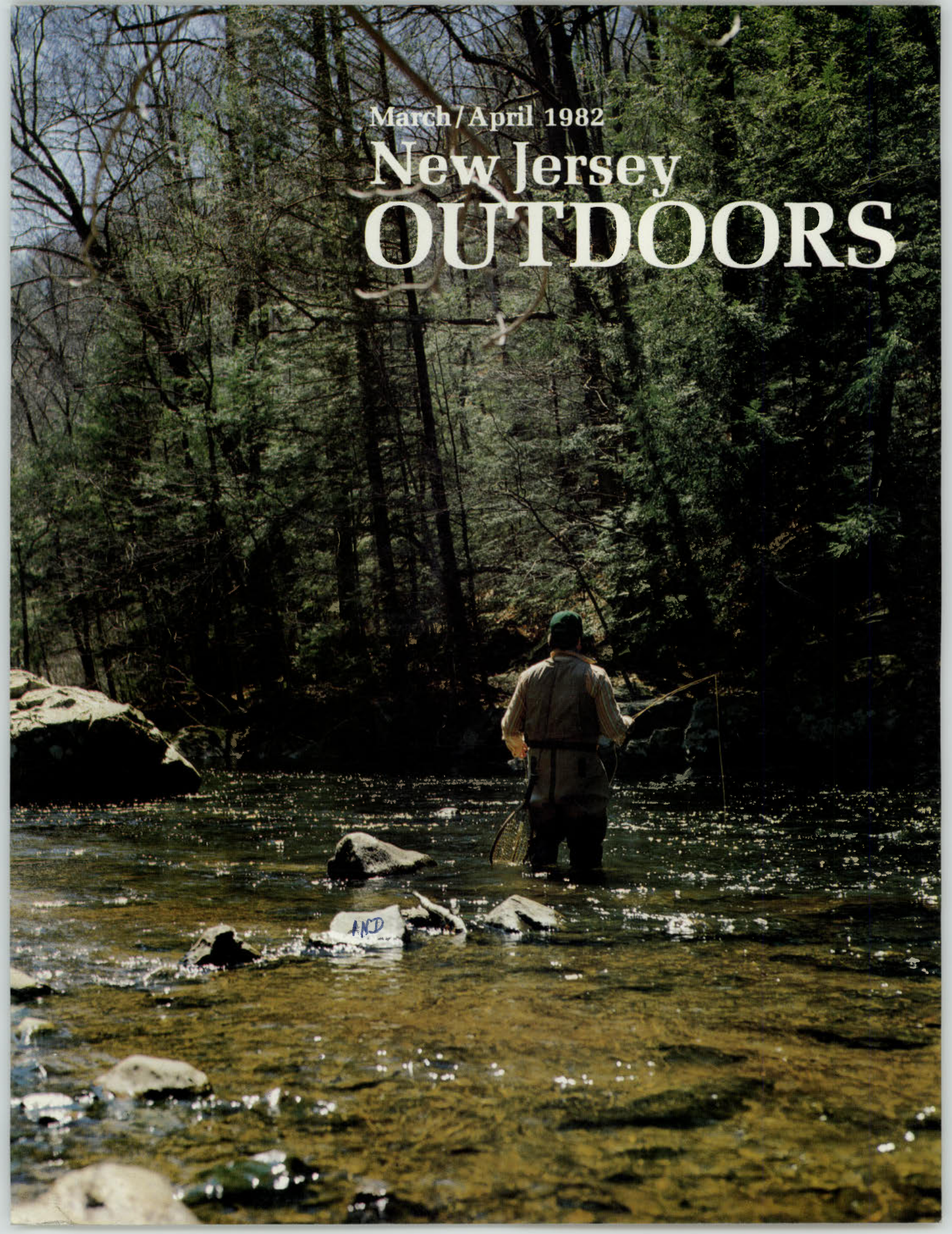
March/April 1982
New Jersey
OUTDOORS

New Jersey Outdoors Magazine

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March/April 1982
VOL. 9 NO. 2

New Jersey OUTDOORS

From The Editor

"We Care About Eagles"

The soaring bald eagle on our back cover introduces Wildlife Week, March 14-20. This year we celebrate the 200th anniversary of the bald eagle's selection as our national symbol, and the National Wildlife Federation has proclaimed 1982 as the "Year of the Eagle."

To show that "We Care About Eagles" the National Wildlife Federation introduces us to a Raptor Information Center which:

- Coordinates mid-winter bald eagle survey.
- Conducts Chesapeake Bay eagle banding project.
- Publishes *The Eyas,* a newsletter of raptor news items.
- Conducts raptor workshops.
- Administers a $500 reward program for information leading to Federal conviction of anyone killing a bald eagle.

The federation has also contributed to the welfare of eagles by:

- Working with researchers, wildlife managers, and legislators for the protection and proper management of eagle habitat.
- Producing the film "We Can Save the Eagle" and the filmstrip "We Care About Eagles."
- Establishing wildlife refuges in various parts of the USA.

To receive a 17 x 22 color poster (and other wildlife week information) of our back cover, write to:

Wildlife Week Poster
National Wildlife Federation
1412 16th Street N.W.
Washington, D.C. 20036

In this issue

It's spring again. And in the spring we turn to trout fishing—or some of us do. One such aficionado is Allen G. Eastby, a frequent contributor, who writes about *The Dry Fly Forever . . . or at Least Once in a While.* Read "Doc" Eastby's learned dissertion on how to hook the rising trout; then go out and purchase a 1982 fishing license and a trout stamp, and get your old flyrod ready for Opening Day, *Saturday, April 10.*

Our front-cover angler on the South Branch of the Raritan, Ken Lockwood Gorge, was photographed by Cornelius Hogenbirk.

Our resident iconoclast, fisheries biologist Robert Soldwedel (or so I've labeled him), is at it again tearing down some cherished beliefs in the article, *What We're Really Here For.* And he does score some points.

And before you can say, "Gobble, Gobble" we have *The Second Spring Gobbler Season* by wild turkey project leader Robert Eriksen. More than 2000 hunters will apply for 1200 permits selected from a random drawing. Season dates are listed in the article.

New Jersey's *Spring Voices in the Night* belong to the woodland frogs and toads awakening from their winter "slumber" eager to participate in the breeding season just beginning. The text and photographs were provided by Herpetologist Robert T. Zappalorti, former curator of reptiles at the Staten Island Zoo, which has one of the finest reptile collections in this area. The author has been under contract to the Division of Fish, Game and Wildlife working on reptile and amphibian research for the Endangered and Nongame Species project. This *Wildlife in New Jersey* series article is introduced by the illustration on the inside back cover by Carol Decker.

Author Linda L. Loveland writes, "It may surprise readers to know that Manhattan's tallest skyscrapers are within sight of . . ." *Cheesequake Marsh.* The author notes that this natural area provides such favorable food conditions that the region is packed with wildlife.

For the past six or seven years the spring weakfish run in Delaware Bay has attracted thousands of New Jersey anglers and with good reason. The thrill of hooking several or a dozen or so 5-, 6-, or 10-pound weakies makes it a worthwhile trip. Read *Spring Weaks in Delaware Bay* by expert saltwater fisherman, Pete Barrett, who tells us when to go and what to use.

Don't Mow it—Grow it! or *Alternatives to a Close-cropped Lawn* is by Jack Kligerman, who admits he doesn't like to mow the lawn. But his results are great—his "laissez-faire policy" has reintroduced native plants such as blackberry brambles, lillies, buttercups, violets, other wildflowers of all sorts, and a crop of saplings of white oak, sweetgum, mulberry, hemlock, holly, and others. And these wild plant growths have attracted many species of birds and other wildlife.

I confess I'd like to try this experment on my lawn. But my neighbor is a lawn fanatic—I'm sure she'd have me tarred and feathered for infecting her lawn.

Although we are accustomed to looking for the colorful fall foliage of our deciduous trees, we don't much notice the colors of our trees in bloom in spring, except maybe some of our flowering fruit trees. Read. *Vernal Colors/Trees in Bloom* by John Patt, Jr., new to our publication.

A continuing feature in our magazine, *More on Saltwater Fishing,* discusses four saltwater species: Red Hake, Winter Flounder, Black Drum, and White Perch. The article was compiled by Bill Figley; illustrations were provided by Anthony Hillman.

Because author Frank Clark described his fishing experiences on Preakness Brook to the Fisheries Bureau of the Division of Fish, Game and Wildlife, the future for trout in this small brook looks brighter. Read *Death of a Native.*

If you like to run amidst flowering cherry trees, join the *Branch Brook Park Cherry Blossom Run* on Saturday April 17. Check the article for details.

Harold Lindemann was distressed by the amount of litter he observed on his frequent walks in his area, so he started picking up litter in a big way. He recruited volunteers, made suggestions to the borough, wrote letters to the governor, and started a daily volunteer litter cleanup which extended over 21 weeks for one hour each day. During this period the effort netted 137 bags of litter and three large piles of trash. Author Lindemann is convinced that *We Can Win the Litter Battle,* and he's doing something about it!

Stephen M. Perrone

The Dry Fly Forever... or At Least Once in A While

by

Allen G. Eastby

PHOTOS BY AUTHOR

Already I had bounced the bottom of the car on the crown of the dirt road twice, almost took off the license plate backing into one tight parking place, and swallowed a double load of gum when I met a pickup truck fender-to-fender on a blind curve, so I eased the car off the road and into the pullout slowly and carefully, managing not to scrape the paint on the rocks and a wind-toppled tree limb. Usually such things don't bother me. They are all part of a visit to the South Branch of the Raritan in the Ken Lockwood Gorge. But on this Saturday I had to "work." The flyrod would stay in its tube, the reel in its case, and the vest piled negligently on the station wagon's back seat. Instead of fishing I'd be spending the day taking pictures. So every little thing that went wrong was blown out of proportion, becoming a scene from a grade C disaster movie.

After the car was safely parked (with the emergency brake on to keep the station wagon from rolling into the river, which was exactly what I expected would happen), I hung two cameras around my neck, slung the gadget bag stuffed with lenses, film, and filters over my shoulder, and marched down the road, looking for flyrodders to photograph. The light was perfect and a few wisps of mist that clung tenaciously to the tree tops would add a touch of atmosphere. Pausing momentarily to screw a filter into place, my eye caught a glimmer, a faint sparkle, in the bankside brush. Easing closer I would see spinners, scores of them, beginning to take to wing, appearing from the snug and secure niches where they had rested during the night. In a matter of moments mature mayflies by the hundreds were in the air, gathering over the stream, mating, and dropping down to the water's surface to lay eggs.

While I was engrossed in the mating ritual of the mayflies, two anglers had moved into position, one near the head of the pool, one at its tail. The trout were rising now, splashing and slashing, gobbling up spinners. But the two fishermen, who had indeed seen the rising trout, continued to lob their weighted nymphs into the current. It seemed to me that these flyrodders were literally ignoring the rising trout. They weren't alone. On the next pool upstream two other flyrodders also paid no attention to the rises that freckled the surface. Downstream, still another angler concentrated on flogging the water with a traditional "cast" of three wet flies. And all the while the trout rose.

As I made my way back to the car I no longer marched. My pace was more a slow scuffle. I had not been surprised, not really, by what I had seen: I knew full well that the dry fly has fallen on hard times. Yet whenever I see anglers slighting the dry fly I feel disappointed and on that morning disappointment quickly became depression.

We anglers are creatures of habit and none more so than trout fishermen. For most of us who chase trout the habit we have fallen into, the now comfortably familiar rut we run in, is nymph fishing. Luckily, it's a good way to catch trout so we don't suffer too badly because of our slavish adherence to the sunken fly. But by neglecting the dry fly we pass up unequalled opportunities to catch trout and miss out on the pure, unalloyed fun of taking trout on floating flies.

But, comes the question from the back row, don't you know that trout feed mainly *below* the surface? Indeed, I know that is what people believe. But is it so? What are the facts?

A number of theories have evolved out of studies done on what trout eat. The most widely circulated one is that trout do 90 percent (some say 70 percent, others 80 percent, and a few 95 percent) of their feeding below the surface. This is used as a justification for reliance on nymphs and other sunken flies. There is more than a little truth in this argument, just as there is no doubt that nymphs are effective. Yet if you go back and actually read the studies upon which this theory is based there is really only one conclusion you can draw and it's not the one that has been passed along from angler to angler until it has acquired the authority of holy writ. No indeed. The only thing that is true for all trout everywhere throughout the season is that trout are *opportunistic* feeders. They will eat literally anything and everything that comes their way: insects, crustaceans, fish, all are eaten with equal relish.

In most streams trout have to eat whatever is available. True, there are some streams in which the food supply is so abundant that trout can pick and choose and not worry about

Continued on page 4

The author doing what comes naturally: fishing a dry fly in April

CLARA A. EASTBY

Dry fly fishing on the Musconetcong

Continued from page 3

The Dry Fly

going hungry. But such waters are few and far between and most of us don't fish them very often. On the streams we fish regularly, trout have to take advantage of every opportunity to fill their stomachs, and this means eating everything from stonefly nymphs drifting along the bottom to adult stoneflies bouncing along the surface.

Trout also *like* to feed off the surface or, at the very least, they are *conditioned* to eat food from the surface. We might as well admit it: most of the trout we fish for and catch come from hatcheries. All of us have, at one time or another, visited a hatchery and, if it was at feeding time, watched as the trout churned the surface into a froth after dollops of "trout chow," the milled pellets hatchery dieticians and fish nutritionists are so proud of, are scattered over the rearing troughs. Of course, the fish will eat pellets that sink. But keep in mind that hatchery trout have spent their entire lives looking upward for food.

Wild trout (those born and raised in a stream) and carryover trout (those which have survived from earlier stockings) are also accustomed to eating from the surface. True, they are not as rigorously conditioned as fish fresh from the hatchery. But any trout that makes it through a year in a stream must have learned to make do with what is available. In most of our streams this means relying on the surface for a fair proportion of their meals, especially during the late spring and summer. Why? Most aquatic insects reach maturity during the spring. The nymphs that emerge from eggs laid in May are present in summer streams in tremendous numbers, but they are miniscule, much too small to be worth the energy a trout expends capturing them. An occasional large mayfly dun or an adult caddis, on the other hand, provides

Dry fly water without equal: the South Branch of the Raritan in the Ken Lockwood Gorge

The South Branch of the Raritan: where dry flies should be used but seldom are

more energy than it costs. Wild or carryover trout are incredibly efficient energy managers. They will find the best sources of food, those that produce the most energy for the least effort. This is as much a part of their makeup as spots, fins, or fear of sudden shadows. And as often as not, for most of the year, a stream's surface is the source of easily captured food.

Trout, then, are as likely to snatch something to eat from the surface as they are to ambush lunch near the bottom. This is why dry flies are a good choice in most angling situations, not only when "hatches" (emergences of aquatic insects) are underway. Indeed, after the first flurry of early season fishing is over, dry flies are better than nymphs on most days on most streams. The trout will be looking for meals from the surface and there is no reason why anglers shouldn't take advantage of this.

There may be hesitation on the part of some to try dry fly fishing because it is thought of as difficult. It isn't. In fact, it is far easier than nymph fishing because the dry fly is visible at all times and the angler therefore knows exactly what it's doing, where it is, and when it's taken. Furthermore, with the "new" and "rediscovered" patterns now available, finding good flies is no longer a chore. If there is a hatch of course it should be "matched." But if there is no discernable insect activity (and these days hatches are not as common, as predictable, or as intense as once they were) choose a fly that is imitative of what the trout *expect* to see or are *accustomed* to seeing. For instance, early in the season try dark olive, grey, and brown "downwings" (caddis or stoneflies). Later in the season switch to light olive, tan, and yellow flies. On many streams all season long there are some medium-sized mayflies active. Even if there is no concentrated emergence of duns or fall of spinners, trout will immediately recognize a Dun/Brown Spinner as something they have eaten before. Or if you like your sport stripped to the bare essentials, stick to a March Brown. In a range of sizes (10 through 20) this fly (or any of its variations) is effective from April through October.

Double V Cut-Wing Dun.

Hen Neck Feather Spinner.

Hackle Wing Spinner.

Paradun.

On that April day last season I wanted to grab one of the nymph fishermen and twist his arm until he used a dry fly. Instead, I drove over Schooley's Mountain to the "no-kill" water on the Musconetcong in time to see a youngster (he couldn't have been more than 11 or 12 years old) humiliate a gang of nymph fishers by catching a dozen trout on a roughly tied hair-wing caddis. I was so excited that I forgot my cameras and didn't get even one picture. Looking back, I deeply regret that I didn't try to capture the look of sheer pleasure on the youthful angler's face because that would have conveyed the real reason for using a dry fly: it's a lot more fun. □

From the Fly Box

Nowadays dry flies come in a bewildering variety of "styles" ranging from the conventional hackled type through strange-looking concoctions with wings of extruded synthetic fibers.

In most fly boxes, mayfly imitations still predominate, but now the traditional ties are supplemented by no-hackles (such as the Comparadun), double "V" hackles, and "parachute" (also called "paradun") types. All are good; all have a place in the box. Fast becoming a necessary adjunct are spinner simulations. These too come in a variety of styles: hackle wing, feather wing, hair wing, and polypropylene wing. The best are probably the hackle and feather wing versions.

Probably the most significant development in dry fly fishing in recent years is the so-called renaissance of "down wing" fly patterns, imitations of caddis and stoneflies. Clearly the best of these is the "delta-wing caddis." Following a close second is the "new" Adams (merely a conventional Adams with different-colored body materials substituted for the traditional grey muskrat). Bringing up the rear and making it a tight race are the hair wings, usually incorporating woodchuck, chipmunk, or mink tail hair or deer or elk body hair.

There are still plenty of opportunities for experimentation and innovation in tying dry flies.

What We're Really Here For

by Robert Soldwedel

Asked what the Bureau of Freshwater Fisheries does to justify its existence, I'll bet nine out of ten people think of trout stocking first. Probably five out of that ten think of trout stocking first and last. This is excusable because the stocking of trout is our most visable and most publicized activity. We ourselves tend to overstate the importance of hatchery trout production. It's reached the point where the numbers of trout produced are watched by the state's fishermen the way Wall Street brokers watch the stock market tapes. If the number drops, panic sets in and everyone asks "What's wrong with the division?" If the number goes up, everyone lights up cigars and celebrates. It's a shame that the bureau's and division's job performance is equated to trout production, for despite all the hoopla the trout stocking program is not the bureau's prime reason for being.

The basis for the creation of the Bureau of Freshwater Fisheries, and, in fact, the entire Division of Fish, Game and Wildlife is to protect and manage the wildlife resources of the state so that, in plain language, there will be enough wildlife to hunt, trap, fish for, photograph, or just plain enjoy, forever. The term "wildlife" includes any wild mammal, bird, reptile, amphibian, fish, mollusk, crustacean, or other wild animal. (Historic note: the original language found in Title 23 referred only to fish, birds, and game animals but this was refined to be more accurate and inclusive in 1973).

To meet this responsibility, of managing its particular portion of the wildlife spectrum, the Bureau of Freshwater Fisheries has within its organization more than a dozen trained biologists, who together with their fellow biologists from the division's other bureaus and the Nongame section form the largest pool of wildlife expertise in the state. This is not the type of work one does for the

Flanders Brook in Morris County is a typical north Jersey native trout stream characterized by a fairly steep gradient, pools and riffles, overhead cover, and cold, well-oxygenated water.

No chance for trout here, in what once was a fine trout stream. All trout habitat has been removed and the streambanks paved in the interest of flood control.

PHOTOS BY AUTHOR

Sun Valley Brook, also in Morris County is a stream that has been "improved" to serve human needs. No room for trout here.

purpose of making big money and the common thread that runs through each and every division biologist is a genuine concern for the state's wildlife and a dedication to its continued well being and availability to those who would enjoy it. I would also like to stress that, while the ways in which our biologists relate to wildlife run the gamut from the zealous consumption hunter to the impassioned passive observer, their basic objectives, an unending abundance of wildlife, are the same.

The relatively easy part of achieving this objective is in recommending regulations for control of the harvest of fish and game through the establishment of bag limits, season, size limits, and so forth. These are submitted to the Fish and Game Council for approval and adoption. What makes this part of our program relatively easy is that the council and division more or less have total control of this situation. The council, acting on the division recommendations, enacts the regulations and our conservation officers enforce these as well as the statutory laws. Before I alienate my associates in the law enforcement ranks, I'd better point out that their job is not an easy one, relatively or not. In fact, it's extremely difficult, frequently frustrating, and often dangerous.

Unfortunately, the fish and game laws alone are insufficient to protect the state's wildlife resources. These laws protect the wildlife, but except for a few noteworthy examples relating to pollution and lake lowerings, these laws do not protect the wildlife habitat. It should be obvious that without the habitat you cannot have the wilflife. The wildlife habitat on the division-owned wildlife management areas is about the only land in the state where the primary consideration is the wildlife resource and all its users (while the state parks and forests preserve land more or less in its natural condition, this land is not necessarily managed to provide the maximum benefit to wildlife). Wildlife, however, by the very nature of the word, should not be confined to a few intensively managed and zealously protected tracts of land scattered around the state. The basic ingredient in wildlife is freedom—there is a world of difference between a bear in the woods and a bear in a cage in a zoo. Herein lies the problem: Somehow, we've got to protect the wildlife habitat on lands not under our direct control, land that's serving other purposes for people with other interests.

The natural environment does not necessarily lend itself to maximum human exploitation. Humans fashion the landscape to suit their needs and serve their purposes. Trout streams are dammed up to provide water supply, forests are leveled for timber to build homes, fields are covered with asphalt for shopping-center parking lots, streams are channelized to allow buildings to be constructed in the floodplains, rivers become sewers, and what's done to the air defies description. Unfortunately, wildlife usually comes out on the short end of this stick. One of Murphy's Laws should read that the more desirable a species of wildlife is, the less tolerant it is of change.

When a new shopping center or highway is proposed, when a stream is to be channelized, when a barrier island is to be developed, who is there, with the needed expertise, to speak up for wildlife? Well, it's our responsibility, by law, and we have the desire and we have the expertise within the division to do this. Unfortunately (there's that word again), we do not always have the authority. There is not a person in this division who would not like to be able to demand a "stop what you're doing right now" order and make it stick. However, once we step outside what is specifically outlined as "our turf" we find we must take other interests into consideration and try to work our will through the authority of other agencies. Although we have many sympathetic friends throughout the various levels of government, working our will is not always possible in full. Considering the needs of wildlife is usually expensive to the builder. To accommodate wildlife properly often necessitates major revisions or even rethinking of plans, all at costs to the builder which are ultimately passed along to the consumer. When public safety or urgent public need (droughts, Mediterranean fruit fly, etc.) is involved, wildlife nearly always is the first thing thrown out the window.

The precedence for human abuse of wildlife habitat was set when the first nomads crossed over the Bering Strait from Asia and used an Alaskan salmon river as their sanitary facilities. Things didn't get any better for centuries after that, so turning this long-standing tide of abuse was not something that was going to happen overnight. It was not until 1973 that the then Bureau of Fisheries began formally and routinely to review all projects which might affect the state's fisheries resources. It was in that year that an application for federal aid was sought from the U.S. Fish and Wildlife Service under the Federal Aid in Sport Fish Restoration Act (usually called Dingell-Johnson for short, after its Congressional sponsors) to provide the funding to carry on these project reviews. This project, the Fisheries Technical Assistance Project, was subsequently approved. Two years later, the Bureau of Wildlife Management chipped in some of its funds from the Federal Aid in Wildlife Restoration Act (called Pittman-Robertson) and the project title was expanded to include "wildlife."

In recent years the newly formed Bureau of Marine Fisheries and the Nongame and Endangered Species Section also began providing their expertise to the program. By establishing this program we created the means to make our contribution, on behalf of the state's wildlife under the wave of legislation that was passed in the early 1970s when the country finally began to realize what it was about to lose. Laws such as the federal Environmental Quality Act of 1970, the federal Fish and Wildlife Coordination Act, and the state's Coastal Area Facility Review Act, new laws governing the use of riparian lands, and new state policies and procedures relating to water quality standards, sanitary landfills, and stream encroachments all provided an avenue for division input. We were finally getting the opportunity to see what was happening around us and to respond to it. A portion of this review process has since been withdrawn from the federally supported project and is now handled as a separate activity because of a new state funding procedure which allows for 100 percent reimbursement of the division's expenses from the general treasury (not from the Hunters and Anglers Fund). This arrangement was much fairer as the division's work in this area was benefiting everyone, not just the hunters and fishermen. However, most of the division's major project reviews (highway construction, power plants, U.S. Army Corps of Engineers flood control projects, federal policy proposals, etc.) remain in the federally supported Technical Assistance Project.

Under the Techncial Assistance Project, the division also

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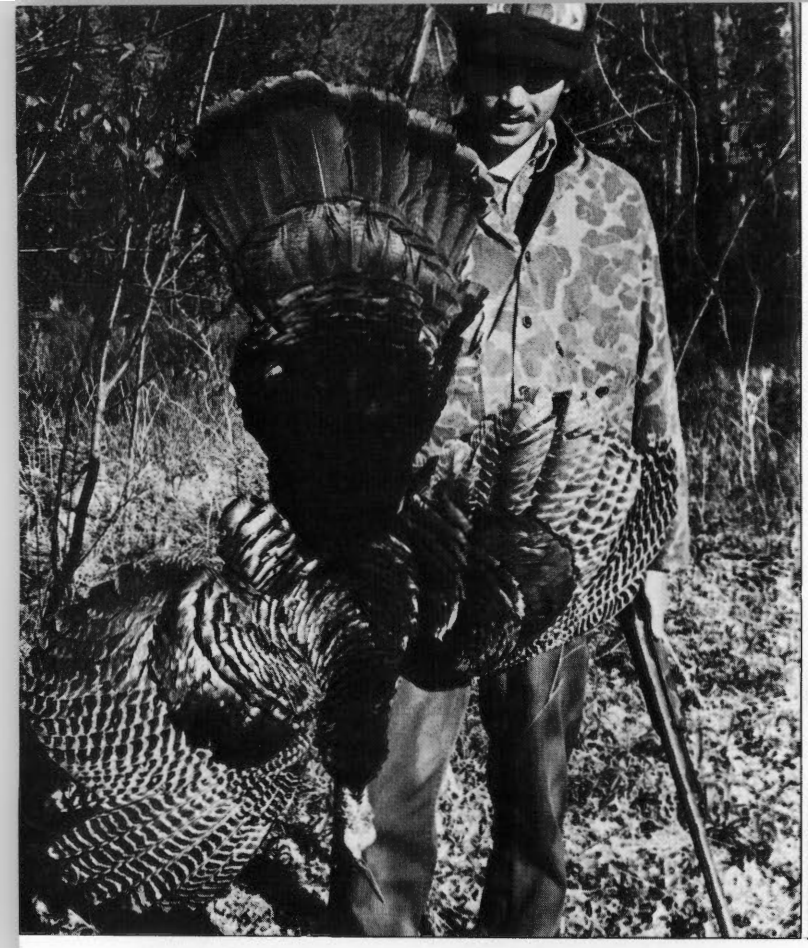

HARRY GROSCH

Louis Kuhn of Hackettstown, with the first New Jersey wild turkey taken by a hunter in nearly 100 years.

The Second Spring Gobbler Season

By Bob Eriksen

As the first hint of grey appeared in the eastern sky, the hunter checked his watch. It was 5:10 AM on the morning of May 3; a day for which he had prepared for nearly two months. He had spent four of his Saturdays and two Sundays out in the woods scouting, starting when the snow was on the ground. He had found plenty of signs in this area and once he had glimpsed a turkey. Was it a gobbler? He wasn't sure. But even if it wasn't, he had heard four toms on this hillside last Saturday morning.

Driving north with the radio on at 4:30, the hunter knew that the day was perfect. Stars winked at him from a cloudless sky and the temperature hovered around 38°. There was no wind to keep the gobblers quiet. Even if he had some pull with the weatherman he couldn't have ordered a better opener.

Leaning against a 90-year-old oak, a shiver went through him. Was it the cold, or excitement? He breathed into his hands to warm them. This forest had been farmland a century ago. It had reverted to forest over the years and was once again the home of wild turkeys.

The sky began to brighten in the east. A sleepy robin a hundred yards away greeted the morning with a light twitter. Somewhere a wood thrush sang a half-hearted song. The hunter quietly slipped three #4 magnum shells into his 12-gauge, checked the safety, pulled on his camouflage gloves, and straightened his face mask. He laid his calls at his side within easy reach and daydreamed about magnificent gobblers strutting by in courtship display. He knew that old longbeard was only 250 yards away. The bird had gobbled from the roost last night just before dark.

A lone barred owl hooted his rhythmic cadence, "Who cooks for you . . . Who cooks for you-all?" from down in the hollow below. The owl hooted again. When he did, the old gobbler awakened. The bird ruffled his feathers and shook the dew from his back. He'd be ready when the owl hooted again. When the owl hooted a third time the gobbler's head shot out and a mighty gobble thundered out across the valley. The large bird, whose long beard and spurs gave away his age, had answered a primeval urge to respond to the call of an owl. He didn't know why, but he often answered barred owl calls.

The hunter jumped at the sound. He had been half-dozing, soaking in the morning's beauty. The eastern sky was painted with orange, pink, and violet as the hunter slipped a diaphragm call into his mouth and imitated the sleepy tree call of a hen turkey. Before the muffled call was completed, the old tom had cut it off with a loud gobble. His gobble was instinctive. He was in breeding condition and the presence of a hen elicited an instant response.

Though his heart was pounding and his stomach had knotted up, the hunter resisted the temptation to call again. That old gobbler knew exactly where the "hen" was and calling too much to a roosting bird often cools the gobbler off.

It was nearly 5:30 and the entire sky was bright. The old tom scratched his head with a foot, and then stood on his perch 30 feet from the ground stretching his neck to search for the hen he had heard. He gobbled again, spread his great wings, and sailed to the forest floor 50 yards from the roost tree.

Picking up a box call, the hunter scratched out a series of excited hen yelps. He had heard the gobbler fly down and knew it was time to lure the bird in by imitating a hen who was interested in getting to know the old tom better.

When he heard the hen yelping, the gobbler immediately went into a courtship display. His tail fanned and was held vertically, his wings dropped and were spread, their tips brushing the ground, and his head turned bright red as blood rushed to the bare skin. He moved slowly, each step carrying him toward the hen 200 yards away.

It had been 10 minutes since the bird hit the ground

and he hadn't gobbled. The lone hunter began to grow a little concerned. A crow cawed in the distance and a gobbler across the valley responded. Had he made a mistake in calling? Had the old bird met a hen? What was going on?

Feeling quite dejected, the hunter stroked out a series of yelps on the box call. There was no response. What was wrong? Where was the bird? He clucked three or four times with the diaphragm in his mouth.

The gobbler was 125 yards from the hunter when he heard the hen yelp and cluck. His interest was definitely aroused but his response was cautious. He couldn't see the hen yet. He was displaying and was sure she would hear his drumming as he expelled the air in his chest. He moved deliberately in the direction of the hen . . . but he took his time.

After taking a breath, the hunter clucked once more on the mouth call, and hearing no response began to doubt his abilities. He picked up the box call and yelped again. Except for bird songs, the air was still. The hunter decided to risk a cackle. Moistening his lips and drawing a breath, he emitted a fast, excited series of yelps with the diaphragm-the breeding call of the hen turkey.

The old gobbler was in mid-stride when the hen cackled. He was caught off-balance but his head shot out and a double-gobble split the air. The old bird began to display once again and moved toward the hunter.

The double-gobble sent the hunter's heart into high gear. That bird was within 70 yards. But where was he? He pushed the diaphragm to the roof of his mouth and clucked three times. Then he purred and clucked again. His eyes scanned the forest in an arc. How could the bird be so close and remain invisible? The battle was on.

Twelve hundred lucky hunters will be able to enjoy experiences such as the preceding fictional account during the second gobbler season. New Jersey's second spring gobbler season is scheduled for May, 1982. Twelve hundred permits will be isued to hunters selected in a random drawing from all applications received. Hunters selected in the drawing will be eligible to hunt gobblers for one week of the four weeks season in the area of their choice.

Season dates for the 1982 season are as follows:

May 3-May 7,
May 10-May 14,
May 17-May 21,
May 24-May 28,

Over two thousand hunters will apply for the 1200 available permits. For 1200 people, there is a good chance to bag a gobbler without interference from other hunters and without worrying that they will be interfering with others.

Last year's hunt, the first since 1913, was an outstanding success. Many of the participants have indicated that they found it to be a highly enjoyable experience whether they bagged a gobbler or not. Almost eight percent of those who got permits were successful at bagging gobblers. Some of the successful hunters had never hunted the big birds before; others had varying levels of experience. All successful hunters shared one thing in common. They had spent time before the season scouting and practicing with various calling devices, learning how to imitate the call of a hen turkey. Many of these people had attended at least one seminar on spring gobbler hunting techniques and read a number of books and articles on the subject. They had done their homework and it paid off.

The first successful hunter was 17-year-old Lou Kuhn of Hackettstown. Lou used a Lynch box call to lure in his bird, a 17-pounder with a seven-inch beard. Lou had scouted the area prior to opening day and knew of several gobblers.

A total of 71 gobblers were taken during the 1981 season. Thirty-one birds were harvested the first week, 28 the second, and 12 during the third week. Weather played an important part of the kill. The third week was quite warm, a factor which can reduce gobbling activity.

Table 1

Gobblers Harvested During the 1981 Spring Gobbler Season In New Jersey by Area and by Day

	Day of the Week	Area 1	Area 2	Area 3	Daily Total
Week A May 4-May 8	Monday	3	9	4	16
	Tuesday	3	2	1	6
	Wednesday	2	0	1	3
	Thursday	1	2	1	4
	Friday	1	0	1	2
	Total	10	13	8	31
B May 11-May 15	Monday	0	4	1	5
	Tuesday	0	1	1	2
	Wednesday	3	8	1	12
	Thursday	3	3	0	6
	Friday	1	1	1	3
	Total	7	17	4	28
C May 18-May 22	Monday	3	1	0	4
	Tuesday	1	0	1	2
	Wednesday	1	1	0	2
	Thursday	0	0	3	3
	Friday	0	1	0	1
	Total	5	3	4	12
		Area 1	Area 2	Area 3	Total
	Overall Totals	22	33	16	71

Gobblers were harvested every day of the season (see Table 1). The heaviest harvest occurred on the opening day (16 birds) and on Wednesday of the second week (12 birds). Both days were clear and cool, just the right kind of day for gobbling activity.

Differences in the harvest occurred in the three areas open to hunting. The largest number of birds was taken in Area 2 (32 birds). Area 1 was second with 23 birds and Area 3 was third with 16 gobblers. These differences in the total harvest reflect the size of the hunting area rather than number of turkeys present.

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Suddenly it's Spring

Open House At the Fish Hatchery

WHAT:
Open House

WHEN:
Sunday, March 28 10 A.M. to 4 P.M. (Rain Date: April 4)

WHERE:
State Fish Hatchery—Hackettstown*

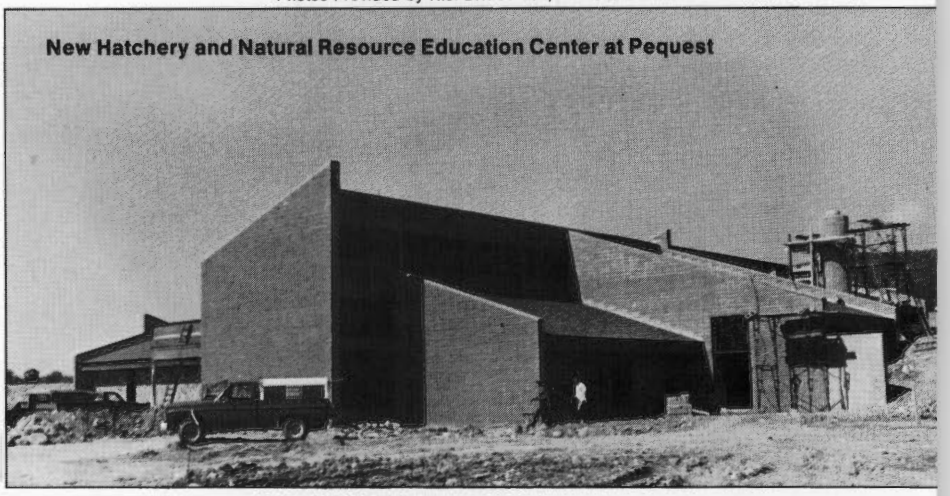
WHY:
A Family Fun Day Outdoors

ACTIVITIES:
For the Young and the Young-at-Heart

- ***Free bags of fish food to youngsters so they can feed the fish in the raceways.***
- ***Free issues of New Jersey Outdoors magazines.***
- ***Guided tours of the Fish Hatchery.***
- ***See the tens of thousands of fish of all sizes in the raceways.***
- ***Display tanks of Brown, Brook, Rainbow and Lake trout for viewing and photography.***
- ***Display tank of Tiger Muskies and Striped Bass.***
- ***Artist's Concept of the New Fish Hatchery at Pequest; also fact sheets on the new hatchery. And a short trip west on Rt. 46 will reward you with the new hatchery buildings in progress.***
- ***The place to purchase your 1982 fishing license, trout stamp, etc.***
- ***The place to find out everything you wanted to know about fish, fishing, and wildlife in New Jersey.***

*The Fish Hatchery is located one mile south of Route 46 from the center of Hackettstown on Rockport Road.

Photos Provided by N.J. Div. of Fish, Game and Wildlife

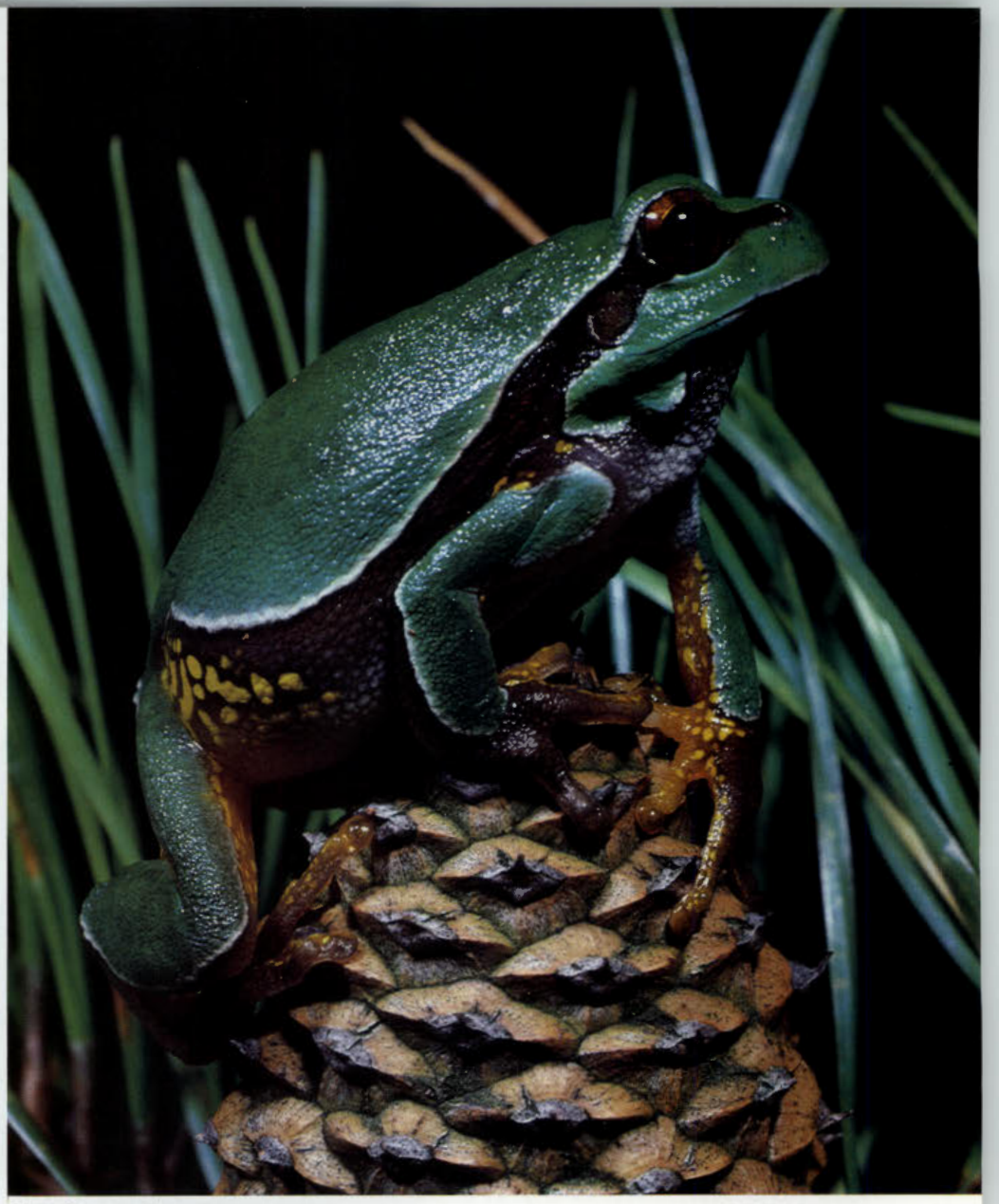


New Hatchery and Natural Resource Education Center at Pequest

Tiger Musky

Spring Voices In The Night

by Robert T. Zappalorti



Pine Barrens Tree Frog PHOTOS BY AUTHOR

The cold grip of winter relaxes toward the end of March in New Jersey. Stimulated by the rising temperatures, little creatures that have been "sleeping" deep under the muddy bottom of the pond, or nestled in a subterranean burrow, are awakened. The silence of the quiet woodland ponds is broken when the breeding season arrives, announced by a chorus of assorted shrill, clear whistling peeps or croaks, voiced every second or so. The strange noises emanating from the ponds are New Jersey's frogs and toads, which are just beginning their reproductive cycle.

One of the first vocalists is the spring peeper, a tiny member of a large family of frogs known as the Hylidae to scientists, more commonly referred to as treefrogs. These frogs can climb freely among the tall grasses, shrubs and trees that border the ponds and wetlands where they make their homes. This is made possible by a small disc or "suction cup" at the end of each toe. Peepers are usually light tan to dark brown, but always have a dark cross-shaped marking on their backs. This gives them their scientific name, *Hyla crucifer.* The skin of the stomach is pinkish-orange. Their maximum length is 1 1/2 inches.

There are 15 species of frogs and toads native to New Jersey. They are capable of producing a wide variety of whistles, croaks, grunts, and trills. The ability to produce these sounds is very important to their survival. It is the vocal breeding call, produced only by male frogs, which attracts the females to the pond, for the all-important process of reproduction. Each species of frog has its own distinct call, to ensure that the female will be attracted only to the male of the same species.

The call is produced when air is expelled from the lungs, passed over the vocal cords, and into the vocal sac. The vocal sac may be internal, as with the bullfrog, or external, as in the Fowler's toad. Some frogs, such as the spring peeper, have a single vocal sac, whereas the carpenter frog has double sacs. The vocal sac acts as a resonator, or echo chamber, which serves to amplify the call so that it can be heard from some distance away.

The wood frog, *Rana sylvatica,* along with the spring peeper, is another early spring chorister. It is a handsome member of the Ranid family (the true frogs), and is usually light brown to dark orange, with a dark "robber's mask" over the eyes and on the sides of the head. There are two ridges of skin (the dorsolateral folds), along the sides of the back. The maximum length of this frog is three inches. The earthy colors of the wood frog blend in very well with fallen leaves and other debris on the forest floor, making them extremely difficult to observe outside of the breeding season. Their call sounds like the quacking of distant ducks.

Rivaling the spring peeper for the honors of being the smallest frog in New Jersey are the chorus frogs, also members of the treefrog family. There are two subspecies in New Jersey, the New Jersey chorus frog, *Pseudacris triseriata kalmi,* and the upland chorus frog, *Pseudacris triseriata feriarum.* Their calls are similar to the sound produced by running one's finger over the small teeth of a pocket comb. The New Jersey chorus frog can be recognized by the three broad, dark stripes running the length of the back, while in the upland chorus frog, these stripes are usually broken up into spots. Both have a light line along the upper lip. These tiny frogs call from the surface of the water, often at the base of a grass tussock, and are very difficult to spot, especially since the slightest disturbance will result in their ceasing to call.

The peeper, wood frog, and chorus frogs all have the ability to resist low temperatures. They have been known to

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Spring Voices

call in full chorus, even when ice covers the shady portions of the pond.

As April brings warmer nights, other species of frogs join the chorus. The southern leopard frog, *Rana utricularia,* adds its guttural call to the almost deafening sound of the peepers. Leopard frogs can vary greatly in color pattern, but usually have a double row of white-bordered, roundish black spots extending down their green or olive-colored backs. Beginning at the back of each eye and extending along both sides of the double row of spots to the base of the hind legs is a prominent dorsolateral fold. The belly is white.

Other names given to this amphibian include grass or meadow frog, since after the breeding season is over they often leave the ponds and forage in damp fields for grasshoppers and other insects. These constitute about 90 percent of their diet. This species is the one most often used for experimentation in schools and laboratories. Leopard frogs are also one of the few species of frogs that can tolerate brackish water, although they will breed only in fresh water.

Very similar in appearance to the leopard frog is the pickerel frog, *Rana palustris.* This species differs in having a double row of square brown blotches down the back between the dorsolateral folds, and has bright orange patches on the concealed surfaces of the hind legs. Its maximum length is 3 1/2 inches. Pickerel frogs begin their breeding cycle at about the time that the leopard frogs finish theirs. Sometimes the two species breed in the same pond. The "snoring" call of the pickerel frog sounds similar, but the pitch and intensity is much lower than that of the leopard frog. These frogs are often difficult to find because they call while partially or even completely submerged in the water.

Joining in with the harsh, guttural calls of the preceding species in early spring is the melodic trill of the American toad, *Bufo americanus.* Found only in the northern part of the state, the American toad, and toads in general, differ from frogs in having a rather dry, rough, warty skin, as opposed to a relatively smooth, moist one. It averages about two to three inches in length, and varies in color from yellow-brown to gray to olive-green, or even brick-red. All toads have an enlarged parotoid gland, located behind the eye and above the eardrum. These glands secrete a milky fluid which is poisonous to any animal which might try to eat the toad. Exceptions to this rule are the water, garter, and hognose snakes, and the skunk, all of which are able to eat toads without any apparent ill effects. Needless to say, humans cannot contract warts from handling frogs and toads; this belief is merely an old wive's tale.

Spring Peeper, Hyla crucifer

Fowlers Toad calling

The only amphibian in New Jersey likely to be confused with the American toad is the Fowler's toad, *Bufo woodhousei fowleri.* It is generally slightly smaller than the American toad, and is found mainly in the Pinelands of central and southern New Jersey. One way to tell them apart is to examine the dorsal surface. Both of these toads have patches of dark pigment on the back. However, the Fowler's toad will have three or more warts in each of these dark patches, where the American toad will have only one or two warts in each. Another way to differentiate between the two is by their calls. The call of the

Fowler's toad has a nasal quality to it, and has been described as sounding like the bleat of a goat or sheep. If one whistles and hums at the same time, this call can be easily imitated. It is quite different from the musical trill of the American toad.

In general, toads *(Bufo)* lay their eggs in a long jellylike string, rather than in a mass, like the true frogs (*Rana*). Once the eggs are deposited on submerged vegetation, the adults leave the pond and remain on dry land throughout the year. They hunt at night, and eat great numbers of beetles, grubs, and other injurious insects. This makes them a real friend of the gardener, and very beneficial to humans. They do not return to water until breeding time the following spring.

Just as the peepers finish their breeding activities, another frog begins. Mid-April to June is when the plunking voice of the green frog, *Rana clamitans melanota,* is added to the nightly symphony. Abundant and widely distributed throughout New Jersey, green frogs are usually some shade of green about the head and fore parts of the body, with some individuals being brown, or even having small blacks spots on the back and hind legs. The males have bright yellow throats. While the frog is calling, the vocal sacs swell up to look like two small balloons. Their call is best described as the sound of a loose banjo string being plucked again and again. At the peak of the breeding season they may call in the daytime as well as at night. Green frogs have prominent dorsolateral folds, and reach a maximum length of four inches.

A close relative of the peeper that breaks hibernation at about the same time, but which does not add to the vernal chorus until May or June, is the northern cricket frog, *Acris crepitans crepitans.* It is best identified by the rough, warty skin, usually emerald green and brown with a dark triangle between the eyes. Cricket frogs are capable of jumping 33 times their own length. Their powerful leaping ability helps them to escape from their many enemies. They attain a maximum length of about 1 3/8 inches. The cricket frog's voice has been likened to the sound of two pebbles being clicked together rapidly. To the uninitiated listener, the call is more insect-like than frog-like. When a large congregation of these frogs are calling at the same time, it can be quite deafening.

A visit to the sphagnum bogs and cedar swamps of southern New Jersey in May and June will introduce the observer to two very interesting amphibians, the carpenter frog, *Rana virgatipes,* and the Pine Barrens treefrog, *Hyla andersonii.* Both these frogs are

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Gray Treefrog on holly

Wood frogs in mating position

Pickerel Frog, Rana palustris

Author caught and released two trout here. Note the clarity of water. One hundred yards to the right is a large shopping center.

PHOTOS BY AUTHOR

A small trout

DEATH OF A NATIVE

BY

FRANK CLARK

One sunny winter day in February, my neighbor, Steve, sounded off, "Let's go fishing! I outdid you during winter bow, and now hunting season is over." He was smiling and obviously holding something behind his back. "Okay," I replied sarcastically, "let's see it." Out popped a fine, beautifully colored brook trout, about ten inches long. "Where do you have to go for that —the Poconos?" I quipped. "No," he answered earnestly. "I caught him here in town."

My mind flashed back several years when my wife and I used to visit an older couple, and over a glass of ale, listen to the way things

The future looks better for trout in the Preakness (or Singac) Brook since Frank Clark told of his experiences fishing there. As a result of his discovery, the headwater region of the Preakness has been reclassified to "trout production waters" by the New Jersey Division of Fish, Game, and Wildlife. In an effort to save the trout and trout producing-capacity of the stream, the Division has notified the Wayne Township Environmental Commission, the mayor, the township engineers, and other local officials. "Unfortunately," says Andrew Didun, Regional Fisheries Biologist with the Division, "all we can do is make recommendations. We can't force the local officials to preserve the trout producing-capacity of the Preakness, although that is certainly what we are recommending to them." Mr. Didun is also urging anglers to refrain from fishing the Preakness at this time. The trout population is still at a critical level, and as noted in the story, most of the fish are too small to make for good fishing. Biologists at the Division of Fish, Game, and Wildlife are not stocking the stream, because they don't want to introduce disease into the natural population.

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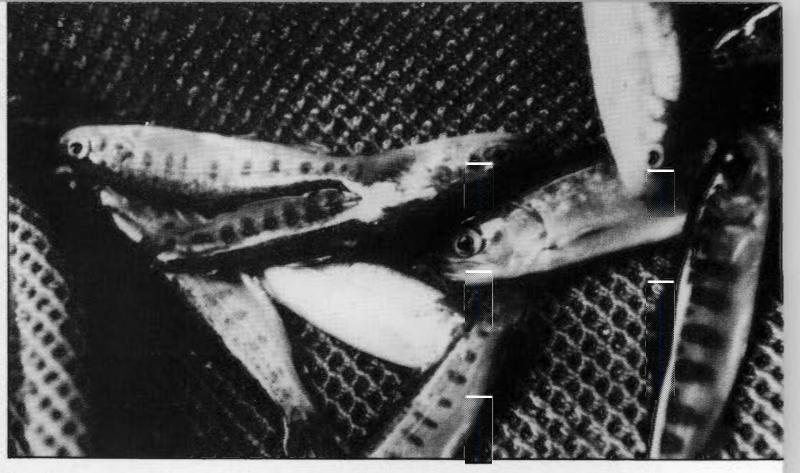
What We're Really Here For

maintains representation on or provides input to inter- and intrastate commissions and councils (such as the Pinelands Commission, the Delaware and Hudson Rivers Fish and Wildlife Management Cooperatives, and the Natural Areas Council). It also makes itself available to any local environmental commission or sportsmens group that requests it, to provide input on behalf of wildlife and its users (as a rule of thumb, when you truly benefit wildlife, you also benefit its users—the hunters, trappers, fishermen, photographers, bird watchers, etc.). Basic truths about the management of wildlife must be conveyed to these groups where wildlife expertise would otherwise be lacking. Most people consider themselves knowledgeable about wildlife and they all have the best of intentions, but they seldom are aware of all the long-term ramifications of their proposals. What they might consider a good idea could turn into an ecological disaster. For example, overprotection of any one species, be it deer or trout, could at best turn out to be useless or at worst the waste of a resource (in a world that can ill-afford waste of any kind). In the interests of fairness it should be noted that sometimes the sportsmen's notions about wildlife are as far off base as those of the preservationists. The division also found it imperative to get a handle on aquatic vegetation control, at least in state-controlled lakes, before overapplication of herbicides wiped out the pickerel population.

After we became actively involved, the first year or two of the battle was largely centered around getting the chance to comment on other people's projects. The battle was won and the fight shifted to having our comments recognized. While this has not been accomplished to our complete satisfaction, we have scored some important victories, not the least of which was getting universal acceptance and recognition of our trout water classification in such programs as the state's water quality criteria. Under the present regulatory setup, trout streams should no longer be subjected to effluents that would raise their water temperature or deplete their dissolved oxygen supply to the point where trout could no longer survive. We've identified critical wildlife habitats and directed development away from these areas. Many potential problems can be averted by comments made early in a project's planning stage. This is a much better approach than coming around during or after construction to pick up the pieces. Along this line, we have had considerable success in limiting activities in or near streams to those periods of time which would not have a negative impact on wildlife reproduction, anadromous fish spawning runs, and trout stocking. We've also strived for bridges and culverts to be constructed so that they do not form blockages to fish migration under low flow conditions. The incorporation of fish ladders in dams proposed for rivers with anadromous fish runs is also a routine demand of the division. The filling in of wetlands and floodplains, the channelization of streams, and other such environmentally destructive activities are invariably opposed, except in cases involving public safety or where no other feasible alternative exists. In all our reviews we try to avoid giving people a flat "No" and instead suggest less



Trout do reproduce in the wild, in New Jersey, when given half a chance. Our number one objective is to give them that chance.

environmentally destructive alternatives or mitigating measures that make the project more sufferable. Although it goes against our idealism, sometimes a little "give and take" will produce more positive results than we would get by being stubborn, especially since we don't always have the legal authority to back up our demands.

We never fail to put in our two cents for our sponsors (the license-buying hunters and fishermen) whenever we can. If the opportunity exists in the project to incorporate wildlife management considerations, or to provide access for hunting and fishing and/or to guarantee that such outdoor recreations will be provided on the lands and waters involved, we always make these considerations a condition for our approval. In our project reviews and other dealings we always try to remember our twin commitments to the well-being of the wildlife resource and the needs of the users.

The frustrating part of all this is that in many cases, even though our points are scientifically correct we cannot always make our comments stick. All too often we find that our recommendations (which are often only that) are ignored for a supposed overriding public need or because they are too much trouble to incorporate in the plans and cost too much in money and time. This is an extremely painful time for our biologists because they know all too well the environmental consequences involved. It's kind of like the feeling you get watching your favorite football team get beat 72 to 0, except in these cases there is no "wait till next year." Followup field investigations, to see whether the project conditions you requested were adhered to, also present problems. Once the damage is done, even well-intentioned attempts at restoration never really replace nature's original system. But even with these shortcomings and heartaches, we are one heck of a lot better off today, in our efforts to protect and manage the state's wildlife resources, than we were in the past. God willing, we'll be even more effective in the future.

If any portion of the division's activities is fully deserving of the support of every citizen of the state, it is this one, for this deals with improving their quality of life. To flourish, wildlife needs an unpolluted and undegraded environment, and so do *we*. Over the years, this portion of the environmental quality crusade has been "our baby," and this is what gives the hunter, trapper, and fisherman the right to stick out his chest and loudly proclaim to the world that "He pays for wildlife." □

TONY HILLMAN

"Litter, Litter, everywhere . . ."

We Can Win the Litter Battle

By Harold Lindemann

As a senior citizen, I can recall my boyhood summers in Wisconsin, going barefoot all the time without cutting my feet on glass or tin cans. Children today are deprived of that pleasure with all the glass and litter around. Those carefree days ended with the population boom, when people started carelessly throwing cans, bottles, cigarette packages, matchbooks, and other litter around with complete disregard for the beauty of nature and health of their fellow beings, fish, birds, and animals.

Perhaps we cannot restore our streams, lakes, and rivers to what they were 70 years ago, but we surely can improve them and beautify our general environment if everyone will pick up litter everywhere. A man at an Eatontown pick-up-litter rally said to me, "Mr. Lindemann, I've been throwing my cigarette packages, matchbooks, and cigarette butts on the ground all my life. Now that I have been picking up litter today, and see how awful it is, I'm going to stop it."

Litter is not only unsightly, cluttering up yards, streets, parks, forests, and highways, but, as I have said, "Litter, litter, everywhere—when the wind blows, it's in the air." An example of how litter is blown from property to property was shown me when my landlord had my check blown from his hand while depositing it at the bank drive-in window. After fruitlessly searching for it, I noticed that the wind was blowing toward a gas station across the highway, about 350 feet away. I went to alert the attendant to be on the lookout for my check, but before I finished the sentence, he reached in his pocket and handed me the check.

Much litter lies around so long that the paint and print leaches off and ends up, along with rust, polluting our waters. The zillion cigarette and cigar butts thrown on the ground discolor our waters and then we talk about how awful our streams look. Just take a few cigarette butts and crumple them in a glass of water, after several weeks, the water turns almost black. Shouldn't we stop feeding the fish, birds and animals nicotine cocktails, sulphur from matchbooks and paint and print from tin cans and paper litter? Singapore, which claims it is the cleanest city in the world, fines people $200 for throwing cigarette butts on the ground.

A lady told me that when she was young, her parents instructed her to keep penny candy wrappers in her hand or pocket until she could place them in a receptacle or could bring them home. Young and old today need to follow that simple practice.

Every week while picking up litter I find some money, which I put in the church collection plate on Sundays, figuring that it is not my money. I found a corner of a $100 dollar bill near my residence and am still looking for the other part! In addition, I find good pencils, nuts, bolts, etc. I pick up many nails and jagged pieces of glass, which helps save on everybody's tires.

I suggested that our borough, Eatontown, start an antilitter campaign. The Pride-in-Eatontown Committee was established and I am now chairman.

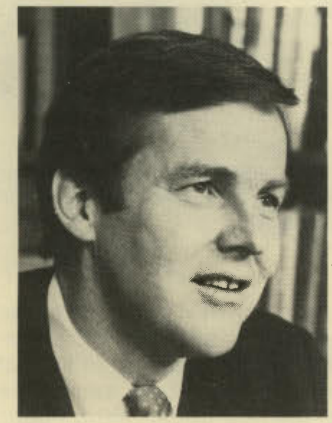
Eatontown citizens have shown great interest in litter work. Every week some area of the borough needing care is brought to the attention of the committee. A school poster contest produced more than 100 posters, all with catchy slogans, exhorting people to clean up litter, such as, "Pick up litter, make your town glitter." One showed a lion saying, "Be on the prowl for litter." It has been suggested that civic groups organize regular weekly or monthly pick-up-litter hikes and that parents do likewise with their children, ending up with refreshments after the pickup. And all walk-a-thons should be converted into constructive pick-up-litter-thons. Another suggestion is that people who walk their dogs ought to carry bags with them and pick up litter along the way in exchange for waste their pets leave behind on lawns of neighbors; several towns now require dog-walkers to clean up after their pets.

I recruited a group of volunteers and we started picking up litter one hour a day on Wednesday mornings. For 21 consecutive weeks we "harvested" a total of 137 bags of litter and three piles of trash. Eighteen bags were bottles and cans which I took to the recycling unit; the money earned is used for Boy and Girl Scout groups. After pickups, we chatted over free soda, coffee, and doughnuts. One week, we had Boy Scouts and parents out with the temperature just below freezing. The free refreshments made a big hit with the boys.

I suggested to our Governor that windshield stickers, placed in cars when the cars are inspected, have wording about fines for littering. I received a letter in early January from the Commissioner of Transportation that they are seriously considering this suggestion. Also, they are considering my suggestion to have the unmarked patrol cars on the Parkway and highways used to apprehend and arrest litterers. Surely no one will throw out litter if they know an unmarked police car might be following them.

Let's get involved and keep our state looking like the "Garden State."

Environmental News



NEW ADMINISTRATION'S AIMS STATED BY KEAN

Thomas H. Kean was sworn-in as the 48th Governor of New Jersey by Chief Justice of the New Jersey Supreme Court Robert N. Wilenz on January 19, 1982, at the War Memorial Building in Trenton. In his inaugural address, Governor Kean called on the State Legislature to work with him to meet the state's obligations despite diminishing resources and begin a "new renaissance in Trenton."

Kean said he would direct his administration to deal with the problems of transportation, the improvement of the educational system, the protection of the environment, fighting crime and rebuilding the cities.

In regard to environmental protection, he said, "We must never forget that the land we occupy today is but a trust for those who will follow us. Our children and grandchildren deserve the right to live and work in this state free from the fears of poisons in the air, water and earth."

AMERICAN CYANAMID AGREES TO CLEAN UP CHEMICAL PLANT SITE

Under terms of an agreement with DEP, American Cyanamid is undertaking a massive pollution clean-up program at its Bound Brook (Somerset County) plant site. The agreement, embodied in an Administrative Consent Order that became effective on January 1, provides that American Cyanamid (Cyanamid) will continue to withdraw and treat its groundwater, continue to control off-site migration of contaminants, and begin a program of assessing and remedying its lagoons and other sources of pollution. The cooperative agreement was reached just six months after DEP served Cyanamid with an order to address a cleanup of its plant site.

Specifically, the consent order consists of four areas: prevention of migration of the contaminants from the Bound Brook plant site, elimination of known sources of pollution, an evaluation of the entire site leading to elimination of other sources of pollution which may be found, and a study to determine Cyanamid's impact, if any, on the water quality of the Raritan River. Under the terms of the Consent Order, Cyanamid is required to pump a sufficient amount of ground water to prevent off-site migration of contaminants. The effectiveness of this program will be monitored by the DEP. As part of this program, Cyanamid is required to meet federal and state permit discharge limits for all of the pumped water.

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ROBERT E. HUGHEY DEP COMMISSIONER

Robert E. Hughey, 38, of Margate (Atlantic County), has been nominated by Governor Kean and confirmed by the State Senate as the new Commissioner of Environmental Protection. Hughey, a principal in the planning and design firm of R. E. Hughey Associates, Inc. in Margate from 1974 until his appointment, was director of cooperative education at Stockton State College from 1970 to 1972; and held administrative positions at Syracuse University from 1968 to 1970. Earlier, he was a technical representative for E. I. duPont & Co. (1965-1968). Hughey is a member of the American Institute of Planners and the American Institute of Certified Planners. He is a licensed professional planner in New Jersey.

Hughey, who received his B.A. degree in political science and economics from Gettysburg College, earned a master's degree in public administration from the Maxwell School of Public Administration

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$33 MILLION FOR TOXIC WASTE CLEANUP

On January 6, Assembly bill 3699 which appropriates moneys from the Hazardous Discharge Bond Fund for identification and cleanup and removal of hazardous discharges, was signed into law by Governor Byrne. (The Hazardous Discharge Bond Act proposal was approved by New Jersey voters in November 1981.)

The law, Chapter 406, P.L. 1981, appropriates—

- **$10 million** for the state share (10 percent) of federal Superfund moneys for 10 abandoned toxic waste dumps now being considered for cleanup by the U.S. Environmental Protection Agency. These are: *Bridgeport Rental & Oil Service,* Logan Township (Twp.), Gloucester County; *Burnt Fly Bog,* Marlboro Twp., Monmouth; *Kin Buc,* Edison Twp., Middlesex; *LiPari Landfill,* Pitman, Gloucester; *Spence Farm,* Plumsted Twp., Ocean; *Pijak Farm,* Plumsted Twp., Ocean; *D'Imperio Property,* Hamilton Twp., Atlantic; *Price's Landfill,* Pleasantville/Egg Harbor Twp., Atlantic; *Lone Pine Landfill,* Freehold Twp., Monmouth; and *Friedman Property,* Upper Freehold Twp., Monmouth.

For the time between this appropriation and the receipt of federal Superfund moneys, the law permits the use of the state funds for the actual cleanup and removal of toxic wastes from these sites.

- **$20 million** for 26 other sites identified for cleanup and removal of hazardous

Continued on page 16D

DEP Spotlight on . . .

TIDELANDS DELINEATION

DEP's Office of Environmental Analysis (OEA) is now in the process of mapping the tidelands of the state. Tidelands are defined as those lands now or formerly flowed by the tides at or below mean high water. Tidelands are state-owned, unless the tidelands agency (Tidelands Resource Council) has granted or sold them. State-owned tidelands are an asset of the fund for the support of free public schools. All monies received from the sale or lease of tidelands goes into this fund.

Roland Younghans, chief of DEP's Office of Environmental Analysis, in the article below, details the careful, analytical procedures used in the mapping program.

Governor Thomas H. Kean was Assemblyman Kean (R.-Essex) when he was a sponsor of the legislation which created the Department of Environmental Protection. It was on the first national Earth Day, April 22, 1970, that Governor William T. Cahill signed the measure into law. At the same time he named Richard J. Sullivan Commissioner of the new department. Public officials and legislators (sponsors of the bill) attended the event. Seated, left to right, in the 1970 picture above: Assemblyman Thomas H. Kean (R.-Essex); Governor William T. Cahill; Assemblyman David Goldfarb (R.-Essex). Standing, left to right: Assemblyman John Dawes (R.-Monmouth); Assemblyman Karl Weidel (R.-Mercer); Dr. James R. Cowan, State Commissioner of Health; Richard J. Sullivan, DEP's first Commissioner.

Potential state-owned tidelands may be found in 17 of the state's 21 counties. To catalog state-ownership claims to tidelands, approximately 1600 tidelands photo-base maps at a scale of 1"-200" have been prepared. These maps depict approximately 2400 square miles of land (30 percent of state) within which state-owned tidelands may be found. Basemaps were prepared from infrared photography flown in the summers of 1977 and 1978. The photography is precisely enlarged and rectified to correct for any tip or tilt of the airplane at the time of exposure of the film. Resultant basemaps exceed National Map Accuracy Standards.

The legislature mandated that tidelands mapping be done when they passed legislation which can be found in N.J.S.A. 13:1b-13.2 *et seq.* This statute also established general guidelines for the mapping, but a specific program had to be developed and implemented. OEA has developed a precise mapping program using aerial photography, certified datums of mean high water, field investigations, historical photography, analysis of maps and charts, and precise determinations of the head-of-tide. The program draws upon a staff of experts who have knowledge and experience from a wide variety of disciplines, including cartography, photogrammetry, remote sensing, biology, tides and their measurement, statistics, surveyjng, civil engineering, and computer sciences.

All maps are prepared in accord with written rules which have been adopted by the Tidelands Resource Council. All mapping techniques were the subject of intense court scrutiny in "City of Newark *et al.* v. Natural Resource Council *et al.*" On 15 May 1980, the New Jersey Supreme Court found the OEA's mapping methodology was in accord with the legislative directives.

All mapping work is accomplished without knowledge of ownership and parcel boundaries to insure impartiality. Work is scheduled within pre-established zones which are based upon areas of similar tidal characteristics. This statewide program began with the collection of tidal data in over 200 locations for periods of three months to one year. Certified datums (elevations) of mean high water were calculated at each location by the National Ocean Survey. Elevations are monumented by permanent benchmarks. This datum information is used by trained biologists, surveyors, and engineers in conducting investigations regarding extent of tidal flow and vegetation identification with respect to mean high water.

Delineators analyze field data in relation to the signature (tone, texture, height) on infrared photography as well as historical photography, maps, charts, and other sources for each tidelands map. Maps are checked in the field before final drafting. Each map undergoes a 23-step, 20-week analysis, which includes a four tier technical and administrative review to insure technical accuracy and consistency. All work is documented in bound log books so that the specifics of each step are recorded.

The final product of this mapping is a clear plastic overlay depicting those areas which are now or were formerly below mean high water. Each overlay is keyed to its corresponding photographic basemap. Upon completion, basemaps and overlays are submitted to the Tidelands Resource Council for promulgation. Overlays are also precisely digitized to produce detailed metes and bounds descriptions and State Plane Co-ordinates for all tidelands claims lines. This digitized information is used to precisely locate the claims lines on the ground, to produce maps at different scales, to reproduce maps in the case of loss, to modify maps, or to make area calculations of specific parcels for court proceedings.

In late 1978, OEA presented a complete program plan to the Budget Bureau, Department of the Treasury and DEP. This plan outlined the most time and cost effective and accurate method to delineate the state's tidelands. This seven-year program was approved in January 1979. As of this date, three years into the program, the project is

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SHORE PROTECTION PLAN ADOPTED

The *New Jersey Shore Protection Master Plan,* the first such plan for the state and a model for the nation, has been adopted by the state after more than two years of studies, workshops and pubic hearings. The development of the plan began after New Jersey voters approved a $20 million bond issue proposal for shore protection. The plan will guide DEP's decisions on financial assistance for the construction, repair and maintenance of beaches, groins, jetties, seawalls, bulkheads and dunes. Also, the plan provides the framework for DEP's technical assistance on shore protection matters to local officials, citizens and developers.

David N. Kinsey, director of DEP's Division of Coastal Resources, said the plan divides the shore into 16 shoreline areas or "reaches," and establishes a priority list for projects to assist them. The list is based on a cost-benefit analysis. Kinsey said, "The state is unlikely to ever have sufficient funds to finance all the shore protection projects that local governments request. This plan gives DEP the knowledge necessary to select those projects which will provide the greatest benefit to New Jersey taxpayers."

For further information about the *New Jersey Shore Protection Master Plan,* contact David N. Kinsey, Director, Division of Coastal Resources, CN 401, Trenton 08625. □

REAGAN SIGNS ACT CONTINUING U.S. FUNDS FOR CLEAN WATER GRANTS

Reforms to the federal Clean Water Act, including a four-year extension and an authorization of $9.6 billion for municipal wastewater treatment facilities nationwide, was signed into law by President Ronald Reagan on December 29, 1981. The reforms call for expenditures of $2.4 billion annually over the next four years. Under the new law, New Jersey will receive $85 million in fiscal year 1982 and $385 million total over the four-year period, after the money is appropriated by Congress.

According to DEP's Division of Water Resources, more than $200 million in needed water cleanup projects are ready to begin, and more than $1 billion in such projects will be ready to start by the end of 1982.

The federal Construction Grants Program gives municipalities federal grants of 75 percent project cost to build wastewater treatment facilities. DEP's Division of Water Resources administers the construction grants program for New Jersey. □

GROUND BROKEN FOR DEP BUILDING. On a clear and cold January 11, a symbolic ground-breaking ceremony was held at the Trenton site of the proposed $30 million, 400,000-square-foot DEP Headquarters Building. The building, scheduled to be open in 1984, will be constructed at the corner of East Canal and East State streets, across from the Federal Building. The DEP building along with several other state building projects will be financed with proceeds from the sale of revenue bonds. Participating in the ceremony were, front row, left to right: Edward Meara 3d, chairman of the state Building Authority; DEP Commissioner English; Governor Byrne; and Trenton Mayor Arthur Holland. Looking on are State Senator Jerry Stockman (partly hidden) and Labor & Industry Commissioner John Horn. (A state department of Transportation employee stood by with a jackhammer, in case it was needed.)

TRAILS PLAN ACCEPTED

The New Jersey Trails Plan, mandated by the legislature and prepared by the New Jersey Trails Council with staff assistance from DEP's Office of Green Acres, has been accepted by DEP and endorsed by the State Department of Transportation. Public comment was received at a series of public meetings held in September 1981.

The plan, part of the state's comprehensive outdoor recreation planning effort, provides a framework for the development of a unified system of trails throughout the state. It proposes the establishment of a trails system consisting of long distance trails and major regional trails and trail areas designed to serve six major trail use categories—foot, water, horse, bicycle, snow and motorized. For further informatiion, write to "New Jersey Trails Plan," DEP, Office of Green Acres, CN 404, Trenton 08625.

'PICK UP, NEW JERSEY' IS ANTI-LITTER SLOGAN

The winning entry in the statewide contest for an original litter abatement slogan is "Pick Up, New Jersey." Russ Alquist, of Atlantic City, who suggested the slogan, was presented with a $100 cash prize by James Morford, Director of Governmental Relations for the New Jersey Chamber of Commerce, in a recent ceremony at the State House in Trenton. The slogan will be used in the state's continuing anti-litter educational and promotional campaign.

A booklet, *New Jersey vs. Litter,* has been published by DEP as a guide for communities, businesses and organizations joining the statewide campaign to make New Jersey litter free. For further information and copies of the booklet, contact Charlotte Tomaszewski, DEP, N.J. vs. Litter Campaign, CN 402, Trenton 08625. Phone: 609-292-9120. □

LIBERTY STATE PARK SEAWALL

A federal/state agreement, signed in January by DEP and the U.S. Army Corps of Engineers (Corps), made it possible for bids to be received for the first of four phases of seawall construction at Liberty State Park, culminating planning which began in 1974. When completed, the entire seawall bordering New York Harbor at Liberty State Park on the Jersey city waterfront in Hudson County will reach from the existing south embankment overlook in the park northward to the historic Jersey Central Lines ferry terminal. The crescent-shaped seawall eventually to be about 1.5 miles long, will be surmounted for its full length by "Liberty Walk," a scenic promenade, from which park visitors will enjoy spectacular harbor and city vistas.

Plans call for the construction of the first section of the seawall—about 600 feet long—to begin this spring with completion about eight months after work begins. The Corps will receive bids for the project and supervise construction for DEP. The state will pay the cost of the first section of seawall, estimated at $2.5 million, using Green Acres funds. □

ARBESMAN HONORED BY STATE JAYCEES

Paul Arbesman, 35, DEP deputy commissioner and state drought coordinator, was selected as one of 1981's "Ten Outstanding Young Citizens" by the New Jersey Jaycees and Jaycee-ettes. Arbesman was cited for his "service to help solve some major contemporary problems and success in influencing public opinion in the area of toxic waste and the state drought emergency." □

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TIDELANDS

exactly on schedule. All maps have been completed and submitted to the Tidelands Resource Council in Bergen, Passaic, Essex, Hudson, Union, Somerset, Middlesex and Monmouth counties. Substantial work is completed in Ocean, Burlington, Atlantic and Cape May counties. By 1 October 1982, OEA will complete the Atlantic coastal area of New Jersey, which is one-half of the total project. The remainder of the maps, which include the interior tidal portions of the Tuckahoe and Great Egg Harbor River, tidal areas of Delaware Bay and the Delaware River and its tributaries will be completed by 31 December 1985.

OEA has taken a complex technical problem and developed a comprehensive program to produce an accurate product. The staff has also devised an administrative plan in conjunction with the technical program to keep all major tasks synchronized and to produce maps on schedule. □

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DEP COMMISSIONER

at Syracuse University. He took doctoral courses in city and regional planning at Rutgers University. A member of the Board of Trustees of Atlantic Community College, Hughey also is a member of the Board of Governors of Atlantic City Medical Center.

He is married and has two children.

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AMERICAN CYANAMID AGREES

During the next several years, Cyanamid will be eliminating all known sources of pollution on site. This aspect includes a reworking of Cyanamid's primary wastewater treatment process, neutralization of pollution from light oil sludge lagoons on the site, and fixing or replacing broken sewers on the property. Cyanamid will be required to replace an existing unlined lagoon on its site with a double-lined lagoon with a leachate collection system between the liners within forty four months.

During the next thirty months, Cyanamid will be performing a comprehensive analysis of its site to determine if there are any sources of pollution on the site which are presently not known to the company or the Department. Cyanamid is then required to eliminate any pollution coming from these presently unknown sources.

Finally, Cyanamid will be conducting an analysis of what effects, if any, its discharges to the ground water have had on the Raritan River. This analysis will be completed during 1982.

The reaction of Joseph Mikulka, Division of Water Resources Region IV Enforcement Chief to the agreement was, "This all inclusive and satisfactory resolution will have the DEP and Cyanamid working together in the next several years to solve thorny and crucial technical questions." He went on to say that the site was large and complex and that all who deal with it will have to be creative in their thinking. Mikulka said that the company's attitude of cooperation will benefit them greatly." Instead of having DEP geologists and soil experts spending their time preparing for litigation, they can and will be involved in helping Cyanamid get this massive job done," Mikulka went on to add.

"This Consent Order and its implementation will effect a solution to the problems emanating from the Bound Brook site," said Tim Haley, an attorney with the Department and Chief Negotiator, "From the State's perspective, we accomplished everything for which we could have hoped. Sources of pollution will be eliminated, drinking water supplies will be protected while the sources

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TOXIC WASTE CLEANUP

wastes. These are: *Williams Property,* Swainton, Cape May; *Bog Creek Farm,* Howell Twp., Monmouth; *North Bergen Drum Dump,* North Bergen, Hudson; *Barczewski Street Dump,* Kearny, Hudson; *466 Wilson Avenue,* Newark, Essex; *610 South 13th Street,* Newark, Essex; *Sayreville Pesticide Dump,* Sayreville, Middlesex; *GEMS Landfill,* Gloucester Twp., Camden; *Roosevelt Drive In Dump,* Jersey City, Hudson; *Bayonne Trailer,* Bayonne, Hudson; *Lang Property,* Pemberton, Burlington; *Buzby Brothers Landfill,* Voorhees, Camden; *MAC Landfill,* Deptford Twp., Gloucester; *Meyers Property,* Franklin Twp., Hunterdon; *Horseshoe Road Dump,* Sayreville, Middlesex; *Krysowaty Farm,* Hillsborough, Somerset; *JIS Landfill,* South Brunswick Twp., Middlesex; *Newark Stamp & Die,* Newark, Essex; *Swope Oil,* Pennsauken, Camden; *Barrier Industries,* Vernon, Sussex; *Jackson Township Landfill,* Jackson Twp., Ocean; *Keystone Steel,* North Bergen, Hudson; *All County Environmental Services,* Newark, Essex; *T. Fiore Demolition,* Newark, Essex; *Delilah Road Landfill,* Egg Harbor, Atlantic; *Renora, Inc.,* Edison Twp., Middlesex.

• **$3 million** for use in unanticipated hazardous material emergencies, such as train derailments, chemical facility fires and explosions.

The law states that the moneys appropriated shall be used only upon certification by the administrator of the New Jersey Spill Compensation Fund. This certification must state that the amount in the fund is insufficient to cover the costs of the project or projects for which the moneys were appropriated.

are being eliminated, and a major employer in the Bridgewater area will be able to stay in business at its present site," he added. "Cyanamid is to be congratulated for working with the DEP in a forthright manner to develop this comprehensive solution to a very difficult problem."

DEP Commissioner English said, "The department geared up for a fight and found, to our delight, that the company was quite sensitive to its environmental obligations. This recognition of duty is a concept whose time has come and Cyanamid, by faithfully undertaking both the letter and the spirit of this remedial agreement, has become a leader in the business community. It was an enligthtened decision to choose not to spend hundreds of thousands of dollars in litigation by opposing the department's directive. The time and money are best spent on curing problems." □

Don't Mow It—Grow It!

Alternatives to a Close-Cropped Lawn

by Jack Kligerman

PHOTOS BY AUTHOR

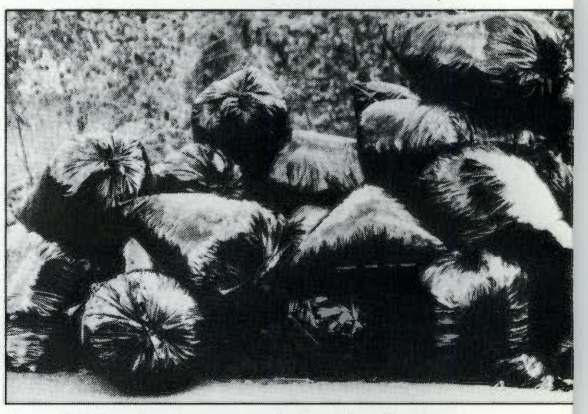
There can be many motivations for seeking alternatives to a typical close-cropped lawn. You may be committed to an ecological viewpoint, in which case living in balance with one's environment and conserving energy are primary concerns. Or yours may be a preservationist/conservationist ethic, valuing existing ecosystems and relicts of more extensive past ones, while reintroducing native plants into an altered landscape. Others may be motivated mainly by highly practical concerns, which is perhaps the case of the highway engineer concerned with what kind of plants to introduce in order to stabilize freshly graded areas subject to wind and water erosion. Still others may mingle aesthetics with practicality and, like landscape architects or suburban homeowners, be concerned with reducing maintenance costs and establishing a visually pleasing area on one's property through the use of conventional ground covers. Or someone like myself may be both curious and perhaps a bit lazy in at lawn-tending, preferring to watch for signs of change in order to encourage whatever inclinations existing green areas have to develop on their own. Whatever the motivation, what we seem to be experiencing now is an unmistakable change of attitude toward that high-maintenance and high-energy consumer, the "traditional" grass lawn.

As for me, I confess to being a curious and relatively lazy wildflower watcher. Convinced of the value of nature close at hand by the essays of John Burroughs and by the conversations of a writer-friend, Barry Targan, who brought to my attention the fact that we always think of nature miles away "out there" rather than just outside our doors, I set out to see what would happen if I let the existing wildflowers on my lawn, and a variety of ground covers, follow their own will.

Behind the house, high shrubs have run wild. There is a thick cover of old blackberry brambles, lilacs, and privet hedges: You name it, we have it. In the summer, this cover provides a nesting site for a pair of catbirds as well as an effective barrier to neighbors' curiosity and squabbles. In the winter, it acts as a perfect cover for the birds which come to our feeders. Out in front of the property, which, incidentally measures 100' x 150'; amplified by a town right-of-way off the street, is a row of very tall Norway spruces. Beneath them is a thick growth of English ivy which we have been encouraging to expand ever since we moved in nine years ago. As the ivy spreads, it cuts down the extent of the lawn area, thereby conserving time and energy in the mowing while covering sparse shady areas subject to erosion and water run-off during heavy rains. The closer the ivy gets the house, the more it mingles with pachysandra, whose color, texture, and shape counterpoints the ivy nicely. In winter and summer, the green of their ground cover is welcome to our eyes.

What I am most proud of, however, is my "crop" of wildflowers. I can't remember when I brought my field guide and camera back out of the country and put them to use out my front door, but I have been reaping a better wildflower harvest ever since I eased up on the mowing and let the native and alien plants flower. The colors they afford throughout spring and summer are enough motivation for me. Creeping buttercups just splash their yellow along a fence at the southern edge of the property. Gill-over-the-ground takes a different course and spreads its tiny purple violets cluster thickly; in others it is mouse-eared chickweed; and in full sun, and often, common dandelions. At times the clovers, both purple and white, make the lawn simply sparkle.

The Compost Pile: an "energy efficient" alternative for kitchen scraps—fruits and vegetables only—grass clippings, and mulched leaves.



A neighbor's "energy intensive" way to clean up autumn leaves and winter debris.

In general, I try to encourage the wildflowers wherever they appear. Essentially, what this means is that I have been growing into a landscape which tells me what it wants to do. Some words of Aldo Leopold from *A Sand County Almanac* are relevant here: "We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."

Some aspects of my laissez-faire policy have yielded some unexpected results. Where the ivy spreads out of the shade into filtered sunlight, I now have a crop of saplings, consisting mostly of white oak, sweetgum, mulberry, red maple, chokecherry, hemlock, holly, and white pine. With some exceptions, the vegetation seems to be reverting to that characteristic of the damp woods of the northern New Jersey lowlands, my environment. This experience is a common one, an exam-

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Cropped Lawn

ple of the ecological process called *succession.* Arthur Ode wrote in the Spring 1977 issue of *Plants and Gardens* that "a lawn area left unmowed will return in a number of years to an approximation of native forest .... Exact species composition may not be similar but the general aspect certainly is returning." Since the trees on my property have not yet gotten tall enough to shade out the spruces, I have yet to make any real decisions about their unchecked growth, except for occasional pruning and thinning.

What I have been doing by chance, however, others have been doing by design. The Horticultural Society of New York, for instance, has been turning its attention toward greening vacant city lots by participating with community groups in planting wildflowers, or "wayside plants," as Ms. Maria Grimaldi informed me recently. The compacted clay soil of these lots would require an enormous cost and effort to make them immediately productive as vegetable gardens, as I have observed in the activities of several South Bronx neighborhood organizations. So what the Horticultural Society has been doing is to encourage ecological thinking while enabling local groups to plant wildflowers and "green manure" crops, such as alfalfa, buckwheat, rape, and red clover, in order to allow the soil of vacant lots to regenerate itself organically.

Both alien and native plants have been found to be highly adaptive to the adverse conditions of city lots. In addition, the maintenance of ground sown with such seed is absolutely minimal. After the first two years' growth, mowing is required only once a year. Ms. Grimaldi indicated that sowing time was critical—no later than the end of March and the beginning of April—and that mowing could be performed only after the plants had gone to seed.

The results have been encouraging. City lots that otherwise would be rubble-strewn eyesores are now at various times very attractive to the eye. The soil of these lots is at the same time being restored naturally to its proper balance after years of disuse. Student groups from schools in areas such as the South Bronx are beginning to use the lots as outdoor classrooms for ecological study. The children gain thereby a richer understanding of their admittedly sparse natural environment.

Elsewhere in the country, a similar interest in wildflower or native/alien plant restoration projects are occurring. (I mention alien plants since, as Ms. Grimaldi emphasized, they have been with us an awfully long time.) Professor Darrell Morrison of the University of Wisconsin Department of Landscape Architecture, in Madison, Wisconsin, kindly updated me on the progress of two projects of native plantings which he discussed in the October 1975 issue of *Landscape Architecture.* The two projects—one in Walden Park, Madison, and the other on the grounds of a local insurance company home office—were begun in 1972 and are still underway. Each year's growth further reduces maintenance requirements as native plants fill in barren places. The value of such native plantings—in Wisconsin this generally means prairie grasses—has been recognized by the city of Madison, which last year repealed an ordinance prohibiting lawn plantings of other than regularly mowed conventional grasses. Now residents are allowed to sow native grasses and wildflowers and let them grow through their cycles, if they file a permit first.

Recently the Dane County Highway Department, the county in which Madison is located, has established a greatly reduced mowing scheme along its roads and has hired a naturalist to supervise "prairie restoration" projects along its country roads. Meanwhile, nurseries in the Madison area have begun to specialize in native and prairie plants, indicating that the momentum to reestablish the look of the native landscape may steadily increase.

As a landscape architect, Professor Morrison appreciates the value of native plantings in creating a dynamic landscape. Instead of the uniform green of a lawn monoculture, the plants change with the seasons and the stages of growth cycles, constantly altering the visual appearance of the land. In addition, Professor Morrison stresses the educational and ecological importance of a reestablished native landscape. To these he adds a more popular view of the benefits of native plantings. The restoration of the prairie—or in general the reestablishment of plants native to any local environment—will result in significant energy conservation and savings in labor, fuel, fertilizers, pesticides, and water, if allowed to develop into a meadow through a restricted mowing policy.

Attitudes similar to Professor Morrison's have appeared elsewhere in the United States and Canada. To some extent they are motivated by practical and financial realities. In California, research in such places as the Rancho Santa Ana Botanic Garden has focused on the water-saving value of native plants. In Texas, native plants have been found to be far more drought- and insect-resistant than non-native plants, and they are therefore being planted along roadsides throughout the state. A pamphlet from the New York State College of Agriculture and Life Sciences urges the planting of groundcovers, both native and non-native, "to prevent soil erosion and eliminate mowing."

Most public agencies, when they turn their attention to a variety of ground covers to replace frequently mowed lawns, do in fact turn to hardy native plants. One notable exception has been in the County of Los Angeles, California, which has been centering some of its research on identifying fire-retardant plants for hillside areas. In general, researchers have found that the best fire-retardant plants are the succulents: Both their relatively high moisture capacity and their prostrate or creeping growth habits, make them highly suitable for "greenbelt" ground covers in areas where highly flammable native plants would be less than desirable.

Probably one of the most imaginative native plantings was reported by Kent Alverson in the January 1976 issue of *Soil Conservation.* He noted that Kansas City International Airport has, since 1971, seeded more than 180 acres in native grasses. Though the idea ori-

Hedera helix: **English ivy. Spreads one to two feet each year in all directions if allowed. Pale at the end of winter, but it rejuvenates quickly. Like Pachysandra, covers shaded areas under evergreens and stabilizes soil.**

Pachysandra terminalis: **Japanese Spurge. Green all winter through, lit up by a March 1st sun.**

ginally developed to "give an image of the midwestern prairie to air travelers," savings in maintenance costs quickly followed. The plantings, by the way, "consisted of buffalograss, big and little bluestem, sideoats grama, love-grass, crown vetch, and blue grama." As usual, the project was labor-intensive and difficult to maintain over the first three years, but since then the prairie grasses have been taking care of themselves nicely.

All in all, it seems that the impulse toward the use of native plants as ground covers in a variety of circumstances reflects an ecological viewpoint and the growing sensitivity of many people toward the "nativeness" of their environment. In such cases, native plantings are a projection of an attitude toward land values very consistent with Aldo Leopold's wish. Nevertheless, when we consider the need to conserve energy, soil, and water, and generally to reduce maintenance costs of greening a landscape in a time of rapidly spiraling inflation, we should not overlook the long-established value of conventional ground covers as well.

These plants, both native and nonnative, offer public officials and homeowners a fully developed alternative to a conventional close-cropped lawn. As Don Dimond and Michael MacCaskey point out in their book, *All About Ground Covers,* "there is a ground cover to suit any soil type: sand, clay, acid, alkaline, moist, or dry." Ground covers are also highly adaptable to varying light conditions if chosen wisely. They cover land the mower would never be able to reach as well as land no grass could grow on. Though more care is needed in preparing the soil for conventional ground covers than for native grasses and wildflowers, the eventual care is equally minimal. In nine years at my present house, I have never "mown" the ivy or pachysandra, and only rarely trim around the edges with a handclipper. If one is inclined to mow such ground covers once a year, it is possible to find special lawnmowers whose blade heights can be adjusted for four, six, and eight inches above ground.

Generally the process to follow in choosing a conventional ground cover as a lawn alternative is as follows: (1) Determine the soil, moisture, and light conditions of the planned site, (2) Choose a plant suited to such a microclimate, which may vary in some ways from that of the overall planting zone (for example, an area reciving full sun will have different minimum and maximum temperatures from one in deep shade), (3) Consider visual harmonies and variations in form and texture of the preferred plants, (4) Prepare the ground as suggested by a handbook or your local nurseryman, (5) Bend your back and go to it!

Although conventional ground covers may not perform the same ecological or educational functions as native plants, they do allow one to reduce considerably the amount of lawn to be mowed. They should therefore be valued accordingly as conservers of land, water, and energy. One should not forget, however, that certain strains of alien or native plants can be used as ground covers, plants such bugle (*Ajuga repans*), woolly yarrow (*Achillea tomentosa*), and the speedwells, members of the Veronica family. For a comprehensive view of this subject I would suggest Robert E. Atkinson's *The Complete Book of Groundcovers: Lawns You Don't Have to Mow.* Finally, it might be worth mentioning in this context that the lawns of Buckingham Palace are not composed of grasses but of the "nonflowering chamomile *Anthemis nobilis*" (*The Garden,* Feb. 1977). So much for the prestige of the lowly "weed."

It would seem, then, that the value of alternatives to the closely-cropped lawn is widely accepted in our culture and is growing rapidly. The trend has not caught on exactly with the speed or persistence of *Kudzu,* but social, political, environmental, and ecological forces seem to be acting in concert to bring an end to the last several hundred years' reign of greensward. If not, they are at least acting to limit its sway and significantly reduce its domain. The tangible benefits in terms of energy conservation and the less tangible aesthetic and ecological gains are certainly motivation enough to encourage all landowners and land-servants to listen to the land and hear what it is singing. Not only will we encourage the growth of plants more suited to their environments than conventional lawn grasses, but we will be encouraging our own growth as well. □

CHEESEQUAKE MARSH

LINDA L. LOVELAND

PHOTOS BY AUTHOR

Old pilings of former docks and landings along Cheesequake Creek are highlighted in the eerie light of a summer squall.

In Old Bridge Township, there is a saltmarsh called Cheesequake, which offers plants and animals a natural environment with such favorable food conditions that the region is packed with life.

It may surprise readers to know that Manhattan's tallest skyscrapers are within sight of this uninhabited marine estuary. With such an urban backdrop some may wonder how Cheesequake Marsh survives and remains an unpolluted haven for so many species of plants, animals, birds and fish.

A wooded scarp or bluff encircles the marsh and creates a natural boundary 40 to 80 feet in height between the marsh and the surrounding rapidly developing commercial and residential areas. Cheesequake Creek and the small streams which provide the freshwater source for this marine wetland originate within this thousand-acre marsh, located in Middlesex County adjacent to Raritan Bay. No human habitation exists along the grasslined tidal creeks. To further contribute to the undisturbed nature of the creeks and marsh, runoff from nearby industrial areas drains away from the marsh and into Raritan Bay via the South River and its tributaries. These natural drainage patterns create a self-contained marsh of unusual purity in the midst of a vast metropolitan region.

For thousands of years before humans came here the saltmarsh was forming. As a result of glacial retreat begun 14,000 to 18,000 years ago, the sea level began to rise. Erosion from the land above the scarp washed silts and sediments down onto this sandy area. Slightly elevated areas of mud over sand were created. Nutrients were brought in by the tidal action from Raritan Bay. Detritus and algae in the freshwater region of the marsh combined to create an area more productive than either the sea downstream or the freshwater drainage area upstream of the marsh.

Toads, various small rodents, skunks, raccoons and ruffed grouse are just a few of the species which frequent the edges of the marsh and return to the surrounding forest of oak, pine, and red maple. Deer occasionally wander onto the marsh to graze at the fringes of the succulent grass. Foxes venture across the marsh to hunt.

Unlike most salt marshes of the Atlantic coast, which often extend for miles, the distance between the woods and Cheesequake Creek is little more than 100 yards. Yet, Cheesequake Marsh provides a compressed view of the transitions present in all saltmarshes.

Nearest the woods the brackish marsh begins. Here salt concentrations in the soil are low and reedgrass, or *Phragmites,* grows. Its tall stalks are topped by feathery plumes which give it another name, foxtail. Marsh wrens sing as they hang precariously from the swaying stalks and red-winged blackbirds fly low into camouflaged nests.

Low-growing salt hay, *Spartina patens,* stretches beyond the reedgrass, carpeting large segments of the marsh. Its narrow blades grow two feet tall, but tend to bend over, forming a thick protective mat which harbors many small animals. The saltmarsh snail, a tiny, air-breathing creature less than ½ inch across, anticipates the flood tide and climbs high up on salt hay stems to keep above the rising water.

Winding through this thatch of hay are trails made by meadow voles. Blades of cut grass are scattered along the runways by these tiny rodents with short tails and silky dark fur.

Along the creek edges, smooth cordgrass, *Spartina alterniflora,* grows ten feet tall in dense stands and blots out the sun around its heavy stems and roots. Clapper rails use this thick cover for nesting and feeding. Egrets and herons wade along the edge of the tall grass on the mud banks of the creek.

At the water's edge, weasels may hunt for crabs and small mammals or birds. Muskrats swim in the creek and dig long burrows into the tangled roots along the banks, feeding on nearby vegetation.

An army of fiddler crabs lives in the mud around the tangle of cordgrass roots. The male fiddler crab has one enormously enlarged claw which it carries like a warrior's shield in front of its body. This claw is not used for feeding or for locomotion but is used during the breeding season to attract females and to defend territory.

Although they live on land, fiddler crabs are dependent upon the sea during their larval stages. In the spring, females release eggs into the creek waters from their abdominal appendages. The eggs immediately hatch into zoea, microscopic organisms which have little similarity to a mature crab. The larvae drift in the sheltered creek water, which serves as their nursery during their early growth. At this time, many larvae die, but some are dispersed by the tidal waters and are distributed widely along the banks of the creek. In the ensuing two weeks the larvae metamorphose several more times until they reach the stage of development called the megalops. Now, the young fiddler crabs leave the waters of the creek and climb back onto the marsh as miniature versions of their parents. For the remainder of their lives they live and grow only a few feet from the water's edge, feeding on the decaying vegetation and other organic litter created by the seasonal changes of the marsh. When an intruder approaches,

each crab scrambles into a burrow among the mud-covered roots, its huge claw folding neatly in front of its shell as it enters.

Fiddler crabs are just one of the animals whose life cycle occurs totally within the salt marsh. Mud and marsh crabs thrive in this tidal zone as well, and ribbed mussels attach to the mud and roots where the marsh is flooded regularly with tidal water. Amphipods (beach hoopers) abound here too. All these invertebrates provide food for more conspicuous species of wildlife.

Many oceanic animals which migrate up and down the Atlantic coast enter Cheesequake Creek to find food and to reproduce. Numerous species of fish, shellfish, and turtles seek the protected waters of the marsh. Ascending from the narrow mouth of Cheesequake Creek, the animal passes under three bridges. The first carries traffic on Route 35, linking urbanized Middlesex County communities to the shore towns in Monmouth and Ocean counties. Next is the Conrail bridge. Skirting the marinas clustered near the mouth of the creek, the marine visitor passes under the Garden State Parkway bridge which carries thousands of passenger cars daily over the marsh.

Young flounder follow this water route to feed in the creeks and tributaries of Cheesequake Marsh. Snapper blues from the open ocean can be caught with light tackle in the upper reaches of the creek. Elvers, which are young eels, have migrated into the creek from their spawning grounds off Bermuda. Diamondback terrapins (turtles) also swim to this region from the open bay; they lay their eggs in the protected sandy areas of the marsh. Schools of mummichog and stickleback pass up and down the creek in droves, feeding on algae and larvae in the water.

This tranquil setting, where only the current of the incoming tide or the swirl of tiny baitfish disturb the clam creek waters, gives no hint of the bustle of activity that occurred in this area in the early days of the American republic.

Above the wooded bluff the small town of Cheesequake stood, set high above the marsh so its citizens could avoid the tormenting marsh insects. Two graveyards on Route 34 mark the location of the early settlement. In the Baptist graveyard, ancient headstones predate the American Revolution.

More recent evidence of human activity can be seen on the marsh itself, where an osprey sits on the tall posts of an abandoned steamboat landing at the foot of Dock Road.

Not long ago, this landing served as a link in a bustling trade between central New Jersey and the ports of the Atlantic coast. Watermen of Cheesequake used the creek as a transportation lane long before the advent of smooth highways and efficient railroads. They transported large quantities of timber and farm crops which were brought to the landing from the nearby farms and forests. These products were loaded onto barges and on the high tide they were shipped down the creek to ports on Raritan Bay and to New York harbor.

During the 18th and 19th centuries clay was mined at sites around the headwaters of the creeks. This fine-quality clay was used for making stoneware and was shipped to points on the Atlantic coast from Maine to Texas.

Another type of clay was mined in the Cheesequake vicinity for the manufacture of bricks. The thick woods off Dock Road nearly cover the tumbled walls of an old brick factory. Scraped areas where clay was mined have turned into forest glens where bunchberry and lady's slipper bloom in the early spring. Only a few yards away, where woods and saltmarsh meet, the bank of the tidal creek is strewn with pieces of old bricks. A few posts remain of a pier where these locally manufactured bricks were loaded on flat-bottomed scows and poled downstream to commercial centers.

Until the 1940s, salt hay was harvested on the saltmarsh. The hay was cut, stacked on flatboats and sold as fodder and bedding for farm animals. It was also used for pottery packing material. The salt content in the hay retarded its decomposition. Also, because of its high salt content, the hay did not burn readily, so it was a popular form of insulation. Today synthetic materials have taken the place of salt hay.

In the 1950s the Garden State Parkway was constructed on a raised roadway across the eastern part of the marsh, thereby relocating part of the channel of the creek. As residential growth occurred, much of the surrounding area was sewered, and Cheesequake State Park, a recreational area with picnic groves, a ballfield, and a swimming lake, was established.

A patch of pine barren forest still persists along Cheesequake Creek.

Headstones which predate the American Revolution, in the graveyard at the site of the vanished town of Cheesequake.

Male fiddler crabs (Uca minax), with one enormously enlarged claw, live in burrows along the banks of the creek.

Because of these changes and because of the demise of waterways as transportation links, people turned their commercial interests away from the marsh area.

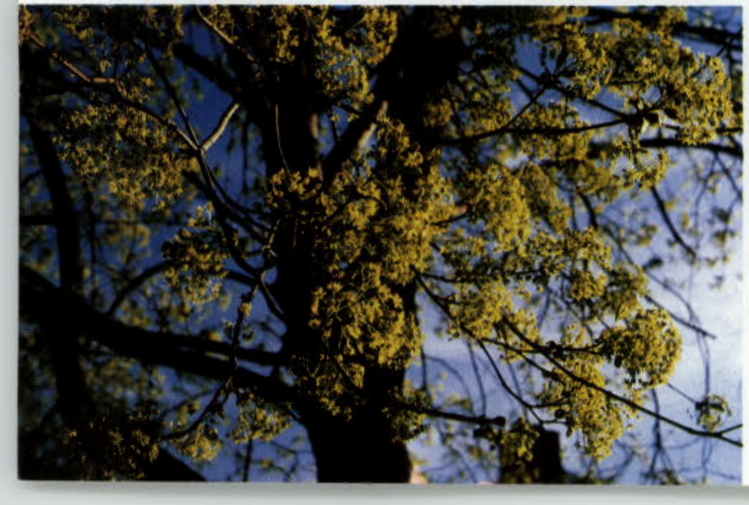
Once again the marsh reverted to what it has been for thousands of years: a marine wetland whose shallow waters and abundant food nurture numerous forms of wildlife.

Cheesequake marsh is located just north of Cheesequake State Park and exit 120 of the Garden State Parkway.

△ Box elder *(Acer negundo)* in bloom

▽ Norway maple *(Acer platanoides)* flowers

▽ Red maple *(Acer rubrum)* in bloom



△ Pin oak *(Quercus palustris)* flowers

▷ Box elder *(Acer negundo)* staminate flowers

PHOTOS BY AUTHOR

Vernal Colors Trees in Bloom

BY

JOHN PATT, JR.

◇ ◇ ◇

The woodlands of New Jersey produce a spectacular exhibit of color every fall. But in early spring as well some of the broad-leaved trees stage a display of pleasing colors. At this time the hues are more subtle, for many are produced not by the leaves but by the tree's flowers.

◇ ◇ ◇

Certain deciduous trees (those which shed their leaves in autumn) flower before they leaf out; this is an adaptation which allows their pollen to be more easily distributed by the wind. Anywhere you walk on an early spring day, beside a streambank, on a woodland trail, along a tree-lined road, or perhaps only into your own backyard, the colors of these trees stand out against the gray background of a receding winter. Where close scrutiny would have revealed only swollen buds a few weeks earlier, now branches and twigs outlined in colors ranging from pastels

to burgundy brighten the early spring sky.

When the limbs of most trees are still barren the red maple is flowering in shades of red and orange. Norway maples are draped in clusters of soft yellow-green blooms and the pale green to near-white flowers of box elders sway gently in the warm afternoon breezes.

The flowers of several species of deciduous trees are often not recognized as such because they either have diminutive petals or are incomplete. Incomplete flowers lack one or more structures present in complete flowers—sepals, petals, stamens, pistils, or enclosed ovules. Consquently such flowers are not as easily noticed as complete flowers with large bright petals, such as those of hawthorns, yellow poplar, redbud, mountain ash, and fruit trees. Nevertheless, collectively, these colors can produce some of the more vivid scenes of the early vernal landscape.

It is easy for a novice to learn to recognize and identify incomplete tree flowers with the aid of a good field guide. Examine the twigs of trees during spring for structures which are obviously not leaves. They are either flowers or fruits. Then consult your guidebook for identification. There are some excellent tree identification guides available for the layman, including *The Tree Key,* by H.L. Eldin, Chas. Scribner's Sons; *Trees of North American,* by C.E. Brockman, Golden Press; *The Tree Identification Book,* by G.W.D. Symonds, Wm. Morrow and Co. Paging through a field guide *before* you begin looking at trees will give you an idea of what various flowers look like. Some diminutive flowers such as those of maple and oak are rather obvious. Others, such as sweet gum, are so tiny that even though they develop before the leaves, from a distance the tree does not appear to bloom and you will have to examine the twigs closely to find the flowers.

Trees, like other types of plants, do not bloom at the same time. Some deciduous trees flower before leaf out, while others bloom well into spring. However the flowers become less obvious as more and more foliage appears. Maples and box elders bloom early on. Sweet gums and oaks follow shortly, while walnuts flower closer to summer. Knowing when a certain type of tree blooms will also simplify the identification process. The approximate time of flower is available from some guidebooks.

Learning to recognize and identify tree flowers is a form of botanizing that can add to outdoor activities ranging from leisurely walks and country drives to backpacking and fishing trips. It can appeal particularly to the wildflower enthusiast, amateur dendrologist, and close-up photographer. But its value is not just recreational. For by becoming familiar with subtle events like the flowering of trees, we enhance our sensitivity to our natural surroundings, and the associated developments and processes upon which our everyday lives ultimately depend. □

Continued from page 9

Spring Gobbler

Approximately the same kill, one gobbler for every three square miles of land area, occurred in all three hunting areas.

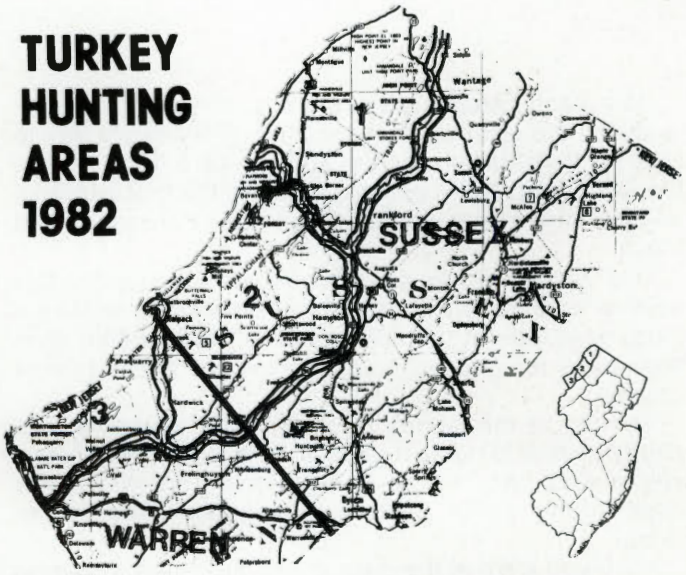
Gobblers varied in size from 10½ pounds to 23 pounds. Jakes, or juvenile toms, averaged slightly over 13 pounds. Adult toms, those two years old or older, tipped the scales at an average of about 18 pounds. All birds appeared to be in excellent physical condition. Eleven gobblers weighed in at 20 or more pounds.

Though some gobblers are beardless, all the gobblers reported last year sported beards, which ranged from 1½ to 11 inches in length. Jakes' beards measured an average of 4¼ inches. Those of adult toms averaged a shade over 9 inches in length.

Young toms generally have short spurs ranging from mere buttons on the lower leg to 3/8 of an inch in length. This was the case with jakes harvested in New Jersey as well. Adult toms taken in Sussex and Warren Counties had spurs ranging from 5/8 of an inch to 1½ inches.

Seventy of the 71 gobblers were harvested with shotguns, the 12-gauge semi-automatic being the favorite gun of successful hunters. Successful turkey hunters preferred to use #4 or #6 shot though #4 was more popular. Only one wild turkey was taken by a bow hunter using a compound bow.

All but one of the successful hunters reported using some type of calling device. The hunter who did not use a call carried one but did not have an opportunity to use it. Diaphragm calls were the most popular type, used by

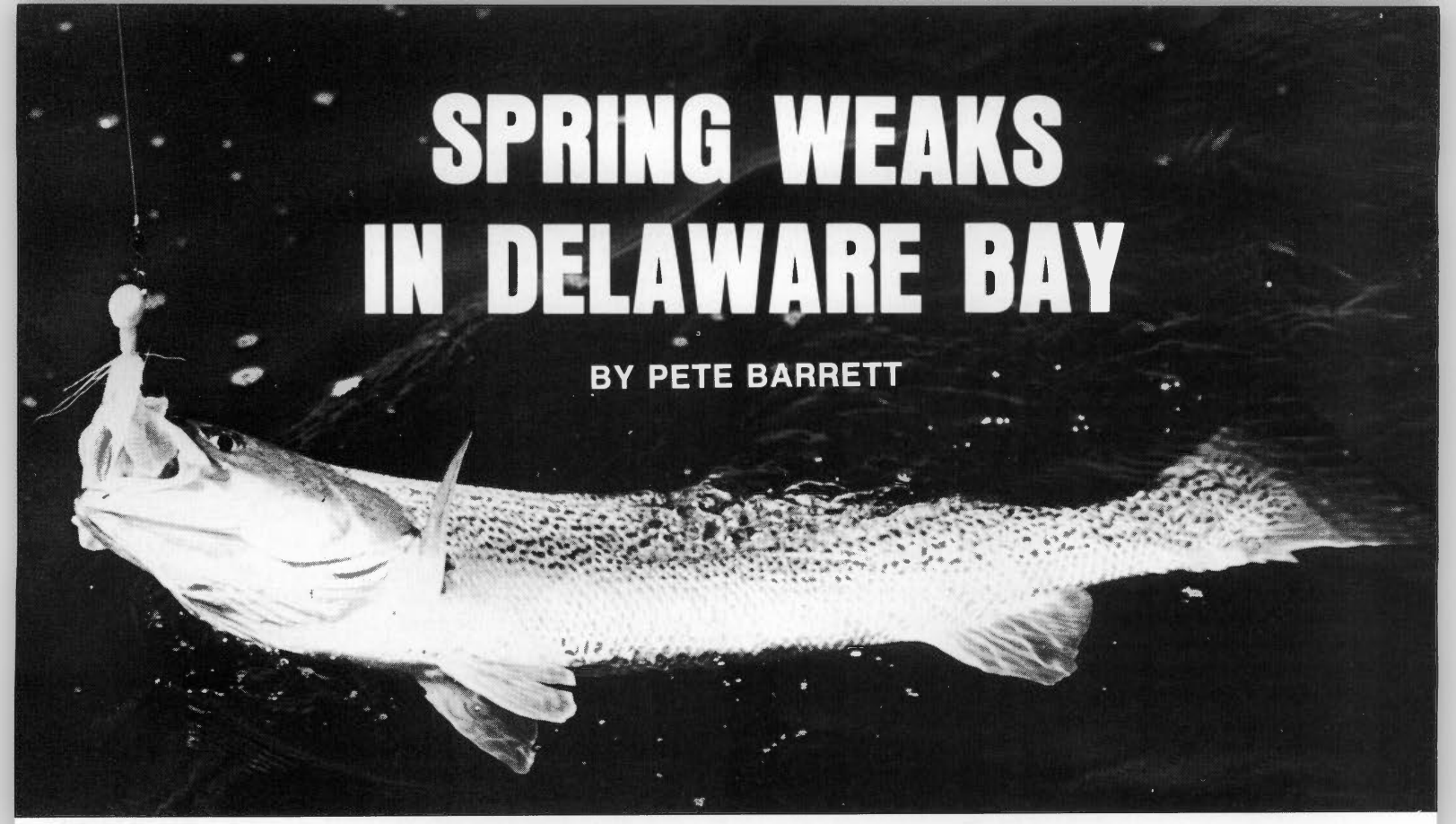


31 of the hunters who bagged gobblers. Twenty-eight hunters used box calls and three lured birds in with slate calls. Five hunters reported using a combination of calling devices to fool the wary old toms.

The 1981 spring gobbler season was a milestone for New Jersey sportsmen. Only a decade ago no wild turkeys could be found in our state. In spring of 1981, nearly 1000 wild turkeys roamed the woodlands of Sussex and Warren Counties. The 71 gobblers harvested have undoubtedly been replaced by young birds hatched in June of 1981. We can look forward to many more rewarding seasons as wild turkeys become more numerous and widespread in New Jersey. Now we can look forward to the 1982 season. □

SPRING WEAKS IN DELAWARE BAY

BY PETE BARRETT



A white bucktail fooled this tiderunner-size weakfish near Brandywine Light.

PHOTOS BY AUTHOR

With each passing year, more and more fishermen focus on the terrific run of weakfish in Delaware Bay to kick off their fishing for the spring. It's a good choice too, with many hefty weakies obliging the thousands of anglers who descend upon Cape May, Fortescue, and Villas.

This increase in numbers of fishermen over the last several springs has caused some fishermen to take a long, hard look at the fishing in the Bay to better plan their days for good fishing, yet without the hassle of crowds.

Arriving at the launch ramp by eight o'clock allows plenty of time to make a good showing with the fish; but you're also just in time to meet head-on with a few dozen other trailer boaters waiting their turn at the ramp.

Yet if you were at the dock at say, six, there would be hardly any wait at all. Likewise, if you launched later in the morning at ten o'clock, most fishermen will already have launched their boats and be out at Brandywine jigging bucktails.

The few times we launched early during the last two years, we saw breaking schools of weaks and blues on some mornings and were able to take a few fish with poppers and small metal squids before the sun was barely over the horizon. Some of our largest weaks were also caught before the sun was high in the sky and the best action came just at sunup.

You could get in a good day's fishing from six until noon, be back at the ramp with no wait to get your boat out, and be on your way home for an early dinner and a snooze.

If early mornings aren't your thing, try late in the day. There may be a slight delay at rampside, as you may wait for two or three boaters ahead of you to retrieve their boats and head home, but it won't compare to the eight-in-the-morning delays.

During the last two years, the ball-headed bucktails have proven to be the best fish catchers; however, on any given day when the fish are on a real feed, they will hit most anything you toss at them. It is the slim-picking days when the ball-headed jigs really pay off with the best catches. The greater mass makes them the heaviest, but with a small size and shape.

My favorite colors have been the white and yellow heads. To my knowledge there are three manufacturers of these ball heads: Mai Tai lures from Toms River, Osprey from South Jersey, and B&P Tackle from Jersey City. They are available in two versions. One has a hook solidly molded into the bucktail head; the other has a free-swinging hook. Some anglers like the swinging hooks—others don't. I do like it and feel that it gets more hits, but there are others who like the solid hook because it is easier to set. As they say, "You pays your money, and you takes your choice." They both work.

I keep a selection of weights that range from only a half-ounce to two ounces and find that on most days I will use a one- or one-and-a-half-ounce bucktail. It is important to have your bug right on the bottom where most of the weaks will be stationed, and you may require a heavier or lighter lure to stay down deep. On days when the tide and wind combine for fast drifts, I

have used more than two ounces. Yet on other days, or when the tide slacks off, you may find that a three-quarter-ounce is perfect. My plastic box has every size from one-half to two ounces so I can be ready for any tide conditions.

Although squid is still used by many fishermen, there are many more who have made the complete switch to plastic tails like those made by Twister, Cordell, and Mann. I don't prefer one brand over another, but do like to purchase the tails in large quantities. This is sometimes hard to do unless you can find a tackle shop that will order bags of one hundreds.

The most-often-used color tail is the white, but I bring along yellow, pink and purple because on same days the fish will definitely hit better on colors other than white.

Many fishermen also prefer the plastic or rubber worm, similar to the worms used by freshwater large-mouth bass fishermen. You can find these easily in virtually any color you may need. One very effective weakfish color combo is a dark-headed bucktail with a purple worm.

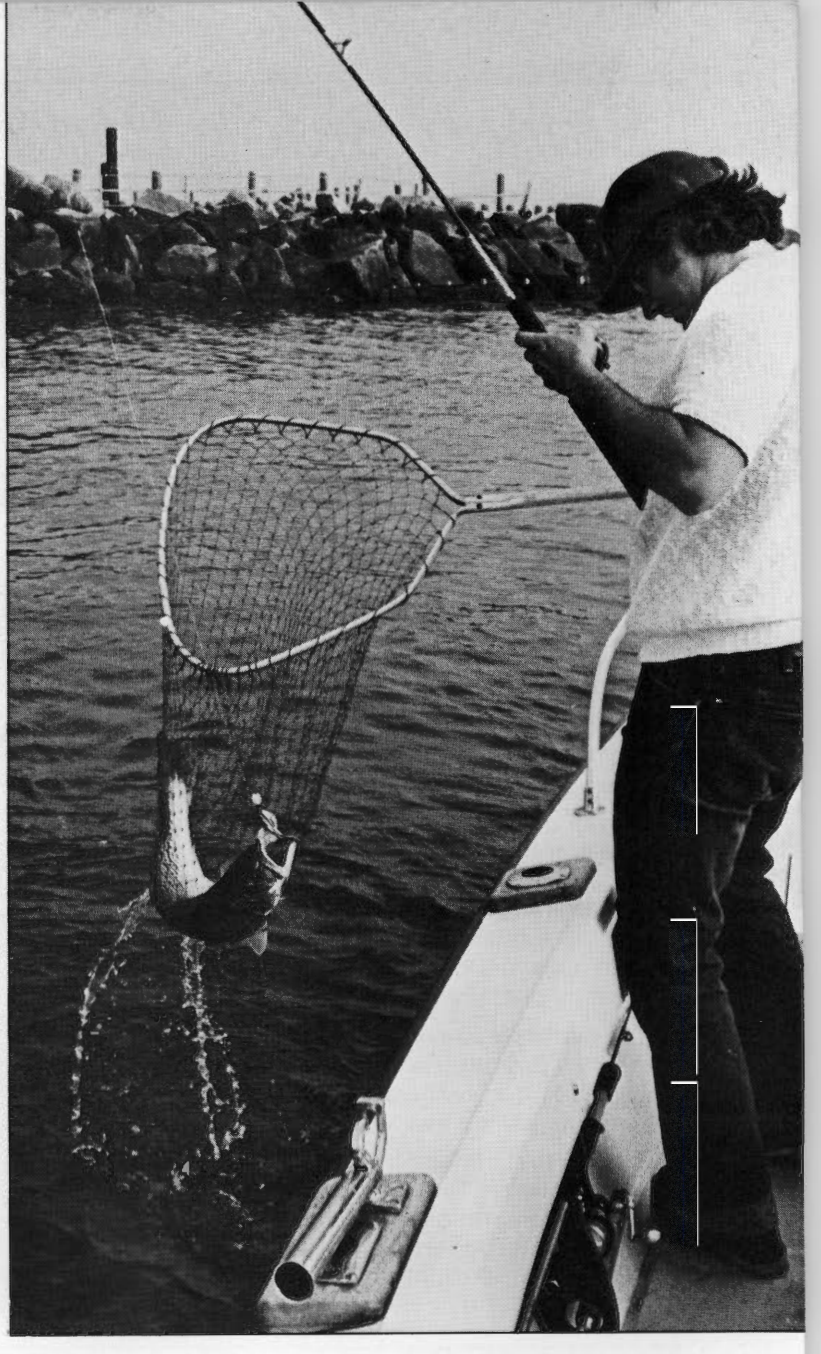
The weakfish run in Delaware Bay provides ideal conditions for the angler who likes ultra-light equipment to test his skills and his tackle against some very large fish. Imagine the thrill of hooking a 10-, 11-, or even a 12-pound weakie on threadlike six-pound test line—or even lighter four-pound test! The hard fight, the precision feel of perfectly balanced tackle, and the final netting of a bragging-sized fish can give you a justifiably swelled head.

The trick, if you can even call it that, is to use rod, reel, and line that balance together and still allow you to put lots of pressure on the fish. Delaware Bay is not all that shallow at Brandywine or Fourteen Light and a rod with some lifting power is needed to get these strong fish up from the bottom. My choice of rod has been a Fenwick PLS-65, a six-and-a-half-footer with a light tip, yet with enough guts in the butt to handle big fish. Home rod builders should take a look at a blank like the Lamiglas MB-84-3M. Using these two rods as guides, you can easily select a rod from the many brands available.

Although many fishermen use shorter, lighter rods of the type designed for freshwater trout, I use the slightly longer rods, since they do put more pressure on the fish. Even with six-pound test line, by adding additional drag on the reel spool, you can gain line as you pump the fish up to you. The greater length also provides more cushion as the fish make their powerful runs back to the bottom or away from the boat as you ready the net. The six-and-a-half, or even a seven-foot rod, is a more efficient fighting machine than a smaller, shorter rod.

The reel must also be chosen with some forethought. Whether it costs a few dollars or a wallet full of dollars, a good light-tackle reel must have a smooth drag, a roller line that does roll, and the roller should be hardchromed—not carboloy.

Check the drags. If the drag is jerky, you may be able to smooth it out by adding a Teflon washer, oiling the leather washers (if the reel has them) or by coating the Teflon washers with silicone or STP. Be careful, though



Because of their soft mouths, weakfish should be netted.

—you don't want to oil a fiber washer or an asbestos washer. Oil will make them perform worse.

Choice of line is up to the individual angler, but the finer-diameter lines will have less water resistance as you send the bucktail to the bottom to begin the jigging retrieve. The finer-diameter lines will also allow you to use lighter bucktails more suited to the light tackle.

If you don't like spinning gear, you can still use very light plug casting tackle. Ambassadeur, Shimano, Ryobi, and Daiwa all have "ultra-light" plugging reels that will handle line as light as six-pound test.

Going light can add to your powers as a fisherman. Your fishing may be more fun, and there is a lot of pride in holding up a glistening, fresh-caught tiderunner of 11 pounds, saying "I got him on six-pound test!!" □

Branch Brook Park/Cherry Blossom Run

Saturday, April 17, 1982

The Essex County Department of Parks, Recreation and Cultural Affairs offers you a budding challenge.

The second annual 10 kilometer Cherry Blossom Run, through scenic Branch Brook Park, is the highlight of a month-long celebration commemorating a flowering display of over 3,000 Cherry Blossom trees.

Run amidst nine varieties of flowering cherry trees in a park that boasts an extensive network of lakes, and a history dating back to the Civil War, when this land was used as training grounds for Union troops.

The oldest county park in the nation, Essex County's Branch Brook Park was recently honored by being placed in the New Jersey Register of Historic Places and the National Register of Historic Places. The designation to the National Register protects the 359-acre park from any effort to change its character or aesthetics.

This memorable event will be captured on video tape. Live entertainment will be featured and refreshments will be available.

For further information on the Cherry Blossom Run and/or Cherry Blossom Celebration, please call the Essex County Department of Parks, Recreation and Cultural Affairs at 201-482-6400.

PLACE:
Branch Brook Park, Newark starting adjacent to Branch Brook Skating Center

DATE:
Saturday, April 17, 1982

DISTANCE:
10 Kilometers (6.2 miles) Certified and sanctioned by New Jersey Athletic Congress

TIME:
10 a.m. promptly

DEADLINE FOR ENTRY:
Friday, April 9, 1982
All entries must be postmarked or hand delivered by this date.

ENTRY FEE:

Essex County residents:	$5.00
Out-of-county residents:	$7.00

AGE GROUPS:
(Male and Female)

14-Under	30-39
15-19	40-49
20-29	50-Over

RACE PACKET PICK-UP:
Place: Branch Brook Skating Center
Branch Brook Park
Dates/Time: April 13, 14, 15 (9-4 p.m.)
April 16 (9-7 p.m.)

RACE DAY REPORTING
1. Runners who have not picked up race packets prior to race date must do so between 8-9 a.m. at Branch Brook Skating Center.
2. Park at Branch Brook Park Skating Center's parking lot off Clifton Avenue, Newark. Parking attendants in lot.

AWARDS:
The three top finishers in each category will receive awards. First 1500 entrants will receive a tee shirt. Awards will be presented shortly after completion of race.

CHECKS AND INFORMATION:
Make checks payable to: Cherry Blossom Run
Mail to:
Essex County Department of Parks,
Recreation and Cultural Affairs
115 Clifton Avenue
Newark, N.J. 07104

Information: Call 201-482-6400, Ext. 315

DIRECTIONS: Branch Brook Skating Center is located at the southern end of Branch Brook Park near the Clifton Avenue entrance to park. FROM SOUTH JERSEY—Garden State Parkway north to Exit 145. East on Rt. 280 to Newark Exit (stay left) to First St. Make left. Proceed to second traffic light. Make right into park. Follow signs to Branch Brook Skating Center and parking areas. FROM NORTH JERSEY—Garden State Parkway south to Exit 145. East on Rt. 280 to Newark Exit (stay left) to First Street. Then follow same directions as South Jersey. □

NORTHEAST FISH AND WILDLIFE CONFERENCE

Hosted by The New Jersey Division of Fish, Game and Wildlife at The Hyatt Cherry Hill, New Jersey—April 13-15, 1982

Organizations Participating in the Conference

Northeastern Division, American Fisheries Society
Northeastern Section, The Wildlife Society
Conservation Law Enforcement Chiefs Association
Northeast Society of Conservation Engineers
Northeast Conservation Information and Education Association
Association of Northeast Game, Fish and Conservation Commissioners

What is a Northeast Fish and Wildlife Conference?

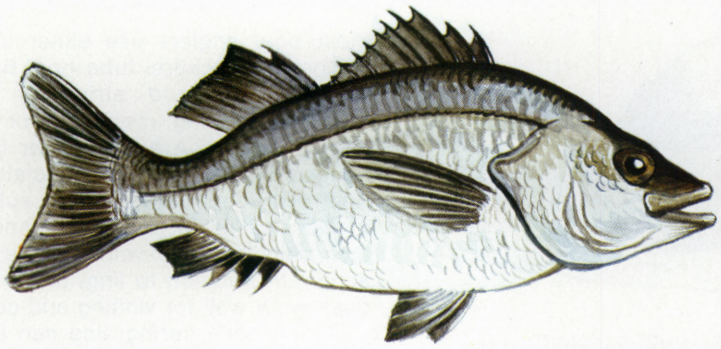
Annually, over 600 professionals in the broad field of wildlife conservation hold a meeting in one of the Northeastern states to discuss the latest information concerning wildlife. These people come from the states of Maine, New Hampshire, Rhode Island, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, District of Columbia, Virginia, Maryland, and West Virginia, and the Canadian Provinces of New Brunswick, Newfoundland, Nova Scotia, Ontario, Prince Edward Island, and Quebec. These professionals work for various state and federal agencies, universities and private conservation groups.

Up to date information on how to manage fish and wildlife resources is dispersed through a wide selection of technical sessions and field trips emphasizing fish and wildlife work and research.

For information, write to Mr. Frank Tourine, Treasurer-Northeast Fish and Wildlife Conference, c/o New Jersey Division of Fish, Game and Wildlife, CN 400, Trenton, New Jersey 08625.

MORE ON NEW JERSEY'S SALTWATER FISH

WHITE PERCH



BIOLOGY

Common names: White perch, blue nose perch, black perch, gray perch, sea perch.

Scientific name: *Morone americana*

Range: Nova Scotia to South Carolina

Size: White perch averages 8" to 10", usually 1 lb. or less, but they can reach 15" and 2 lbs.

Food: White perch eat minnows, shrimp, invertebrates, insect larvae and vegetable debris.

Habitat: Perch can be found along the coast, but are much more abundant in saltwater ponds, estuaries and river mouths. They also occur in landlocked freshwater ponds. They are usually found in waters less than 35 feet deep.

Spawning: White perch go into fresh or brackish water to spawn during April to June. Each female lays about 40,000 eggs which sink and stick together in masses. Hatching occurs in 6 days.

RECREATIONAL AND COMMERCIAL IMPORTANCE

The white perch is one of the few gamefish that provides almost year-round action for New Jersey anglers. Despite widespread abundance, however, white perch are sought only by small numbers of anglers. In 1979, it was estimated that less than 30,000 white perch were caught by sportfishermen in New Jersey.

White perch are taken commercially in the winter and early spring in the state's estuaries. The principal types of gear employed are fyke and gill nets and haul seines. Annual commercial landings have fluctuated between 30,000 and 150,000 pounds.

FISHING FACTS AND TECHNIQUES

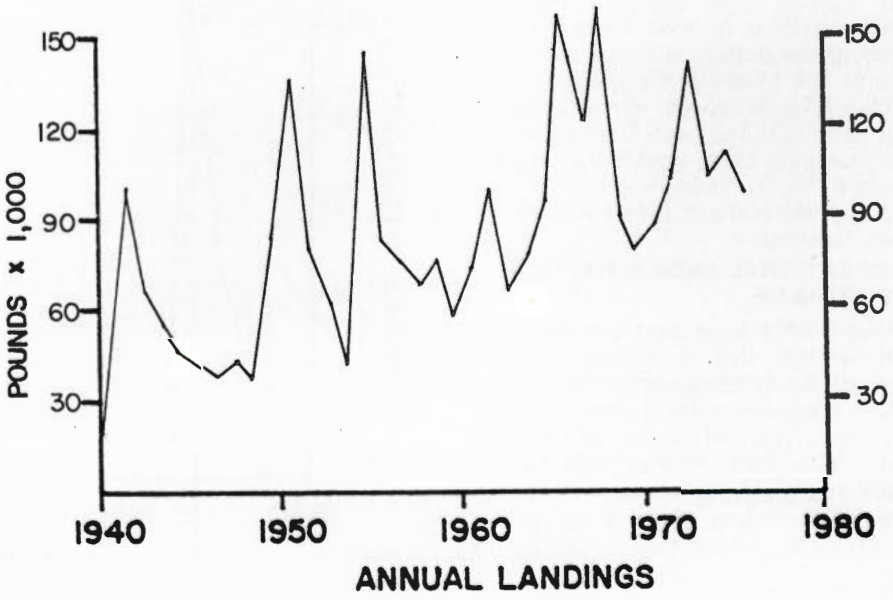
White perch move about considerably in the bays and estuaries in response to changes in season and water temperature. Although they feed continuously throughout the year, it takes experience to know where and how to catch them at different times of the year. In general, perch are found in shallow, brackish creeks during the spring and summer; during late fall and winter, they congregate in the relatively warm waters at or near the bottom of channels and deep holes.

For most of the year, a light spinning outfit is recommended for white perch. For fishing through the ice, tip-ups or short icefishing rods are better. Perch can be taken on grass shrimp, minnows and small lures, such as spinners and spoons. When bait fishing, use either a bobber or split shot to keep your bait at the level the fish are feeding. Small, short shanked hooks are best. Cast and retrieve lures. At high and ebbing tides, fish along marsh banks and at the mouths of small creeks and ditches.

In late fall and winter, a depth finder is an invaluable aid in finding schools of perch in deep holes. Perch often congregate in a several foot thick band, where water temperature and dissolved oxygen levels are optimal, somewhere between the surface and bottom. Set lines at different depths to find where the fish are located in the water column.

ACKNOWLEDGEMENTS AND REFERENCES

Anthony Hillman (art), Barry Preim (graph), Bigelow and Schroeder (1953), Hildebrand and Schroeder (1972), McHugh (1977), Breder (1948).



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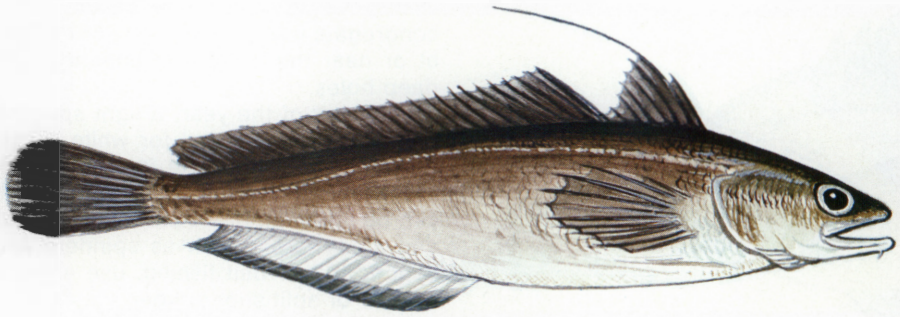
MORE ON NEW JERSEY'S SALTWATER FISH

RED HAKE



BIOLOGY

Common names: ling, red hake, squirrel hake

Scientific name: *Urophycis chuss*

Size: Ling average 1 to 4 pounds, and can reach 8 pounds. Age/length relationship: 1 year = 8", 2 years = 13" to 14", 3 years = 16" to 19".

Food: Crustaceans, shrimp, amphipods, small fish and squid

Migration: Although ling are found along New Jersey in waters deeper than 120 feet all year, they move closer inshore between November and May. They may move offshore temporarily during mid-winter, if water temperatures drop below 40°F.

Habitat: Ling prefer muddy or sandy bottoms and are rarely found over shelly or rocky bottoms.

Spawning: Ling spawn in the early summer months. Their eggs are buoyant. While searching for food, the ling swims close to the bottom with the tips of its ventral fins touching the ground. Most feeding is done between sunset and sunrise. Although ling have keen sight and can recognise food, most of their food is found by touch. Young ling seek shelter and live within the mantle cavity of the ocean scallop.

RECREATIONAL AND COMMERCIAL IMPORTANCE

Ling stocks have been underutilized commercially due to limited markets. The highest catches were made during World War II when there was a shortage of protein. The majority of red hake are taken with otter trawls. Most fishing takes place during winter and spring. The major fishing grounds are in the Mud Hole and off the mouth of Delaware Bay.

Ling are most often encountered by party and charter boat fishermen angling for whiting or other bottom species. To a small degree, ling and whiting have been substituted for the once-abundant cod. A salt-water fishing survey estimated that 322,000 ling and whiting were caught by New Jersey anglers in 1979.

FISHING FACTS AND TECHNIQUES

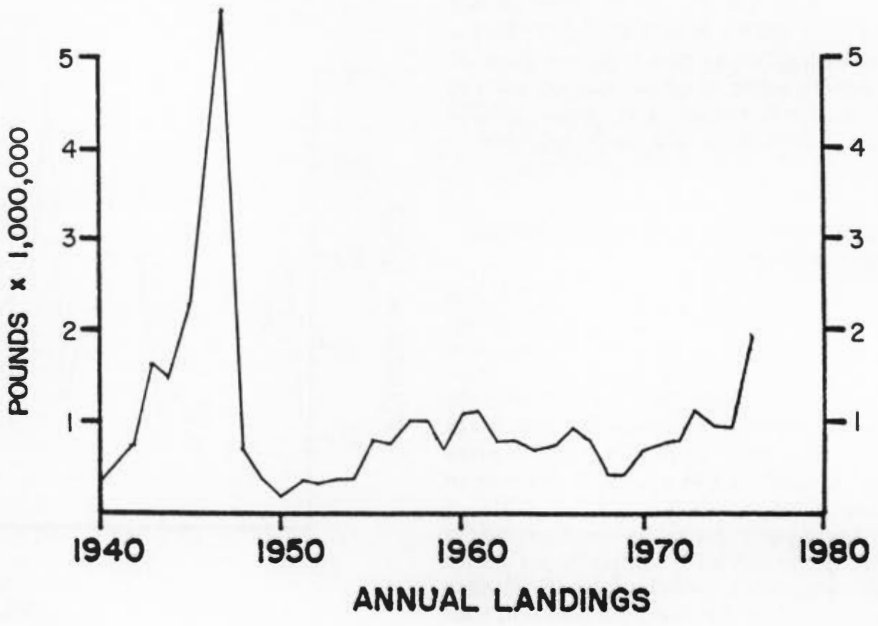
Most anglers rely on the skill and experience of party and charter boat captains to put them over a school of ling; few private boat anglers fish for them. In New Jersey, most ling fishing is done north of Barnegat Inlet.

For offshore fishing, a short stout rod and conventional reel is recommended. Most boat anglers use either top and bottom or mackerel tube rigs. Baits include clams and strips of squid, mackerel, herring, menhaden or freshly caught whiting. A heavy sinker is often needed to hold bottom, especially if the boat is drifting. Some anglers substitute a diamond jig for the sinker and keep their baits in motion with a gentle jigging action. In addition to ling, these techniques work well for whiting and cod.

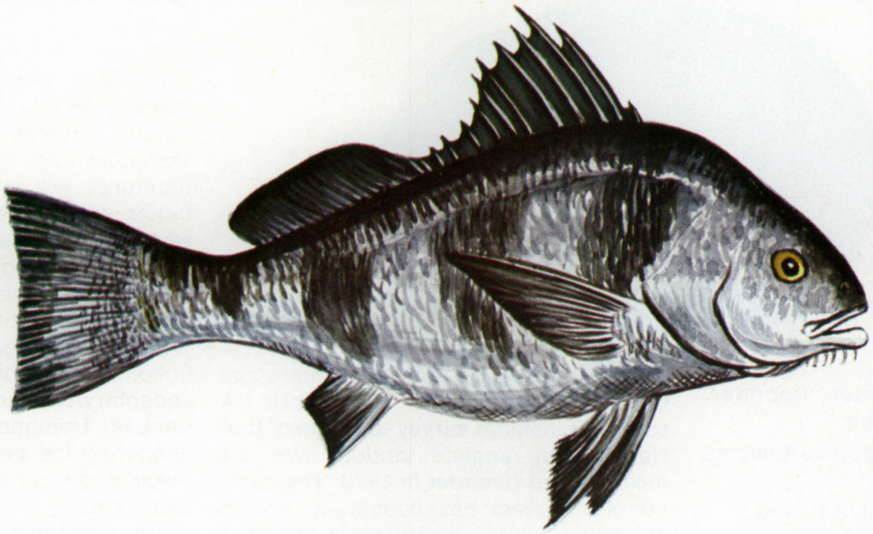
During early spring, ling can also be caught from piers, jetties or along the beach. The best fishing along the surf zone occurs at night during northwest winds. For this type of fishing, a medium size spinning outfit is ideal. Use a top and bottom rig or a baited hook in combination with a small lure, such as a jig, spoon or bucktail. Regardless of the rig, bait each hook with a fish strip. Rigs with lures should be retrieved slowly and close to the bottom.

ACKNOWLEDGEMENTS AND REFERENCES

Anthony Hillman (art), Barry Preim (graph), Hildebrand and Schroeder (1972), Bigelow and Schroeder (1953), Giessnebel (1977), Millo (1979), McHugh (1977), Breeder (1948).



BLACK DRUM



BIOLOGY

Common names: Black drum, sea drum

Scientific name: *Pogonias cromis*

Range: Massachusetts to Argentina

Size: 20 to 40 lbs. is average size, although 60 lbs. is not unusual. The largest recorded drum was 146 lbs.

Food: Drum are bottom feeders, eating mollusks and crustaceans. They crush their food before swallowing. A large school of drum can do considerable damage to an oyster bed.

Migration: In the spring, they move northward and inshore and in late fall, offshore and southward. However, they rarely venture far from the coast.

Habitat: Drum are found in shallow coastal waters, sometimes only 3 feet deep.

Spawning: Spawning occurs at sea near bays and sounds during the months of April and May. Their eggs are pelagic and hatch in 24 hours.

Like other members of the family, the black drum is capable of emitting a low pitched rumble or drum that is clearly audible from a boat. Two special drumming muscles produce the sound by squeezing or rubbing the air bladder. Unlike weakfish, in which only the males can produce sounds, both male and female drum are capable of drumming.

RECREATIONAL AND COMMERCIAL IMPORTANCE

The drum is not a commercially important species in New Jersey. Landings vary from several thousand to nearly 100,000 pounds annually. There is no commercial fishery directed specifically for drum; they are usually caught incidentally in gill nets or otter trawls while fishing for other species. Also, many of the drum taken on rod and reel are sold at the market.

For a brief time in mid-spring, the black drum is the target of party, charter and private boat anglers in Delaware Bay. Because drum fishing is a night time activity, there are no accurate statistics on recreational catches.

FISHING FACTS AND TECHNIQUES

An old fishing adage states that when the dogwoods blossom, it's time to fish for black drum. In New Jersey, the drum season extends from late April to mid-June, although the best fishing is generally during mid-May. The Delaware Bay is the only area in the state where drum are consistently taken. Drum enter the bay on the Delaware side first, swinging north to the Jersey side when they encounter brackish water. Traditional hotspots have been Bug Light, Bayshore Channel, Four-Fathom Slough, Brandywine Shoal, 14-foot Bank and Brown Shoal.

Although drum may be taken during the day, the vast majority are caught at night. Due to the size of these sluggish giants (up to 100 lbs.), a stout rod and a 3/0 or 4/0 reel wound with 30 to 60 lb. test line is the recommended outfit. Baits should be fished on the bottom from an anchored boat. Due to the strong currents of Delaware Bay, at least 6 to 12 ounces of weight is needed to stay on bottom. A fish finder rig, which allows the free movements of bait beyond the sinker is commonly used. One or two 7/0 to 10/0 hooks (they must be sharp) are needed to penetrate the tough skin of the mouth and heavy mono or braided wire is required to withstand the chafing of the drum's grinding teeth. The best bait is whole, fresh surf clams. Use one or two clams and bury the hook completely. The empty shells may be tossed overboard as chum.

Hooking a drum requires patience. While waiting for a strike, hold the rod and set the reel in free spool. Allow the drum to pick up the bait and move off slowly. When the run reaches a fast pace, put the reel in gear, allow the line to stretch until you feel the weight of the fish, then set the hook.

ACKNOWLEDGEMENTS AND REFERENCES

Anthony Hillman (art), Barry Preim (graph), Lou Rodia, Bigelow and Schroeder (1953), Freeman and Walford (1974), Silverman (1979).

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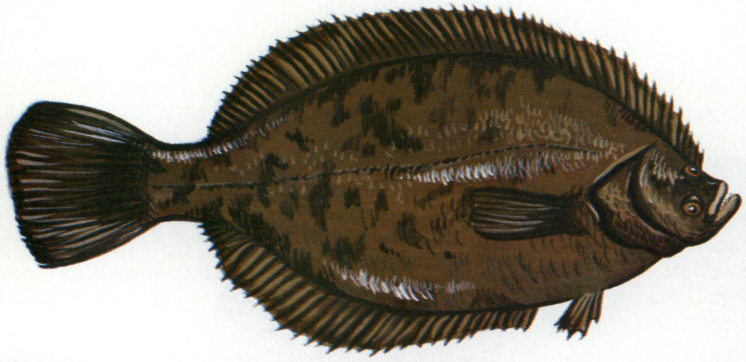
MORE ON NEW JERSEY'S SALTWATER FISH

WINTER FLOUNDER



BIOLOGY

Common names: Winter flounder, blackback, flattie, mud dab.

Scientific name: Pseudopleuronectes americanus

Size: Average 8" to 12", 1/2 to 1 lb.

Food: Shrimps, mollusks, small crustaceans, small fish, worms, hydroids, small mussels, soft and hard clams siphons.

Migration: In fall, flounder move inshore to coastal estuaries, returning offshore in spring, as bay waters warm. Once on their wintering or summering grounds, they are relatively stationary.

Habitat: Sandy and muddy bottoms as deep as 20 fathoms.

Spawning: Flounder mature in their third year; spawning occurs in the winter and the females develop 500,000 to 1,000,000 eggs. Eggs sink and stick to the bottom in clumps; hatching occurs in about 15 hours. The young spend their first year in estuaries.

At hatching, winter flounder and other flatfishes have an eye on both sides of their skull and swim upright. At 8 or 9 months a metamorphosis takes place and the one eye migrates to the other sides of the body. This adaptation permits the flounder full use of both eyes while it lies flat on the bottom. Camouflage coloration remains only on the exposed side, the underside becomes white. The winter flounder differs from the summer flounder (fluke) in that its eyes are on the right hand side, while those of the fluke are on the left. To differentiate right and left handed flatfish, hold the fish upright with its mouth pointing away from you and its lower jaw pointing down, note which hand is holding the side with eyes and coloration.

RECREATIONAL AND COMMERCIAL IMPORTANCE

Although winter flounder is one of the top ten marine sportfishes in the mid-Atlantic region, it is of minor commercial importance south of New York. A saltwater fishing survey estimated that New Jersey anglers landed over 1.4 milion winter flounder in 1979. The commercial harvest has fluctuated around 100,000 pounds, except for a five-year period in the late 1960's when landings averaged around 400,000 pounds. The major offshore fishing ground is located off Long Island where flounder are taken close to shore in otter trawls. Trawling within two miles of the New Jersey coast is prohibited. About two-thirds of the commercial catch is taken during the spring in fyke nets set in coastal estuaries.

FISHING FACTS AND TECHNIQUES

Winter flounder are relatively small fish with small mouths; consequently, light tackle is the rule. The most commonly used hook is the long shanked Chestertown. Most rigs consist of two or three leadered hooks attached to a bank sinker, the smallest necessary to hold bottom.

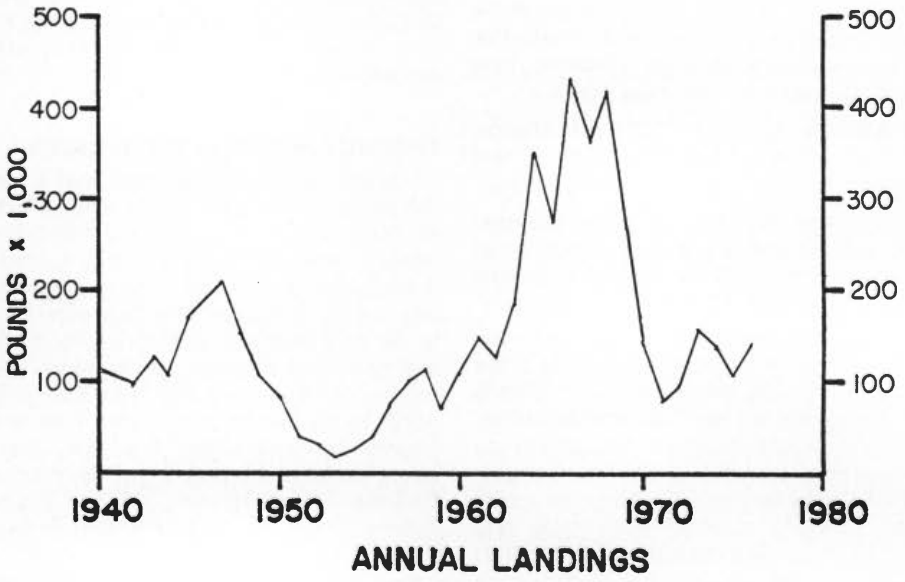
Winter flounder enter bays and estuaries in October and usually remain there until early May. Best fishing occurs during November-December and late March to early May, when water temperatures are moderate. Anglers have better success on warm, sunny days when the fish are most active. Flounder seem to congregate along the edges of holes and channels. Fishing can be done from a boat, bank, pier or bridge.

Unlike its aggressive relative, the fluke, winter flounder are relatively sedentary. Thus, it is necessary to keep the baits from moving too much. Double anchoring the boat from bow and stern helps prevent constant swaying back and forth.

The most commonly used baits are clams, mussels and bloodworms. Thread thin strips back and forth on the hook. Most boat fishermen chum with crushed mussels or use a plunger on a long stick or a clam rake to stir up the bottom to attract flounder. The baits should be dropped down current, but very close to the source of chum. If you don't catch a fish in 20 to 30 minutes, try another spot.

ACKNOWLEDGEMENTS AND REFERENCES

Anthony Hillman (art), Barry Preim (graph), Muller (undated), Bigelow and Schroeder (1953), Briggs (1978), McHugh (1977), Hildebrand and Schroeder (1972), Breder (1948).



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Spring Voices

restricted in their New Jersey distribution to the pinelands in the central and southern part of the state. The carpenter frog, named for the hammering sound of its harsh, two-syllabled call, is brown above, with two yellow-orange stripes on each side of the body. It lacks dorsolateral ridges. A large chorus of these frogs is very suggestive of the hammering of a squad of carpenters. This frog is easily observed as it calls from mats of floating vegetation. When disturbed, it dives below the surface, but usually pops up a few feet away after a short time.

Although the Pine Barrens treefrog averages only about two inches in length, it is considered by many to be one of the most beautiful frogs in the state. Bright apple green above and white below, with a lavender or purple stripe extending from its eye to the groin, it resembles a living jewel as it sits on the branch of a blueberry bush, giving its nasal "quonking" call. The Pine Barrens treefrog, sometimes called Anderson's treefrog, is listed as an endangered species in New Jersey, although it is still fairly common in certain protected parts of the Pinelands. Increased construction of housing developments and pollution of its breeding ponds have been responsible for the decline of this species in recent years. Like the other members of the treefrog group, it lays its eggs singly, instead of in masses or clusters.

Contrasting vividly with the nasal "quonk" of the Pine Barrens treefrog is the deep bass voice of the bullfrog, *Rana catesbeina.* The call of this frog is a repeated "jug-a-rum, jug-a-rum." It is the largest frog in the United States, attaining a maximum length of eight inches, and is sometimes hunted for its legs, which are sold to restaurants as a delicacy. Bullfrogs are usually plain green above and white below. In males, the throat is washed with yellow.

Bullfrogs are late breeders, usually not getting under way until June or July. One pair may lay as many as 3000 fertile eggs in a single season. This may seem like a large number of young for a pair of frogs to produce, but the mortality rate for all frogs is high. The eggs themselves are often infected by an airborne mold (*Saprolegnia)* that can destroy the whole egg mass. After the eggs hatch, the tadpoles may fall prey to fish, turtles, newts, and the larger forms of aquatic insects, such as diving beetles and dragonfly larvae. When they finally transform into froglets, they are again hunted by a host of enemies as they get ready to try out their new lungs for the first time. Snakes, raccoons, and large water birds take countless thousands of froglets. They are also sometimes eaten by larger adult bullfrogs, which do not distinguish between young bullfrogs and other small creatures that live on the shore of the pond.

Young bullfrogs are sometimes mistaken for green frogs because of the similarity in color. However, bullfrogs do not possess dorsolateral folds extending down the sides of the body. Their ridges end just behind the eardrum. An adult could not possibly be mistaken for any other species because of its large size.

Another amphibian voice that can be heard almost statewide is the mellow trill of the gray treefrog. This species exhibit great color variation, from dark gray to light green or even nearly white. There is usually a dark blotch on the back and a light spot under each eye. These frogs are also known as "tree toads," since they have very warty skin for a treefrog. The voice could be compared to the sound of a loose fan belt on a car, but with a musical quality to it, and is audible for a considerable distance. They usually call from low, overhanging shrubs on the shores of ponds. When nights are colder, they call from the water, as do the other species of treefrogs.

There are actually two species of gray treefrog occurring in New Jersey, the northern, *Hyla versicolor,* found throughout most of the state, and the southern, *Hyla chrysoscelis,* restricted to Cape May and Cumberland counties. The southern gray treefrog is considered to be an endangered species in New Jersey. Both gray treefrogs are almost identical to each other in appearance, and can be differentiated only by comparing their breeding calls, or by microscopic examination of their blood cells.

Heavy rains usually stimulate most amphibian breeding activity, and this is especially so with the eastern spadefoot toad, *Scaphiopus holbrooki.* These secretive little amphibians spend most of their lives in underground burrows, coming to the surface only during heavy rains. Breeding can take place almost anytime during the spring and summer. The spadefoot toad gets its name from the sickle-shaped "spade" present on each hind foot, which aids the animal in burrowing backwards into the ground. Spadefoots can be distinguished from true toads (*Bufo)* by examining the eye. The pupil in spadefoot toads is vertically elliptical (oval), like a cat's eye. In true toads, the pupil is horizontal. Spadefoots are variable in color, but are usually some shade of brown. There are two yellow lines on the back, which may resemble the shape of a lyre or hourglass. The call is a low-pitched grunt, repeated every few seconds.

Once the breeding season has passed, the various species of frogs and toads will become dispersed throughout their home ranges. Some species will live along the shores of the pond for the entire summer, while others will spread out into the surrounding meadows and woodlands. Thus the ponds become quiet again until next year, when winter passes and the first few solitary "peeps" signal the coming of spring. □

Fly Tying For Trout

Sponsored by the Ernest Schwiebert Chapter of Trout Unlimited

Classes are held in conjunction with the Ewing Adult Evening School. Registration information may be obtained by calling (609) 771-1300, ext. 290.

There are two separate courses, "Fly Tying For Trout, Beginners" and "Fly Tying For Trout, Intermediate." The beginners course started February 23, 1982, the intermediate course in October, 1982.

The beginners course consists of eight in-class tying sessions covering: The Streamer, Blending of Furs and the Wooley Worm, Caddis Nymph and Freshwater Shrimp, Mayfly Nymph, Stonefly Nymph, Wet Fly, Dry Fly (Compara Dun), Caddis Dry Fly and Terrestrial.

The course will heavily stress the blending of natural furs. The student will be taught to do his own blending.

A seminar on Fly Fishing Equipment and Technique will be held at the Antler & Fin Shop in Flemington, New Jersey, where Ron Poles and Len Mack will professionally guide the student on how to properly select fly fishing equipment, the tying of leaders and general streamside information. There will also be a casting clinic sponsored by H.L. Leonard Rod Company in the spring of 1982, that the student may attend.

Fee $30

The Ernest Schwiebert Chapter of Trout Unlimited meets the second Wednesday of each month at the Elks Club located at the intersection of De-Cou Street and Railroad Avenue in West Trenton, New Jersey. Ring door bell for admission, as the Elks is a private club.

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DEATH OF A NATIVE

used to be in Passaic County twenty and thirty years ago. Inevitably, our conversations always focused on hunting and fishing in the local area, and I could vividly remember my friend speaking of the excellent trout fishing in the Preakness Brook and surrounding streams. The area was all farmland, then, and although it was only about a half mile from Paterson, it was considered country.

Hiking and hunting, I had traveled extensively throughout the woodland that remains. For sure, it is quickly disappearing, being eaten away by housing and large corporations. I know of only one area where native brookies could possibly exist. There are still more than 1600 acres of uncleared land, containing some of the most rugged terrain in North Jersey. Only there, I conceived, could a trout survive, much less reproduce. The area's first inhabitants were Leni-Lenape Indians. Now it's inhabited by junk cars, motorcycles, and old tires.

Shaking the reflections, I asked, "What did you use for bait?." "A small piece of ham," my neighbor declared, noting that worms were not readily available. "Ham," I grimaced and grabbed a jar of salmon eggs from the shelf in my garage. And we were off to his secret stream. And it was exactly where I had estimated it would be; well, almost. Parking on a newly constructed four-lane highway, we sloshed through muddy snow to a narrow creek. The creek was fed by two mountain springs, one which flowed alongside the office building of a large corporation, the other was piped under the roadway from a barren hillside soon to be developed. The small stream was clear and cold here, and it contained a good amount of watercress in its slower-moving pools. In days gone by, I had traveled up and down this creek, hunting deer and trapping, but never once thinking of fish, certainly not trout. We baited up and in no time there was a tug on my line and my salmon egg was engulfed by a small beautiful brook trout. I carefully played it out and released it as Steve, who hadn't any bites yet, moved about 100 feet downstream to another shallow pool. After traveling about 300 yards downstream, we found that the stream was still only about three feet wide and it was no more than two feet deep, then only in pools. It was obvious this stream couldn't support more than a few fish. To me, it seemed a miracle it could support any at all.

Another 500 feet downstream, we found that our clear little brook flowed into a silted pond on the property of the largest soil mining operation in the county. This pond, I had heard, used to be an anglers' paradise, with some of the best pickerel and bass in the area. It was hard to believe, looking at the shallow, weedy mudhole it had become. On the other side of this marshy area, the stream paralleled a fresh cut road, and the runoff from the road had turned our crystal clear vein of water a muddy brown. As we walked further, we saw old tires, shopping carts, and assorted debris strewn along the banks and upturned in the creek. Apparently, the debris came from 60 feet above us, the huge parking lot of the second largest shopping mall in the county. The stream could hardly be called a stream anymore; it was a mass of stagnant pools blocked off by the rubble. Nonetheless, in some of the pools, I saw tiny fishes, not even large enough to swallow the bait. Other pools were so murky that it was impossible to see the bottom or the litter I was sure must lay there. The water was brown as shoe polish and looked almost as thick. Needless to say, the day's fishing had ended hours ago.

Two days later, I returned with my four-year-old son, Jimmy. We fished the creek, about 100 yards in each direction, and had only one strike. The next weekend, Steve and I fished there again. After two hours and only two small strikes, we quit. Before we left, I looked up at the idle earth movers, quiet now after another week of roadbuilding and construction. I would not have believed that trout were living in this stream, so close to an urbanized area, if I had not seen them for myself. Some of the other natives are gone forever, but the trout is trying to make a comeback. I wondered how much longer the struggle would take and what the outcome would be. I looked once more at the dozers on the hillside and then down at a tiny trout darting through the water. And I knew it wouldn't be long before Passaic County sees the death of another native. □

FRONT COVER

Trout Angler in the Ken Lockwood Gorge—Photogaphed by Cornelius Hogenbirk

INSIDE BACK COVER

Frogs and Toads—Illustration by Carol Decker (See "Wildlife in New Jersey," article on page 11.)

BACK COVER

We Care About Eagles—Photograph provided by the National Wildlife Federation for National Wildlife Week, March 14-20. (See Editorial for details.)


© Carol Decker


We Care About Eagles
The Year of the Eagle
NATIONAL WILDLIFE WEEK MARCH 14-20, 1982
JOIN AND SUPPORT THE NATIONAL WILDLIFE FEDERATION AND STATE AFFILIATES