New Jersey Outdoors

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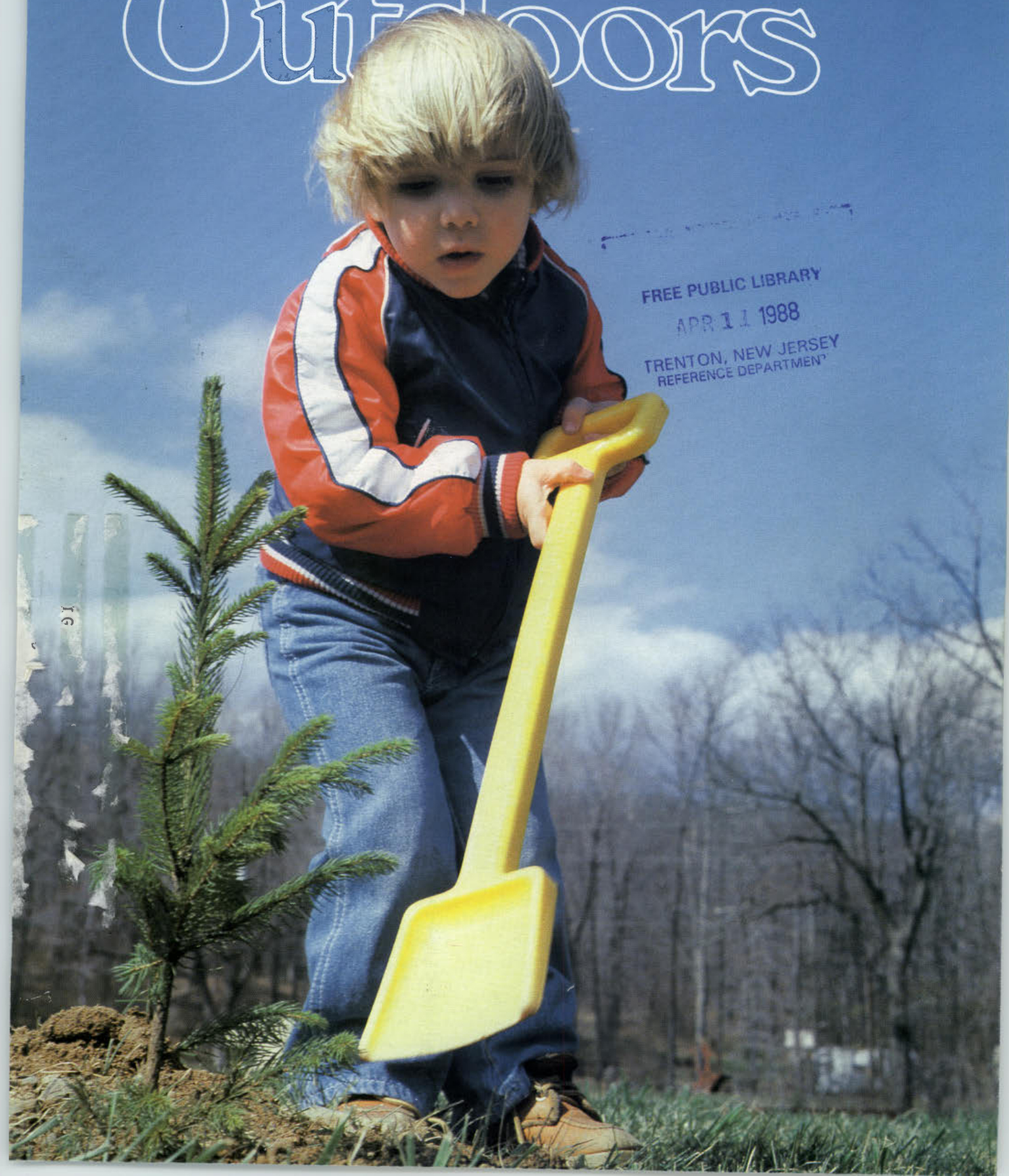

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New Jersey Outdoors

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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.

Guest Editorial

Andrew C. Smoot is a Governor's fellow assigned to the office of the Department of Environmental Protection's Assistant Commissioner for Natural Resources, Helen C. Fenske. With a master's degree in public administration from the University of Missouri—Kansas City, he will be working on open space and recreation issues in New Jersey.

In the last few months, I have dealt with more different and diverse issues, than I ever thought possible. As a Governor's Fellow I have been able to step outside the orderly process of government, and look at outdoor issues from many different angles. Not being a New Jerseyan before moving here, I've been like a kid at Christmas looking at his new toys. My new toys are Wharton State Forest, Bass River State Forest, Liberty State Park, and Belleplain State Forest to name a few.

In the Midwest where I grew up, we recognized the importance of the outdoors. There always seemed to be enough. I can remember driving through the prairies, apple orchards, and tree-lined roads in Kansas and Michigan. They invited one to sit back and contemplate something as simple as the setting sun. But now that simple setting sun has taken on a new significance for me, because I am learning the outdoors cannot be taken for granted.

There are many things going on with the outdoors in New Jersey that you might not be aware of. We have groups like the State Planning Commission and the Governor's Council on New Jersey Outdoors, and issues like the health and viability of our forests and the Natural Resources Restoration and Preservation Act (A-2195 and S-1897) all vitally important in setting a course for stable outdoor policy in New Jersey. At the federal level, there is also the President's Commission on Americans Outdoors, which is looking at this issue from a national point of view.

Outdoor policy is not as newsy as taxes or drug testing but it is just as important. I know that watching a tree grow is not the same thing as seeing a nursing home built for the elderly. But the outdoors is one of our greatest capital assets, because it is what we live in. Protection of our outdoors then should be one of our main goals. Buildings, elected officials, and people come and go, but the land is constant.

The Governor's Council on New Jersey Outdoors will be responding to the recommendations of the President's Commission on American Outdoors, due to be released by the end of the year. It will also make recommendations to Governor Kean on outdoor/open space recreation policy through the year 2000. I can remember thinking that the year 2000 was going to be a special year, because it would be the space age and we would be able to fix all our problems with a blink of technology. As we come closer to that date, I am beginning to wonder whether what we appreciate today will still be around, and whether technology will be able to fix our problems. Societal issues on outdoor policy are so complex that by affecting one thing we set off many chain reactions.

The Governor's Council on New Jersey Outdoors has set itself on a course that will allow for no unexpected chain reactions. We have to be realistic enough to know that with the amount of development taking place in New Jersey, there will not be a lot of open space left after the next five years. This means one thing. We must provide as much outdoor space regionally and locally as we can for future generations.

When I studied history in college, I learned one of the greatest lessons of human nature. If they are allowed to, people do the same dumb thing over and over again. But every once in awhile, someone comes along and says, maybe we should try it this way instead. Then someone else says, hey! that is not such a bad idea, let's try it and suddenly this new idea becomes the basis of life.

Well, that is what we need now in outdoor policy. We need someone to stand up and say let's make outdoor policy a higher item than 10th on a list of 10. If we will just take the time to think about what it means to hike through Stokes State Forest, or observe the wildlife in the Greenwood Forest Wildlife Management Area, then we will understand a little better about what it takes to manage the outdoors.

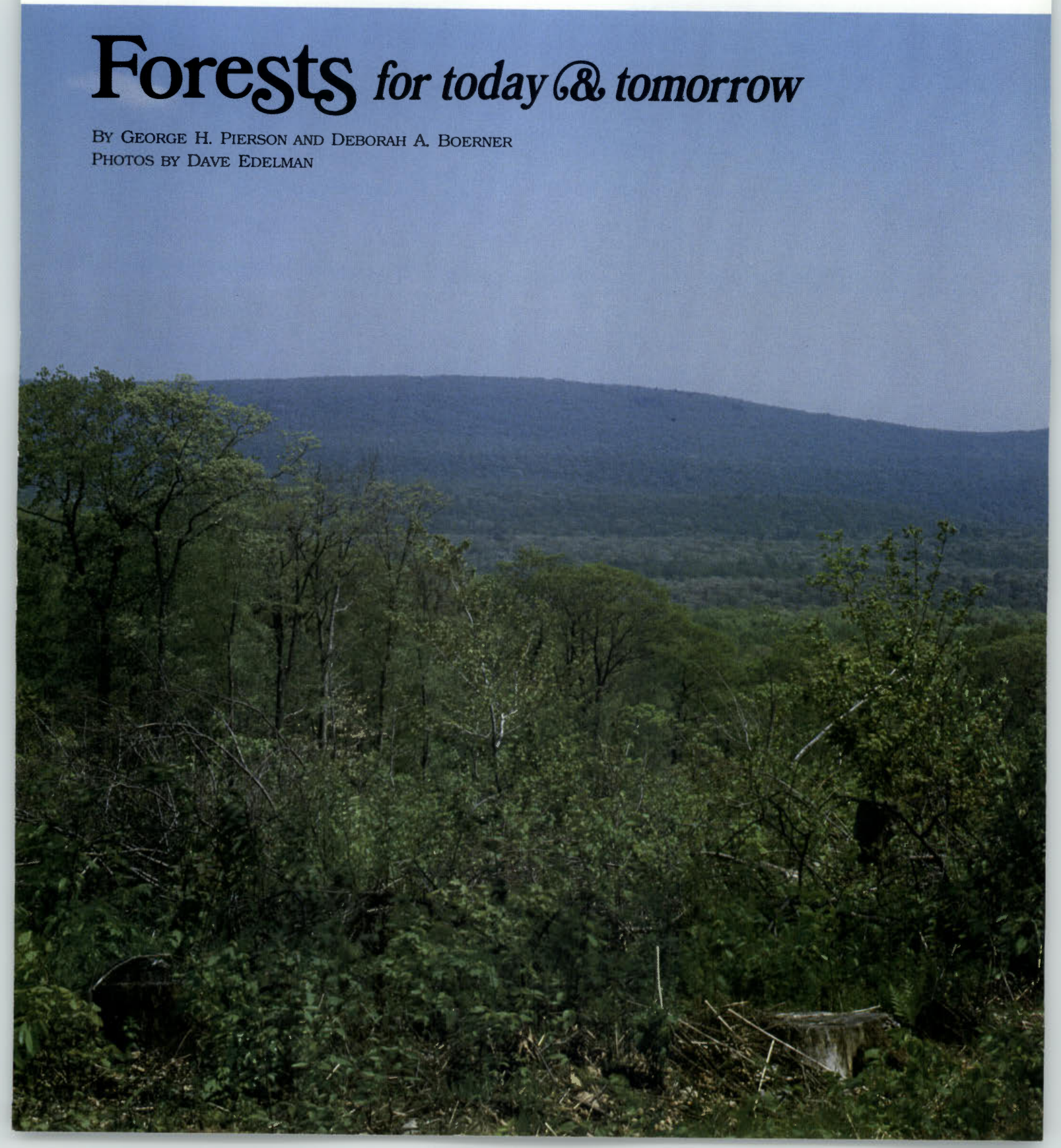
The outdoors is not a pretty china doll sitting in a glass case. It is something that needs daily care and attention. This is what we want you to think about. Next time you visit a state park, think about what it means to you and your family. Then write your legislators, and tell them about the nice time you had at the park and that they should move outdoor policy up that interest scale. Maybe they will not move it to number 1, but they might move it up to number 5 which would be a start.

If some New Jersey citizens would arise as an advocacy group for outdoor/open space issues it would be a plus for New Jersey, and an example to the nation.

—Andrew C. Smoot

Forests *for today & tomorrow*

By George H. Pierson and Deborah A. Boerner
Photos by Dave Edelman



New Jersey's forests are many things to many people. Everyone who lives or travels in the state enjoys wooded landscapes while driving its highways and byways. Forests protect watersheds that produce pure water. A variety of forest types and age groups provide habitats for a wide range of birds and wildlife. Outdoor recreation would lack much of its enjoyment with fewer forests. Properly managed and harvested forest land provides wood products, employment, income, and other economic benefits to the citizens of New Jersey.

A forester's job is to maintain healthy, vigorous trees and vegetation for these purposes, and in so doing, to use techniques and practices that can be adjusted at any time to provide a maximum of any one or combination of benefits. Management techniques can be the manipulation of vegetation to increase water production, or creation of clearings for wildlife food patches or to develop conditions for a preferred species.

A more specific example can be found in the management of Lebanon State Forest in Burlington and Ocean counties. When acquired by the state in 1908, the area consisted of abandoned farm fields interspersed with oak-pine woods. Most of the fields were planted with a variety of pines—white, shortleaf, loblolly—by the Civilian Conservation Corps (CCC). Once the trees were large enough to resist fire damage, portions of the stands were periodically burned lightly to reduce the chance of a hotter, more destructive wildfire.

In the early 1970s, as the oil crisis created a demand for firewood, more emphasis was placed on hardwoods—mostly oaks—at Lebanon and throughout much of the state. But wood sales were planned to overlap other management activities. Firewood was cut to create as great a variety in conditions as possible, to improve aesthetics and create "edges" for wildlife. Edges, where two types of land coverage—mature forest and open field, for example—attract wildlife to the range of conditions they provide. A good example is that of summer tanagers and red-headed woodpeckers—a threatened species in New Jersey. They are now found throughout Lebanon State Forest, but especially where understory hardwoods have been cut and mature pines left standing.

New Jersey forests did not always benefit from the expertise of trained foresters. With an established base of forest resources such as the state has today, it is possible to do many things. Our great-grandfathers did not have that luxury, since at the end of the 19th century, New Jersey forests were at their lowest point. How did this critical situation develop, and how was it overcome?

Forest use, 1600s-present

When the first settlers arrived in the 17th century in what is now New Jersey, they found a land of boundless forests. At least that's the popular belief. But the writings of early explorers and colonists also refer to "fresh meadows," "maise lands," and open, treeless lands. This diversity resulted from both natural and cultural causes. Natural effects included fire, insects, ice and wind storms, and flooding, especially by beaver—the same problems that plague our forests today.

The Indians who were New Jersey's first residents had a lifestyle and customs that caused them to destroy additional trees. They used fire to improve hunting and to create clearings for their villages. Some villages were quite large; at least one encompassed over 150 acres. Village sites, farming plots, and adjacent areas were often cleared to obtain wood for fuel. The Indians abandoned their village sites and set up new ones from time to time.

To the early colonists, the forests were both an asset and a hindrance. Land was cleared for agriculture by "slashing and burning." Trees were either cut and burned or the large trees were girdled (that is, the trunks were notched all the way around so that the sap flow was cut off and the trees gradually died) and the brush around them cut and burned. Crops were then planted among the blackened trees or stumps.

By the time the American Revolution began, nearly all the forests in central New Jersey had been converted to farmland. Wood was about the only domestic and commercial fuel, which continued to be the case through the middle of the next century. What this meant for New Jersey forests was devastation like there had never been before or since.

Johann Schepf in 1777 commented, "The mining and metallurgial industry in New Jersey, as everywhere in America, cannot be enduring in its present condition because no care is taken, as is done in most districts in Europe, to maintain the forests, and many works must stop without uninterrupted supplies of (char)coal and timber, as is here and there already the case. There is not the slightest care of the forests. The owners of forges and furnaces have generally large tracts of woodland, which are cut over without order."

The development of glassworks, steamboat lines, railroads, and other industry increased

Stokes State Forest clearcut three years after completion. Sunrise mountain is in the background.

the demand for wood. The 1830 census lists 655 sawmills operating in New Jersey compared to 65 in the state today. Forest fires continued to be a major factor in shaping the forest. Cutting and clearing continued until 1860 when very little of the original forest remained. It was common practice to deforest an area every 20 to 30 years. The most severe cutting occurred from 1850 to 1860. Thus, photographs from the Civil War era have few trees in them.

After the Civil War, the discovery of anthracite coal and high quality iron ore farther west eased the pressure New Jersey forests had felt for so long. This allowed some recovery and improvement of the forest resource. And something else happened for the good of the forests during the late 1900s—a conservation ethic was developing that made people aware of the need for proper management of natural resources.

In 1897 Gifford Pinchot from neighboring Pennsylvania, America's first native-born forester and soon to become one of its leading conservationists, was engaged to survey the forests of the state. His extensive report led to the establishment of the Forest Park Reservation Commission in 1905 and appointment of a state forester in 1907. At this time, land was acquired for the first state forests, a forest fire control organization was established, a nursery for growing seedlings was started, and a cooperative program for assisting private landowners with reforestation and forest management operations was started. It was a progressive era for New Jersey forestry.

These changes helped the woodlands recover from earlier use and abuse. During the 1930's, the state's efforts at forest fire control and advice and assistance to landowners was coupled with national conservation efforts, such as the CCC. Originally supervised by the State Forester, the 36 CCC camps in New Jersey by June 1937 had employed over 89,000 men to reforest and improve woodland throughout the state.

Establishing a branch of the U.S. Forest Service Northeastern Experiment Station in Lebanon State Forest in 1936 helped expand the cooperative research programs of the federal agency and the New Jersey Bureau of Forestry. These programs led to recommended techniques for prescribed burning, the management of Atlantic white-cedar and pitch pine, as well as other forestry practices in use today.

During World War II, a New Jersey wood product was again in demand. This time it was sawtimber for the construction of wooden patrol boats used in submarine warfare.

The first modern comprehensive survey of the New Jersey forest resource was conducted in 1955. It showed that lumber production in the state had quadrupled in just 23 years. It also listed 150 sawmills and five pulpmills that obtained most raw materials within the state. At that time, forest industries, including those using imported wood supplies, employed 39,000 people and produced $291 million worth of goods annually.

A second survey completed in 1972 showed that forest products were produced on 1,928,000 acres—or 40 percent of the total area in New Jersey. Federal, state, and local government owned 390,000 acres while the majority—1,538,000 acres—were in private ownership. An additional 685,000 forested acres, or 14 percent, had uses that precluded management for forest products. The New Jersey timber products industry then employed over 5,000 people to produce $186 million in forest products. Secondary wood-using industries employed over 40,000 and produced more than $300 million worth of goods.

The U.S. Forest Service, Northeastern Forest Experiment Station, New Jersey Bureau of Forest Management, and Rutgers University are presently finishing up work on a third survey of the state's forests. Results will be available next year.

Forest management

All this goes to show that the forest is not static. Today, as in the past, what we need from the forest and what the forest is able to provide is in a constant state of flux. If history has taught us anything, it has taught us that forests are resilient and capable of providing benefits for all of us. And when properly managed and cared for, our forests provide more benefits than when neglected or mismanaged.

There are many factors currently causing New Jersey forests to suffer. Wildfire continues its destructive cycles, and the gyspy moth has reduced thousands of wooded acres to dead or dying trees. Changing land use has the obvious effect of shrinking forestland acreage as well as more subtle effects. A municipality may adopt an ordinance that prohibits the cutting of trees or establish zoning that makes the growing and selling of timber a non-permitted use. Other state and local laws developed with good intentions can create conditions that prohibit or restrict proper forest management activities and result in fewer benefits that forests can provide.

On the other hand, state laws such as Green Acres Act have increased state-owned woodlands by over 130,000 acres in the 25 years it

PHOTOS BY
BUREAU OF FOREST
MANAGEMENT

has been in effect. The Coastal Areas Facilities Review Act has halted the conversion of Atlantic white cedar stands to development. The Farmland Assessment Act has encouraged private owners to retain woodlands by offering incentives for good forest management. Both the U.S. Forest Service and the New Jersey Department of Agriculture have additional incentive programs for proper forest management.

What the future forest will be to people of the state depends on the actions we take and attitudes we develop toward our forests today. With past successes and failures to guide us, we can make the right choices for today and tomorrow.

Forestry Friends

If you are one of the state's 63,600 forestland owners or you just enjoy learning about New Jersey's trees and forests, the following information may help you link up with other residents who share your interests. The New Jersey Forestry Association is a strong force in matters that affect forest management in the state. Its more than 300 members are kept informed and active through a quarterly newsletter, and field trips and annual meetings that are informative as well as entertaining. Membership costs $15 per year and an application can be obtained by writing to the Association at P.O. Box 51, Chatham, NJ 07928-0051 or by calling 609-292-2532.

Since the issues that affect New Jersey forestry are often fought most effectively outside its boundaries—forest management tax reform and acid rain legislation are just two examples—consider joining the American Forestry Association. As one of its members, you'll help strengthen a voice that needs to be heard loud and clear in our nation's capitol these days. The Association keeps its members informed, via AMERICAN FORESTS magazines. Write to AFA, Dept. NJ at 1319 18th St., N.W., Washington, DC 20036 for a membership application.

A monthly newsletter titled "Wood Chips" published by the New Jersey Farm Bureau relates "news of particular interest to New Jersey woodland owners." For information about receiving the newsletter or about the Farm Bureau's forest management program, contact Helen Heinrich at The Farmhouse, 168 West State St., Trenton, NJ 08608.

More specific forestry assistance for your woodlot can be obtained from several sources. The New Jersey Bureau of Forest Management, CN 404, Trenton NJ 08625, can provide information on forestry incentive programs and consulting forester assistance.

Another source of help for particular problems is the Extension Forestry Specialist, Box 231, Cook College, Rutgers University, New Brunswick, 08903. Also, local agricultural extension offices may know of consulting foresters working in your area.

The Perfect Christmas Tree

PHOTOS BY AUTHORS

BY MARIA AND CHARLES DUPRAS

Traditionally, Thanksgiving is a day for family gatherings, complete with turkey dinner feasting, but it also officially unlocks the Christmas Holiday season. Parades usher in Santa Claus and we are all too soon entwined in the "hustle and bustle" mesh of shopping, decorating and, of course, searching for that *Perfect Christmas Tree.*

Growing that perfect Christmas tree is the objective of over 500 Christmas tree growers, throughout the garden state. For them, the "Season to be Jolly" actually begins in March and April, when thousands of tiny two or three year old seedlings (6 to 12 inches high) are planted in newly cultivated ground or next to the stump of a recently harvested tree.

Before these seedlings attain the mature height of six to eight feet, they must be pampered for 8 to 12 years. "No, those tiny trees, which were just planted this Spring, will not be ready to sell next year!" This is a typical response to just one of the questions from many first time Christmas tree plantation visitors.

Care after planting involves weed control; small seedlings are unable to compete for light and moisture. Dense shade from weedy vegetation will cause poor branch development, resulting in a lesser quality Christmas tree.

Diseases and insects are always lurking on the "sidelines" and certain outbreaks can practically destroy a Christmas tree farm. Therefore, preventive or control measures must be annually utilized.

Pine, Spruce or Fir

This Holiday Season, when you're on a Christmas tree plantation, attempting to make a selection from amongst the many perfectly shaped trees, let your thoughts drift back to the hot, humid days of June, July and August. Where were you at that time? Perhaps relaxing at the beach or mountains, enjoying that much needed vacation.

Well, during those sultry days, your tree and all the others were sheared and shaped into that perfect Christmas tree. Without this annual shearing, over the 8 to 12 year growing period, trees would never develop into the quality tree, which is demanded by you, the consumer.

Christmas tree growers are also being faced with other present-day consumer demands. One being the projection of customer preferences for 10 years in the future. Each year, growers gaze into their "crystal ball" seeking answers to what type of tree will my customer desire—short or long needled, Pine, Spruce or Fir?

Since the late Sixties, Pines have somewhat declined in popularity, Spruce has remained about the same, whereas the demand for Douglas-fir is increasing. But Garden State Christmas tree growers will continue to plant several different species, to meet the demands of consumers looking for that perfect tree.

From Thanksgiving until Christmas Eve, you'll have an opportunity to select that perfect tree, from nearly 300,000 trees being offered for sale on Choose and Cut Christmas Tree Plantations.

"Beauty is in the eye of the beholder."

Margaret W. Hungerford, poet

During late November or early December, when the weather is cool and crisp, many families will visit a local Christmas tree farm where they'll enjoy a delightful day and have a wonderful experience, tagging that perfect, "Jersey Fresh" tree (if tagging is permitted) or just cutting it and bringing it home.

If a "dug tree" is your preference, so that after the holidays your tree can be planted outdoors, there are farms which will either dig for you or allow you to do it. If this is your choice, select the area where you'll be planting the tree and dig the hole—now. As a protection against freezing, cover the hole and the soil taken from it, with leaves and plastic.

Where can a Christmas tree farm be located in my neighborhood? A Bulletin entitled "Where to Find, Choose and Cut Christmas Trees in NJ—1986," published by the NJ Christmas Tree Growers' Association, lists the locations of 44 Christmas tree farms throughout the State of New Jersey.

This free listing is available from your Regional Forester or County Agricultural Agent's office. Copies may also be obtained by sending a stamped, self-addressed envelope with your request to either the State Forestry Service, Bureau of Forest Management, CN 404, Trenton, NJ 08625. Telephone (609) 292-2531 or Charles A. Dupras, Executive Secretary NJCTGA, 29 River Road, Mays Landing, NJ 08330—Telephone (609) 625-2307.

As "beauty is in the eye of the beholder," such is the description of the perfect Christmas tree—it's that particular one, which is most appealing to you!

Wherever you may purchase that live Christmas Tree, New Jersey Christmas tree growers will do their utmost to make it a *real tree ... mendous experience!* Happy Holidays!!

Tree Farmer of the Year

By Greg Ovechka

A visit to Brookdale Farms in Chesterfield is a rare experience, a marvelous journey through time and place . . . to 1677 when Frank Wallace's ancestor Samuel Taylor arrived in Burlington County from Great Britain. The following spring, he cleared the land and built a log house on a 300-acre tract which originally was owned by William Penn, the founder of Pennsylvania and supervisor in the planning and layout of Philadelphia. In 1766, Taylor's grandson built "The Farmhouse"—where Frank Wallace and his wife live today in the heart of a 450-acre farm.

With 250 acres of it woodland, it is called a tree farm, and in 1985 Frank Wallace was named N.J. Tree Farmer of the Year by the New Jersey Tree Farm Committee. The Tree Farm System, sponsored nationally by the American Forest Council, has 152 members managing 79,693 acres in New Jersey. In accepting the award, he said that he owes a lot to a sound forest management program implemented for him more than 20 years ago by the New Jersey Division of Parks and Forestry's Bureau of Forest Management.

While Brookdale had always been tree farmed, Wallace was looking for a better way "to make the greatest possible use of the natural resource both from the conservation and financial aspects." The Bureau of Forest Management's John Perry went to Brookdale Farms, studied the woodlots in the North, Brick and Main woods and produced a Forest Management Plan—a key element of which called for logging or harvesting 10 acres every five years. This plan would provide for continuous regeneration indefinitely.

This is both sound financial and sound conservation practice. The "virgin forest" is a myth which exists only in isolated places where no cutting has taken place since Colonial times. If woodland is not harvested there will be more disease in the forest, more decay of the natural resource—and little regeneration. There will also be more fire hazards from accumulated forest debris.

The tree farmer is a conservationist, one involved in careful, concentrated stewardship of the special resources of the land. Through proper forest management, he benefits wildlife, soil and water quality, and he prevents destructive fires. And by making what money he can from logging as part of tree management, he can reforest the land and pay for other conservation measures.

Since Frank Wallace implemented the forest management plan for Brookdale Farms, there have been three timber cuttings, all of which, he said, contributed to farm income. The farm has also been able to qualify for the New Jersey Farmland Assessment Program—which provides a significant savings for landowners with wooded land.

"An unexpected bonus to the timbering," added Wallace, "has been the increase in the number and variety of wildlife due to the luxurious regeneration which provides excellent cover, accompanying the removal of the overburden. Rabbits, squirrels, raccoons, possums, skunks, weasels, fox, and grouse have proliferated."

Wallace said that the second growth has been vigorous, and within three years head-high stands of tulip, beech, maple, sweetgum, and oak give promise of a new forest of mixed hardwoods, which will in time require considerable thinning to permit premium growth.

Another aspect of the tree management plan called for girdling unwanted, distorted and trash trees—wood not good for timber—to improve timber growth in the North section of the woods. Two professional firewood cutters were contracted to cut up all downed timber and remove dead, girdled trees.

The tree farm was hit with its first infestation of gypsy moth in 1980. "At first, the problem did not seem too serious, but by 1983, the woodlots were being completely stripped and by the middle of July resembled the woods in Winter! It was the white oaks that suffered the most and after three years of infestation the woods had lost 85 percent of the white oaks and a lesser percentage of red oak. Fortunately, the tulip and sweetgum were not seriously affected. I don't believe in spraying, unless you have to and in 1983 we had the woods sprayed with Sevin but that was too late. While this devastation has provided an additional source of firewood, it is hard to calculate the true loss. Fortunately, the epidemic has now subsided."

The Tree Farmer of the Year grew up on a 90-acre farm in the Germantown section of Philadelphia until 1935 when the family sold Germantown farm and moved to Chestnut Hill. Recalling his visits to Brookdale Farms as a boy, Frank said there was no electricity, no central heating, no inside facilities.

Wallace, who leases out the other 165 acres of the farm for soybean, corn and dairy operations, is on the Chesterfield Township Planning Board where he has had to keep his eye on another "varmint"—the Jersey Developer. Wallace and other landowners enrolled their farms so that the former Chesterfield Commons tract would meet Burlington County's minimum size requirement of 1,000 acres for an eight-year agriculture retention program.

For relaxation, he enjoys hunting and fishing. Mr. and Mrs. Wallace have four grown children—a realtor, teacher, manager and a housewife.

About forestry, Wallace said, "Forest resources are vitally important to the preservation of farmland. I don't make any separation between foresting and farming. Forestry is farming."

Brookdale Farms, enrolled in the eight-year agriculture retention program, could be deeded permanently to agriculture at the end of this time.

"I'm leaving that decision," he said, "up to my kids."

JANICE OVECHA

Frank Wallace

the Lebanon Experimental Forest

BY PETER W. GARRETT

Tucked away in the Pine Barrens of south central New Jersey is a small, inconspicuous plot of land that attracts visitors from as far away as South Korea. In 1934, the New Jersey Division of Parks and Forestry, Bureau of Forest Management and the U.S. Forest Service established an experimental forest on approximately 500 acres of the Lebanon State Forest, about one mile north of Route 70 on the New Lisbon Road.

Among those assigned to the Experimental Forest over the past 50 years, Dr. Silas Little—who retired in 1979 after more than 40 years with the U.S. Forest Service—left the most indelible mark. Dr. Little's publications and other contributions to the ecology of the Pine Barrens will always be considered basic to an understanding of that area. His research into the effects of fire on the succession of forest tree species is recognized around the world. The Society of American Foresters named him "Outstanding Forester in the Region," and the Governor of New Jersey appointed him technical advisor to the Pinelands Commission established to regulate development in and protect the ecology of that unique and vulnerable area. Most recently, Dr. Little received an award for his contributions to the understanding of the ecology of Atlantic white-cedar.

A tree that would grow faster

But Dr. Little has yet to be adequately recognized for his contribution to the development of a pitch pine-loblolly pine hybrid. In 1961, the Bureau of Forest Management, New Jersey Division of Parks and Forestry, the West Virginia Pulp and Paper Comany (Westvaco) and the Northeastern Forest Experiment Station (U.S. Forest Service) initiated a joint project to develop a tree that would grow in the Northeast on poor soils, and grow faster than the trees then available. The Lebanon Experimental Forest was selected as the cornerstone for this research effort.

Earlier breeding experiments in California had shown that pitch pine, which commonly grows on the sandy soils of central New Jersey, Cape Cod, parts of eastern New York, and other areas in the Northeast, could be crossed with loblolly pine, the most widely planted and fastest growing pine in the Southeast. The few small plantings of these hybrids that were established in the Lake States and in the East did not display better growth than native species in the same plantings. Each of the parent species has its good and bad points. Pitch pine tolerates cold temperatures and survives on the poorest of sites but generally is a slow growing tree with poor form. Loblolly pine has excellent stem form and growth but cannot survive in cold climates and suffers excessive top breakage from ice and snow when planted north of its natural range.

Dr. Little and I. Fred Tew of Westvaco believed that the problems with the earlier tests resulted from the use of poor quality parent trees in the breeding program, and felt that if they selected only the best trees of each species they could produce much better seedlings. Assisted by cooperators from Maine to Maryland, they located 30 outstanding trees of each species; these trees were then grafted into a three-acre breeding orchard on the Experimental Forest.

Why so much interest?

As others became interested in this project, the cooperative grew, it now includes seven state forestry agencies, nine wood-using companies, three universities, several federal agencies, and one private landowner. Since 1971, these cooperators have planted, maintained, and collected growth information from 65 test plantings in 16 states. Interest in these hybrids has even spread worldwide. The largest program outside the United States is in South Korea, where more than 100 million pitch pine-loblolly pine hybrid seedlings are grown and planted each year by the government and hundreds of small rural forestry cooperatives. The Ontario Ministry of Natural Resources has tested the hybrids in southeastern Canada, and hybrids are now growing in France, Hungary, and several other European countries. Because both parent species are native only to the United States, most of the hybrids planted outside this country have been produced from cuttings and seed from the small but elite collection of trees in the New Jersey breeding orchard.

Why so much interest in this hybrid being produced in New Jersey? For one reason, the growth of the hybrid trees on most sites has been exceptional. While the original intent was to find a tree to plant on poorer sites where foresters didn't want to plant "good trees" such as eastern white pine, that hybrid has proven also to hold its own on good sites as well as to outgrow anything else on poor sites. Planted on the deep, dry, and relatively infertile sands of the Pine Barrens, they grow more than 30 feet tall in 10 years and exhibit the best qualities of both parent species. They have also done well on Cape Cod and on the highly acid coal mine spoils of Kentucky and

Cooperators meeting at New Lisbon, New Jersey breeding orchard. L to R. Dr. Shim (Director, Institute of Forest Genetics, Korea), Otto Kunkel (NJ Bureau of Forest Management, Deceased), Clyde Hunt (USFS, State & Private Forestry), Dr. John Kuzer (Rutgers Univ.), Dr. Lee (Inst. Forest Genetics, Korea), Dr. Peter Garrett (Project Leader, Genetics, USFS), Gordon Bamford (Asst. Director, NJ Div. of Parks and Forestry, Retired), Dr. David Funk (Asst. Station Director, USFS), Dr. David Canavera (Geneticist, Westvaco, Charleston, South Carolina), Don Knezick (Rutgers Univ.).

other states. They have grown well at higher elevations in the Appalachian Mountains on shallow, rocky soils, and have made exceptional growth on the deeper and more fertile soils of south-central Pennsylvania. In addition to exhibiting the desired good form and rapid growth, the hybrids are resistant to a disease which is the most serious pest of loblolly pine in its native range; they may prove very useful in areas where this disease is a problem.

If this hybrid tree performs so well in the test plantings why isn't it being planted on a commercial scale in New Jersey and other areas of the Northeast? Most forestry breeding programs work with a single species at a time—a number of select trees are planted together and permitted to cross pollinate by wind or insects. The New Jersey pine hybrids, however, result from the crossing two different species, and that presents some unique problems. When many trees of the two species are planted together, the pitch pines pollinate each other and loblolly pines likewise and no hybridization occurs. This is partly a matter of timing. The male loblolly trees release their pollen before the female flowers on the pitch pines are receptive. Therefore all the hybrid trees in the 65 plantings in this program have had to be produced by hand-pollination—a slow process resulting in relatively small quantities of hybrid seed. Research is now

Innovative forestry research

under way in New Jersey to find ways of producing large quantities of seed economically. When that goal is achieved, and when we know more about which hybrid combinations grow best in different areas of the Northeast, these hybrids could easily become the most widely planted tree in the entire region.

An idea that started with a few people of vision, and that continues to grow with the assistance of the New Jersey Division of Parks and Forestry, Westvaco, and our other cooperators, is just part of the new breeding technology that is being employed across the country. In addition to combining the best traits of two or more species by breeding, it may someday be possible to manipulate the genetic structure of plants to build-in fast growth, cold hardiness, resistance to insects and diseases, and other desirable features. The Bureau of Forest Management, New Jersey Division of Parks and Forestry, with its many contributions to this program, can rightfully take credit for being among the leaders in promoting and supporting innovative forestry research.

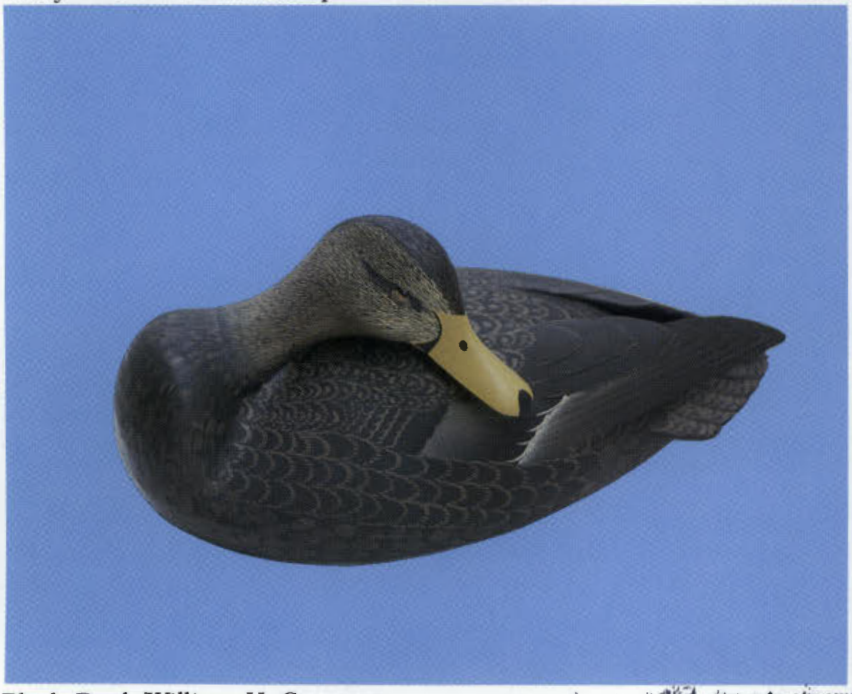
PETER W. GARRETT

BUREAU OF FOREST MANAGEMENT

Barnegat Bay Decoy Carvers

Harry V. Shourds Workshop

ARTHUR LIESE

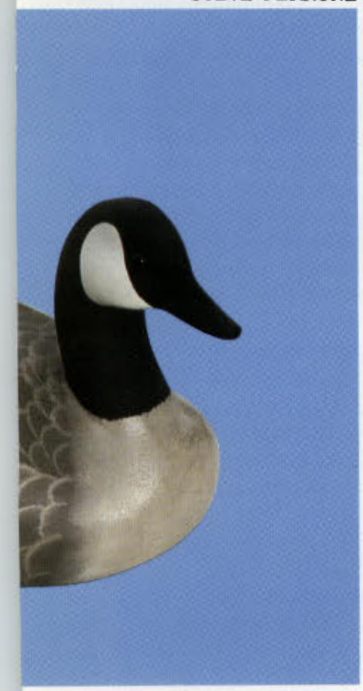


Black Duck/William H. Cranmer

ARTHUR LIESE

By Patricia H. Burke

STEVE PERRONE



RAY FISK

William H. Cranmer

Back in 1932 when William H. Cranmer was a youth of 15, attending Tuckerton High School, he began to carve his first decoy in his hometown of Manahawkin, New Jersey. He started out "by trying to copy Harry Shourds' work."

Using native Jersey cedar and sometimes white sugar pine, Bill began making decoys for himself because he needed a rig for his own use and could not afford to buy it. Starting with a hatchet, which he used to profile, he would carve and hollow out his "shooting" decoys by hand.

A special gouging tool was used by Barnegat Bay decoy carvers to hollow out the decoy, and this tool had to be custom made by the local blacksmith. Bill recalls that he "borrowed one from Joe Tom Cranmer, the decoy carver, to show it to the blacksmith, to make a tool just like it." The blacksmith, Irving "Pop" Cook, made many other useful tools for the local baymen such as clam tongs and oyster tongs. His shop was located right behind the Old Stone Store in town. Bill recalled with excitement, that long forgotten day, when his gouging tool was ready: "I rode my bicycle to pick it up and it had a hardwood handle and cost one dollar and twenty-five cents."

Bill carved black duck, broadbill, Canada geese, brant, merganser, teal, widgeon, mallard, canvasback, bufflehead, and about a dozen pintail. He did and still does his own painting which he says takes just about twice as long as the carving. Today he might use a drum sander and band saw, which can cut down the carving time, but "there's nothing to speed the painting."

In the 1930s he also painted the eyes, especially on the broadbill, on which he would use a 3/8 inch dowel to make holes for the eyes and then simply "dip in" some yellow paint. For the black duck he would "just dark streak paint" as the eyes weren't as clearly indicated on that particular species. By the 1940s he began to use glass eyes.

Being true to the traditional Harry Shourds/ Tuckerton style of decoy, Bill used the inlet weight for ballast. As this writer hails from the Head of the Bay, where it is traditional to use a lead pad for ballast, we discussed the pros and cons of both methods. Bill thought that the inlet weight "was neat, but required an extra step. The pad probably better distributes the weight over a larger area but the inlet weight was satisfactory." I mentioned that I'd heard the lead would tend to fall out over a period of time and Bill explained that during the process of pouring the molten lead into the opening, the wood burned. Eventually, the lead might fall out. Bill carved a rectangular opening that was "cut under at an angle" or beveled, so that the lead "might rattle, but it wouldn't fall out." When he carved a round or circular opening instead of a rectangular, he would use a forstner bit to drill and then finish with a dovetail cutter. That way the lead was never a problem.

It just so happened that while reading a copy of *Field and Stream* magazine in 1948, Bill saw an article about a decoy contest. He decided to "send a few up" to New York City to compete in the 1949 International Decoy Makers Contest. The judges that year included Joel Barber, author of *Wild Fowl Decoys;* Lynn Bogue Hunt, the artist; and William J. Mackey, Jr., the famous New Jersey decoy collector and author. The results were in, and Bill Cranmer made the trip to New York to pick up the ribbons he had won: 1st Place for Merganser and 3rd Place for Black duck.

Around 1950, Bill started carving decorative decoys and a few shorebirds. By that time, his style had evolved from copying Harry Shourds' work, to what Bill called his "experimental" period, to a period when he studied with the Ward Brothers in Crisfield, Maryland. He says that it was "in the 1950's when I got to know them, particularly their painting style."

In the early 1960s Bill did some painting for Charlie Birdsall's Wildfowler Decoy Shop in Point Pleasant. By that time Bill was known as "The Jersey Ward" having mastered a style of painting similar to that of the Ward Brothers.

The last time he exhibited his decoys for the public was in 1968 down in Salisbury, Maryland. He has plenty of work to keep him busy, as his reputation has spread by word of mouth. And each year he makes a special decoy to be auctioned for fundraising at his local Ducks Unlimited Annual Dinner.

The other day I was speaking with Ed Hazelton of Manahawkin, who has known Bill Cranmer since their school days. Ed remembers one time when Lem Ward came up from Maryland to see Bill. They stopped by to say hello to Ed and during the course of their visit, Lem took Ed aside to say, "Bill Cranmer ranks among the best, and don't ever forget it."

Harry V. Shourds

Harry Shourds. The name brings instant recognition to anyone who knows decoys, inside or outside of New Jersey. There were actually three individuals with that same name: Harry V. Shourds (1861-1920), his son Harry M. Shourds (1890-1943) and his son Harry V. Shourds.

To reach the workshop of Harry V. Shourds, take Route 9 until you are in the town of Seaville in Cape May County. Look for the sign on the highway that says "The Duck's Nest" and pull into the long driveway and pass the Yellow Lab resting under a tree. Most days Harry is here working in his shop.

As our interview begins, the fresh smell of Jersey cedar permeates the air and it lingers. Harry's style of decoy carving has developed over the years, yet many people assume that Harry learned all about decoy carving from his famous father and grandfather, but that never happened. His grandfather had died before Harry was born and his father died when he was 12 years old. At that young age he wasn't old enough to get a permit to hunt but he does have fond memories of tagging along with his dad, going duck hunting, although too young at that time to carry a gun.

It wasn't until he was 16 years old that he carved his first decoy, a bufflehead. He did a fair amount of hunting after school hours and he carved several bufflehead and black duck decoys for his own use. No one actually taught him how to carve or paint the decoys; it was just something that he picked up naturally.

After finishing high school, he spent four years in the Navy and returned home to Ocean City, New Jersey. It was in 1962 that he moved to Seaville and literally hung out his sign. He started selling his decoys at the decoy show in Chestertown, Maryland and he also sold them at Charlie Birdsall's show which was held at the firehouse in Point Pleasant. Before long, customers were placing their orders for a dozen geese or brant decoys to be used for gunning. At this time, the 1960s, the asking price was $100.00 for the dozen. Today, the cost is $100.00 each. Because a hand carved gunning decoy can be relatively expensive, some hunters are now using plastic decoys which are much cheaper. But that hasn't hurt Harry's business. The emphasis simply shifted from the gunning decoy to the decorative. Customers began to bring Harry photographs of rare or exotic birds which they asked him to carve. Included among the decorative birds he has done are the European widgeon, Cinnamon teal, Harlequin, Eider, Fish hawk, Pelican, South African ducks, and Penguins.

Beginning in 1970 and for the following three years, Harry competed in the U.S. National Decoy Show in Long Island, New York. He won first place for his Herring gull and his Wood duck also won a ribbon. At the World Championship Wildfowl Carving Competition in Salisbury, Maryland he brought home numerous ribbons in the Gunning Decoy Class.

Today, new projects keep cropping up. Once a week, each Tuesday, Harry goes to the local senior citizen center to teach a wood carving class. It is strictly a volunteer endeavor but he enjoys sharing his time and talent. His students have been carving small animals and there were a few little rabbits, fish, and pigs in his workshop.

He has written several books on decoy carving, including *Carving Duck Decoys, with Full-Size Patterns for Hollow Construction*, which he co-authored with artist Anthony Hillman.

There are also several landscape paintings hung on the walls in his workshop. Just out of curiosity I asked if he had painted them and he said he did. With no formal art instruction painting has always come easy for him. Even his decoy painting takes "just a couple of hours, fast."

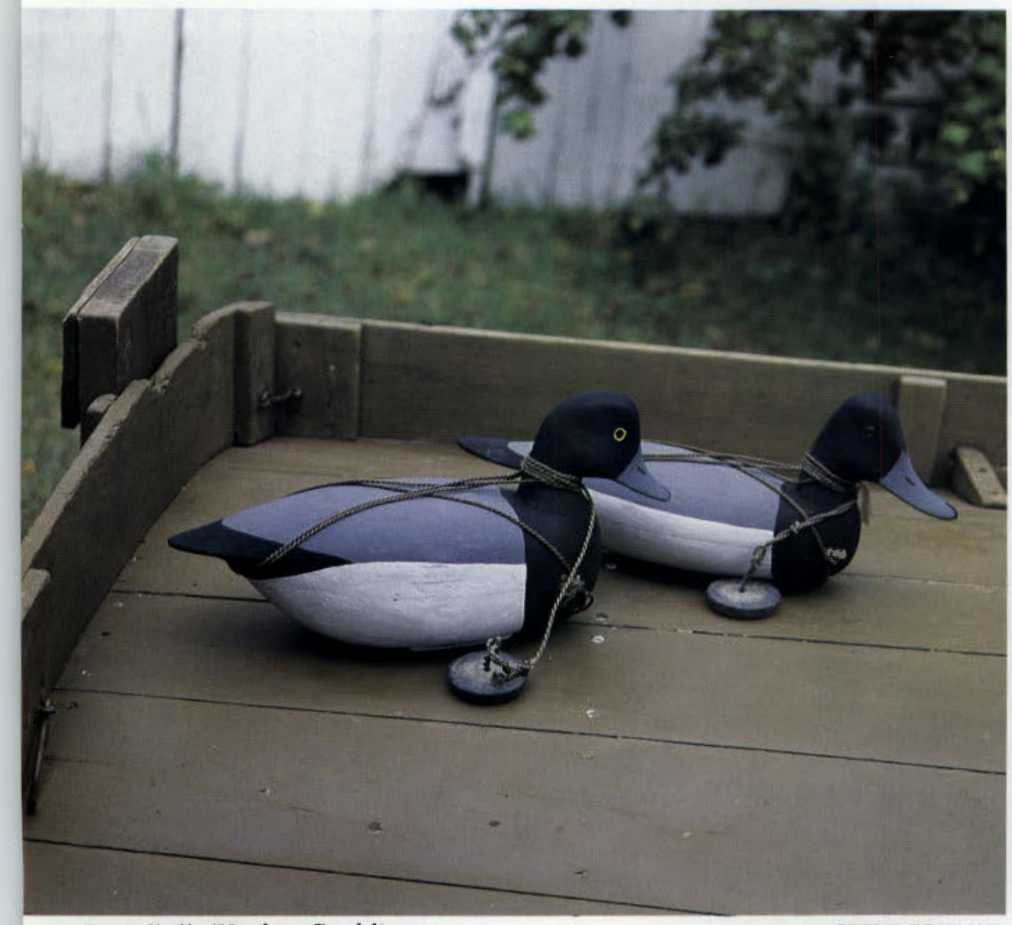
When you see decoys he makes with such ease, you realize that here is a natural talent. I could see, in Harry, those same reasons why his grandfather and father had become so famous. It was exciting to discover this and to know that the Shourds' decoys will continue to be appreciated by decoy collectors throughout the country.

Hurley Conklin

We're going deep into the Pine Barrens of Ocean County, southern Ocean County to be exact. There is a different perspective here where towns like Point Pleasant and Bay Head are referred to as "north Jersey."

Hurley Conklin was born in the area known as Cedar Run. In 1928 when he was 14 years old, he began carving decoys. It all started when a man named Sherwood Corlies, who had a local sawmill, gave some pieces of cedar to Hurley to carve a few decoys. Hurley made a half dozen Sheldrake and Black duck. When he showed them to Sherwood the response was "I'll have to put them in the closet cause they look so real, the cats will eat the heads off."

Soon Hurley started making decoys for his friends and orders came in for Sheldrake, Black duck, Brant, Canada geese, Broadbill, Bufflehead, Seagulls, Shoveler, Teal, Pintail and Canvasback. These decoys were all hollow except for the Sheldrake which were solid when he first made them. The bottom of the decoy is rounded with a lead pad nailed down for ballast. In the mid-1960s Hurley decided it wasn't enough so he changed and began to drill a circular hole with a one-inch bit and then poured in molten lead for the ballast. To be sure the hardened lead would not fall out



Broadbills/Hurley Conklin STEVE PERRONE

1986 Decorative Decoys, Hurley Conklin RAY FISK

over a period of time, he drove in a small nail about half way on either side of the hole. This way the molten lead would solidify around the nails to keep the lead in the decoy.

The price Hurley charged for one decoy in 1928 was $1.00. This was also the time when a half case of shells cost 65 cents a box and a single barrel shotgun, which Hurley purchased from Sears Roebuck sold for $6.00.

Hurley's life was interrupted by World War II when he served in the army from 1941-1944. He was stationed in North Africa and served under General Patton.

When Hurley returned home, he settled in Manahawkin working as a carpenter. He was also a bayman who spent his time clamming, eeling, fishing and cranberrying. In addition to his duck hunting he also worked as a guide for the Marsh Elder Gunning Club and other private parties as well.

The tradition of boat building runs in the Conklin family. Hurley's father built boats in Cedar Run called "bateau sharpies." And Hurley's brother had a boatyard where he built garveys. Over the years Hurley has been making miniature Barnegat Bay sneakboxes which measure 18 to 20 inches in size, complete with miniature decoys stored on deck. He spends close to a week making one and estimates that he's sold about 40 of them to interested collectors.

About 20 years ago Hurley began carving decorative decoys. A Blue heron which he had sold originally for between $200 and $300 has since appreciated in value to $1,500.00. A $20 Crow made 10 years ago is now worth $400.00. His Sandpipers, Yellowlegs, Plover, White heron and Egret are equally popular.

Hurley's decoys have done consistently well at auction. Recently a pair of Ruddy ducks sold for $800.00 and a Canada goose in the feeding position sold for $1,400.00. Hurley heard that Senator Edward Kennedy and singer Andy Williams have his decoys in their collections.

At 73 years of age Hurley Conklin is still active and he can be seen among the carvers and collectors who attend the meetings of the New Jersey Decoy Collectors Association that are held in what better place—Manahawkin.

Jackson Forest TREE SEEDLING NURSERY...

BY STEVEN K. BRUSH

PHOTOS BY
DAVID BORRELLI

There are many areas of New Jersey that can benefit from the planting of trees. Forest trees are planted for a variety of reasons including the reforestation of gravel pits and abandoned farm fields. They are used for screens, windbreaks, and to supplement natural regeneration in areas damaged by forest fire and insects. Selected seedlings add to the gene pool and improve the quality natural stands. All of these factors contribute to the need for a sustained and farsighted reforestation effort.

At the heart of the State's program addressing this problem is the Jackson Forest Tree Seedling Nursery. Established by the Division of Parks and Forestry five years ago, the nursery produces seedlings for both State and private reforestation.

Comprising 450 acres, the Jackson facility is the newest and only active State tree nursery. Earlier nurseries at Mays Landing and Green Bank in South Jersey date back to the turn of the century. The recently-retired nursery at Washington Crossing State Park was established in the late 1920's, according to the Bureau of Forest Management's Les Alpaugh. This site is still used for seed production. Such seed orchards are long-term investments which can neither be discarded nor replaced, Alpaugh observed.

When Parks and Forestry found it necessary to improve its nursery facilities, it chose the site of the old Jackson Quail Farm. Its sandy, loamy soil, southern location and adequate size would allow the development of a productive nursery. Here the Division's long-term goal of two million seedlings per year could be achieved. To meet current demand, the nursery is producing 600-700,000 seedlings annually.

At the Jackson Forest Tree Seedling Nursery, the cycle of seedling propagation begins with selection and procurement of the seeds themselves. There are two basic sources for the seeds: State seed orchards and select wild trees. As in other types of agriculture, the seeds are planted in the early spring. Over the one to two year growth cycle, the seedlings are fertilized, irrigated and cultivated.

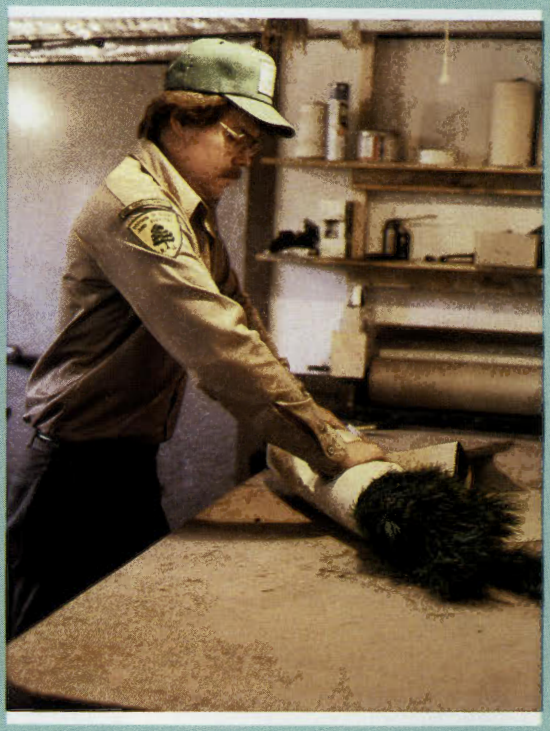
During the spring harvest, the increased work load requires seasonal workers to complement the Nursery's full-time staff. The harvest starts with a specialized tree harvester straddling the rows to gently uproot the seedlings from the light soil. The harvester conveys the uprooted trees back to forestry personnel and seasonal workers for initial sorting. Then, in a fieldside building, the seedlings are measured, resorted and counted. Finally, they are carefully wrapped to keep the roots moist during shipment.

An essential part of the work at the Jackson Nursery is the development of genetically-improved tree species. Cuttings, or scions, from

Forester Craig Coutros examines grafting samples called scions

The tree harvester scoops up a row of trees

...where it all begins



Rangers and seasonal workers sort the seedlings uprooted by the harvester

Assistant Nurseryman Bob Meierjurgen wraps up a counted bundle of seedlings to keep the roots moist

superior trees are taken from woodlands around the state. These are painstakingly grafted onto appropriate seedlings for the generation of improved tree stock. A project currently underway is the development of an improved pitch pine for reforestation. This is being done in collaboration with Rutgers, The State University.

The Jackson Nursery is the site of a planned, major Interpretive Center to be built by the Natural Resources Education Foundation. As a part of a network including the Pequest and Liberty State Park Interpretive Centers, this facility will contribute to public understanding of New Jersey's natural resources. The Jackson Interpretive Center specifically will focus on our forests, their management and forestry's role in maintaining a healthy environment.

Many of the tree species native or naturalized to New Jersey, both coniferous and deciduous, are produced at the Jackson Nursery. However, four kinds—white pine, pitch pine, short leaf pine and Norway spruce—make up the majority of every seedling crop. Other species include Japanese black pine, loblolly pine, black walnut, white ash, black locust, chestnut oak, red oak, tulip and autumn olive.

Yearly production of these trees is influenced by both seed availability and current forestry needs. An example of the fluctuation in seed availability is the red oak which may yield a good crop of acorns only once every five years. Particular species also are needed for particular use. Loblolly pine is planted solely in South Jersey. The salt-tolerant Japanese black pine is utilized along the seashore. Black locust is commercially valuable for fence post production. Autumn olive is commonly used for wildlife habitat improvement.

The different species produced by the Jackson Forest Tree Seedling Nursery help State and private foresters to meet the varied needs of forestry in New Jersey. Two hundred acres a year are reforested on State lands by the Division of Parks and Forestry with Jackson seedlings. This restores some of the woodland lost to fire and gypsy moths. Both public and private landowners can qualify to purchase seedlings by meeting the following requirements:

1. *Own a minimum of five (5) acres.*
2. *Plant a minimum of 1000 seedlings.*
3. *Plant the trees for reforestation or conservation.*
4. *Seedlings may not be dug, potted, or sold as nursery stock. Christmas trees, ornamental or other purposes.*

The deadline for ordering is January 31.

For further information write: Bureau of Forest Management
CN-404
Trenton, N.J. 08625

As a supplier of improved tree stock for both State and private reforestation, the Jackson Forest Tree Seedling Nursery plays a vital role in maintaining New Jersey's woodland environment.

First

Just Lazing Around. Val Gawron

Second

Reflections. Therisa Ruthe

New Jersey Outdoors

Photo Cont

First

Untitled. John Baumgartner

Second

At Rest. Diana Dale

st Winners

New Jersey Outdoors

kayaking New

By Carl White

Autumn. It's a warm sunny Sunday in early November. The marine weather forecast calls for clear skies and brisk southerly winds, 15 to 20 knots. On Little Egg Harbor the bay waters are furrowed with a 2- to 3-foot wind chop, cresting with whitecaps. The brilliant sun shines down on a troubled waterscape seemingly devoid of any human activity. However, a sharp-eyed observer on the little beach at Parkertown County Park can see nine brightly-colored boats making their way into a quartering wind and sea. The boats are 15 to 18 feet long, only 21 to 28 inches wide, and each is propelled by a single occupant wielding a two-bladed kayak paddle. A contingent of New Jersey sea kayakers is out in its chosen element.

New Jersey has approximately 350 miles of tidal coastline, as the gull flies, beginning at the New York state line on the Hudson, continuing past Sandy Hook, around Cape May and into Delaware Bay, then up the Delaware River to the end of the tide below Trenton. This coastline is further crenelated with innumberable bays, lagoons, estuaries, inlets, channels, spits and points, all providing a diverse and fascinating environment tailor made for the kind of small-scale, close-to-the-water explorations sea kayakers enjoy.

The small but growing band of New Jersey (and eastern Pennsylvania) coastal paddlers has representatives out on the water on many weekends throughout the year, except during the coldest winter months. The slender craft

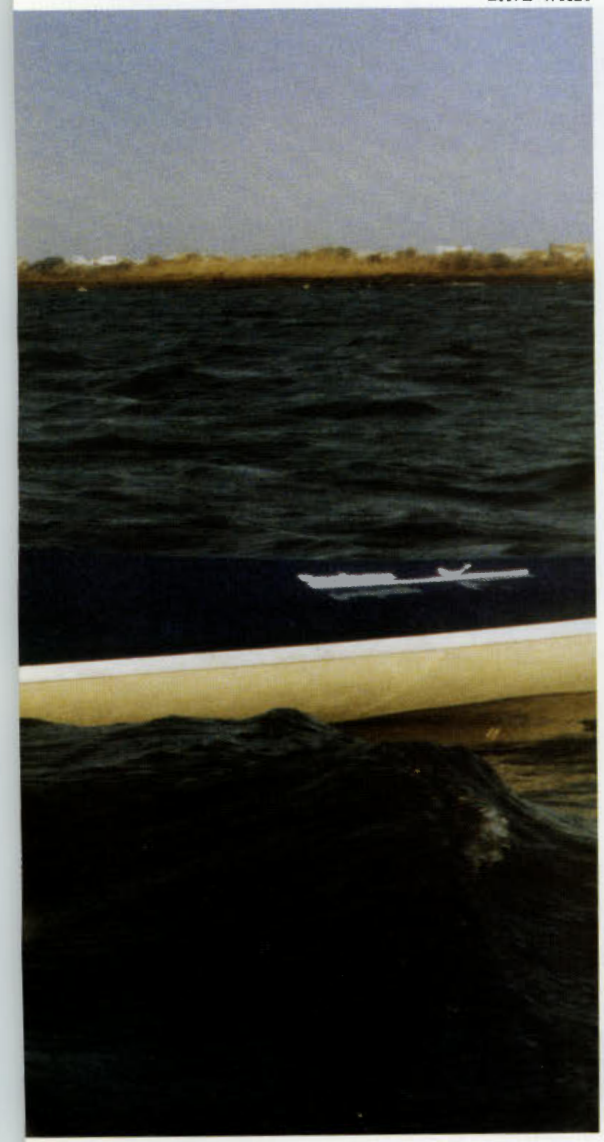
Jersey's tidal waters

are launched into the Hudson River, Raritan and Sandy Hook bays, the Shrewsbury and Navesink rivers, the Manasquan and Metedeconk, Barnegat Bay, Little Egg Harbor, Great Bay, Great Egg Harbor and the Delaware Bay and River coastline. An average day's excursion will cover from 10 to 20 miles, with courses checked against National Oceanographic and Atmospheric Administration (NOAA) marine charts. The kayaks are carried to and from the launch sites on car roofs, and trip arrangements are worked out a few days in advance on the kayakers' informal telephone network.

The flotilla continues its journey into waves and wind. The steep-sided, cresting waves would soon sink a rowing shell. A canoe or rowboat would have headed back to shore. A small outboard-drive craft would find it a tough, unpleasant day on the water. The kayakers, however, are all smiles as their narrow boats cut cleanly through the chop. Their low profiles are not much affected by wind. The waves that break over the boats' bows and along the deck quickly run off, never penetrating the tight, waterproof sprayskirt that each paddler wears around his middle, sealing him into his cockpit. The light, restless motion of the boat, the waves and the wind, are all a sea kayaker needs for an exhilarating day on the water.

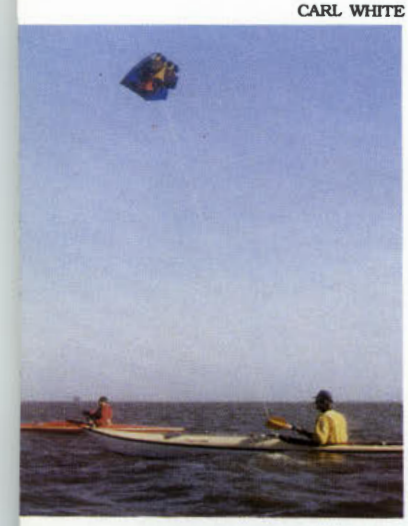
Rounding the peninsula that forms the northern shore of Parker Cove, the nine boats turn to port and run north-northeast, with

DAVE WYKA



CARL WHITE

CARL WHITE



wind and waves coming from almost dead astern. By accelerating to match their speed to that of the overtaking chop, the paddlers can catch free rides, surfing on the slopes of the onrushing waves. Just relaxing with outspread paddle across the shoulders results in a 3-knot wind-driven ride.

A closer look at a properly outfitted sea kayaker and his or her craft reveals a combination of equipment, skills and habits ideally suited to safe, small-scale maritime adventure. The boats, most of which are fiberglass, are seaworthy, watertight, easily driven through the water, straight tracking and relatively stable if you know what you're doing. Each paddler has equipped his kayak with airbags or some other form of tested flotation, firmly fastened into the boat at bow and stern. And each wears a lifejacket, sprayskirt and today, a 1/8th-inch thick wetsuit of the type favored by whitewater kayakers, surfers and sailboarders.

Kayakers are acutely aware of the dangers of hypothermia following an unscheduled spill into the water. They have mastered an array of rescue techniques, including "Eskimo rolling" their boats back upright from a capsize, re-entering and bailing out their boats following a wet exit, and assisting others in boat reentry. The wetsuit is a must for New Jersey paddling from November through April, if hypothermia, the number-one killer of people in small boat capsizings, is to be avoided. Each kayaker is also equipped with spare paddles, a hand-held pump, an airhorn and flares, and each realizes that sound judgment, prudence and a thorough knowledge of weather, winds, waves and tides count for far more in sea kayaking than brute strength or ill-advised bravado. Coastal paddlers believe themselves to be the best-equipped, most safety-conscious boaters on the water.

The kayakers continue their northward journey, paddling along the southern unit of Barnegat National Wildlife Refuge from Dinner Point to Horse Point to Popular Point. The lead kayaker breaks out a parafoil kite and sends it aloft to act as a sail, as the rest of the group surfs along behind. The "sweep" kayak brings up the rear of the group, ensuring that no stragglers are left behind and generally watching for signs that someone needs a rest. Overhead fly "Vs" of Canada geese, sea ducks and cormorants. Loons and grebes bob on the waves. An occasional great blue heron flaps heavily into the salt marsh, startled by the passage of the boats. Later, in December, lucky paddlers will move along enormous flocks of whistling swans and brant.

The sea kayakers enjoy their rich tidewater environment most while the summer users of bay and beach are gone—when the sailboats and cabin cruisers are in drydock, the outboards are in the backyard, when most sailboarders and surfers have packed it in for the season, as have the green-head flies. The bays, the barrier islands, the marshes, sea and sky are empty and open, and the kayakers own it all.

Sea kayakers do go to sea, though in New Jersey access is often not easy. Passage through the inlets can be hazardous due to swift tidal currents, big waves and boat traffic. Launching into the surf can also be very difficult, calling for skill and judgment. And paddling in the ocean is often just not as interesting as cruising among islands, bays and lagoons.

Coastal kayakers are the heirs of an ancient maritime tradition. Sea kayaking was developed by the Eskimos and Aleuts as they pursued the marine mammals that formed the basis for their culture. Modern interest in the sport has emanated from the British Isles and the Pacific Northwest coast of North America, both centers of sea kayaking and boat manufacture. East Coast kayaking is centered in New England and New York State, but interest has been continuously expanding southward. New Jersey has as active a group of paddlers as can be found anywhere. Most area enthusiasts are members of the Association of North Atlantic Kayakers, a loose network of eastern paddlers sharing experiences and tips in ANorAK, their bimonthly newsletter.

After a lunch stop at the base of the Manahawkin Bay Bridge, the group continues northward, skimming by the northern unit of the Barnegat refuge. Main Point, Marshelder Island, Whalebone Point, Gulf Point. The wind has died down to about five knots, and the kayakers are plying their paddles in that slow, even rhythm that can propel them for hour after hour at a steady three knots.

Turning west-northwest, the paddlers stroke toward the waterfront at Barnegat, the pull-out site where the cars were placed that morning. At Barnegat a cluster of waterfront observers is full of questions. The boats are loaded onto the cars that have been brought north from Parkertown. Full of the satisfied weariness well known to coastal paddlers at the end of a great day on the water, the kayakers take their leave of one another, promising to call soon and make plans for another day on New Jersey tidewater.

For more information consult *Sea Kayaking* by John Dowd (University of Washington Press); also the Association of North Atlantic Kayakers, 14 Heather Drive, Suffern, NY 10901.

Miracle of Migration

By Claire Gerber

There are people who don't look up and marvel at migrating birds. But most of us are drawn to the sight and sound of the spectacle. The curious among us, from backyard watchers to scientists, wonder why and how it all happens.

The mystery of migration was probably among the first wildlife activities to attract the attention and stir the imagination of early man. Today, despite our scientific knowledge, the familiar phenomenon is only partly explained.

Some bird species migrate with a punctuality that suggests they're watching a calendar. Probably the most famous are the swallows of San Juan Capistrano. In New Jersey, our Lambertville colony of cliff swallows heralds the arrival of spring each April.

Our earliest records indicate that primitive people had an interest in migrating birds. Cavemen noted flying flocks, as evidenced by wall drawings. Even the Bible has numerous references to the periodic movement of birds.

Aristotle informed the Greeks on the matter at great length. He noted that cranes passed to warmer regions to spend the winter. He theorized that the seasonal disappearance of some birds was due to hibernation. Aristotle was not completely off-base. As recently as 1948, it was found that hummingbirds, swifts and poor-wills become torpid in cold weather, thereby avoiding the rigors of migration.

One of the most remarkable later theories is contained in an essay written in 1503 by one Jeremiah Johnson, who signed himself "A Person of Learning and Piety." His "probable solution" was that migratory birds flew to the moon for the winter.

Cotton Mather, a minister in New England at the turn of the 17th century, said: "The wild pigeons, on leaving us, repair to some undiscovered satellite accompanying the earth at a near distance."

Scientific experiments show that the triggering force for migratory journeys is photoperiodism, or length of days. This stimulates the pineal and pituitary glands and the birds become restless. Migratory restlessness causes them to seek their nesting wintering grounds.

Only in the last 30 years have researchers begun to understand the relationship of birds to time and space. How innate knowledge (instinct?) is derived and used may never be known.

Migration is also caused in part by the need for food. Weather influences the availability of insects—a food source in which many birds feed almost entirely. Yet, some insect eaters fly north with the coming of the spring while

MICHAEL BAYTOFF

PETER-MICHAEL ZANETTI

ROBERT W. HERRES

there are still plenty of insects at their winter homes.

Why the long, arduous annual trips between winter quarters and breeding grounds? The chief reason is evidently space. Every pair of birds requires a certain amount of territory to provide food for themselves and their young, who must be fed continuously. In the Arctic summer, for instance, the 24-hour daylight in the short breeding season provides feeding advantages and, therefore, rapid growth of the offspring.

Many birds are lost to predators during migratory overland flights. Other perils are storms, abrupt weather changes and even monuments, TV towers and airplanes. The Statue of Liberty and the Washington Monument, with their bright lights which attract and distract birds, cause enormous destruction of the winged wayfarers.

Sandpipers, plovers and terns fly farthest. An outstanding example is the golden plover, which covers 2400 miles over the Atlantic, from Nova Scotia to South America, without

stopping. Semipalmated sandpipers, red knots, ruddy turnstones and other shorebirds migrate from their breeding grounds in the Artic down to South America, and then north through New Jersey on their way back to the Artic breeding grounds. Delaware Bay has been identified as an important migrating stop-over point for the birds to refuel on horseshoe crab eggs.

The author Frederick C. Lincoln wrote, "Birds are the most mobile creatures on earth. Even man with his many vehicles of locomotion does not equal some birds in mobility. No human population moves each year as far as from the Arctic to the Antarctic and back. Yet the Arctic terns do."

Most small birds migrate by night to avoid predators, and they feed and rest by day when they can see both enemies and food better. New Jersey offers great opportunities for watching migrant birds as they stop to refuel. Higbee Beach is especially good for migrant warblers in the fall.

Day migrants, strong-winged birds such as swifts, swallows and night hawks, feed on flying insects and can easily pick up a full course dinner as they travel. Gulls, hawks and pelicans feed so heavily when food is available that to miss a meal now and then makes little difference to them.

Birds have the ability to adjust their flight speed. During migration and normal activities a slower flight speed is maintained, faster speeds are used for escaping enemies or pursuing food. Most songbirds have cruising speeds of between 25 and 50 miles per hour during migration. The peregrine falcon has been clocked at 180 miles per hour while pursuing prey.

We who watch can be grateful that most birds travel less than 5,000 feet above the earth during migration. Observations from towers and airplanes, as well as radar reports, indicate this. Lack of oxygen and of buoyancy in the rarefied air much above this altitude would prohibit flight.

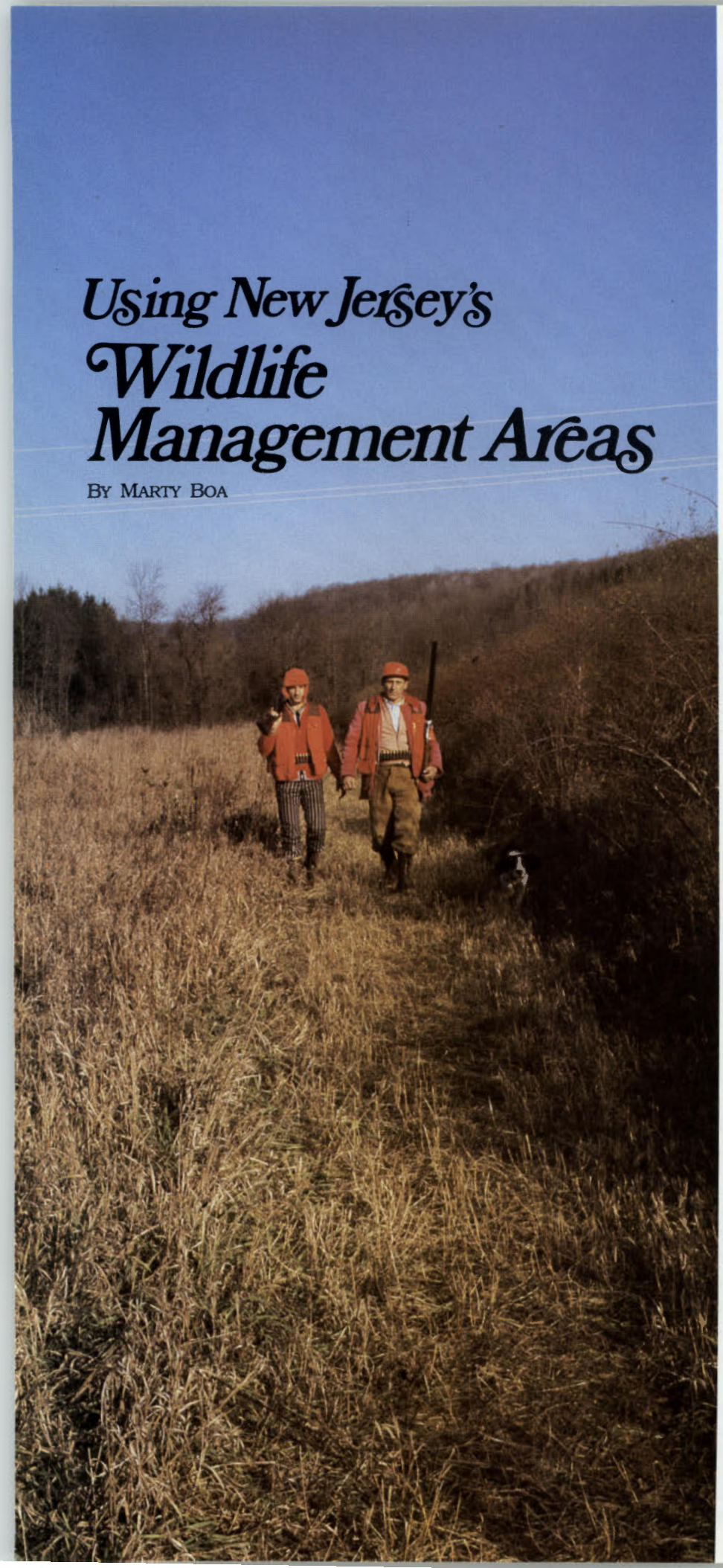
Most waterfowl follow north-south routes each spring and fall. The outlines of the coasts, courses of large rivers and trend of mountain chains define the four flyways in the United States: Pacific, Central, Mississippi and our own Atlantic.

Our Atlantic Flyway hosts good flights of waterfowl, raptors, and songbirds in migration. Cape May Peninsula, Delaware Bay, Kittatinny Ridge and coastal areas along the Atlantic are good places to enjoy the migration.

How fortunate are those of us who live along a flyway, to watch and to wonder.

Using New Jersey's Wildlife Management Areas

By Marty Boa



Two hunters and dog on Clinton Wildlife Management Area

On a wooded mountainside in Northwestern New Jersey, a bowhunter sits with his back against a tree as he watches for a buck in the group of deer crossing the rock strewn stream below him.

Meanwhile, four counties away, an upland gunner cautiously walks along a hedgerow as he approaches his pointing dog. The pair have pinned down a gaudy cock pheasant at the edge of a cornfield that they've been working.

One hundred and fifty miles to the south, a waterfowler reclines in a grassed-in sneakbox. Covered by a burlap blanket which almost perfectly matches the surrounding marsh grass, he stays hunkered down in the boat's tiny cockpit and chuckles a feed call to the pair of puddle ducks that circle overhead.

What do these sportsmen have in common? Aside from sharing an interest in hunting, they are all taking advantage of New Jersey's unique system of Wildlife Management Areas.

Just what is a Wildlife Management Area?

The W.M.A.'s, as they are frequently called, are state lands owned by the New Jersey Department of Environmental Protection which fall under the administration of the Division of Fish, Game and Wildlife.

Ranging from the Garden State's northern apex to the South Jersey Delaware Bay shores, these public lands total over 165,000 acres. Approximately 100,000 acres of these tracts have been acquired through funds from sportsmen's license fees and federal aid programs. Green Acres bond issues have helped with the rest and, most recently, additional acquisitions have been made with monies from the dedicated fund of revenues from the New Jersey Waterfowl Stamp Program.

New Jersey's Wildlife Management Areas are developed, maintained and operated with finances derived from the sale of hunting and fishing licenses, taxes on sporting equipment and Federal Aid to Wildlife Funds.

These lands, which are managed to incorporate a multiple use philosophy, belong to the citizens of our state and are open to hunting, fishing, and a host of other outdoor activities like nature photography, wildlife observation, hiking and sporting dog field trials.

To completely describe all of the W.M.A.'s and the important role that they play in the proper utilization of the state's land and wildlife resources would indeed be an accomplishment. Yet this topic should be addressed for the benefit of all who enjoy New Jersey and the wealth of outdoor recreational opportunities that exist here.

PHOTOS BY DIVISION OF FISH, GAME AND WILDLIFE

Let's begin by noting that the Wildlife Management Areas are well dispersed geographically throughout the state. The areas encompass a diversified habitat range, which varies with location, and concurrently supports a wide variety of flora and fauna, with the latter including both game and nongame species.

The species present on a given Wildlife Management Area are, most often, directly related to the type of habitat that has been preserved there, and frequently, the bird, fish, and animal numbers are significantly increased by habitat enhancement and/or stocking programs.

While it is true that even a person out for a brief nature walk can make excellent use of almost any one of the state's sixty plus W.M.A.'s, hunters and fishermen probably get the most use out of these lands, especially during their respective seasons. New Jersey is a state where open hunting lands and accessible fishing areas are disappearing rapidly. It is fortunate that the Wildlife Management Areas have been set aside to protect valuable acreage and wildlife habitat, sheltering these from the insatiable appetite of the bulldozer, which has been responsible for the demise of farms, fields, woodlands and wetlands in recent years.

Canoeing on lake in Assunpink Wildlife Management Area

Open to outdoorsmen

At the same time, these tracts of land provide sportsmen with huntable lands and fishable waters that can be utilized without the door knocking that goes along with the permission granting process that is such a necessary part of hunting or fishing on private spreads.

On state lands, except for an occasional safety zone notification, outdoorsmen are free from the intimidation of the "Posted" and "No Trespassing Signs" that are all too frequent throughout New Jersey.

My first exposure to the W.M.A. system came a number of years ago when, through no fault of my own, I lost access to a coveted piece of hunting real estate. Special permission, privileged access and friendly contacts all went by the wayside as a once treasured upland and farm parcel suddenly became off limits.

And in that same season I discovered Assunpink. Here, in rural Western Monmouth County, rolling hills, corn and soybean fields, hedgerows and woods provide diverse wildlife habitat. Here the Division of Fish, Game and Wildlife's efforts have created what many upland hunting and bird dog enthusiasts refer to as the "showpiece" of the upland management areas.

The impressive expanse of Assunpink features spacious lakes and numerous remote ponds that harbor Canada geese, pintails, teal and mallards in addition to pheasant, quail, woodcock, grouse and whitetail deer. Anglers appreciate the pickerel, largemouth bass, yellow perch and bluegills that are present in Assunpink's waters. Channel cats, bullheads and crappies—they're here too—large enough to tempt any person who ever casts a line.

At Assunpink, and on the other management areas, the law-abiding properly licensed sportsman finds no posted signs, no questions, no hassles.

I'll admit that things did get a little crowded during the mid to late 1970's, especially on opening day of the pheasant season on the Saturdays that led up to Thanksgiving.

Then I discovered Stafford Forge Wildlife Management Area; a place of cranberry bogs with woods of oak and pine, and a series of impoundments with brushy, overgrown dikes. In this sector, man and dog can hunt the "long tailed bird" until tired feet and paws will plod

no more; and shots over open water are commonplace.

The "Forge" was different and usually less crowded. About this time I also learned that bird hunting on the W.M.A.'s can be just as good in the afternoon as it is in the morning. When working for pheasants with or without a dog, always check those lakeshores as they tend to hold birds after things have settled down from the hunting pressure that most stocked areas experience during the early morning hours.

Getting back to the three hunters that were described at the beginning of this article, each could be utilizing a different Wildlife Management Area especially suited to game animal being pursued.

The deer hunter could be situated somewhere on the Whittingham or Black River tract since both of these areas boast large deer herds and rather mountainous topography. Both are deer management zones that have offered an extended season for bowhunters.

The bird shooter with his dog might have chosen the Assunpink W.M.A., or any one of a number of areas that provide fine shooting on upland areas.

Diversity of uses

Our waterfowler could be located at the opposite end of the state in a setting such as one would find at Dennis Creek, Heislerville or Mad Horse Creek, where there is nothing but prime salt marsh as far as the eye can see. In duck hunting havens like these, the green-winged teal often arrive in cloud-like flocks over properly placed decoy rigs located in remote ponds, or along the Delaware Bay coast.

Fly fishermen may try their angling skill at the Ken Lockwood Gorge, where the spirit of a legendary outdoor writer still lingers around the deep and rocky pools of the Raritan River's South Branch.

Other anglers may want to give the Menantico Ponds a try. This unique area incorporates a series of interconnected ponds, each with a different species of fish predominating.

New Jersey seems to have it all; and while the W.M.A.'s offer a variety of outdoor sporting opportunities, that almost seem too good to be true, anyone who plans to utilize these areas for hunting or fishing should check out the tracts in question before the intended use period.

A preliminary or pre-season trip to a Wildlife Management Area will give the user a chance to scout the land and/or waters concerned. The wise outdoorsman will note the location of parking areas, boat launching ramps and major roads providing access to the most desirable locations within the W.M.A.

For an in-depth familiarization with an area, take a walk through the locations that you intend to use, looking for runs, droppings, tracks and other telltale hints of wildlife.

When planning to use the waterways of a Wildlife Management Area, check them out ahead of the waterfowling or fishing season that you plan to participate in. Learn what the bottom is like by exploring the river or lake in a small boat or canoe.

Maps are necessary

If you plan to do any duck hunting, walk along the shallows and look for good places to set out decoys and/or hide. Take the time to learn the high and low tide depth differentials as this can be a big factor in locating a decoy rig and in determining anchor line length. Make sure that you can get out of the place at low tide or be prepared to stay until the tide changes. If you plan to walk the marshes, check the terrain for walkability.

Lake fishermen should use all available methods to determine structure location, depth and temperature.

When it comes to finding your way around, the use of appropriate area maps is necessary when scouting or utilizing a W.M.A. for outdoor sporting activities.

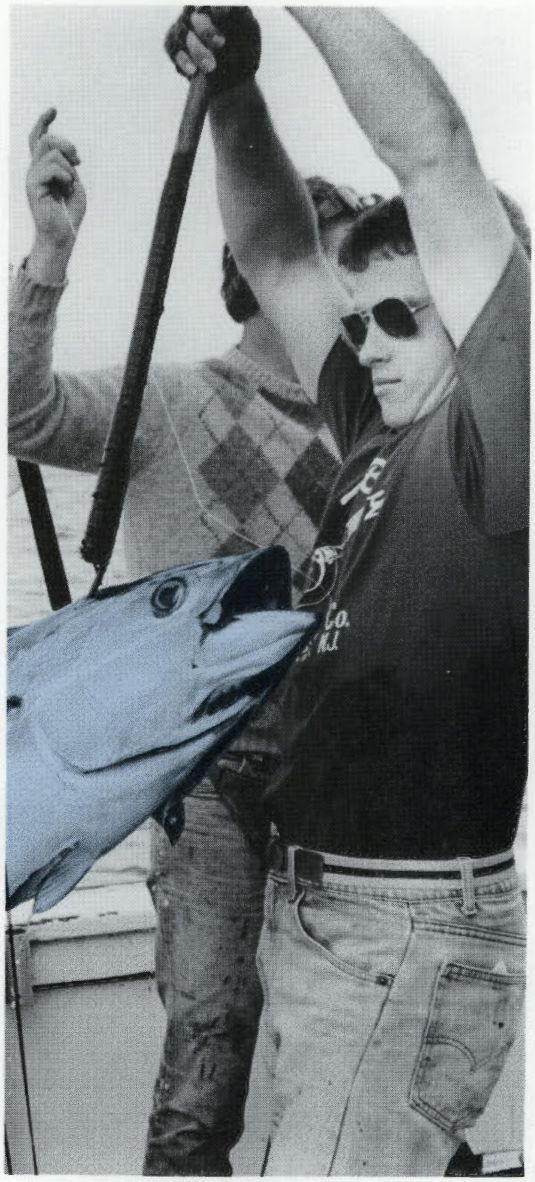
The Department of Environmental Protection's Division of Fish, Game and Wildlife has published a 124-page GUIDE TO WILDLIFE MANAGEMENT AREAS in order to provide outdoor persons with detailed information and outline maps of the various state lands. Write to the Division of Fish, Game and Wildlife, CN 400, Trenton, NJ 08625.

Available from the Division at a cost of $6.50 postpaid, this valuable reference will come in very handy to anyone who plans to use New Jersey's Wildlife Management Areas for any outdoor activity that is permitted on the tracts. Additionally, good quality state and county maps can be used in conjunction with the guide to ensure accurate reference.

Because of rapidly diminishing open lands and an ever increasing population with a growing interest in outdoor recreational pursuits, our Wildlife Management Areas, as well as the philosophy that contributed to their evolution, will continue to play an important role in New Jersey's recreational outlook, especially in regard to hunting and fishing.

New Jersey's
Big Game Fisheries

By Norma DeNoia and Bill Figley
Photos By Hank Wurzburger



Fishing for saltwater big game fishes in New Jersey began in the 1920s. Bluefin tuna, which could be caught relatively close to shore, was the first species sought by anglers. A few years later, fishermen started working inshore grounds for white marlin. With the development of fast-planing boats and a variety of electronic gear in the late 1950s, anglers began fishing further offshore, eventually reaching the submarine canyons at the edge of the continental shelf. The blue offshore waters yielded a variety of species, such as yellowfin, albacore and bigeye tuna, swordfish and blue marlin, that were rarely caught on the inshore grounds.

Offshore big game fishing increased dramatically in popularity during the 1970s and is still growing today. During this same time, New Jersey anglers also began fishing for sharks, a group of species that had largely been overlooked as gamefish.

For the past five years, the Bureau of Marine Fisheries has monitored the big game fishery in order to document its importance. We have measured levels of participation, fishing effort, catch and economic value. These types of information are needed to understand future trends in this fishery, to add to our knowledge of offshore fish populations and to uphold the interests of offshore sportfishermen.

Big Game Fisheries

There are four distinct big game fisheries, each characterized by either a particular fishing method or fishing ground, available to New Jersey's anglers. While there is some overlap in the species caught, fishermen target their tips toward a particular individual or group of species. The four fisheries are listed in the chart below:

Fishery	Target Species	Primary Fishery Grounds	Fishing Methods
1. Canyon	yellowfin, albacore bigeye tuna, white blue marlin, swordfish	30 fathom contour to Canyons	mostly trolling; night drifting; some chumming
2. Shark	all shark species	15 to 30 fathoms	chumming
3. School bluefin	small bluefin tuna	15 to 40 fathoms	trolling; some chumming
4. Giant bluefin	large bluefin	Mud Hole	chumming

Mako Shark

Participation

In 1985, New Jersey's marlin and tuna sportfishing fleet consisted of 1,140 boats, including 995 private and 145 charter boats. The ocean shark fishing fleet was composed of 1,345 boats, including 1,148 private and 197 charter boats. Most of the boats were involved in both fisheries.

New Jersey anglers undertook an estimated 10,802 offshore fishing trips for marlin, tuna and shark during 1985. Sharks typically open the offshore season, with fishing beginning in late May, peaking in June and tapering off through the summer. In late July, many shark anglers switch over to canyon fishing for marlin and tuna. The canyon fishery peaked in August and dropped off sharply in October due to poor weather not the lack of fish. Fishing for school bluefin tuna occurred during two periods, one in late July-early August as the fish migrated north and another in October as they moved southward. The fishery for giant tuna occurred during September and October as fish from northern waters schooled up in the Mud Hole. During 1985, New Jersey anglers caught almost 30,000 fish in the four big game fisheries.

Canyon Fishing

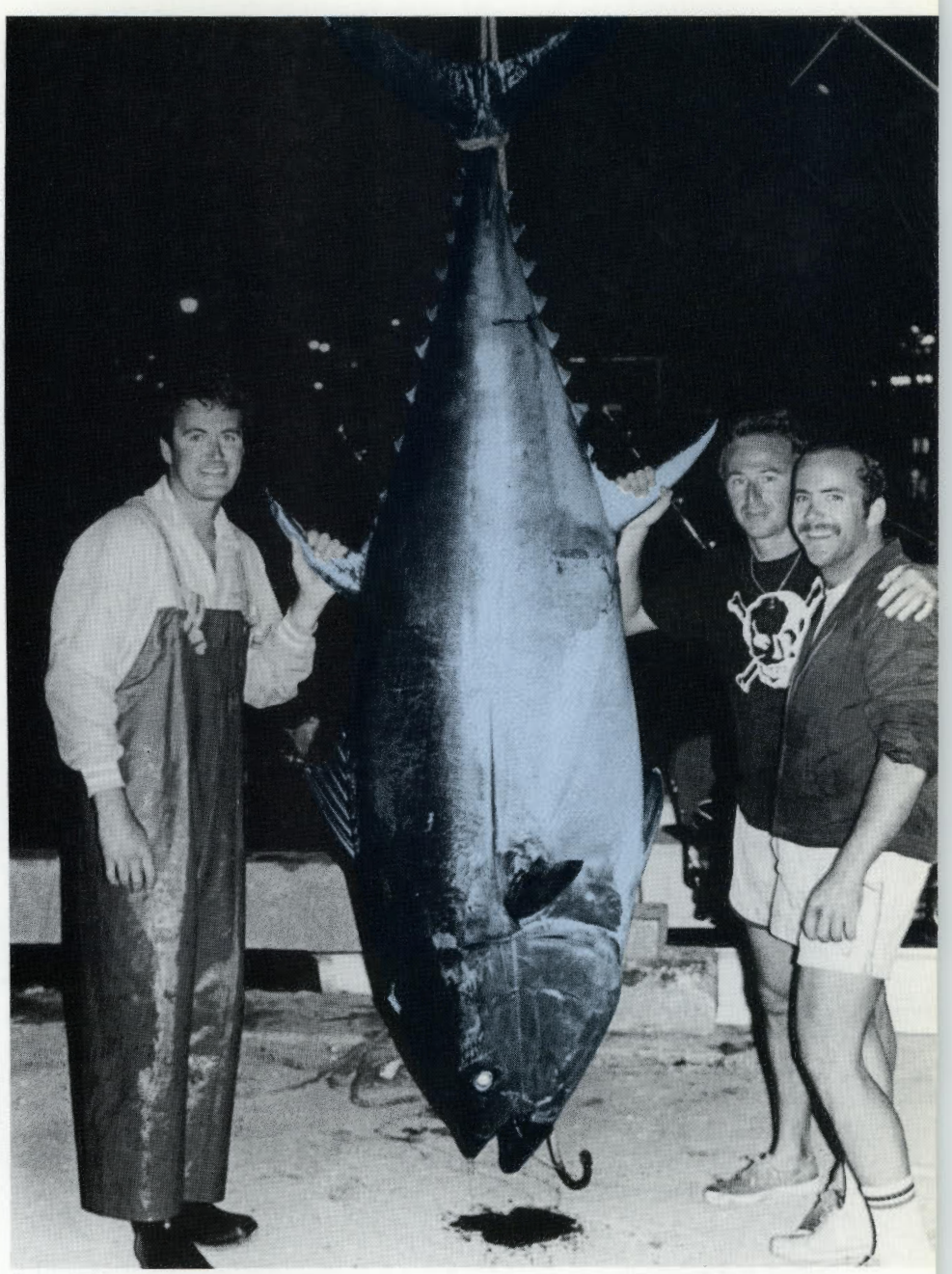
Fishermen targeting their efforts at yellowfin tuna and white marlin, caught an estimated 20,144 big game fish during 1985 (Table 1). For most of the summer, anglers searching for the "blue water" that harbors large pelagic gamefishes were plagued by "green water" which often extended into and beyond the canyons. This turbid water condition may have been responsible for the relatively low catch rates during June, July and August. Fishing conditions improved considerably in September and October, possibly in response to the cleaning effect of Hurricane Gloria.

Yellowfin tuna dominated the catch throughout the summer, with dolphin also being taken in greater numbers than usual. Fishing for albacore, white marlin and swordfish was poor.

The best catches of yellowfin, albacore and bigeye were taken in the Hudson and Toms Canyons, while the Baltimore produced the most consistent catches of white marlin (Table 2).

Shark Fishing

Shark fishermen caught an estimated 4,743 sharks during 1985 (Table 3). Brown/dusky, blue and mako sharks dominated the catch in that order. Only small numbers of hammerhead, tiger and thresher sharks were taken.



Giant Bluefin Tuna

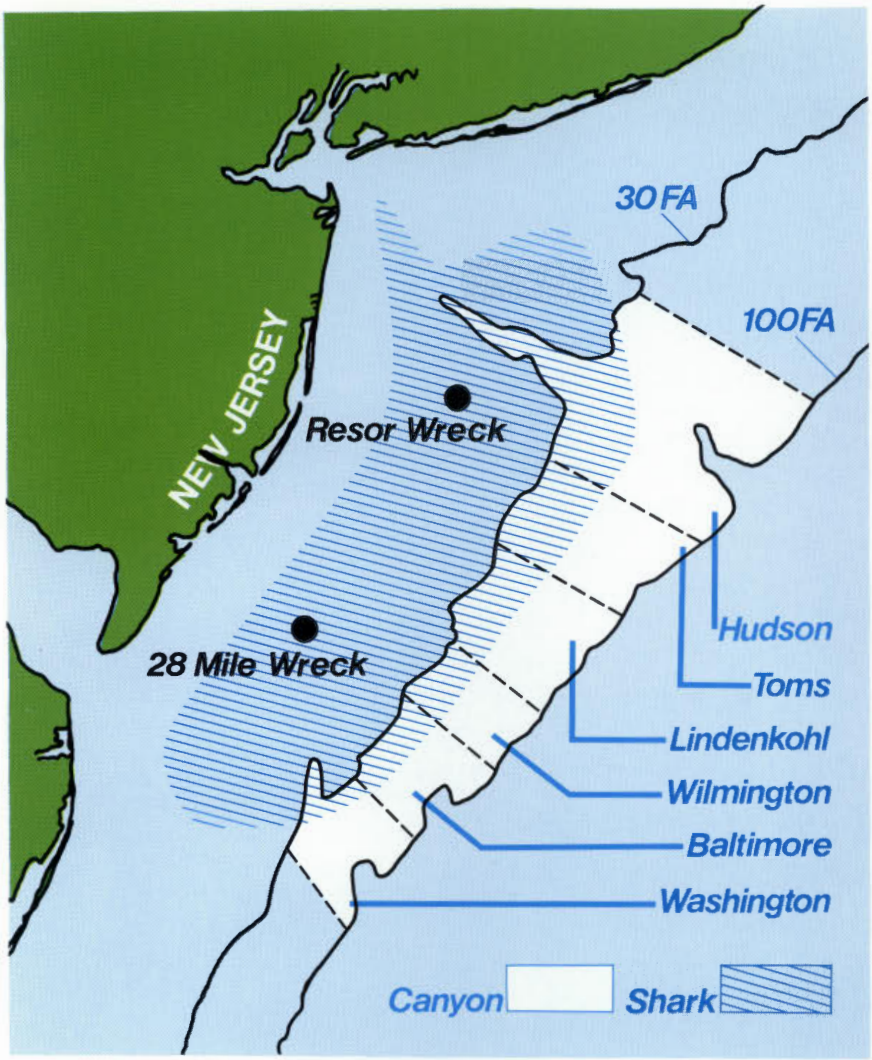
Blue sharks dominated the early season fishery, with the largest catches being made in late May-early June. Mako catches began and peaked in June. Brown and dusky sharks appeared somewhat later with peak catches in August. Hammerhead and tiger sharks were also most abundant later in the season.

The seasonal difference in species catch rates is largely due to surface water temperature (Figure 3). Blue sharks prefer the coolest water temperatures, makos, browns and duskies, moderate temperatures and hammerhead and tiger favor warm water.

Of the 4,743 sharks caught approximately 63 percent were released alive.

Release Rate

Mako	12%
Brown/dusky	75%
Blue	86%
Hammerhead	100%
Tiger	60%



Makos, because of their excellent eating quality and high market value, were usually kept. In general, only very small makos were released alive. Blues and brown/dusky sharks, because they are common and relatively small in size, were usually released.

It is important for the future of shark fishing that anglers release alive as many sharks as possible. The relatively slow growth, maturation and reproductive rates of sharks compared to other fishes makes them highly susceptible to overfishing. There is now particular concern for the mako and its ability to withstand rapidly increasing fishing pressure. Tournaments have taken steps to reduce the number of sharks killed. Most tournaments have minimum weight limits and award prizes only for the largest sharks rather than for total aggregate weight.

Anglers who would like to tag and release sharks they catch should contact:

Jack Casey
National Marine Fisheries Service
Northeast Fisheries Center
Narragansett, RI 02882

School Bluefin Tuna Fishing

Although only a small number of boats were involved, fishing for school bluefin tuna was very good in 1985. An estimated 4,835 fish were caught by anglers fishing specifically for school bluefin, including 3,410 bluefin, 1,106 skipjack, 226 dolphin and 93 yellowfin. The fishery began in late July around the 26 Mile Wreck, with average catches of 4.0 and 1.9 bluefin per trip for July and August, respectively. The best fishing, however, occurred in October around the Bacardi Wreck where catches averaged 14.6 bluefin per trip.

Giant Bluefin Tuna

Although considerable effort was expended fishing for giant bluefin during 1985, success was very poor, with only 3 giant tuna of 451, 567 and 572 pounds landed in New Jersey. Eight mediums, between 147 and 200 pounds were also caught.

Five-Year Canyon Summary

Although the 1985 canyon fishing season was marked by long periods of poor fishing, the overall catch rate improved significantly over the 1984 season and reversed the steady downward trend of the past four years (Figure 4).

Year	Offshore Fishing Trips	Estimated Number of Fish Caught
1981	5,471	39,762
1982	4,582	28,556
1983	5,500	23,891
1984	3,952	12,042
1985	4,069	20,144

The 1985 season total catch rate of 5.0 fish per trip was six percent below the previous four-year survey average. Species showing the greatest improvement included yellowfin tuna (up 59 percent), blue marlin (up 100 percent) and dolphin (up 67 percent). Those showing the greatest declines in catch rates over the previous four-year survey include bigeye tuna (down 23 percent), albacore (down 90 percent); white marlin (down 63 percent) and swordfish (down 67 percent).

Acknowledgments

Thanks must be given to the hundreds of sportfishermen who willingly provided information for this survey.

This survey was part of an overall study of the offshore recreational fisheries of the Mid-Atlantic organized by Darryl Christensen of the National Marine Fisheries Service. Survey work was done by Norma DeNoia, Terry Westhead, Claire Schneider, Sherri George, and Lori Giust. Data entry program was prepared by Bob Picanowski. Typing was done by Diana Dougherty and Peggy Andrews. Charts were prepared by Barry Preim.

This survey and publication were funded through Dingell-Johnson Federal Aid to Fisheries, the National Marine Fisheries Services and the State of New Jersey.

TABLE 1.

Total Catch in the canyon fishery by month in 1985.

Species	Number of fish					
	June	July	August	September	October	Total
Yellowfin	111	2,489	2,520	4,581	159	9,860
Bigeye	3	185	316	357	12	873
Albacore	9	85	363	498	*	955
Bluefin	19	214	99	64	8	404
White Marlin	*	149	393	*	*	542
Blue Marlin	*	7	105	13	*	125
Swordfish	*	*	8	13	*	21
Skipjack	6	491	580	280	*	1,357
Dolphin	*	242	4,270	1,072	191	5,775
Wahoo	*	*	38	*	*	38
Mako	*	21	38	13	*	72
Other Sharks	*	35	60	27	*	122
Total	148	3,918	8,790	6,918	370	20,144

* too few to estimate

TABLE 2.

Average catch per trip of canyon fishery by fishing area in 1985.

Species	Average catch per trip					
	Hudson	Toms	Lindenkohl	Wilmington	Baltimore	Washington
Yellowfin	3.249	0.889	1.577	1.446	0.694	2.143
Bigeye	0.324	*	*	0.054	0.102	0.143
Albacore	0.319	0.667	0.096	0.008	*	0.286
Bluefin	0.075	0.333	0.327	0.092	*	*
White Marlin	0.038	*	0.212	0.208	0.469	0.143
Blue Marlin	0.009	0.222	0.019	0.054	0.061	*
Swordfish	0.005	*	*	0.008	*	*
Skipjack	0.568	0.222	0.038	0.238	0.122	*
Dolphin	1.728	0.667	2.481	1.038	0.735	2.714
Wahoo	*	*	0.058	0.015	*	*
Mako	0.023	*	0.019	0.015	*	*
Other Sharks	0.066	0.111	0.308	0.023	*	*

TABLE 3.

Estimated total catch of sharks by month.

Species	Number of Fish				
	May	June	July	August	Total
Mako	*	724	453	16	1,192
White	*	*	*	*	*
Brown/Dusky	*	186	1,279	344	1,809
Blue	501	687	320	78	1,587
Hammerhead	*	341	40	*	74
Tiger	*	*	54	16	70
Thresher	*	11	*	*	11
Total	501	1,642	2,146	453	4,742

* too few to estimate

TABLE 4.

Average weight of big game fish caught during 1985.

Species	Weight in Pounds
Yellowfin Tuna	46.1
Bigeye Tuna	147.4
Albacore	39.5
White Marlin	51.8
Blue Marlin	377.4
Dolphin	17.5
Wahoo	42.5
Mako Shark	143.7
Brown Shark	93.0
Dusky Shark	102.4
Blue Shark	95.0
Tiger Shark	272.1
Hammerhead Shark	204.7

Dear Editor

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. Please keep the letters coming. We'd like to hear what you think about the magazine. We'll also try to answer questions and if we cannot, we'll ask our readers for help.

Hurray for the NJ Council of Diving Clubs

We enjoyed the article in the September/October 1986 issue of *New Jersey Outdoors* on "New Jersey Divers Monitor Ocean Dumping" by Cathie Cush, particularly because it points out that citizens can help government agencies on environmental issues.

Your readers should know that the New Jersey Council of Diving Clubs was instrumental in getting the Diver Observation Program started, and its members have been among the most loyal activists in the program ever since. Their reports are accurate and complete, and they have helped alert the public to the importance of a healthy marine environment for New Jersey's coastal waters.

D.W. Bennett
Americal Littoral Society

A Response to Mrs. Evelyn W. Baldwin Letter

My name is Kim Smith, one of many Kim Smith's from High Bridge, and I'm 16 years old. I was astonished to see a mention of my home town in the N.J. Outdoors magazine and wanted to send a reply right away.

So you want to know how things are doing in old High Bridge ...

First of all, Solitude Lake is now algae-covered and weed-infested; it's not even good for ice skating anymore! Secondly, while not a "jumper" myself, I have many friends who love to jump off the Falls, as they are called now. Another favorite pasttime we have is tubing down the river from the Falls, under the arches, and ending at Gronsky's Milk House. The trestle and "bunny trail" are still used frequently, and the Firemen's Carnival is eagerly awaited during the summer.

An unfortunate development is all the new developments being built up in the town. The fields and horse pastures are nearly gone, having given way to condominiums and townhouses.

High Bridge has known fame recently. A team of High School students from High Bridge, myself included, won the Olympics of the Mind World Tournament. We all feel that High Bridge deserves all the "fame" it gets!

I love my town of High Bridge!!!

Sincerely,
Kim T. Smith

Explorer Goes West

Having just visited my two young grandchildren in Colorado and wanting them to learn about their grandma's lovely state, I planned on starting a "Grandma lives in New Jersey" and place pictures and descriptions of the leaves, birds, insects etc. that are native to New Jersey. What a delightful surprise to find the Explorer in the center of the magazine the actual leaves I had planned to draw and name for my first installment are already done in life size—I sure do hope this is going to continue so that I may send the Explorer to my grandchildren each month.

Thanks so much.

P.S. Of all the many lovely states I've visited and camped in I always treasure the lovely autumn colors and the beautiful cardinal so many states cannot offer.

Thanks again,
M. Gibilisco

Maybe our readers have some suggestions?

I am a subscriber to your magazine and thoroughly enjoy reading it.

So, I need a favor, or better, some advice.

My wife and I recently bought a home in Mt. Laurel, N.J., which backs on a small pond. There are some dozen or more homes along the water on one side and the other is lined with trees.

The problem? A familiar one I suspect. We are currently hosting a flock of geese whose colorful, sometimes noisy presence, is marred by their considerable droppings on the lawns.

Excluding injuring the animals, is there any humane way of discouraging them from utilizing our properties?

Although not too optimistic, I would appreciate any information you may be able to provide on the subject.

Sincerely,
J.G. Galloway
Mt. Laurel

A state fossil?

I have been reading your magazine for about two years and enjoy the magazine thoroughly!

As a geology student, I find all the articles on the state's geology extremely interesting. Even though our state is one-half coastal plain, there is much to learn from the sedimentology as well as the structural geology.

One point that may be of interest to your readers is the radon problem in the older rocks in the northern part of the state. People are probably disillusioned about what is really happening and an article may serve as a clarification tool.

Also, did you know that we have a state fossil? It is the *Exogyra costa* characteristic of the cretaceous and younger sediments.

Keep the geology articles coming!

Kathy Sturzione
Neptune

You're on the list

First I must congratulate you and staff on such a fine Magazine. I have been getting the magazine since I have been 16 years old and I am now ready to graduate from East Stroudsburg University, Pa., in December majoring in Environmental Science. I have been active in the Osprey Program under Dr. Larry Rymon along the upper Delaware River in Portland, Pa. We are successful in fledging osprey back to this area.

The *Environmental News* used to be published in New Jersey Outdoors; if it is still being published, I would like to receive a copy along with my subscription to New Jersey Outdoors.

Yours truly,
Robert Duryea
Washington

CALENDAR OF EVENTS

NOVEMBER

8 — "BACKSTAIRS AT THE BIG WHITE HOUSE" at Morristown National Historical Park. Candlelight tours and historical drama at the Ford Mansion. Tours at 7:00, 7:30, 8:00 and 8:30 p.m. Limit 25 per tour. Drama about Washington's stay at Mrs. Ford's house as seen by the servants. Reservations required. $5 per person. Call for tickets after October 6.

9, 9:00 AM — CANOE THE OSWEGO RIVER with the Outdoor Club of South Jersey. About 4 hours. By now the river should be full of water, but not full of people. Bring a change of wool clothing in a waterproof container, life jackets, lunch, beverage, etc. Sorry, no rentals. Meet at the dam where the lake empties into the river in Penn State Forest. Leader: Shep Shephard, 215-288-3331.

16, 10:30 AM — DECOU POND MINI-HIKE. 5 miles. Meet at Sooey Road & Rt. 72, 9½ miles SE of jsct., Rtes. 70/72, and 13 miles west of Garden State Parkway, between Mileposts 9 and 10. One of the neatest, most symmetrical ponds you could imagine, complete with a wide beach, deep in the pinelands of eastern Burlington County. Bring lunch. Leader: Bert Nixdorf, 609-267-7052.

22, 9:00 AM — HIKE THE TOBACCO ROAD II. 16-20 miles. Moderate to fast pace. Visit the Spotswood Outlier, an outlier of the Pine Barrens, and the historic snuff mill town of Helmetta, considered by the state to be the only operating mill town in New Jersey. Bring or buy lunch at the general store. Hike consists of wooded and paved roads. Meet at the Monroe Township Municipal Building, Perrinville and School House Roads, Monroe Township, Middlesex County. From South Jersey, take Rt. 130 north to Rt. 32 (Forsgate Drive). Make right at Chevron gas station Buy-Rite Liquors onto Perrinville Road. Leader: Joey Sapia, 609-655-5467.

30, 9:15 AM — THE "MANSFIELD MASTICATOR" BIKE RIDE. 20 miles. Meet at western edge of parking lot, Northern Burlington Regional High School, 1½ miles east of Rt. 206, on the Mansfield-Georgetown Road, 1.3 miles north of Columbus. All rural, slightly rolling terrain, followed optionally with an all-you-can-eat Christmas Brunch & Bazaar. Shop early for the holidays. It's a super deal at $4/adult, $2/child, reservations unnecessary. Benefit of Deborah Hospital. Leader: Bert Nixdorf, 609-267-7052.

DECEMBER

1-31 — GIANT GREETING CARD CONTEST AND EXHIBIT. On the riverfront in Bridgeton. Open to all ages. For details call 609-451-4802.

1-31 — MONMOUTH COUNTY PARK SYSTEM CROSS-COUNTRY SKI CLINICS. Held at Thompson Park on Newman Springs Road. For season schedule and other information call 201-842-4000.

6 — CHRISTMAS CANDLELIGHT CONCERT and Candlelight Tours of Washington's Headquarters at Morristown National Historical Park. Linda Russell will present a concert of Christmas folksongs from the 16th thru 18th Centuries. From 8-10 p.m. Tours of the Headquarters at 7 and 10 p.m. Reservations required. $4 per person. Call for tickets after November 1. For information call 201-539-2085.

6, 7 — ANNUAL SAINT NICHOLAS DAY TOUR AT HISTORIC ALLAIRE VILLAGE. Costumed guides take you through historic buildings where a celebration of a Christmas of 1835 is recreated. Limited tickets go on sale November 1, 1986. Contact Allaire Village—phone 201-938-2253, or 201-528-9056.

6, 7, 10:00 AM — NO FRILLS BACKPACK with Outdoor Club of South Jersey. 10 miles. Easy pace. Atsion Lake to Mullica River Wilderness Area Campsite. A chance to try out winter backpacking to see if you like it. No fancy equipment needed. We'll check equipment, repack gear, check boots and winter clothing before we depart. Meet at Ranger Station, Atsion, Route 206, about 10 miles south of Red Lion Circle. Leader: Tom Brooks, 609-783-1392.

14, Noon to 5:00 PM — CHRISTMAS IN GREENWICH. Old homes tour, costumed hostesses, Christmas exhibits, live harp music, and food available. Donation. Call Cumberland County Historical Society, 609-451-8454.

31, 11:30 PM — NEW YEAR'S EVE ON THE RIVERFRONT. In historic Bridgeton. A laser light show and fireworks will climax Bridgeton's Tricentennial year. Call 609-451-4802.

JANUARY

10, 9:00 AM — ALLIANCE FOR NJ ENVIRONMENTAL EDUCATION CONFERENCE. Theme: "NJ Wetlands—A Critical Issue." At Ocean County College from 9 AM to 4 PM. For exhibits, special programs for teachers, fees, call 201-766-5787.

Wildlife in New Jersey

Grouse

BY BOB MCDOWELL

Anyone who has spent much time in New Jersey's forested areas has certainly been introduced to our most abundant native game bird, the ruffed grouse. (The pheasant is not a native bird.) Most likely the encounter was short lived with the startling escape of the bird as its wings created a loud roar in the quiet of the forest. Most observations of this bird consist of glimpses as it weaves and darts through tree trunks and thickets.

The plumage of the grouse is a mottled brown, tan and white with different shades of brown mixed in. In addition, the fan-shaped tail has some gray and rusty red in a banded pattern with the predominant browns. A ruff of very dark feathers ring the neck of the bird. Grouse also have a small crest of feathers on the top of the head. Both the ruff and the crest feathers of the bird are frequently erected when the grouse is alerted or displaying for breeding or territorial purposes.

Both sexes have the same plumage with the exception of very subtle differences in the rump feathers near the tail. Biologists use this to determine the sex and age of the birds. However, only differences of immature from mature birds can be determined from the plumage.

As with many species of birds, the female grouse are larger than the males. Grouse are between 16-19 inches long and appear to be about the size of a bantam chicken. The wing span of an adult bird is about 24 inches.

In the Spring, the wings of the bird become an important instrument in the mating ritual of the grouse. Unlike many birds the predominant sound of the breeding male is not a call made with the vocal cords but with the "drumming" of the wings. Males mount a fallen log or some other elevated position in their territory and beat their wings to create a loud, rhythmic thumping sound to proclaim their territory and attract females. Grouse do make sounds with their vocal cords that sound like the "bluping" of a percolating coffee pot.

The grouse mating period in our state is March and April. The female, after selecting a male, chooses a nest site. The location is usually a shallow depression at the base of a tree or stump in an open stand of hardwood forest. She lays from 8-11 eggs at a rate of two eggs every three days. When laying is complete, a 24-day incubation begins. Only one brood is hatched per year; however, if the nest is unsuccessful many females will nest again.

The young are hatched in 24 days and are nearly ready to run. They soon join their mother in travels around the woodlot trying to satisfy large appetites.

Several years ago I had the unusual opportunity to observe, at a short distance, a female grouse and her brood. I was walking on a wood road when I heard the faint percolator sounds of a grouse. I laid down in the road and watched the group approach. The female erect and alert and the golf ball sized young scurrying around chasing insects and pecking at anything that looked like grouse food. Soon the young birds were feeding within inches of my nose when the female became suspicious of my unfamiliar shape in the road. She suddenly flushed and flew a short distance. Right before my eyes the young grouse seemed to melt into the leaves. I looked for the little birds and could only find one. Their camouflage worked extremely well. After looking over the youngster I released it. I walked a short distance and could hear the female's "bluping." Soon, the very spot where I had lain seemed to come alive with little grouse scurrying toward the direction of the calls.

The preferred foods of young growing grouse are insects which provide the necessary protein for rapid growth. The adults are more flexible in their menu and eat seeds, berries, fruits, nuts and bugs that are available in their preferred young hardwood forest habitat.

A mixed habitat of young hardwood forest, recently cut forest, and abandoned farmlands with old apple orchards is the ideal grouse environment. New Jersey's prime grouse habitat is in the hills and foothills of the Appalachian Ridge in the northwestern area of the state. The second best habitat is in the woodlots of the fertile farmland of the central region. In addition, the woodlands that border the farmlands in southern New Jersey also have populations of grouse.

Wherever grouse are found their populations fluctuate in a cyclical pattern. An unexplained population peak seems to occur every 10 years. However, it is more pronounced in the northern areas of the country and in Canada. In New Jersey we currently are experiencing an increase in grouse numbers. This has been illustrated by our cooperative program of trapping grouse for re-establishment of the species in Arkansas. Biologists from that state and our own have been trapping these birds in northern areas of New Jersey for several years. They have caught more grouse in our state for the time and effort expended than any other state in which they have worked. Arkansas Game and Fish Commission is giving New Jersey turkeys in return for the favor. The turkeys will be stocked in southern areas of our state to help with our reintroduction of that native bird.

We have good grouse populations in our state and this makes it our second most popular game bird. (The pheasant is the most popular game bird.) Approximately 40,000 grouse are harvested annually by hunters. But, this number represents a great amount of effort. This is due to the elusiveness of the bird, its sudden flushes from cover and its darting quick flight. Consistently successful hunters utilize highly trained dogs and have a detailed knowledge of grouse and its habitat.

Those hunters fortunate to bag a grouse have excellent eating for their efforts. Nothing tastes better than properly prepared grouse.

For those of us who have the need to know that there are wild places in our state and who occasionally need to experience the activities of hunting, woods-walking or photographing wild things, the grouse represents what "it" is all about.

FRONT COVER—"Growing Together"—Joshua Taylor plants a Norway spruce seedling at Camp Taylor Tree Farm in Columbia, NJ. Photograph by Alden Stahr.

INSIDE BACK COVER—Ruffed Grouse. Illustration by Carol Decker.

BACK COVER—Ronald Louque's painting of a pair of resting pintail ducks is New Jersey's third Waterfowl Stamp. For information on where to buy signed, numbered, limited-edition prints, contact MIDWEST MARKETING, Sullivan, IL 61951, 800-382-5723.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