church has been under the care of the Flemington Baptist Church. Services are not held in the building which is still in good condition, with original window panes of rolled glass. The building is a registered state landmark. Inside, under the communion table, lies the body of one of the earliest pastors, laid to rest there at his request. Lift the floor boards, built in as a kind of trapdoor, and the flat headstone tells the story. The sandstone building is picturesque as it commands the northwestern corner of town amidst a grove of towering maples, and surrounded by a neat stone wall of unknown vintage. Two of the oldest of the hamlet's residents, not in the best of health, were unable to be contacted for this article, so a debt of gratitude is owed to Mr. Smith.

If you check the old cemetery, you'll find that just about every last headstone indicates that Heath must have been the prominent clan. Most of the



Locktown Christian Church. SHARON COX

deaths occurred in the 1820's and 30's. You must be a cemetery buff with expertise in reading the stones, weathered and unclear as they are. But before you scrutinize the stones you must push back the wildflowers. In late August Queen Anne's lace overtakes the little burial ground, almost obscuring the two- to three-foot high stones from view.

Wildflowers bloom in profusion along the winding Wickecheoke, too. In late April the woods and roadsides bordering the creek abound with bloodroot, trout lilies and Dutchman's breeches. The entire region around the creek is composed of farmlands, cornfields and pasture. Most of the farms are enclosed by heavy hedgerows. These make for the seclusion and picturesqueness hard to come by in these days of using every last inch of land. Artists and camera fans have endless opportunities.

According to Smith, "about 60 or 70 acres is the normal size of a farm around here." A steer ranch in the 1970's was owned and operated by the late Chet Huntley. His farm was managed by a local farm machinery dealer for a time. Huntley later left for a new venture in Wyoming, where he died. And Paul Whitman, the great bandleader, used to ride his horse into historic Colligan's Inn, at Stockton for a bit of imbibing. An interesting story in this respect will be left untold. You, too, can enjoy this scenic, quiet portion of the state favored by some of this nation's elite.

Enjoy the WICKECHEOKE CREEK HIKE in April when wildflowers brighten the way, or in August under a full canopy of foliage, or in autumn when the roadsides are ablaze with color. Upon completion of the seven-mile loop, you'll end with but one desire—to live along the Wickecheoke, in a "house by the big tree."

Stone Bridge Pine Hill Road along the Wickecheoke.

BERT NIXDORF



# SMOKEY BEAR TURNS

# “40”



BY JOSEPH R. HUGHES  
Photos provided by Bureau  
of Forest Fire Management

What personality has a consistent recognition factor of 96% or above in a nationally conducted survey? Several people would probably come to mind such as the President, or some of the more prominent individuals in the sports and entertainment field. However, this honor goes to a figure who has gained distinction as a 'protector of the environment' and more specifically as the National Symbol of Forest Fire Prevention. In case you have not guessed by now... the character is SMOKEY BEAR!

SMOKEY reaches a very significant milestone in his life this coming year—he turns “40”! This is an age that many of us face with trepidation because we are thought of as being “over the hill.” However, SMOKEY is still going strong, and is planning to make “1984” the biggest year ever! A number of National and State events have been planned during this year to honor this character and symbol who has contributed most to protecting the environment and saving our valuable forest resources from the ravages of uncontrolled wildfire.

SMOKEY's story begins in the early days of World War II. Because of the War effort, there was less manpower and fewer resources available to fight forest fires. This caused concern among forestry officials who appealed to the newly organized War Advertising Council, forerunner of the National Advertising Council, to sponsor a Nation-wide Forest Fire Prevention Campaign.

Copywriters and artists brandishing pens and brushes developed colorful campaign ads with slogans such as “Careless Matches Aid the Axis” and “Our Carelessness, Their Secret Weapon”—which were used in 1942 and 1943.

Walt Disney's “Bambi” proved a popular experiment of Forest Fire Prevention in 1944, and everyone still thinks of fleeing deer during a forest fire.

Several ideas were tried, but in 1945, the advertisers decided that an animal that could be portrayed erect was most promising because the figure would be able to use its paws and arms to demonstrate fire prevention activities. A well known cover artist, Albert Staehle, was commissioned to draw a bear, and the first SMOKEY, in dungarees



and old style Ranger's hat, pouring water on a campfire appeared—a natural peace time symbol which melded the emotional appeal of an animal with the ruggedness of a Fire Fighter. The caption read: “SMOKEY says: Care will prevent 9 out of 10 forest fires.” This friendly character and his slogans slipped into the hearts and homes of millions of Americans.

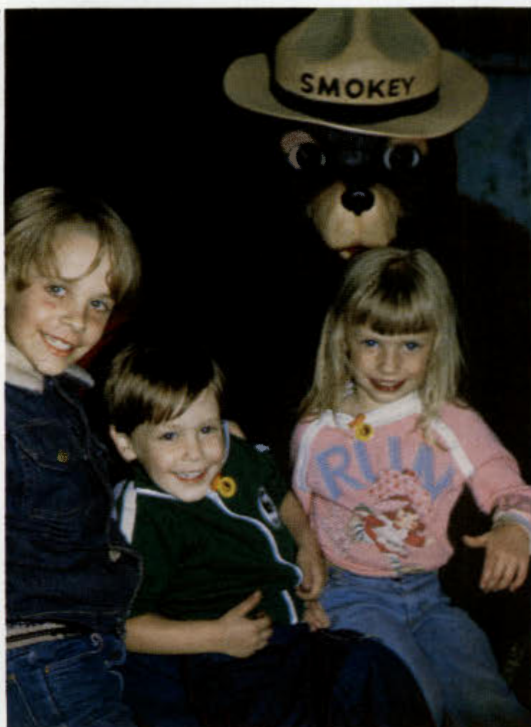
SMOKEY made his public service debut on posters and car cards in 1945. Magazine and newspaper forest fire prevention advertisements soon followed.

Two things happened in 1947. The Foote, Cone, and Belding advertising agency suggested the slogan, “REMEMBER, ONLY YOU CAN PREVENT FOREST FIRES.” This line has established itself as an outstanding example of a personalized message that bears directly on a national problem. Another was the use of a “voice” for SMOKEY in radio recordings. Jackson Weaver, a Washington, DC, radio personality, put his head in a barrel and thus created a characterization that could be recognized as the “voice” of SMOKEY BEAR in an ABC-TV series shown each Saturday.

In June of 1950, a black bear cub, dazed and badly burned, was rescued in the wake of a 17,000-acre forest fire in the Capitan Mountains of New Mexico. The cub, named SMOKEY, was nursed back to health and flown to Washington, DC, where he found a home in the National Zoo as the living symbol of Forest Fire Prevention.

Great interest in the SMOKEY BEAR program became obvious right from the start. By the year 1952 it was apparent that legislation was needed to protect the image of SMOKEY BEAR and the work of the Cooperative Forest Fire Prevention Program. In an unprecedented action both Houses of the 82nd Congress unanimously passed Public Law 359 (now known as the SMOKEY BEAR ACT), which protects the image of SMOKEY from abuse and





provides for an orderly commercial educational support system.

The first commercial license was issued in December of 1952. One of the first items to be licensed under this Act was a stuffed SMOKEY BEAR doll. A large replica of this first doll was presented to President Eisenhower on June 18, 1953, at the White House, for his five-year-old grandson David.

Over 140 licenses have been issued since 1952 and over two million dollars collected. There are currently 50 licensees with income of \$40,000 per year. Harold Bell Associates, Inc., of Los Angeles currently serves as the merchandising and licensing consultant for the SMOKEY BEAR Program, issuing and promoting licenses from various private industries.

The SMOKEY BEAR Junior Forest Ranger Program began in 1953 with an official kit of fire prevention materials for each boy and girl who wrote to SMOKEY BEAR Headquarters. This program, started modestly, has enlisted over six million young people in the cause of Forest Fire Prevention. So many cards and letters came in from youngsters offering their help (about 500 per day) that SMOKEY was given his own Zip Code "20252" in 1965. Contract mailing service with some states (now 16) started in 1966. The work is now performed by three people in Washington, DC, in cooperation with the 16 states.

In 1956 a formal agreement between the Forest Service and the Canadian Forestry Association established international cooperation in Forest Fire Prevention.

In May of 1958 President Eisenhower gave special recognition to the fine Fire Prevention Record set in 1957. For the first time in history, the number of human-caused fires was under 100,000 and the acreage burned was below 4,000,000. In a ceremony on the White House lawn, the President awarded the first four Golden SMOKEY Statuettes. Today, five

types of SMOKEY BEAR Awards are given as part of the Cooperative Forest Fire Preventive Campaign. Over 205 people, organizations, agencies, have received these National Awards to date.

In 1962 a mate for SMOKEY named "Goldie" was brought in from New Mexico. The years came and went with no heir apparent. In 1970, Ray Bell helped locate a "son" for SMOKEY and Goldie to adopt, and Secretary of Agriculture Hardin accepted "Little Smokey" on behalf of the United States. In 1975 the original SMOKEY retired along with his mate, and "Little Smokey" was installed in ceremonies on May 2nd as the new living symbol of SMOKEY BEAR and Forest Fire Prevention. The original living symbol of Forest Fire Prevention died on November 9, 1977, at his retirement home in the National Zoo and his remains were buried at the SMOKEY BEAR Historical State Park in Capitan, New Mexico. SMOKEY's successor, "Little SMOKEY" continues to greet over three million visitors at the National Zoo each year.

Before the Cooperative Forest Fire Prevention Program began in 1942, about 210,000 forest fires each year burned some 30,000,000 acres. The average for 1967-77 was 130,673 fires, burning about 2,500,000 acres, or a 38% reduction in the number of fires and a 92% reduction in acres burned.

Has the SMOKEY BEAR Program paid off? Although there is much that yet needs to be accomplished, we can say emphatically the answer is YES!! Realistic appraisal of the savings in resource damage that may be credited to the program over the past 40 years is 20 billion dollars. The Annual Budget of the program is currently \$500,000.

Is it no wonder that a *celebration* is being planned after such a distinguished record and outstanding career!! At the National level two of the more important events are a Presidential Proclamation which will declare the week of May 13, 1984, as SMOKEY BEAR WEEK. The US Postal Service will issue a SMOKEY BEAR POSTAGE STAMP on August 9th. This later event is the result of an eight year lobbying effort by Mike Marchese, a paid fireman, from Williamsport, Pennsylvania.

Plans at the State level include a Governor's Proclamation to coincide with the Presidential Proclamation; ceremonies at local Post Offices to celebrate the issuance of the SMOKEY BEAR stamp; a statewide convoy which may possibly be coordinated as a National event; birthday parties for SMOKEY at schools; and visits by SMOKEY to various statewide functions. The Year 1984 is being touted by DEP as "Parks '84" year ... so SMOKEY should be busy with Park appearances alone!

Beyond 1984, SMOKEY's plans are to continue what he has been doing so well for 40 years. Despite the decreases in number of fires and acreage burned, forest fires still remain a significant problem. There is still an average of over 100,000 forest fires in this country every year. Right here in New Jersey over 1100 wildfires burned 7600 acres in 1983. What is particularly shocking is that *9 out of 10 forest fires are caused by HUMAN CARELESSNESS and can be prevented!*

A birthday wish we can all give SMOKEY is to remember his slogan...

**"ONLY YOU CAN  
PREVENT FOREST FIRES!"**



**PLEASE!**



**Only you can  
prevent forest fires**



# Happy Accidents in Sussex

BY WILLIAM ZANDER  
PHOTOGRAPHS BY  
DR. STEVEN OKESON

Sussex County, in the northwest corner of New Jersey, has mountains, forests, trout streams, deer, wild turkey, even bears—and an imposing, cavelike, medieval-Japanese ceramic kiln in the side of one of its wooded hills.

This kiln—called an “anagama,” or “hole,” or “climbing” kiln—is not quite medieval; it was built in 1980. It is not an astounding discovery in the wilds of New Jersey, though it looks like a fossil sea-serpent from the outside and a Romanesque cathedral from the inside. Nor has it been installed as a lure for Sussex County’s considerable tourist trade; rather, it has become a focal point for a widening interest in wood-firing among American potters, and such notable ceramists as Peter Voulkos, Toshiko Takaezu, Bennett Bean, and Tom Neugebauer have fired pieces in it.

The anagama is the creation of a 36-year-old Japanese ceramist and master kiln builder, Katsuyuki Sakazume, who in 1978 received grants from the National Endowment for the Arts and the Japan Foundation to construct the kiln at Peter’s Valley, a craft village and school operated in cooperation with the National Park Service in the Delaware Water Gap National Recreation Area. Besides ceramics, Peter’s Valley has ongoing programs in fiber, fine metals, blacksmithing, photography, and woodworking.

In the 1970s, Sakazume had done extensive archaeological research on anagamas in Japan and in Korea, where this type of kiln originated. Anagamas were introduced in Japan in the third century and were used for making temple tiles and ceremonial vessels. In the 12th century, Chinese monks brought Buddhism and tea, which was used for meditation, from the mainland. The famous tea ceremony—called *cha-no-yu*—became widespread

outside the monasteries by the Momoyama period in the 16th century. Bowls fired in anagamas are perfect for *cha-no-yu*, since they are roughly finished, unglazed except for ash melt; beauty comes from “happy accidents,” which are important in Zen Buddhist aesthetics. But the Momoyama period also marked the decline of the anagama, as Japanese potters developed chamber kilns and new glazes which produced pottery more efficiently and less expensively, and anagamas fell into disuse for hundreds of years.

The anagama at Peter’s Valley is the only working one outside Japan, and during its year-long construction Sakazume tried as much as possible to follow ancient methods. Foundation trenches were dug by hand along the sides of the kiln and filled with some 100 tons of fieldstone gathered from surrounding woods. These were painstakingly fitted to prevent future shifting or sagging. Instead of using arch forms, Sakazume followed the traditional Japanese technique of using sticks of bamboo—also gathered locally—to support the individual fire-bricks until he had fitted the key brick at the top of each course. According to Sussex County Agent Warren Welsh, bamboo is not native to New Jersey but was brought here as an ornamental; once planted, it tends to “escape” and go wild.

“In building the anagama, we used the natural materials around us,” Sakazume says. “For the students and assistants who worked on the kiln, this was maybe the best part—doing it themselves.”

The final phase of construction was covering the brick with layers of a sand-and-clay mixture for insulation. The finished kiln rises at a 30-degree angle for 46 feet, half of which is chimney. There are six side stokeholes for removing ceramic pieces or for turning them. As the name implies, the anagama is

below the ground, with only the crown of the arch and the firemouth remaining visible. Entering this opening, however, one is moved by the beauty of the brickwork, the steps leading up to the far chimney as if to heaven. There is room to stand; maximum inside height is 6 feet 4 inches; maximum width is 7 feet 6 inches. The structure is shielded from rain and snow by an unsided wood-frame shed with a corrugated metal roof, rather out of sync with the feelings one gets from stepping inside the kiln itself.

When the anagama is about to be fired, unglazed ceramics are placed on the steps or sometimes buried in the sand floor; the kiln has held as many as 500 pieces in one firing. The entrance is then bricked up to create an opening 18 by 18 inches for stoking. Firing takes a long time—10 to 14 days—and requires round-the-clock stoking with about 10 cords of firewood. Temperatures ranging from 2200 to 2400°F are produced and held for a day or more before the cooling-off period, which usually takes a week. The anagama, with its long, single chamber, is designed to maximize the natural effects of wood combustion, the ash drawn through the kiln by the strong draft and uneven temperatures. According to Tom Neugebauer, a resident potter at Peter's Valley, "You never know exactly what's going to happen, what color you're going to get."

Then why go to all that trouble? Isn't there an easier way? Sakazume has an answer: "The beauty of fire visible in ceramics fired in woodfiring kilns—the natural glaze from falling ash, the stripes and patterns burned into the clay—simply cannot be evoked in modern gas and electric kilns."

Sakazume has an almost religious attitude toward his kiln. "In Japan, processes have been hallowed as a realization of religious feelings," he says. "As in many primitive arts, techniques are directly related to piety."

And it is the whole process that is important, not just the finished ceramic pieces, not even the firing of the kiln, but the continuing process of the anagama, beginning with a hole in the ground. It is what Sakazume calls "the slow way," an organic interaction among the potter, the clay, and the fire. And it means, for him, a closeness to his environment, which at present is the woods of New Jersey. Not only did Jersey fieldstone and bamboo go into the building of the kiln, but so did Jersey firebricks, from the A. P. Green Refractories Co. in Woodbridge. Not only does Jersey wood go into the firing of the kiln, but Jersey clay has been used to make the ceramic pieces themselves.

Sakazume claims he can "smell" where there is clay, and there is clay suitable for pottery in New Jersey, though most of the commercial mines are now played out, covered by shopping centers and highways. Middlesex County was once the center of the state's ceramic industry, and much of the clay, going back to the glacial period, lay near the surface in the Woodbridge area. Neugebauer had made special arrangements with Green to buy raw clay from its plant there; since March, however, the company's Woodbridge facility, dating back to 1865, has been shut down. The same clay deposit extends to Staten Island but is not commercially mined; Sakazume and his students must take a truck and get it themselves. A side-result of Sussex County's recent landfill search has been the discovery of a significant clay deposit closer to home; the Peter's Valley potters may be able to use it—if it isn't covered by a dump.

So East meets West at Peter's Valley. Early Jap-

anese ceramics have already had a profound influence on American artists, beginning with Bernard Leach's *A Potter's Book*, published in 1940. Leach introduced to American potters the techniques of Japanese folk-art pottery, high-fire stoneware in open-chambered kilns like the anagama, the idea of "happy accidents," the holistic approach—the digging of one's own clays and the building of one's own kilns. Sakazume is continuing this influence but says he is not in New Jersey to promote Japanese culture.

"A culture can only develop in the climate in which it was born," he says. "For me, most importantly, I have to find out why I breathe now—here, in America."

Sakazume lives now, most of the time, with his wife Keiko in a 19th-century stone house in Peter's Valley. Known as "Katz" to American friends and students, he teaches classes on the use of the anagama in the spring, summer, and fall and says he likes to teach. He also likes to fish, one of the appealing features of the Walpack and Delaware valleys where he lives. "My native land is just like this," he says. Sakazume was born and grew up in the Niigata district on the northern part of the main island, about five hours by train from Tokyo. The climate, he says, is much like northwest Jersey's—cold in winter, warm in summer, lots of precipitation. "What's strange to me is not the place but the people, the customs," he says.

On Nov. 9, 1980, Sakazume was able to perform the ancient ritual of clapping his hands to invoke the kiln gods, sprinkling salt over the firebox, and lighting the anagama's first fire. This past May 28, the results of the seventh firing of the kiln climaxed a four-day woodfire conference at Peter's Valley, which attracted ceramists from all over the United States. The day of the unloading was a cool, clear, sunny one. People, many with cameras, milled around, sat on the anagama's hill, or perched precariously on the wood piled up around the kiln's exterior. There was an expectant, celebrative atmosphere, but also a lot of technical talk about insulation, types of firebrick, the dangers of slag, problems with green wood and "reduction."

Finally, Sheila Stiven, executive director of Peter's Valley, announced that it was "time to crack the magic box and see what happens." After Sakazume made a speech in his halting English, the front of the still-smoldering kiln was removed and the first pieces were taken out. They were unpromising indeed—black, covered with ash, apparently burnt up; some had cracked or become mere shards, including a Voukos plate. One reason for the breakages was the five-day cooling-off period, which had been cut short to jibe with the end of the conference. But in some pieces the cracks turned out to be "happy accidents," as in the rectangular slabs by Sakazume, which he calls his "gravestones."

"Clay is always moving," Sakazume said. "One expects cracks. It makes no sense for me to make a perfect block."

And once the pieces had cooled and been washed off with a hose, one could see the subtle beauty produced by ash glaze—reds, blues, purples, yellow-greens, browns, rust—the colors of earth. And it is this connection with the earth and its shifting elements that is important to Sakazume.

"I'm starting from archaeology," he says, "not only learning about techniques, about cultures, but about everything under the ground. I dig it up—not only physically, but also I try to dig it up spiritually."



Removing fire bricks after firing and cooling (Katsuyuki Sakazume, center)

Kiln requires round the clock stoking



## Cook Course

continued from page 13

pay \$5 in France for a sandwich like this," Dr. Locandro joked. Then the kidneys and livers were fried. Several classes were dedicated to cutting up the carcasses. With instruction we came up with the retail cuts that are sold in meat sections of our supermarkets: roasts, spare ribs, hams, bacon, etc.

Before the final exam we made sausage. Thirty-five pounds of pork was transformed into tasty breakfast sausage. We used some of the venison to make kielbasi. The important thing was keeping "the proper meat-to-spice ratio." The sausage was fried up at the end of the day and everyone took samples home.

The "final exam" had questions brought in by the students or provided by the Locandro family. The first "question" on the exam was offered by Tim Little, who was going to Harvard Law School in the fall. I could not identify what he had marinated—it was scungilli that he had bought on the Fulton trip. Other "questions" were mako shark, beef and kidney pie, fried calico scallops, and marinated octopus—all brought by students. The Locandro family provided us with dandelion cakes and watercress sandwiches—main ingredients found on their property. Pork and lamb were roasted in open pits. I knew the extra-credit questions: beer, salad, and chocolate cake.

Toward the end of the picnic I asked some of the students what they felt they had gotten out of the course. There were a few joking answers like, "One credit," but Ray Papalski from Bayonne took my question seriously.

"I went out to eat recently and ordered breaded veal. I couldn't help but think of all the stages it had to go through before I could enjoy it. It'll never be the same for me when I eat." Jim Holderbaum, president of the senior class, agreed. "I think everyone should see an animal slaughtered—they'd never take their food for granted again." The others seemed to quit joking for the moment and nodded in agreement. I think Dr. Locandro would have been pleased if he had overheard their comments.

## Turtles

continued from page 20

### TURTLES IN CAPTIVITY

All the turtles in New Jersey are protected in one way or another. Under nongame wildlife regulations, it is illegal to possess any species of turtle in New Jersey, with the exception of Snapping Turtles and Painted Turtles, without a nongame permit. Also, since turtles can carry the bacteria of Salmonella diseases, there are health regulations against selling any species of turtle in New Jersey, for any purpose other than food.

Wild turtles really belong in the wild. Probably, for those people who are interested in turtles, photography and field observation could profitably be substituted for pet-keeping; a look through any technical book on turtles reveals that surprisingly little is known about food habits in the wild, feeding behavior, courtship, and nesting behavior of even some rather common turtles. And, in New Jersey, any observations and sightings of Bog Turtles or Wood Turtles, with or without photographs, would be of interest to the Nongame section, New Jersey Division of Fish, Game, and Wildlife, CN 400, Trenton, NJ 08625.

## National Hunting & Fishing Day Poster Contest

In a significant change from past contests, the 1984 National Hunting and Fishing Day Poster Contest will be held and the winners announced during the current school year. This change was made to give more students the opportunity to participate in the poster contest and be eligible to win one of 52 national prizes including a \$1,000 U.S. Savings Bond. The deadline for entries in the national contest will now be May 1, 1984.

The theme of the 1984 NHF Day Poster Contest, "How Sportsmen's Duck Stamp Dollars Help Wildlife," spotlights the important role funds from Federal "Duck Stamp" purchases play in conserving wildlife. The theme was selected to coincide with the 50th anniversary of the Federal "Duck Stamp" program. National prizes that total \$5,200 in U.S. Savings Bonds will be awarded to students who best illustrate the 1984 contest theme.

The National Hunting and Fishing Day Poster Contest is open to all students in grades 5-12. So that youngsters can compete on a more equal basis, there is a Junior Division for grades 5-8 and a Senior Division for grades 9-12.

In addition to the Grand Prize of the \$1,000 savings bond, national prizes include \$500 savings bonds for First Place, \$250 in bonds for Second Place and \$100 bonds for Third. First, Second and Third Prizes will be awarded in both the Junior and Senior Divisions. There will also be 10 Honorable Mention Prizes of \$75 savings bonds and 35 Merit Awards of \$50 savings bonds.

In order to be considered for national awards, posters must first be winners in a locally sponsored National Hunting and Fishing Day Poster Contest. On the local level, contests can be organized by schools, sportsmen's clubs, conservation or civic groups, newspapers, etc. To give youngsters time to research and prepare their posters, it is preferable that contests be organized as soon as possible.

Prizes for local winners may be awarded by the sponsoring organization. Winning posters should then be sent to NHF Day Headquarters for national judging by May 1, 1984.

For information on how to sponsor or participate in a local National Hunting and Fishing Day Poster Contest, please write: NHF Day Poster Contest, P.O. Box 1075, Riverside, CT 06878.

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## Letters To The Editor

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New Jersey Outdoors welcomes letters from readers. Letters for publication should include the writer's name and address and should be mailed to: Editor, New Jersey Outdoors, CN 402, Trenton, N.J. 08625. Letters may be edited for reasons of length or clarity. In the July/August issue, we announced the start of a Letters to the Editor column. Here's a sampling we have received over the last few months. Please keep the letters coming. We'd like to hear what you think about the magazine—good, bad or indifferent. We'll also try to answer questions and if we cannot, we'll ask our readers for help.

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"Outdoor Destination: Park & Walk in Central Jersey" by Steven Brush (January/February) causes us grave concern. Although the Sourland Mountain Preserve is mentioned as an undeveloped unit of the Somerset County Park Commission, the article does not make clear that this area is not open to the public and that hiking through the area is not permitted without special arrangement. Because of the area's ruggedness, its close proximity to an active quarry which blasts frequently, and the lack of developed marked trails, access is permitted only with a guide and by advanced arrangement with the Park Commission's Environmental Education Center in Basking Ridge. Such arrangements are complex as they must be coordinated with the quarry's blast schedule.

Walter A. Jones, Administrator  
Division of Natural Resources  
Somerset County Park  
Commission  
Basking Ridge

### The author responds:

I regret to have misinformed *New Jersey Outdoors'* readers about access to Sourland Mountain Preserve. I must say "I'm sorry" to them and to the Somerset County Park Commission, which manages the area. My hope is that the public will abide by the regulations for the preserve as they are outlined in Mr. Jones' letter.

By way of explanation, I must say that nothing on-ground at the preserve or on maps available to me indicated that access is limited. It was an oversight, however, not to have confirmed my impression with the Park Commission.

Steven Brush

Enjoyed "Touring New Jersey's Lighthouses" by Kim Ruth (November/December). I have been cultivating an

interest in lighthouses for a few years, so your piece was music to my eyes. You mentioned some 30 lighthouses in N.J. waters. I know of 20; would appreciate you adding to my list.

Tom Flanagan  
Green Brook

**Kim Ruth will supply a list of N.J. lighthouses to anyone who requests it and encloses a self-addressed, stamped envelope. Send your requests to NJO, CN 402, Trenton, NJ 08625 and we'll pass it along.**

Please continue to send me *Environmental News*. It is an aspect I don't want to miss. I would also like to suggest that you reprint another notice of the change for those who may have overlooked the first announcement.

Stewart Austin  
North Brunswick

I just want to inform you that I think a great disservice is being done to your readers. How can you justify the deletion of *Environmental News*? Your magazine should reflect a growing concern about our natural resources.

Tom Henwood  
Collingswood

**We've received a number of letters like these two. *Environmental News* is being distributed separately in response to many requests for a more comprehensive, current and informative newsletter for the Department of Environmental Protection. *New Jersey Outdoors* will continue to carry articles about all aspects of our state's rich stock of natural resources. If you would like to receive *Environmental News*, please send your name and address to:**

Editor  
Environmental News  
Department of Environmental  
Protection  
CN 402  
Trenton, NJ 08625

**We'll be glad to put you on the mailing list. There's no charge for *Environmental News*.**

As a commuter for 26 years from 1949 to 1983, between Red Bank and New York City, I found Robert McDonnell's article on the CRRNJ Terminal now part of Liberty State

Park, (November/December), most pleasing. Between 1949 and 1956 I used that terminal daily. Behind the south wall was a bar that had doors to both the ferry house and the train shed and could be used as a pedestrian route from one to the other. At 5:10 p.m. every day, a ferry departed Liberty Street in N.Y. to connect with the 5:22 p.m. train to Bay Head. Just before the ferry arrived, the barkeeper would set up drinks for commuters he knew would be coming through. As the boat tied up in its slip, there'd be a mad dash by commuters, cash in hand for the bar. Through the door they'd rumble, drop the cash, pick up the drink, down it, deposit the glass and run through the trainshed to catch the train as it was pulling out.

John Russell  
Fair Haven

In reply to Douglas Reynolds' request (November/December) concerning recipes for pickrel, the recommended method is to pickle the pickrel. A sure fire way to soften small bones in fish is the following.

Clean and scale the fish. Wash in cold, cold water and cut into chunks. Place fish in a glass bowl and nearly cover with lemon juice. Allow to stand overnight, covered, in the refrigerator. The next day, add cold water to cover fish. Remove fish. Boil the liquid with sliced onions and carrots. Add fish, reduce heat and cook in covered pot for about 40 minutes. Add sugar to taste about five minutes before done. Let cool slightly; add one teaspoon of mixed pickling spices. Refrigerate in covered container for 24 hours.

Yours for good fishing,  
Sam Freed  
Hightstown

The Senior Youth Group of Temple Beth-El in Closter is interested in the environment around us. We would like to learn about New Jersey's wildlife and we hope you might have some suggestions.

Noah Rolland  
Closter

**Len Soucy, author of "New Jersey's Barn Owls, (November/December) is a naturalist, lecturer, photographer and raptor researcher. He might be able to help. You might also try the New Jersey School of Conservation, Montclair State College, Branchville, 07826.**

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## Of Trees and Trowels:

# Ocean City's Unique Dune-Building Program

BY TIM FAHERTY

PHOTOGRAPHS  
BY AUTHOR

Each year around Easter, when most of us are only beginning to think about the shore, groups of volunteers in Ocean City are busy planting grass on sand dunes.

If you've always associated the shore with Memorial Day rather than Easter, you may be surprised to find that these man-made dunes actually begin their lives with another holiday—Christmas.

New Jersey's barrier island communities fight a constant battle with the sea. The same Atlantic Ocean that supports their tourist economies robs their beaches of sand, and threatens beachfront homes. The state has responded with stone jetties and groins, bulkheads, and millions of dollars in bond issues. But Ocean City has added to its arsenal a unique and inexpensive beach-building formula—volunteers and Christmas trees. After Christmas in Ocean City, trees are collected and placed high on the beaches, where they become the skeletal structures of future sand dunes.

Most oceanside communities encourage the development of sand dunes. The dunes, especially after they have been anchored with grass and other vegetation, are generally recognized as a superior form of beach protection. Dunes are part of a natural cycle which begins when wind-blown sand collects in small hills on a beach. In severe storms, the dunes absorb the force of the waves, protecting other areas. And, as they are eroded away, the dunes provide a reservoir of sand to replenish the beaches.

What makes the Ocean City program unique, according to its director, Steve Gabriel, is "the large-scale volunteer aspect, and the organized nature of Christmas tree utilization."

While you took down your Christmas tree this year, and dragged it, shedding needles and leftover tinsel, out to the curb or to a landfill, about 100 volunteers in Ocean City were arranging local trees on the city's beaches. The trees are anchored with shovelfulls of sand, and placed in patterns that the volunteers themselves have developed over six years.

A volunteer work day cancelled because of rain provided an opportunity to tour the dune sites with Gabriel, a blond and bespectacled man who looks more like one of the Beach Boys than the city's environmental planner. "We're not solving the problem of beach erosion by putting trees out on the beach," he said. "What we're doing is trapping a little sand, accumulating a little sand into mounds that

happen to do better in storms than the flat beach does. It becomes a barrier. And of course, we're doing that at very little cost."

In its first five years, the program placed about 8,000 trees on the city's beaches. After a severe storm, the crumbling edges of the dunes reveal the tree branches that were used to start or enlarge them. About 2500 of those trees came from over 50 miles away. Jim May of Palmyra, who owns a summer house on the island, has organized the collection of trees in his home town and in Riverton. A borrowed truck brings the trees to Ocean City.

That kind of dedication is not unusual among the volunteers. Some, like Mary Brier of the Environmental Association of South Ocean City, "adopt" dunes. They do all the work at specific street ends, including augmenting the trees with snow fencing and planting dune grass in the spring. Gabriel thinks this is an especially valuable way to volunteer. "You just take a special interest or a special pride in what you do then," he said.

Other active groups include the Ocean City Anglers Club and the surfing club of Holy Spirit High School in Absecon.

"The volunteers really do have a lot of responsibility for the direction that the program goes," Gabriel said. "And that's really the way these programs should be organized, so it doesn't matter who's in city hall, the job gets done."

The city provides "a lot of coordination and a good amount of technical support," said Gabriel, who supplies much of that support himself in the evening and on weekends.

Some of the dune work is also done as part of the city's Juvenile Diversion program, in which first- and second-time juvenile offenders are sentenced to perform public service work.

Of course, not everyone in the city supports the dune project. "Those who have opposed the dunes in the community are predominantly beachfront property owners," Gabriel said.

At first he felt frustrated by this attitude, Gabriel said, "because I really thought it was shortsighted for people to refuse to allow sand dunes to be created in front of their property just because the structure survived the storm in '62."

Now Gabriel concentrates on the positive improvement that can be made to the beaches. "There's plenty of other places where dune work can



be accomplished, and it's got the support of the property owners."

Like other coastal experts, Gabriel believes that sooner or later another major storm or hurricane will hit the New Jersey shore. "I don't see how we can avoid it. The thing to do is be aware of it and prepare for it as best as possible."

If a major storm does cause severe damage, it might change the way we look at barrier islands. "Hopefully, we would redevelop in a much more conscientious manner, with more respect for the ocean," Gabriel said.

For now, the dune work continues, and aside from increasing the beauty of the island, it has had several successes.

"We've been able to establish, reestablish, or repair sand dunes. We've been able to raise the community consciousness for sand dunes and beach protection," Gabriel said.

"It's people taking pride in their community and taking an interest in doing something to improve their community. That kind of commitment will carry over into other projects."

For a copy of Ocean City's guidebook on dunes and dune-building projects, write to the Division of Public Works, 1040 Haven Avenue, Ocean City, N.J. 08226.

*Lower Right: Steve Gabriel points out some man-made dunes.*



TEXT AND PHOTOS BY  
CORNELIUS HOGENBIRK

# Shooting Wildflowers

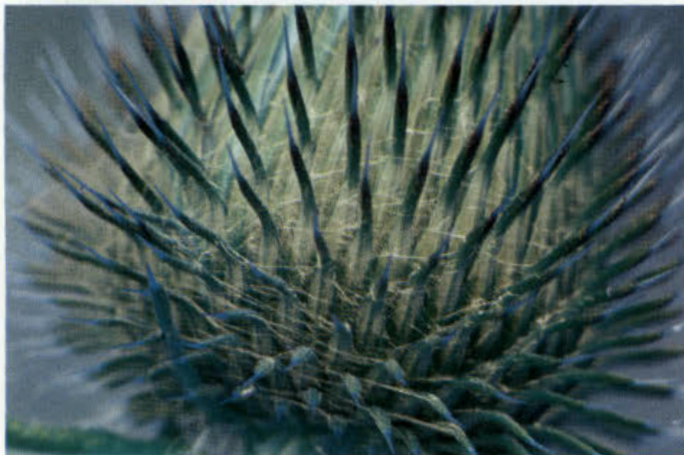


*Roughfruited, or Sulphur Cinquefoil, *potentilla recta*. A back-lit flower photo, that through the use of a reflector required only a half-stop increase in lens opening. Here a light-colored flower just about corrected for underexposure normal to a metered setting.*



*Moth Mullen, *verbascum blattaria*. White flowers often give false meter readings. This example would have benefitted if a half or full stop smaller lens opening had been used. The green background is a section of lawn.*

*Swamp Thistle, *cerstium muticum*. A burr alone is pictured showing the "cobwebs" typical of this species. Again using the 2x tele.*



When I go hunting for wildflower pictures, or other nature subjects such as dragonflies or butterflies, I want to enjoy my outing. Therefore I only carry the basic items that I will need for this type of photography. I travel light.

On the other hand, I would not leave behind so essential an item for close-up photography as my tripod. I want to do it right. That's the picture. Travel light, but do it right. I am not so burdened that I break into a sweat climbing a 10-degree slope, and I am confident that the results will be satisfying.

Listed below are the items that I consider essential:

1. A 35mm SLR with manual controls. Mine is a leftover, sale priced, original F-1 model Canon.
2. A macro lens. I use a Tamron 90mm f 2.8.
3. A good 7 element 2x tele-converter.
4. A lightweight aluminum tripod, the kind that can be spread out to inches above ground level. Mine is a Velbon VFB-3.
5. A cable release. I prefer the 12-inch size.
6. A reflector. This can be made from an 8x10-inch piece of hardboard with crinkled aluminum foil taped to it.
7. An accessory speed viewfinder, if available for your camera. This device has two twist positions. The position with the viewfinder facing up allows me to take close-to-the-ground photos comfortably. It also magnifies the image slightly.
8. A lens hood.
9. A bean bag. Place it on a rock or whatever and there will be no need to set up the tripod. Mine are 4x6 inches and are homemade. This simple little device is just about the handiest thing there is.
10. A piece of a rug remnant about 12-inches square. Useful when it is necessary to kneel down on the ground.

11. Several rolls of Kodachrome 64. Sometimes I will use Kodachrome 25 or Ektachrome 64, but if there was only one choice I'd take Kodachrome 64.

All of the camera gear is packed into a simple and inexpensive shoulder bag. The rug remnant is rolled around the tripod and secured by two heavy rubber bands. This I hand carry.

Many of our wildflowers are rather small, requiring a close-up shot. The problem is in finding a plant with unblemished blossoms in a nice, flat plane. Focusing a close-up is critical enough without having a depth of field problem to worry about, so I take my time and search for the most photogenic example I can find. Once it is found, I carefully frame the flower in the viewfinder, then stop to study the image closely. It only takes a moment to snip off an offending out-of-focus piece. If I do overlook a distracting item, it will be there when the processed film is returned.

The reflector I use on nearly all my close-up shooting. Its use reduces contrast and provides luminosity. Without it a back-lit flower would be dark, almost a silhouette. Sometimes I use it to shelter a delicately stemmed flower from the breeze. Then I wait, cable release ready, patiently watching for that instant of stillness.

White flowers such as the trillium, bloodroot and twin leaf, light-colored plants like the spring beauty, and several of the yellow-petaled flowers, the marsh marigold and prickly pear will not meter correctly. Depending on flower and light conditions these subjects may come back muddy looking (underexposed) or washed-out (overexposed). I have learned from

experience that often a half-stop or full-stop lens stopdown say from f 11 to f 8 will compensate nicely. If in doubt I will bracket, going half a stop under and over the meter reading setting, and occasionally a full stop both ways. That's a total of five shots for just one image, but I will have at least one good picture instead of none.

The above type of flower subjects are much easier to capture on a hazy day with the sunlight filtered through a high, thin layer of clouds.

Back lighting can produce some lovely creations. Here again we have to "correct" the indicated metered setting. The rule is to open the lens setting by two stops—f 11 to f 5.6. However by using the reflector, only one stop adjustment is necessary, and sometimes just a half stop. In this example the reflector did two things. It illuminated the flowers, and it reduced the amount of lens opening needed, thereby preventing the back-lit areas from washing out.

A clean background is important. Here depth of field becomes our friend instead of enemy. A slight change in camera angle or height may move the background away. The further away it is, the more out of focus it becomes, and the less distracting it will be.

Sometimes I will find interesting subject material in waste lots or alongside the road. It is either too difficult to get a good background, or dangerous because of passing cars. I will then cut some of the flowers. In my car I carry a jug of water and a roll of paper towels. Loosely wrapped in a few moistened towels they will usually survive. Back at home I will make a fresh cut and place the flowers in a jar of water, and out of the sunlight. If the plants do not revive, I may try plunging the stems into very hot (about 120 degrees) water.

The next day I will take the plants outdoors to be photographed. The lawn will be used for a background. The plant stems will be anchored, at an angle, in a large can of wet sand. When photographed from above with the camera at a like angle, a nice medium green background results. A partially shaded lawn section will produce a mottled green, while a shaded section will become a dark green.

This cut-and-bring-them-home backyard technique is also useful for flowers that open just at a certain time of the day, like the evening primrose.

The 2x tele-converter comes into play when very tiny flowers are to be photographed, the forget-me-not for example. Or perhaps I cannot get close as I wish. The tele solves that, too. I find this device most useful for shooting insects that are visiting our plant world friends for one reason or another. First I stalk my prey to watch for a pattern. At a likely spot the camera is set up. Kneeling on the rug remnant, I keep still. In due time I will either go to sleep or be rewarded.

One thing I do have to do is to keep my glasses clean. The 2x reduces effective film speed by four times. This in turn makes for a very shallow depth of field. Focus is super critical. But I get a good shot now and then, so it is worth the effort.

Wildflower photography gets me outdoors often. It has been a useful tool in my nature learning experience. In addition the pictures are attractive and a reminder of the outdoors. They can make a nice display when hung on the walls of a kitchen, den, library or sewing room. So, travel light, but do it right.



*Asiatic Day Flower, commelina communis. Use of a 2x tele-converter provided a close-up look at the tiny flower of this common plant.*



*A Dragonfly lands on a seed stalk and I capture it too. An entomologist at Cook College identified this specimen as a sympetrum internum, or perhaps s. rubincundulum.*

*Common Burdock, arctium minus. A backyard photograph.*



*Dutchman's Breeches, dicentra cucullaria. Find a plant with unblemished blossoms, and all of them on an even plane, for a good photograph. In this picture a nice section of leaf is shown. This was in the shadow but the reflector lightened it nicely. Woodland trails at Allaire, Monmouth county.*

# The Yellow Perch and Eastern Chain Pickerel

BY DAVID CHANDA

Did you know that the world record yellow perch was caught in New Jersey? That excellent pickerel fishing can be found throughout the state and the next world record for an eastern chain pickerel just might be caught in the Garden State? That's right, New Jersey is a prime area for perch and pickerel.

The world record yellow perch was caught by Dr. Charles G. Abbott, an amateur ichthyologist who lived in Bordentown, New Jersey. The fish was caught in Crosswicks Creeks, Burlington County, in May of 1865, and it weighed 4 lbs. 4 ozs. This record still stands, although the state recently placed this fish in a historical records category, to allow for a modern day record. The new modern state record is a 2 lb. 2 oz. yellow perch caught in Lake Mohawk, Sussex County, by Eric Avogardo on July 3, 1983.

The yellow perch is a very important fish to our waters. They are consumed in large quantities by many of our important game species such as largemouth bass and eastern chain pickerel. Though it is a small fish, the yellow perch with its firm white flesh is considered a favorite by many fisherman and restaurants.

Yellow perch look very similar to the walleye, a remote cousin. The difference is yellow perch have 6-9 dark contrasting vertical stripes over a yellow or olive body and their fins are generally brilliant orange/red. They average between 6 to 9 inches and rarely exceed 12 inches in length.

Habit patterns make yellow perch an easy fish to find and catch. These fish feed sun-up to sundown and are generally found in the weedy areas of lakes or slow moving sections of a stream. They are generally not very active at night. However, there is an old trick used by fishermen to catch perch at night. They hang a lantern off the side of the boat so the perch will be attracted to the light and begin to feed as if it were daylight.

Yellow perch generally spawn in April. The female will lay a string of gelatinous eggs over submerged aquatic plants or branches of fallen trees. This strand of eggs can measure up to 8 feet in length. A 10-inch female perch can lay up to 61,000 eggs which will hatch in two to three weeks. No parental care is given to the eggs or young.

Perch travel in schools and chase their prey down. They are carnivorous, and have many sharp teeth which they use to catch their food—mostly crustaceans, insects and small fish, such as minnows. They feed throughout the year, which makes them a favorite fish during the ice fishing season. Their winter diet consists of small insect larvae found in bottom mud. Favorite baits used by anglers include minnows, grubs, worms and mousies. Popular artificial lures used by fishermen include tiny jigs and spoons. Frequently while jigging for perch the ice fisherman is startled by the sudden strike of a pickerel. Pickerel live in the same habitat as yellow perch.

The state record eastern chain pickerel weighed 9 lbs. 3 ozs. and was caught in 1957 by Frank McGovern in Lower Aetna Lake, Burlington County. This is just 3 ounces shy of the world record chain pickerel caught in Georgia by Baxley McQuaig Jr. in 1961.

Consistency makes the eastern chain pickerel a favorite quarry among many New Jersey anglers. While other species may become finicky or just not willing to strike, the pickerel is always ready, willing and able to battle an enthusiastic angler.

Found throughout New Jersey, the chain pickerel is a loner and likes quiet still waters where it lurks near stumps, under lily pads or in dense weed beds waiting motionless to ambush its prey.

This slender, elongated fish has a large mouth which can be opened to twice the size its body's cross section. The mouth is filled with many teeth which are used to seize and hold its prey. The basic color of an eastern chain pickerel is dark green on the back, brassy yellow on the sides, and creamy white below. The chain-like markings on its side distinguish this pickerel from other larger members of the pike family such as muskellunge and northern pike.

Pickerel spawn before most other species early in the spring. A 12 to 14-inch female will lay 6,000-8,000 eggs. The young will hatch in about 6-12 days and immediately begin to feed on small crustaceans and insects. No parental care is given to the eggs or young.

The young pickerel are large enough for a fish diet at approximately the same time the young of later spawning fish are hatching. This is a nice adaptation to insure an adequate food supply for these ferocious predators.

Once mature, a chain pickerel will feed entirely on other fish. Sunfish, yellow perch, shiners and brown bullheads are staple items in its diet. However, at times they will feed on small snakes, ducklings, frogs, crayfish, turtles, mice or anything else that may swim by. Also, it will not hesitate to eat one of its own. Some prey items are so large, that it takes all day for the pickerel to swallow its meal. Such meals often cause the pickerel discomfort and it will try and relieve itself by frequently stretching or yawning.

When fishing for pickerel it is important to maintain a constant retrieve. Because of its elongated body, a pickerel lacks maneuverability and thus must rely on fast strikes to catch its prey. The pickerel cannot react quickly enough for the sudden change of a herky/jerky retrieve such as is used by a bass fisherman. Also, when using live bait on pickerel it is best to allow the pickerel to take the bait for a few seconds before setting the hook. This is because a pickerel will seize its prey by the side and then manipulate it head first down its throat.

Both the eastern chain pickerel and the yellow perch are popular among all types of anglers, from youngster to adult, novice to expert. These fish are easy to catch, can be taken by many different methods and are willing to bite at any time of the year. So, if you have the time and are looking for a fight, these fish will give it to you—12 months a year!

(There are no shortages of places to fish in New Jersey. You can obtain a free list of "Places to Fish in New Jersey" by sending a self-addressed stamped #10 envelope to the New Jersey Division of Fish, Game and Wildlife, CN 400, Trenton, New Jersey 08625).

### FRONT COVER

Trout fisherman Bob Byrne—Division of Fish, Game & Wildlife photograph.

### INSIDE BACK COVER

The Yellow Perch and Eastern Chain Pickerel—Illustration by Carol Decker.

### BACK COVER

"Water—We Can't Live Without It" is the theme of National Wildlife Week: March 18-24.



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# WATER

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