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New Jersey OUTDOORS



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From The Editor

Talk back to us ... again

To make sure that I'll publish a magazine that you (our subscribers) will continue to buy, I'll have to find out what you really would like to see in *New Jersey Outdoors*. Of course, it's impossible to contact and satisfy each and every subscriber, but I do hear from you—or people like you—in the letters and phone calls I receive. Also, I've met many of you at the various functions I attend each year.

And I am communicating with more and more of you each year. Why? Well, when I published the first issue of this new series of *New Jersey Outdoors* in 1974, our paid circulation was under 6,200 subscribers. Our present circulation is over 61,000, which is another reason why I cannot communicate one on one.

But we have a better way to communicate with all of you in this issue. We've included a Reader Survey Form.

In a 1975 issue of *New Jersey Outdoors* we included our first Reader Survey which you filled out and

mailed back to us. Your response was excellent.

Then in the November/December 1978 issue we included our second Reader Survey. Again more than two percent of our subscribers responded. In the May/June 1979 NJO we devoted the entire editorial page to a discussion of your responses.

Now we're back with the third Reader Survey. Please turn to page 16G of the Environmental News insert. Complete the survey and return it to the address printed on the form.

The primary purpose of this survey is to help us publish a better product in the future. Of course, we also want to know you better . . . what you like . . . or don't like . . . your interests . . . age group . . . what you think about us . . . and so on.

After the Survey answers are tabulated and analyzed, I'll publish the results in an editorial later this year. So talk back to us—we're listening.

In this issue

Our *Wildlife in New Jersey* article in this issue is introduced by the illustration on the inside back cover by wildlife illustrator Carol Decker. The article titled, *Diamondback Terrapins: Between Laying and Hatching* was written by Dr. Joanna Burger of the Department of Biology, Livingston College, Rutgers University, a frequent contributor to *New Jersey Outdoors*.

If you like sportfishing for tuna, marlin and swordfish, then you should read *New Jersey's Recreational Canyon Fishery* by marine biologists Bill Figley and Doug Long. The colorful illustrations were provided by Anthony Hillman.

The article titled, *Nature's Weakness . . . Nature's Strength* was written by A. Sylvia Montroy. Ms. Montroy has been published in *Dog Fancy*, *Living with Teenagers*, *Crafts* magazine, *Accent* travel magazine and others.

A familiar name, Ferd Di Palma, writes about *The Jersey Blues*, "... tough as leather, mean as sin, yet tasty and succulent on the table."

In the article titled, *Lakewood Urban Forest*, Forester Anne Conley, Bureau of Forestry, writes that Lakewood Township is one municipality that is making a commitment to provide a healthy urban forest to enrich the lives of the citizens.

The article, *Gulls of the Salt Marsh*, is introduced by the photograph on the outside back cover by photographer/author William D. Griffin. The author discusses the nest building, egg laying and egg hatching of the Laughing Gull, a familiar summer visitor at the Jersey shore.

New Jersey in Focus: A new feature this summer to help you take better photographs. *Don't Let Murphy's Law Ruin your Vacation Pictures* was written by a frequent contributor, Robert J. McDonnell, whose work has appeared in *Industrial Photography* magazine, *Petersen's Photography* magazine, *New Jersey Audubon* magazine and the Asbury Park Press. Mr. McDonnell welcomes questions from readers about photographic problems, etc.

Photographer David Campione, a frequent contributor, got hooked on *Drum Fishing: Delaware Bay* and decided to tell us about it. Dave and friends had a fantastic outing but as he explains in the article, you must look for all the "right signs" before you venture out for drum.

Author Frank Montarelli writes "to be in the Batsto historical area is to be in the very heart of the pristine Pinelands of southern New Jersey." So read *Historic Batsto Village* and jot it down for a summer trip.

"People come from near and far to fish at the Long Branch Fishing Pier. They travel from New York, Pennsylvania, and other nearby states." So I believe Ron Jacobsen when he writes that *Long Branch Pier Has No Peer*. Outdoor writer Jacobsen is the Outdoor Editor for *The Dispatch* in Union City and *The Shoppers Friend* in Lake Hopatcong.

In the article titled, A "Great Adventure" in Conservation author Barbara L. Maus discusses the soil conservation measures that are required to maintain grass cover and other plantings at the Great Adventure theme park in Jackson Township. Ms. Maus

is Public Information Officer for the USDA Soil Conservation Service.

Author Deborah Boerner is back with *The Blueberry Invention*, or how the blueberry industry was developed in New Jersey by Dr. F. V. Coville and Elizabeth G. White. The photos (circa 1920's) were provided by the Conservation and Environmental Studies Center, Inc. at Whitesbog.

Dr. Helen Ross Russell, author of *Foraging for Dinner* and *Collecting and Cooking Wild Foods* tells us to *Save that Milt!* And then provides us with recipes for the milt. What is milt? Read the article.

If you have the legs and the stamina to pedal some 30 miles on roads that range from level to moderately hilly, and if you can ignore the discomfort of riding on a 10-speed bicycle seat for five to eight hours, then take *A Scenic Bicycle Tour from Somerville to Bull's Island State Park*. Author/bike rider Ann Gullette enjoyed it and tells us how.

Island Beach State Park is a pictorial essay by Christie McFall, a first time contributor to our magazine. Mr. McFall provided us with the illustrations and the text.

This short-short is about *Chiggers*. If you've walked through a woods or field and come away with red bumps that required non-stop scratching, you've been chiggered. Author Pete McLain, Deputy Director of the Division of Fish, Game and Wildlife, is an expert on chiggers. He's been bitten hundreds of times.



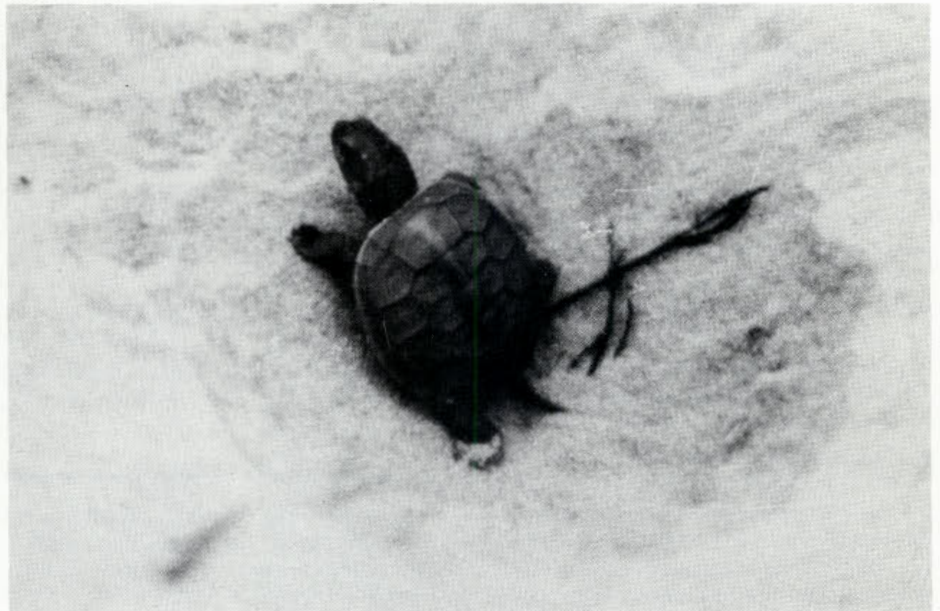
DIAMONDBACK TERRAPINS: Between Laying and Hatching

By Joanna Burger

A Laughing Gull hovered silently 15 feet above the dune grass, its eyes riveted on the sand below. After several seconds the gull circled and disappeared behind the bayberry bushes nestled between rolling dunes. I walked slowly through the grass, peering over each dune cautiously before moving on. Finally I saw a turtle flipping dirt with her hind feet, first the right and then the left foot scooping out a hole. The gull stood behind occasionally pecking at the turtle's shell, but she patiently continued digging. She laid eggs, filled the hole, and walked rapidly away as the gull pecked randomly at the sand before flying off. Such was my first encounter with the Diamondback Terrapin.

There are six subspecies of *Malaclemys terrapin* scattered along the coastal marshes and brackish inlets from New England to Texas, and perhaps even into Mexico. They are the only turtle specialized for this intermediate habitat between sea and freshwater ponds and streams. There is a great deal of variation in their appearance, as their shells range from black, to black-and-yellow; from smooth to those whose scales or scutes contain concentric growth rings. Adults range in length from four to eight inches. Males, however, never get larger than five inches, whereas females normally attain a length of six inches or more.

Diamondback Terrapins used to be quite common along the Atlantic and Gulf coasts, as an observer could count more than 1,000 turtles in a single day. Owing, however, to their excellent flavor and easy accessibility, they became a popular food item around the turn of the century. "Bulls," or males sold for \$12 a dozen; "half counts," or females between 5 and 6 inches, sold for \$24 a dozen; and "counts," or females over six inches, sold for \$40 or more a dozen. Terrapins measuring over eight inches brought as much as \$125 a dozen in the early 1900's. Natu-



Hatchling emerging from nest

rally retail prices were substantially higher. Turtle "farms" sprang up all along the coast. Such a lucrative resource was taken advantage of, and populations quickly declined. Only protective legislation curtailed the species demise, and populations slowly began to increase. Restocking practices resulted in various subspecies being introduced outside of their normal range, no doubt contributing to the current mixture of color patterns present along the coast. Now, when Diamondback Terrapin populations have increased substantially, the destruction of large tracts of salt marsh and sand dunes threatens their continued survival. "Beware, turtle crossing" signs fail to stop the massacre of hordes of female turtles attempting to cross superhighways between the salt marshes they live in and the sand dune areas they use for nesting. I spent two summers on Little Beach Island, a barrier-beach island near Atlantic City in New Jersey, studying female nesting behavior, finding out how their behavior influences nesting success, and what factors determine how many hatchlings reach the bays to restock the coastal marshes.

Females began crossing the cordgrass marsh in search of nesting sites as early as the 9th of June, and egg-laying continued until mid-July. On a warm sunny day in late June, I could find as many as 30 terrapins in search of nests while walking a half-mile stretch of rolling dunes nestled behind the high jagged ones that face the open ocean. After a summer of censusing at different times of the day, I found that more turtles searched for nest sites at high tide than at any other time, and none walked the dunes at low tide. Coming on land at high tide to look for a nest site has immediate as well as long-term benefits for the female. When the tide waters encroach upon the cordgrass marsh, females can swim much closer to the dune area before entering the hostile land environment. This decreases the distance they must travel and the time they are exposed to the drying rays of the hot sun or to the prying eyes of potential predators. However, nesting during the high tide also ensures that the nest will be above the tides, in areas where the eggs will not drown in the constant ebb and flow of tidal water or during storm tides.

Searching for a nest site takes any-

where from a few minutes to more than an hour. Meandering over the dunes, the female occasionally puts her nose to the ground and scrapes a few grains of sand before moving on to try another spot. I have seen females try seven or eight places before seriously beginning to dig. Females do not nest just anywhere on the dunes, but in fact select particular areas. No turtles nested in the high jagged dunes devoid of grass, that faced the open sea. Instead, females generally choose older, lower, protected dunes covered with clumps of dune grass which ensures that the dunes are stable and will not shift for the two or three months necessary for the development of their eggs. More turtles nest on the higher areas of the dunes than in the low, flat places between them. Again this choice helps to ensure that the nest is well above the storm tides that sweep over the cordgrass marsh and edge into the lower reaches of the dunes. Once they find a general area for nesting, they carefully select the flattest spot with the least grass. Often I found almost-completed holes abandoned because the females' probing feet had touched a rock or some roots from nearby grass. Many a turtle attempted to dig a nest on a steep slope, only to slide or topple backwards. It's just as well that digging on steep dunes fails since the sand is less stable there; sliding and drifting sands soon would expose the eggs to the sun and predators.

Once satisfied with the nest site, the female digs sporadically for a few minutes with her front feet and then shifts forward and begins in earnest. Using her webbed feet alternately, she scoops out sand rapidly until the four- to six-inch hole is complete with a round egg chamber at the bottom. Larger females do not necessarily dig larger or deeper holes. She remains propped up by her front legs, her hind end partially in the nest, dropping eggs every few seconds. In the silence of her stillness, I can see a tear fall from her eyes, tears which serve to remove salt from her system. Although most females spend 10 to 20 minutes digging the hole, egg-laying takes less than five minutes. I found clutches ranging from 2 to 17 eggs although most females lay 8 or 10 white, leathery eggs slightly over an inch long. Rapid movement starts anew as she begins shoveling the sand back into the hole with one foot and then the other. Still propped up by



Nesting females in different habitats.

her front legs, she completely fills the hole and then begins the process of camouflaging the nest. To the right and left she moves her hind legs—scooping sand, patting down the sand, smoothing over the nest and obscuring it from predators. With each movement the area covered increases, and she slowly slides ahead until the disturbed sand area may be a foot or two long. Finally she crawls slowly off, directly toward the marsh and the bay.

In only a few hours gently blowing sands completely obliterate the nest, and the sand looks as smooth and undisturbed as elsewhere. The first year I found only about 15 nests by locating the nest scrape, but by the second year I had developed a "search image" and located more than 200 nests this way. Every day I walked over the dunes in search of laying females, new nests, and nests dug up by predators.

The least sound or movement disturbed digging females, and they quickly scurried into bushes or under grass. Even when they had already laid two or three eggs they deserted the nest, only to dig another and finish laying the clutch elsewhere. Turtles which had laid more than three eggs seemed more determined, however, and rarely left without completing the clutch and covering the nest. This may be the result of the amount of parental investment. That is, if most of the clutch is laid, it is more advantageous to cover and hide the eggs in the hope that the "predator" won't be able to find or dig up the nest. Gulls and crows careened over the dunes in search of laying females or

peered diligently from perch sites. Sometimes they succeeded in displacing the female, and I watched as they reached in, pulled out the eggs, and ate them. Gulls frequently carried eggs in their bills to their own nests in a nearby gully to feed chicks now a few days old. The Laughing Gulls searched the dunes only at high tide when the turtles were nesting.

Gulls and crows succeed in locating nests only by finding digging females. Still, in the course of the egg-laying season they found and destroyed some 225 nests out of more than 1500 nests in the colony area.

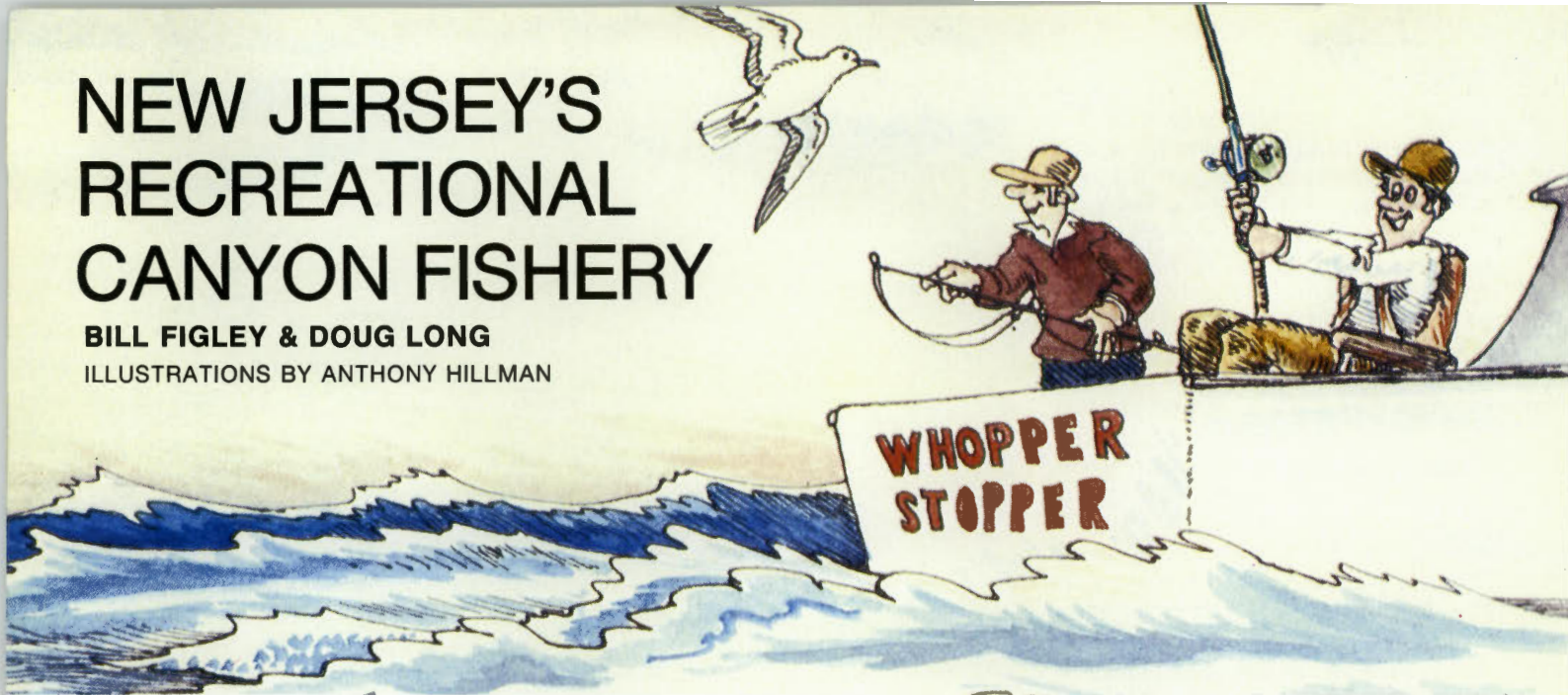
At night, foxes and raccoons worked the dunes in search of nests. They rely on smell, however, and thus can locate nests days, and even weeks, after they are completed. Mammalian predators took about one percent of the available nests every night during the developmental period. Their raids are easy to identify. Foxes dig out the entire area, destroying the nest while leaving a hole several inches deep, almost a foot wide, and up to two feet long with sand strewn at one end. No eggs or turtles survive, and only empty shells and fox tracks attest to the fate of the eggs. Raccoons, on the other hand, are more delicate, and make a smaller hole as they scoop out the eggs. They are also less efficient and often leave an egg or two in the bottom of the nest. Whenever I searched the dunes before six in the morning I found nests opened by raccoons with an egg or two remaining. Sometimes when the nest is near hatch-

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NEW JERSEY'S RECREATIONAL CANYON FISHERY

BILL FIGLEY & DOUG LONG

ILLUSTRATIONS BY ANTHONY HILLMAN



INTRODUCTION

Sportfishing for tunas, swordfish and marlins, the so-called big game fishes, began about the turn of the century following the development of tackle heavy enough to handle these large, powerful, deep-sea battlers. Dramatized by popular writers such as Zane Grey and Ernest Hemingway, the sport grew rapidly among an elite group of wealthy anglers during the 1920s and 1930s. The initial fishing grounds for marlin and other billfish were located where deep water was relatively close to shore, such

as the Caribbean islands and the coasts of California and southern Florida.

Along the New Jersey coast, big game fishing began in the 1920s, but only for a single species, the bluefin tuna, that could be caught close to shore. Tuna clubs formed in Brielle and Forked River and tournaments were organized between these clubs and those in Freeport, Long Island. Most fishing activity occurred within 20 miles of shore. An occasional marlin was caught incidentally while trolling for tuna, but no major attempts were made to fish strictly for these billfish.

Sportfishing trips to submarine canyons 70 to 90 miles offshore began in the mid 1950s with the development of fast, planing hulls and a variety of electronic gear, such as LORAN, VHF radios, radar and depth finders, which provided precise navigation and added safety. Finn Magnus was among the pioneers and he reportedly frustrated many tournament anglers with repeated catches of billfish taken in the bluewaters well offshore of traditional fishing grounds. Throughout the remainder of the 1950s and all of the 1960s, only a relatively small number of fishermen made trips to the canyons. It was not until the early 1970s that the canyon fishery increased tremendously in intensity.

New Jersey's offshore sportfishery is still growing rapidly. At this early stage, it is important that information concerning participants, effort and catch be collected and documented. Such information is necessary for the evaluation of future fishery trends. This type of information has usually been collected too late, a prime example being the bluefin tuna. The bluefin was once very abundant and the state's major big game species, but is presently so scarce that many anglers think it is not worth fishing

for. No effort was made to collect sportfishing statistics on bluefin tuna until a drastic decline was already evident.

In addition, data concerning the economic value of a fishery are often needed to defend that fishery against outside interests. The Japanese now fish with longlines for various tunas inside the United State's 200 mile fishery zone. They fish without restriction because tunas are not currently protected by the 200 mile limit. Their extensive longlines also catch and kill large numbers of swordfish, marlin and sharks. The long-line fleets of Japan, Taiwan and South Korea catch between 200,000 and 300,000 blue and white marlin and sailfish in the Atlantic Ocean each year. Such massive foreign catches of tuna, billfish and other species have a serious impact upon U.S. sport and commercial fisheries.

The purpose of this project was to estimate the participation, effort, catch and value of New Jersey's offshore big game sportfishery. This information is necessary to both understand the fishery and to help uphold the interests of New Jersey fishermen in a world of competing uses for living marine resources.

FISHING GROUNDS

Yellowfin, bigeye and albacore tuna, white and blue marlin and swordfish are pelagic species that inhabit the open ocean. They are particularly abundant 70 to 90 miles off New Jersey along the edge of the continental shelf where the depth is 100 fathoms (600 feet). While yellowfin tuna and white marlin are fished as close as 30 miles offshore in areas such as the Resor, 28 Mile and Triple wrecks, the vast majority of these and other bluewater species are caught beyond the 30 fathom contour. The off-



shore limit for most sportfishing is the 1200 fathom contour. New Jersey anglers fish from the Hudson to the Washington Canyon, a fishing ground encompassing 4,000 square miles (Figure 1).

SURVEY METHODS

The first step in the survey was to compile a list of canyon fishing boats by canvassing marinas, tackle shops and canyon fishermen. Each week during the fishing season, May through October, a random sample of canyon anglers was contacted by telephone to find out how many times they had fished and their catch during the previous week. The total catch was estimated by expanding data collected from over 550 canyon fishing trips. Information regarding the value of boats and fishing expenses was obtained through a questionnaire that was mailed to all known canyon fishing boat owners. Length and weight measurements of over 1,000 fish caught in the canyons were collected at marlin and tuna tournaments.

RESULTS

Participation

During 1981, New Jersey's canyon fishing fleet numbered about 800 boats, including 714 private, 82 charter and four party boats.

Effort

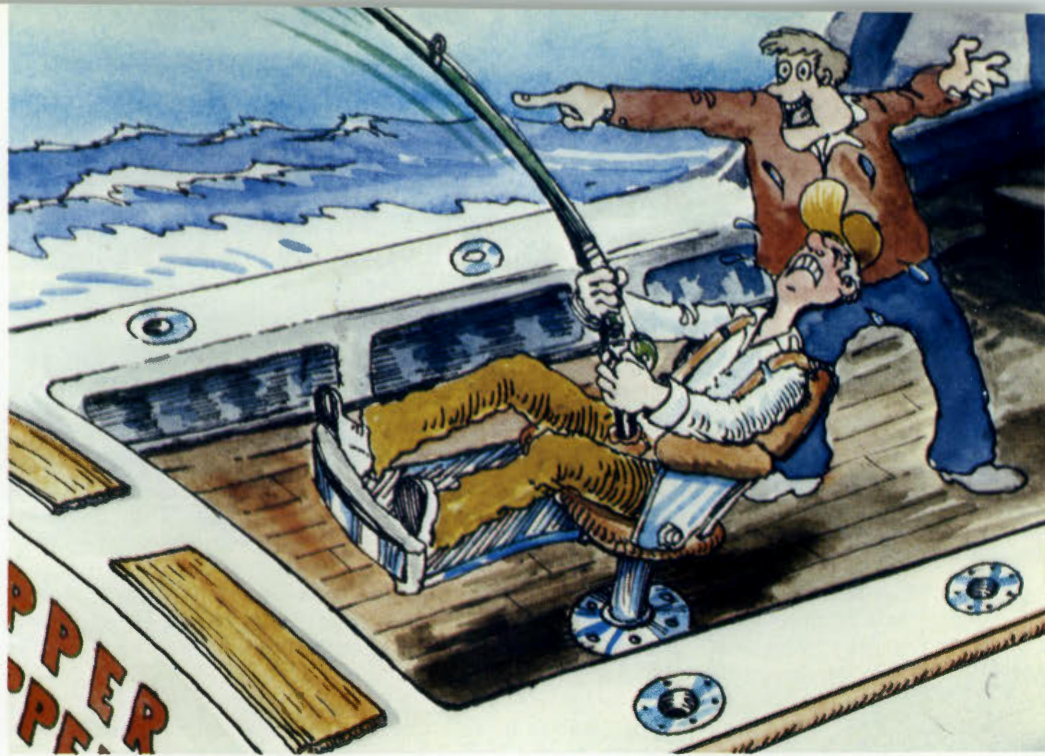
The total number of recreational fishing trips to the bluewaters beyond the 30 fathom curve was 5,473. Private boats accounted for 89 percent of the activity, charter boats 11 percent and party boats less than one percent. Although trips were made to the canyons during May to October, the most intense fishing occurred between late June and mid-September.

The primary fishing method was trolling; 99 percent of all offshore trips involved at least some trolling. Drifting was employed for tilefish during the day and swordfish at night; 11 percent of the trips involved some drift fishing.

The most heavily fished areas were the Hudson and Wilmington Canyons, with moderate levels in the Toms, Lindenkohl and Baltimore Canyons and a very limited amount in the distant Washington Canyon.

Catch

During 1981, the total catch of all species in the canyons by New Jersey anglers was over 39,000 fish (Table 1). Yellowfin and albacore tuna dominated the catch, comprising 83 percent of the total canyon take. Many anglers claimed that 1981 was the best season ever for albacore; the bigeye catch declined from the prior year, however, representing only three percent of the total harvest.

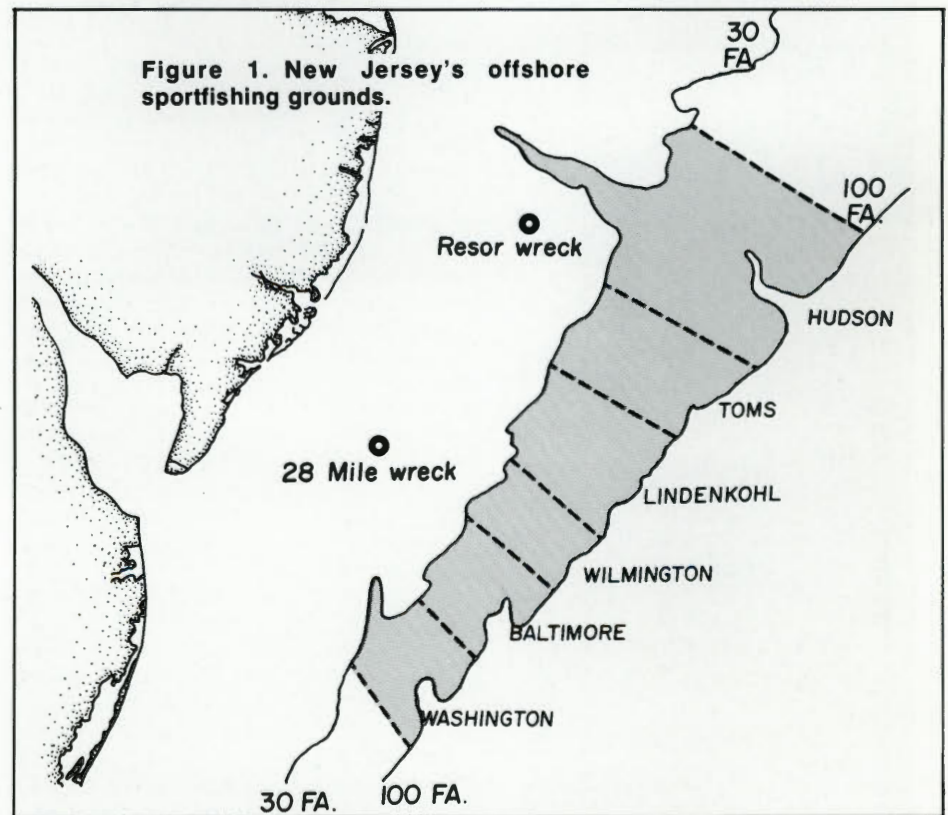


White marlin were caught in good numbers, comprising six percent of the canyon catch. About 51 percent of the white marlin were released alive. Other species, such as blue marlin, swordfish wahoo, although caught in relatively small numbers, certainly added an element of anticipation to canyon fishing.

It should be noted that the average catch per trip figures presented in Table 1 represent the overall season average

for the entire Jersey coast. At particular times, certain areas produced much higher catch rates. For example, the Hudson and Toms Canyons produced by far the best tuna fishing, with the average catch near or exceeding 10 tuna per trip (Figure 2). On the other hand, white marlin fishing was much better in the southern canyons, particularly the Baltimore and Washington.

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Nature's Weakness ... Nature's

By A. Sylvia Montroy

For nearly two years, we've witnessed the day-to-day routine of a pair of cardinals who visit the feeding shelf on our deck about six feet from the sliding glass door of our family room. We began by feeding them squash seeds, with which they reared their first brood. Shortly after their youngsters left that summer, we added cantaloupe seeds to the adults' diet.

The second summer, even more cardinals came, much to my delight. One afternoon, I heard a wee cry from outside. It was a familiar sound. I spotted a new visitor at the shelf—a picture-perfect male cardinal engrossed in feeding his youngster. The fledgling was perched in an oak tree overlooking the

deck. The male made several trips to the tree to pop cantaloupe seeds into the eager, waiting mouth. They flew off together but returned that evening for another snack. This time the youngster followed the adult to the shelf. His needs were met by a devoted parent who snapped each seed open with great precision.

I waited for them to come the following day, and the next, and the next, but they didn't. I had hopes he'd bring his mate and other members of the brood. Finally, the fourth day after his initial visit, he and his youngster returned. I was busy watching the little one, who was nearly all brown and the size of a sparrow. He hadn't been out of the nest long and was

so dependent upon his parent. When my eyes finally rested on the male, I knew something was wrong. He seemed half his normal size. His reflexes were slow, his crest battered, and his head cocked awkwardly. It was clear that his hunched up creature was injured and it seemed he was partially blind. He struggled to feed his fledgling. It took great effort to split the seeds which four days earlier he had opened with a mere snap. They left for a short time and upon their return, I was able to detect through binoculars that he had a severe eye injury. The left side and top of his head were also wounded. Here was a victim of nature's harsh treatment, laboring to meet his obligation as a parent.

While this was happening, I wasn't aware that our permanent male resident was nearing the deck, but the injured cardinal, sensing that he had overstayed his welcome, darted off in the opposite direction. Not yet alert to danger, the fledgling remained at the shelf and pleaded with the new arrival for seeds. The male responded by flashing his wings and clucking a warning to stay away. His mate joined them and was oblivious to the youngster's demands. The male charged at the little one, forcing it to leave.

It became apparent that the injured male knew his limitations and that his aim was to avoid a confrontation. He slipped from the edge of the roof and floated vertically toward the shelf each time he approached. He never uttered a sound, although his youngster announced their approach with never-ending cries for food. There didn't seem to be a mate, nor was there more than one offspring. This led me to speculate that the male had been injured trying to defend what had been his and perhaps the others had perished.

He continued to struggle that evening to feed the fledgling, and I wished I could help somehow. But I felt that tampering with nature's way would do more harm than good—a view shared by experts in the field. Since both birds could fly, this was the determining factor which kept me from intervening. I decided that the only way to assist was to supply him with

Despite his suffering, the parent labors to crack a seed to feed his youngster.



Strength

seeds, eliminating his need to search for food.

The following morning while they were at the shelf again, I noted a difference in the cardinal's attitude toward his youngster. He wasn't feeding it and seemed preoccupied. He was nervous, constantly scanning the sky with one eye, searching for enemies. The little one tried in vain to open the seeds. He was so young and vulnerable that I became concerned for his safety. My worry wasn't without cause, for that afternoon (only 24 hours after he had arrived with his injured parent) the fledgling disappeared, never to return.

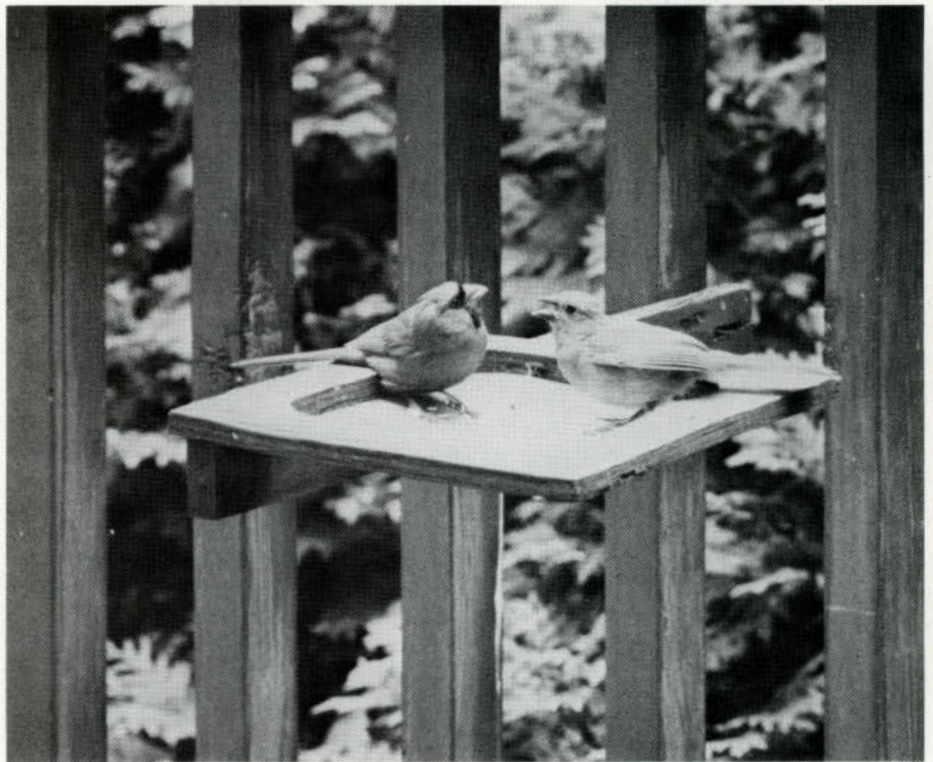
The male slipped off the roof to feed regularly after that. He, too, seemed helpless and vulnerable. He constantly watched the sky for approaching danger and continued this pattern for a few days. Many times I noticed various males feeding at the shelf, when suddenly they would lift vertically toward the roof, and I knew that they were driving the unwanted visitor away. Because of his silent approach and the way he appeared to drift from the sky, we named him the Phantom.

One day, not long after, there was a change in the way the Phantom came to the deck. He no longer approached from the roof, but landed proudly on the railing and hopped to the shelf with newfound confidence. I hoped that this confidence wouldn't dull his self-protective instinct.

Mid-afternoon a few days later, our original faithful pair of cardinals was feeding at the shelf. The male suddenly shot into the air and an aerial combat erupted between him and the Phantom. They charged at each other with claws, and as quickly as it had begun, it was over. The Phantom retreated, and his adversary went back to guard his mate while she ate.

I felt that this confrontation would discourage the Phantom from visiting us again. He didn't come back until late the next day and once again approached from the railing with assurance. He hadn't been beaten.

He visited us many times daily for the next several weeks. His crest remained sparsely feathered, and as his wound



Five weeks after the injury, the male's permanent disability will soon be disguised by a new fall plumage.

healed, he turned his head more easily. Learning to live with one eye was a major feat, as was his ability to pop the seeds open again with one snap. He was alone and unwanted—regarded as an outcast by the others, but he didn't lose his determination to survive, no matter what the consequences.

When fall arrived, his visits became less frequent (as was the case with several of our cardinals), indicating to me that he had found his place once again in the wildlife community—perhaps in another locality. Judging from nature's strength and his spirit of determination, he'll see another spring.

Check List of the Plants of New Jersey

By Karl Anderson

Few reference works can be more helpful to the field botanist than a complete list of the plants of his area. Unfortunately for the local plant student, the most recent list to cover all of New Jersey, and only New Jersey, was published ninety years ago. The *Check List of the Plants of New Jersey* has been prepared to partly fill this need. It was compiled by updating and integrating much older published sources as Britton's *Catalog of the Plants Found*

in New Jersey; Stone's *The Plants of Southern New Jersey*; and Taylor's *Flora of the Vicinity of New York*, with current local lists, field trip reports of botanical societies, and extensive personal observations.

Price for this 54-page book is \$2.50, plus \$1.00 for postage and handling. Order from the: Rancocas Nature Center, New Jersey Audubon Society, R.D. 1, Rancocas Road, Mount Holly, New Jersey 08060 • 609-261-2495.

THE JERSEY BLUES

By Ferd Di Palma

It is said that when the New Jersey state legislature acted to select an official state fish, one of the legislators suggested gefilte fish. Another, equally tongue in cheek, felt that the baccala more truly represented the desires of his constituents. But when the final tally was counted it was old *Pomotomus saltatrix* who carried the day hands (fins?) down. Yes, the bluefish. Also known as the chopper, the slammer, the Jersey jumbo.

New Jersey has been getting a lot of bad raps lately because of some appalling environmental problems caused by the illegal disposal of the wastes of its number one industry—chemicals and pharmaceuticals.

All to the good, however, are the

reports filtering down about our second largest industry—tourism. Visitors to our state contribute \$4 billion—give or take a few bucks—to the state's tourist industry. That is a nice round figure that rolls gently off the tongue.

The rattle of dice, the click of chips, and the roll of the slots down at Atlantic City notwithstanding, New Jersey's saltwater sport and recreational fishing accounts for a large chunk of that pie, especially when the "ripple effect" is considered. Food and gasoline; bait and beer; Tackle, tolls, and taxes.

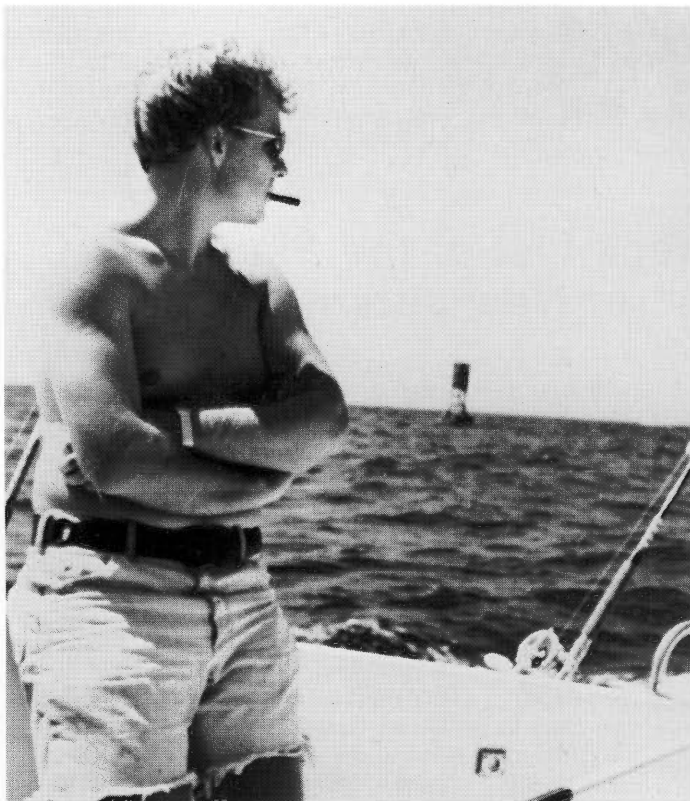
On just about any party boat fishing out of just about any port in New Jersey when the bluefish are busting all over, scratch a fisherman and you will

find a Pennsylvanian. Ditto for New Yorkers.

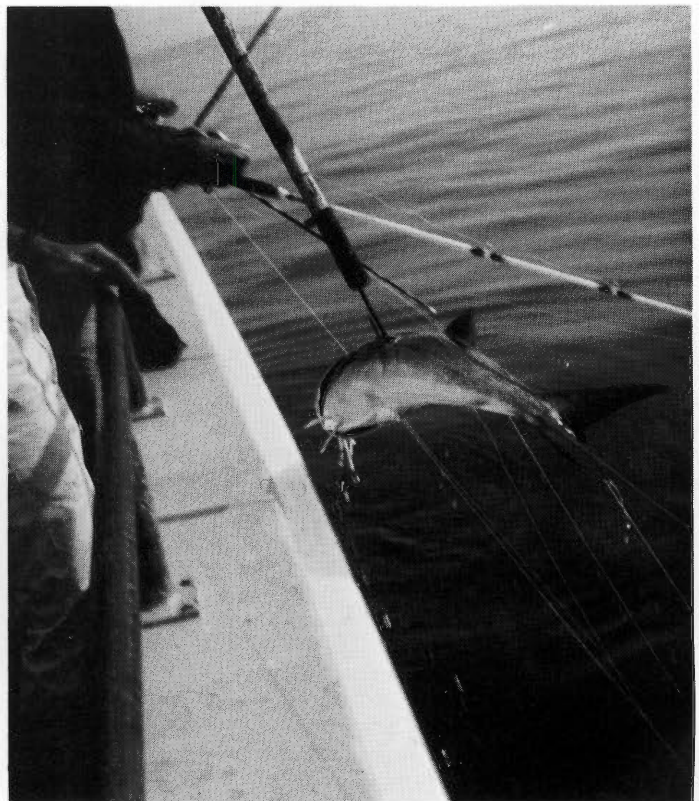
Down at Cape May in May and June the place is bursting with out-of-staters. Check one of the parking lots and you will see what I mean. License plates from a dozen different states mean that the weakfish are on their annual spawning run in Delaware Bay. Superb light-tackle game fish, these weaks tip the scales at five to eight pounds and go as high as ten or more.

Then there are the striped bass! True salt-encrusted bass buffs no long come around in force. These gamesters are still at a low ebb in their cycle of plenty and scarcity.

There remain the blues! Tackle-bust-



Trolling: Brian Duffy keeps a wary eye on the stern rods. We trolled wire line deep using Spider mini-umbrellas on the stern rods and green tube lures on both outriggers.



The angler allowed this chopper to get out of control. Hence the tangle of lines as the nice blue is brought over the rail of the chum packet.

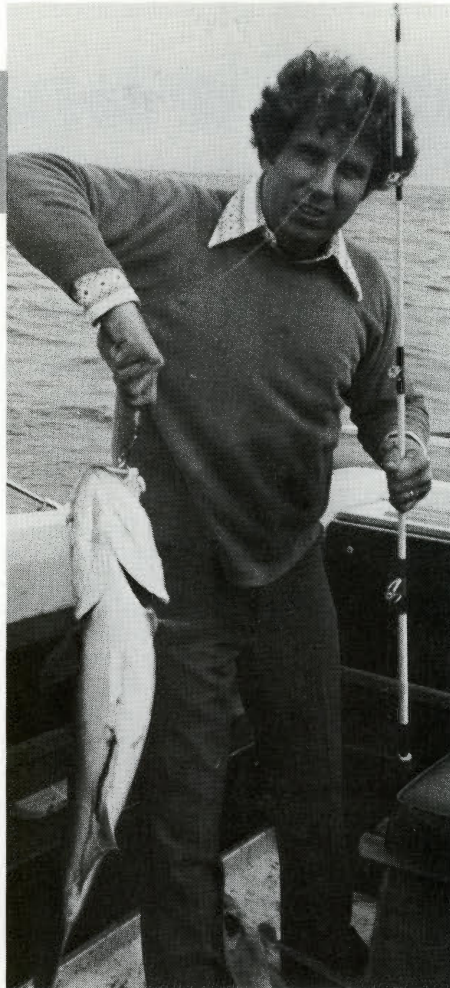
ing blues! Brutal barbarians of the salt sea! Choppers with bulldog jaws and razor teeth! Eating machines always on the prowl for something in which to sink those formidable muscle-powered cutting edges, be it anchovy, another bluefish, or a fisherman's finger.

Bluefish are of course found in the coastal waters of other states. But only in New Jersey's inshore waters can they be taken for so long a period of time in such a wide range of sizes and by such a wide diversity of methods.

Blues are taken by trolling wire lines and picking up fish directly off the bottom, generally with the use of tube or other artificial lures. This method is usually employed by those aficionados who trailer small boats to the more productive coasts, or by visitors and natives alike who charter the vessel of one of the many capable guides available at almost any large marina.

Blues can be and are, taken by land-based buffs casting lures and plugs from sand beaches or rock jetties. These inshore fish are usually marked by working flocks of seabirds, which spot schools of feeding blues as they range the shallows herding baitfish along the beaches, especially where rock jetties form natural traps for the fleeing forage fishes. These land-based anglers, residents and summer visitors alike, seem to have some invisible method of communication which sends out the message, "the blues are in!"

More likely, however, bluefish fanatics, including many former striped bass buffs, will be found aboard one of the many party vessels which pursue blues of all sizes to their favorite holding grounds: Barnegat ridge, the Klondike bank, Manasquan ridge, the Shrewsbury rocks, and the high grounds near the Ambrose light tower. There are many other hot spots. The skippers will take you there and get you back. It is up to the angler to know what to do when he gets there; a



John Weber jigged this 17¼ pound Jersey jumbo at the Klondike. The lure was the popular Ava in the 3-ounce size.

capable mate will give a novice the drill—once.

Party boats themselves use two quite different techniques, both of which are successful in providing the kind of excitement that bluefish fans hope for. In the method called chumming, the vessel usually drifts while a deck hand ladles a thin, soupy mixture of ground-up menhaden and sea water over the off side. The angler, meanwhile, drifts a 6-0 hook baited with a piece of that same cut bait slowly into the oily slick formed by the chums. Blues are attracted to the slick, and, while investigating the interesting particles of food, soon find the baited hooks. If several large specimens "hit" at once, the deck of the vessel so engaged soon becomes a scene of instant carnage.

Other skippers opt for jigging. The use of the three-ounce metal jig is becoming increasingly popular along the

Jersey shore, especially in the northern sector. While the chumming vessels frequently take blues that have been harrying the menhaden, or, as they are often called, mossbunkers, the jigging fans look for blues feeding on sandeels. There has been a terrific population explosion of the sandeel during the past several years; thus the popularity and success of the chrome-plated metal jig. In this type fishing the skipper usually pursues the schools of feeding blues which are marked by the working flocks of gulls and terns following the moving schools of fish. These lures, jigged rapidly, resemble a fleeing baitfish and take bluefish ranging in size from two to sixteen pounds and occasionally a bit more. Tied directly to the 20 or 30 pound test monofilament line the jig is cast underhand about 20 to 35 feet from the vessel's side. The lure is allowed to hit bottom and then retrieved as quickly as possible. A reel with a fast retrieve—four to one or better—is best suited to this type of fishing. Very little in party boat fishing can compare to the "kick" when the speeding lure is intercepted by a Jersey jumbo!

Sometimes the fish are on the small side. It does not matter! Bluefish fans often carry aboard two rods—a medium outfit and a light one—so that they can suit the tackle to the fish. In that way the two and three-pounders register a thrill a second when taken on the light stuff.

Whatever their size, Jersey blues will usually live up to their advance notices; tough as leather, mean as sin, yet tasty and succulent on the table. Whether three or fifteen pounds, each size can supply equal pleasure and excitement as long as the right tackle is used.

Boat fishermen are usually fond of the sea. They enjoy the light summer breezes that can set a small craft dancing on the tide. But most of all they enjoy a day in which they can troll, chum, or jig that fantastic finned fighter, the Jersey bluefish.

Lakewood Urban Forest

By Anne Conley

Young children, freed from the confines of their small apartment, shout and laugh as they tumble down a grassy slope at their local park . . . a retired couple stroll down a cool, shady street in the middle of summer . . . a young boy, with the help of some friends, builds a tree house . . . a college student trying to study beneath a large old oak tree cannot concentrate over the chatter from two squirrels overhead . . . Although they may not realize it, all these people are sharing some of the benefits of a healthy urban forest. But healthy, useful urban forests don't just happen. They are the product of years of planning, development, continuing maintenance, and commitment by farsighted community leaders.

Lakewood Township, in Ocean County, is one municipality that is making a commitment to provide a healthy urban forest to enrich the lives of the citizens.

This commitment has its foundations in the Lakewood Shade Tree Commission, a group of volunteers, led by chairman Aleksander Prima, a retired horticulturalist. Established in 1962, the commission has responsibility for the street trees in the township. Gilbert Carlson, the superintendent of public works, and Frank Bartolf, assistant superintendent of parks, are also members of the commission. Including these two officials of closely related agencies on the commission promotes smooth interactions for all facets of the urban forestry program.

Lakewood, with a population density of 1500 people per square mile, is much like other urbanized areas of New Jersey, having a great diversity of ethnic and economic neighborhoods within a small area. Fortunately, Lakewood

also enjoys an abundance of open space. The township was once a haven for multimillionaires such as the Rockefellers and the Goulds, and some of their former estates have been preserved as parks. Near the center of town, two large lakes provide year-round recreational opportunities, including fishing, swimming, canoeing, and ice skating. A long established community, Lakewood also has many tree-lined streets along with street-side parks.

To care properly for their street trees, the commission realized the necessity of knowing the condition of the trees in Lakewood. A street tree inventory was needed, but how was it to be accomplished? The commission looked to the New Jersey Bureau of Forest Management for assistance. As part of the urban forestry program, the bureau's area forester for Ocean County began working with the shade tree commission, and also located an interested college student who could earn college credit while working on the shade tree inventory.

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After determining exactly what information was needed, the forester developed a shade tree inventory system and then trained the student, who was able to complete the inventory for a large portion of the downtown area. The commission is hoping to find additional students to complete the inventory for the entire town.

The inventory lists the location of each tree, and its species, diameter, height, and condition. Areas that were lacking trees were also noted during the survey.

The commission used this information as a starting point for a tree planting program. In consultation with the area forester, the selection of species was based on important factors such as the diameter and height the tree will reach and their relation to the size of the planting strip and the presence of overhead utility lines.

In the fall of 1981 the commission planted 30 new street trees as a beginning for their continuing tree planting program. The commission hopes to enlist the aid of community groups so that this program can be expanded in the future.

Of course, tree planting is only one phase of a complete urban forestry program. The existing and newly planted trees must be cared for and maintained. The shade tree commission employs a foreman and two tree trimmers who coordinate activities with other tree care crews from the public works department. The shade tree commission's budget also includes the operation and maintenance of a bucket truck which is a valuable asset for completing the necessary tree maintenance work. Realizing the importance of up-to-date training on tree planting and maintenance and



Lakewood residents exploring the outdoors along the nature trail in Pine Park.



Lake Carasaljo, only a block from the center of town, provides many recreational opportunities.

cost restraints, the commission wanted to provide the training at minimal cost to the township.

The area forester, working with the Bureau's staff urban forester, developed and presented a two-day training course for the commission's and public works department's tree maintenance crews. The course included tree planting, pruning, and wound care as well as instruction on tree growth and the mechanisms of tree diseases and decay, giving the crewmen enough background knowledge to understand why proper tree care is important.

The township is keeping a close watch on gypsy moth populations. Last year, 800 acres were sprayed to help control the pest. The township is ready to spray additional wooded areas that have high gypsy moth populations this spring to protect their urban forest resource.

Pine Park, an old estate that formerly served as a school and a Navy training center during World War II, was purchased by the township and is being used as a park. It is named after the many stately old pine trees which provide a enjoyable environment for various recreational pursuits such as tennis, softball, bocce, and just relaxing. In the summer, the community schools sponsor a supervised recreation program for township youth.

When Lakewood wanted to develop a nature trail at the park, assistance was obtained from cooperating agencies. The area forester laid out the trail and a Young Adult Conservation Corp (YACC) crew from Lakehurst Naval Air Station cleared the trail, built bridges, and erected signs identifying trees along the trail. Meandering through the woods and around a lake the trail provides a relief from the nearby city hustle and bustle for the many township residents who use it year-round.

The increasing number of joggers drawn to the cool, shady park prompted plans for a jogging/exercise trail, with the township's environmental commission appropriating the necessary funds. The area forester, working with park employees, marked out a course and planned the exercise stations for the trail. Two loops were designed: a beginner's, following flat terrain, and an advanced loop on more hilly terrain. The two are interconnected so that a dedicated jogger can complete both loops. Each loop will have 14 exercise stations. Park employees will clear the trail, and a volunteer group, the Blackhawks, will construct the exercise stations.

With a goal of reducing the forest-fire hazard in the park, a prescribed burning plan for the area of highest fire risk has



Training sessions on tree maintenance aids township employee Ronnie Pullen with his work.



College student Harry Holdorf working on Lakewood's shade tree inventory.

been developed by the area forester. By burning against the wind in the wintertime, accumulated leaf litter and shrubby undergrowth are eliminated, creating a more parklike effect and reducing the forest fire fuel.

In recognition of their efforts to manage their urban forest resource effectively, Lakewood will be designated a Tree City, USA, at their Arbor Day ceremonies this spring. This prestigious award by the National Arbor Day Foundation has been granted to only 210 cities and towns across the United States. The criteria for the award are based upon the idea of continuing planning, development, and maintenance of shade and street trees as well as parks, rather than just simply planting trees. Lakewood will be the first municipality in Ocean County to receive this recognition.

Lakewood's Urban Forestry Program is not unique. Quite a few towns in New Jersey have comprehensive urban forestry programs. Unfortunately, many other towns are ignoring their street trees and woodlands. How about your town? Is its urban forest being preserved and developed? It doesn't take a multimillion-dollar budget. The most important requirements are concerned citizens and dedicated township employees who care about preserving their urban forest resource so that it can be enjoyed both today and by future generations.

Gulls of the Salt Marsh

By William D. Griffin

PHOTOS BY AUTHOR

Stretching westward from the Atlantic, the salt marshes of south Jersey are breeding grounds for numerous species of animal life; one of the most obvious of these is the raucous Laughing Gull. Of the three gull species commonly seen in New Jersey in the Summer, the Laughing Gull is the only one with a black head, and is smaller—but noisier—than the Herring and Great Black-backed gulls. Gliding easily on the summer winds, and frequently making the maniacal laugh-like call from which their name derives, these gulls are a common sight all along the Jersey shore.

The Laughing Gulls arrive back from their southern wintering grounds in April, and begin building their nests among the grasses of the salt marsh a month later. Early nests and eggs are often washed away by the high waters that inundate the marshes in spring, so nest building and egg laying usually continue well into June. The nest of dry marsh reeds typically holds three or four eggs. The gulls nest in colonies, so numbers of nests will be scattered over an area of the marsh.

One bright early-July day, I waded and walked through alternately wet and dry stretches of a salt marsh in Cape May County, to reach a colony of Laughing Gulls in order to photograph the nest activities. A half-hour after I set up my blind some 15 feet from a nest containing three eggs, the female bird alighted, but the nearby blind obviously annoyed her; she stood near the eggs, scolding loudly. Soon the male bird (slightly larger and with more red on the bill) landed, and by sound and motions indicated to his mate that she should be over the eggs. Convinced that she would now continue the incubating, he left, but she stood over the eggs for another five minutes, scolding all the while, before sitting down gently to warm the eggs.

Three weeks after the egg is laid, the gull



Sailing gracefully on the ocean breeze, the Laughing Gull is a common summer resident along the Jersey coast.

chick emerges, wet but fully feathered. In a day the feathers have dried, but the “egg tooth” can still be seen on the upper mandible. The several eggs hatch over a period of several days, and the young birds remain in or near the nest for a few days thereafter. Now the parent gulls take turns providing shade for the chicks from the hot July sun. When hungry, the youngsters implore the parent for food, and are fed by regurgitation. At a week old, the young birds explore the outer reaches of the nest area and the marsh surrounding it.

By their third week, the half-grown gulls gather in groups, and the various parents take turns feeding the active chicks. The young become able to fly at the age of six to seven weeks, and are then the same size as the parents, but of duller plumage. In October they will make their first migration south, and next spring they will return to the south Jersey salt marshes where they grew up.



Standing near her nest and eggs, this female Laughing Gull voices displeasure at the nearby photographer's blind.

Don't Let Murphy's Law Ruin Your Vacation Pictures

By Robert J. McDonnell

During the last decade, and especially within the past few years, electronic technology has given photographers a dazzling array of cameras and accessories sporting a variety of automatic features. These include: aperture- and shutter-priority automatic exposure, automatic flash, autowinders (motor drives), automatic focus, and automatic fill-flash (a piece of the sun!). Do these features guarantee better pictures to casual photographers who dust off their cameras only to record special events like vacations? Manufacturers' "hype" easily lulls you into this sense of security—after all, equipment is computer-controlled, so it solves every photographic problem, right? Wrong! Computers can be fooled and, if you doubt it think about all the time and effort required to correct that erroneous, computer-generated bill you received a few months ago.

Murphy's Law—"if anything can go wrong it will"—suggests that any camera equipment will fail at the least opportune time and it also implies that the photographer won't be aware of the problem until it's too late. Laws of probability also predict that the more complex a device becomes, the more likely it is to fail. Thus, a photographer embarks on vacation, the camera fails, and the shutterbug really gets bugged when pictures return from processing. Then, grim reality—in the form of incorrectly exposed, blank, or scratched pictures—lies on the table for family and friends to see.

This inaugural column offers some pre-vacation hints that may help you evade the clutches of Murphy's Law.

Just as you inspect and clean other vacation usefals, so should you inspect and clean your camera equipment. I would recommend the following:

1. If you haven't used your camera in some time, read its instruction manual and become familiar once again with all its features and controls.
2. Replace batteries in camera and flash.
3. Open the camera back and, using a blower brush, clean the film compartment.
4. Clean both front and rear lens elements using blower brush first and lens tissue second.
5. Check flash operation after battery replacement by using the manual or "test" button.

Once all cleaning steps have been performed, a real test of the entire sys-



PHOTO BY AUTHOR

tem is in order. You should have cleaned your camera a few weeks before your scheduled vacation and the intervening time shouldn't be wasted.

Buy a roll of 20-exposure color slide film and load your camera. Make time to shoot this roll of film, choosing both outdoor and indoor (if you intend to use flash) subjects. Color slide film has little exposure latitude, so shooting test slides and having them processed before leaving on vacation will tell you if your camera and flash are functioning properly. Such a test will cost only a few dollars and might save much aggravation later. If resulting pictures are properly exposed and unscratched, you can be confident in your camera and flash.

At the outset, I stated that automatic exposure and flash can sometimes be "fooled" and now's the time to discuss what I meant. For simplicity, I'll discuss only the camera's automatic exposure, but my statements hold for automatic flash as well.

Both aperture- and shutter-priority exposure systems found in today's cameras are prone to identical shortcomings. Most often these exposure systems yield excellent results, but if the camera lens is aimed at a subject that is too bright or too dark, under- and overexposure (respectively) will result. You probably will encounter both these extremes while on vacation, especially at the Shore. Don't forget: Sand and water reflect much sunlight, so if you allow too much of this reflected light to influence exposure, the resulting images will be dark (underexposed).

For example: you are taking a picture of your child playing in the sand and you stand too far away and in the wrong

place such that your camera is facing the sun. In this situation the camera's meter will be overly influenced by sunlight, instead of light reflected from your subject. Thus, your image will be of a child in silhouette. To avoid this problem move to another position so that the child is "frontlit" and take a meter reading by walking right up to the child. This reading is held via your camera's "memory lock" feature. Now stand back and expose the image. If your camera does not have a "memory lock" feature, override the automatic mode by using your camera in its manual, or needle-match, mode. So, the change of position and proper metering save a picture! Be forewarned, however, that this procedure might result in a background that looks bright or overexposed. (A solution lies in use of fill-flash, the topic of a future edition of this column.) You must decide what is important—the child's expression of joy, or the brightness of the background! The choice is clear, I believe.

Now assume that you wish to record an image of a person who happens to be wearing dark clothing. If you let your camera think for itself, no doubt, it will think that the clothing is the subject, not the person's face, resulting in an image showing perfectly exposed dark clothing and an overexposed face. To avoid this problem, follow the procedure previously described, taking the meter reading near the subject's face.

Similar pitfalls await a casual user of automatic electronic flash. If the flash sensor "sees" too much dark background, the picture, usually of a person, will show a perfectly exposed back-

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Five drum fish

DRUM FISHING: DELAWARE BAY

By David M. Campione

We listened most intently for the sound of the drum fish: like a slowly beating drum underwater. Visibility was about half a mile. The water was as calm as a lake (rare occasion on the bay). We were six miles from shore. Trying to catch the elusive drum fish. Fishing boats were all around us, each with anglers on board waiting patiently to hook one of these prehistoric-looking gamefish. This was the first drum fishing experience for Jim Bradshaw and me on the Delaware Bay. We had heard so many stories about this gamefish and how much people fished for the drum: only in the Delaware Bay.

A lot of information on how to catch this fish came to us from "experienced fishermen," who had drum-fished before. Most of the information came from friends of friends who frequented Jim's service station. We were told to use medium to heavy boat poles, at least a 3/0 conventional fishing reel, 50-pound-test line (ours held 300 yards of line), and 9/0 to 12/0 hooks on a two-foot wire leader.

Clams, we were told to use for bait. Buy a bushel of large clams. Do not use the cherrystones, unless you plan to eat them yourself. Clams are a part of the

drum fish's diet. Put at least two large scrumptious clams on one of the large hooks mentioned. Use a fish finder and a three-ounce sinker. Sinker weight will vary depending on weather conditions and you cannot predict the Delaware Bay, so be prepared.

More information: The best time to fish for drum fish is when the moon is full, on an incoming tide, between the hours of six and eleven pm and hope for decent weather and the right spot. With all this information received from well-intentioned fishermen, it will be "so easy" to catch this mighty gamefish.

Jim and I digested all the information we received through the winter. This whetted our desire to catch the famous black drum fish of the Delaware Bay. Our thoughts turned to the upcoming fishing season of late May and early June—so distant from the present winter weather. We discussed the possibilities (mostly dreaming) of hauling in a drum fish weighing 50 pounds or upwards to one 113 pounds (world record) with the feeling of pulling up an old tire. Pulling up an old tire! What the heck is so exciting about that! Must be more to this gamefish?

A quizzical thought struck both of us

at the same time: We forgot to ask our informative fishermen, who so readily supplied us with all the information on how to catch a drum fish, "How many of these gamefish have you caught?" I guess everybody who provided us with their knowledge on how to catch these fish, thought we were wise guys. When we saw each of our information sources, we then asked, "How many of these drum fish have you caught over the years?" The answer was always "None." Or, "I heard them drumming at night while fishing for them." You did! And "I saw some at the docks once." "But none personally." This was becoming too much to comprehend. All this information from "experienced Delaware Bay drum fishermen"; now it seems like we are trying to catch the legendary Jersey Devil. Let's face it, full moons, certain hours at night, special baits, incoming tides, special fishing equipment, specific sounds, certain times of the year. Whew! Maybe we should go snipe hunting at night with a burlap bag! "Kinda makes you wonder if we are being conned?" Well, being diehard weakie fishermen of the unpredictable Delaware Bay, we decided to fish for the drum anyway. What could we lose?



Five drum fish, thirteen weakies, ten blues, one fluke and the fishing poles used to catch these fish.

PHOTOS BY AUTHOR

There we were, our lines in the water, anchored one-half mile from bug light in the fog. Twenty boats around us and it is 6:30 p.m. A boat 30 yards away hooks up. We watch this fisherman pull in a 30-pound (found out weight later) drum fish. We yell over congratulations to the fisherman. "Thanks," comes the reply. "It's a shame it's only a puppy." Modest fisherman. I look at Jim and laugh, and say, "Only a 30-pound puppy drum fish." I do not know about you, but fresh or salt water, I never caught a 30-pound anything.

Our excitement settled down and we went back to our own fishing. A few minutes later, Jim says, "I think one is biting." Drum fish have a peculiar way of taking bait. Now the time has come. All the worthwhile information we received comes together at this time. Jim peels off a few yards of line when the fish takes the clam. He sets the hook and off he goes (the fish). Now the fight begins, and I push the stopwatch on my watch to time the battle. The fish takes off running and shaking his head, while the line is peeling off rapidly. The fish heads for the ocean as the reel screams, forgot to take off the click. Fifty, one hundred, one hundred and fifty yards of line is stripped off in a matter of seconds. Jim is holding on as the line continues to peel away. I look at him and say, "Can't be a drum fish, remember what we were told—just like pulling in an old tire." Well, if this is a

drum fish and is supposed to feel like an old tire, why does it feel like pulling an old Volkswagen going 30 miles an hour?

Jim finally stopped this fish, turned him, and began to reel him in. As the fish neared the boat I was ready with the gaff. Well, this big ugly brownish-black fish came to the surface and did not like what he saw (me or the boat) and off he went again. This time his run was longer, still shaking his head with what seemed to be even more powerful jerks. Jim said, "This ain't no old \$#@ & % # tire," as he hung on and the fish headed for the open sea again.

Well, the fish was finally brought alongside the boat. I went to gaff him in the belly, but the gaff would not stick. We thus found out that it was best to gaff this fish in the mouth. We got the big fish on board and the other fishermen nearby were yelling and cheering. "Nice catch!" It took 20 minutes to bring in a first drum fish, which tipped the scales at 58 pounds.

The fog started to roll in real good after we boated this beastly-looking gamefish. As we headed in for the night, our talk centered around the next time we would try to catch a drum fish. Unfortunately, the weather prevented us from trying again during that particular season.

The following year, there were four of us on Jim's center-console aquasport. We convinced two of our friends, Ted Igle and Walt Gregory,

to come along and try their skill at this elusive gamefish. Their ears filled with some of the same stories we had heard, plus we added our own experience.

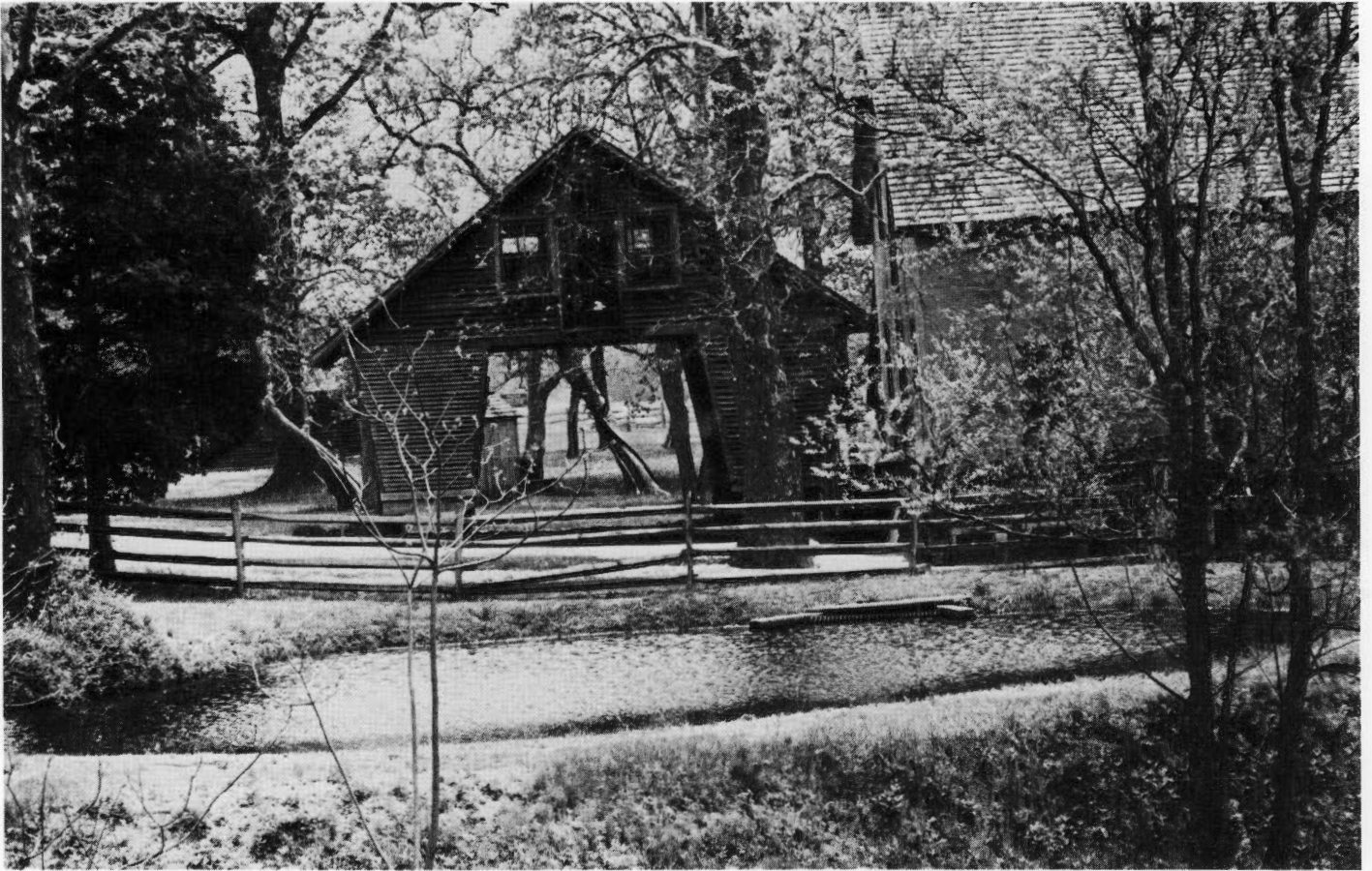
A phone call to South Jersey Hunting and Fishing Club, Cape May, reserved two bushels of clams for the particular night we were going fishing. During drum fishing season, it is best to call a bait and tackle shop and reserve clams, for they became quite scarce at this time of year.

We had checked the calendar for a full moon in late May or early June, and looked for all the "right signs," as we were not going to fish the same area as the previous year. For our second year we decided to fish about one and a half miles southeast of Fourteen-foot Bank. Being experienced drum fishermen now, we decided that a different area would test our skill against luck from the first year.

After we anchored and got all settled in, we started to catch some nice weakies and blues in the late afternoon, using bucktails with squid and high-low rigs with squid.

By 6 p.m. Jim, Walt and I were fishing with our conventional poles with the standard drum fish rig. Ted was still jigging for weakies. About 6:30 p.m. Ted hooks into something big. We kid him about hooking into a big ray, as no drum fish would take a bucktail with squid on it. So we thought. Fifteen minutes later, Ted

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HISTORIC BATSTO VILLAGE

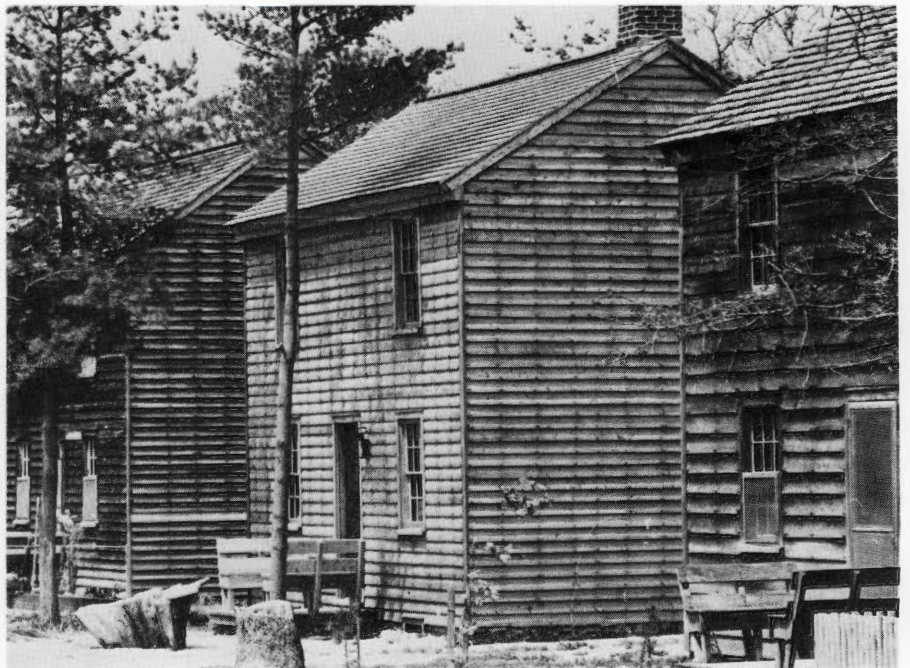
By Frank Montarelli

To be in the Batsto historical area is to be in the very heart of the pristine Pinelands of southern New Jersey.

Located on Route 542 approximately 13 miles west of the Garden State Parkway, in 99,672-acre Wharton State Forest in Burlington County, the restored Batsto Village stands as a unique, accessible link to the history of New Jersey, predating as it does the American Revolution.

A visit to Batsto is more, though, than a tour through some 28 restored structures. It's an opportunity to touch the state's venerable past and to experience Batsto's serene Aura: It is perhaps as tranquil and relaxing a place as any in the state.

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Environmental News



ADOPTED EAGLE CHICK THRIVING. New Jersey's last pair of nesting bald eagles, who have been unable to produce a fertile egg for the past six years, are doing a splendid job as foster parents to the eaglet transferred from a federal facility in Maryland to their Cumberland County nest on April 12. The adopted eaglet, photographed at age seven weeks after it was banded on May 13, was almost ready for its first flight. The zoologist who climbed the 80-foot tree to band the bird said it was very healthy and because of its size is probably a female. Female eagles, as with all hawks, are larger than males. The eaglet, nicknamed "Check-Off" in honor of the tax check-off program to fund the state's Nongame and Endangered Species Program, is now covered with brown feathers. It will not develop the characteristic white head and tail of the adult until it is four or five years old. The Bald Eagle Reintroduction Program is administered by DEP's Division of Fish, Game and Wildlife.

COUNCIL TO ACT ON TIDELANDS MAPS

As NJO goes to press, the Tidelands Resource Council, on May 27, was slated to adopt 710 maps delineating coastal lands now or formerly flowed by mean high tide waters. The tidal status of such lands determine whether the state has claims to their ownership. They encompass much of the tidelands (riparian) property in an area stretching from the New York State line south to Cape May Point. The council anticipates adopting an additional 107 maps by November 3.

The adopted maps will be open to public inspection in the offices of the New Jersey Secretary of State in Trenton, the Clerk of each county and each

municipality whose boundaries include lands shown on the maps, as well as in three offices of DEP's Division of Coastal Resources (DCR). The DCR offices: Bureau of Tidelands, Room 711 Labor & Industry Building, John Fitch Plaza, Trenton (Phone: 609-292-2573); Bureau of Coastal Enforcement and Field Services (BCEFS), Northern Shore Region, 1433 Hooper Avenue, Toms River (201-341-3977); and BCEFS, Southern Shore Region, Stockton Solar Energy House, Route 561, Pomona (609-652-0008).

Continued on page 16C

WATER EMERGENCY ENDS

'I hereby declare that a water emergency no longer exists . . .'

Governor Thomas H. Kean

On April 27 Governor Kean in Executive Order 5 declared the water emergency at an end in New Jersey; ordered the lifting of water use restrictions imposed by former Governor Byrne's Executive Order 104 because of a severe drought situation; and directed that amnesty be granted to individuals who failed to pay surcharges levied for excessive water usage and a credit be given to those who paid the surcharge.

On the same day the Delaware River Basin Commission (DRBC) also lifted water restrictions imposed in January 1981. The DRBC is made up of the Governors, or their representatives, of the four states that use the water from the Delaware (New York, New Jersey, Pennsylvania and Delaware). During the water emergency the DRBC limited the amount of water each of the states could take from the river.

Governor Kean, in the executive order, credited the water conservation efforts of the people and businesses, and the action of the legislature to provide emergency funds for construction of water supply projects to improve the capability of interconnections and water supply delivery to the heavily populated north-eastern part of the state. However, he said, "while the water emergency can be considered over for the present, the conditions which resulted in the shortage continue to exist with a number of water purveyors and, as a result, there is a continued probability that below normal rainfall could again result in severe water supply shortages."

The governor called on New Jersey residents to "continue to exercise conservation measures to avoid the imposition of similar restrictions in the future . . . We have learned a lesson; namely, that our water supply is subject to the whims of nature." (The pattern of below level precipitation lasted for 18 months. The substantial rainfalls and snowfalls of this past winter and early spring reversed the trend and replenished the state's reservoirs to bring them close to capacity by the end of April.)

Continued on page 16C

HAZARDOUS WASTE SITING COMMISSION SWORN-IN

The nine members of the Hazardous Waste Facility Siting Commission were administered the oath of office by Governor Kean on April 27. Noting that illegal and haphazard dumping of toxic substances has created a severe problem in New Jersey, the governor said the commission faces "perhaps the most difficult task confronting the state . . . to prepare a long-range plan to assure that citizens are never again exposed to the hidden dangers of toxic wastes."

The principal duties of the commission will be to review the criteria for the siting of new major hazardous waste facilities that will be proposed by DEP in consultation with the Hazardous Waste Advisory Council; prepare, in consultation with the council, a Major Hazardous Waste Facilities Plan for New Jersey and propose and adopt site designations for the number and type of such facilities determined to be necessary in the plan; prepare a public information program and hold public meetings and hearings in the state on any matter related to the siting, licensing, construction, operation or closure of major hazardous waste facilities; adopt rules and regulations for exemptions.

The commission members represent government, environmental or public service organizations and industry. They are—former state senator Pat Dodd, chairman; John Heinz, mayor of Egg Harbor Township; Stephen Capestro, Middlesex County freeholder director; Thomas Lean, executive director of the Jersey City Redevelopment Agency; George Polzer, Jr., executive vice president of Commercial Services and chairman of the Chemical Industry Council of New Jersey; Dr. Roy Gottesman, vice president of environmental and regulatory affairs for Tenneco Chemicals, Inc.; Dr. Max Weiss, supervisor of radiation protection at Bell Laboratories; Ann Auerbach, director of natural resources for the New Jersey League of Women Voters; and Gordon Millsbaugh, an attorney, and a trustee of the New Jersey Conservation Foundation.

DEP 1981 ANNUAL REPORT

The Annual Report of the New Jersey Department of Environmental Protection for fiscal year 1981 (July 1, 1980 through June 30, 1981) has been published. To obtain a copy, write to Pat Lane or Mary Ann Delorme, DEP Documents Distribution Center, CN 402, Trenton 08625.



Two weeks before the summer season began, close to 10,000 acres of New Jersey's woodlands had already been consumed by flames. DEP's Bureau of Forest Fire Management reported that between January 1 and May 16 of this year, 1,008 fires had burned 9,845 acres of forestland. A reminder: To report a forest fire by phone, dial "O" for the Operator and say, "I want to report a forest fire." You will be connected to the nearest fire warden.

PUBLIC INVOLVED IN PLANNING CLEANUP OF BURNT FLY BOG



R. Gimello Federal, state, county and municipal officials, and private citizens are actively involved in a cooperative effort to plan for the proper and safe cleanup of the Burnt Fly Bog toxic waste dump site in Marlboro and Old Bridge townships (Monmouth and Middlesex counties). DEP was instrumental in the creation of the Burnt Fly Bog Citizens' Advisory Committee composed of residents from both townships to act as liaison between DEP and citizens and to review and comment on the cleanup planning being conducted at the Bog site.

Rick Gimello, Chief of DEP's Office of Public Participation, is an ex-officio member of the citizens' committee; and Sally Mollica, environmental officer in Marlboro Township, is chairman. The committee, which has been in existence since October 1981, publishes a newsletter entitled the "Bog News", which is the direct informational link between those responsible for the cleanup and

the township's citizens.

As of the end of April, Gimello reported that Dames & Moore, a leading engineering firm selected among 15 bid applicants, has commenced a preliminary \$325,000 study that has been funded by the U.S. Environmental Protection Agency (EPA). The study will determine the exact extent of the toxic contaminants and the results will be part of the state's application for federal Superfund monies. Additional emergency funding by EPA has enabled a fence to be constructed that will contain the exposed liquid lagoons.

Burnt Fly Bog is an area of approximately 1700 acres. During the 1950's and 1960's approximately 10 to 15 acres within the Bog were allegedly used by a waste oil reprocessing firm. The soil and groundwater on site is thought to be heavily contaminated with toxic chemicals including lead, zinc, arsenic and PCB's.

At this time, groundwater contamination appears to be confined to the site. Public water supplies are being monitored by the DEP. The potable water wells in the area are being monitored by the Monmouth County Health Department.

WATER EMERGENCY ENDS

In regard to the repayment of surcharges, the governor directed that the DEP commissioner appoint a Drought Coordinator to assure that all surcharges collected under the emergency rationing program be returned according to the mandates set out in Executive Order 5 and in accordance with the Public Laws of 1981, Chapter 540, Section 2c. (DEP Commissioner Hughey appointed Dirk Hofman, deputy director of the Division of Water Resources, to be Drought Coordinator).

Further, the Kean executive order directs the Department of Environmental Protection and the Department of Community Affairs to develop an emergency rate schedule to be used by water purveyors in the event of drought emergency declarations in the future. The schedule will reflect the necessary cost of water given the scarcity as well as the need to curtail excessive water use during an emergency.

The moneys to be collected by the water purveyors are to be deposited in a Water Emergency Fund to the extent that such monies exceed the amounts collected under normal rates. The Fund can be used for the promotion of water conservation, water saving devices, as reimbursement to purveyors for reasonable expenses incurred in the administration of the program, and for reasonable costs attributable to the emergency as incurred by the state.

Also, the governor directed DEP and its Office of Water Conservation in cooperation with water purveyors, to continue efforts to keep the public aware of the need to conserve the state's water supplies.

(The end of the state of emergency also brought to a close the work of the Citizens Water Emergency Advisory Task Force and that of the state Drought Coordinator for the Emergency.)

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Governor Kean greets Trenton area school children following a Clean Air Week demonstration by DEP technicians of the procedure used to test auto emissions during a car's annual motor vehicle safety inspection. A car at the State House curbside was tested with equipment housed in a mobile van (background, right).

CAFRA ACTIONS

DEP's Division of Coastal Resources recently approved Coastal Area Facility Review Act (CAFRA) permits to build a hospital and a justice complex in Ocean County.

Hospital: Point Pleasant Hospital proposes to build a 780-bed satellite hospital on a 32-acre site between Green Grove Road and State Route 88 in Brick Township. Plans call for the hospital to be constructed in three phases, the first being a five-story, 120-bed facility. An additional three stories may be added to this building. A second, and ultimately third tower, may be constructed to reach a total capacity of 780 beds.

Justice complex: The Ocean County Justice Complex, when complete, will include 200 jail cells, courtrooms and offices. The complex is to be built on a 2.5-acre site at the intersection of Hooper Avenue and Sheriff Street in Toms River. The correctional facility, in the planning stages since 1974, will relieve severe overcrowding at the existing Ocean County Jail and provide recreational facilities for the prisoners.

TIDELANDS MAPS

Persons aggrieved by the map results may file new data with the Tidelands Resource Council and request a remapping. David Moore, chairman of the council, explained that in the case of persons whose property is claimed by the state, and who are unable to establish the validity of their ownership, the Tidelands Resource Council will entertain applications for tidelands grants to correct ownership questions. The council's mailing address is Box CN 401, Trenton 08625.

DEP will assist owners of record in obtaining clear titles. Where encroachments exist, DEP intends to deal first with the most recent ones, then with older encroachments which are still flowed by tides and finally, with situations involving formerly flowed areas.

BACKGROUND: Currently, tidelands are state-owned, unless the state, through the Tidelands Resource Council, has granted or sold them. Under the New Jersey Constitution, 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 publicly owned tidelands goes into this fund. The Fund has assets of \$38 million and is used to guarantee local school district bonds.

However, voters on November 3, 1981 approved an amendment to the New Jersey Constitution which gave the state until November 3, 1982 to claim ownership title or lose all rights to tidal (riparian) lands which have not been tidal flowed at any time during the 40 years immediately preceding the adoption of the amendment.

McLELLAN ELECTED TO HEAD N.J. ACADEMY OF SCIENCE



Dr. Alden McLellan, IV, DEP's Assistant Commissioner for Science and Research, has been chosen president-elect of the New Jersey Academy of Science. McLellan is only the second president-elect

from state government in the history of the Academy. The Academy is a private, nonprofit scientific organization of over 600 professional scientists from industry, government and higher education, embracing all scientific fields including medical, biological, environmental, and physical sciences.

EARTH DAY OBSERVANCE FEATURES AWARDS TO DEP POSTER/ESSAY CONTEST WINNERS

Governor Kean and DEP Commissioner Hughey officiated at an awards ceremony at the State House in Trenton on April 22, Earth Day, to honor the winners of DEP's third annual poster and essay contest for students throughout New Jersey. U.S. Savings Bonds and plaques were presented to the first prize winners; plaques to second and third prize winners.

The theme of the contest, "Environmental Concerns for the 21st Century," sparked the imagination of even the youngest of the entrants. The team of judges from public and private educational and environmental organizations did not have an easy time choosing the winners from the hundreds of well presented entries. These proved that New Jersey's young people not only have a good understanding of the serious problems to be faced and solved, but also yearn with their elders for a safe, clean and beautiful environment in which to life, work and play. DEP salutes all the participants!

ALL POSTER PHOTOS BY PATTY NOWOSIELSKI

POSTER WINNERS

Primary Division: 2nd prize—Jermaine Frederick, 1st grader, Trinity Cathedral Day School, Trenton. **3rd prize**—Matthew Walton, 3rd grader, Hampton Public School, Hampton.

Middle Division: 2nd prize—Alexandra Urban, 4th grader, Winslow School, Vineland. **3rd prize**—Brendan Lepis, 5th grader, St. Francis Academy, Union City.

Jr. High Division: 2nd prize—Cheryl Cossaboon, 7th grader, Maurice River Township Elementary School, Port Elizabeth. **3rd prize**—Brian Shanahan, 8th grader, Our Lady of Victories School, Harrington Park.

High School Division: 2nd prize—Al

Jefferson, 11th grader, East Orange High School, East Orange. **3rd prize**—Carolyn Old, 11th grader, Cherry Hill High School East, Cherry Hill.

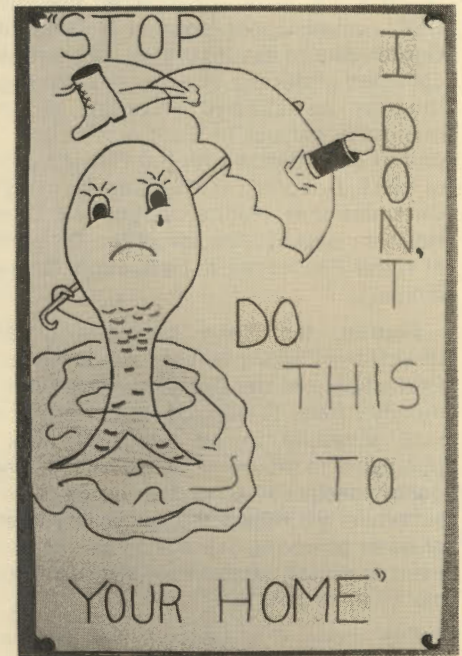
Special Education Division: 2nd prize—Noreen Clendenny, United Cerebral Palsy League of Union City, Union City. **3rd prize**—Patty Troupis, Bergen Center for Child Development, Haworth.

ESSAY WINNERS

1st prize—Maria Moribaldi, 8th grader, St. Paul the Apostle School, Irvington.

2nd prize—Julie Anderson, 9th grader, Thorne Jr. High School, Port Monmouth.

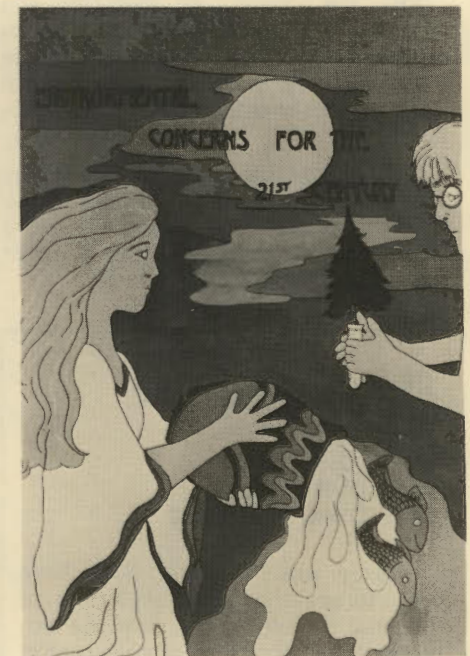
3rd prize—Christine Zeman, 7th grader, Nativity School, Midland Park.



Special Education Division: 1st prize—Edgar Reinhardt, Richmond Avenue School, Atlantic City.



Primary Division: 1st prize—Brian Eltora, 3rd grader, Hatchery Hill School, Hackettstown.



High School Division: 1st prize—Denise Ondrejka, 11th grader, Mainland Regional High School, Linwood.



IT'S ALL UP TO US
THERE IS
A CHOICE



PROTECT AND CONSERVE NOW!

Middle Division: 1st prize—Scott Milesnick, 6th grader, Von E. Mauger Middle School, Middlesex.



Jr. High Division: 1st prize—Kelli-Ann Flynn, 8th grader, St. Paul the Apostle School, Irvington.



During the Earth Day observance, Governor Kean announced the largest land purchase to date in the state's Pineland Acquisition Program, a 5,513-acre* addition to Wharton State Forest in Bass River and Washington townships (Burlington County). The purchase is part of a 6,700-acre acquisition project known as the "Oswego River Extension."

He also announced the approval, that morning, by U.S. Interior Secretary James Watt of \$2.95 million in federal funds to cover the 75 percent federal share of the entire acquisition project. The cost of the 6,700 acres acquisition is expected to be about \$3.9 million. The state's 25 percent share will be funded through the Green Acres program.

(The Oswego River Extension is an area of pristine wilderness in the core of the pinelands. The Oswego is considered one of the most scenic of the pinelands rivers and is a favorite of canoeists. Part of the tract is active in cranberry production, which DEP will continue to encourage.)

In addition, "two wonderful examples of the public's support of the Pinelands Program," were noted by Governor Kean. He thanked Mr. and Mrs. John F. McGovern and family for donating \$25 to the acquisition program, saying their gift "symbolizes the deep feelings of people throughout New Jersey for the preservation of their common heritage." And, he thanked Robert D. Timpany, president of Central Jersey Industries, Inc., for the company's gift of six acres in Shamong Township (Burlington County), saying it is an "example of sensitivity to environmental concerns that our entire corporate community in New Jersey can emulate."

*This 5,513-acre purchase brings the total to over 18,000 acres of land acquired for open space recreation by DEP's Office of Pineland Acquisition, in conformance with the Land Acquisition Program within the Pinelands Comprehensive Management Plan.

EIGHT STATES MEET RE: DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTE

The Coalition of Northeastern Governors' (CONEG) Low-Level Radioactive Waste Policy Working Group met in Newark the end of April. The CONEG policy working group, comprised of representatives from each of the Northeastern states,* is responsible for the development of a multi-state regional compact (or compacts) for disposal of low-level radioactive waste. The meeting was open to the public.

Under the provisions of the Low-Level Radioactive Waste Policy Act (U.S. P.L. 96-573) existing disposal sites can refuse shipments of low-level waste from states which are not members of multi-state regional compacts by 1986. Although the Northeastern states generate 40 percent of all low-level nuclear waste in the U.S., none of the current disposal sites are located in or near the Northeast. The policy working group is continuing its efforts in exploring alternative arrangements for low-level radioactive waste.

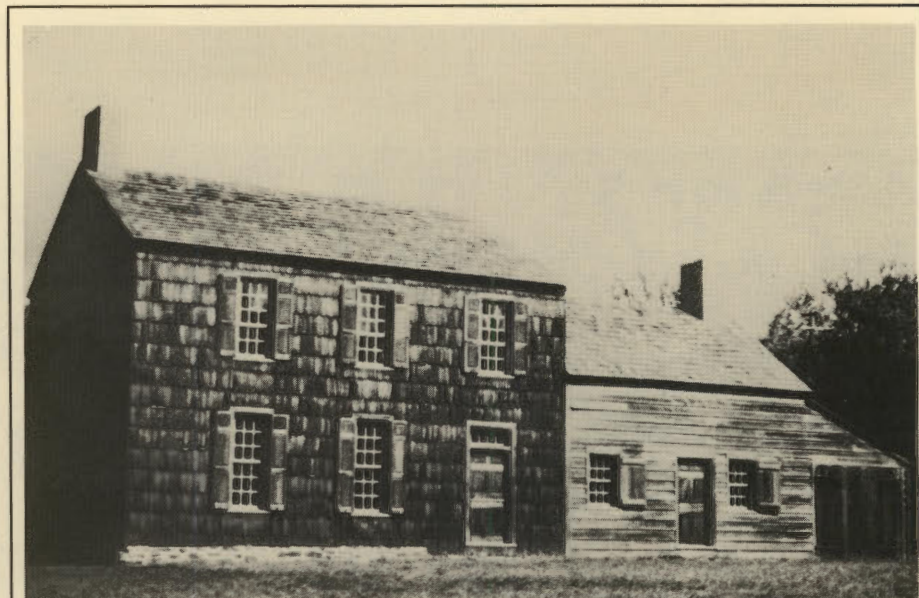
*Connecticut, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont.

GOOD NEWS FOR BOATERS

New boat ramp at Leonardo: A boat launching ramp, designed to accommodate two launchings at the same time, opened at Leonardo State Marina in Middletown Township (Monmouth County) the end of April. The fee is \$5 per launch. The parking capacity at the facility is approximately 100 cars with trailers. PLEASE NOTE: When the parking area is filled, the ramp will be closed for public use until parking spaces become available. The marina, located at 2 Concord Avenue, Leonardo, is administered by DEP's Division of Parks and Forestry.

Channels marked: The job of marking the state's waterways was completed in time for the summer boating season by DEP's Division of Coastal Resources. The state maintains lighted pile structures, buoys and stake day-marks to guide boaters through more than 500 miles of navigable channels. The U.S. Coast Guard maintains channel marker buoys in New Jersey waters which are under federal jurisdiction.

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HISTORIC CRAIG HOUSE, built in 1710, has been restored to its 18th century appearance and decorated with period furnishings. The Craig home supposedly was used as a temporary field hospital by the British during the Battle of Monmouth in June 1778. Located at Monmouth Battlefield State Park in Freehold, the entrance to Craig House is on Schifanoff Road off Route 9. Open Wednesday through Sunday; free admission. The historic site is administered by DEP's Division of Parks and Forestry.

GOLDEN EAGLE PASSPORT

A "Golden Eagle Passport" which admits the holder and family group to the 63 national park areas that charge entrance fees is again available this year for \$10, the same Congress-set fee that has been charged for the past ten years. The passport is a saving to persons who plan several visits to park areas with entry fees as these range from 50 cents per person to \$3 per car. (Campground fees are extra.) The passports, which can be purchased at any national park or National Park Service regional office, are good throughout 1982.

DEP NOW IN CHARGE OF NPDES PROGRAM

The U.S. Environmental Protection Agency (EPA) this spring officially gave New Jersey authority to run the National Pollutant Discharge Elimination System (NPDES), the federal permit program that controls industrial and municipal discharges of liquids into the state's surface waters. DEP is in charge of the water pollution control program, including primary responsibility for the issuance of permits as well as compliance, monitoring and enforcement. The pro-

gram is administered by the department's Division of Water Resources. EPA serves in an overview capacity.

PARK USERS, SAVE MONEY!

Two popular DEP free admission programs, which were cut during last year's shortfall in parks' funds, have been reinstated for 1982. Enjoy!

• **To encourage carpooling:** Free parking at all state parks and forests EVERY DAY through the end of the year for cars carrying five or more persons.

• **To encourage weekday use of facilities:** Free parking at all state parks and forests EACH TUESDAY through Labor Day. (No minimum passenger requirement.)

TRAILS PLAN AVAILABLE

Copies of the **New Jersey Trails Plan** are available at \$3 each from DEP, Office of Green Acres, CN 404, Trenton 08625. Please make checks payable to "Treasurer, State of New Jersey."

PROJECT LEARNING TREE

Resources and energy are limited. We must develop new attitudes toward how we use them. We need more effective ways of conserving our limited resources.

PROJECT LEARNING TREE materials will inspire teachers to help their students develop skills in evaluating information and in making careful decisions.

Subject Area: PLT is an interdisciplinary program—offered to assist educators in finding activities which correspond with a particular subject.

Grade Level: K-12

PLT Principle: Long-range goal of the activity

- Environmental Awareness
- Diversity of Forest Roles
- Cultural Contexts
- Societal Perspectives on Issues
- Management and Interdependence of Natural Resources
- Life Support Systems
- Lifestyles

Concepts: These are more detailed statements of the main ideas underlying the PLT principles in the curriculum framework

Skills, objectives, activities, variations, and extensions are also included in the guides

Project Learning Tree is an environmental education project jointly sponsored by the Western Regional Environmental Education Council and the American Forest Institute.

For workshop and materials information please contact:

Mary Sue Topper
Environmental Awareness &
Education Program

New Jersey Department of
Environmental Protection
CN 402

Trenton, NJ 08625
(609) 984-7478

or

Dr. Louis Iozzi
Cook College, Rutgers University
New Brunswick, NJ 08903
(201) 932-9164

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and tape to seal, and send to
address on back.**

NEW JERSEY OUTDOORS READER SURVEY

This survey was designed to help us plan future issues of New Jersey Outdoors. It can be cut from the magazine without damage to the reading matter. Please answer questions carefully.

1. Circle the appropriate answer and fill in blanks.
 - A. Age (1) 14-17 (2) 18-29 (3) 30-40 (4) 41-50 (5) over 50
 - B. How many children under 14 in your home? _____
 - C. Your educational level
 - (1) less than four years of high school
 - (2) high school graduate (3) attended college
 - (4) college graduate (5) post graduate degree
 - D. Occupation _____
 - E. Sex _____
2. A. What are your interests? _____
Your favorite hobby or sport? _____
- B. How much time do you spend outdoors? _____
3. How did you first learn about New Jersey Outdoors?
 - A. another reader B. exhibit or educational program
 - C. state fair D. newspaper, magazine, or TV E. Direct Mail
 - F. Motor Vehicle Insert G. other
4. How long have you been reading New Jersey Outdoors?
 - A. less than a year B. 1-2 years C. 2-5 years
 - D. 6-10 years E. over 10 years
5. A. How many people read your copy of New Jersey Outdoors? _____
- B. Ages and sex? _____
6. What do you generally read first?
 - A. editorial B. recreational articles C. environmental news
 - D. wildlife management articles E. nature study F. pictorial essays
 - G. historical H. other
7. Rate the following topics 1-8 according to your preference:
 - A. outdoor recreation B. natural resource conservation
 - C. environmental quality D. pictorial essays E. historical
 - F. nature study and environmental education
 - G. land use planning H. wildlife management
 - I. hunting J. fishing
8. Have you ever given New Jersey Outdoors as a gift subscription? _____
To a School? _____
9. Do you save your copies of New Jersey Outdoors? _____
10. Would you purchase a compilation of the best New Jersey Outdoors covers and other color photographs. The estimated cost would be about \$15.00 each.

11. Do you think New Jersey Outdoors is effective in its efforts to inform and educate the people of New Jersey about our environmental problems and the conservation of our natural resources?

12. In your opinion, what are the three most pressing environmental problems in New Jersey? Suggestions?

(Attach separate sheet, if required)

ADD TAPE TO SEAL

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New Jersey Outdoors Reader Survey

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Edward Markowski was presented with the New Jersey Conservation Officer of the Year Award at the Northeast Fish and Wildlife Conference this spring. Mr. Markowski is a CO with DEP's Division of Fish, Game, and Wildlife.

**A KETTLE OF FISH
Saltwater Fishes of the
Mid-Atlantic Coast**

by Lisa Beard

This 48-page guide to the common fishes of the mid-Atlantic shore is a FISH FANCIERS DELIGHT illustrated with 17 full page black-and-white drawings depicting over 50 species of marine fish from local waters.

From sharks to bass to weakfish, this book is designed to aid your appreciation for the fish you will catch when you haul a seine, fish with a line, or visit the seafood markets along the coast. A summary of the biology and behavior of each fish, fishing hints and recipes round out the text.

To order a copy of this 8½" x 11" guide send \$5.25 (includes postage) to: The Tidepool Shop, The Wetlands Institute, Box 398 Stone Harbor Blvd., Stone Harbor, N.J. 08247.

Continued from page 16

Names in the Batsto area enhance its old-time flavor: Tylertown, Quaker Bridge, Bulltown, Crowleytown, and New Gretna.

It's not hard to let one's imagination go while in Batsto, to see the workers as they walked from their quarters in the early morning to go produce iron in the furnaces, to see munitions being manufactured for General George Washington's Continental Army as it fought for freedom on New Jersey battlefields.

Water in the Pinelands region, on the surface and in underground aquifers, is still pure. The Mullica River, fertile with fish, flows past Batsto on its way to expansive Great Bay, Little Egg Inlet, and the Atlantic Ocean. From Batsto Lake, the Batsto River flows through the village to the Mullica. Notably, it was the lake that first attracted the iron furnaces that flourished there during the 18th and 19th centuries.

Within easy driving distance of Batsto are the Brigantine National Wildlife Refuge, historic Smithville, Penn State Forest, Bass River State Forest, Lebanon State Forest, and seashore resorts.

Amidst this abundance of outdoor resources, Batsto serves as the epitome of life in the Pinelands, of the self-reliance and resiliency of her people. In the middle of a vast wilderness area, it stands as testimony to south Jersey's cyclical flow of fortune.

Things got rolling for Batsto in 1776, when it became one of four iron-work facilities in southern New Jersey. During the Revolutionary War, the cannon balls produced by Col. John Cox of Philadelphia at Batsto were considered so important that workers there could not be drafted. Some 35 years later, munitions to fuel the War of 1812 would also be made in Batsto.

The property changed hands several times, but in 1848 iron work ceased in Batsto, and in 1858 the Batsto furnace was disassembled. By 1867, the glass industry that had been started at Batsto 21 years earlier also ceased operation, and in 1874 fire consumed more than half of the village's structures. But at its peak, nearly 1000 people had thrived in Batsto.

It was in 1876 that Joseph Wharton purchased Batsto for \$14,000—his first land acquisition in the Pinelands, which he hoped Philadelphia could exploit for its pure water resources. But in 1878 the State Legislature reacted with a law that forbade the exportation of New Jersey water.

The nearly 100,000 acres Wharton managed to acquire before his death in 1909 were rejected for acquisition by New Jersey voters in 1915. The property was finally purchased by the state in 1954.

Batsto Village's buildings, which include a mansion, have been restored so that visitors can tour and see them much as they stood so many decades ago. Batsto's buildings can be examined on one's own or with tour guides.

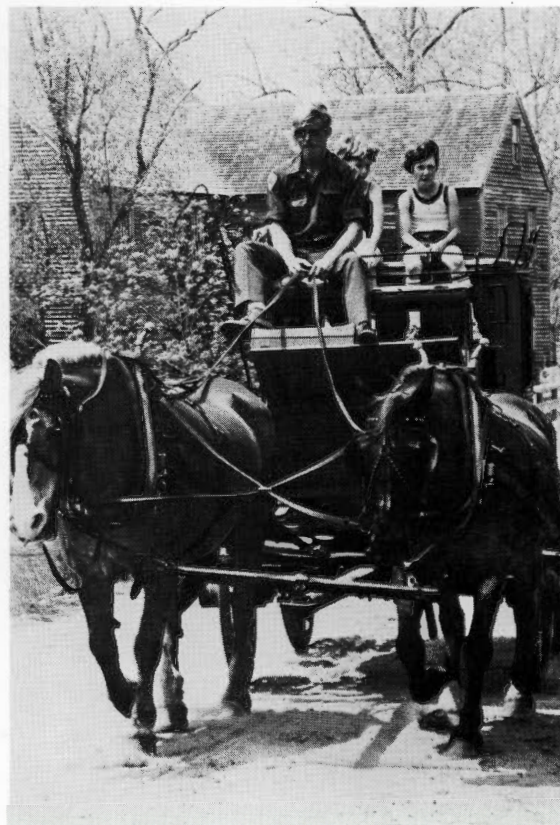
Interestingly, some of the buildings that housed Batsto workers during the 1800s have now been occupied following restoration, allowing the structures to regain their usefulness in the 20th century.

Visitors can also tour a nature center and stroll through the woodlands of pine and oak.

Youngsters have plenty to keep them busy at Batsto, from watching wildlife to riding a horse and carriage along the village's dirt roads. There is also a children's playground and a refreshment stand.

Campsites are available, but they can be reached only by a four-wheel drive vehicle, by backpacking, or by canoe.

For more information write to: Bureau of Parks, CN404, Trenton, N.J. 08625.



PHOTOS BY AUTHOR

Long Branch Pier Has No Peer

By Ron Jacobsen

The Long Branch Fishing Pier is the largest structure of its kind on the North Jersey shore. Built in 1902, it has been an anglers' haven for many generations. The concrete and steel structure once extended 950 feet out over the Atlantic. Today, however, the pier is 75 feet shorter as a result of damage sustained during a severe hurricane on November 7, 1945. The remaining part of the pier has weathered the most violent of tempests and is sound. Bob Bassinder, the present owner, conducts an ongoing maintenance program to ensure the structural integrity of the pier and the safety of all who use it.

The pier is unique in that it provides anglers with 24-hour, all-year-round fishing opportunities. During the summer, anglers line the rail to catch bluefish, croakers, fluke, porgies, weakfish, and many other species. In winter, even on the coldest nights, fishermen dressed in layer upon layer of insulating clothing, fish shoulder-to-shoulder when the ling and whiting are biting. Regardless of the season, with some basic fishing skills and a little bit of luck, an angler can take home a five-gallon bucket or two filled with fresh fish.

People come from near and far to fish from the Long Branch Fishing Pier. They travel from New York, Pennsylvania, and other nearby states. Even party boats from ports on Long Island ply the ocean to take advantage of the good fishing encountered off the landmark structure. Most of the anglers who frequent the pier are, however, Garden State residents.

The pier boasts a well-stocked tackle shop where bait, tackle, and ice may be purchased. A restaurant and a bar are located near the tackle shop and are convenient for anglers desiring food and drink. Shelters and comfort stations are provided in the fishing area. Fish-cleaning troughs with running water enable anglers to clean or fillet their catch on the spot. Floodlights illuminate the deck for nighttime fishermen.

Anglers are charged \$5 for each rod they take onto the pier. Bait, once free with admission, now costs extra. Fishermen who don't bring their own fishing rods pay \$5 to fish from the pier. Rental fishing rods with reel and one terminal rig are available for \$3.50 each.

Groups of 10 or more anglers can

take advantage of a group discount rate and pay as little as \$2.50 per person. Fishing rods are provided for group members to use free of charge. Weekdays are best for a group fishing outing since the pier is usually less crowded on those days. Civic organizations and other groups planning a pier outing should make arrangements in advance by calling (201) 222-9826.

According to pier manager Dolly Pelusio, handicapped persons are always welcome. A special parking zone for the handicapped is provided on Ocean Avenue near the pier entrance. Handicapped individuals are admitted for \$5 and that fee includes the use of a rod and reel at no additional charge. Pelusio noted that fishing is a really great therapy for the handicapped and everyone else for that matter.

Ms. Pelusio, who has worked at the pier for nine years, constantly strives to make fishing more interesting for customers. She conducts two fishing contests which generate added excitement by giving anglers an opportunity to win valuable prizes. In one contest, 15 free passes to the pier go to the angler who catches the first fish of a particular



Long Branch Pier

PHOTOS BY AUTHOR

species when the run arrives each season. The fishermen catching the second fish of a given species gets 10 free pier passes while the individual who hauls up the third one receives 5 passes and so on for each newly arrived species.

In addition, a weekly fishing contest is run from Memorial Day to Labor Day. Prizes are given for the three heaviest fish, regardless of species, which are caught from the pier each week. The fisherman who reels up the heaviest fish gets six free passes, while the second heaviest fish is worth five passes; the third heaviest brings a four-pass prize. Fishing tackle is also given to winning contestants from time to time. Most people, however, prefer the pier passes.

The Long Branch Pier is an excellent place to introduce a youngster to saltwater fishing. Most of the comforts of home are close at hand and parents don't have to worry about their kids getting seasick. A spacious deck allows a young angler lots of room in which to learn the art of casting without endangering others. If the fish aren't striking and his attention wanders, there are many things of interest to see including anglers, boats, and gulls wheeling overhead. Most kids will be impatient if the fish aren't hitting but once he cranks up that first fish, you'll probably have trouble getting him away from the rail when it's time to go home.

Many old anglers regard the Long Branch Pier as a meeting place for their pier-fishing fraternity. Veteran anglers return year after year to renew old friendships and to make new ones. Old-timers can be seen gathered in small groups near the rail, fishing and reminiscing the good old days.

Old salts even bring along their wives, who sit in lawn chairs knitting and talking while their husbands are fishing. Some of the ladies like to fish too and often catch as many fish as their men do. To such elderly couples, pier fishing is a happy and productive tradition.

Fishing at the pier, as at any other place, can be excellent or poor. If you are planning a fishing trip to Long Branch, you can find out how the fishing is before leaving home simply by calling (201) 222-9816. You'll get an up-to-the-minute honest report on fishing, weather, and sea conditions at the pier. If fishing is lousy, they'll tell you



A family fishing outing at the Long Branch Pier.

so; the management doesn't want people to waste time and gasoline traveling to the pier when fishing is not up to par.

Where is the best place on the pier to fish? Pier regulars claim that fishing is always best off the south corner where there is a shoal about 100 feet out. The shoal attracts and holds fish and is indeed a hot spot. A surf rod must be used to reach this very productive area.

Fishing for blackfish is best from the pier's north side. Blackfish congregate along the jetty which runs parallel to the pier and around the many piles which support the fishing platform. Good fishing for various other species may be enjoyed from just about any location along the rail when the fish are in and conditions are right.

Fluke are taken from the pier all summer, but if you want to catch some really big ones, be there in September. Big flatties that grow fat feeding in bays and tidal rivers during the summer, migrate around Sandy Hook and swim south along the coast at this time of the year. When they arrive at the pier, many seven-to-ten-pounders are caught. When a doormat is hooked, a basket or net is dropped from the pier on a long rope. The angler must work his fish over the basket and then haul it to the deck 30 feet above.

Regardless of the season, the Long Branch Fishing Pier has no peer. It is perhaps the most convenient and economical place in New Jersey for land-bound saltwater anglers of all ages to enjoy a relaxing and productive sport.



Flower plantings

A "GREAT ADVENTURE" IN CONSERVATION

By Barbara L. Maus

In south central New Jersey on the edge of the famous "Pine Barrens" area, exotic animals from many parts of the world live in surroundings favorable to their survival and as close to their natural habitats as the Garden State can provide.

Giraffes stretch their long necks to reach tender leaves growing on tops of trees. Gazelles step so lightly they hardly seem to touch the ground.

This Safari Park where 2,000 animals roam comparatively free over many acres is part of the Great Adventure Six Flags Theme Park located in Jackson Township, Ocean County, New Jersey. On a busy weekend, thousands of people visit the park to enjoy their favorite rides, eat hot dogs, and watch the resourceful monkeys try to outwit their caretakers.

Some of these people rest a few minutes on benches strategically positioned to allow the best view of a bright multitude of flowers. Others escape to the shade of a tree where green leaves of many shapes cover the ground that adjoins the miles of walkways in the amusement park.

In both the amusement and the safari sections of the park, care of the natural resources that support this interesting creation is of prime importance. The meticulous landscaping is planned to conserve and protect the land resources and to create a festive mood.

Under the towers of the "Lightning Loops" a drainageway lined with rocks protects the surface and carries excess water safely to a waterway. As brave riders ascend the first slope of

the giant roller coaster called "Rolling Thunder," they have a few seconds to look down toward a carpet of grass designed to keep silt out of a nearby stream. Alert eyes see native wildflowers protected and cultivated as part of plant life in the park.

Frank Webb, a plant materials specialist for the USDA, Soil Conservation Service has worked with the staff of Great Adventure since 1975. Webb said, "Overnight the fragile soil cover can be churned into the sand. Maintaining a grass cover is a difficult and continuous task. However," he said, "it is a vital conservation measure that affects the entire park."

In 1979, three tons of grass seed were bought for only the safari park portion of Great Adventure. Personnel there know that elephants, camels, girafes, and goats are desert makers. They trample grasses or eat them too close for recovery.

Keeping the park looking lush and beautiful through the variable and often harsh weather conditions of south central New Jersey takes more than knowledge and experience. It takes care, money and extensive planning to keep each animal area, ride and show with its individual environment ready for viewing by critical eyes from all over the world.

However, grasses are not easy to grow when many animals with sharp hooves walk over a single spot many times a day. The soil type in the area is predominately sand with a little clay. Water runs through sand quickly but with adequate fertilization and frequent watering the land becomes capable of supporting small plant life.

African cattle rest on plain.



Algerian Sheep



Lions

Fertilizer for the many acres is derived from a sewage disposal system large enough to care for the peak August weekend crowds. Through a sprinkler system, waste-water is applied to the grassland, many of which need 1½ inches of spray irrigation each week.

On drier areas where irrigation is not feasible, other grasses are being tested. Primarily, these are warm-season types such as Blackwell switchgrass and Atlantic coastal panic grass. Through much of the planning, development, and operation of the Safari Park, the management, Soil Conservation Service employees, and SCS plant materials specialists have worked together to select and maintain plants that withstand the stresses of a concentrated number of animals.

Park officials believe that this Safari Park is the largest outside of Africa. "But they know safari parks have come and gone in the past and hope that this one stays and remains successful. The only way for this to happen is to apply good land management and consistent care."

There are 13 separate animal sections in the park each needing different types of environmental conservation. The North American animals have 46 acres to stretch their legs. The African Plain covers 78 acres. The newest addition is the Australian area, where kangaroos jump across the small creek and hop up onto small rolling hills and rocky outcrops. Thirteen hundred tons of rock were brought from the Delaware River to create the appearance of a miniature mountainous region.

Animals are always in sight in Safari Park. The two-toed, flightless, but swift ostrich is ever curious. If a car stops, one or more amble directly over to see exactly what is going on. So don't get out of the car—they have a powerful kick! This largest of existing birds (often weighing 300 pounds) digs up its fair share of turf.

Everywhere that animals walk and rest the grass wears away. One large problem of an animal park serving so many visitors is that all major improvements must be accomplished during the off-season, when more of the animals are inside or huddled together in shelters.

There are problems involving plants, soil, and numbers of animals on the land and some aren't completely solved. But, Great Adventure-Six Flags is working toward solutions with continued use of adapted plants and appropriate management techniques as an integral part of the operation to provide a great variety of exciting and beautiful experiences for all who enter this magical area.

Basil Hanger, the original green thumb behind the landscaping of Six Flags-Great Adventure Park died in December 1981. Hanger, who was a native of England previously worked for the British government in research and introduction of new crops to aid in agricultural development in foreign countries. He spent seven years caring for parks in Kenya. This experience plus his devotion to his job helped Hanger to create a beautiful fun spot in New Jersey.

The Blueberry Invention

By Deborah Boerner

PHOTOS PROVIDED BY THE CONSERVATION & ENVIRONMENTAL STUDIES CENTER, INC.

What do the light bulb, the electric telegraph, and the blueberry have in common? The first two, you say, are important inventions that were developed in New Jersey. That's exactly it! The blueberry, too, was "invented" here in New Jersey. Its "inventors" aren't nearly as famous as Thomas Edison or Samuel Morse, nor has the blueberry led to anything so technologically important as modern illumination or communications. Yet, if it weren't for the work of two people, blueberry pie might be as rare as caviar—and just as expensive.

Blueberries, in their wild form, have been around for a long time. The Indians combined them with venison to make what they called "pemican." Another of their favorites was stew flavored with dried blueberries; the native Americans dried the berries soon after picking them in order to keep them from decaying. The American colonists found that blueberries, as well as being good to eat, made excellent dyes.

The blueberries that the Indians and the early settlers found growing in the woods were of two types, the highbush

blueberry and the lowbush blueberry. The berries and plants are similar except that the highbush plant attains a height

New Jersey ranks second in overall blueberry production and leads the nation in the marketing of fresh blueberries.

of three feet or more, while the lowbush plant rarely grows much higher than a foot. Also gathered in the early days were bilberries, dangleberries, and huckleberries. Huckleberries have often been confused with blueberries, even though the blueberry (*Vaccinium* spp.) has small soft seeds and the huckleberry (*Gaylussacia* spp.) has large stony seeds.

Today, the lowbush blueberry that grows wild in Maine and parts of eastern Canada is harvested as a commercial crop. Fields of it are burned over early in the spring to control insects and disease.

The burning also acts as a pruning mechanism; sprouts grow back healthier and bear more fruit. In late summer, the berries are "raked up" with tooth scoops similar to those used for harvesting cranberries. These blueberries go to the canneries where leaves and debris can be sifted out. The entire 1979 Maine blueberry crop, for example, went to the processing plant. Nevertheless, Maine has more acres of blueberries than any other state, almost doubling that of second and third-ranked Michigan and New Jersey.

New Jersey and Michigan, however, have higher yields per acre of blueberries than Maine. This indicates that the more productive highbush blueberry makes up a greater part of the crop in these states. This is also reflected in agricultural statistics for 1979, which show that about two-thirds of Michigan's blueberry crop was processed and only one-quarter of New Jersey's crop was not eaten fresh.

Thus, New Jersey ranks second in overall blueberry production and leads the nation in the marketing of fresh blueberries. These statistics are no surprise to those who live in south Jersey, and particularly in Atlantic and Burlington counties. There, the blueberry has become as much a part of summertime as baseball games and ice cream cones. Almost every farm in that part of the state grows some cultivated blueberries, and some farms are solely blueberry farms. There's not a grocery store or roadside market in the area that doesn't tempt the July vacationer with the delicious berries.

It's hard to believe, then, that blueberries are a recent "invention." In 1908, Dr. F. V. Coville of the United States Department of Agriculture began working to domesticate wild highbush species. He selected the bushes with the best fruit he could find and cross-pollinated them. Elizabeth C. White, a cranberry grower from Whitesbog, New Jersey, read about Coville's experiments and was very interested in them. She encouraged her pickers to tag the best wild blueberry bushes they saw so that Coville would have native stock with which



Federal botanist Dr. Frederick Coville and Miss White worked as a team until 1928.

he could work. She also donated land on which hundreds of new plants were propagated and cross-pollinated. From the hybridized seed, thousands of seedlings were grown in Whitesbog. Miss White produced the first commercial blueberry crop in 1916, just five years after offering her assistance to Coville. From 100,000 seedlings, Dr. Coville developed 15 improved varieties of blueberry in 35 years. Fifteen more varieties were developed by 1959, as his unfinished work was continued by others after his death.

The characteristics Coville focused on during the early years of blueberry breeding were better flavor, larger size, light-blue color, and hardiness. Most hybrids excelled in one area and lacked in the others. Nonetheless, the acreage devoted to blueberry-growing in New Jersey jumped from 200 acres to 20,000 acres in those first 35 years of blueberry research. Acres actually harvested has risen from less than 1000 in 1939 to 7800 acres in 1979. Thanks to improved varieties, yield per acre and value of production have also been on the increase.

Another reason why blueberries have done so well in New Jersey is that the bushes have low fertility requirements and grow best in acidic soil, such as that found in the Pine Barrens. Few other crops can grow there without excessive liming and fertilization. The Comprehensive Management Plan for the Pinelands states that "environmentally, berry agriculture is more compatible with the character of the Pinelands than more conventional agricultural activities." Thus, land that was once thought to be "barren" is now considered agriculturally productive, and according to the CMP, its agricultural productivity can best be realized through cranberry- and blueberry-growing.

The blueberry industry has already changed somewhat in its short history.



The first commercial crop of Rubel-Pioneer cross was sold in Harrisburg, Pa.

Besides the varieties that have been favored down through the years, methods of harvesting, packaging, and marketing have also changed. Blueberries have traditionally been picked by migrant laborers and family members, but mechanical pickers are sometimes used on the larger farms today. Pint trays in which the berries are sold have gone from wood veneer to plastic mesh to the now popular molded pulp. They are usually packaged with a cellophane wrapper that bears the farmer's name.

Perhaps instrumental in making New Jersey the top fresh blueberry-producing state in the nation is that it lies

between four great metropolitan centers. Besides being sold locally in stores and at roadside stands, blueberries have long been trucked to Philadelphia, New York City, Boston, and Baltimore. The larger operations have shipped some of their blueberries to Europe by plane, and recently, there's been some discussion about boat shipments to Europe.

Meanwhile, research continues at the Cranberry and Blueberry Research Center in Pemberton, New Jersey. The emphasis now is to breed for winter-hardy, drought-resistant, disease-free plants that retain the qualities Coville bred for in the early part of the century. Because of the work in Pemberton and throughout the state, the New Jersey Agriculture Experiment Station was recently named by the USDA as the national center for blueberry and cranberry research. How appropriate that the national center is to be located where the blueberry invention originated and has prospered ever since.

But the names of Dr. F. V. Coville and Elizabeth C. White are not written in our grade school textbooks. And the blueberry is not as widespread as the telephone and electric wires that span most parts of the nation and even the world. Indeed, there are many people in the midwestern and other parts of the United States who have never tasted a fresh blueberry. The people of New Jersey aren't so unfortunate. 'Tis the season—so enjoy.



USDA and blueberry growers meet at Whitesbog in 1923 near the first office at the village.

SAVE THAT MILT!

Helen Ross Russell

For several years we lived next door to a deep-sea-fishing enthusiast. Each spring and summer he would organize friends and neighbors to go on all day trips off the coast of New Jersey. Before he left he always called to ask, "How's your freezer space?" and when he returned he called to say, "I'm home. Come get some fish."

My husband and I would grab sharp knives and sometimes, depending on the fish of the day, my grandmother's highly prized fish scaler and hurry over to hear the tales of the day's activities and share in the bounty of the sea.

Often, particularly in mackerel season, the females were loaded with roe which we carefully set aside for immediate consumption and future gourmet meals. If females were roe-laden, males contained milt, and there were often twice as many males as females.

"Can we eat the milt?" I asked.

"Never heard of it," I was told.

I went home and got out my fish cookbooks. Both said the same thing.

"Milt is also edible. Use in place of roe in recipes."

I put a packet of roe beside a packet of milt. They certainly did not look as though they should be treated in the same way.

Packets of roe are firm. Packets of milt are fragile and soft. If you break a packet of roe, dry, round eggs roll out; a broken packet of milt oozes a white substance of the consistency of yogurt, more nearly suggesting sweetbreads or oysters.

Obviously they deserved better treatment than to be used as a second-rate, asterisk-at-the-bottom-of-the-page substitute for roe. They deserved recipes of their own. I began by poaching the packets to make them firm, and found them delicious but considerably more delicate in flavor than roe. I then tried using the poached milt in a variety of ways. The recipes that follow have all passed the dinner-table test. Try one that sounds good to you, or invent your own recipe following your own style of cooking—but don't discard this nutritious food.

POACHED MILT

Put enough water in a frying pan to just cover the milt. Add a teaspoon of salt. Bring to a boil. Drop packets of milt into the water. Turn heat down to simmer. Simmer covered for 5 minutes. Remove with a slotted spoon, or drain gently.

FRIED MILT

Mix equal portions of unbleached and whole-wheat flour. Season with salt and pepper. Dip milt in milk, then in flour mixture, fry in bacon fat. Serve garnished with bits of bacon. Variations: Use all whole-wheat flour, or all unbleached. Use butter or margarine instead of bacon fat.

SCALLOPED MILT

Combine 1 cup cracker crumbs and 3/4 cup bread crumbs with 1/2 cup melted butter. Spread 3/4 cup of the above mixture on the bottom of a greased baking dish. Add 2 cups poached milt sprinkled with 1 tablespoon finely chopped celery, 1 tablespoon finely chopped onion. Season with salt and pepper. Add 1/2 cup of milk. Top with remaining crumbs. Bake at 350 degrees for 30 minutes. Serves 4.

FISHERMAN'S PIE

Cover bottom of 1 qt. casserole with
Add
In a saucepan heat
Add and brown

1 cup sliced boiled potatoes
1 1/2 cups poached milt
2 tbs. oil, butter or margarine
1 finely chopped onion
1/4 cup sliced mushrooms
2 tbs. flour

Sprinkled with
Stir and cook 1 minute
Add
Cook for 5 minutes.

1 cup milk

Pour over potatoes and milt season with salt and pepper. Cover top of baking dish with your favorite pastry. Cut 2 slits for steam to escape. Bake at 450° for 15-20 minutes. Serves 6.

SHIP AND SHORE CASSEROLE

In a baking dish
Combine
Fold in
Top with
Bake at 350°
Serves 6

1/2 cup sour cream
3/4 cup yogurt
1 cup diced cooked chicken
1 cup poached milt
Buttered crumbs
30 minutes

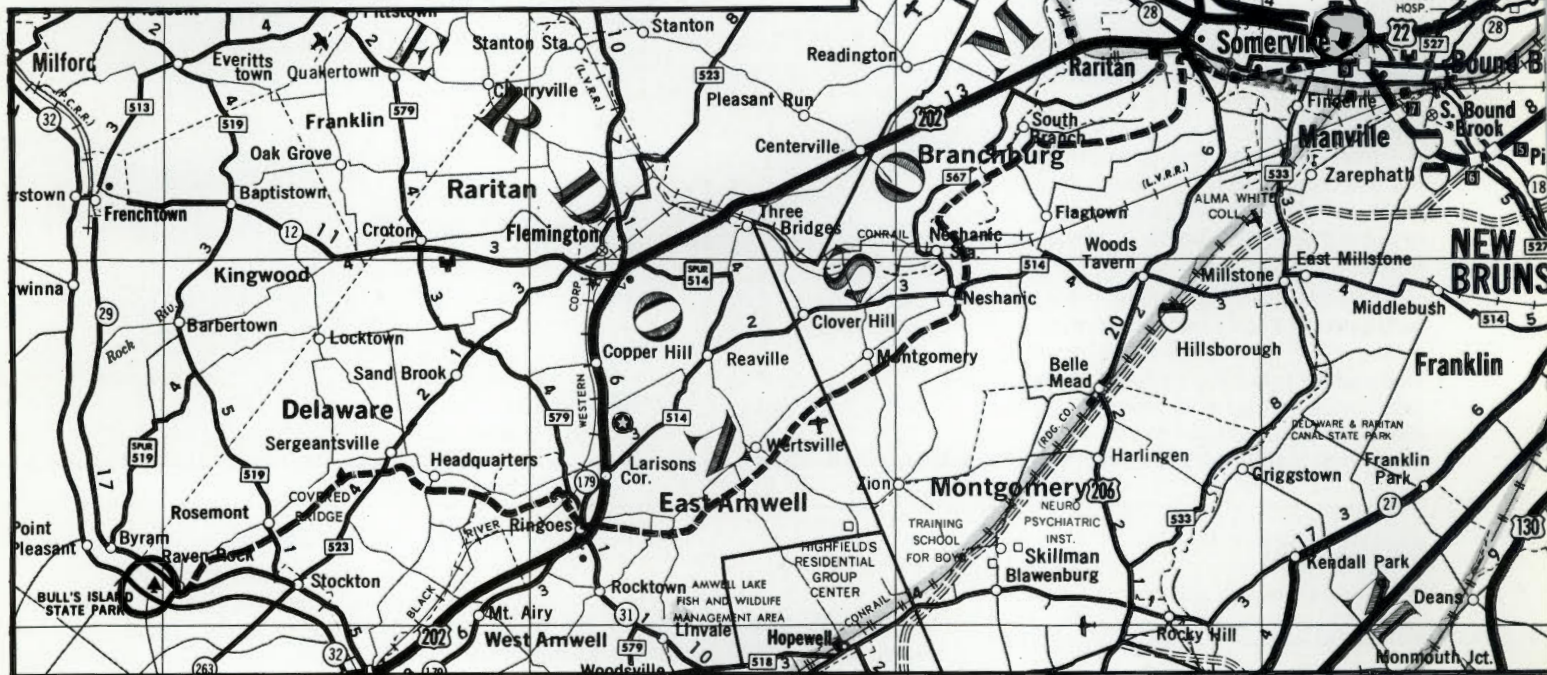
CURRIED MILT

Combine in a skillet

1 cup sour cream
1 cup plain yogurt
1 tsp. curry powder
1/2 tsp. salt
1 sauteed onion

Fold in
Simmer for 10 minutes or until heated through. Serve in patty shells or on toast. Serves 6

A Scenic Bicycle Tour from Somerville to Bull's Island State Park



By Anne Gullette

Legend ———

From the Pathmark parking lot on Urban Drive in Somerville by the train station turn right and go to the end of the street. Turn left into Somerset Street. After going under the railroad overpass, turn left into Washington Place. At the T intersection turn left. You will see the old stone Dutch Parsonage and across the street the Wallace House, George Washington's headquarters during the winter of 1778-1779. George and Martha Washington lived here longer than in any other house in New Jersey. It is open to visitors. (Open daily 10-12, 1-5 except Wed. Adults \$.50) Go back to Somerset Street, turn left, and go through Raritan, a small central Jersey town with an Italian population and good Italian eating places. After leaving town make a left turn across from the Quick Check into Nevius Street. You will cross the large old bridge over the Raritan River and be on South Branch River Road. This is a lovely, winding country road lined with big trees and miles of corn fields. Watch for deer and Canada Geese, which inhabit this area in large numbers. As you ride along

you will pass fences and gates to the Doris Duke Estate on your left. Here are her famous greenhouses, open to the public from October first to April first. One should make reservations in order to see them. These can be made on the same day as your visit but you need to allow several hours for the tour. (To get to them you take Route 206 south from Somerville Circle and turn into the main gate of the estate immediately after going over the Raritan River bridge.) After passing the Duke Estate watch for the old cemetery on your left (two miles from the bridge) with gravestones dating back to the 1700s.

After riding through four miles of countryside you pass through South Branch, a tiny village with lovely Victorian homes and an old church. The village has been designated an historic site. After going 3.1 miles past the village turn left at the stop sign. In about two miles you will go through Neshanic Station. During spring and summer a flea market is open here on Saturdays and Sundays. Refreshments are available at the Neshanic Inn be-

hind the train station. Walk bicycles over the white bridge to get there. Continue past Neshanic Station for 1.2 miles to Amwell Road in the town of Neshanic, a crossroad on the trail marked by the old stone Reformed Church dating back to 1752. Turn right into Amwell Road and travel a half-mile to Wertsville Road and turn left. Proceed for half a mile to Long Hill Road and turn left. Make an immediate right back onto Wertsville Road. As you approach the next stop sign look for the house with solar panels on your right. Continue on to Route 202 (approximately seven miles). Cross over 202 and you will be in the town of Ringoes. There is a deli and a restaurant here. Turn right at the stop sign and then take the left fork (579 North). You will pass the Black River and Western Railway Museum on your left. You might wish to take time for a ride on an old steam engine train all in the high fashion of the 1800s.

Continue tour left onto Route 604 West. In 4.3 miles you will be in a

Continued on page 26

CANYON FISHING

Continued from page 5

The method of fishing and the target species also had a great influence on catch rate. For example, considering all canyon trips, swordfish were caught only one percent of the time. Night drifting, however, produced swordfish on 12 percent of the trips. Much of the increase in tuna catches that has occurred during the past few years may be attributed to the use of high speed trolling lures which seem to be both more tantalizing to tuna and permit fishing boats to cover more area.

All of the catch figures in Table 1 are estimates based on information collected from 550 canyon fishing trips. Depending upon the species, the actual catch may be higher or lower. For example, sharks are usually cut free and their estimated catch may be low due to a

Table 1. Total estimated catch of all species in the offshore canyons by New Jersey fishermen.

Species	Estimated Total Number of Fish Caught	Average Catch Per Trip	Largest Recorded Catch for a Single Trip	Percentage of Trips Catching at Least One
Yellowfin	18,200	3.33	31	72
Bigeye	1,362	0.22	12	11
Albacore	14,636	2.58	35	42
Bluefin	571	0.09	13	3
Skipjack	719	0.15	30	2
Dolphin	354	0.07	18	4
White Marlin	2,564	0.49	8	32
Blue Marlin	82	0.01	2	1
Swordfish	86	0.02	2	1
Mako	111	0.02	2	1
Other Sharks	181	0.03	5	2
Wahoo	132	0.02	2	2
Tilefish	835	0.13	36	1
Total	39,762	—	—	—

Bicycle Tour

Continued from page 25

delightful small town, Sergantsville, where refreshments are available. Go through town on Route 604 West for about one mile to New Jersey's only remaining covered bridge. After crossing bridge go 1.7 miles to Route 519 and turn left to 519 South. In one mile 519 bears left. You continue straight toward Raven Rock on an unmarked, narrow, paved road. After 1.9 miles turn left at the intersection. Continue one-seventh of a mile to Route 29 North (slight turn) and look for the entrance to Bull's Island about half a mile down the road on your left. Here for \$4 a night you can set up tents. There are picnic tables and fireplaces at each campsite, and running water and rest rooms are provided. It is a wonderful quiet, beautiful place along the Delaware. Swimming is fun in the rippling water. A walk bridge crosses the Delaware here and on the Pennsylvania side are lovely old inns and it is fun to stroll and look at the fine, old homes.

I was there early in August of 1980. The whole trip was splendid in summer. Spring and fall should be equally good times.

The first part of the trip from Somerville to Ringoes is fairly flat. After Ringoes the road is more hilly. The roads used are not heavily trafficed.

NOTES

Somerville can be reached by train (Jersey Central Railroad) which stops in the middle of town, or by bus which stops at the Hotel Somerset also in the middle of town. By car you can take Routes 202, 206, or 22 depending on the direction from which you start.

Somerville is a small town and the Pathmark parking lot is right in the center of town.

Bicycle Shops:

In Somerville there is
Saling's Schwinn Cyclery
23 South Bridge St.
Phone: 201-725-3431

In Lambertville at the other end of the trip there is

Mort's Sport Shop
43 Bridge St.
Phone: 609-397-0108

Motels are available in Somerville and at the other end of the tour lodgings are available in inns on Route 29 at Stockton or in Lambertville.

Drinking water available in any of the towns along the bike route.

The tour is approximately 30 miles one way on roads that range from flat to moderately hilly. Plan for the tour to take between five to eight hours.

If you desire to return on an alternate route or take any side trips, purchase a map of Hunterdon County in any news-store in Somerville.

Vacation Pictures

Continued from page 13

ground and overexposed subject. Conversely, a bright background yields an underexposed image. The solution! If you encounter these conditions, use your flash in its manual mode—determining exposure via the flash's calculator dial!

Aside from these vacation basics there is another common summer problem awaiting an unsuspecting photographer—heat. If you visit the Shore or anyplace else where the temperature is uncomfortable for you, assume that the temperature will also be most uncomfortable for your camera and film.

NEVER leave your camera equipment locked in the trunk of your car or in its glove compartment. Did you ever spend a day at the beach then return to your car only to find you couldn't sit on the broiling hot seat? Sure you have. So you voice your discomfort by yelling "Ouch!" Your film will show its discontent by yielding washed out, ugly and most forgettable images.

Do yourself a favor by bringing your equipment with you wherever you go. When on the beach for a day's swimming or fishing, you should keep your equipment protected from the heat by storing it under a beach umbrella, beach towel, or both. And don't forget to take the camera out of your car when you return home!

I hope these tips make your vacation a little happier by helping you produce some memorable pictures you'll enjoy during years to come. Happy Shooting!



possible reduced reporting rate by interviewed anglers.

Fish Weights

New Jersey anglers landed over two million pounds of big game fish in waters beyond the 30 fathom curve during 1981 (Table 2). The average weights of canyon fish boated during marlin and tuna tournaments are also presented in Table 2.

Value

Canyon fishing requires the use of large, well-equipped boats. The New Jersey fleet consisted of about 800 boats between 21 to 65 feet in length (not counting party boats), with an average size of 36 feet. The average value of a fully outfitted canyon fishing boat, including all the necessary electronics and boat equipment, was over \$90,000. The

Table 2. Average weight and estimated total catch in pounds of selected canyon species.

Species	Average Weight in Pounds	Total Catch in Pounds
Yellowfin	60.0	1,200,000
Bigeye	141.4	193,000
Albacore	31.7	464,000
White Marlin	54.5	140,000
Blue Marlin	365.0	30,000
Swordfish	188.0	16,000
Wahoo	44.1	6,000

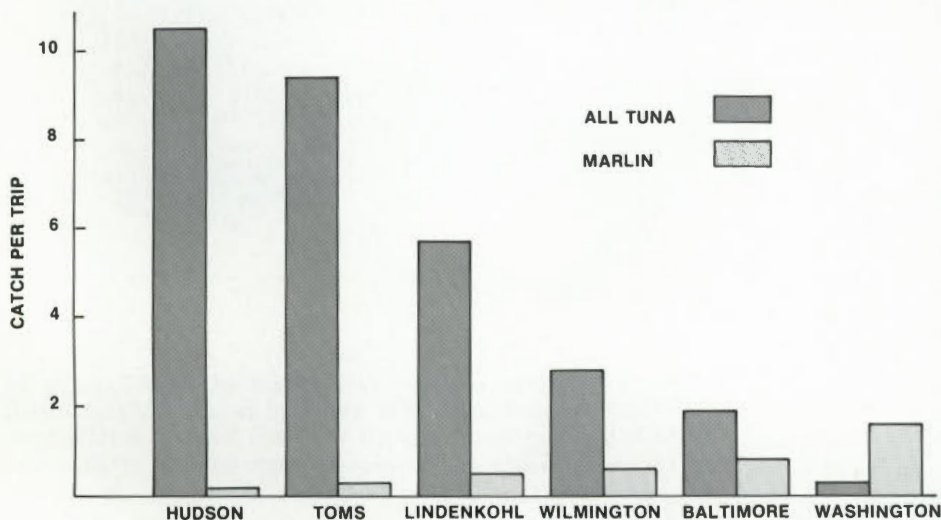


Figure 2. Average catch per trip of tuna and marlin by canyon.

value of the entire fleet was estimated at \$73 million.

Adjusting figures to reflect the percentage of a boat's use that was devoted to canyon fishing and prorating costs over the life of an item, the annual expenditures of New Jersey's canyon fishing fleet were as follows:

boats and equipment	\$4.6 million
boat maintenance	2.2 million
mooring and storage	0.7 million
insurance	0.6 million
fishing tackle	0.7 million
fuel	1.8 million
bait, ice, food	0.6 million

Thus, canyon boat owners spend about \$11.1 million each year on the items listed above. Also, anglers spent an estimated \$600,000 on charter fees for canyon fishing during 1981.

Acknowledgements

In addition to hundreds of sportfishermen who willingly supplied information for this survey, the following people assisted in either the data collection or report preparation: Bruce Freeman, Paul Hamer, Don Byrne, Debra Spencer, Peggy Reno, Barry Preim, Diana Dougherty, Anthony Hillman, Dave Siegel, John Meyer, Dave Mathews, Frank Daddetto, Joe Collabella and Mike Trailes.



ISLAND BEACH

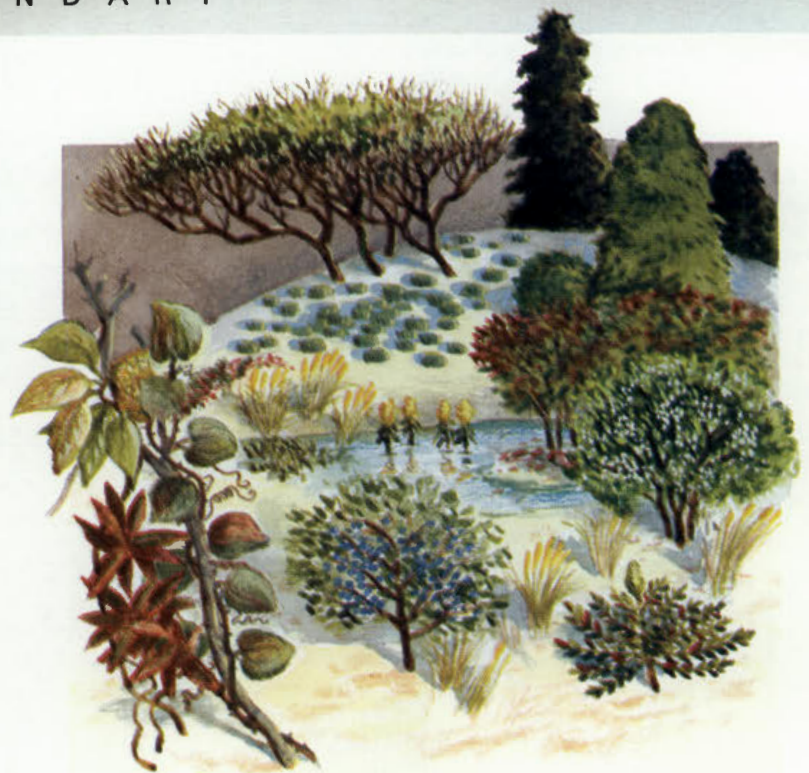


Illustration and text by Christie McFall

Located in Ocean County. A 3,002-acre, 10-mile strip of sand dunes bounded by the Atlantic Ocean on the east and Barnegat Bay along the west shore. The area is divided into a botanical zone, a recreational zone, and a wildlife sanctuary. First three miles is designated as a Natural Area. There is ocean bathing and surf fishing. Picnicking is confined to the ocean beach; no picnic tables or fireplaces are provided.

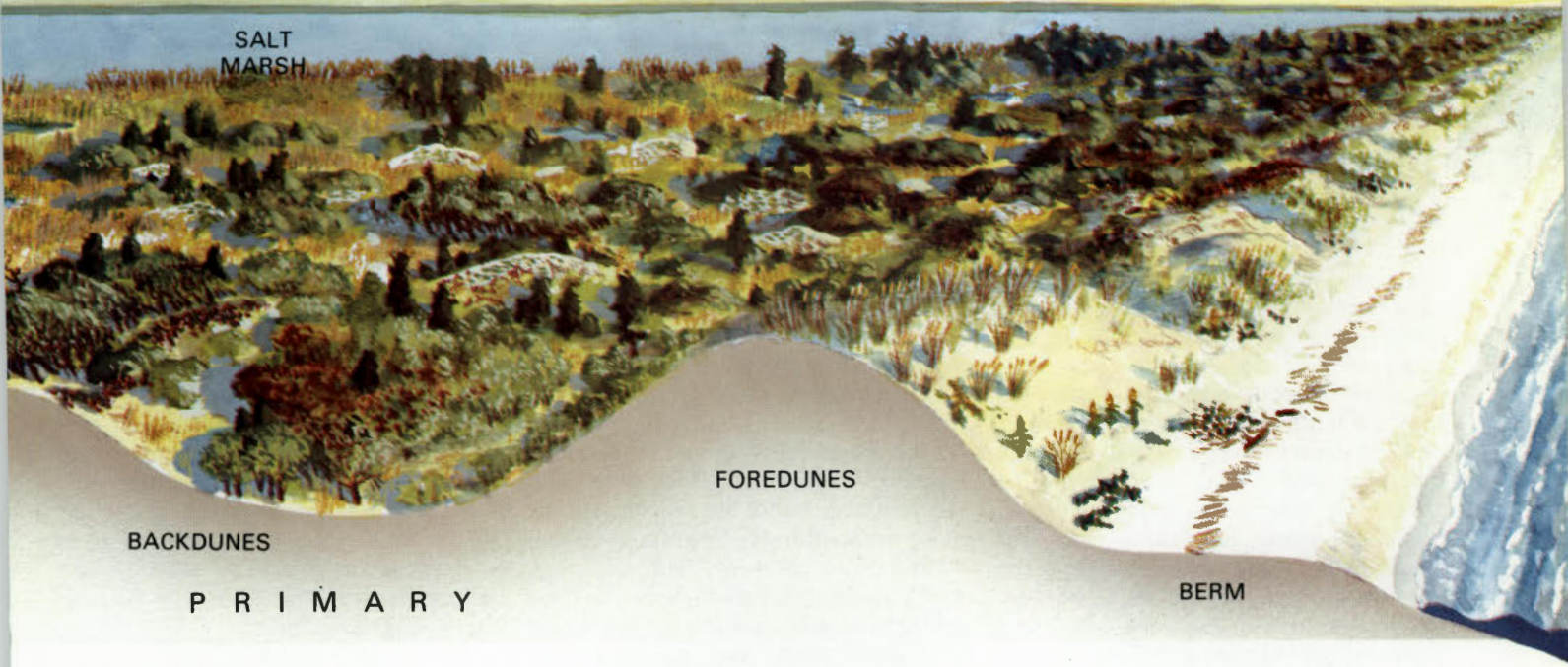
The 10-mile strip of Island Beach State Park is, for the most part, an undisturbed oasis of native vegetation. The painting above represents a composite view of the kinds of vegetation found there. The park is one of the few natural expanses of barrier beach left along our Atlantic and Gulf coasts and looks much the same as when first seen by early settlers.

Island Beach State Park has more than 180 plant species, excluding weeds which have been introduced along roadways and around buildings. Most dune areas are protected and remain in their natural state. The northern third



Some of the more common plants are shown above. Vines on the left are poison ivy, greenbrier, and Virginia creeper. From top left to bottom are wild black cherry, beach heather, seaside goldenrod, marsh fern, and beach plum. From top right to bottom are red-cedar, holly, highbush blueberry, bayberry, beachgrass, and dwarf sumac.

STATE PARK



of the park is set aside as a botanical preserve, where limited trails have been laid out for both guided and self-guided tours. There is a nature center on the island, across the road from the administration building.

The narrow strip, which was once an island, can be divided into four plant zones; pioneer type vegetation (mostly herbaceous), scrub (mostly woody shrubs, vines, and dwarf trees), forest (where trees dominate) and marsh. Nearly all the plants in the first two zones are to some extent tolerant of salt spray and are known as *halophytes*. Primary foredunes are relatively unstable as they are exposed to the full force of wind erosion, sand deposition, and windblown salt. In general the amount of salt spray and sand movement decreases from ocean to bay.

Beachgrass dominates the primary foredunes; its extensive network of fibrous roots helps to stabilize the dunes. The upper beach and primary dunes support only a few annuals. Sea rocket, although unpretentious, is found on nearly every sandy coastline in the United States. Seaside gold-

enrod, like sea rocket, has large fleshy leaves that reduce moisture loss. Although there are more than 100 species of goldenrod, seaside goldenrod is the only one usually found on the beach and dune.

The scrub, forest, and marsh zones of Island Beach are covered not by uniform types of vegetation but rather by complex mosaics of many plant communities which are quite different in structure and composition. About 75 plant species grow in abundance.

Damp low areas behind primary dunes are often clothed with a level canopy of bayberry and highbush blueberry. Shrubs along the exposed seaward edge are commonly molded into thickets which slope toward the sea, as the salt spray kills exposed tree twigs and suppresses terminal growth. The crowded shrubs in these slow-growing thickets are interlaced with dense tangles of greenbrier, Virginia creeper, and poison ivy.

Temporary freshwater ponds sometimes form in hollows between the dunes. Goldenrod grows on the fringes

and wades into the ponds. Beach heather is the principal pioneer community on protected and inactive dunes. Its low yellow-flowered cushions spread radially along the ground, stabilizing bare slopes. Wild black-cherry trees are anchored in the backdune slopes and red cedars punctuate ridge lines.

Secondary dunes are relatively stable, allowing areas of freshwater marsh to become established in the hollows. Marsh ferns often cover the shallow bottoms, interspersed with cattails. Hibiscus and other shrubs fringe the edge. Holly covers secondary dunes and mixes with red-cedar woodland. Low and high thickets grow upward into red-cedar and pitch pine then downward to the bay. The tangle of cedar, holly, greenbrier, reeds, and shrubs often forms an impenetrable barrier to the bay shore. As the land slopes gently toward the bay it becomes wetter and there are occasional areas of brackish marsh. Reedgrass lines much of the bayside, growing on sand ridges pushed up by winter ice floes. Beyond the reeds lies the broad sweep of saltmarsh.

TERRAPINS

Continued from page 3

ing, or contains hatchlings, a turtle escapes from the opened nest leaving only its tracks to attest to its safe departure. However, when I checked later in the morning the gulls had already found the opened nests. Unable to find or open nests themselves, they opportunistically fed on the remains left by raccoons.

Terrapins place their eggs four to eight inches below the sand surface, yet it is the sun's heat that drives their development. I placed continuously recording temperature probes in several nests to find out how the nest temperature varies. Over the course of a day the temperature range varied from 4 to 18 degrees with a low at six in the morning and a high at three in the afternoon. Nest temperatures rarely dropped below 68 degrees, nor exceeded 99 degrees, although sand at the surface burned at 120 degrees. Prolonged periods of rain depressed nest temperatures to their daily low. Deeper nests were cooler than shallow nests, and egg development time correlated with nest depths.

Even after the egg-laying period I searched the dunes almost daily for evidence of predation and hatching. Slowly the dune grass grew taller, fuller, darker, leaving less of the sand exposed to the searing sun and wind. Nest after nest fell prey to fox and raccoon until nearly 60 percent had been taken. As days and weeks passed, fewer and fewer nests remained. In early August, I checked my marked nests more carefully, looking for signs of hatching since turtle eggs hatch in about two to three months from egg-laying. After 60 days, I dug up nests, gently scraping the sand away from the eggs without actually touching them. The first nest had an egg hatch on the 20th of August. From then on, I dug up nests as they reached 60 days of age, making sure not to disturb the eggs since jarring is known to stimulate hatching. Once I found the hatching date for any nest I left it undisturbed to discover when the young leave the nest. The emerging hatchlings leave crawl trails indicating where they went. By looking for these trails every few hours I could determine exactly when they emerged. The developmental period for

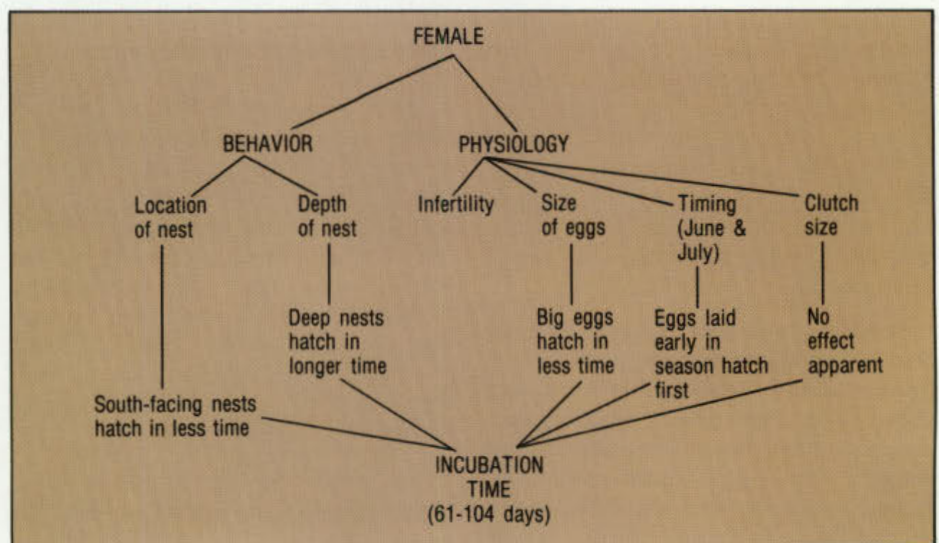


Nesting habitat of diamond back terrapins

individual nests ranged from 60 to 104 days but most hatched around 75 days. Within any given nest the young hatched over a four-day period, with the bottom eggs hatching last. Turtles on top which had hatched first usually emerged from the nest first. Once having hatched, some hatchlings left the nest immediately, whereas others waited up to nine days before leaving. They always departed from the nest during the day; usually in the early afternoon when the sun was the warmest. Turtles hatching during cold spells remained in the nest longer, whereas turtles hatching on warm sunny days left the nest immediately, exploding from the surface in a rosette of tiny trails. Even more than two months after laying, the behavior of their mother influenced their lives, since eggs in deep nests took longer to develop than those in shallow nests, eggs in nests on the sunny south-facing slopes hatched sooner, and eggs laid in June hatched sooner than those laid in July since August is warmer than Septem-

ber. Since foxes and raccoons continue opening nests at a constant rate over the season, the sooner eggs hatch the less chance there is that they will be eaten. Furthermore, once eggs hatch nest odor increases, so that foxes and raccoons find twice as many nests each night as they did when the nests contained only intact eggs. Nests in areas with more turtle nests per square meter suffered more predation than nests in areas with fewer nests.

The warm rays of the sun stimulate the hatchlings within the nest to begin swimming movements which eventually bring them closer and closer to the surface of the sand. Upon reaching the surface, they crawl quickly to the safety of nearby dune grass and wait until nightfall. Often I followed the tracks of a hatchling which ended abruptly at the tracks of a gull or crow. Other tracks led on further, tumbled down steep dunes, and then went off in another direction. Hatchlings emerging from nests on flat sand spread out in all directions, eventually heading for the



closest grass. However, hatchlings from nests on steep dunes invariably traveled downward in the direction of the bay.

To test their preferences for slope and vegetation, I examined the direction of trails from undisturbed nests. Hatchlings always went to the closest vegetation on flat areas and to the closest vegetation below the nest on sloping dunes. To find out which stimulus was the strongest, I tested hatchlings on an incline apparatus in the field and in the laboratory. Vegetation was the stronger stimulus as they always headed for it regardless of the slope. This is indeed important for them, as gulls and crows constantly search for the hatchlings, and searing rays of the sun can quickly desiccate their tiny bodies. In the cool cover of the night they can slowly make their way to the protection of the bay.

During the course of one summer, I followed more than 200 nests of Diamondback Terrapins containing more than 1,700 eggs. Some eggs hatched in at least 36 percent of the nests, 57 percent of the nests were completely destroyed by predators, and the rest failed to have any eggs develop. Yet of the 36 percent of the nests having some eggs hatch, only 70 percent of the eggs hatched. Of the hatchlings, 22 percent were eaten by predators before emerging, and six percent died in the nest as solitary hatchlings because they seemed unable to get out when alone. Thus, considering all the eggs originally laid, only 16 percent successfully left the nest as hatchlings bound for the open bays.

But just getting to the bays and channels is difficult as crows and gulls cruise the dunes by day, fox and raccoon patrol by night, and the path is strewn with logs, brush, grass, and other obstacles difficult to negotiate. The hatchlings must also orient in the right direction to find the bays or they end up in a maze of coastal brush and woods. Still, some make it to the water, and swim out toward the safety of vegetation where they can once again hide in the dark shadows. They will not return to the dunes until they are three or four years old but instead will live in the bays, estuaries, and salt marshes, hibernating each winter in mud beneath the channels.

The behavior and physiology of female Diamondback Terrapins affects nest success in a number of ways.

CHIGGERS

By Pete McLain

South Jersey has its share of insect and insect-like pests, ranging from the mosquito, to the saltmarsh greenhead fly, to the black fly along the beach, to the deer fly in the woods. But of all the pesky critters which make outdoor life difficult for man and beast, one of the worst has to be the almost invisible little chigger, which produces nasty red bumps on your skin, and which almost turns you into a perpetual itching machine.

Many people don't know what they have when they get a "mess of chiggers," but most shore doctors will quickly recognize that you've been in the woods or field and you've got chiggers. About all the medical profession can offer is the advice to "scratch them and they will go away in time."

Surprisingly, neither the medical profession nor the layman know much about chiggers, ever though they've been pestering people since the Leni Lenape Indians got them centuries ago.

The chigger is not an insect, but the larval stage of a mite, an arthropod related to spiders. The biting chigger is only one stage in the series of metamorphoses which finally result in the adult mite. A point of trivia is that there are something like 55,000 species of mites recorded, and more to come.

The miserable chigger is found universally, and is most active during warm weather as far north as Massachusetts and Minnesota, or wherever the air temperature reaches higher than 60 degrees. They are particularly bad in the southern United States, and in the tropics, but the Garden State has its share of them (more than its share, you'll feel, if you get a good infestation).

Chiggers live in both damp and dry woodlands, and they definitely tend to cluster in small areas. Of two people hiking together, one may get a wicked case and the other never a single bite.

The chigger is so small that it's almost invisible to the human eye. They are red

and equipped with a pair of piercing jaws called "chelicerae."

When you come walking through the woods, the chiggers simply crawl off the leaves or grass stems and onto your clothing. Then they quickly head to spots where your clothes are in contact with your body, like the belt line, groin, back of knees, and the ankles. Here each beast penetrates your skin with its chelicerae and injects a salivary secretion into the opening. This repeated injection produces the enzymes which break down the skin cells to provide food for the chigger. During this feeding process a "stylostome," or tube, is formed. A chigger may feed for four days, and can live 14 to 30 days without feeding.

When you feel the itch, you'll scratch, and probably dislodge the chigger, but the stylostome will remain in the wound, and it will continue to produce the intense itching. There is no known immediate relief for the itch, but there are a couple of ointments available containing a local anesthetic which helps.

As far as dabbing on nail polish, alcohol, and the like, forget it. You'll still have the itch for several days, because although the chigger is gone, the troublesome stylostome is still doing its job.

If you are going to a known chigger area, a good preventive measure is to dust your body with flowers of sulfur (available in drugstores), which really seems to work. Also, tuck your pants legs into your boots or socks, spray your pants legs and belt areas with a repellent, and keep repeating the spray treatment at intervals.

When you get home, take a good hot bath and wash your clothes in water hotter than 100 degrees. (Chiggers will live for several days in unlaundered clothes and attack anyone who wears the infested clothing.)

In the case of chiggers, a pound of prevention is worth a ton of scratching. Anyone who had even one chigger bite will know what I mean.

Drum Fishing

Continued from page 15

brings this fish on top and to our surprise, it's a big drum fish. Ted caught this drum on a one-ounce white bucktail with squid, a spin outfit, and 20-pound-test monofilament line. Forty minutes and a lot of joking later, Ted's drum fish was boated. For the tired man's reward, the fish tipped the scale at 65 pounds.

A short time later, Jim hooked up and off went his drum fish. In 20 minutes, we boated his drum fish. His reward was an 84-pounder. It is much easier to fight these fish on conventional fishing equipment than on spinning outfits. When the drum fish are there, get them in as quickly as possible so all may have a chance at catching one.

Walt connected a short time later and was amazed at the strength and pulling power these large fish have. Walt had the same look on his face that we all had when our first drum fish was hooked and running. Bewilderment! Eyes wide, feet braced, arms straining to hold the pole, line peeling off and wondering if he will be able to stop him. Walt was rewarded with a 73-pounder after 24 minutes of pure battle.

Then it happened. It was my turn. By this time, it was 10 pm, with boats within 50 feet of us trying to catch the drum fish. Our boat was the only one to bring in any drum in our vicinity that night. When I felt the sinker lift off the bottom, I started to peel line off (about three yards) with my right hand, holding tightly to the pole with my left, and bracing myself before setting the hook. All this is done in a few seconds. I set the hook and held on! The pole was nearly ripped out of my hands. Real powerful gamefish. It was quite an experience. Off he went, peeling line



Left to right: Walt Gregory, Jim Bradshaw, Ted Igle, David Campione, five drum fish, thirteen weakies, ten blues and one fluke.

and heading for the ocean, running and shaking his head at the same time. I tightened the drag a little. Something you are not supposed to do, but I was afraid of all my line being peeled off. It worked, and he slowed down. When I turned him to reel in, I knew this was not an old tire or one attached to an old Volkswagen. A Volkswagen can't shake its head while running!

The drum fish fought with extreme strength and power. One must realize that my fishing partners and I are used to catching weakies, blues and fluke. This gamefishing was a whole new ball game. I brought him alongside for gaffing in 15 minutes. Boy was I happy! Grinning from ear to ear! This drum weighed only 50 pounds, the smallest for the night. Hell, I was ecstatic!

A short time later Jim hooked up again with another big drum fish. A real good night. Five drum fish, smallest 50 pounds, largest 84. Plus 13

weakies, 10 blues and 1 fluke.

Tasty, too. If you like veal outlet, you will like eating drum fish. You can hardly tell the difference. Maybe this all sounds so simple to catch these delicacies, but a lot of time and patience are involved. If you regularly fish the Delaware Bay, you have half the battle won. Give it a try.

Next year we will try again. First we'll check the calendar for the full moon date. You can expect good drum fishing on that weekend. Besides the full moon, look at the tide tables and hope for an incoming tide between 6 and 11 p.m. on one of those days. Hope for decent weather on the Delaware Bay. You may also try your luck at the drum tournament that Cape May County puts on each year. You could catch a nice-sized drum fish and maybe win prize money at the same time.

The black drum fish is not mythical—it does exist!

FRONT COVER

Party boat returning to dock at Atlantic Highlands—Photographed by Cornelius Hogenbirk

INSIDE BACK COVER

Diamondback Terrapins—Illustration by Carol Decker. (See article on page 2.)

BACK COVER

Laughing gull shading chick—Photographed by William D. Griffin. (See article on page 12.)



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