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OUTDOORS



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NEW JERSEY OUTDOORS is the bi-monthly magazine of the Department of Environmental Protection of New Jersey. This publication is dedicated to the wise management and conservation of our natural resources and to foster a greater appreciation of the outdoors.

(Note: Costs of publishing the magazine not covered by subscriptions are met primarily from the Fish and Game License Fund, administered in the Department of Environmental Protection by the Division of Fish, Game, and Shellfisheries, and from general revenues available to the Department of Environmental Protection.)

Second-class postage is paid at Trenton, N.J. and additional mailing offices. Subscriptions are \$3.00 per year and three years for \$8.00 payable by check or money order to New Jersey Outdoors Mailing Office, P.O. Box 1809, TRENTON, N.J. 08625. Change of address should be reported to the above address. Send old and new addresses and the zip code numbers. The Post Office will not forward copies unless forwarding postage is provided by the subscriber. Allow six to eight weeks for new subscriptions and change of address to take effect. Unsolicited material is sent to the magazine at the risk of the sender. Permission granted to reprint with credit to New Jersey Outdoors. Publication office at 3885 Quaker Bridge RD, Mercerville, New Jersey, 08619.

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from the editor

Wildlife Needs You

The title is the theme of National Wildlife Week, March 19-25, 1978, illustrated by the photograph of the young peregrine falcon on our back cover this issue. The adult peregrine is considered the fastest of our birds of prey, attaining speeds of up to 200 miles an hour as it dives on prey.

In New Jersey, our endangered species project, a unit in DEP's Division of Fish, Game and Shellfisheries, participated in a peregrine hacking program in which young peregrines from the Cornell University Peregrine Fund were placed in peregrine nesting towers at three locations in our state. Several Cornell University biologists fed and observed the peregrines until they were ready to fly and hunt their own food. A total of 21 peregrine falcons were raised and released over a period of three years. New Jersey was the first state to cooperate with The Peregrine Fund of Cornell University.

Our Wildlife Week poster tells us that *Wildlife Needs You* . . . the legislator: to understand conservation issues; to demand a quality environment with room for wildlife.

Wildlife Needs You . . . the birder, the biker, the sportsman, the camper, the hiker, and everybody who enjoys the outdoors: to champion the interests of wildlife, to keep informed on new resource management practices, to

encourage all users of the outdoors to follow high standards of environmental ethics:

Wildlife Needs You . . . the student, the teacher: to encourage interest in environmental matters; to help parents understand the need for environmental emphasis in curriculum.

In DEP's Division of Fish, Game and Shellfisheries, the Wildlife Education Unit has been holding 3-day *Wildlife Workshops for Teachers* twice a year at two locations in New Jersey. This is an indoor-outdoor in-the-field get-wet get-dirty workshop taught by wildlife biologists and foresters designed to provide ideas, concepts, and teaching tools to the teacher-students.

Wildlife Needs You . . . the wildlife manager-researcher: to maintain and improve wildlife habitat; gather information to improve wildlife management, and help others understand the importance of wildlife management. In New Jersey the wildlife management program has increased and maintained a white tailed deer population of about 100,000 in this state where in the early 1900's there were few if any.

Wildlife Needs You . . . but we all need wildlife more—because wildlife is a barometer. When this revolving sphere we call home, country, and world becomes unfit for wildlife, then it's only a matter of time before it becomes unfit for Homo sapiens.

in this issue . . .

A Fisheries Biologist by profession and iconoclast by temperament, author Robert Soldwedel tells you *Why you are not going to catch any trout this year*. Outstanding illustrations by outdoorsman, artist, waterfowl carver Anthony Hillman.

In the Spring of 1977, twenty-four New Jersey State Senators co-sponsored a bill which said, "The horse (*Equus caballus*) is designated as the New Jersey state animal." Other information right from the horse's mouth in the bill included: 4,654 horse farms in the Garden State, and 888 raise racing horses; more than 38,000 horses in the state, only 18,000 in 1961. We don't know what happened to this senate bill, but we know that the doubling of the horse population in our state in just 16 years means that author Laura Henning is absolutely correct in saying that *Blacksmiths Have Not Gone the Way of the Buggy Whip and Flypaper*.

Herring Gulls Invade New Jersey reads the headline over the article by Dr. Joanna Burger of Cook College, Rutgers University. You may not be

alarmed about this invasion of our New Jersey coast, but our laughing gulls and some of our shore birds would be concerned if they could evaluate the consequences.

Another non-game and endangered species wildlife portraits: *The Bog Turtle* by Joan Galli and illustrated by Robert Pierro. This article is introduced by the full color Bog Turtle illustration by Carol Decker on the inside back cover, suitable for framing.

An Aquarium for the Naturalist introduces a new author, Ronald M. Clayton, to our readers. Mr. Clayton is associated with the Institute of Marine Sciences at the University of North Carolina at Chapel Hill.

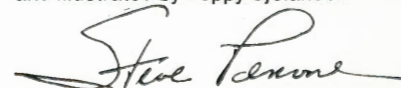
Spring at Batsto by Patrick Sarver, introduces another new author to our subscribers. Writer/photographer Sarver is an Associate Editor at *Outdoor Life* magazine, a major national outdoor publication with editorial offices in New York City. Author Sarver has been published in *Camping Journal*, *Travel*, and several of his articles are scheduled to appear in *National Parks*, *Trailer Life*, and *Backpacking Journal*.

Trout fisherman Art Weiler Jr. relates some history about and illustrates some famous *New Jersey Trout Flies*. Author Weiler asks that you send to our publication any other information on trout flies used in our state.

After an absence of several years, this issue includes a book review of one of the best wildlife books published in many a moon. The book is titled *The Cult of the Wild* by Boyce Rensberger, an award-winning science writer for the *New York Times*. This book is a must reading for all people interested in the future of wildlife populations . . . and human populations as well.

How to Catch Early Season Largemouths by Bruce Litton, introduces still another new writer to our pages. Bass fishermen, pay attention to this article; then take the tips offered by the author, and get yourself a string of largemouths.

On page 20, a pictorial piece titled *Seeking Wildlife In An Old Abandoned Farm House*, written by Joan Galli and illustrated by Teppy Sjolander.



Blacksmiths Have Not Gone The Way Of the Buggy Whip And Flypaper

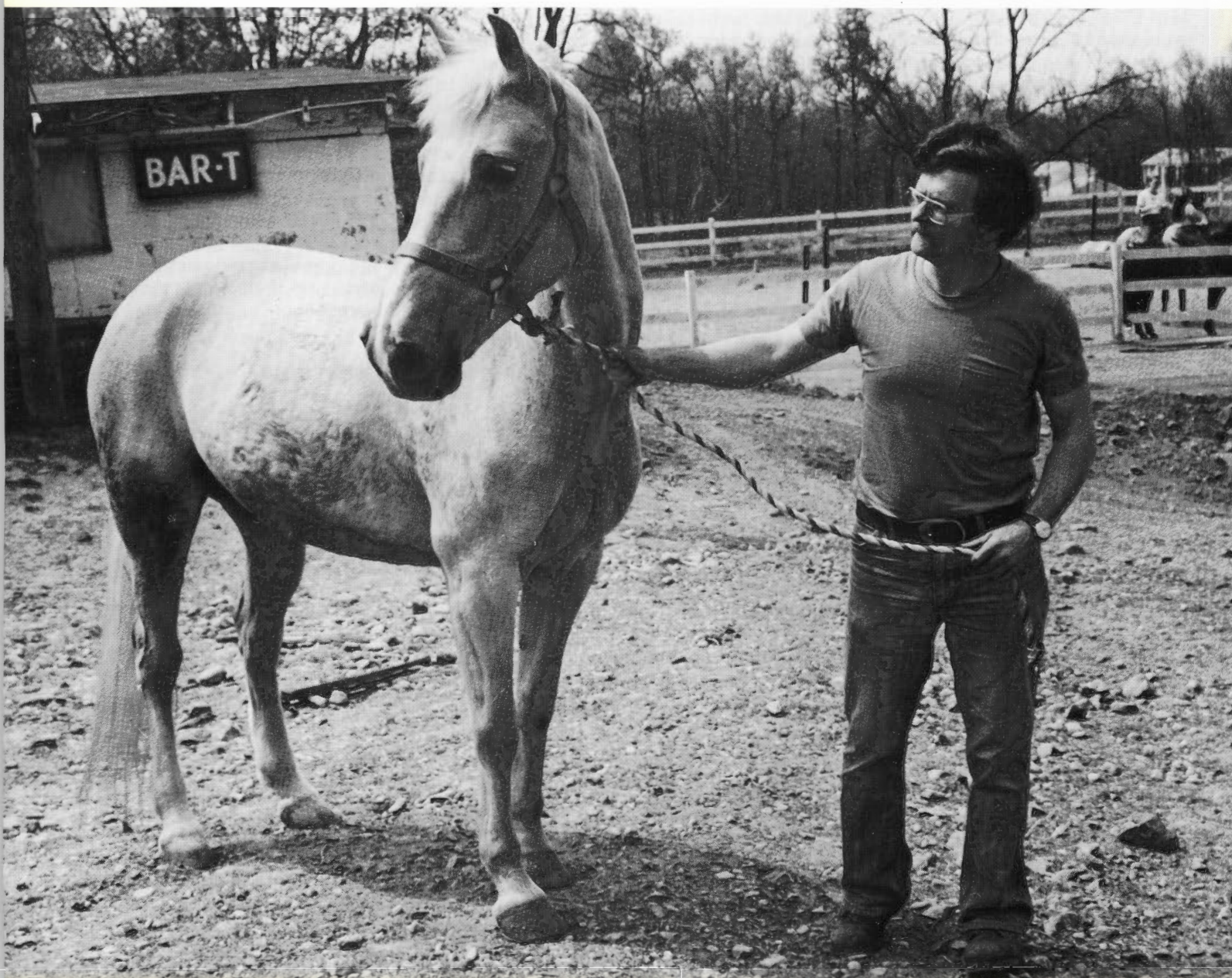
By Laura Henning

PHOTOS BY AUTHOR

Every morning when Joe Mutchler's suburban Maplewood, New Jersey, neighbors scramble to catch commuter trains, he steps into his blue, bouncy International van to make his horseshoeing rounds. Mr. Mutchler is one of about 100 itinerant farriers shoeing the estimated 60,000 burgeoning horse population in this ironically the most industrialized and eighth most populous state in the Union.

Contrary to first impression, his profession is hardly an anachronism. Backyard pets, fancy show horses, hunters, thoroughbreds, rodeo mounts, even the steeds of the Newark mounted police, they all need shoes. There are even farm work horses which must be shod. Mr. Mutchler knows of two farmers who actually sold their tractors and bought horses instead because they have fewer breakdowns and their fuel is cheaper. They even turn automatically at the end of each row.

Thirty-eight-year-old "Little Joe," as he is affectionately called, has not always been a horseshoer.



Born in Orange and a former Newark College of Engineering student, he was with Prudential for several years and finally made the drastic career change after a brief stint as a licensed insurance broker. Being tied to a desk and cooped up in an office was not the life for him.

Since horses have always been a part of his lifestyle, it seemed natural that he would make one facet of horse husbandry into a career. He acquired his first equine at the age of 12 years and has been riding, training and showing them ever since. Even during combat duty in the Mekong Delta, he found time to ride the shorter, stockier breeds of Vietnam.

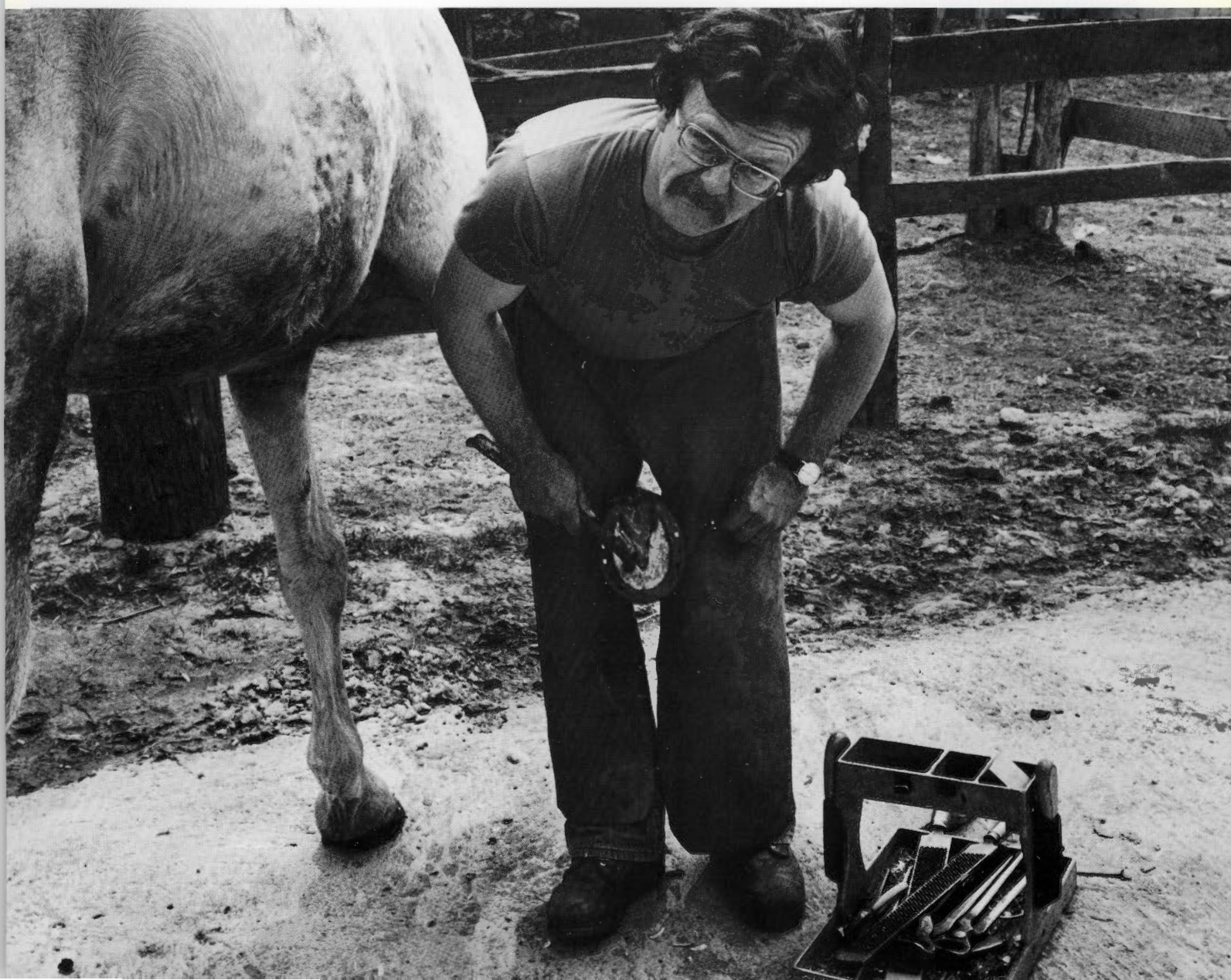
Mr. Mutchler is by no means a dreamy, anti-establishment dropout in search of the simpler life. Methodical, efficient and thorough, he is all businessman. He is constantly in search of new business because "if you stand still, you stagnate," he said. What if suburbia closes in with anti-horse ordinances and tract houses covering once peaceful riding trails. "I can

always move on," he explained. Meanwhile close to a hundred, four-legged customers receive his expert attention on the average of once every six weeks. As hefty a clientele as this may seem, he is always looking for more.

Five years ago, when Mr. Mutchler launched into this line of work, he did not just pick up a horseshoe and tack it on a hoof. First came two weeks of horseshoeing school in Mineral Wells, Texas, one of about four in the country. The others are at the University of Michigan, Cornell and Pennsylvania State University.

The 25 students were from all over the country and had varied interests and backgrounds. Some were college and veterinarian students, several had had no previous knowledge of or experience with horses, one was a Florida horse trainer and another was a New York Rangers coach who had a team of draft ponies that he showed. Two were women, who "were slower than the others but did not have to go back and do

Continued on page 28



Herring Gulls Invade New Jersey

BY JOANNA BURGER

PHOTOS BY AUTHOR

Herring Gulls are in New Jersey to stay! Though for many years a few Herring Gulls have careened noisily over New Jersey sand dunes, followed fishing boats, dropped clams on stone breakers, and stood serenely on rain-beaten dock pilings, these birds have been only transients, sporadic visitors to our shores. In fact, before the 1960's only one or two pairs nested in New Jersey.

In North America, Herring Gulls used to nest only in Canada and Maine. Since the turn of the century, New England Herring Gulls have increased by a factor of 15 or 20. Inevitably they spread into New York, nesting on sandy or rocky islands. Soon they began nesting in the median strips between superhighway lanes—and finally in grassy areas of public beaches and parks. I have seen fearless Herring Gulls casually incubating eggs beside a green picnic bench

while kids munch hot dogs on the table above, their feet dangling only a few inches from the gull's head. Time passes, the picnickers change, but the parent gull relinquishes its nest only to its mate.

Why have Herring Gulls increased in numbers and annexed new areas when so many other birds have declined? These are really separable questions. Birds *invade* only when they have enough food for themselves and enough space to rest and roost; they *increase* only when they have sufficient food for their young and safe places for nests. Indirectly, we have provided the food for the expanding gull populations. As human populations

have increased along our coasts, so have the garbage dumps—heaps of energy readily available to both young birds and their parents. The task of learning to forage alone, one of the most critical and difficult for young gulls, is eased by an ever-present dump (garbage left by people) that never moves away as do fish, clams, and other foods.

Yet to continue expanding, Herring Gulls must also have nesting areas located safely away from rats, dogs, raccoons, and other predators. In New Jersey, there are few traditional habitats, such as rocky or sandy islands, available for colonization today. Therefore, Herring Gulls have responded by invading a



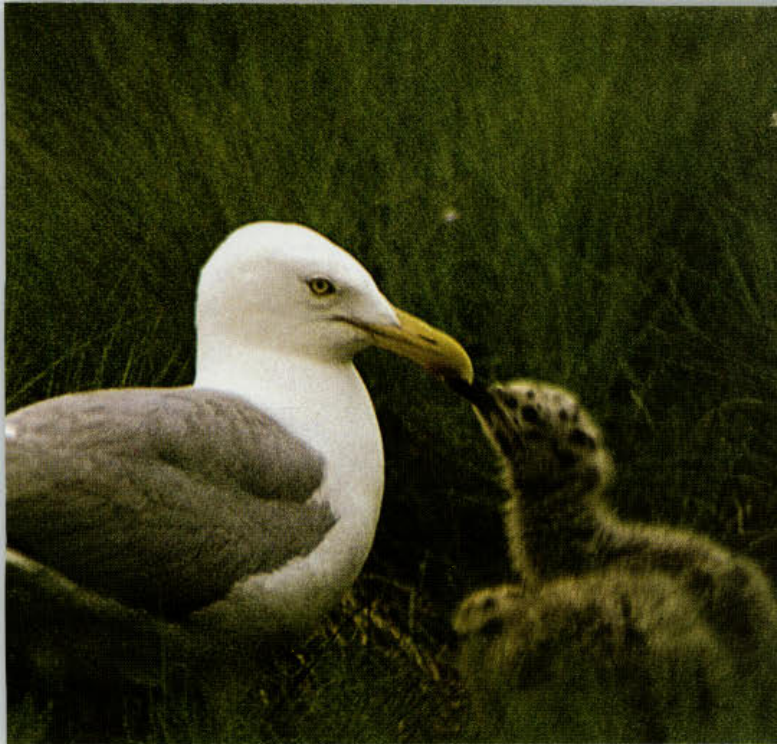
Herring Gull portrait. Chicks peck at the red spot on the bill to get them to regurgitate food.

Green wing tag on Herring Gull chick. All tags are numbered so chicks can be individually identified.



Incubating Herring Gull in grassy area. The small bush provides some protection from the hot sun.





Herring Gull adult with 8-10 day old chicks that they must protect from neighbors predators. (Chick pecks at bill to initiate feeding).



Female Herring Gull (on right) inciting male to regurgitate food which she uses when making eggs.

new habitat—the salt marsh. A number of native birds, such as Common Terns, Black Skimmers, and Laughing Gulls, as well as herons and ducks, long since evicted from their sandy and rocky island colonies, now nest in salt marshes singly or in colonies. In order to understand the effects of the Herring Gull invasion on New Jersey's native species, let us look at a typical salt marsh colony on Clam Island in Barnegat Bay.

On a foggy, dew-dunked morning, only the rhythmic sound of the fog-horn from Barnegat Light indicates the short distance between Clam Island and deserted beaches, empty houses, and the comforting, always-open Coast Guard station. In early March the marsh is a sullen brown; the grass has been bent by the weight of winter tides rolling over the island.

A few Herring Gulls stand about in the salt-hay center of the island, one or two giving "long calls" to prospective mates. Within a few days more gulls arrive, the courting "club" commences with earnest "long calls" and chases, numbers build to almost 1,000 birds. Low-flying planes, curious people, chilling temperatures, and drilling rain may still drive the milling mass from the island temporarily, but by early April the colony is here to stay. A few mated pairs walk tentatively to

nearby bushes staking out territories, standing guard silently near their chosen plots until some other gull lands nearby. The ensuing fight involves calling, wing-flapping, pecking, and chasing; sometimes in a surplus of fury the gulls each peck viciously at the nearby grass before resuming their fight. The original territory owner usually wins, and the intruder flies off in search of another area. More fighting among Herring Gulls occurs before egg-laying than at any other time in the breeding cycle although fighting increases again when the eggs hatch.

Herring Gulls begin building nests of grass in early April, although the first eggs aren't laid until mid-April. They prefer to nest near bushes, although a few nest in the salt hay and cordgrass nearby. Three to eight days elapse between the laying of the first egg and the third. The parents do not begin incubating until three eggs are laid, but they stand nearby ready to defend the nest from gulls that have not yet found a territory. Selecting a nest site is critical since the location must be defensible, above flood levels, and easy to escape from whenever a predator comes. Further, once the eggs hatch, the nest site must provide cover to protect chicks from rain, heat, and the eager eyes of predators flying overhead. Within a few days each pair

has beaten a path through the grass from the nest under the bushes to open grass areas. These runways are used as rapid escape routes whenever the colony is disturbed, since the gulls cannot fly directly from the nest up through the bushes.

By early May the grass is taller, the bushes have leafed out, and most gulls incubate quietly. Both parents incubate, each taking turns of a few minutes to several hours while its mate is off feeding along the bay, on tidal flats, or at a garbage dump. An infrequent Marsh Hawk creates a panic as the gulls rise en masse to surround the intruder, escorting him quickly to the edge of the colony, though only a few persist in following the intruder beyond the Barnegat lighthouse. At night, the lull of colony noise is interrupted by the soaring swoops of the Barn Owl in search of food for its six young nestled in the attic of the old hunting shack.

Eggs hatch in 28 to 32 days. Hatching itself takes more than a day as the chick saws his way out with the tiny egg tooth on his bill. In three or four hours the chicks dry, the down fluffs out, and they begin to call to their parents. Within a day they begin to walk haltingly around the nest. Although some chicks die trying to break out of the egg, most that perish do so in the first week after hatching. It is dur-

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NEW JERSEY'S WILDLIFE

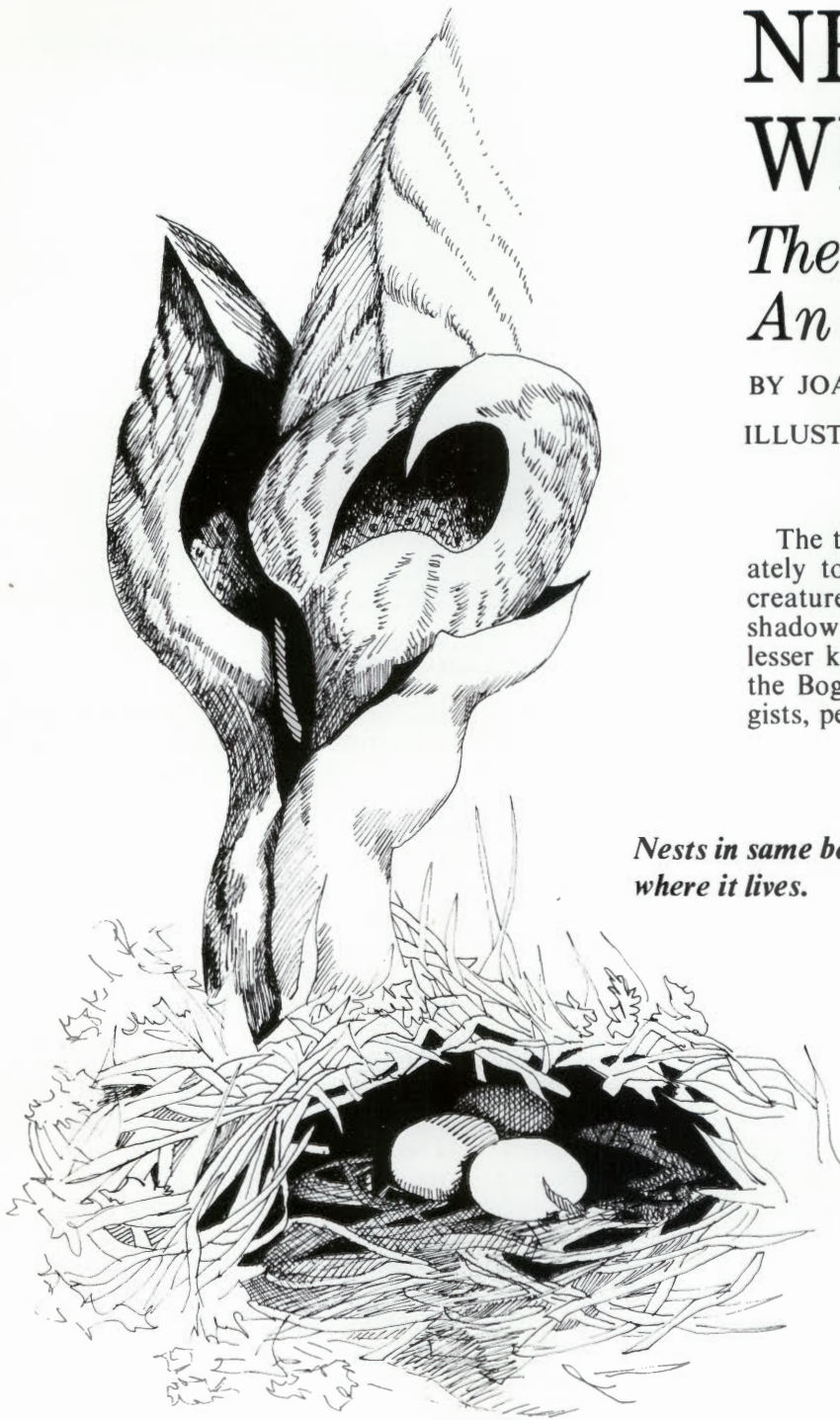
The Bog Turtle An Endangered Species

BY JOAN GALLI

ILLUSTRATIONS BY ROBERT PIERRO

The thought of endangered species brings immediately to mind images of eagles and falcons. These creatures are so impressive that they tend to overshadow some of the equally important but smaller and lesser known New Jersey endangered species such as the Bog Turtle, (*Clemmys muhlenburgi*). Herpetologists, people who study reptiles and amphibians, have

*Nests in same bog
where it lives.*



*Garden pests like
the Japanese beetles
are a part of its diet.*



always considered the bog turtle a rare creature. Today, however, within its limited range from western Connecticut and New York south to North Carolina, this diminutive bog turtle is, in many areas, on the verge of extinction.

This interesting reptile is related to the more familiar spotted and wood turtles. The bog turtle is easily recognized by the conspicuous yellow, orange or red blotch on each side of its dark head. The top shell, or carapace, is generally brown and either smooth from burrowing in older adults, or slightly sculptured in juvenile turtles. Some bog turtles are additionally marked with yellow-orange striations radiating from the center of each shield on the carapace. Bog turtles are the smallest of the North American turtles. The adults rarely exceed four inches in length.

A creature of unique needs, the bog turtle is found in wet meadows and boglands flowed by shallow, slow, mud bottomed riverlets. These wet areas are vegetated by cattail, skunk cabbage, sedge, alder, willow, swamp maple and sphagnum moss. Historically, bog turtles were found in almost every county in New Jersey. Major populations were found in the bogs of northeastern and central New Jersey as well as in the Pine Barrens. Unfortunately, many of these freshwater

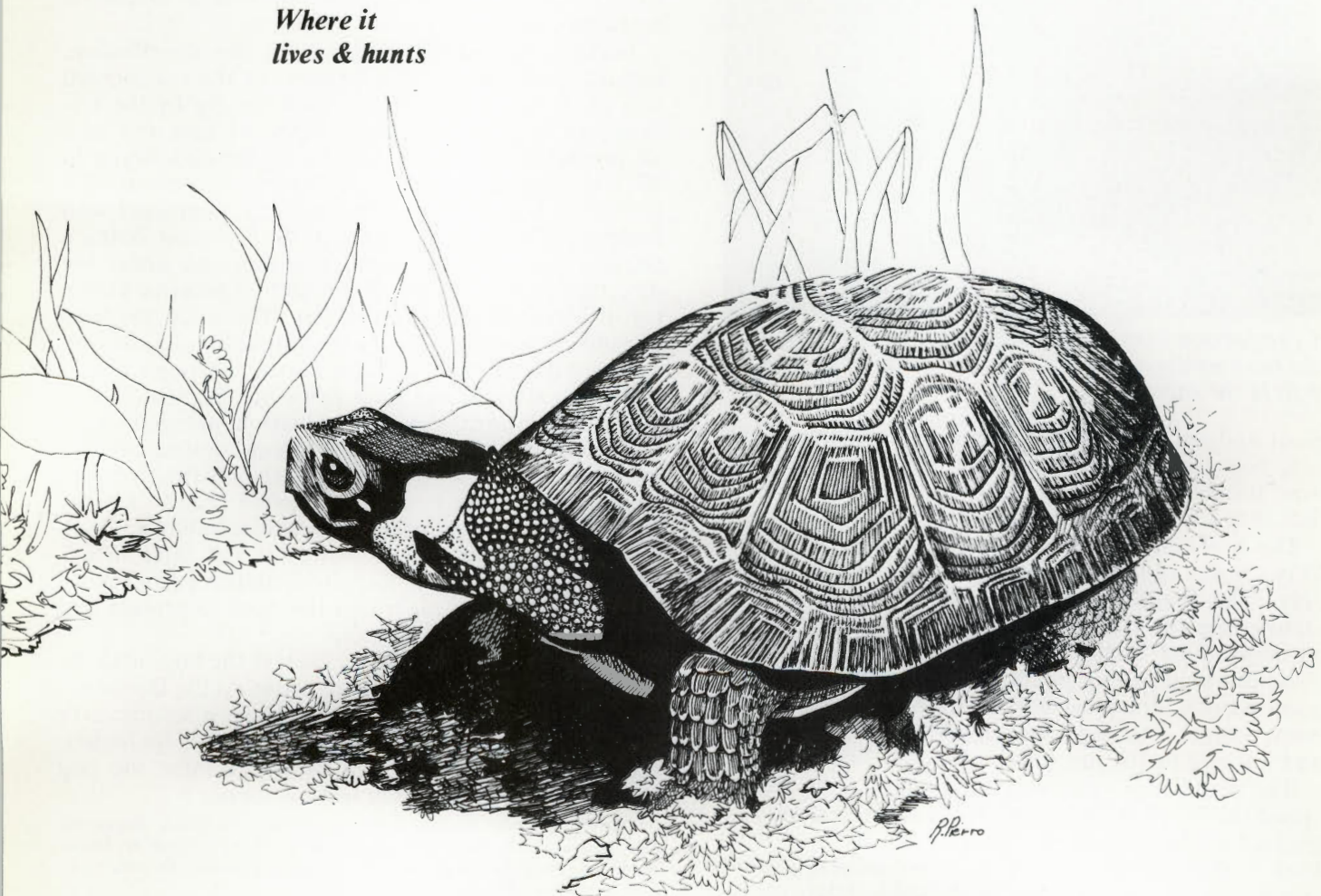
wetlands have been destroyed by pollution, filling, dredging, dumping, or developing for housing, highways, or garbage disposal. As a consequence, considerable suitable habitat and many of the major bog turtle populations of the northeastern and central portions of the state have been destroyed in the last twenty years.

Although historically less abundant in northwestern New Jersey, the bog turtle is presently maintaining good populations in rural Morris, Sussex, and Warren Counties. The preservation of these few limited and widely scattered habitats in the northwest, along with a few disjunct populations in the Pinelands is the key to the survival of bog turtle in New Jersey. Illegal collecting of the bog turtle by those who seek them for their rare status and also to supply the illegal pet trade further threatens populations in areas which have not yet been destroyed by development or pollution.

The bog turtle is a shy and retiring creature. They construct burrows within their home range and inhabit them throughout the year, particularly during winter hibernation. The turtles begin to appear above ground in mid-April to mid-May when daytime temperatures remain above 70° F. They are omniverous, feeding on

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Where it lives & hunts



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THE BOG TURTLE



Male Bog Turtle.

PHOTOS BY ROY DECKER



A comparison between the larger, full-grown female and the younger male. Both turtles are small enough to fit in the palm.

plant and animal material. When not basking in the sun, bog turtles spend much of their above ground time foraging for slugs, snails, nestling mice, crayfish, skunk cabbage shoots and pond weed seeds.

The breeding season for the bog turtle begins in May, with egg-laying during mid-June to early July. The females lay their eggs in the bog, thus eliminating the danger of migrating to high ground as many other turtles must. The nests, two-inch depressions usually dug in the top of a sedge or sphagnum tussock, are constructed within the safety of the home range. The eggs, tucked away in the dry nests and warmed by the sun, hatch in about 45 days.

The hatchlings, not much larger than a penny, spend the first few days of their life burrowed into the grasses or mosses before venturing out to forage and bask in the sun. Due to their secretive habits, juvenile turtles are difficult to study in the wild. Adult turtles

have been found to be active throughout the day providing the air temperature is at least 65° F. Extremes of hot or cold will cause the turtles to seek shelter in their burrows.

Some success in breeding the bog turtle in captivity has occurred in the last ten years. Fred Wostholz of Old Tappan, New Jersey, pioneered the initial captive breeding research in the state. The late Richard J. Holub of Branchville, New Jersey, had the most success. He maintained a successful captive breeding colony on his farm in Sussex County for many years.

Captive breeding, although important for maintenance of bog turtles at zoos and research stations, is not the solution for preservation of these turtles in the wild. Habitat preservation of the open areas of woodlands, bogs and wet meadows is the key to the bog turtle's survival in New Jersey. In recognition of this fact, the New Jersey Division of Fish, Game and Shellfisheries' Endangered and Nongame Species Project established a bog turtle refuge in 1974 on state-owned lands at a secret location formerly inhabited by bog turtles. Turtles acquired by the Division through confiscation (possession of any State endangered species is a violation of A-2151, *The Endangered and Nongame Species Act of 1973*), donation from captive breeding programs, or from relocation programs have been released at the refuge with the hope that they will establish a successful breeding colony.

Division sponsored research on the distribution, population dynamics and habitats of the endangered bog turtle has been a major undertaking by the Endangered Species Project. Surveys to locate and map all potential and known bog turtle habitats began in 1975 by the late Dr. James Anderson. A grant in 1977 from The National Audubon Society, combined with federal aid funding from the U.S. Fish and Wildlife Service has enabled this work to continue under the direction of Mr. Robert Zappolarti, Executive Director of Herpetological Associates. The work has been expanded recently to include compilation of data on the ecology of this secretive turtle. Through mark-recapture studies, the field team has been obtaining additional information on population size and structure, individual growth, reproduction, nesting activity and home-range movements. Such information will enable project personnel to establish criteria for the recognition of the bog turtle's critical habitat as well as develop management plans for the bog turtle's protection. The project has also initiated a program to educate the public regarding the need to protect and maintain endangered species.

You can help the effort to protect the bog turtle by reporting any sightings of bog turtle to the Division's Trenton office (609-292-9400). Only a cooperative effort between concerned citizens, research biologists, and management personnel will guarantee the bog turtles continued existence in New Jersey.

This article was prepared by Joan Galli, Nongame Biologist, N.J. Division of Fish, Game and Shellfisheries, from technical material provided by Robert Zappolarti, Thomas Bloomer and Roy and Carol Decker. □

something new

from the endangered and nongame species project

New Jersey has been a leader in research and management programs designed to protect and restore endangered species. The Division of Fish, Game and Shellfisheries Endangered and Nongame Species Project has made important strides in the management of the osprey, the peregrine falcon, the bog turtle and both the tiger and blue-spotted salamanders.

To continue this work requires funding beyond that appropriated by the state. By purchasing a decal you help provide this funding. All proceeds will be donated to the Endangered and Nongame Species Project. In addition, under the Endangered Species Act of 1973, the federal government will remit \$10 in federal aid monies for each \$5 donation. Therefore, each decal sold means \$15 invested in endangered species work.

These colorful decals, featuring the endangered bog turtle, are available for \$5.00 each. To receive your decal use the order form below.

Show others that you care about the future of New Jersey's Endangered Species. Get your decal today for display on your car, boat, window, etc.



1978 ENDANGERED SPECIES DECAL *featuring the* **BOG TURTLE**

DECAL ORDER FORM

NAME _____

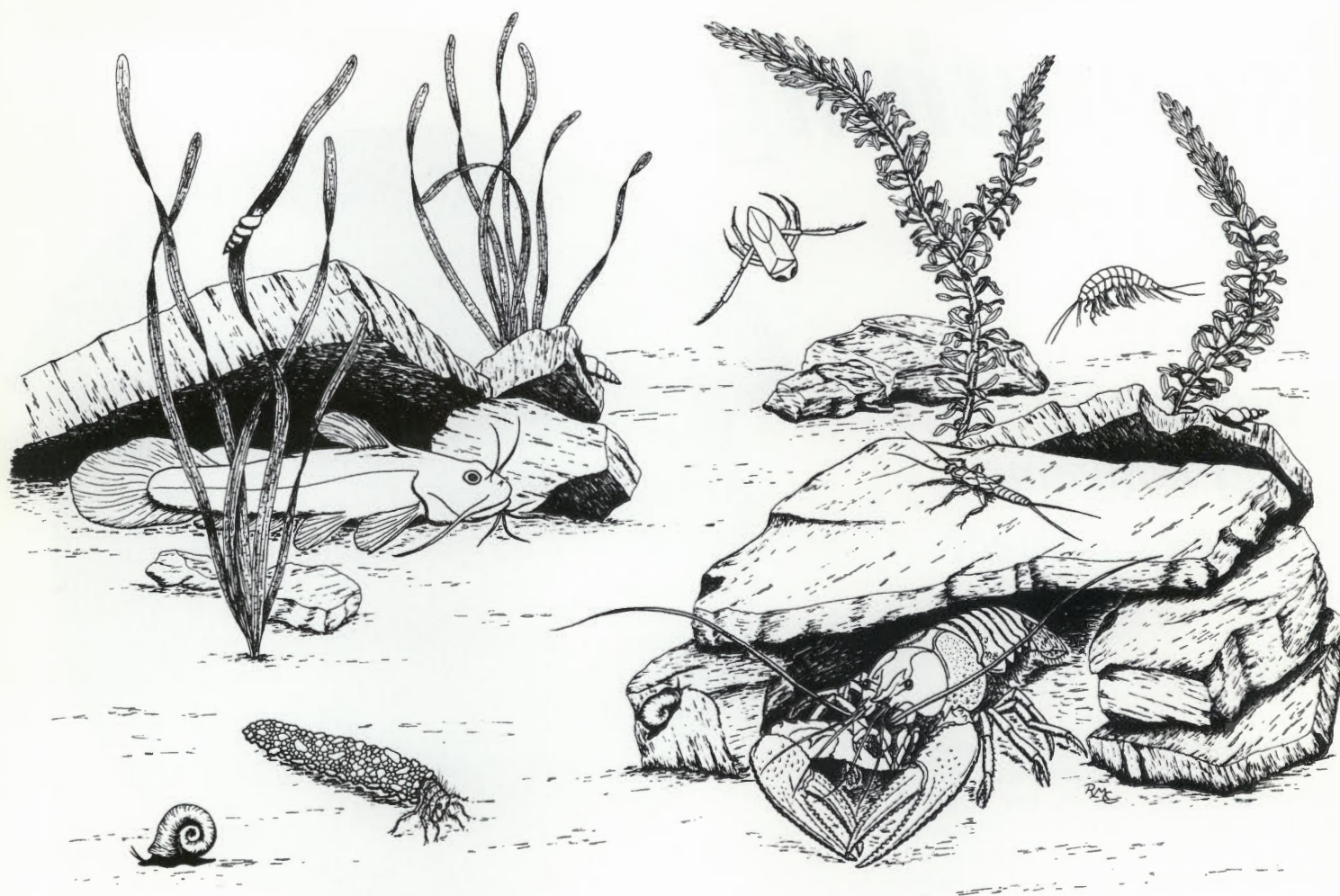
ADDRESS _____

CITY _____ STATE _____ ZIP _____

Please send me _____ bog turtle decal (s) at \$5.00/each.

Total amount enclosed _____ (check/money order)

MAIL TO: **ENDANGERED AND NONGAME SPECIES PROJECT**
New Jersey Division of Fish, Game and Shellfisheries
Box 1809
Trenton, New Jersey 08625



an aquarium for the naturalist

BY RONALD M. CLAYTON

ILLUSTRATIONS BY AUTHOR

Maintaining an aquarium filled with local fish and other aquatics can be an enjoyable, learning experience, and give you a good excuse to get out and stomp around in your local pond or stream. It's fun collecting new animals and plants to add to the aquarium, to replace ones that have died, or as food for your locally acquired fish, and learning about your wildlife is a fascinating part of the experience. In the shimmering shallows and mysterious depths of almost any nearby body of water thrives a whole world of living things, some very ugly and some very beautiful—the variety will amaze you. If you are interested in providing inexpensive recreation and education for yourself and perhaps your family, read on.

What You Will Need To Buy.

The only things you will need to purchase are: the aquarium with cover and light (which may also be con-

structed from a kit or from scratch), an air pump and plastic tubing, a filter and filtering materials, one or two airstones, and a couple of fine-meshed dip nets. A small minnow seine (1/8-inch mesh) will also be helpful, especially for collecting fish. If you are a fisherman, this seine can also be used for collecting bait, and thus will pay for itself.

Setting Up Your Aquarium.

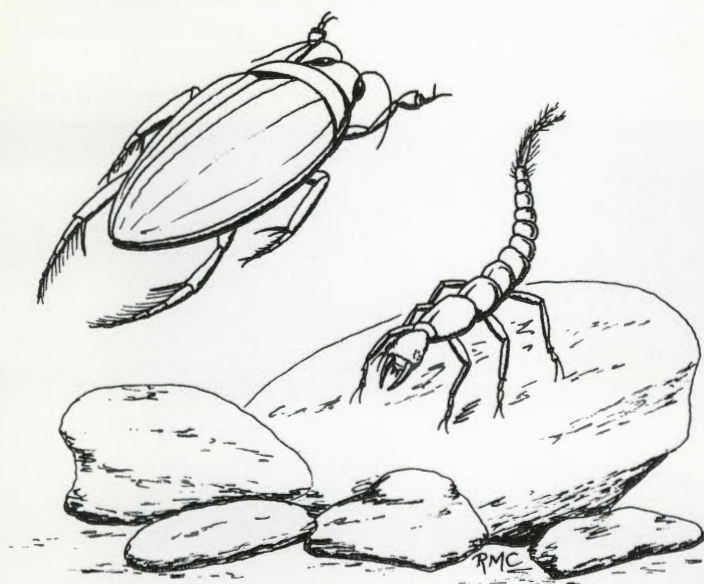
Locate your aquarium on a sturdy, waterproof surface, fill it with water, and set up the air pump. Air stones will have to be weighted down to keep them on the bottom. The filter, which aids in preventing the water from becoming cloudy, does not generally need extra weight to sink. If chlorinated tap water is used to fill the aquarium, let it sit for at least 24 hours before adding any animals. The air bubbling through the water will purge it of the chlorine, which will kill most aquatic

animals. Heating the water is not necessary, since the animals you will collect are used to varying temperatures. They should do quite well at room temperature as long as the water is well aerated.

Collecting For Your Aquarium.

Before setting out on your collecting trip, be sure to consult local regulations for collecting in the body of water you intend to visit. It is probably best to talk to your local conservation officer and explain to him the purpose of your collecting. There are usually regulations as to net size and types of fish which may or may not be taken. Most game fish can only be taken by rod and reel. If there are no size limits on these species in a particular body of water, it is probably legal to keep small game fish in an aquarium as long as they are caught legally. Check the laws first!

You will need to take several buckets, a dip net, the seine, another person to help in seining, and either rubber boots or old shoes for foot protection. (Your local pond or stream is almost guaranteed to harbour some rusty cans and broken bottles.) If you will be collecting in water where the bottom is rocky, it will be helpful to have some type of nonslip soles on your footwear. The algae and slime on the rocks can make them more slippery than if they were greased.



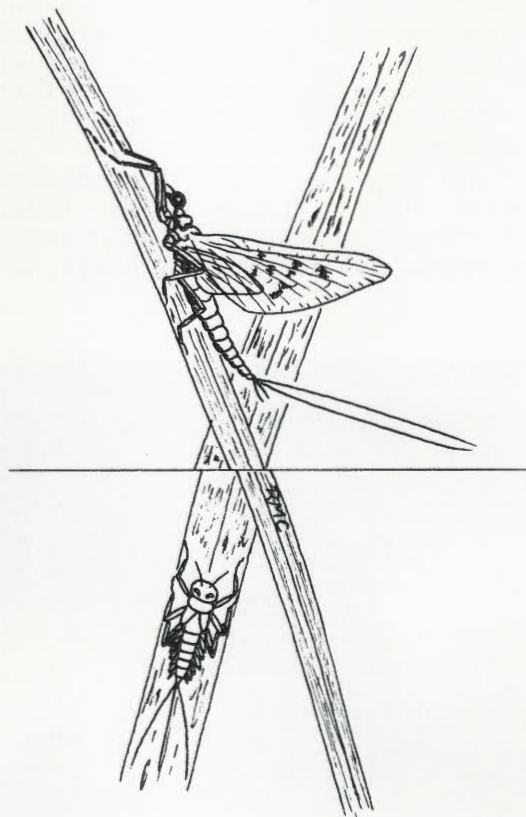
Predaceous Water Beetle and larva

The habitat. Many types of fish, insects, and other animals will do very well in the home aquarium, but in order for them to survive and act naturally you must set up the aquarium to simulate their natural environment. Variety of habitat is the key to success if you want to keep a variety of organisms in your aquarium. For this reason you will need to collect some of the materials that are common in the animals' environment.

If the bottom of the stream or pond has sandy areas, collect some of the sand in one of the buckets. Also collect some gravel from the bottom if possible. Keep these materials in separate buckets. You should take

enough of these materials to cover the bottom of the aquarium to a depth of about one-half to one inch. In addition to providing a natural substrate in the aquarium, these materials will trap the detritus (wastes and dead plant and animal material) so that it will not be stirred up in the water by activities of the inhabitants. Collect some larger rocks (up to about six or eight inches in diameter and fairly flat if possible) for constructing shelters that many fish and other organisms will use for hiding, spawning, and certain social activities.

A variety of real plants will enhance the beauty and naturalness of the aquarium habitat, provide food for certain organisms, and shelter for others. Collect several different kinds of small, rooted aquatic plants from the area where you will be collecting the animals. Try not to get any algae, especially the filamentous kinds.



Mayfly and Nymph

They tend to choke your aquarium in a short period of time. If you cannot find plants free of algae, wait until you can collect some from another area with similar habitat.

The inhabitants. Some fish live in the middle or upper depths, but most of the animals you will want to collect, including fish, crayfish, newts, snails, clams and insects, live on the bottom or in plant beds. These are the areas where you should concentrate your efforts.

Collecting in a stream is usually easier than collecting in a pond, since the bottom is usually more solid and the current can do much of the work for you. In pools

Continued on page 23

SPRING AT BATSTO

BY PATRICK SARVER

When spring returns to Batsto in the Pinelands of southern New Jersey, the restored iron village on the southern edge of the Wharton State Forest becomes the center for many outdoor activities. As warm weather approaches at New Jersey's largest state forest, it means an invasion by city dwellers is at hand. Canoeists, campers, hikers, fishermen, bird watchers, photographers, sightseers, and enthusiasts of every other outdoor sport will soon come roaming through these woods of blackjack oak and pitch pine.

Yet the Pinelands at Batsto move blissfully toward summer without so much as blinking an eye. New plants sprout up all across the sandy floor of the forest. Trees and flowers burst into bloom. Even the deep amber rivers seem to run sweeter every day as the season advances.

Spring also brings the village of Batsto back to life. The sawmill whines as it turns out new lumber to repair the damage wrought by winter. Nearby, the cedar-stained Batsto River roars over its spillway as if

to approve of the new season as a fisherman battles a pickerel from its waters.

The eighteenth-century village has changed little from its heyday, when it was a major manufacturing center. Iron from the bogs of the Pinelands was shaped there into cannons and cannon balls for the Continental Army in the Revolutionary War.

The name *Batsto* is a derivation of the early Dutch settlers' phrase, "Baatstoo," or bathing place. In 1776, Batsto was found as one of a chain of four southern New Jersey ironworks. During the Revolution, Batsto played an important role supplying weapons for Washington's army. It also furnished munitions for the War of 1812, and produced water pipes and other iron products used throughout the region. At its peak, Batsto was a community of nearly 1,000. The ironworks supported the town into the 1800's, when Batsto became a glass manufacturing center. But the town's future was limited, and in 1867, the glass operations were shut down. Seven years later, much

Batsto Mansion.

PHOTOS BY AUTHOR



of the town was destroyed by fire.

In 1876, Philadelphia financier Joseph Wharton bought Batsto and much of the land around it, hoping to use it as a water source for Philadelphia. In a separate case involving water sales to Staten Island, however, the state assembly banned the sale of New Jersey water to other states. Wharton was unable to develop his water-supply plans before he died in 1909. In 1912, the state offered Wharton's heirs \$1 million for the 97,000-acre tract, but voters rejected the sale in a referendum. In 1954, however, the state finally bought the land for \$3 million, preserving the largest forest tract in the state from development. Today, as a result, you can sightsee, fish, canoe, hike, take photos, or explore the abundant plant and wildlife around the old village of Batsto.

Batsto consists of the Mansion House, which has an 80-foot observation tower, and the village around it. There is an old grist mill, blacksmith shop, general store, carriage house, iron workers' cottages, sawmill, and many other structures to explore. Relics of the iron and glass manufacturing periods are on display, and there are guided tours of the town. The old buildings are being restored to their original condition, including the decor inside the Mansion House.

The Batsto River, which flows through the village and is impounded at Batsto Lake, has some good

spring angling, primarily for pickerel and catfish. Pickerel, the smaller relatives of pike and muskies, provide good sportfishing on light tackle. They prefer to hang close to weed patches in the stream, hitting best on minnows and minnow imitations fishing rapidly along the cover where they hide. They are easy to recognize by the patterns on their sides that resemble chains, which gives them their name of chain pickerel. Although they can be caught in Batsto Lake, the fishing's better in the river above and below it. In spring, pickerel usually stay in relatively shallow water, making them easier to catch than in summer when they head for the cool water in deep holes. Pockets just below the lake are popular spots for catfishing.

Canoeing is also enjoyable on the Batsto River. Most canoe trips start upstream near Quaker Bridge and wind south on the river toward the village. South of Batsto, the Batsto River joins the larger Mullica, which can be canoed for another 12 miles south to Green Bank, where tidal action and wind often make canoeing difficult. Canoeing from Quaker Bridge to Batsto village takes about three hours on the relatively calm river. From Hampton Furnace, farther upstream, the trip is six hours.

Hiking is also a top sport at Batsto. There are 400 miles of sand roads in Wharton Forest that are unmarked but great for hiking. The 30-mile Batona

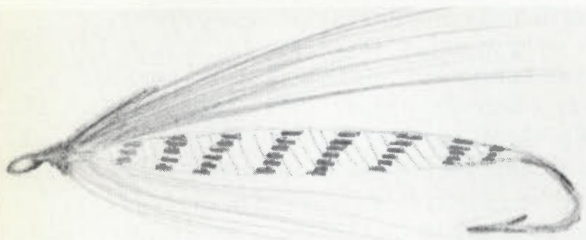
Continued on page 22

Gristmill and canal.

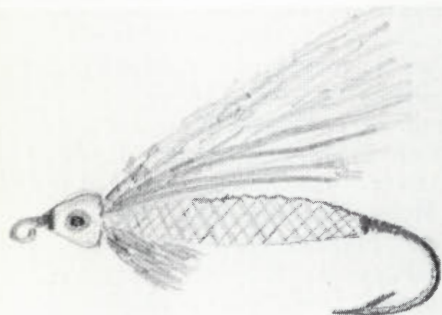




**Bub's Green
Inchworm**



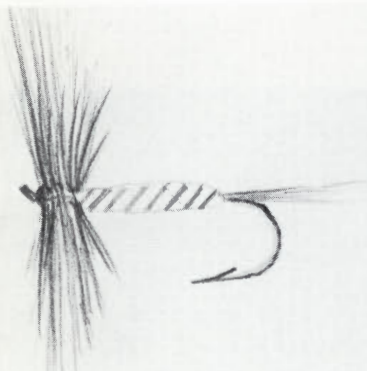
**Ken Lockwood
Streamer**



**Grey Marabou
originated by
Louis "Bub" Church**



**Hard-backed Shrimp
originated by
Louis "Bub" Church**



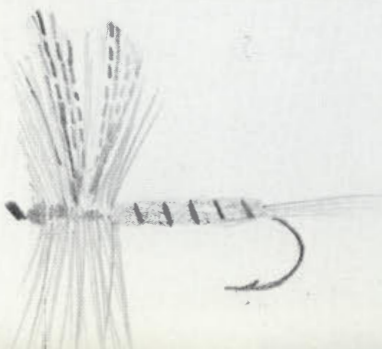
Ken Lockwood Dry



**Flatbrook Bastard
Tied by Mr. Short**



Jersey Cream



**Paulinskill
(Ray Bergman)**

New Jersey Trout Flies

BY ART WEILER JR.

Downstream from the trestle, tucked into a wooded mountainside glade, is a monument to Ken Lockwood. Bygone are the days when brook trout filled our waters and great fly fishermen sought our streams. New Jersey still has its share of trout, brown trout educated to the ways of fishermen as they are, and we still have our share of great fishermen and fly-tiers.

Ken Lockwood was often seen fishing that section of the South Branch of the Raritan that bears his name, the "Ken Lockwood Gorge." He developed several flies, including the *Ken Lockwood Streamer* and the *Ken Lockwood Dry*.

Ray Bergman, the famous author of the now classic *Trout*, named one of his famous dry flies the *Paulinskill* after that New Jersey stream of the same name which, by the way, still holds a population of wary browns in its waters which flow to the Delaware.

Both Ken Lockwood and Ray Bergman have passed away, but the New Jersey influence is seen in the flies of Louis "Bub" Church of Plainfield, New Jersey. Bub is well known for his famous salt water fly patterns, but he has also developed some winning fresh water fly patterns. These patterns include *Bub's Green Inchworm*, the *Grey Marabou*, and the killing pattern called *Hardbacked Shrimp*. Bub's flies are pictured in his original dressings tied by himself.

Notable among New Jersey trout streams is the cold and clear Flatbrook. This stream requires special flies, for it harbors large brown trout which have migrated into the cool waters from the Delaware. These trout rarely rise to the dry fly, but the notorious *Flatbrook Bastard* as tied by Mr. Short in his house on the banks of the river, often does the trick. The fly pictured was tied by Mr. Short, now in his eighties, and he recounted to me how he once landed a brown over five pounds on the fly, even though the fish broke his rod in the process.

Most widely known of the New Jersey patterns is the *Jersey Cream*, a springtime and high water favorite. The history of this fly is unknown. Do you know about the history of this or other famous New Jersey trout flies? Please write care of New Jersey Outdoors so we can help preserve this heritage. □



Environmental News

DEP Adopts Three Major Water Measures

The department on January 23 took three major steps toward improving New Jersey's water quality and protecting the vast underground reservoir beneath the Central Pine Barrens.

In addition to adopting new water quality standards for the Pine Barrens and designating the 760-square-mile tract as a "critical area," DEP has also revised its statewide regulations governing all septic systems and small water supply systems. The Pine Barrens regulations, affecting portions of Ocean, Atlantic, Burlington, and Camden counties, became effective immediately. The revised statewide septic tank and water supply regulations go into effect April 1.

The designation of the Central Pine Barrens as a critical area for sewerage purposes will require that all septic systems be approved by DEP prior to the issuance of a building permit. DEP Commissioner Ricci said the critical area designation together with the more stringent surface and groundwater quality standards will greatly help to protect the Pine Barrens' high quality waters and fragile ecosystem.

Prior to adoption of the Pine Barrens' rules, DEP studied soil conditions, groundwater table levels, population densities, projected growth trends and existing water quality. Many public hearings were held.

Guidelines have been prepared to aid the public in preparing applications for disposal systems in the Pine Barrens. The guidelines detail those projects which are more likely to have a significant impact upon water quality. The guidelines, available from DEP's Division of Water Resources, provide for a more extensive review of larger projects (over 50 units) and projects which propose to place disposal systems on lots smaller

than one acre.

The department's other major action was the revision of statewide regulations governing the design and construction of septic systems and small public and private water supply systems. The regulations were adopted under the New Jersey Realty Improvement Sewerage and Facilities Act, commonly known as Chapter 199, and contain several revisions as a result of public hearings held last April (1977). Some of the significant changes include:

- New cesspools are not permitted anywhere in the state.
- Alternate designs for septic systems are permitted with state approval, thereby allowing innovative approaches to sewage disposal.
- Percolation tests must be performed under the supervision of a licensed engineer, health officer, or first grade sanitarian.
- Disposal systems may not be constructed above bedrock which has been blasted.



COMMISSIONER RICCI RESIGNS

Rocco D. Ricci resigned his post as DEP commissioner in January to return to the federal government. Ricci, who joined DEP in June 1974 as assistant commissioner, later became first deputy commissioner and in July 1977 was named to head the department. He has been on leave of absence from the federal environmental agency (EPA) since June 1974 (prior to joining state government Ricci was with EPA for 11 years). Ricci's leadership was a key factor in New Jersey's receiving more than \$1.1 billion in federal sewerage construction grants and quicker handling of industrial construction permits within the state's new 90-day mandated review period. (As NJO went to press, no successor had yet been named.)

CAMDEN COUNTY'S SEWAGE TREATMENT GETS EPA/DEP ATTENTION

The regional office of the federal Environmental Protection Agency (EPA) and DEP are taking joint action to require that all municipalities in Camden County join the regional sewage treatment system being developed by the Camden County Municipal Utilities Authority (CCMUA) so water quality and wastewater treatment requirements can be met. Announcement of the joint action was made in early January by EPA Region II Administrator Eckhardt C. Beck and DEP Commissioner Rocco D. Ricci.

Officials from both agencies evaluated the situation in Camden County, where most of the approximately 40 municipalities have facilities which do not provide levels of sewage treatment that comply with state and federal standards. Handling sewage on a regional basis by the CCMUA is the best method of installing appropriate sewage treatment facilities as quickly as possible

and reducing the overall regional cost of sewage treatment over the next 10 to 20 years. To accomplish this, municipalities must sign agreements with CCMUA.

Both agencies are convinced this is the most cost-effective way for these communities to provide the necessary level of sewage processing—secondary treatment—and to meet quality standards to protect the waterways of the area.

"The State of New Jersey has invested the CCMUA with the responsibility providing sewage treatment for the County," Beck stated. "EPA is prepared to commit \$250 million in federal financing to the county for sewage treatment. Going regional is the most cost-effective approach over the long-term and will ensure that the needed facilities receive the fullest measure of federal funds possible for the life of the project," he added.

"DEP intends to enforce a 1971 Court

Continued on page 16C

Air pollution suit update

State Defers Suit Against Pa./Philadelphia/74 Industries

In response to a request by the Commonwealth of Pennsylvania, New Jersey agreed to temporarily and conditionally defer filing of its lawsuit against Pennsylvania, the City of Philadelphia, 74 commercial establishments in that city and the U.S. Environmental Protection Agency (EPA) for violation of the federal Air Pollution Control Act. (See Jan./Feb. NJO for full story.)

A December 28 letter to EPA Region III Administrator Jack J. Schramm from Deputy Attorney General Steven A. Tasher outlined four conditions which must be met by Pennsylvania:

1. The regional sulfur dioxide strategy promised by Pennsylvania to DEP was to be submitted by January 3, 1978.

Continued on page 16D

CHEMICAL COMPANY AGREES TO CARRY OUT POLLUTION ABATEMENT MEASURES

Madison Industries, Inc., one of two chemical companies located in Old Bridge Township (Middlesex County) taken to court on water pollution charges by DEP this past August, signed a consent order with DEP in mid November. The order, approved by Judge David D. Furman, requires the company, located adjacent to the City of Perth Amboy's potable (drinking) water well field, to implement pollution abatement measures designed to prevent any contaminants from reaching the groundwater aquifer which feeds the city's well field. The other defendant, Chemical & Pollution Sciences, Inc., had earlier signed a court approved agreement with DEP to undertake remedial measures. (See these pages in Nov./Dec. 1977 NJO)

Background: In court, DEP alleged that both plants had been discharging into Prickett's Brook and the Old Bridge aquifer which serves the Perth Amboy well field. As a result, numerous potable water wells had been condemned as unfit for human consumption by DEP and taken out of service. The purpose of the court action was to protect the many other wells which are not contaminated. The well field, operated by the city since 1900, yields about 7 million gallons daily.

The measures agreed to by Madison Industries, Inc. include:

- completion of a berm (strip of ground alongside a dike) and paving of the surfaces with impervious material to channel all storm water runoff into the sanitary sewer system and away from Prickett's Brook traversing the property

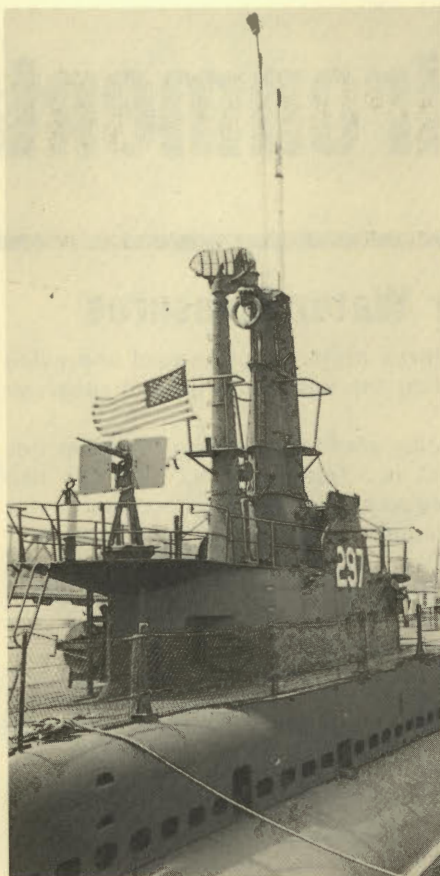
- within one year all outside storage of raw materials and products must be terminated with said material placed in enclosed storage buildings; and, in the interim, all such potential sources of contamination must be maintained on paved impervious surfaces.

In addition, the court ordered the company to comply with federal pretreatment requirements for all discharges entering the Old Bridge Sanitary Sewer—to remove the heavy metals (zinc, lead) to the maximum extent practicable with current technology.

Deputy Attorneys General Keith A. Onsdorff and Stuart R. Meislik presented the case for DEP. □

DEP SPONSORS SEMINAR ON SLUDGE MANAGEMENT

The department recently sponsored a two-day program to explore alternative methods of disposal and handling of sewage sludge. State and federal experts discussed all known techniques of sludge management, such as composting the material for recycling, land application and incineration. (There is an urgent need for an effective program to keep industrial toxics, heavy metals and carcinogens—cancer-causing substances—out of municipal sewer systems. These substances not only contaminate municipal sludge and complicate the disposal problem, but they also pass through treatment plants and pollute the state's waterways, some of which are sources of drinking water.) □



Success story

U.S.S. LING—FROM SCRAP HEAP TO HISTORIC SITE

The World War II (WW II) submarine, U.S.S. Ling (SS 297), which was saved from being scrapped by the Navy at the end of 1971 through the efforts of the nonprofit Submarine Memorial Association of Hackensack, has been added to the State Register of Historic Places by DEP. First Deputy Commissioner Betty Wilson attended the dedication ceremony on January 16. The Ling, which patrolled the Atlantic coastline of the United States during the final days of WW II, has been completely refurbished by the association with the help of many citizens and corporations who donated time and money to restore the vessel and prepare the docksite. Since the Ling was opened to the public in July 1973 more than 300,000 people—many of them schoolchildren—have made the tour aboard. Naval ROTC cadets from nearby regional high schools receive training aboard the Ling from time to time. The Ling is afloat in the Hackensack River and connected to its Borg Park docksite at 150 River Street in Hackensack (Bergen County) by two 40-foot gangways retrieved from old steamship piers. On the park green nearby is an outdoor display including a torpedo memorial and bronze plaques to men and submarines lost before, during and after WW II. A building at one side of the entrance contains a large display of memorabilia and submarine-related photographs. The Ling is open every day all year from 10 a.m. to 6 p.m. Admittance free. □

DEP Testing North Jersey Air For Cancer Causing Agents

The department in December began monitoring the air over northern New Jersey to test for the presence of nine cancer-causing substances—Benzene, Carbon tetrachloride, Chloroform, Dichlorobenzene, Nitrobenzene, Perchloroethylene, Trichloroethane, Trichloroethylene, and Vinyl chloride monomer.

DEP awarded a \$51,000 grant to the New Jersey Institute of Technology in Newark to conduct the survey which will include the collection of approximately 300 air samples from the Newark, Nutley-Passaic and Bridge-water Township areas.

The samples, collected at different hours and under a variety of weather conditions, are being analyzed with a recently developed, complex system involving gas chromatography and mass spectrometry. (A gas chromatograph is an instrument which separates a mixture into its components. A mass spectrometer is an instrument which subsequently identifies the individual substances.)

The North Jersey survey will supplement a more general investigation of air pollution of Central Jersey made by the federal Environmental Protection Agency (EPA) in 1976. In that study, EPA detected more than 200 volatile organic compounds, most of which are considered toxic and seven were known or suspected carcinogens (cancer-causing substances). □

Shad Study Seeks Angler Help

The Delaware River Basin Anadromous Fishery Project is seeking angler volunteers to aid in determining the size of the river's 1978 American Shad spawning run. Utilization of both sport fishermen and fishery biologists is necessary for determining an accurate Shad population. Biologists will be tagging and releasing Shad at Lambertville, N.J. from March 27th through May 5th during the fish's annual spring upriver migration. Volunteer anglers will be provided a log book to record their Delaware River Shad fishing effort and catch.

Log book keepers will receive a Service Award Certificate and a report of study findings for their participation. Additionally, any angler catching a tagged Shad will receive a monetary reward, plus a Tagged Shad Certificate.

If you wish to participate in the study (volunteers are requested to make at least three Shad fishing trips) or obtain additional information, send a postcard to Carl Baren, Shad Study, P.O. Box 95, Rosemont, N.J. 08556. The anadromous fish project is a cooperative effort of the Pennsylvania Fish Commission, New York Division of Fish and Wildlife, New Jersey Division of Fish, Game and Shellfisheries, National Marine Fisheries Service and the U.S. Fish and Wildlife Service. □

GET HOOKED ON TROUT FISHING



'CHOPPER' ATTACKS FOREST FIRE. Quick initial attack by helicopters (above) and fixed-wing aircraft dropping liquid retardant on a woodland blaze is extremely effective in keeping the fire contained until the arrival of Forest Fire Service crews and equipment. Two retardants are used: first a diamonium phosphate mixture and later, water. In New Jersey the spring forest fire season extends from mid March through mid May. (In 1977, the fire which damaged the most land broke out on March 31 at Atsion in Burlington and Atlantic counties—by the time the fire was extinguished, 3,900 acres had been burned.)

James Cumming, State Firewarden, reported that in 1977 there were more than 2,300 blazes which burned more than 39,000 of the 2.7 million acres under surveillance of DEP's Forest Fire Service unit. It was the worst fire year since 1971 when more than 40,000 acres were destroyed. Cumming stressed that public cooperation, including good individual conservation practices of sportsmen, picnickers, campers and residents, along with the use of modern fire fighting equipment and intensive training of forest fire personnel is vital to forest fire prevention and control.

1978 FISHING LICENSES

DEP's Division of Fish, Game and Shellfisheries reports that 1978 New Jersey fishing licenses, and trout stamps, can be obtained from county and municipal clerks and fishing license-issuing agents throughout the state. The license issuing agents are usually located in sporting goods stores. Be sure to ask for your free New Jersey Summary of 1978 Fishing Laws when purchasing your license. □

Continued from page 16A

CAMDEN COUNTY SEWAGE

Order which requires the local municipalities to join the regional treatment system," said Ricci. EPA will include this requirement in the discharge permit for each municipality. If the state action to require the municipalities to treat their wastes through the regional system is not successful, EPA will refer the case to the U.S. Department of Justice for noncompliance with federal water pollution control standards. □

PARKING AND BOAT LAUNCHING FEES REDUCED AT STATE PARKS

There's good news for vacationers' wallets this year—weekday and weekend fees have been reduced at all New Jersey state parks. (Schedule below)

Summer parking rates, from Memorial Day through Labor Day, have been reduced by a dollar. For example, the weekday parking rate at Island Beach State Park is now \$3 per car instead of \$4, and the holiday and weekend rate is \$4 instead of \$5. At Round Valley and Spruce Run recreation areas the weekday rate dropped to \$2. At seven state parks—Allaire, Belleplain, Cheesequake, Lebanon, Ringwood, Skylands, Stokes (Stony Lake) and Wawayanda—the weekday parking fee is now only \$1. The lower weekday rate is offered to encourage greater use of the state's recreation facilities from Monday through Friday.

Motorcycle fees have been lowered to \$1. Moped parking fee, \$1. Daily launching fees have been reduced to \$1 a boat at Hopatcong, Spruce Run and Wharton (Crowley Landing). Annual boat launching permits have been reduced to \$10. Boat launching fees have been eliminated at Bass River, Belleplain, Bull's Island, High Point, Parvin, Stokes and Worthington.

Walk-in charges have been eliminated in 15 areas. A 50-cent walk-in fee for those age 12 and over will remain at Barnegat Lighthouse, Bass River State Forest, Lake Hopatcong State Park, Round Valley, Spruce Run, Swartwood and Parvin. There is no parking fee at Parvin.

No fee is charged for New Jersey residents age 65 or over or for totally disabled persons (applications for Senior Citizen Park Pass and Totally Disabled Person Park Pass are available from DEP, Bureau of Parks, Box 1420, Trenton 08625). No fee is charged for bicyclists.

Overnight camping and cabin fees are not affected by the new schedule. Last year's overnight fees remain unchanged. □

AREAS	WALK-IN FEE 50¢	December 1, 1977					
		MEMORIAL DAY WEEKEND TO LABOR DAY WEEKEND					
		Weekdays			Weekends and Holidays		
		\$1	\$2	\$3	\$2	\$3	\$4
Allaire		X			X		
Barnegat Lighthouse	X		X			X	
Bass River	X		X				X
Batsto					X		
Belleplain		X				X	
Cheesequake		X				X	
Hacklebarney					X		
High Point			X				X
Hopatcong	X		X				X
Island Beach*				X			X
Lebanon		X				X	
Monmouth Battlefield					X		
Parvin	X	NO PARKING FEE					
Ringwood		X			X		
Skylands		X			X		
Shepherd Lake			X				X
Round Valley	X		X				X
Spruce Run	X		X				X
Stokes (Stony Lake)		X				X	
Swartwood	X		X				X
Washington Crossing					X		
Wawayanda		X				X	

* Island Beach State Park—Daily \$2 fee in effect day after Labor Day to day before Memorial Day Weekend.

Motorcycle — \$1.00
Moped — \$1.00

Bus: In State Groups — \$10.00
Out of State Groups — \$25.00



Progress report:

LIBERTY STATE PARK

The development of the state's first urban park — Liberty State Park in Hudson County — continues steadily. A \$1.2 million contract has been awarded by the state under a \$3 million grant from Round II Economic Development Administration for work to be done in the vicinity of the wildlife area along the southern edge of Black Tom channel. The contract includes site work; an interpark road which will act as a buffer between the wildlife habitat and the industrial park and extend northwards to a new maintenance area; a parking area and expansion of the existing fire protection system. This phase of construction will enhance the visual attractiveness of the existing park area and convert an additional 26 acres into usable space. When this phase is completed (scheduled, September 1978) Liberty State Park's developed area will have grown to 60 acres. Liberty Park drew more visitors during 1977 than any other state facility. DEP is responsible for the development and administration of the park. □

Over \$2.8 million

FEDERAL AID RECEIVED FOR CLEAN AIR PROGRAM

DEP has received more than \$2.8 million from the U.S. Environmental Protection Agency (EPA) to support the state's air pollution control program. The funds, which cover the period October 1, 1977 through September 30, 1978, will augment an estimated \$1.9 million in state financing.

New Jersey pioneered clean air efforts — it was the first state in the nation to pass a statewide air pollution control law (1954). Later, when the national clean air law was passed and implemented, federal funds became available to the states. New Jersey's grant awards have risen steadily over the years from \$6,000 in 1959/60 to the \$2,888,544 just received. The people of New Jersey are breathing cleaner air as a result of federal and state cooperation in funding, expertise and law enforcement. □

LAKES MANAGEMENT

DEP's Division of Water Resources has established a Lakes Management Unit with its Bureau of Water Quality Planning and Management. The unit will concentrate exclusively on restoring, protecting, and resolving problems of lakes in the state. There are approximately 1,000 lakes and ponds within New Jersey borders on which DEP has been conducting preliminary surveys to determine the trophic state (the degree of the productivity, nutrient or enrichment of a lake) and ultimately to recommend methods of control or restoration. The new unit's programs are being developed taking full advantage of federal funding. □

SHELLFISHERMEN GAIN ADDED HARVEST TIME

Shellfishermen gained an extra six weeks of harvest time this season when DEP adopted emergency rules in mid November to allow early opening of certain shellfish beds in Great Egg Harbor off Ocean City. The 1300 acres reopened for the harvesting of oysters, clams and mussels will remain open through April. (The area was originally scheduled for reopening on January 1.)

The order was adopted to aid the depressed shellfish industry, while maintaining safeguards to protect the public health. DEP investigations found that the Ocean City Third Street wastewater treatment plant has been operating satisfactorily and water samples collected showed acceptable water quality. □

ILLEGAL CLAMMING LEADS TO TROUBLE

Violators of shellfish regulations had a hard time of it last year. DEP's Bureau of Marine Law Enforcement issued more than 300 summonses for illegal taking of shellfish during 1977 with a conviction rate of 66 percent. In round numbers this means that only 100 suspects were acquitted.

Most of the violators paid fines, but in one case, a jail sentence was imposed (mandatory under law for second offenders) in addition to a cash penalty. In the latter case, four men were arrested in the early hours of June 30 by New Jersey marine police for taking clams from the condemned waters of the Shark River (the polluted waterway has been closed for shellfishing since 1961), clamming without a license and taking clams between sunset and sunrise. The case was heard in municipal court in Neptune in late November. All four defendants were found guilty and all were assessed fines amounting to \$750 in total, and one man — a second offender — was sentenced to 30 days in the Monmouth County Jail in addition to the fine. An appeal has been filed with the court. □

DEP ANNIVERSARY

The New Jersey Department of Environmental Protection will mark its eighth anniversary on April 22. Founded on the nation's first Earth Day in 1970, DEP's goal for a better quality of life for New Jerseyans through the protection, conservation and preservation of our air, water, land, flora, fauna and historic heritage, remains unchanged. □

Continued from page 16A

AIR POLLUTION SUIT

2. The results of any tests conducted on the strategy must be submitted to DEP as soon as they are available.
3. A meeting between EPA, Pennsylvania and DEP must take place on or about January 16 to discuss and evaluate the proposal.
4. Pennsylvania must present at the meeting a firm time schedule for full implementation of the strategy.

The plan was received by DEP on schedule and is being reviewed. The meeting has been scheduled. □

Emissions testing given credit

CARBON MONOXIDE LEVELS DOWN THOUGH GAS CONSUMPTION UP

Since the start of the state's auto emissions inspection program in 1974, carbon monoxide levels in New Jersey's air have decreased by 26 percent even though there has been increased gasoline usage. In the period between November 1975 (when gasoline again became plentiful after the shortage) through June 1977 while gas consumption increased by 39 million gallons per year, the carbon monoxide levels decreased by 16 percent.

(Carbon monoxide is an odorless gas which interferes with the body's ability to use oxygen. It affects the nervous system, slowing reaction times. Sufficiently high concentrations cause death.)

While these reductions are significant, excessive carbon monoxide levels can still be found in many central business districts with traffic congestion. The problem is highly localized and common to downtown areas in many municipalities. For this reason, local governments have been invited to join with DEP and the state department of Transportation (DOT) in developing strategies to further reduce auto pollutants.

DEP and DOT have instituted a consultation process with local governments to determine what agencies should develop local transportation improvement programs. Each mayor and freeholder has been sent background material on the federal Clean Air Act Amendments. □

DEP GETS FEDERAL AID TO EXPAND SOLID AND HAZARDOUS WASTE PROGRAMS

The department received a \$473,500 grant from the federal Environmental Protection Agency (EPA) to expand the state's solid and hazardous waste management programs. DEP will use the grant to develop resource conservation and recovery methods, conduct an inventory of landfills, identify the management responsibilities of state and local agencies, and research ways to produce energy from solid waste. Grant funds also will be used for research on the available markets and economic feasibility of separating trash materials such as glass, paper and metal.

Governor Byrne, who announced the grant in January, said the federal aid will further the goals of New Jersey's Solid Waste Management Act which created 22 solid waste management districts to plan for the efficient and environmentally sound disposal of solid and hazardous wastes.

A copy of DEP's solid waste program is available for review at the Solid Waste Administration Office, 32 E. Hanover Street, Trenton. □

GET HOOKED ON TROUT FISHING

The Cult of the Wild

The Cult of the Wild
by Boyce Rensberger;
Drawings by Betty Fraser;
Anchor Press/Doubleday,
Garden City, N.Y.
\$7.95

A refreshingly realistic and frank treatment of wildlife and wildlife problems distinguishes a recent book by Boyce Rensberger from the plethora of popular nature literature which has appeared over the last few years. In *The Cult of the Wild*, Rensberger shatters one wildlife myth after another and upon their rubble constructs a conservation ethic rooted in fact rather than fancy.

Rensberger is an award-winning science writer at the *New York Times* as well as a long time observer of national and international natural resource problems. A lucid style coupled with a strong scientific background makes the book interesting as well as accurate.

Rensberger points out that for most people a knowledge of wildlife is learned from *Elsa the Lion*, *Jaws*, *King Kong*, *Flipper*, *Smokey the Bear* and *Little Red Riding Hood*. These depictions of the entertainment media are no closer to real life animals or their behavior than the moon being made of green cheese. Despite these basic errors in understanding many people do not feel inhibited when making dogmatic statements concerning wildlife and wildlife management.

The author also points out that the most ardent voices concerning wildlife originate in wealthy urban centers where the opportunity for modification of misconception through direct contact with wildlife is limited to non-existent.

An infrequently heard thesis of man being a part of the natural world rather than the great despoiler is put forth. Rensberger argues that the wealthy westerners who advocate the preservation of all African wildlife, have no understanding of man's place in the ecosystem and care even less about the socio-economic aspects of the people involved. The commonly used argument that third world nations can develop a tourist trade based on national park systems of natural wildlife for the observation and enjoyment of wealthy American urbanites is absolutely ridiculous. An agricultural-based economy is what these countries desire. This means the destruction of habitat and competing animals so that modern agriculture can feed the expanding populations of these countries. These practices will spell more problems for wildlife than any other process.

The author also approaches extinction as a normal process of evolution. The disappearance of a single species may be sad but is by no means a catastrophe. In fact, conservation efforts should be oriented toward saving ecosystems rather than a two-inch fish which occurs in one mud hole in one cave in the American Southwest.

Rensberger closes not by neatly tying all of the loose strings together into a bright outlook, nor does he paint a picture of gloom; rather, he presents a list of alternatives and decisions which must be faced. Trade-offs and compromises will be a part of any realistic program of wildlife management and conservation. The fear that the author does have is that uninformed public opinion will outweigh the voice of the professional to the detriment of the resource. □

Review by Joseph M. Penkala;
Project Leader, Upland Research,
Bureau of Wildlife Management.

How To Catch Early Season Largemouth

BY BRUCE LITTON

About this time each year, after the ice has melted and the water temperatures are moving through the 40's, I look to the small ponds in my area to begin my first open water fishing for largemouth.

This fishing usually happens anytime from mid-February to mid-March, depending upon how long it takes for the weather to warm up. Bass will not be as active at this time as they will be later on in the year, and it takes a special kind of persistence to catch these cold water fish. I hope this article will induce that persistence.

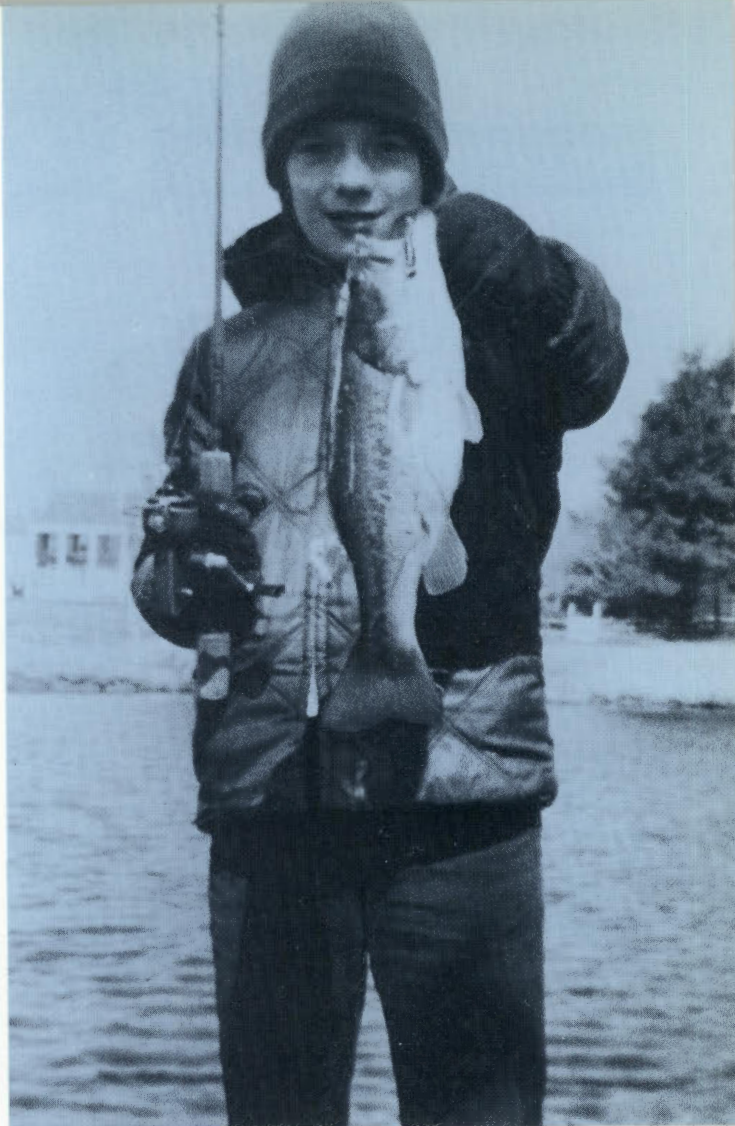
The best waters to start your season with are the small ponds. The obvious reason to start your fishing in these lightly fished waters is they warm up (and melt) faster than the larger lakes. The darker the water color and the shallower the pond's depth, the sooner it will warm up. You may be able to catch fish consistently by the first of March in the ponds, while the fisherman who strictly fishes big water is complaining about the ice being too thin for ice fishing; but, of course, too thick to launch his boat.

Where do you find the fish at this time of year? It depends on the type of pond and the holding areas it has. Let me explain some common pond situations encountered in New Jersey.

Cold water bass make very few feeding movements. The lethargic fish are content to stay where they are—usually in the deepest water in the pond—except on rare occasions when a group of fish may invade the shallows for a brief period of time and then return to their deep water holding areas.

Bass can catch you by surprise at this time of year. Oftentimes I have worked on the bass for several hours without a hit and then suddenly two or three bass fall victim to my slowly worked spinnerbait. These quick spurts of action come in the shallows not in the deeper holding areas and the action invariably comes on small 1/8 ounce spinnerbaits.

These are fish that have paraded into the shallows



BRUCE LITTON

Ricky Litton holds a bass taken from a shallow edge of deep water on small spinnerbait

for a grab at some unwary forage as I mentioned before. As soon as the action from them is over, I assume they have dropped back off into the depths and, likewise, I follow them down with my lures and bait.

Action in the deeper areas of the pond is more steady and consistent. I don't mean to say the action is always slow, but you usually won't find yourself hitting a fast, furious burst of action like you might in the shallows.

When I'm fishing the deep water holding areas of the pond and the water temperature hovers somewhere in the 40's, I often try to entice the bass with a live minnow. I have witnessed times when bass would sock my live minnow and very few would hit other fishermen's spinners that were being retrieved right across their noses. Don't forget I'm discussing the pond's deepest water at this point. In order to systematically check the shallows, a slowly retrieved spinnerbait should be put to use in most cases.

The hardhead (killiefish) type seems to be the best bait because they live the longest. Shiners and chubs



HARRY GROSCH

Father, son and bass

work well but don't live long. Minnows in the 2½ to 3½ inch class are preferred.

I generally rig the minnow in two ways. The first rig I will describe is the rig I use most of the time. I use four to ten pound test mono line depending on how thick the cover. To this I tie a number six Mustad Aberdeen hook. Then I simply clamp on a small BB split shot or two about 12 inches up the line from the hook.

Use this rig in the shallow ponds and the cover filled deeper ponds. It is most often best not to use this rig in deep water with little or no cover as it will result in a loss of feel. You won't be able to feel bottom and subsequently will develop that feeling of not knowing whether the bait is in the fish zone or not. I will describe a rig for this situation later.

Fish the first rig in the following way. Cast and let your minnow sink and settle to the bottom. Let your minnow sit for awhile. Don't pass this step up, make sure you let the minnow sit on bottom for at least ten seconds. Now raise the minnow slowly off the bottom with an upward movement of the rod. As you do this

twitch it subtly until the rod is at an 11 o'clock position. This will allow the minnow to bounce along the bottom or cover. You will eventually learn to feel what your minnow is doing and be able to tell if the minnow is going through weeds, brush or leaves etc. After the rod has been raised to the 11 o'clock position, drop it back and repeat. Keep the entire process s-l-o-w.

For the second rig, used in coverless water eight feet deep or deeper, use the same line and hooks. Cut a piece of line 18 inches long from your reel and set it aside. Slip a walking slip sinker (other types of slip sinkers will do if this type can't be found) on the line leading to the reel. Use an 1/8, 1/4 or 1/2 ounce size depending on the depth to be fished.

To the line leading to your reel, tie a small split ring. Tie the line you set aside to the other end of the split ring. The hook is tied to the end of the 18 inch strand and the rig is complete.

Retrieve this rig very slowly and steadily over the deep coverless bottom, pausing every so often.

With either rig, when you get a strike, let the fish run with the bait for ten to twenty seconds or longer, tighten up the slack and slam home the hook. If the bass has swallowed the hook and you wish to release him, cut the line as close to the fish as possible and do so. Most likely he will survive.

If you disdain the use of live bait and strictly use lures, you may be missing out on some good fishing. At times it is desirable to use lures however. More water can be covered quickly and efficiently using lures and when the fish are receptive more can be caught because the lure can be delivered to the fish faster and you don't wait for the bass to swallow the minnow—the whole process is speeded up.

It is this reason and the fact that I admittedly prefer to catch a fish on a lure that I check the area with a lure before using live bait.

My favorite cold water lure is the spinnerbait. Crankbaits, jigs and occasionally floater-diver plugs in the shallows are also top producers.

Spinnerbaits should be retrieved slowly and carefully at this time of year. Let the lure sink to the bottom; watch your line carefully keeping the line tight and the rod held at the ten o'clock position. When the spinnerbait, jig or any other sinking lure reaches bottom, you will feel a slight bump and your line will go slack. Begin your retrieve and keep it slow. You should be able to feel the lure come in contact with the bottom occasionally. Keep the lure near the bottom.

A variety of retrieves can be put into use using crankbaits—the deep diving Bombers, Big O's, Mudbugs etc. A slow retrieve usually draws the most fish but occasionally a bass will slam into a high speed lure.

In order to retrieve bouyant crankbaits slowly in deep water, crank the reel handle hard and fast for a few turns then slow down. The crankbait will hold its depth.

When using lures don't get stuck with any one retrieve, keep experimenting but remember, when the water is cold keep the retrieve slow. □



Seeking Wildlife In An Old Abandoned Farm House

BY JOAN GALLI

Illustrations by Teppy Sjolander

It always saddens me to see an old abandoned farm house. These large, gracious homes once dutifully sheltered and protected their human residents. Now, they are often left to decay—victims of time and weather. These old houses may be abandoned, but they are not uninhabited. We visited one recently to see what we could find.

The mice were probably in residence even while there were people in the house. Nor were the spiders intimidated for long by the previous tenant's vacuums and brooms. Termites also probably persevered



TERMITE



MOUSE



QUAIL

despite the human residents. However, the black rat snake which we startle into a hasty retreat to safety through the outside basement door is fortunate that there are no longer humans around. Even though the snake keeps the mouse population in check, it is rarely welcome near homes.



STARLING

Lack of human activity benefits a variety of wild-life. The chitter of chimney swifts swooping from their summer retreat into the chimney of the livingroom fireplace is a soothing summer sound. The swifts swirl in pursuit of insects such as the mud daubers and paper wasps which hide their nests behind the window shutters of the old house. Mosquitoes, hatching from discarded, rain-filled cans and old tires, are eagerly snapped up by barn swallows foraging in the evening to feed their young in nests on the corn crib rafters. The house wren, whose nest is tucked away in the knothole of a beam supporting a half demolished shed



MOSQUITO

delights us with a song. Meanwhile, we have found a robin's nest precariously perched on the door ledge of the old garage.

Further explorations reveal a nest of house sparrows tucked away in the sagging ceiling of the front porch. A starling, scolding at our approach, in-



BARN SWALLOW

advertently reveals her nest in the evergreens near the kitchen. Other residents are more wary. A bobwhite quail cautiously skirting the yard almost escapes our notice in a fringe of tall grass. The inhabitant under the front porch is suspected to be a rabbit. Its true identity, however, remains a mystery.



HOUSE WREN

Other species also elude us. The dens of woodchucks are evident in the fallow fields although the inhabitants dash away at our approach. Searching high and low also fails to disclose any sign of barn owls nesting in the old buildings around the farm. We will just have to visit again another day to see if we can catch the woodchucks and owls at home. □

Continued from page 15

SPRING AT BATSTO

Trail also starts at the village and runs north through the Pinelands to Lebanon State Forest. In spring, the hiking trails around Batsto are the key to seeing the area's abundance of plants (464 species in all) and wildlife. A nature area near the village is a good place to visit before starting a hike, because of the many specimens on display there.

Camping near Batsto is also good in spring, and isn't as crowded as it is in summer. Camping areas are scattered throughout Wharton Forest, although there are none at the village. Nights are cool in spring, but still warm enough for comfortable camping with the right sleeping bags. A number of private camping

areas are also nearby, and there are many walk-in campsites along the Batona Trail for backpackers.

Batsto village is a prime spot for spring photography. The village's scenic setting makes it good for photography year-round, but the pastel tones of spring blend with the buildings, lending a feeling of rebirth to the old town. Along the rivers and in the forest, the new plants and blossoms add dashes of color that the Pinelands lack in summer, also making Batsto particularly good for outdoor photography in spring.

At this time of year, before the summer crowds arrive, Batsto is one of the most scenic areas to explore in the state. The variety of outdoor activities, the visual beauty of the old village, and the peacefulness of the Pinelands around it make Batsto an enjoyable place to pursue outdoor sports of all kinds in spring. □

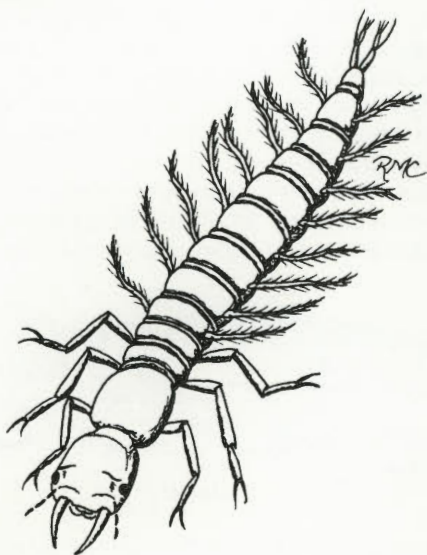
Pickerel fishing on Batsto River below dam.



Causeway over dam on Batsto River.



aquarium

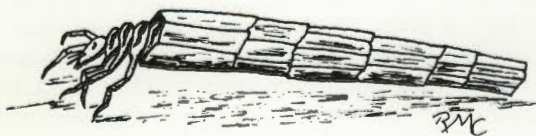


Hellgrammite
(Dobson Fly larva)

and areas of slow flow, pull the seine as rapidly as possible, preferably upstream or across the current with the downstream man leading. Keep the weighted part of the seine dragging bottom as much as possible. Keep the seine moving until it is lifted from the water; if you stop, many of the animals you have caught will escape. In riffle areas one person can hold the seine stationary in the current while the other person shuffles the bottom and splashes the water, working from a few feet upstream down toward the net. The faster the current, the farther upstream you can start your shuffling. The splashing and shuffling will dislodge animals hiding in the rocks and weeds, and the current will carry them into the net. A large dip net can be used by one person to collect in the riffles. Hold the net downstream from yourself, with one edge against the bottom between you and the net.

When seining in a pond, work parallel to the shore, then toward shore at the end of a haul. Again, remember to keep the seine moving until it is lifted from the water.

The dip net can also be used, in stream or pond, for sweeping through weedbeds and under matted vegetation, or pursuing slower animals like newts, crayfish,



Caddisfly larva

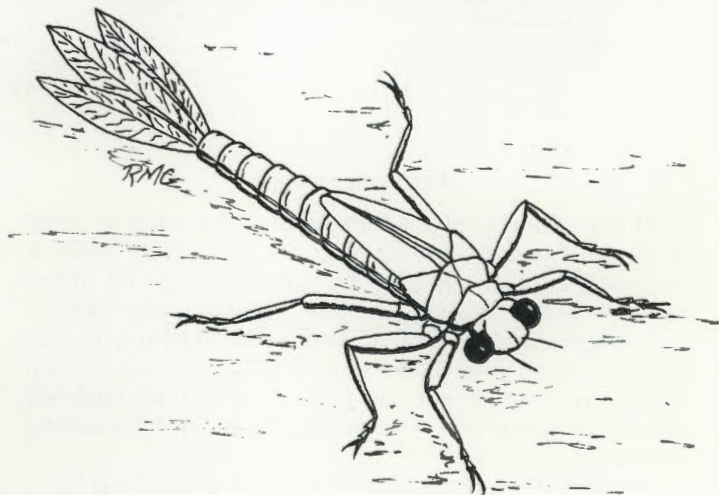
and insects. These animals are slower than most fish, but you still have to be quick to catch them.

Snails and clams can be picked off the bottom by hand.

What Have You Collected?

When you lift your net from the water, it is likely to contain a variety of wiggling, crawling, flopping animals of many shapes, sizes and colors. Some will be keepers, some won't. Those fish which cannot be legally taken by net (such as game fish) should be returned to the water unharmed.

Fish. The most common types of fish you will probably find are of the minnow family (carp, stonerollers, dace, minnows, chubs, and shiners) and sucker family (suckers, chubsuckers, hogsuckers, and redhorses). Darters and sculpins are also quite common. Less common fish you might catch include madtom catfish (careful—



Damselfly nymph

they sting!), silversides, sticklebacks, young eels, killifish, and topminnows. If you want to identify the fish you have collected (this can be very interesting and educational), a good book to consult is *How To Know The Freshwater Fishes* by Samuel Eddy (published by the Wm. C. Brown Co. of Dubuque, Iowa). Checking the natural history of the fish you collect will alert you to potential problems, such as the intolerance of sculpins for warm water.

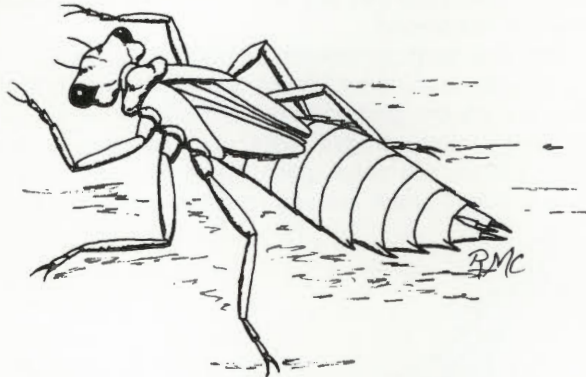
The ability of different fish to survive handling and confinement in an aquarium varies with species and age, and differences occur even between similar-aged fish of the same species. Even with careful handling, you can expect some mortalities either during transportation or after you have put the fish in your aquarium.

Crayfish and other crustaceans. Crayfish, freshwater relatives of the lobster, are not as dangerous as they look, but they do pinch with their claws. When you pick them out of the net, grab them with thumb and forefinger, a little forward of mid-body, from above. Their claws cannot reach you in that position. The smaller ones (less than one and one-half inches) seem to die more often than not when put in an aquarium, but the larger ones usually do quite well. (Incidentally, the larger ones make very good eating when boiled in

Continued on page 24

aquarium

salted water. The taste is similar to, but milder than, that of their briney cousins.) You will probably also find shrimp, amphipods, and other small crustaceans in your net. These serve as excellent food for your larger animals.



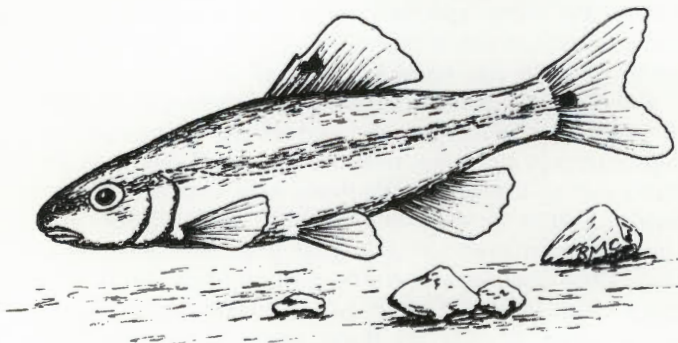
Dragonfly nymph

Newts. Newts are salamanders that spend their adult life in water, but do not have gills. They breathe through their skin and by occasionally gulping air at the surface. These amphibians are greenish with orange and yellow spots over most of the body. They are usually found in ponds. Most do well in an aquarium, but an occasional one will not eat. Animals should be released if you notice that they are refusing to eat and becoming thinner.

Insects. Most of the insects you will collect will be in immature stages. Only adults of the aquatic beetles and the water bugs are generally found in the water. Adults of all the others are terrestrial and are found in or on the water only when laying eggs. Do not pick up the water bugs — many of them give a painful bite.

The aquatic beetles make interesting aquarium creatures. They carry their air supply with them beneath the surface of the water in the form of an air bubble, and must return to the surface periodically to replenish the supply. For some types of beetles, a film of air around part of the body acts as a gill, extracting oxygen from the water by diffusion.

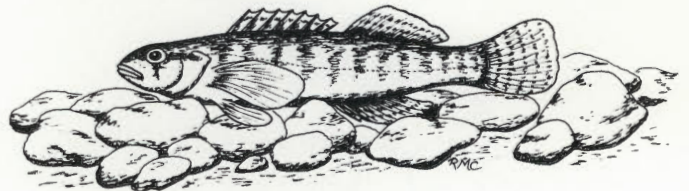
The immature stages of insects exhibit an almost unending variety of form. Many, especially those of the



Minnow

flies, look more like worms than insects. The kinds of insects you are most likely to find in your net are the dragonflies and damselflies, mayflies, caddisflies, stoneflies, flies, hellgrammites, and beetles. Some of these will provide excellent food for your fish and newts, others may try to eat your fish. Many will eat each other. Some are vegetarians, and may even help control any algae that grows in your aquarium. You will want to collect as many of the smaller insects as possible as food for the other animals.

Molluscs. You will usually find snails, and occasionally a clam, in the net. Snails are great for the aquarium as they help to keep it clean. Clams sometimes do well.



Darter

They don't show much activity except filtering the water for food, but they are interesting, so take them home if you find any.

Game Fish.

If you want to collect game fish with rod and reel, use small lures with small, barbless hooks to minimize injury to the fish. Don't keep fish over three or four inches unless you have a very large aquarium. Game fish need room to move around. These fish will usually eat almost anything alive that they can get in their mouths, including your other fish.

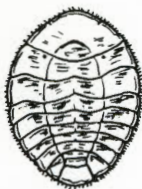
Handle With Care.

Do not crowd your catch into a single bucket. If you are taking a large number of animals for a large aquarium, it is better to use several buckets to transport them. Too many animals in a bucket of water will deplete the oxygen rapidly and many may die before you reach home. You should also keep the buckets shaded. If the water is warmed, it will not hold as much oxygen in solution, so the oxygen present will be used up sooner. Replenish the water in all the buckets containing animals at least every half hour, or more often if the fish begin gulping for air at the surface. Refreshen the water just before you leave for home, then waste no time getting there.

Do not transport the animals in the same bucket with the rocks you've collected, or the small animals may be crushed. Put a few plants, not too many, in each of the bucket containing animals. This seems to prevent them from getting too excited and jumping out.

Setting Up The New Environment.

When you reach home, you should place the sand, gravel, rocks, and plants in the aquarium before introducing the animals. (For this reason, you may find it more convenient to collect these materials on one trip, place them in the aquarium, then collect the animals on a second trip afield.) Place the sand and gravel in separate areas of the bottom, allowing them to mix only where they meet. Plant roots can be imbedded in these



**Water Penny
(Beetle larva)**

bottom materials. If a plant floats off the bottom, a rock can be used to weigh down the rooted end.

Place the larger rocks about the bottom and construct shelters opening toward the front of the aquarium so you can observe the animals hiding in them.

Now the environment of the aquarium is ready for its new inhabitants. Before placing the animals in the aquarium, check the water temperature in the buckets and the aquarium. If there is more than a few degrees difference, you should allow the animals to become accustomed to the temperature in the aquarium slowly. Place them in plastic bags with water from the buckets, then float the plastic bags in the aquarium for about a minute for each degree difference in temperature. Then release them into the aquarium. Most will swim around exploring their new home, while others will either hide under rocks and plants, burrow in the sand, or just sit on the bottom.

Different Lifestyles For Different Animals.

As the fish and other new members of the community become accustomed to the new habitat and to movements in the room around them, they will begin to act naturally. Some of the fish may swim in schools, while others may wander about picking at the rocks and plants, feeding on minute organisms. Some fish, along with the crayfish and certain insects, will occupy hiding places which they will attempt to defend against any intruders. The newts may wander about in search of food, fight with each other, or just sit around. If a small, flat piece of wood is floated in the aquarium, the newts will often sprawl out on it like frogs or turtles sunning themselves on a log in a pond.

Be sure to keep a cover over the aquarium that fits close around all the edges. Newts sometimes climb up the sides and try to escape. Fish may also jump out of the aquarium if it is not covered. The cover will also prevent dust and household insects from falling into the water.

Feeding And Caring For Your Pets.

Some fish will eat commercial dried fish foods, while others will only eat bits of liver, diced worms, or live food such as small fish and insects. You will discover which types of food your fish prefer through trial and error; you must be observant to see which fish like which food.

Crayfish will eat just about any type of meat or dried food and will also eat any fish which may die and sink to the bottom.



Amphipods

Newts are very fond of liver, worms, and insects. They also seem to be fond of crawling on your hand.

Some of the insects will graze on the algae and detritus, while others will greedily seize pieces of meat or other insects, or fish.

The snails will eat algae and minute organisms growing on the rocks, plants, and glass sides of the aquarium, and also aid in disposing of dead organisms and bits of food on the bottom. You need not worry about feeding the snails, or the clams, which filter their food from the water.

Learning About Aquatic Life.

By carefully observing this aquatic community you can learn many strange and interesting things about a world that many people don't even realize exists.

You may see fish establish social hierarchies in which each fish holds a rank and dominates all the fish in lower ranks. Some animals will establish territories which they defend vigorously. Sometimes one fish will dominate all the others in the aquarium. It is a good idea to remove an overly aggressive fish before it kills the others. This aggressiveness is an expression of territorial behavior in which the fish assumes the entire aquarium as its territory.

You may learn about the many predator-prey relationships of the food web, and understand why there are many thousands of prey animals for each larger predator. Some of the animals may reproduce, and you will see why they produce many young, usually by the hundreds or thousands, so that a few will survive to adulthood.

Some creatures, such as the newts, will lose their fear of you and take food from your hand, perhaps even nip at or attack your hand.



Red Spotted Newt

If you are lucky enough to be observing your aquatic community at the right time, you will witness the almost unbelievable transformations made by insects such as the dragonflies, damselflies, and mayflies as the beautifully delicate adults emerge from the drab, ugly nymphs.

These and other wonders of the underwater world reveal themselves to anyone who has some curiosity and a little time.

Take Care Of Your Aquarium.

Clean the aquarium, replacing the sand, gravel, and filter materials, every couple of months, feed your animals live food whenever possible, and they will provide you with many hours of learning enjoyment. □

Editor's note:

For further information on regulations regarding the netting and seining of baitfish, see the *New Jersey Summary of 1978 Fishing Laws* available free at sporting goods stores or from The Division of Fish, Game and Shellfisheries, P.O. Box 1809, Trenton, NJ 08625.

Herring Gulls

ing this period that parents may not bring enough food back or guard them sufficiently from predators, from the cold, or from just getting lost.

Parents brood the chicks for the first few days and remain with them constantly until they are about three weeks old. Chicks initiate feeding by pecking at the red spot on the parent's bill, which in some way triggers regurgitation of fish, insects, clams, garbage, or other food. When they are five or six days old, the chicks actively assault their parents for food, and by 20 days the parents stagger backward under their attacks. By now chicks can defend themselves and their territory, and though parents return as often, they leave soon after the feeding. Parents still regurgitate, but the pieces are larger, less digested, and more abundant. Although by 30 days they stand as tall as their parents, the chicks remain on the territory for another two or three weeks and do not wander much. In the heat of the day they stand in the shade of the bushes. When their approaching parent calls, they all run madly to their usual feeding station. An alarm call from any adult, however, makes each chick dash to its favorite hiding place, used since it was a day or two old. The same chicks can be found under the same clumps of grass for more than four weeks.

The first chicks to hatch attempt their first flights in mid-June. Aerodynamically inept, they crash into bushes, grass, and each other. By late June the fledging chicks congregate in shallow channels ringing the island, breaking into family groups when parents land. By early August the marsh is again silent, and only the scattered, bedraggled nest scrapes attest to the 800 pairs of Herring Gulls that have nested there.

These are the Herring Gulls, who in less than 20 years have come to nest in well over 25 colonies in New Jersey salt marshes. Many of these colonies are also colonies of Com-



A parting glance at the house and salt marsh on Clam Island.

mon Terns, Skimmers, and Laughing Gulls. I have spent the last three years finding out just how these Herring Gulls affect our native species.

Herring Gulls nest in our three largest Laughing Gull colonies: Brigantine National Wildlife Refuge, Stone Harbor, and Clam Island. In all these areas, five or six Herring Gulls first nested under the higher bushes at the edge of the Laughing Gull colonies only 10 to 20 years ago. As Herring Gull numbers increased however, they began to move out into the marsh grass, and they are continuing to move out from these centers as their numbers increase even further.

On Clam Island more than 800 pairs of Herring Gulls nest under bushes and in salt hay, while Laughing Gulls nest primarily in the low cordgrass areas. At first glance there appears to be little overlap. However, the two kinds of grass grow intermixed on eight to ten percent of the island. About 15 percent of the Herring Gulls and 20 percent of the Laughing Gulls nest in this intermixed grass area, where a few years ago, only Laughing Gulls nested. Since cordgrass grows in low areas with frequent tidal inundation, and mixed-grass areas are higher and drier, the smaller Laughing Gulls are being forced to abandon the safer nest sites. Since many

eggs and chicks die during high flood tides, nesting in high areas is critical to their survival. Furthermore, Herring Gulls are still increasing, suggesting that they might soon require additional nesting space, and thereby force *all* Laughing Gulls out of the mixed-grass areas; and when nesting Herring Gull pairs fill all the mixed-grass areas, new pairs in search of sites will move into the cordgrass areas now used almost exclusively by Laughing Gulls.

Herring Gulls are also successful in displacing Laughing Gulls because of timing. Since Herring Gulls arrive fully a month before Laughing Gulls, they have clearly established territories before Laughing Gulls arrive. Even when gulls of the same size fight, the territory owner usually wins; Laughing Gulls, only a third the size of Herring Gulls, simply cannot defend their territories against them. I observed interactions between these species in late April when Laughing Gulls landed and attempted to set up territories in mixed-grass areas near Herring Gulls. Herring Gulls successfully chased all Laughing Gulls landing within 20 feet of their nests, whereas Laughing Gulls chased fewer than 20 percent of Herring Gulls landing nearby. Within two weeks, interactions between these two species ceased as



Herring Gulls on territory in early May. Preferred nest sites are near bushes.

Laughing Gulls moved to other, lower and wetter cordgrass areas. It seems that whenever Herring Gulls begin to move into Laughing Gull nesting areas, they will be able to displace the smaller species. Further, I found that Herring Gulls can build high enough nests in low cordgrass areas to successfully hatch and raise young. Thus, they not only can invade Laughing Gull habitat, but they can do so successfully.

In an attempt to understand the success of Laughing Gulls on Clam Island, Joseph Shisler, a colleague at Rutgers, and I are placing numbered wing tags readable with binocular, on a large number of young birds each year. The tags do not interfere with their flight. All reports from these tags help us determine the movements and mortality of Laughing Gulls fledged from Clam Island. Following the hurricane last August more than forty of these gulls turned up in the Jamaica Bay area of New York, and four were blown as far north as Cape Cod, Massachusetts. Some Laughing Gulls turned up as far north as Maine and as far south as Panama City, Florida. In late August the young Laughing Gulls began moving south, and some reached Florida by October. When these marked birds return as adults to breed we can find out whether

they breed on Clam Island, or whether they are forced to nearby islands.

The effect of Herring Gulls on Common Tern and Black Skimmer colonies can be even more disastrous. If a Laughing Gull cannot defend its habitat against Herring Gulls, surely these smaller species cannot. This past summer, long-time field ornithologist Fred Lesser and I surveyed all the Common Tern and Skimmer colonies along 46 miles of coastline in Ocean County. We found 29 colonies of 6 to 554 pairs. Skimmers nested in eight of these colonies. Most Common Terns nested on windrow strewn there by high tides although almost 20 percent nested in cordgrass. Eleven of these islands also contained Herring Gull colonies. By counting the number of empty nests with eggshells, broken eggs, egg white, or pecked eggs, we estimated that predation on islands with Herring Gulls ranged from 10 to 83 percent, while islands without Herring Gulls had rates lower than 10 percent.

Waders, such as herons, egrets, and ibises nest in *Phragmites* reeds and bushes high on the salt marsh. Herring Gulls offer no threat to their nesting space, although they often nest in adjacent marshlands. However, I have seen Herring Gulls eat heron eggs when someone walk-



Aerial attacks are infrequent, but occur when an intruder flies too close to a nest. The nest owner attacks from the top.

ing curiously through the colony had scared away the parents. Similarly, Herring Gulls do not compete with ducks and shorebirds for nesting space but will eat their eggs if they find them unattended.

Herring Gulls have invaded New Jersey and apparently intend to stay. Their invasion evokes mixed feelings. On one hand, they seem to be competing with out native colonial marsh nesters for space and in fact, prey upon their eggs and young. These smaller species have no other available nesting areas and we may need to protect some of these areas from Herring Gulls. Their impact on Skimmers, Common Terns, and Laughing Gulls bears close and constant watching. On the other hand, Herring Gulls can successfully nest in our salt marshes and can coexist with people along the coasts. Indeed, they feed on our increasing garbage dumps and thus actually benefit from man's presence. Finally, they are a pleasure to watch. Who can deny the charm of a young Herring Gull learning to drop clams on rocky areas rather than on the soft sand, or the majesty of an adult Herring Gull soaring only a few inches above tumbling breakers?

The author wishes to thank G. Costa for his kind permission to work and live on Clam Island, and W. Vesterman for comments on this article. □



Continued from page 5

Blacksmiths

things twice," recalled Little Joe.

At the school they learned the anatomy of the horse from the shoulder down, techniques of shoeing, the use of the forge and methods of hammering molten steel shoes into desired shapes. When in training it took Joe three and a half to four hours to shoe what must have been incredibly patient horses. He has now gotten it down to an hour and a half. Aside from acquiring the necessary skill, the hardest part of learning the craft was getting his muscles into condition. At first his legs shook with fatigue and his back ached.

At school he learned just the basics. An apprenticeship of a year and a half followed when he worked for nothing, Joe emphasized. Two local farriers took him under their wing, teaching him technique refinements. One eventually moved from the state and left Joe his customers.

Although the horseshoer has become well established in business, he is always learning more. There are always new and better techniques to master, and Joe and his fellow Jersey farriers gather regularly at Garden State Horseshoers Association meetings to discuss shoeing problems and new methods. "You have to keep asking questions," said Joe. "There isn't a horseshoer who knows it all. If you stop asking

questions, you are lost." Just as a starter, not only is each horse an individual, but also each foot is different.

Perhaps the most obvious question. Why shoe a horse? Especially under the added weight of a rider, hooves that encounter pavement and rocky terrain wear unevenly, thus throwing the horse into an uneven position and gait. Hoof material, which is very like our nails, splits and chips, generally turning into an unholy mess if left "barefoot." Shoeing horses is an ancient practice, for the Indians put leather boots on their ponies to protect their feet. First shoes usually go on at the age of 18 months, and up to the age of three years remedial shoeing can correct a lopsided gait and alleviate lameness. Expert hoof trimming and shoeing can also result in faster times at the race track.

There are many types of shoes with such exotic names as bar shoes, swedge shoes, turned heels and trailers. Usually made of steel, some are constructed of aluminum and others are rubberized to prevent skids on smooth pavement. They range in size from tiny pony shoes to massive ones worn by draft horses that weigh several pounds and measure seven inches across. They have protrusions called toe grabs that aid the horse in grabbing the earth in the course of their work or in sledge pulling contests. Horses are not the only animals to be shod. Oxen have special shoes to accommodate their split hoofs.

Just how physically demanding shoeing a horse is was brought home to me as I recently observed Joe on the job at Mitchlee's Stables, a 10-acre complex of several riding rings and three barns containing 46 horses unexpectedly situated in the middle of tract home developments in suburban Livingston.

The scene was a 15-stall stable housing as many horses quietly chomping their daily hay ration, for which their owners pay \$100 monthly. Nearby two stable cats, huddled together to ward off the damp morning cold, when not preening quietly surveyed the proceedings. I thought they added a suitable touch of authenticity. Two German shepherd-like hounds hovered close by, anticipating what could only be a dog delicacy: Hoof trimmings.

At 9:15 a.m., the appointed hour, Joe's secondhand van, formerly used to haul musical instruments, bounced down the bumpy incline towards the stable. It ground to a halt and out popped Joe suitably attired for the job. Only jeans and a sweatshirt protected his compact, jockey size frame from the winter chill. He gets too warm if he overdresses and then he sweats. Most likely he had a light breakfast. Both too many clothes and too much food inhibit his maneuverability.

Not surprisingly, he was wearing the regulation cowboy boots. Are they *de rigueur* for a farrier, I asked. No, not really, he answered. He just wears them because they are comfortable. Actually, steel toe shoes would be best, he noted, to protect the toes against an occasional 1,200-pound beast that likes to step on them.

After getting the forge going with special fine far-

rier coal purchased every few weeks a thousand pounds at a time from a Jersey City outfit, Joe brought the "patient" out from her stall and hitched her up. Cream colored, she looked like a small horse to me, but the blacksmith identified her as a large pony.

Then he carefully sharpened a knife to trim the pony's hoofs. "It took me two years to learn how to sharpen this correctly," admitted Little Joe. "Some people just have the natural talent to do this. I didn't."

Next Joe pried off the shoes and removed the nails. The shoes were in good enough condition to reuse. This is unusual as most often they can only be worn once. The horseshoer then trimmed about 3/4-inch of material off the hoofs. The growth of the hoof is the prime reason for the frequent need to reshoe, not the wearing down of the shoe metal. With an 18-inch metal rasp he then scrupulously filed the hoof to the necessary straightness and angle.

He put the shoes in the red coals of the forge set up in the back of the van. When they were equally glowing, he pulled the shoes out with tongs and with a heavy hammer banged them in the desired angle on the 100-pound anvil. The deafening clang might have been as loud as Verdi's Anvil Chorus but it was not as melodious. Gingerly handling the hot shoes, Mr. Mutchler next placed them on the pony's feet to check them for size and fit (90% of the time rear hoofs are larger than the front ones). There was an audible sizzle but the pony was not harmed. The hot shoes serve to further flatten and smooth the bare hoofs. The shoes were then allowed to cool in the chilly air, but they can also be cooled in buckets of water or oil which hardens them.

Doubled over like an Olympic speed skater and with a hoof secured between his thighs, Joe then began the exacting task of hammering the nails. They are designed so that if banged in at an angle they will go up through the hoof and then out the "wall" where they are bent over. There is only a 1/4-inch leeway between insensitive hoof material and live flesh. He can tell if he is going in the right direction by the sound of the nail. Hammering must be done in sharp, brisk strokes. "Sticking" a horse, that is hitting the flesh, is not all that unusual. Even an expert horseshoer will do it on occasion.

If there are occasional hazards for the horse, there are many more for the blacksmith. Joe's thumbs have taken the most abuse, he has burned himself and banged his knees instead of the nails. Fortunately, his sturdy mule hide farrier's apron protects him from nails he might otherwise drive into his thighs. His gold rimmed shatterproof spectacles are another protection as the upward swing of his hammer frequently misses them by millimeters. In addition, from time to time clients may nip him or step on his toes. Finally, his job is made infinitely more difficult by the restless horse or the one that is too uncoordinated to stand on three legs, and Mr. Mutchler must literally hold him up as he works.

Cold is his greatest enemy. His fingers get numb and he may be unaware of cuts. And his tools, purchased from the Madow Company in New Canaan,

Connecticut, also get cold, which adds to the general misery. Happily, he has favorite barns where the winter cold is more bearable. "Some are good morning barns because the morning sun comes in. Others are good afternoon ones, and some are good all day long," observed the farrier.

Shoeing is not for the overly hygienically-minded as one cannot help getting at least a touch of horse droppings on the hands. This once bothered this blacksmith, who was in the habit of washing his hands "eight or nine times a day," but he has become accustomed to it. And I, used to Airwick freshness in my home, could not help noticing the pungent aroma of the stable. This does not affect Mr. Mutchler, but he said there is one stable in Secaucus where he has to work outside, so overpowering is the indoor fragrance. No, a farrier's life is not easy.

But it is made tolerable by Joe Mutchler's real affinity for his charges. He has respect for the strength, intelligence and individual personality of each horse. Some, handled by humans since birth, are friendly and like human contact. Others are loners and barely tolerate their shoeing. Joe recalled one animal in particular. "He's been too good for too long. I think he's saving it up." They respond well if you are kind to them and remember when mistreated. Get on a steed you have been less than diplomatic with and he may buck you off.

For Joe Mutchler his greatest challenge is discovering the individual talents of each horse. A polo pony, for instance, may be built to be one but his talents may lie in other directions. Perhaps he would make a good jumper or show horse. Just like humans, each horse has individual abilities and inclinations, and just like us they have their good and bad days.

When not shoeing, Mr. Mutchler trains three animals as pleasure horses. One of them is Casper, an all white broad-backed and wide-rumped "grade" (translation: mutt) which Joe affectionately characterized as "basically a coward." He likes to ride him through the nearby 2,000-acre South Mountain Reservation, where he can enjoy the quiet of the park's 20 miles of trails.

He also plans to attend a calf roping clinic in Branchville, a rural hamlet in Northwest New Jersey. He can rope a calf fairly proficiently, but so far the quick tie-up has eluded him. Joe is basically not interested in participating in rodeo events, but the clinic offers him a chance to learn that much more about horses. Depending on the season, the rest of the bachelor's spare moments are taken up with tennis and skiing. Rope twirling is another pastime.

Unlike too many of us, Joe Mutchler is doing what he loves best and what he does best. There is no dichotomy between his work life and the rest of his life. It is not a bucolic, stressless existence, for he is subject to the same pressures of any other independent businessman. It is also physically exhausting and minor, but aggravating, injuries continue to plague him. However, Joe, as always cheerful and easy going, noted, "There are many others not as fortunate as I am." How true. □

trout again this year

following the stocking. Now don't try to tell me the other 99 died—not when 20 were caught the next year. These facts just do not support the contention that truck followers wipe out the trout within hours after they are stocked and that if you can't be there when the load goes in, it's no use showing up at all. June has traditionally been the best month for catching trout in the state's major impoundments and there is no stocking in June. This holds true pretty well for the major trout streams too and you'll find some degree of solitude to boot.

The exceptions that prove the rule are the small streams that are stocked during periods of low flows. Here is where the truck follower has his field day. Yet later in the year if you go back to these streams you'll be amazed at the number of trout that got through, not to mention the wild trout that seem to survive against incredible odds.

And while on the subject of wild trout I'll bring up another pet peeve. I wonder how many people have destroyed 4- and 5-inch browns and brookies, cursing them as hatchery rejects when in actuality these were wild yearling native trout. And those who think the hatchery trout are small are under no obligation to keep these fish. If they put them back they may be amazed to find that an incredible thing will occur—the little trout will grow. While a few preach the “non-kill” trout fishing philosophy, many more follow the old “party boat” practice of “no-live.” Incidentally, the day of reckoning is fast approaching for that type of thinking too.

What else are you doing wrong? There are a good many of you who wander as far as 20 or 30 yards from your car and plop your behind down for the rest of the day hoping a passing trout will stop at your bait (which actually came off when you cast out or was nibbled off by sunfish an hour ago). The success rate of the “sit and wait” type must be so low that you'd wonder why anyone would do



Put 'em back—little trout into big trout grow



Success rate of “sit and wait” angler is low

it unless he was merely out for a suntan. The same goes for the nimrod who flails the water to a few feet from his original point of entry into the stream. The wanderer is sometimes just as inefficient, but at least he sees more scenery.

There also appears to be a widely held notion that trout are equally distributed both vertically and horizontally throughout a body of water. And to prove that a little knowledge is worse than none at all you have the school of thought that knows trout

prefer the cold water temperatures at the bottom of the lake. Unfortunately they forget to take into consideration that there is no dissolved oxygen at the bottom of the lake or that it can get too cold for trout. Better do some more homework people.

So let's sum up what we've learned so far: (1) you're starting too early; (2) you're quitting too soon; (3) you're fishing in the wrong place; (4) you're fishing in the right place at the wrong time; (5) you're not moving around enough; (6) you're moving



Fishing too shallow or fishing too deep

around too much; (7) you're fishing too shallow; and (8) you're fishing too deep. What else is there? Well you may be fishing in the right place at the right time, but with the wrong gear. Now I'm not going to go into a long discussion on techniques, matching the hatch (what matches a

corn kernel?), and all that but so many of you out there go out with gear better suited to tuna. Not to mention the electronics expert who's trolling in a mass of algae because it's showing up as a blip on his echosounder.

And while I'm at it; isn't it some-

thing that you'll pay outrageous prices for fishing tackle and all the other trappings that go along with it, but scream bloody murder about the price of a license to use it. The spinners I used to buy at 35 cents each are now up to \$1.25. You'll buy the gear but won't pay for fish. Where's the logic in that?

I said I wasn't going to do a primer on technique but how can I not mention the wounded-water-buffalo approach so many of you use when "sneaking" up on the wary wily trout. This may be o.k. for the first few days with freshly stocked fish but after they wise up, forget it. Of course this may be the reason so many are so desperate to get out behind the hatchery truck. Remember—if you can see the trout, they can see you and if you can't see the trout, they saw you first.

When I first started with the Division I used to fret about giving advice to people on when, how, and worst of all, where to fish as it was like cutting my own "fishing" throat. I no longer worry because experience has shown that no one listens anyway. Round Valley Reservoir will still be packed with anglers standing in snow drifts on opening day. Spruce Run Creek will be deserted two days after the last of stocking and you still won't be catching any trout. Now whose fault is that? □



**But
Blue Heron
are
fine
anglers**

campus organizing: YES *Youth Environmental Society*

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ENVIRONMENTAL DIRECTORY

Youth Environmental Society of New Brunswick, is currently compiling a comprehensive directory of New Jersey environmental organizations and agencies. All NJ groups should have received a survey by now. If you haven't, or you would like more information, write YES, P.O. Box 1127, New Brunswick, NJ 08903. The directory should be going to press early this year, so please get your organization listed.

Last fall student activists from six New Jersey colleges met, talked and became friends at a weekend workshop in Stokes State Forest sponsored by the Youth Environmental Society (YES). Representing schools from Stockton to Ramapo, they had a variety of problems and interests, but one idea was clear: environment was the *cause*, organization was the *problem* and unity was the *answer*.

As a facilitating organization we, at YES, are working with college and high school students across the state, giving assistance and advice on ways to carry out environmental projects. In our first professional year, we believe that the best way to establish ourselves in New Jersey is to help students solve the *organization* problem common to all.

From prior work in collegiate organizations at Stockton State College and Rutgers University, Moe Sampson and Dan Van Abs, the seminar coordinators, were aware that environmental groups would have problems peculiar to their groups because of their different stages in program development. Princeton, which established a group during Earth Week, 1970, had problems that were much different than the Seton Hall group, which was only a week old. Richard Weiss of Princeton had to decide how to systematically transfer organizational responsibilities when his group's leaders graduated, while Dr. Wayne Moyer of Seton Hall was concerned with how to establish a leadership structure. These were the kinds of problems that the student activists faced and the YES workshop was the forum for the solutions.

There was only one minor 'roadblock' that kept the seminar from being a total success. The difficulty was that the participants expected the workshop to be geared more toward issues, even though organizing was understood to be a major problem in operating environmental groups on campus.

Although YES is planning new seminars around specific issues, our goals are much higher. We plan to maintain the momentum of unity and friendship that was such a great part of the first seminar. It is this kind of solidarity that will produce long-lasting results for all of us working to inspire environmental action in New Jersey.

Note: Anyone interested in finding out more about the Youth Environmental Society can write to YES at P.O. Box 1127, New Brunswick, N.J. 08903 or call (201)-828-6880.

FRONT COVER

*Get Hooked on Trout Fishing in New Jersey—A Fishing Scene on the Big Flatbrook.
Photographed by Harry Grosch*

INSIDE BACK COVER

The Bog Turtle—Illustration by Carol Decker (See article on page 8)

BACK COVER

Wildlife Needs You—A Young Peregrine Falcon. Provided by the National Wildlife Federation for National Wildlife Week 1978. Photograph by David Hancock. (See editorial on page 1)



Carol Decker

Wildlife Needs You



**National
Wildlife Week
MARCH 19-25, 1978**

JOIN AND SUPPORT THE
NATIONAL WILDLIFE FEDERATION
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