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NJPB

New Jersey Outdoors



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New Jersey Outdoors

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Front: The Agcat, delivering its 300 gallon payload, is the first wave in the state's expanding aerial strategy for wildfire suppression. Photograph by Tom Pogranicy.

Inside Front: The South Branch of the Raritan River runs swift and cold—perfect waters for nymph fishing. Photograph by Allen G. Eastby.

Inside Back: Wood Duck. Original acrylic painting by Carol Decker.

Back: "Predators! They're Part of the Picture." National Wildlife Week, March 19-25. Sixty thousand educator kits are being distributed, and eight hours of predator-related programming will debut on The Discovery Channel.

New Jersey State Library

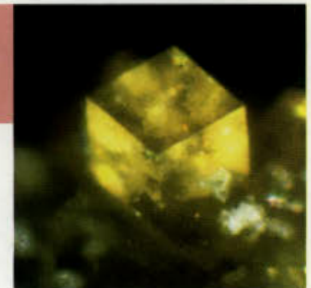
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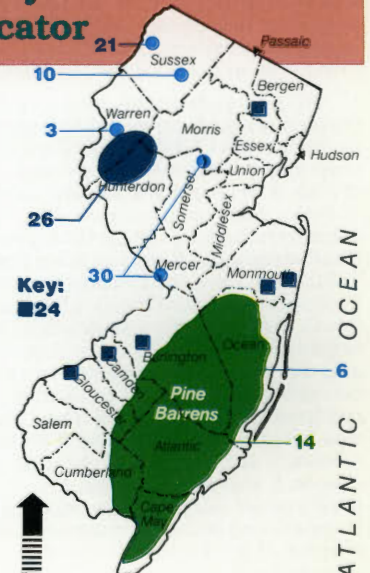
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Story Locator



Editorial

Environmental education is and can be fun, as the new natural resources displays at Pequest illustrate. These well-designed, hands-on exhibits cover the spectrum of DEP's natural resources programs, divisional responsibilities and issues which affect not only wildlife in New Jersey but each and everyone of us.

Try your hand and test your natural resources environmental quotient. But don't be surprised if your "EQ" is less than 100; some of the questions are challenging. After a tour of the hatchery and education center or a nature trail hike, your understanding and appreciation for natural resources should be deepened. Hopefully, it will challenge you to become involved to ensure that this legacy will be here to be enjoyed by your children, and theirs, and theirs.

The NJO family and staff would like to extend our deep appreciation and profound gratitude to the Natural Resources Education Foundation (NREF). A non-profit organization dedicated to the advancement of environmental education, the NREF helped raise a portion of the funds used for the design and construction of the Pequest exhibits. A similar educational display, now being developed for the Liberty State Park Interpretive Center, also received financial assistance from the Foundation.

NJO would also like to express our thanks for the assistance provided by Ed Wilk and Steve Misiur in the preparation of "Franklin Marble." These two "mineral collectors" are members of the New Jersey Earth Science Association and Trustees of the Franklin-Ogdensburg Mineralogical Society. The Franklin Mineral Museum makes an excellent day trip. Hours vary with the time of year, so call first. That drive through Warren and Sussex counties verifies our belief that northwest New Jersey offers the scenic beauty once erroneously believed to be found only in pictorial New England.

Voluntary efforts to cleanup state parks have been previously recognized by former NJO Editor Steve Perrone. In cooperation with the DEP Division of Fish, Game and Wildlife and Division of Parks and Forestry, some 75 volunteers participated last May in a trash cleanup in Wharton State Forest. Volunteers from the Burlington County Federation of Sportsmen's Clubs and the South Jersey Enduro Association, an organization of Pinelands motorcycle and dirt bike clubs, collected more than 60 cubic yards of glass, cans, tires, mattresses, and car parts. Their cleanup was aided by the support and donated materials and services of Atlantic Disposal, Butcher & Singer, Inc., Kohlbrenner Scrap Metals, Modern Way Disposal and Waste Management, Inc. (owners of the Parklands Landfill provided free disposal).

The Sierra Club and the Outdoor Club of South Jersey will embark April 22 on a fourth state park cleanup, necessitated in part by their concern over public natural areas being abused. In the first three outings, 75 tons of garbage and more than 100 bags of recyclables were collected. Illegal disposal of trash is now so commonplace on the banks of lakes and streams, under our state forest canopy or along any vacant stretch of highway or woodland that one wonders if this species of "wildlife" is becoming indigenous.

As landfill disposal costs have skyrocketed and items like refrigerators and tires become more difficult to dispose, the trashing of New Jersey has increased. Even some of us who enjoy the outdoors may be accomplices. Weekend partygoers and revelers leave behind six-pack rings, cans and empty cigarette packs. The angler who discards yards of monofilament line, styrofoam bait containers, bottles and food wrappers is as negligent as the hiker who packs it in but often fails to pack it out. Is it possible that an entire generation believes roadsides which read "Fine For Dumping" are open invitations?

A photographer who has supplied NJO with artwork now takes trash bags with him to cleanup the litter before he takes a scenic shot. Once a corps of civilian conservationists helped beautify state lands and parks. If we follow the photographer's example, we can do it again. Each sportsman and environmentalist, hiker and hunter—all of us who enjoy and use open space—can take an empty trash bag into the woods and bring it out full. Work to see that containers are provided (and emptied regularly) at places where you fish, canoe, hike or camp. If local government can't afford the receptacles, solicit an organization to donate them. Can the litter. Make New Jersey glitter.

Ask local officials to write tougher statutes and enforce penalties that reach deep into the violator's pocket. We can also teach by emulating these South Jersey volunteers. Spend Earth Day Saturday with the Sierra Club and Outdoor Club of South Jersey volunteers for a 9 am cleanup at the Lebanon State Forest headquarters, one mile east of the Routes 70/72 circle. Another 9 am cleanup will be conducted on April 30 in the Wharton Tract, extending from Friendship Run in Tabernacle to the Camden County line on Jackson Road. Expected to join the Federation of Sportsmen's Clubs and the South Jersey Enduro Association volunteers are Ducks Unlimited and Cub Scout Pack #47. Rain or shine, gather at the Indian Mills Gun Club on Atsion Road. Take a day and help "bag it."

Your public lands need your support. By example, let's instill in others an environmental conscience, courtesy and cleanliness. Get out there and "eNJOy!"



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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.

Let's protect our earth

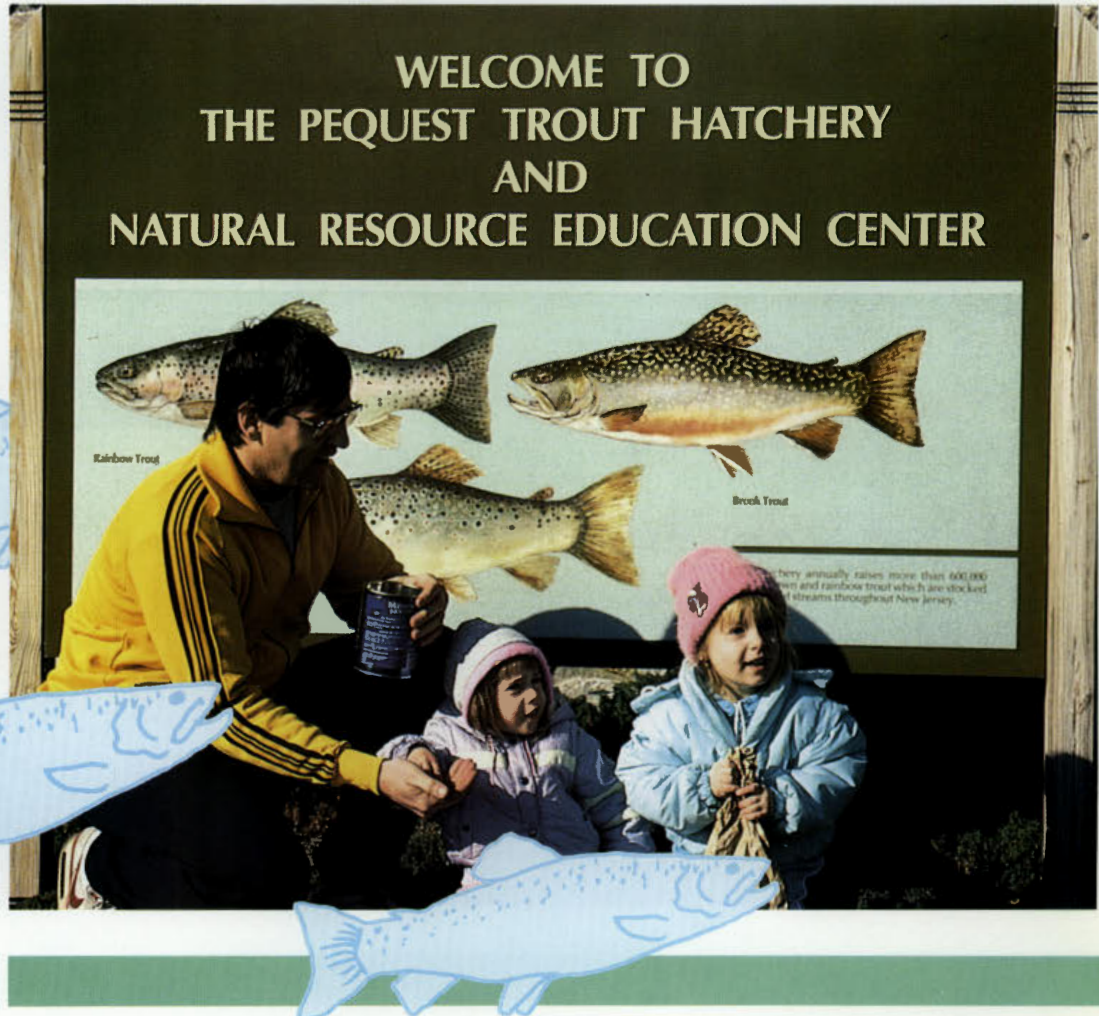
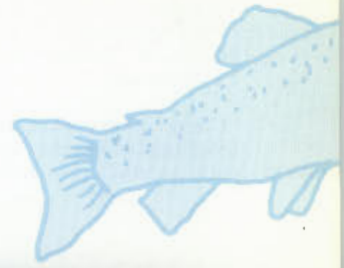


NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

JK

A Different Kind of School

teaching the fourth "R"



By David Chanda and Laurie Pettigrew

Traditional education systems concentrate on teaching "Readin', 'Ritin' and 'Rithmetic"—the three Rs. At the Pequest Trout Hatchery and Natural Resource Education Center, however, visitors learn the fourth "R"—Resource Management.

The Pequest Trout Hatchery and Natural Resource Education Center is located about nine miles west of Hackettstown on Route 46 in Oxford, Warren County. The center is open year-round each Friday, Saturday and Sunday (except holidays) from 10 a.m. to 4 p.m. The facility is operated by the DEP Division of Fish, Game and Wildlife.

The goal of the Natural Resource Education Center is to have the projected 250,000 annual visitors leave the hatchery complex with a better understanding of the importance of natu-

ral resources to people. To accomplish this, innovative educational exhibits developed by the division and special programs are used to illustrate our dependence on natural resources, the need for professional management of natural resources and the importance of protecting wildlife habitat.

The Pequest Trout Hatchery and Natural Resource Education Center is one of the most modern facilities of its kind in the country. The first Pequest-raised trout were released in 1984, and the education center doors opened in July 1985. In addition to hatchery tours, visitors can enjoy more than 30 exhibits which describe various aspects of New Jersey's wildlife and natural resources. Typically a visit begins with a video—"Hooked on Nature"—in the auditorium. This 16-minute presentation presents an overview of the importance of the state's natural resources and a portrayal of the hatchery operation, from egg-taking to the

With their dad, Lindsey and Stephanie Grant of Succasunna (Roxbury Township) develop an early appreciation for the state's natural resources.

"One of the Department's most important responsibilities is to provide environmental education. It is fundamental in achieving a healthier environment."

"The division continues to do an excellent job in teaching us about environmental quality and of each person's role in maintaining it."

Christopher J. Daggett
Commissioner
DEP

"The Pequest center is the first of many natural resources education facilities planned for our state parks and wildlife management areas. It is hoped millions of people will be able to tour and learn at similar facilities every year."

"We're proud of this facility and look forward to the unveiling of the Liberty State Park Interpretive Center."

Helen C. Fenske
Assistant Commissioner
DEP Natural and Historic
Resources



Fish, Game and Wildlife

Surface water resource display journeys from streamlet interludes to tidal pools at the Jersey Shore.

Chris Erwin, Clifton, and Bob Macheshey, Budd Lake, familiarize themselves with trout life cycle.

Smokey the Bear welcomes the young and young-at-heart to Pequest.

stocking of Pequest's brook, brown and rainbow trout.

Following the video, visitors tour the hatchery, aided by signs and illustrations to guide them. The first stop is an overlook where the hatchery's water flow is illustrated. Three to 7,000 gallons/minute of some of the state's cleanest and purest water flow through the raceways. The tour then leads to the nursery building, where a five-minute video provides a behind-the-scenes look at activities in the broodstock and nursery buildings. As a disease prevention measure to protect the fish, visitors are not permitted inside these buildings. The tour is completed at the observation deck with a close-up look of the raceways, where the trout are reared from fingerling to stocking size. All of the Pequest complex, including the fishing pond, is of barrier-free design.

Visitors then head indoors to the exhibit hall, where most of the displays encourage hands-on contact. Lift a phone on the "DEP

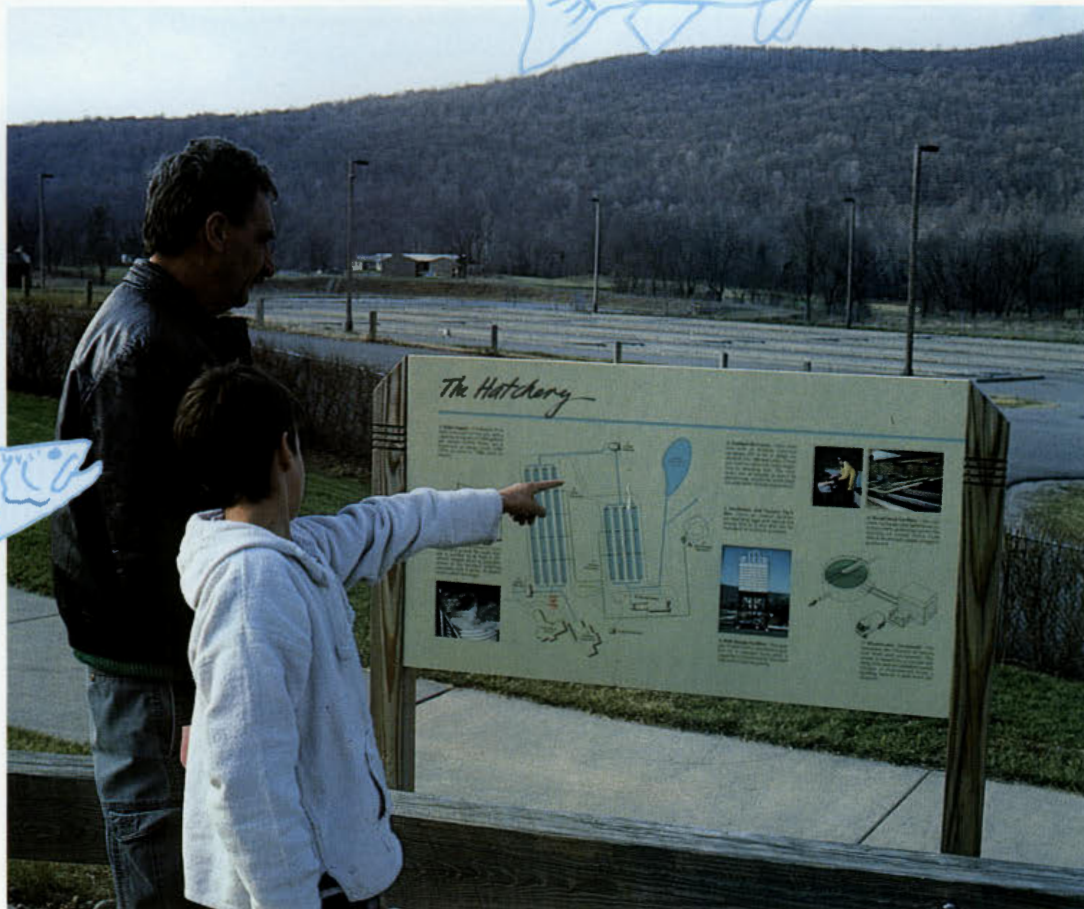
at a Glance" exhibit for a short message describing the functions of different natural resource agencies of the department. The "Habitat Match" panels light up when a question about aquatic habitats is answered correctly.

"The Pequest Story" describes the glacial history of the area and how geologists discovered the huge aquifer located in the Pequest Valley. Visitors can operate a hand pump to see how water actually percolates through the underlying glacial till. Our quarter of a million guests can test their skills as "wildlife managers" at the computer center or try designing a plan for sound watershed development at another exhibit.

Outdoors, complementing the indoor exhibits, are a backyard wildlife habitat, hiking trails, picnic grounds and a fishing education pond. The backyard wildlife area is designed to attract birds and small mammals and is representative of a habitat most people

"For more than 30 years the division has been involved in natural resources education. It is a very satisfying feeling to see our years of planning and hard work come to fruition.

*George P. Howard
Director
DEP Division of Fish,
Game and Wildlife*



Fish, Game and Wildlife

can construct in their own backyard.


Three hiking trails of varying length and difficulty are to be enjoyed by young and old alike. The Natural Resource Trail, a 1.5-mile loop through woodlands and fields, offers special points of interest. The bee tree, an old lime kiln and a brush pile are a few of the numbered stops. A trail guide available at the reception desk provides short discussions on each of the stops.

For those who would like to learn how to fish, Pequest offers a fishing education course for beginners. On special days from April through October, novice anglers can sign up to take a fishing lesson. All the necessary equipment is provided.

In addition to these daily opportunities, Pequest offers special programs every month. Each Saturday from 1 to 3 p.m., a center naturalist leads a guided hike of the management area. Special programs such as "Maple Sugar-

ing," "Let's Talk Turkey," "Beekeeping," "Wild Edibles" and "The Black Bear in New Jersey" are presented Sunday afternoons and Wednesday evenings. A schedule of upcoming programs can be found in the "Budding Naturalist," published twice a year. Sign-up for the Pequest mailing list to receive this brochure.

Pequest is a great place to bring school, 4-H club, scout troop, senior citizen or other organized groups. All education programs discuss the balance of water, forestry, land management, geology, fish and wildlife resources. The programs are free, but reservations are necessary and are given on a first-call, first-serve basis. Why not bring a picnic lunch and spend the day enjoying and learning about New Jersey's natural resources.

For further information, write: Pequest Trout Hatchery and Natural Resource Education Center, RR #1, Box 389, Oxford, NJ 07863 or call 201/637-4125. 

Florida Jay McCabe and his Point Pleasant nephew Bill observe nurturing flow of some of New Jersey's finest water through raceways.

A senior biologist in the Division of Fish, Game and Wildlife, **Laurie Pettigrew** is coordinator of education at Pequest and a first-time contributor. **David Chanda** is Chief of Information and Education for the division.

Firefighting from the Skies



Tom Pogranicy

State Forestry Services



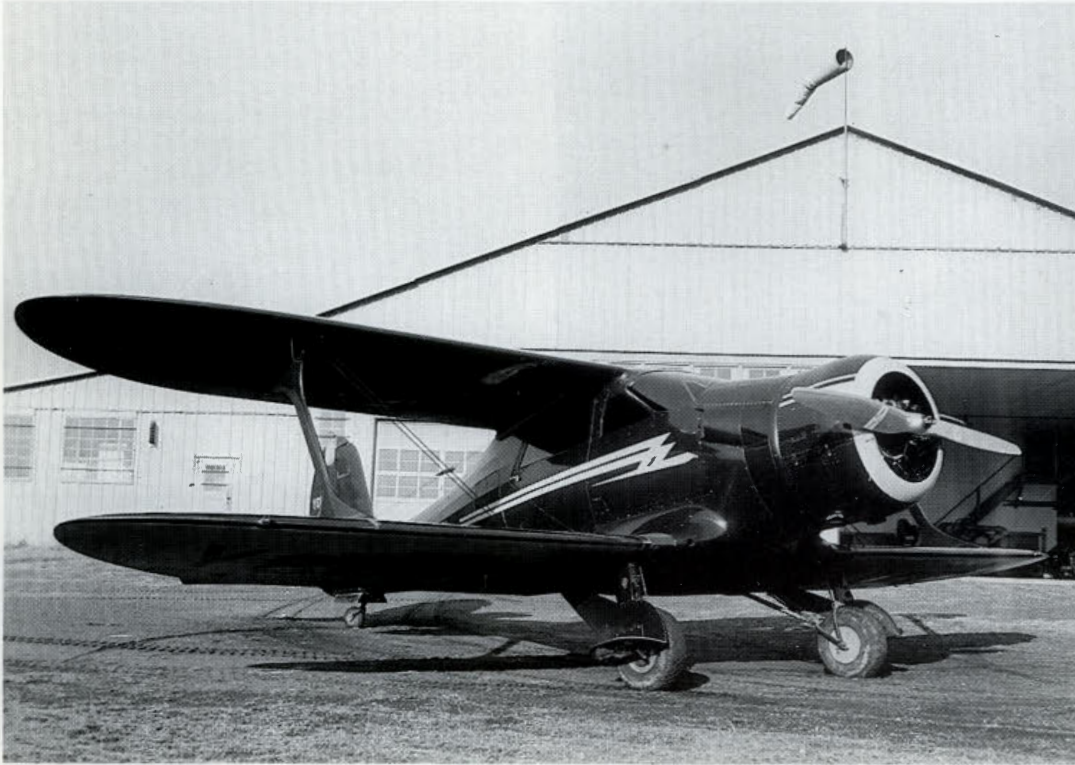
By Joe Hughes

In the weeks ahead, the annual battle against forest fires in New Jersey will be fought on land and from the air.

That's right, from the air! Aircraft have increasingly proved their worth in the battle against forest fires and are now an integral part of most wildland fire suppression organizations. New Jersey is no exception. The DEP Bureau of Forest Fire Management, charged with protecting 2.9 million acres statewide from forest fires, annually contracts 10 fixed wing aerial attack bombers and an observation helicopter. The use of aircraft in fighting forest fires has been so successful that the bureau is expanding its air operations program and acquiring its own aircraft.

The use of aircraft to fight forest fires in New Jersey is not new. Its beginning goes back to 1927. In that year, State Firewarden "Colonel" Coyle, a former military man, recognized the potential of aircraft and was one of the first in the country to use them in the battle against forest fires.

In order to get this program "off the ground," the state acquired a one-square-mile



State Forestry Services



State Forestry Services

piece of property on Route 72 near the Burlington/Ocean County line in 1936. Colonel Coyle, the early architect of this program, envisioned a major facility being built at this site with an observation tower, maintenance complex and hangars. A rudimentary airfield was eventually constructed, still bears his name, and to this day is used as a forest fire air attack base.

Between 1940-42 the Forest Fire Service embarked on a more ambitious program. Several parcels of land were purchased along Route 1 at Bakers Basin in Lawrence Township, Mercer County, the present site of the Quakerbridge Mall and a Division of Motor Vehicles inspection station. A state maintenance facility and airfield were operated there between 1940 and 1956. During that time, aircraft were utilized for aerial observation, mapping and detection of fires.

Aircraft were first used for aerial bombing of forest fires in the state in 1961. A single bi-wing Steerman aircraft, operating out of Coyle Field that year, dropped 5,220 gallons of fire retardant.

Following the disastrous 1963 fire season, a helicopter was added to the program in 1964. In addition to being able to drop water

or retardant, helicopters have the added advantage of being able to hover, making them excellent aerial command platforms from which to direct fire-fighting activities. The old saying "A picture is worth a thousand words" was never truer when applied to helicopters. From on high an observer can see the whole fire, where it is in relation to natural and man-made barriers, what's out in front, and where each piece of fire equipment and fire fighter are.

In the early 70s, the bureau began to experiment with a new type of plane. The Agcat was originally developed for spraying agricultural crops. However, by using a modified gate, it can be rigged to drop a load of up to 300 gallons of water or retardant on a fire. The pilots, who were experienced crop dusters, also proved very adept at aerial bombardment of forest fires.

During the 1960s and 70s, the air program was gradually expanded. A combination of helicopters and fixed wing bombers were used for air attack during those years. Agcats replaced Steermans in the 1970s and eventually replaced even the helicopter for all aerial attack bombing in 1982. This was due to the Agcats' proven effectiveness and economy of

This air attack biplane, part of DEP's wildfire suppression program, operates from Coyle Field in Burlington County.

Aircraft were first used by the state only for forest fire detection.

Observation plane at former Bakers Basin airfield.

The state's first air observer pilot Wesley Smith flew this craft while Colonel Coyle did the observing.



State Forestry Services



State Forestry Services

Fire suppression aircraft can drop hundreds of gallons of water before ground crews arrive.

Utilized 20 years for water drops, helicopters are now aerial command and observation tools.

operation. They proved their worth many times over, providing rapid initial attack and stopping several fires each year from becoming major ones (greater than 100 acres).

An Agcat's operational mission is to knock a fire down and keep it down until ground forces arrive. Agcats can get to a fire much faster than a power wagon that has to fight traffic or travel cross-country. Agcats can also reach and deliver a load of water to those hard to reach spots that trucks cannot get to.

When the program was first implemented, it was standard operating procedure to wait until a warden arrived on the scene before a plane was dispatched. Now a plane is dispatched immediately upon report of a fire, and sometimes two are sent to high hazard areas or where life and property are threatened. The increasingly complex nature of the fire situation and greater values at risk make rapid initial attack of fires more important than ever before.

Statistics support that an expanded air program and greater reliance on mechanized equipment are paying off. The following comparison of acres burned and average size fire over almost three decades show a significant drop.

Years	Acres Burned	Average Size Fire (in acres)
1960-69	311,540	16.87
1970-79	122,710	6.65
1980-88*	66,990	3.84

***Only nine years of data vs. 10 for other periods**

The program has in fact been so successful and economical that other agencies, including the U.S. Forest Service and the State of Florida, have come to study the bureau's program. These and other agencies still rely primarily on drop helicopters and large aerial bombers in their programs. They are effective, but operational costs have escalated appreciably. The U.S. Forest Service spends \$9,000+ per hour for some of its larger aerial bombers. This along with rising overhead have dramatically raised the average cost per fire.

An example of this rising cost was the price tag for last summer's fires in and around Yel-

A regular contributor to NJO, **Joe Hughes** is now in his 18th year of state service. Featured twice in this issue, Joe is Assistant State Forest Fire Warden.



State Forestry Services



State Forestry Services

Early forest fire observation plane.

Fueling a Steerman before another observation flight.


lowstone National Park which exceeded half a billion dollars. Although New Jersey's fire suppression costs have increased, especially during last summer's drought, its average cost per fire and acres protected remains one of the lowest in the country. This can be attributed partly to its efficiently run air program which cost only \$265,000 in 1988.

The low hourly cost of Agcats (\$400-\$500/hour) and their availability throughout the country have some agencies already convinced and others thinking about employing them in their wildfire suppression programs.

Helicopters are still the most effective tool for aerial observation and aerial command of fires. The biggest problem that the bureau has had with this part of the program is that one helicopter cannot be every place at once. Instances of multiple large fires and fires at opposite ends of the state have spread one helicopter too thin. Other state agency and private helicopters that the bureau occasionally relies on as backups are not always available due to short notice, which need takes priority or other commitments. The growing number of homes in the woodland, threat to life and property and increasingly complex nature of the wildfire problem have also placed greater demands on the program.

In response to the increased need for protection and growing wildland-urban interface problem, the bureau is expanding its air program. By working with the U.S. Forest Service, David B. Harrison, State Firewarden, and Olin D. White, Jr., State Forester, have been able to obtain three helicopters and a small observation airplane through the Federal Excess Property Program, all at no cost to the State of New Jersey. The helicopters will be used for aerial observation and command, and the fixed wing will be used for detection. The aircraft will be flown and maintained by state personnel.

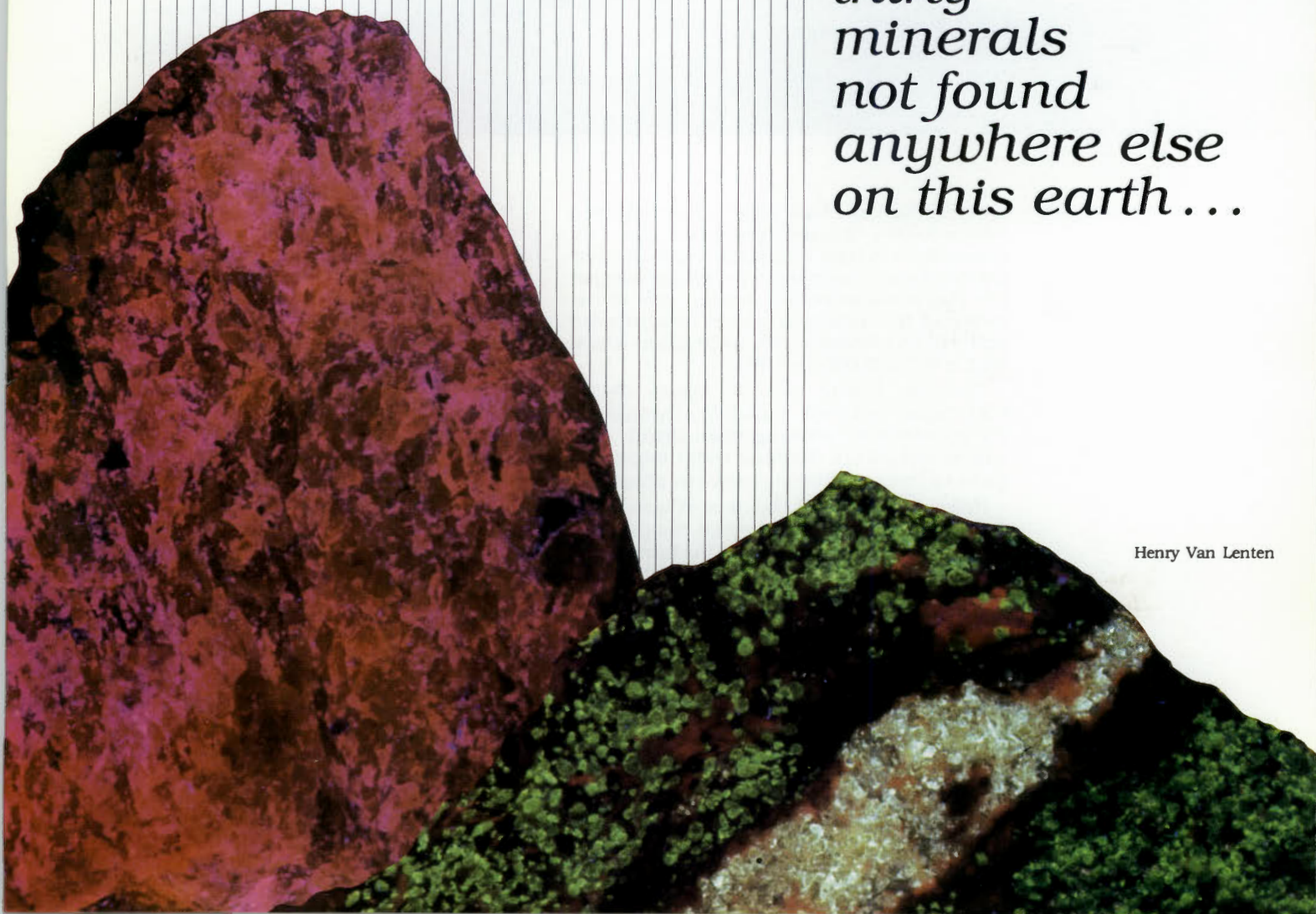
Renovations are currently underway at Coyle Field to provide a hangar for the aircraft, expanded maintenance and a research and development center for forest fire management. The building and nearly all the equipment it will hold were also obtained at no cost through the Federal Excess Property Program. As soon as the aircraft are inspected and declared airworthy, they will be strategically located and the state will have an added tool in its arsenal in the annual battle against forest fires.

The dream (many years ago) of an early State Firewarden may eventually become reality. 

F R A N K L I N
Marble

*thirty
minerals
not found
anywhere else
on this earth...*

Henry Van Lenten



By Richard D. L. Fulton

Along the western border of the New Jersey Highlands, periodically exposed in roadcuts and quarries or along the beds of cool mountain streams, lie glistening white beds of an ancient sea—so ancient, in fact, that little is known about its former extent nor the primordial forms of life that thrived in it.

The rock types of which these ancient sea beds are predominantly comprised was originally a limey ooze on the floor of a warm tropical ocean more than 600 million years ago, during an eon of time designated as the Cryptozoic—"The Age of Hidden Life."

The Cryptozoic Eon was one of the most remarkable periods of earth's history, especially with regard to the establishment and evolution of life. It was during the latter portion of this prehistoric time that multicellular life forms, having gained a foothold in Earth's still harsh and primordial seas, seemed to foster bold "experiments" in the attempt to exploit fully available "new found" environs.

Few of the animals and plants, and those which were both animal and plant, would have been recognizable to modern man, and fewer still would generate ancestors which would survive into even less ancient times, much less produce a lineage traceable to modern life forms. The fossilized remains of these "dawn animals and plants" reveal, if nothing else, that the Cryptozoic witnessed an evolutionary free-for-all with, ultimately, many losers and few winners. But the few would provide the "springboard" for all life on Earth.

One can only speculate if any of these creatures thrived in the Cryptozoic sea which covered what is now New Jersey, although their remains have been found preserved in rocks of approximately the same age as those of the New Jersey Highlands in various parts of the world, including Australia, Russia, South Africa, and Newfoundland.

Whatever remains these prehistoric entities may have left behind in the limey oozes of Cryptozoic New Jersey would eventually be removed by intense dynamic forces generated by cataclysmic geological upheaval which, in addition, would so alter the limey oozes that they would become the crystalline white rocks of the New Jersey Highlands hundreds of millions of years later.

As the ancient sea "grew old," layers upon layers of the limey oozes, sometimes intermixed with layers of sand, accumulated, eventually to the degree that their own weight, along with the weight and pressure of other beds of material deposited on top of them, compressed them into marls and eventually limestone.

Had the alteration of the oozes ceased when they had been converted into limestone, it is likely that any fossil remains they contained would have been preserved to this day. However, the geological forces were not yet done with this deposit. Heat, pressure, and deformation were about to wreak havoc on the neat little beds of white limestones.

Sometime between 600 to 500 million years ago, geologic upheaval began to tear the region apart. Great fissures opened up, sending streams of molten magma charging through the rocks toward the surfaces of existing sea beds and land forms. The Cryptozoic rocks were subjected to intense pressures and heat as continental land masses collided or tore themselves apart.

The pressure exerted on these Cryptozoic limestones of the New Jersey region were so intense that they began to crystallize, first into a rock type called dolomite (or dolostone) and finally into marble. And it is the marble thus produced that one can observe today in the New Jersey Highlands.

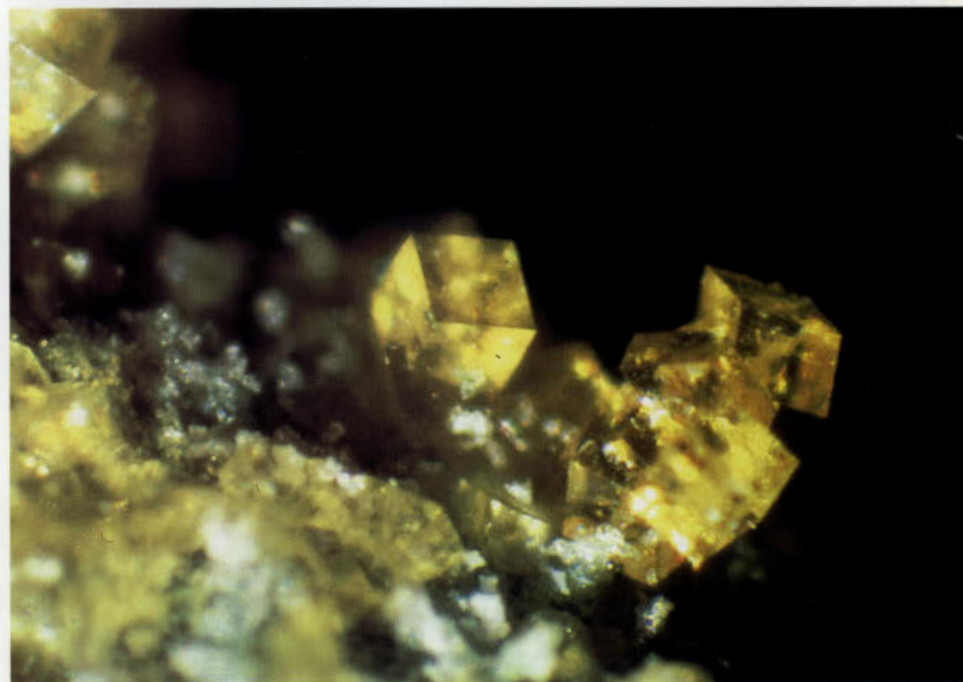
The true extent of this Cryptozoic sea remains something of a mystery to geologists. The one-time continuous bed of limey oozes was so broken up by the subsequent geologic upheaval that its continuity was almost entirely disrupted. Layers were crumpled like taffy by the intense pressures. Other beds were so folded that they fell over—upside down—on adjacent beds of the same former sea floor. In

Sphalerite, one of the Franklin fluorescent species, bursts into brilliant color under ultraviolet light.

Zincite, one of more than 60 minerals that luminesce, was identified at "The Fluorescent Mineral Capital of the World" in 1810.

A micromount of Siderite from the Sterling Mine is best appreciated under a microscope.

NJ Earth Science Association/Alfred Standfast



Shown here with Calcite (white) crystal, Leucophoenicite was first found in the Franklin mine.

Barite, another fluorescent mineral of the Franklin and Sterling Hill ore bodies.

Micromounts of Greenockite (yellow) with Galena (grey), two of the more than 324 confirmed Franklin-Sterling Hill minerals.

In addition, there remains the possibility that there were several successive Cryptozoic seas, each leaving behind its own bed of similar rock, all of which become so intermixed by folding and faulting that they may never be sorted out with any degree of certainty.

Rather than to attempt to assign formational names to the various jumbled beds of marble stretching from Orange County, New York, through the New Jersey Highlands to Bucks County, Pennsylvania, geologists simply refer to the marble complex collectively as the Franklin Marble—named after Franklin, the Sussex County municipality where the marble deposits were initially studied.

Similar marbles can be found sporadically down the entire length of the Appalachian System into Alabama, but the relationship between those deposits outside of the New York-New Jersey-Pennsylvania region and those within has never been firmly established, although they are of the same approximate age.

Although the Franklin Marble has left the paleontologist (those who study prehistoric life forms) empty-handed due to the absence of fossil remains and the hard rock geologist with a seemingly impossible-to-solve puzzle of relationships between the various crumpled beds of marbles, economic geologists, mineral collectors and "rockhounds" have inherited a wealth of valuable ores and beautiful minerals from the ancient sea bed.

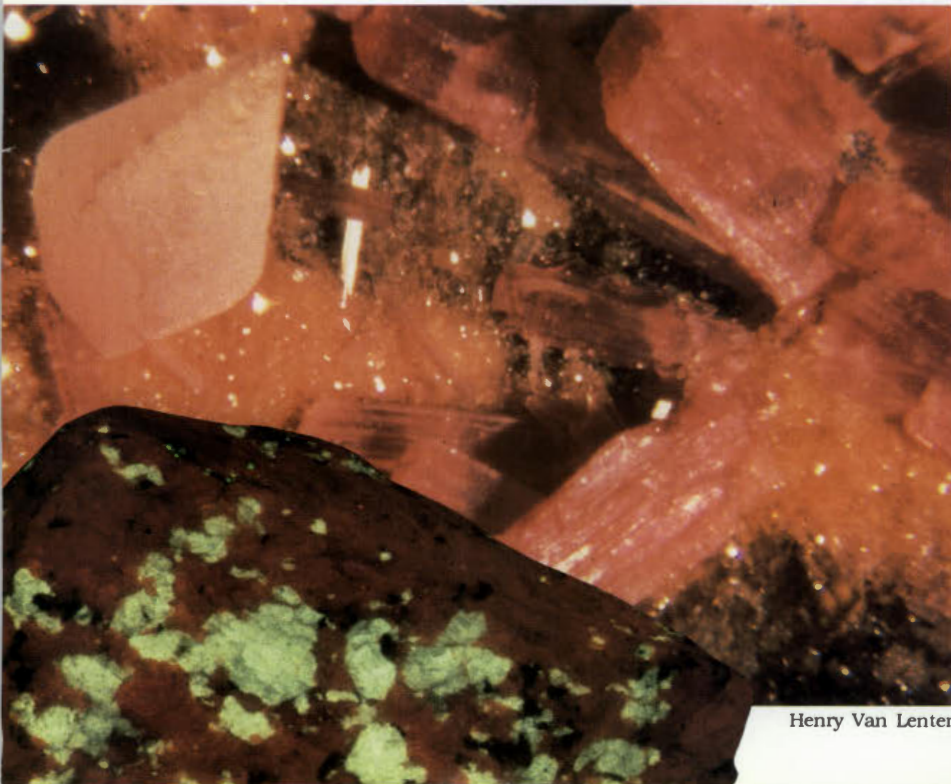
The beds of modern seas are rich in minerals, frequently metals of various types. The Cryptozoic sea of the New Jersey region was not much different in that respect. Most notable were the presence of zinc, manganese, and iron related compounds. However, it took the cataclysmic upheavals of the late Cryptozoic to consolidate these metals into actual ore bodies as part of the deformation process.

In addition to consolidating the metals into ore bodies, during the great deformation intensely hot liquids and gases of melted and vaporized minerals were injected into the now shattered marble, depositing beautiful mineral crystals in any vacant pocket or cavity in the marble beds that they happened to enter.

So rich in minerals were these liquids and gases that they left behind some 1,500 different mineral varieties with many more remaining to be more precisely identified and named. Several dozen of the 1,500 minerals found in the Franklin Marble in New Jersey were discovered here before they were observed anywhere else in the world. A couple of these bear names in honor of the first place where they were collected, such as Franklinite, named for Franklin, and Sussexite, named after Sussex County.

It was, however, the valuable metal ores which first attracted attention to the Franklin Marble and not the dazzling array of beautiful minerals contained in the glistening white

NJ Earth Science Association/Alfred Standfast



Henry Van Lenten



rocks. Although it was not until 1810 that zinc and manganese ores were recognized as being present in the Franklin Marble, early prospectors were apparently aware of the ore-bearing marble deposits as early as the mid-1600s. However, it appears that they thought the zinc and manganese ores were copper ores, which they unsuccessfully attempted to extract. In spite of that, some of the land involved was known as the "copper tract" well into the 1700s.

By the mid-1830s, the first metallic zinc extracted from an ore in America was produced from zincite collected from the New Jersey Highlands. Less than 15 years later, the New Jersey Zinc Company was established and began mining zinc ore at Franklin, the first of the primary zinc ore producing areas of northern New Jersey. A second major ore producing area, Sterling Hill (Ogdensburg), began to be mined during the mid to late-1870s.


Although the various zinc ore producing properties were owned at different times by various companies and individuals, the bulk of the sites fell into the possession of the New Jersey Zinc Company by the late 1890s. The Franklin site was exhausted of profitable ore by 1954 when operations ceased there. Operations at Sterling Hill continued until 1987.

Collections of beautiful and often rare minerals have been amassed by private collectors and institutions from Franklin and Sterling

Hill going back to at least the beginning of the establishment of the New Jersey Zinc Company at Franklin. Almost every major mineral collection in the state, the nation and, indeed, the world contain numerous mineral specimens from the rather unusual Franklin Marble. The Franklin ore contains 30 minerals not found anywhere else in the world.

The Franklin Mineral Museum in Franklin houses one of the most famous collections of rare and exquisite minerals from the Franklin Marble. Rutgers University has, over the decades, inherited a considerable collection of Franklin and Sterling Hill minerals as well. In 1853, they received the Beck Collection of 3,000 specimens, while the Cook Collection, an even larger assortment consisting of some 4,000 specimens, was left to the university in 1870. Since then, Rutgers has received several more large collections ranging from 1,000 to nearly 5,000 specimens each in size.

Most of the collecting which takes place today occurs in the tailings leftover from the mining operations. Although the sites have been heavily worked for nearly a century, there is still a chance one will encounter even the rarer of the Franklin Marble minerals.

For information on collecting sites, it is suggested that the collector contact the Franklin Museum at 201/827-3481 or the New Jersey Geological Survey, a unit of the DEP Division of Water Resources, at 609/292-2576. 

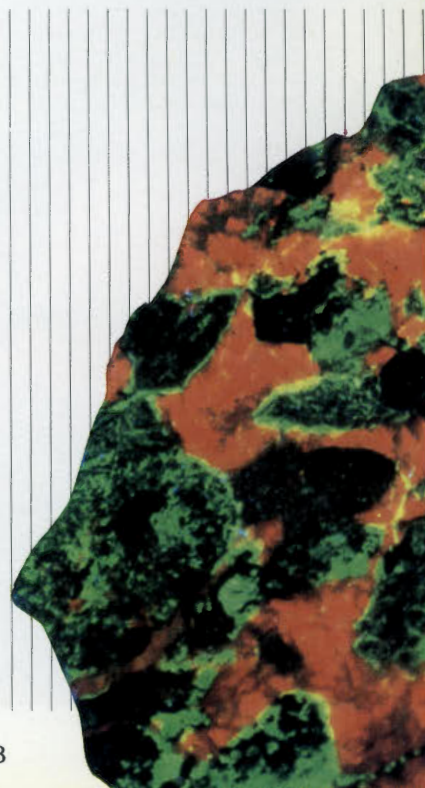
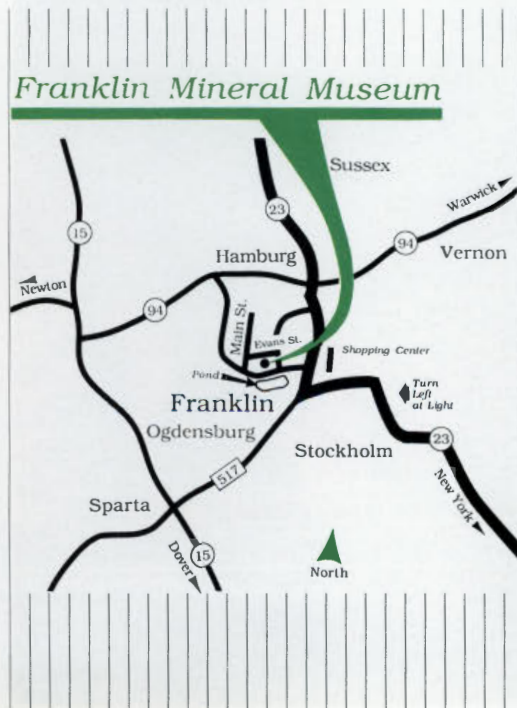
Making his second NJO appearance, **Rick Fulton**, a spokesman for the DEP, promises our readers they will again hear from this confederate Civil War buff.

Manganese, as an impurity, is responsible for the red fluorescence of Calcite and the green of Willemite (first described in 1824).

Henry Van Lenten



NJ Earth Science Association/Alfred Standfast



New Jersey *Doesn't* Let It Burn!

By Joe Hughes



This past summer, millions of TV viewers tuned in nightly to watch the drama unfolding in Yellowstone. By the first snowfall, approximately 700,000 acres in our oldest national park and an additional half million acres outside the park had been blackened by wild-fires, damaging and destroying thousands upon thousands of acres of trees, killing wildlife, burning structures, and threatening

State Forestry Services



New Jersey averages 1,700 wildfires annually.

More than half of the forest fires are detected and reported by Division of Parks and Forestry employees, like Kevin Drake in the Milton fire tower.

Equipment and ground crews confront the intensity of the inferno.

The wildland-urban interface problem grows as new homeowners, particularly in the Pinelands, are faced with the constant threat of forest fires.

economic hardship or business losses to those dependent on the park for their livelihood.

The story started out small but quickly became a front page item and a feature on the evening news involving the president, cabinet level officers and two aspiring presidential candidates. Public reaction to the fires was severe, with many calling for the firing or resignation of Yellowstone Park Superintendent Bob Barbee, U.S. Park Service Director William Mott and Secretary of the Interior Donald Hodel.

What was different about the Yellowstone fires? Why all the debate, hard feelings and bitter controversy? Besides the obvious damage and destruction to one of the nation's oldest and most popular national parks and tourist attractions, the answer lies in the cause of the fires and the fire policy which the National Park Service followed in dealing with them. It raised some very basic questions and issues as to how public lands are managed and what is acceptable or not to the public regardless of scientific knowledge to the contrary or previous track record.

The rest of this article will examine the Fire Management Policy of the National Park Service and compare it with the fire management policies and practices employed in New Jersey.

"Let Burn" Policy

Of the eight major conflagrations and myriad smaller ones, with two notable exceptions the Yellowstone fires of 1988 were caused by lightning. However, rather than extinguish the fires, they were allowed to continue burning under a policy known as "let burn."

In 1968, the National Park Service issued new handbooks encouraging individual parks to allow natural fires to burn. This was based on a greater recognition of the natural role which fire plays in establishing and maintaining a variety of forest ecosystems. It was also an effort to reduce suppression costs on fires which were actually producing a number of beneficial side effects and accomplishing planned management objectives including the reduction of hazardous fuel accumulations.

In 1972, the "let burn" policy took effect. The new policy emphasized allowing "as many lightning fires as possible to burn under natural conditions" while putting out all human-caused fires or fires threatening buildings or other park facilities. Early successes with this policy left officials with a false sense of secur-

State Forestry Services



ity and little warning of the conflagrations to come in 1988. Only a total of 35,000 acres or 1.5 percent of the park was burned from 250 fires during the 15-year 1972-87 period.

However, 1988 proved to be different and in a big way. The first lightning bolts struck near remote Shoshone Lake on June 23rd. The fires which resulted were allowed to continue burning under the park's "let burn" policy. A 90-day long range forecast by the National Weather Service, which predicted cooler and wetter weather than normal for the Yellowstone area, formed the basis for this decision. However, the rains never came. Conditions became progressively drier and fire danger increased. Fed by drought, hot dry weather and winds gusting to 80 mph, the fires took off and a month later became national headlines. The fires burned more intensely and at a faster rate than anyone thought possible. When fire suppression efforts did begin, it was already too late. Nothing except nature itself and a major change in the weather could stop the rapidly advancing flames.

The rest became history, but the final chapter is still not written. There will very definitely be major changes in the federal parks "let burn" policy. If not eliminated, it will definitely be tightened up with much more rigid guidelines.





Prescribed burning reduces fire hazard and enhances subsequent growth for wildlife.

Fire Management In New Jersey

New Jersey does not have a "let burn" policy but does have a fire management program, which is administered by the DEP Bureau of Forest Fire Management. The state did consider a let burn approach in the late 1970s. However, after a thorough analysis, the plan was never implemented because it was considered too dangerous. It was not known if all fires could be stopped within predetermined boundaries because of the highly hazardous fuels and volatility of the Pinelands. If a fire did get away, the state would be opening itself up to severe criticism and possible law suits, similar to what the National Park Service faces today.

Prescribed burning or controlled burning, which had been the practice since 1936, was believed to be a much safer alternative and would achieve the same management objectives.

What is a prescribed burn? Prescribed burning is "fire applied in a skillful manner, under exacting weather conditions, in a definite place, for a specific purpose to achieve certain results." A prescribed fire is different from a wildfire. It is completely surrounded by control lines, is carefully planned and executed, and is only carried out if all estab-

lished guidelines are met. Firewardens can pick the time, place, and conditions under which a prescribed burn is conducted. They are not at the mercy or uncertainty of nature to the same degree that they would be with a "let burn" policy in effect.

The primary purpose of prescribed burning in New Jersey is the reduction of hazardous fuel accumulations. The fuel buildup over time is one of the factors which makes the Pinelands so volatile and one of the most hazardous fuel types in the nation. A prescribed fire also has a number of secondary side benefits including site preparation, habitat manipulation, managing less desirable hardwood species, control of diseases, enhanced appearance and increased recreational access.

To a certain extent prescribed fires are much less likely to occur and, if they do, are much easier to control.

The state Bureau of Forest Fire Management prescribe burns an average of 10,000 acres per year on state lands and an additional 3,000 to 5,000 acres on private land. Burns are conducted during the winter months, usually between November 1st and March 30th. This is the time of year when weather criteria and burning conditions are best for accomplishing planned management objectives.

One negative effect of prescribed burning is the visible smoke and particulate matter which can contribute to air pollution. However, burning can be done under conditions which minimize and dissipate smoke. Smoke management is an important part of prescribed burning plans. Burns are usually only conducted when prevailing winds carry smoke away from developed areas, roads or airports and never during air pollution alerts. In addition, smoke produced from prescribed burns is always less than that produced by a wildfire.

Despite this one concern, prescribed burning remains a proven management tool used successfully in the state since 1936 and even longer in other areas of the country. It is one method of harmonizing forestry management with nature yet, at the same time, providing some built-in safety factors which "let burn" does not. Prescribed burning can achieve the same management objectives as "let burn" but is considered, at least by the State Division of Parks and Forestry, to be a much safer alternative.

If the National Park Service had utilized prescribed burning rather than a "let burn" policy, it may not have faced a situation of the sheer magnitude which it did last summer or the criticism which it still continues to endure. **NJ**

A regular contributor to NJO, **Joe Hughes** is now in his 18th year of state service. Featured twice in this issue, Joe is Assistant State Forest Fire Warden.



Summer Jobs Available!

New Jersey Department of Environmental Protection
Division of Parks and Forestry, State Park Service

Meet New People

Work Out-of-Doors

Earn Money

Competitive entry level salaries up to \$7.50 per hour, with higher salaries available for experienced candidates.

Positions Available:

- Lifeguards
- Maintenance and Operations
- Visitor Services
- Clerical

Contact these State Park Service office locations for further information:

Allaire, Farmingdale, 201/938-2371

Barnegat Lighthouse, Barnegat Light, 609/494-2016

Bass River, New Gretna, 609/296-1114

Belleplain, Woodbine, 609/861-2404

Cape May Point, Cape May Point, 609/884-2159

Cheesequake, Matawan, 201/566-2161

Delaware and Raritan Canal, Somerset, 201/873-3050

Fort Mott, Salem, 609/935-3218

Hacklebarney, Long Valley, 201/879-5677

High Point, Sussex, 201/875-4800

Hopatcong, Landing, 201/398-7010

Island Beach, Seaside Park, 201/793-0506

Jenny Jump, Hope, 201/459-4366

Lebanon, New Lisbon, 609/726-1191

Liberty, Jersey City, 201/915-3400

Monmouth Battlefield, Freehold, 201/462-9616

Parvin, Elmer, 609/692-7039

Ringwood, Ringwood, 201/962-7031

Round Valley, Lebanon, 201/236-6355

Spruce Run, Clinton, 201/638-8572

Stokes, Branchville, 201/948-3820

Swartswood, Newton, 201/383-5230

Voorhees, Glen Gardner, 201/638-6969

Washington Crossing, Titusville, 609/737-0623

Wawayanda, Highland Lakes, 201/853-4462

Wharton, Hammonton, 609/561-0024

Worthington, Old Mine Rd., Columbia, 201/841-9575

Forked River Marina, Forked River, 609/693-5045

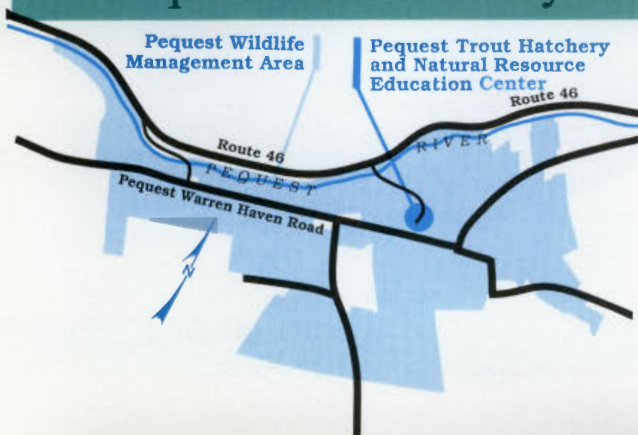
Leonardo Marina, Leonardo, 201/291-1333

Trenton Office, Trenton, 609/292-6441



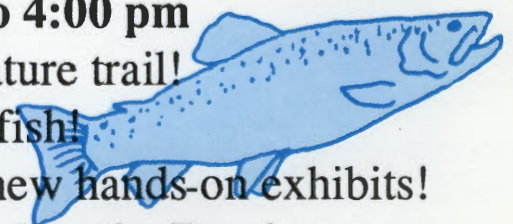
Annual Open House

Pequest Trout Hatchery and Natural Resource Education Center



**Friday, Saturday and Sunday
March 31st, April 1st and 2nd
10:00 am to 4:00 pm**

- Hike a nature trail!
- Feed the fish!
- Explore new hands-on exhibits!
- Meet Smokey the Bear!



Smokey and Rip Taylor have it Covered!



Don't Play with Matches!

THE LINK

Forest Fire Service



New Jersey Department of Environmental Protection •

Division of Parks and Forestry



Calendar

March

- 16 WOODCOCK PURSUIT. 4:30 pm search for the elusive spring suitor. Registration required. HMDC Environment Center, Lyndhurst. 201/460-8300.
 OWL PROWL. 7:30 pm slide presentation by Chris Lanna of the Raptor Trust. Bring flashlight. Pequest Trout Hatchery and Natural Resource Education Center, Oxford. 201/637-4125.
- 17-19 PROJECT LEARNING TREE/PROJECT WILD workshops. Mt. Misery Retreat Center, Browns Mills. Fee. PINES Institute of Glassboro State College (609/893-1765) and F, G and W (201/637-4125).
- 18 BIRDWALK, first of the spring season. 9 a.m. HMDC Environment Center.
 HIKE SPRING HILL AND THE PYGMY PINES. Nine mile/360° panorama of the Pinelands. Lake Oswego (3½ mi. east of Rt. 563, 8 mi. south of Chatsworth). 10 am. Bring lunch. Sierra Club. 609/267-7052.
 MAPLE SUGARING WORKSHOP 1-3 pm. Washington Crossing State Park Nature Center, Titusville. 609/737-0609.
- 19-25 "PREDATORS! They're Part of the Picture." NATIONAL WILDLIFE WEEK.



New Jersey
 Environmental
 Education Week
 April 22- 29, 1989

April

- Mar 31 OPEN HOUSE at Pequest. New hands-on exhibits, 600,000 trout and Smokey the Bear. 10 am-4 pm.
- 1-2 NATURE PHOTOGRAPHY benefits NJ Audubon Society. Somerset County Park Commission Environmental Education Center, Basking Ridge. 2 pm. Donation. 201/766-2489.
- 2 BEACHCOMBING WALK with Chris Letts, Hudson River Foundation. 10 am, Englewood Boat Basin. Palisades Interstate Park Commission. \$3/car. 201/768-1360.
- 5 NEW JERSEY TROUT. 7:30 pm discussion by Robert Soldwedel on the latest developments in F, G and W's program. Pequest.
- 8 OPENING DAY of TROUT SEASON.
- 9 BEEKEEPING. Frank Nakowski, professional honeybeekeeper, discusses the State Insect. Honey tasting session. 1-3 pm. Pequest.
- 12 TALK TURKEY. Bob Eriksen discusses restoration program of the state's largest and smartest (?) gamebird. 7:30 pm. Pequest.
- 15 3rd ANNUAL PALISADES SHAD FESTIVAL. Fishing contests, demonstrations, baking, and tasting, music and children's theatre. Ross Dock Picnic area (under GW bridge). Palisades Interstate Park Commission.
- 15 BIRDWALK. 8:30 am, HMDC Environment Center.
 PROJECT WILD workshop. Franklinville. Gloucester County Parks Commission (609/881-0845) or F, G and W (201/637-4125).
- 15 SPINCASTING FOR BEGINNERS. Reg. Req. Pequest. 1 pm.
- 21 HAIL THE CONQUERING HERO COMES, celebrating the 200th anniversary of George Washington's journey through Trenton en route to 1st Presidential Inauguration. Procession reenactment. Special

- 22-23 CIVIL WAR ENCAMPMENT featuring 2nd R.I. Regiment. Fort Lee Historic Park, 10 am-4 pm. \$3/car. 201/461-1776.
 CRYSTAL MAGIC, 17th annual gem, mineral and jewelry show. NJ Earth Science Association, William Paterson College rec center. Wayne. Sa 9-6, Su 10-5. Adm. 201/762-9358.
- 22-29 ENVIRONMENTAL EDUCATION WEEK
- 22 SPRING WILDFLOWER WALK. Poricy Park Nature Center, Middletown. 10 am. 201/842-5966.
 SWAMP STOMP. 10 am family nature walk at Lord Stirling Park, Basking Ridge. 201/766-2489.
 SPINCASTING FOR BEGINNERS (see Apr. 15).
- 23 ARBOR DAY at Pequest. Complimentary seedlings. 1-3 pm.
- 26 SOUND OF NATURE NIGHT HIKE. 7 pm. Atlantic County Parks and Recreation. Estell Manor. 609/645-5960, ext. 5376.
- 28 NESTING BIRDS. Slide program and outdoor walk. 1-3 pm. The Wetlands Institute, Stone Harbor. 609/368-1211.
 NATURE NIGHT. Poricy Park Nature Center. 7:30 pm.
- 29 NJEA ENVIRONMENTAL EDUCATION CONFERENCE. Cooper Environmental Center, Toms River. Fee. 201/270-6960.
 FLYFISHING FOR BEGINNERS. East Jersey Chapter, Trout Unlimited Workshop at Pequest. 10 am-4 pm. Reg. req.
- 30 WHARTON STATE FOREST CLEAN-UP sponsored by Burlington County Federation of Sportmen's Clubs. 9 am til ? Indian Mills Gun Club, Atsion Road (1½ mi. from Atsion Lake Ranger Station). Volunteers contact Bill Brunner, 609/424-4666.

May

- 1-7 CLEAN AIR WEEK
 7-13 CLEAN WATER WEEK

Permission Granted

By Tom Pagliaroli

The Big Flatbrook was transformed entering the wide expanse of verdant meadow. As it materialized from the stands of hardwoods and conifers, it resembled classic trout water: riffles, boulders and rocky bottom. The river was more tranquil now, the pools stretching and winding gracefully through the late spring flora. A dimple from a rising fish complemented the picture, and the rings from the surface disturbance created miniature waves that lapped for the grassy banks.

Promising indeed. I could only grip the flyrod in utter frustration as blaze orange posters and a rather angry looking fence obviated access. Another rise. Then another. A hatch of some kind was coming off, but I wouldn't get a chance to find out just what or, better yet, what was gorging on the mid-morning bounty.

Off in the distance commanding a view of the entire valley stood a brick ranch with a pickup and horse trailer parked in the driveway. This was my one day off during the week, so it was worth a shot. Twenty minutes later I stood in the same driveway, having second thoughts. I didn't get a chance to change my mind.

"Can I help you?" queried a voice behind me. I turned quickly and was face to face with whom I assumed to be one of the proprietors, a pleasant looking middle-aged woman wearing jeans and carrying a saddle blanket.

"Uh, yes. I was just wondering if I could try a few casts down on the river, if I can." Words sometimes came tough on the unawares. So much for articulation.

"We really don't like strangers on the property," she replied, "because we've had a few problems with hunters and fishermen."

Realizing that once again a few cost the many, I thanked her and started for the car. Before I could turn the key, her husband appeared beside the hatchback and motioned for me to stop.

"Listen buddy, we're sorry to turn you down, but some of these guys just don't have a conscience. We used to let people on the place, but the garbage and damage to the fences was getting out of hand. We don't want to go through that again. Sorry."

I told them I understood, wished them a good day and drove off. Who could blame them? Two weeks later I ran into the husband at a local deli. One more chance, I thought.

I greeted him with a nod, and although he

did not recognize me at first, he was cordial. I reminded him that I had been out at his house earlier in the month asking permission to wet a line. He smiled.

"You know," he began, "my wife and I were just talking about you the other day. A bunch of guys hopped the fence and were down on the creek raising all sorts of hell. Beer cans and bait containers all over the place. Almost had to call the cops to get them out. You were the only one so far this year who took the time to ask permission. If you want to fish, go ahead. Just don't use bait and throw back any trout you catch, that's all."

I thanked him but was low-key. Unfortunately, I would not be able to fish any more that day, and business would keep me out of the area for another couple of weeks. I explained that most of my fishing took place at odd hours, such as late afternoon or in the first light of the coming dawn. No problem as far as he was concerned. Just let someone at the house know that I was going to be fishing or, if too early in the morning, leave a note on my car, which was to be parked at the end of the driveway. Fair enough.

I work that particular stretch of the Big Flat on their property only twice a year returning all the trout, including one 20-inch brown that sipped in a Wulff and then attempted to pull me away to the stream's confluence with the Delaware.

Of course, there are offers to clean stalls, mend fences or cut grass, and there is a card



and a bottle of good stuff at Christmas. The invitation stands, but I do not abuse it.

In these days of increased fishing pressure and shrinking resources, the Garden State angler is pretty much forced to make do with public waters. This isn't so bad, as the DEP Bureau of Freshwater Fisheries is doing its best to provide the finest opportunities with the finances available. Yet, it remains a fact that an increasing number of ponds, lakes and rivers (or portions thereof) are coming under private ownership, and the angler is basically treated as a pariah. The hydra of negative press generally reserved for the hunting fraternity is spreading its tentacles into the fishing ranks.

Panic judgment? Not really. Accounts of trespassing are on the rise, with confrontations between owner and violator none too pretty. And it gets worse every year, as the number of streams being closed can attest.

"The bureau will not stock those waters on which the public is denied fishing access," stated one bureau official. "Landowners are growing weary of the litter and verbal assaults. They see posting as their only alternative."

A number of choice pools on the Musconetcong are no longer stocked for those very reasons. Previously, anglers were allowed on these beats by the property owners. It was a working relationship with the bureau: trout will be liberated if access is assured. No problem. That is until litter was sprouting like mushrooms, flower beds stepped on and ruined, and derisive gestures made when asked to have some consideration.

In the long run, it is the courteous sportsman who gets hurt, and it isn't getting any better.

Still, all is not lost. With a bit of common sense and patience, many anglers can gain access to waters that have been closed to the public or which have never been fished before. It may take time, perhaps a year or two, but when the proprietor gives the nod of approval, the wait seems worth it.

Such was the case on a button-sized Sussex County farm pond. Surrounded by cattails and dotted with lily pads, it looked like a bass factory. When driving by one could occasionally witness swirls and surface disturbances through the browning stalks, especially toward evening. Several times I tried to get in. Not even close.

"Don't bother to come back," was the soured reply to my initial request. I had a feeling things wouldn't be easy when I noticed bottles, cans and tattered bags along the shoulder of the tiny road. Some clods had obviously been

using the front of the house as a dumping ground when passing by. The broken fenceposts did not add any to my confidence, either. The refusal was quick in coming, and the door was shut. A month later I tried again, with the same results. Letting it sit for a year, I returned again. The reply wasn't much different.

"You don't understand English, do you?" The old man looked even more grizzled than I remembered.

Rather than being discouraged, I pursued. It was a chance for a response. An opening, if you will.

"I understand English quite well, sir. I just wanted to try a few casts on your pond. That's all. I apologize if I led you to believe I was not versed in our native language."

Sure, it was a gamble. That answer could have resulted in a volatile exchange, but I was betting it wouldn't. We eyed each other for a few seconds. He asked where I was from and my age. Was I in the area often? Did I keep everything caught? How long did I intend to stay? That last question was as close to an invitation as I could expect. I told him that an hour would do it.

"Be out by sundown, and close the fence. And let the bass go. You can keep the sunnies if you want. Some big cats in there. You can have them too, but let the bass go."

From the way the plastic worm was inhaled, I assumed that the largemouths had been undisturbed for quite some time. Within thirty minutes I caught and released four bass, two of which would easily touch the three-pound mark. Noticing a growing number of dimples in close to the bank, I ran to the car and changed outfits, flicking the cork popper along the shoreline and taking several bluegills that would have had trouble squeezing into a pie plate. They went on the stringer. Fifty-five minutes after my first cast, I called it quits.

The owner was nowhere to be seen, but I could not escape the feeling that I was being watched. I jotted down the name on the mailbox and took a few minutes to pick up as much of the ever-present roadside trash as possible. The next day a thank you card was in the mail, followed by a Christmas card that December. I let it rest until the beginning of May.

A return visit went without a hitch. The ground rules were the same, and the fishing just as good. Offers to help around the farm were refused, and I did not make an issue of it. I keep in contact during the year, but limit the fishing to three trips a season.

Angler/owner relations need not be difficult. Persistence is the key, but this is not to say

that one should become a pest. Remember that this is the owner's property, and he or she has the right to refuse anyone, including you. Too many anglers take the refusal personally without analyzing why access was denied. Granted, if the proprietor does not want fishermen on the place, that is the way it is going to be. No amount of cajoling is going to help.

Perhaps it is the angler who generates a negative image. Dirty or torn clothing does not instill much confidence in the owner who obviously rationalizes that someone who cannot take care of himself surely isn't going to go out of the way to take care of the fishing area. Sounds ridiculous, but it is a fact. Another is tone of voice and grammar. High pressure tactics or requests laced with poor grammar ("ain't" and double negatives being fatal) are insulting, no matter the financial status or level of education of the owner.

Be it a sprawling horse ranch in Hunterdon or a threadbare farm in Warren, courtesy is the key, with attire and etiquette playing pivotal roles.

Angling can get messy, but prior to an approach make sure that hands, face and clothing are relatively clean. A smile and firm handshake upon introduction illustrate confidence, and even if access is refused be gracious, thanking the proprietor for the opportunity to meet and wishing him a good day. That bit of goodwill is never forgotten. You can bet on it.


Return in a few weeks or a month and try again. A refusal must be taken as a matter of course, but do not be discouraged. If possible, get the name and address. A card reminding the owner of who you are with an apology for the imposition builds goodwill. Let it rest for the remainder of the season, and make another approach in the spring.

Should permission be granted, ask for the rules. Are any sections of the stream off limits? Is it okay to cast from the dike or only from the bankside? Should all the fish be returned, and, if not, what could be kept?

By inquiring about any restrictions, the angler gives the impression of responsibility. Any doubts the owner may have are quickly dispelled.

What also must be addressed is the matter of litter. While some may not consider a salmon egg jar, hook packet or length of monofilament any big deal, the proprietor surely will, with predictable results. Discarding any unwanted or unusable merchandise, even if biodegradable, is an affront to the hospitality extended. The household will undoubtedly take umbrage at the eyesore and justifiably so.

Do not be shy about asking to help mend a fence, split some wood or stack hay bales in the barn. A willingness to put in some sweat elevates one from casual acquaintance to possible friend. The benefits derived from perspiration can be a hundred-fold.

"Sure, go ahead and try your luck." 

A frequent contributor, **Tom Pagliaroli** is a member of the New Jersey Outdoor Writers Association.



Environmental Education

Barbara Pietrucha



Barbara Pietrucha



By Steve Perrone

The *Time* magazine cover for January 2, 1989, featured a plastic-wrapped, rope-tied globe of our "Endangered Earth" instead of the usual Man or Woman of the Year cover used in past years. Why? Because our slowly spinning planet, unlike the proverbial rolling stone, has gathered and become encrusted with polluted waterways and ocean repositories, toxic wastes in our backyards, and holes in the ozone layer. Endangered Earth is being scarred and disfigured by thousands of natural resource disasters daily.

If *Time* magazine can devote some 70 pages of an issue to educate their readers about things environmental, then we can surely devote several paragraphs to spell out our Natural Resource/Environmental Education message for our readers and the educational community in our state.

It is a tiny step when viewed from a global perspective, but we can only start small, one step at a time, in our own segment of the globe. In order to insure that our efforts are not wasted or ignored but expanded upon, then it is obvious we must make every effort to instill the environmental ethic into the minds of tomorrow's citizens. We certainly want future citizens to appreciate and even lobby for a cleaner beach, a sparkling, fishable stream, or a marvelous ecosystem like the Pine Barrens. They should be educated to believe that these natural wonders are important and vital to their own well-being. Of course, many schools and other organizations in our state are already involved in this process.

The May/June 1988 issue of *New Jersey Outdoors* featured a Natural Resources Education (NRE) insert which included two natural resource/outdoor education articles and an editorial asking New Jersey schools to send outlines and descriptions of environmental education courses taught in their districts to the magazine. At that time the New Jersey Education Association mailed the NJO Natural Resources Education insert to representatives of 8,400 schools in the state.

This past summer a college student intern in the magazine office contacted more than 600 school administrators and teachers and mailed out about 150 additional inserts to the schools that responded. In September 1988, at the beginning of the new term, about 500 NRE inserts were distributed to New Jersey school districts by the Round Table Meetings of the New Jersey School Superintendents.

New Jersey Outdoors has received nearly 75 written returns but not nearly as many as

UPDATE

anticipated. A listing describing the varied active environmental education programs in the responding schools is being developed and will be available in the near future. This source document will be updated and revised periodically as new information is received from schools that have not yet responded.

Although disappointed in the total number of responses, we were impressed by many of the natural resources courses developed in the New Jersey schools, several of which we've summarized.

In the Moorestown Township public schools, grades K through 7 and high school are involved in natural resources studies. Grades K to 6 students become increasingly aware of their part in the environment as they progress through units in organisms, life cycles, populations, abiotic factors, communities and ecosystems. In grade 7 a laboratory-based basic biology course includes the study of plant and animal populations. About 1,050 students per year take these courses.

Two electives are available to high school students: a full-year, five-credit course titled Environmental Science, and a three-credit, one semester course, Environmental Geology. About 50 students elect these courses each year.

An active program in the Wayne Township public schools includes an Outdoors Laboratory and Environmental Discovery Center for grades K to 4 and special education classes. It serves over 2,500 children per year. Highlights of the Center include a walk-in aviary and an indoor frog pond for "critter catching."

A Resident Camp program involves all 5th grade students in 2½-day environmental education learning experiences and serves nearly 500 Wayne Township students each year.

The Egg Harbor Township High School Environmental Science course is designed for the college-bound student. The course has 29 environmental science objectives, and the content outline is three pages long. Minimum proficiencies include eight items that students will be able to accomplish. As examples, three of the items are listed below:

1. Define ecosystem, habitat, and niche.
2. Discuss the different levels involved in a food chain and the interactions involved in a food web.
3. Describe the influences of climate on species distribution.

In the Howell Township public schools, the grades involved are Pre-first to 8. The yearly programs are divided into two areas:

classroom and outdoors experiences. There are separate field trips for each grade level as well as separate content outlines.

Each grade level has about 27 classes and the total student population in the district is 4,500. Some sample outline titles are:

Grade 2. Environmental Observations

Grade 3. Cycles in Nature

Grade 6. Pollution/Ecology

The natural resource/environmental education courses in the Runnemede Public School are a part of the science and social studies curricula. The grades involved are K to 5. Among class activities are:

Grade 2. The Water Cycle, which includes science text, activity sheets, films on pollution and discussion.

Grade 5. Water Pollution, which includes experiments with oil and water, feathers and cotton to illustrate how pollutants can kill wildlife.


The Greenwich Township public schools environmental education courses are included in the science curriculum. Grades 1 to 8 are involved. According to their outline:

Grade 1. Students will demonstrate an understanding of the importance of air and water by suggesting ways in which water and air can be kept clean.

Grade 5. Students will demonstrate an understanding of energy conservation by explaining why conservation of energy is important and listing ways to conserve energy both at home and at school.

Grade 7. Students will demonstrate an understanding of conservation by explaining how topsoil works, suggesting methods of conserving forests, and designing experiments to demonstrate the results of water pollution.

At Greenwich, the proficiencies required in each grade level begin with a few in the lower grades up to 10 or 12 in the upper grades.

The above is a sampling of what some New Jersey schools are accomplishing in the area of natural resources education. The staff at NJO thanks all the schools and districts who provided us with descriptive information on the state of environmental education in New Jersey. For those whom we have not heard from, *New Jersey Outdoors* would like to know what your school is doing in this area. Send us your course outline, grades involved, number of students completing courses each year, course titles, objectives, and the name, telephone number, and title of your environmental education coordinator. 

Neptune environmental science students spend the first week of school in residence at the New Jersey School of Conservation in Branchville.

School "afloat" experiences sensitize Neptune ninth graders to themselves, their peers and their environment.

After 15 years at the helm, former NJO Editor **Steve Perrone** "retired" with the S/O 1988 issue but continues his active commitment to environmental education.

Natural Resources Education
New Jersey Outdoors
401 East State Street
Trenton, NJ 08625-0402

Mayfly nymph.

Along this stretch of the Big Flatbrook, trout and the waters test the fly fisherman's skills.



Allen G. Eastby

Nymphs to the Rescue

By Allen G. Eastby

Let's face it: it's getting steadily more difficult to take trout. The competition is already fierce, and every year there are more and more anglers on the streams. Whether veterans or newcomers, the flyfishers flocking to our trout waters are well prepared. They've read all the books, attended special schools, studied entomology, and practiced casting on the lawn. They're first rate trout chasers, willing and able to give anyone a run for his trout stamp fee. And the trout? They seem to grow smarter day by day, quickly learning how to humiliate even master anglers. What's a flyfisher to do?

There are always visits to fabled waters far from home. But few of us can afford to spend our weekends in Labrador or Alaska. The crowds on the Beaverkill are as thick as those on the Big Flatbrook, and even on Henry's Fork there are days when you have to wait your turn to cast. You can always try to outdo the competition and become an expert on aquatic science or a keen caster. Then, if you don't catch fish you can at least say you enjoyed your troutless day on the Musconetcong. But that's not why we go fishing. We go fishing to catch fish, even if we release them. So what are we going to do in the face of growing competition on streams where the trout hold graduate degrees in humbling anglers?

Some shrewd flyfishers have the answer. They sit back, relax, and let nymphs come to the rescue.

Of course, every flyrodder uses nymphs. They're immensely popular. But they can be, and should be, used to better advantage.

Imitation or Impression

One problem that has always bedeviled anglers turning to nymphs is whether to use flies that actually imitate the creatures living in trout streams or patterns that are impressionistic representations of "something good to eat." The debate over this has been going on since the first fly was devised and shows no sign of letting up. Which is great since it gives us something to talk about on cold winter nights when sleet is rattling against the window panes. But facing today's super-selective trout in heavily fished streams, anglers using "impressionistic" nymphs are stacking the deck against themselves.

For example, one of the classic "impressionistic" patterns is the "Muskrat Nymph." It's a good fly and still catches its share of trout. But a few simple modifications transform it into a nymph known as "Muskrat Love," a first rate imitation of a dozen varieties of aquatic larvae commonly found in our streams. Which is likely to be the most effective fly? The answer is obvious.

It's also obvious that it would be impossible to tie, carry, and use imitations of every bit of trout food. But that's not necessary. A basic selection of a dozen or so patterns will enable the angler to imitate virtually all the aquatic insects trout are likely to see and eat. Then too, by limiting the number of patterns carried, flyrodders will spend less time changing flies and more time fishing.





Basic Box

The essential nymph selection *must* include both caddis larvae and mayfly nymphs supplemented with a few "oddities" (such as the "Muskrat Love" and similar patterns) and a number of stonefly nymphs (especially black, amber, and, if there is room in the flybox, red).

The caddis larvae should include olive, brown, pale yellow, and black patterns. All of the popular styles of tying caddis nymphs are effective, but some anglers swear by caddis with dyed or tinted latex bodies while others prefer flies with bodies of "sparkle yarn."

There are four essential mayfly patterns, red-brown, olive-brown, yellow-brown, and dark brown. These flies should be tied in a wide range of sizes.

With only a relatively few patterns to worry about, flyfishers can concentrate on learning how to fish them and when and where specific patterns are best. Indeed, this is the key to consistently successful nymphing, discovering where, when, and how to use nymphs.

For instance, only actual fishing teaches you that on the South Branch of the Raritan yellow-brown mayfly nymphs fished deep and slow are best in the stretch upstream from the Ken Lockwood Gorge, while in the Gorge gray caddis and black stoneflies are outstanding. Experience will guide you to select a small red-brown or olive-brown mayfly nymph for morning fishing on the Big Flatbrook in June and a larger yellow-brown mayfly pattern during the afternoon.

Nymphs from Bottom to Top

All too often, flyfishers think in only one dimension, especially when it comes to nymphs. Nymphs, it is firmly believed, are meant to be fished below the surface. Yet the most effective "dryflies" are nymphs.

During a hatch, that is when aquatic insects are undergoing the transformation from immature nymph to mature fly, trout prefer to feed on the nymphs at the moment of metamorphosis. Frequently, they will ignore the adult mayfly or caddisflies completely and eat only insects floating near or on the surface as they struggle to shed their nymphal skins. Other times they'll take both adults and nymphs. But the fish would always rather take nymphs.

Think about it for a moment. It requires a lot less energy to sip in a nymph than it does to chase a fluttering dun or sedge. And as we all know, trout are aware on a deep, instinctual level that they have to conserve energy if they are to stay alive in a cold, swiftly flowing stream.

Taking advantage of this is relatively simple.

All the flyrodder needs to deal with rising trout is a selection of emergers, nymphs that float. To create effective emergers is easy. All that has to be done is to tie nymphs on light wire, "dryfly" hooks. In place of fur or latex, polypropylene or polyester is used for bodies, polypropylene yarn for wingcases, and stiff, high quality hackle fibers for tails (on mayfly patterns). Eight patterns (four mayfly emergers and four caddis emergers, in the same colors used for more traditional nymphs) in a range of sizes will enable an angler to face virtually any hatch with confidence, if he or she knows how to fish a nymph that is only slightly damp.

Emergers should be fished exactly as you would fish a conventional dry fly, upstream, dead drift, drag free, most of the time. But many nymphs create a considerable commotion as they struggle to shuck their nymphal sheaths. Others swim forcefully as they rise from the stream bottom or, in a few cases, head for the shore or the shallows. Faced with this, flyrodders have to manipulate their flies.

Although intentionally imparting movement to dry flies is no longer considered the high heresy it once was, few anglers are actually willing to give it a try. They should. It does take a little practice, though, to get floating nymphs to move *just so* and no more. But it's worth it. It also takes a little time, and some patience, to learn when a twitch or two is necessary. A few minutes spent observing what is going on along the surface of the stream, however, is the best investment a fly-fisher can make. See how the nymphs behave, and then try to make your fly mimic the antics of the naturals. Easy it's not. And you may get laughed at. But you'll have the last laugh when you catch a trout on a floating nymph twitched ever so gently so it bobs and rocks in the flow.

When in Doubt

However good your flies and tactics are, inevitably there will be days when nothing works. The trout will be on strike, refusing perfectly tied imitations of *Ephemerella subvaria* and delightfully juicy-looking impressionistic morsels of fur and feathers. Or perhaps you're on new water, an unfamiliar stream or stretch, and you have no idea what kinds of nymphs the fish expect to see. When all else fails, when you're at your wit's end, when your confidence is faltering, it's time to reach into the flyrodder's bag of dirty tricks.

When you say "fly," most anglers immediately think of a perfectly tied Light Cahill or Red Quill, classic dry flies of the so-called "Catskill School." But there are other flies, if you can properly call them that, and some of them are just what you need when all else fails

or when you're in doubt about what to cinch onto the business end of your leader.

One of the best of these "things" is a pattern called the "Swimming Leech." Originated by well-known mid-west trout angler Dave Engerbretson, it is a simple fly, essentially a dubbed body and a long "tail" of marabou. Fished slow and deep, either dead drift or barely crawled along the bottom (using a slow-paced "hand-twist" retrieve), it drives trout, especially stocked trout, crazy. Particularly useful on ponds and lakes, the "Swimming Leech" is also one of the best flies to use when exploring new water. But you have to be prepared for "short strikes." Trout will often nip at the trailing "tail" of marabou plumage, missing the hook entirely. Don't let that worry you, however. Note the fish's location and come back in ten minutes with a caddis larva or a mayfly pattern. Chances are, now that you have the trout's attention, you'll be able to catch it.

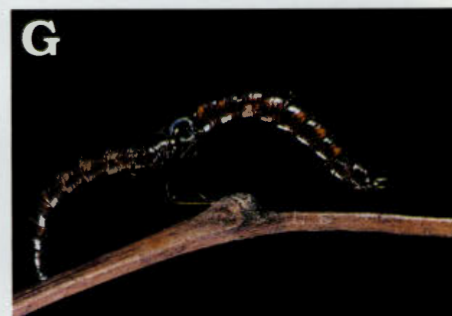
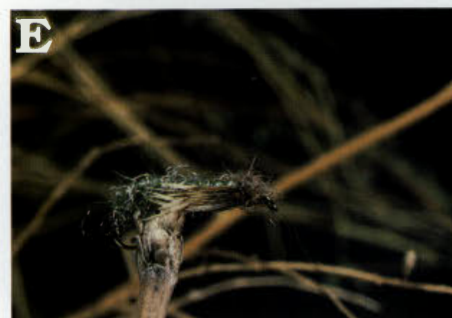
Another "fly" that can turn a fishless day into one to remember is the "Wormy" (also called the "Grub Street Special"). It is an "imitation" of a "natural," an earthworm. Originally intended to be fished after rain had raised and discolored streams, it is also a good choice early in the season when bait anglers are supposed to have the edge. The "Wormy" is fished exactly as you would fish a bit of "live bait," deep and slow, rolling right along the bottom. Let the current impart action to the fly. Keep alert, because the fish will often take this "fly" gently, and the "strike" is usually a barely noticeable "tap."

Perhaps the "Swimming Leech" and the "Wormy" aren't strictly "flies." (Whether or not the "Wormy" meets the "legal" definition of a "fly" is a moot point. An artificial lure it surely is, but a fly?) They can spell the difference between catching trout—and storing up memories to keep you warm during the winter—and going home with nothing but a new load of frustrations.

There's no use denying it: fishing with nymphs isn't necessarily easy. It requires thought, patience, and a little study. But it's worth the effort since it brings trout to net.

So don't let the competition get you down. Too many anglers and not enough water are the realities we face every season. Have the trout become too selective, too sophisticated? Look on it as a challenge. Then ease off a bit. Take a deep breath. Try some new flies, nymphs of course, even if they are out-of-the-ordinary. Try some old favorites, but fish them in new ways. Use your eyes to see what's going on around you. And let nymphs come to the rescue.

Familiar to the NJO family as an avid trout fisherman, published historian and photographer, **Allen G. Eastby** appeared in the M/J 1988 issue with "The Revolutionary War's Longest Day."



Photos by author

A

B

C

D

E

E

F

G

IMITATION OR IMPRESSION?

A. Muskrat Nymph

Hook: Mustad #9672, sizes 8 through 16

Thread: Gray

Tails: Dun hen neck feather fibers

Body: Muskrat fur dubbing

Hackle: Medium dun hen neck

B. Muskrat Love

Hook: Mustad #9672, sizes 8 through 16, or tied as a "wiggly nymph"

Thread: Gray

Body: Muskrat fur dubbing

Hackle: Medium dun hen neck palmered over front half of body

BASIC NYMPHS

C. Caddis Larva

Hook: Mustad #37160, sizes 20 through 16

Thread: Color to match body

Abdomen: Latex, dyed or colored with a marking pen

Thorax: Fur dubbing

Hackle: Partridge, dyed or natural

Colors: Olive, Brown, Pale Yellow, and Black

D. Mayfly Nymphs

Hook: Mustad #9672, sizes 20 through 10

Thread: To match body color

Tails: Soft feather fibers, mottled brown (use grouse, partridge, or pheasant)

Wingcase: Turkey quill segment or colored latex

Hackle: Partridge, dyed or natural

Body: Polyester dubbing ("seal substitute" or shredded "Aunt Lydia's Rug Yarn")

Dubbing blends:

1. 2 parts red-brown, 1 part buff, and 2 parts golden tan
2. equal parts medium olive, gray, and medium brown
3. equal parts buff, golden tan, and brown
4. 2 parts dark brown, 1 part buff, and 1 part golden tan

NYMPHS FROM BOTTOM TO TOP

E. Emergers ("floating nymphs") are simply nymphs tied on light wire hooks. In place of latex bodies, caddis emergers are tied with dubbed bodies. Especially good is a dubbing blend made of polypropylene and shredded "sparkle yarn." Mayfly emergers incorporate "wingcases" fashioned from lengths of polypropylene yarn and tails of stiff, "dryfly grade" hackle. If thoroughly treated with a good quality silicone fly floatant, emergers will stay where they belong, right on the surface.

Use the same colors and dubbing blends for emergers as you would for regular, sub-surface nymphs.

WHEN IN DOUBT

F. Swimming Leech (originated by Dave Engerbretson)

Hook: Mustad #3906, sizes 12 through 6

Thread: Color to match body

Body: Fur or polyester dubbing

Wingcase (optional): Turkey quill segment

Hackle (optional): Partridge, natural or dyed

Tail: Marabou

Colors: Black, olive, pale green, pale yellow


G. Wormy (a.k.a., Grub Street Special)

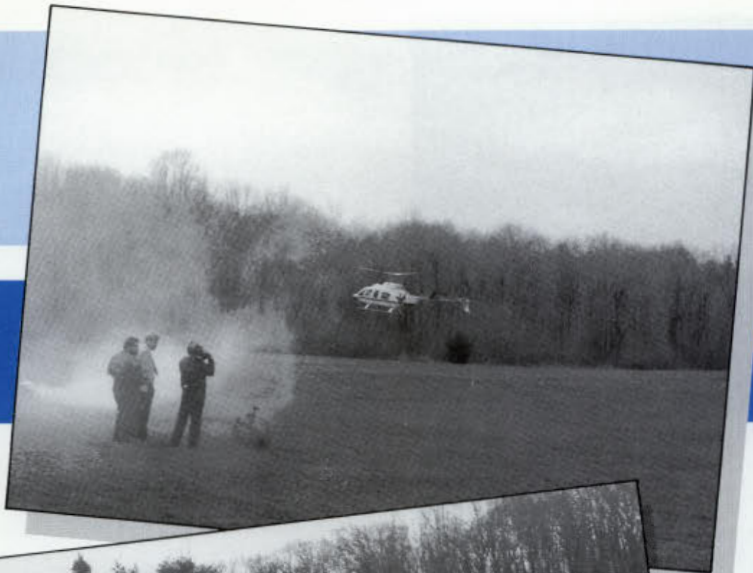
Hooks: Two Mustad #37160, sizes 18 and 20, tied as a "wiggly nymph"

Thread: Brown

Underbody: Dark gray-brown yarn

Overbody: Medium brown

"translucent" Swannundaze 



7
days
aren't
enough!



Environmental Education Week

By Kim Dewling

Spring, the season of renewal, is a beautiful time of year in New Jersey. Trees are leafing, flowers are beginning to bloom and animal activity abounds. Spring is also an opportune time to enjoy and better appreciate our environment; to learn how valuable it is, what is happening to it and how we, as residents of New Jersey and citizens of the United States, can help to preserve and protect our environment for future generations. One way is to get involved in Environmental Education Week, celebrated this year April 22-29.

Governor Thomas H. Kean has, in recent years, proclaimed this week in April, during which Earth Day is celebrated, as New Jersey Environmental Education Week. The first Earth Day, April 22, 1970, is regarded as having launched the environmental movement in the United States. Also on that date the legislation that created the Department of Environmental Protection (DEP) was signed into law. This year, the DEP and the Alliance for New Jersey Environmental Education (ANJEE) are co-sponsoring the Environmental Education Week celebration.

The goal of Environmental Education Week is to encourage and promote a knowledgeable, appreciative and responsible environmental attitude among New Jerseyans. From the beginning, Garden State residents have celebrated Environmental Education Week in a variety of ways. To kick off 1988's Environmental Education Week, an assembly program was held at Grice Middle School in Hamilton Township. Students discussed the affects of balloon launches, plastics, and other forms of pollution on the environment with then-DEP Commissioner Richard T. Dewling. Following the discussion, Dewling presented the Environmental Education Week proclamation, signed by Governor Kean, to middle school teachers Saula Cutter and Jan Wilson.

Cutter and Wilson are facilitators of Project Learning Tree and Project WILD, two of the best-known environmental education projects in the country. These projects, distributed to New Jersey teachers of grades K-12 by the DEP, encourage children to become aware of natural resources and sensitive to their responsibilities for preserving them.

In 1988, Arbor Day followed Environmental Education Week and the stewardship of our natural resources was continued. The New Jersey State Police helicopter flew Woodsy Owl and Smokey the Bear to four schools in northern New Jersey, delighting hundreds of wide-eyed environmentally conscious students and their teachers.

At each stop, an abbreviated environmental education and Arbor Day program was given, while our furry and feathered friends handed out tree seedlings to the audience. This year, Arbor Day falls within Environmental Education Week. At the invitation of several school districts, Smokey and Woodsy are planning to make several stops in the northern and central portions of the state.

Thanks to the hard work and dedication of individuals throughout the state, 1988's Environmental Education Week was a big success. But 1989 promises to bring bigger and better opportunities for everyone's involvement.

"Environmental Education Week 1989" includes a host of activities, from fishing for that favorite catch to walking a nature trail. The theme, "Helping to Support What Supports Us," invites and encourages everyone to take part in the celebration.

Northern

Feel like canoeing? Then take advantage of the Passaic River canoe trip, being sponsored by the Somerset County Environment Center on Saturday, April 22. Perhaps you have always wanted to learn how to fish. On the same date, Pequest Trout Hatchery and Natural Resource Education Center will have "Fishing for Beginners."

Weis Ecology Center (201/835-2160), nestled in the Highlands of northern New Jersey, is sponsoring an Arbor Day tree-planting program on Sunday, April 30 at Norvin Green State Forest. Free tree seedlings, grown at the DEP tree nursery in Ocean County, will be given to attendees.

Central

For educators, Cooper Environment Center (201/270-6960) in Toms River is hosting the New Jersey Education Association's (NJEA) annual Environmental Education Conference on Saturday, April 29. The DEP tree nursery

Environmental Education Week encompasses Earth Day and Arbor Day outreach activities.

in Jackson will be harvesting and shipping nearly 300,000 tree seedlings throughout the state for reforestation and erosion control projects.

Southern

For the animal enthusiast, Atlantic County Parks is sponsoring a live animal demonstration at Estell Manor Park's Nature Center (609/625-7000, x 5376) on Sunday, April 23. Or maybe you would like to take a night hike. If so, you can participate in their "Sound of Night" program on Wednesday, April 26.

For more information about these and other Environmental Education Week activities being planned in your area, contact the New Jersey Audubon Center nearest you after April 1: Lorrimer Nature Center, Franklin Lakes, 201/891-2185; Scherman-Hoffman Sanctuary, Bernardsville, 201/766-5787; Rancocas Nature Center, Mt. Holly, 609/261-2495; and Owl Haven Nature Center, Tennent, 201/780-7007.

The DEP has available for teachers and youth leaders interdisciplinary and supplemental activity packages, designed to be used for Environmental Education Week and throughout the year. If you would like ideas on what you or your group can do to celebrate Environmental Education Week or would like to receive an activity package, write:

DEP Office of Communications
and Public Education
401 East State Street
Trenton, NJ 08625-0402
609/633-1317

Environmental Education Week is more than a time to enjoy spring in New Jersey. It is a time to focus on what we have done and where we are going; a time to instill in each of us commitment and dedication to preserving our environment so that we can celebrate Environmental Education Week in years to come. Whether you are a mayor, teacher, parent, student or concerned citizen, this is your chance to get involved and make a difference in the quality of your environment.

Earth Day 1990

Looking ahead to the future, planning for Earth Day 1990 is already underway. Activities will not only happen on a state level but also on a global level.

Scheduled for April 1990 is an International Earth Day titled "Earth Day 20, 1990." Organizers want to rekindle the worldwide involvement that was sparked by Earth Day 1970, for people to work harder in rebuilding our environment and making it safe for the future.

Earth Day 20's mission is to communicate to ordinary people in every nation information about the urgent environmental challenges that face mankind by providing an international platform for scientists, government leaders, concerned citizens and environmental leaders to communicate their concerns; to seek consensus among the world's peoples leading to effective international cooperative actions to stem or reverse environmental degradation of the earth's atmosphere, land and water.

Beginning this month, scientific and academic leaders will meet to share information and form teams to develop papers for addressing major global environmental challenges such as the greenhouse effect and acid rain. These papers will be compiled into a comprehensive *Earth Day 20 Report on Global Environmental Issues* that will be available through the United Nations Environmental Program.

International events will include concerts in major cities around the world, expositions illustrating environmental problems, live satellite broadcasts of Earth Day 20 events and a climb up Mt. Everest involving Chinese, Soviets and Americans. Local communities will be given help and encouragement to establish their own activities.

To learn more about Earth Day 20, write the DEP Office of Communications and Public Education.

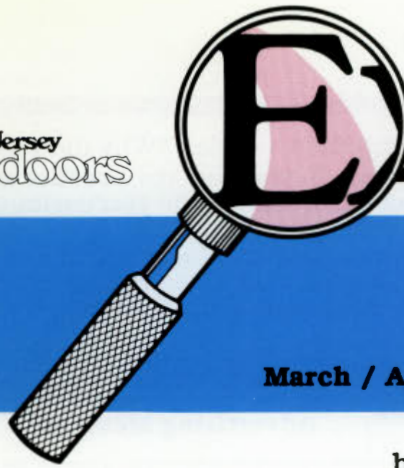
The Alliance for New Jersey Environmental Education (ANJEE) is an organization comprised of teachers, youth leaders, corporations, and government members who are interested in our children and environment. The Alliance was formed four years ago to unite different resources, bringing professionals together for knowledge sharing and to create a communications network.

ANJEE's goal is to create through education an awareness, understanding and conviction that human well-being is dependent upon a healthy environment. ANJEE is a focal point for individuals, as well as groups, that teach and are concerned about the environment. The DEP and ANJEE share this dedication of protecting, preserving and conserving our environment and the need to inform and encourage the public to participate actively in this ongoing effort. For more information on ANJEE, write:

Ross A. Zito
Somerset County
Environmental Education Center
190 Lord Stirling Road
Basking Ridge, NJ 07920
201/766-2489

Making her NJO debut, **Kim Dewling** is a communications specialist in the DEP Office of Communications and Public Education.

Explorer



March / April 1989 Issue Number Four

Teachers and Scout Leaders

Write to *New Jersey Outdoors* to receive a copy of *Here Today, Here Tomorrow — Revisited*, *A Teacher's Guide to Solid Waste Management*.

Here Today, Here Tomorrow

"Here Today, Here Tomorrow" is something your mom might say if she sees your room in the same condition as it was yesterday and the day before that and the day before that - a MESS. She expects to find it in the same condition tomorrow as it is today. After she scans the room for the next minute or so she might say, "When will you pick up this garbage?" or "If you don't have this room cleaned up in two hours, I'm going to throw everything in the trash."

Here Today, Here Tomorrow is not about a messy room

but what your mom calls the stuff in it - Garbage! It is a book for teachers and scout leaders that is filled with fun activities for you! All the activities, some of which are on the next page, are about solid waste. **Solid waste** is a nice way to say garbage, trash or the stuff we no longer want.

New Jerseyans produce a lot of garbage, approximately 5.5 (or 5 1/2) pounds a day! Multiply that by the 7.5 million people that live in the state and you get _____ pounds of solid waste to get rid of today, tomorrow and all the tomorrows yet to come.

Where does all this solid waste go? Approximately 15% is **recycled** into new products. Of the remaining 85%, nearly 55% is trucked and **buried in landfills** in other states, 45% is buried in New Jersey landfills and less than 1% is being used for testing a **resource recovery** plant (a factory that burns trash to boil water, to make steam, to generate

electricity) in Warren County.

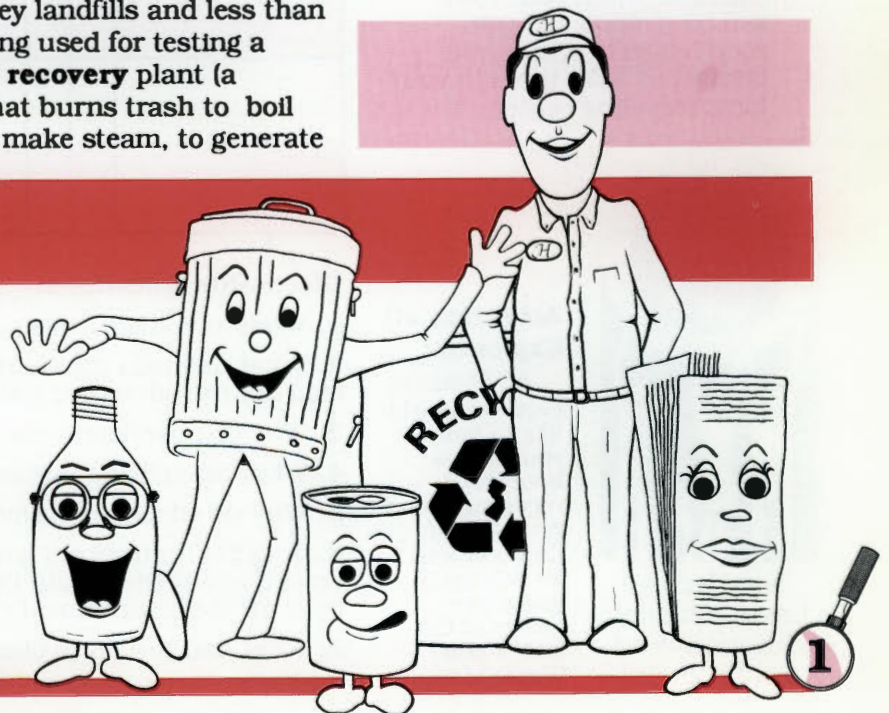
Solid waste, much of which is packaging from the things that we buy, is made of valuable natural resources.

Natural resources are plants, animals, water, air, soil and minerals. In other words, they are the things that in whole or in part support our lives. Some of these natural resources can never be replaced once they are used. We aren't **conserving**, or wisely using, these natural resources when we create too much packaging or don't recycle.

Maybe the title *Here Today, Here Tomorrow* means something different. What do you think that might be? _____



These are DEP's Solid Waste Mascots- Garby, the garbage can; the Recycling Bin; Hector R Collector; and the bottle, aluminum can and newspaper.



Answers to the questions above:

- 41,250,000 pounds of solid waste every day
- Let's conserve our natural resources today so we will be able to depend on them tomorrow.

Explorer in Action

Join the Department of Environmental Protection in celebrating Environmental Education Week (EE Week), April 22-29, 1989. EE Week is a good time to look at how we use the natural resources that make up the environment. It is also a good time to change our habits to improve the quality of our environment. Here are some ideas:

- When buying snacks, choose varieties that have the least amount of packaging.
- Make a compost pile for leaves and grass clippings. Composted leaves make good fertilizer and help keep water around plant roots. Also, no New Jersey landfill accepts leaves. Write to Explorer for composting directions.
- People do a better job recycling when it is easy and convenient. Follow these steps to make recycling easy for everyone at your house:
 1. Find a convenient place for your home's recycling center. This could be the garage, a storage closet, a corner of the kitchen or under the kitchen sink.
 2. Put your recyclables in sturdy, leak-proof containers. Label each container.
 3. Mark the days on the family calendar when your town will be picking up your recyclables or when your family can take them to your local recycling center.



New Jersey
Environmental
Education Week
April 22- 29, 1989


Attention all Explorers:

NJ Outdoors Explorer would like to know your tips on household recycling. Send your tips to Explorer and we will send you a free poster of the DEP's Solid Waste Mascots.

Why Buy Me?

Did you ever buy something and then wonder, "Why did I buy this?" Often the answer to this question is you saw the product advertised somewhere and the way it was advertised made you curious enough to buy it.

Here is a chart and some questions for you to complete and answer with your family or friends. A good time to do this activity is when everyone is together like after supper or while watching television.

 Name and Type of Product	Where did you see or hear the ad?					Advertising Messages							
	Television	Radio	Magazine	Newspaper	Other	It will make you look wealthy.	It is "new and improved."	It is convenient.	It will make you feel good about yourself.	It is recyclable.	It is safe for the environment.	It has little packaging.	Boys/girls will think I am more attractive.
example: <i>Sudso-Laundry Detergent</i>		X					X						

Discussion Questions:

1. What advertising message was used most often?
2. What methods (like cartoon characters, famous people, animals, etc.) did the advertiser use to get his message across?
3. Why do advertisers use these methods?
4. What advertising message was used least often?
5. Why do advertisers avoid using these messages?
6. Judging from your survey, why are or why aren't advertisers concerned about the effects their products and the product's packaging have on the environment?
7. What can you do to change the way products are advertised?

Bicentenary Celebration

"Hail the Conquering Hero Comes," a special exhibition commemorating the bicentennial of George Washington's triumphal journey through Trenton as the first President-elect, opens at the Old Barracks Museum on April 21. Part of New Jersey's reenactment from April 21-23, the exhibition features a partial reconstruction of the flower and laurel festooned Triumphal Arch under which Washington rode enroute from Mount Vernon to New York City. One of the 13 ribs that formed the original 20-foot arch on the north side of the Assunpink Creek, scene of the Battle of Trenton and the Battle of Assunpink (see NJO N/D 1988), highlights the display.

The Old Barracks Museum, a Registered State and National Historic Landmark, is located adjacent to the State Capitol. Administered by the Old Barracks Association, it is a state-owned historic site. For information on the Trenton celebration and exhibition hours, call the Old Barracks Museum at 609/396-1776.



1989 New Jersey State Park Pass

More than 300,000 acres of recreation and relaxation await you this year in the New Jersey State Park System. If you frequent any of the more than 100 parks, forests, recreation and natural areas or historic sites, or if you plan to discover them this year, the New Jersey State Park Pass could mean a savings over the payment of daily walk-in or parking fees. Possession of a pass permits free entry when facilities are not already filled to capacity. It is not valid for buses.

To obtain an application for the \$35 pass, contact your local state park office or the Trenton central office:

New Jersey State Park Pass
NJDEP, Division of Parks
and Forestry
501 East State Street
Trenton, NJ 08625-0404
609/292-2797

Landscaping To Save Water

Before you plan a new landscape or renovate existing shrubbery, "Landscaping for Water Conservation" should be on your must read list. Published recently by Rutgers Cooperative Extension, this illustrated, 24-page guide can help you select an eye-pleasing combination of design, plants, mulches and watering techniques that will improve outdoor water use efficiency.

The publication contains information on watering and water conservation, drought-tolerant plants and ground covers. Single copies are available by contacting your county office of Rutgers Cooperative Extension or writing:

Office of Water Conservation
NJDEP, Division of
Water Resources
401 East State Street
Trenton, NJ 08625-0029



New Jersey
Environmental
Education Week
April 22- 29, 1989

Wood Duck

By Lee Widjeskog

The wood duck is a small to medium-sized duck commonly found on the creeks, rivers and swamps of New Jersey from March to November. From a distance this bird appears dark colored with a light belly. However, when seen up close or with the aid of binoculars, the regal beauty of this duck becomes apparent.

The male has a crest of feathers which contains hues of green and purple. The eyes are red and a white line marks the chin, throat and bill. Another line runs from the bill along the side of the crest to the back, perfectly outlining the head. The chest is burgundy flecked with white, while the breast and belly are white and the back a purplish black. The female is cloaked in olive-brown along her back with brown flanks and white under parts. A distinctive white, tear-drop shaped patch encircles the eye and tapers back toward the crest of the head.

The call of the wood duck hen is as distinctive as the male's plumage is colorful. The female does not quack but emits an eerie call of "wee-e-e-k, wee-e-e-k" that is heard when she is disturbed and forced to leave the area. The male, on the other hand, utters only a soft and seldom heard "twee, twee."

The wood duck nests in tree cavities or in artificial nesting structures. A desirable nest cavity has a three to four-inch diameter entrance at a point from six to 60 feet above the ground. The cavities will be 14 to 36 inches deep. They are seldom found in evergreens and are most often found in beech, sycamore and other hardwoods with a trunk diameter of 16 inches or more. The ideal nest would have a southern exposure, be dry, be difficult for predators to enter and be located over or very near water.

During March and April, the female selects the nest cavity and by late April will have laid up to 14 eggs in the nest which she has lined with down from her breast.

After about 30 days of incubation, the young hatch. The female generally does all the incubation. During this time she leaves the nest only twice a

day, for up to an hour in the morning and again near dusk. The length of time gone depends on the air temperature, since the eggs are covered with only a layer of down and must not be chilled or the embryos within will die.

Once the eggs have hatched and the young have had a chance to dry their feathers and gain a little strength (about 24 hours), the hen will call them from the nest cavity to search for food. She does this by flying to a nearby limb or down to the ground and calling the newly-hatched ducklings. They respond to her calls and one by one climb up the sides of the cavity, perch for a second on the lip of the entrance, and then jump to the ground. Their lightweight, small fluttering wings and downy covering act as a natural parachute and allow them to land unharmed.

The young are then led by the hen to the nearest water which may be as far as one-half mile from the nest. There in the seclusion of low shrubs and tree branches overhanging the water, she teaches her young to find the insects and seeds needed for growth and survival.

In its early stages of life, the wood duck feeds heavily upon insects and various high protein invertebrates. As it gets older, its diet becomes primarily vegetative. It avidly seeks acorns but will also take the seeds of hickories, buttonbush, arrow arum, burreed and grains such as wild rice.

While she is laying eggs, the female will switch to invertebrates for their high protein content. She returns to a predominantly plant diet once incubation has begun.

Hens stay with their broods constantly for four to six weeks and only then begin spending time away from them. By the age of eight to 10 weeks the young are capable of flight and spend more and more time on their own in preparation for the independence that comes when migration begins.

The wood duck begins to migrate from New Jersey as early as late Sep-


tember with the major exodus taking place in October. The exact timing is dependent upon weather and food supplies.

When they leave, wood ducks journey to Georgia and Florida for the winter. By late February they have begun their return, and pairs once more look for appropriate nesting structures to begin nesting.

The wood duck was at one time on the brink of extinction when the combination of market hunting, unlimited seasons and habitat destruction in the late 1800s caused the population to drop to very low levels. Complete protection of the birds, human enhancement of the environment by the employment of nesting boxes and restoration of the natural habitat eventually led to the remarkable comeback of this native bird.

Today in New Jersey the wood duck population is at its highest level in 80 years. However, human population pressures again threaten this bird. This time the culprit is not the market hunter or the sportsman but "progress" in the form of new housing development, changing farming areas, road construction, flood control projects and mosquito control efforts. These projects make streams and swamps unusable for nesting wood ducks, thus reducing populations within that area.

Habitat management, in the form of nest box construction and maintenance, can help the nesting birds but does nothing for the brood-rearing habitat lost to draining and filling. Without this habitat ducklings may hatch, but their chances of ever reaching flight age are slim at best. Only through preservation of existing habitat and proper waterfowl habitat management can we expect the wood duck to survive in New Jersey.

New freshwater wetland laws will control and reduce this destruction, but the future of the wood duck in the Garden State is dependent upon how much suitable habitat we the people of the state are willing to set aside as state forests, refuges and wildlife management areas. 



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NATIONAL WILDLIFE WEEK
MARCH 19-25, 1989

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