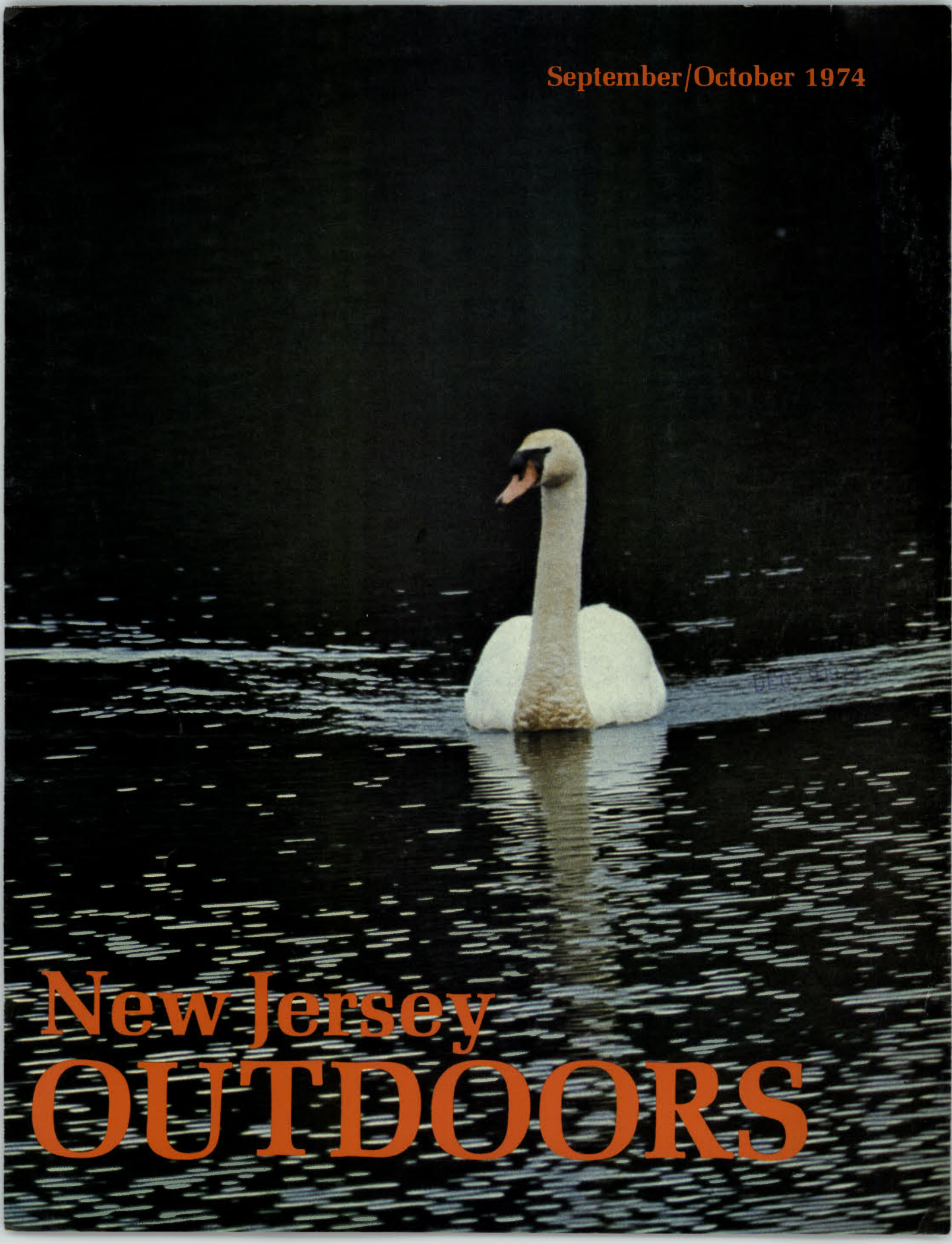
September/October 1974



New Jersey OUTDOORS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FRONT COVER
Mute swan on a wildlife management area pond—Harry Grosch, Nikon F2, Kodachrome II

INSIDE FRONT COVER
Seagull on pole in Great Bay—by David A. O'Neill—Nikon F2, Ektachrome X

INSIDE BACK COVER
URBAN FISHING—Text by Bob McDowell; photos by Harry Grosch—Nikon F2

BACK COVER
Crystal Sandwash in S. Vineland Park—By Rocky Walters—Kodachrome II, 50 mm with 2x telo converter

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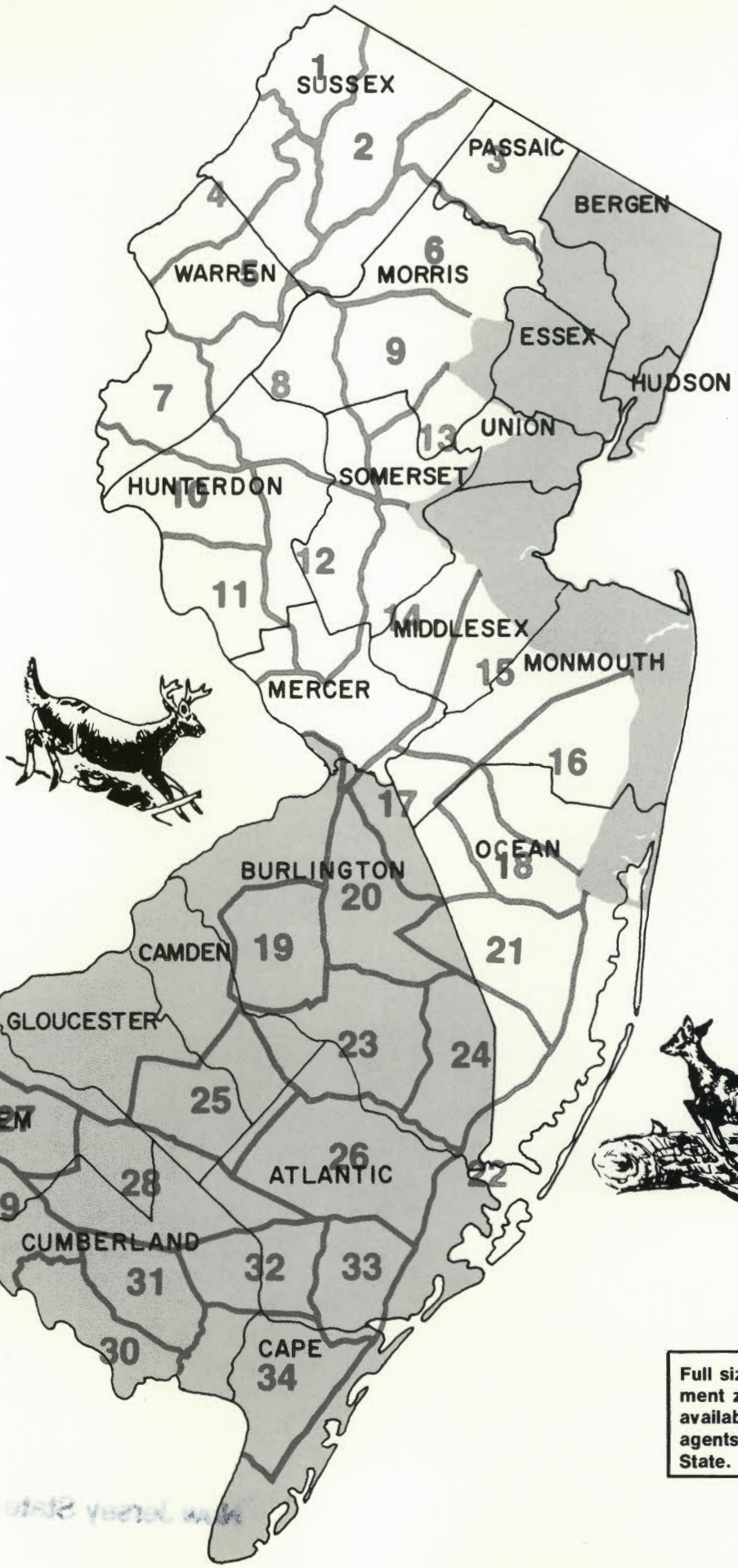
FEATURES



Full size Deer Management zone maps are available from license agents throughout the State.

Deer Management Zones

COMPUTER AGE DEER MANAGEMENT

George P. Howard, Assistant Chief
Bureau of Wildlife Management

With the advent of the 1974 Special deer season on December 18, 1974 a new concept in the management of the New Jersey white-tailed deer resource will be inaugurated. This season will be the first in New Jersey to be conducted on a Management Zone concept with the State divided into 36 Deer Management Zones varying in size from 90 to 344 square miles and totaling 6,031 square miles. The boundaries of the zones will be highways and rivers rather than county lines as in the past.

The location and size of the zones, the total antlerless harvest to be taken, permit quotas to be issued, and all management factors related to this season will vary according to the quality and density of the deer herds and the condition of their ranges, represented within the boundaries of the various zones.

←

A MAJOR GOAL

Deer management on a herd basis, dictated by the needs and characteristics of the deer and their related ranges, has long been the goal of deer biologists everywhere. A giant step toward the fulfillment of this goal in New Jersey will have been accomplished with the inauguration of this season which initiates deer management on a zonal rather than a political or county basis. Since the beginning of modern deer management in New Jersey, following the re-establishment of the deer resource in the early 1900's by the then Board of Fish and Game commissions, county lines have been a prime factor in determining the framework of deer management programs. With the exception of a brief encounter with the Party Permit Season in the early 1960's, all special seasons, open, closed or hunters choice areas, and antlerless deer quotas have been established using county lines as boundaries. Such terms as the Sussex or Burlington County deer herds have become a part of the everyday vocabulary of the New Jersey deer hunter.

MANDATORY DEER CHECKING STATIONS

New Jersey deer biologists have long been aware of the significant differences existing between deer herds and ranges within county boundaries (western, central, and eastern Sussex for example), but it wasn't until the Mandatory Deer Checking Station System came into being in 1972 that these differences could be documented on a meaningful basis. The mandatory checking system, provides New Jersey deer biologists with the mechanism necessary to collect research data essential to proper herd management by area rather than county. While data relative to deer age, sex, reproductive rate, and antler growth had been collected by counties and townships under

various reporting systems in the past, it was not possible to collect representative samples of the data from all areas. Also, data collected by counties and townships did not lend itself to evaluation in a zonal or unit system. The new mandatory checking system made each deer kill immediately available and also significantly reduced the incidence of non-reporting.

ENTER THE COMPUTER

The fact that approximately 11,000 deer (in one season) became readily available for examination created some real problems which had to be solved before the benefits of the reporting system could be utilized. For one, new methods of handling the vast amount of data produced had to be developed. In cooperation with the Department of Horticulture and Forestry at Rutgers University, computer programs were prepared which permitted the rapid processing of harvest data. It was also necessary to devise a better method of reporting kill locations than the traditional county and township designations. This was accomplished by dividing the state into 636 Deer Management Units (grid coordinates) each containing 14 plus square miles and slightly less than four miles on a side. All kill locations reported during the last two years have been recorded by management unit as well as by county and townships. Deer management unit reporting is essential to the zoning system as it provides for the collection of data from very small areas enabling biologists to properly evaluate range and herd conditions as they occur in the field.

THE DEER MANAGEMENT ZONES

The ability to collect data from small units of deer range, plus the availability of computer programs enabled biologists to evaluate all deer range in the State and to consolidate areas with similar range and herd characteristics. On the basis of management unit data, 36 deer management zones were established for the 1974 season.

In developing these zones such herd characteristics as the total number of deer present, reproductive rates, percent of 1½ year old deer in the harvest, incidence of spike bucks, total number of deer harvested, weights of selected age-classes plus other herd condition factors were examined on a management unit basis. The presence of zone boundaries, such as rivers and roads, which determined the practicality of establishing an area as a deer management zone, was also considered together with the land ownership patterns existing within the areas involved. Once the management zones were determined, and all data related to them consolidated, antlerless permit quotas were established for each zone based upon the number of deer to be harvested and past season success ratios for each area. Antlerless deer quotas were determined utilizing the same formulas used in previous years to determine quotas on a county basis. Some minor modifications were made in the method of applying for antlerless deer permits although the system remains basically the same. The only real difference is that the application for permits will be by zone number rather than by county name.

HERD AND RANGE CHARACTERISTICS FOR VARIOUS DEER MANAGEMENT ZONES

DEER MGT. ZONE	AREA SQUARE MILES	% PUBLIC LANDS	1973 FIREARM BUCK HARVEST	1973 EITHER SEX HARVEST	1973 BOW SEASON HARVEST	1973 TOTAL ANTLERED HARVEST	1973 TOTAL ANTLERLESS HARVEST	% 1½ YEAR OLD MALES IN HARVEST	% 1½ YEAR OLD FEMALES IN HARVEST
1	94	41	204	61	13	212	66	84	43
3	202	47	288	84	28	316	84	80	36
4	125	30	480	247	74	532	269	75	43
8	263	3	696	390	196	806	476	85	33
9	158	5	233	181	88	283	219	77	44
10	145	0	574	374	216	677	487	90	36
14	313	1	61	90	49	92	108	58	40
23	210	65	238	—	59	267	30	32	27
25	177	5	59	—	10	64	5	58	49
26	245	1	175	—	33	190	18	67	57

Hunter inspecting doe bagged during Either-Sex **Special Season. In 1974, Special Season is December 18.**

Bob McDowell, of the Information and Education Group, inspects browsed-out cedar in South Jersey.

EITHER SEX SPECIAL SEASON

The establishment of the 1974 Either Sex Special season on a zonal system is only the first step in the modernization of New Jersey's deer management program. It is anticipated that computer simulation models, based upon herd and range conditions as they actually exist in the various zones, will be prepared in the very near future. The use of these models will allow biologists to pre-test proposed management and harvest programs prior to their adoption. Also, the adaptation of the division's present computer mapping program on a zone basis should prove valuable in predicting trends in range and herd characteristics from year to year.

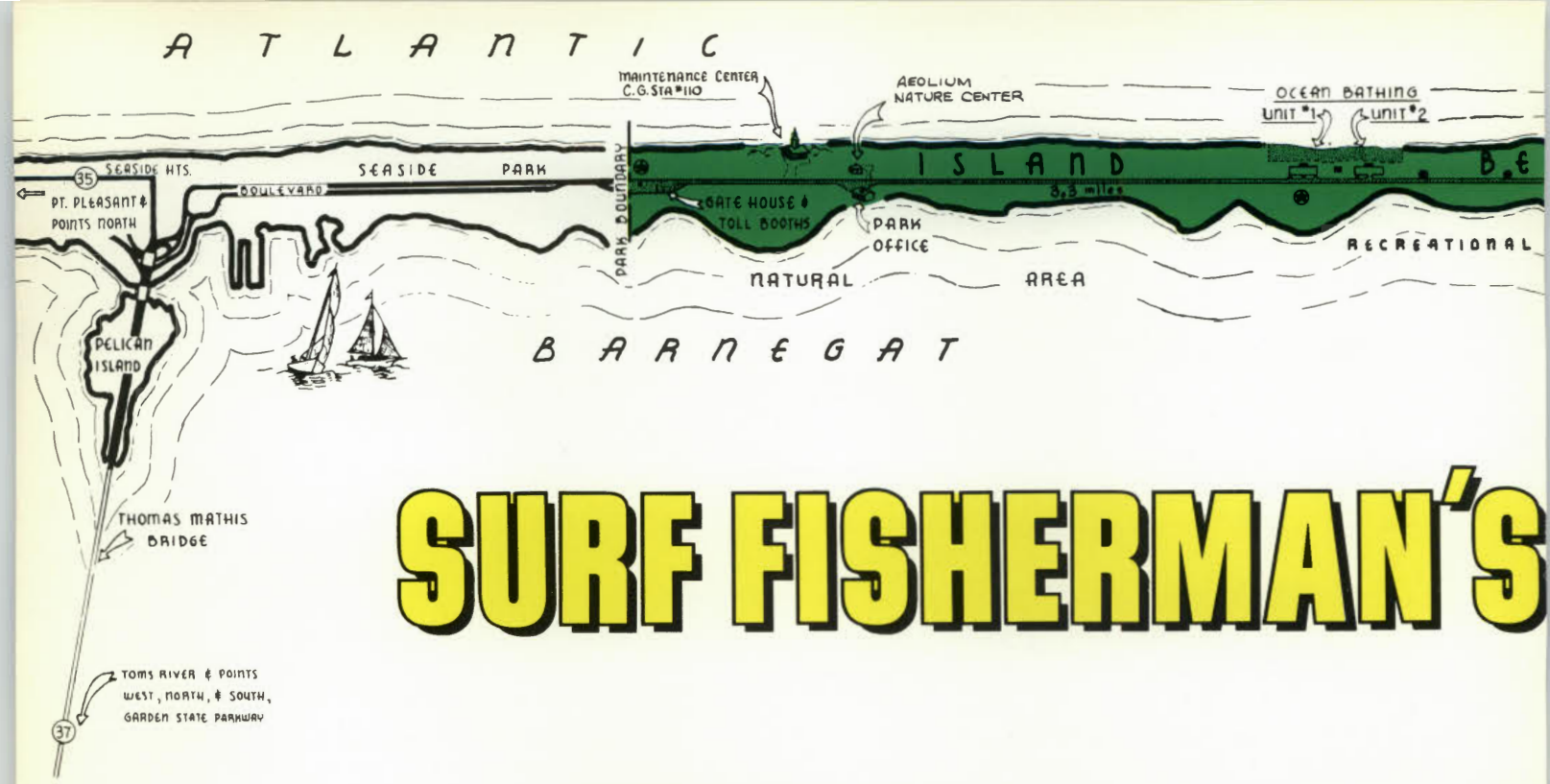
The initiation of the zonal system of management together with the development of various computer techniques enable our biologists to make full use of the information available. This has placed New Jersey in an enviable position as to the quantity and quality of deer management data available to properly manage our white-tail deer resource.

PUBLIC ACCEPTANCE OF DEER MANAGEMENT

While this information is readily available, it is of little value unless the management programs based upon this data are accepted by the citizens of New Jersey. The fact that the New Jersey deer herds presently exceed 75,000 animals and that record harvests have taken place in the past two years attest to the ability of the divisions professionals to properly manage this resource. There is still much opposition, however, to scientific resource management in many sections of the State. The inability of New Jersey biologists to sell scientifically-based deer programs to the sportsmen in parts of South Jersey has caused untold damage to the deer herd and deer ranges of that area. Also, the emotional approach to deer management proposed by certain protectionist groups has many times in the past defeated all attempts at scientific management.

PUBLIC PARTICIPATION

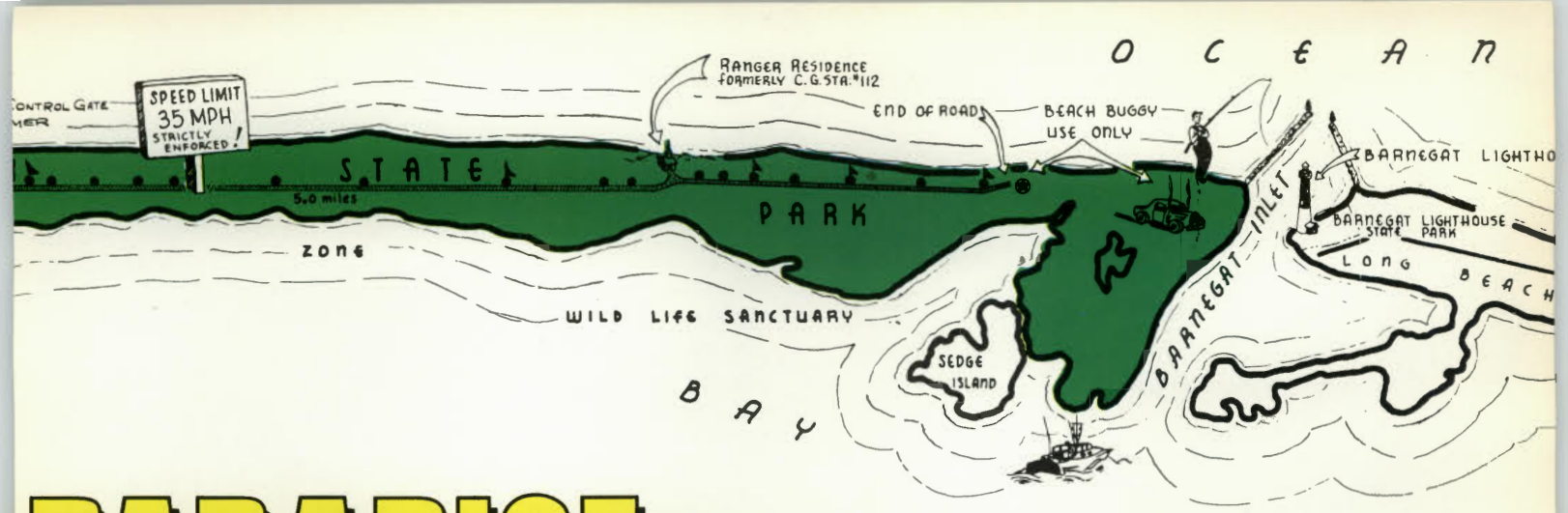
There is no guarantee that the availability of overwhelming amounts of research data supporting scientific management will enable biologists to be any more successful in the future then they have been in the past in the establishment of a scientifically based management program. It behooves every citizen, therefore, to become involved, to make every effort to obtain the facts concerning our natural resources and their management, and after reviewing these facts to support these programs which offer the best potential for the future. If this is done, we as deer biologists are confident that the deer resource of New Jersey will be a viable part of our environment for many years to come. □



SURF FISHERMAN'S

Bill Waters of Harrison with a pair of bluefish he picked up on mullet bait. A frequent visitor, he stays for days, sleeping in his beach buggy at left.

Photos supplied by author



PARADISE

By Henry Schaefer

To many people Island Beach State Park means heavy traffic, terrific heat and final frustration in the form of neatly lettered signs reading "park full" which convey the message that in spite of the hardships endured they won't be able to go swimming after all.

However, to some other people, Island Beach State Park means great surf fishing particularly for striped bass and bluefish, although weakfish, kingfish and fluke occasionally take the spotlight. Fortunately, for the fisherman, the best sport in this 10-mile long park is early and late in the season and not during the hectic months of summer when the place is jammed by visitors.

Island Beach State Park and Sandy Hook State Park are the only two state-owned stretches of surf fishing beaches in New Jersey. Island Beach extends from Seaside Park to Barnegat Inlet with some restricted areas closed to fishing although most of the stretch is open.

Usually the best stretch for fishing is the lower five miles extending from Control Gate 2 to Barnegat Inlet. The paved roadway from the park entrance, Control Gate 1, extends to a mile from the inlet.

Nowhere in New Jersey are beach buggies more popular than they are at Island Beach. During the height of the bluefish and striped bass runs scores of "beach buggies" follow the schools of surfacing bluefish or striped bass up and down the miles of beach.

Late each summer and throughout the fall, small mullet abound in the surf and trigger weeks of what is usually the best fishing of the entire season. When the mullet start running along the beaches, the striped bass shake off their summer lethargy and great schools of migrating bluefish storm into the surf in mad pursuit of the baitfish. No matter how good the fishing may have been during the spring and summer, it is almost invariably much better when the mullet are running.

There are two species of mullet on the Atlantic coast. They are the striped mullet and white mullet, and they occur from Brazil to Cape Cod. Along the New Jersey coast the big runs of these fish occur only late in the season. In Florida the mullets may reach two feet, but in New Jersey they are usually only about six inches long, a perfect size for baiting bluefish and stripers. The striped mullet, blue-grey and green above, silvery below, with longitudinal dusky stripes, is the more common in New Jersey. The white mullet has a dark green back with silvery sides and white belly. In the decidedly unpeaceful ecosystem of the sea, where big fish feed on little fish in a chain starting with microscopic diatoms and ending with giant fishes and mammals, the mullets are the meat and potatoes of bluefish and striped bass in the fall.

John Bilotti Jr. of West Orange uses a cast net to catch mullet in the Island Beach State park surf. Mullet, which run in the New Jersey surf each fall, are excellent bait for striped bass and bluefish.

William Garey of Seaside Park, foreground, casting for striped bass and bluefish in heavy surf.

During the height of the run, when the bass and blues go on feeding orgies, they may be taken on metal lures and swimming and popping plugs, but usually no imitation bait works as well as the real thing. And the easiest way to get mullet is to buy some from one of the half dozen bait and tackle shops at Seaside Park. However, the shops never seem to be overstocked with this bait and most serious surf fishermen catch their own.

To do this a modernized version of the ancient cast net is available in all tackle shops and by its use the fisherman can assure himself of the freshest possible supply of bait at all times. It takes a bit of practice to obtain skill with the net. The net has a lead disc center for casting weight and, if you have a strong arm, can be tossed about 20 feet. Fortunately long casts are unnecessary because the schools of mullet seem to prefer to travel just beyond the beach dropoff.

When the water is clear and the surf is down the schools of mullet are easy to see and catching them is quite easy. When the surf is high it may be impossible to get any fresh bait and the fisherman may have to resort to artificial lures.

The best mullet rig incorporates a painted balsa wood or cork float attached just above the hook. Most fishermen prefer to hook the mullet through the head, passing the hook into the mouth of the bait first.

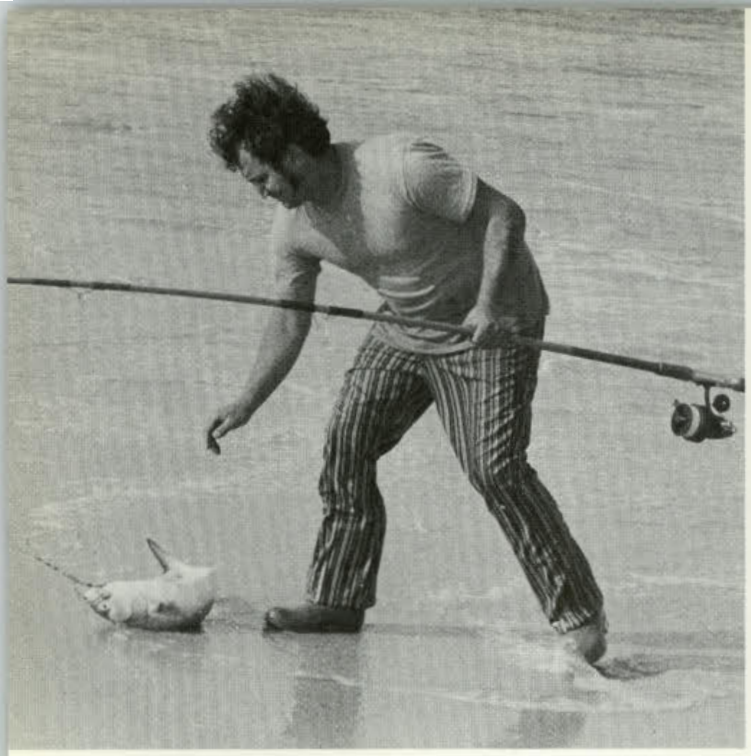
For ease of casting, the leader should be fairly short. Most fishermen prefer a three-way swivel when the aggressive bluefish are in the surf. When striped bass only seem to be about, some prefer to use a fish-finder rig to permit the more deliberate species to move off with bait without dragging the sinker too.

The preferred sinker is a pyramid just heavy enough to hold bottom firmly. Three ounce sinkers are standard but any weight from one to five ounces may be used, depending upon the conditions of the day.

Since the schools of mullet travel along the dropoff, where the gently sloping beach drops sharply into deeper water, long casts are usually unnecessary. The game fish will be where the feed is. However, to reach fish that may be feeding on the far side of sand bars, it may be necessary to cast 200 feet or more. When bluefish schools are charging into baitfish on the surface, everybody will know where the fish are and how far to cast.

Mullet fishing, which produces striped bass and an occasional bluefish or weakfish, even when nothing is visible on the surface, is much easier on the angler than casting with artificial lures. All the fisherman has to do is impale a mullet on his rig, heave it as far as he hopes is right, take up the slack in the line, and wait. The rod butt may be dropped into a sandspike to make things easier still.

As when fishing with worms, striped bass may hook themselves when they take mullet bait, but many a bluefish strike will be missed if the rod is left in the sandspike. There won't be any nibbling preliminaries, just a solid smash and the bluefish will either be hooked or gone.



Garey beaches a bluefish he took on a metal lure.

Weakfish, much more plentiful now than they were a few years ago, also hit a bait very hard. At times, during the past two or three years, schools of weakfish in the surf have been a more than welcome addition to the sport of fall fishing with mullet.

So far at least, Island Beach State Park casters have resisted the trend back to multiplying reels. Heavy duty spinning reels and 11-foot rods are standard along the beach there.

In the fall when schools of surfacing bluefish are moving up and down, and in and out, the long miles of open beach make the beach buggy a necessity. The man who parks his car and walks to a spot on the beach is anchored there and cannot possibly hope to chase the fish along the beach. He has to wait until the fish come to him and they probably won't.

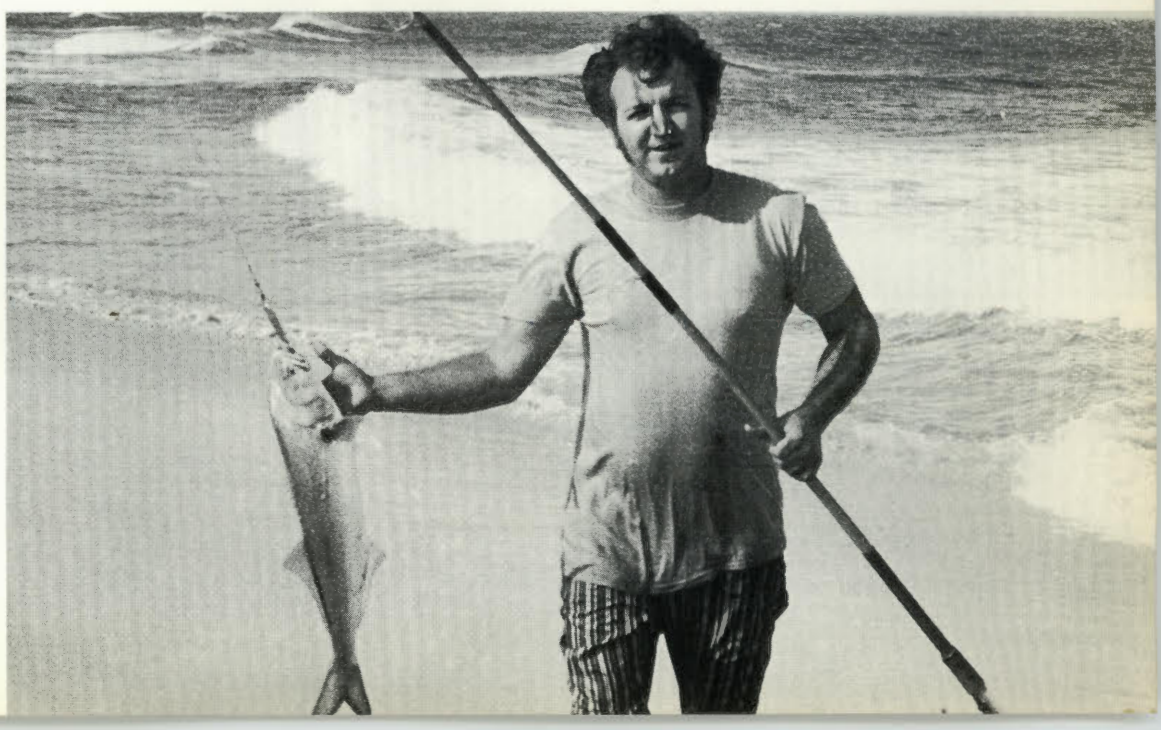
Everybody wants to own a beach buggy, or at least hitch a ride on one to follow the action. But the State Department of Environmental Protection has been forced to set a limit of 550 beach buggy permits for the park to prevent overcrowding of this area.

The permits cost $75 and are good for the full calendar year. There are restrictions on the use of the buggies. The northern end of the park, from the entrance gate and extending south for three miles, is closed to fishing. This stretch is called the "natural area," closed to protect the plant and animal life as much as possible.

Surf fishing is permitted 24 hours a day from September 15 to May 15. During the remainder of the year the park is closed from midnight to 4 a.m., although this does not apply to beach buggy owners who may sleep in their vehicles.

For fishermen who do not own beach buggies, a $20 fishing permit may be obtained at the entrance gate. It is good for the calendar year and may also be used for Sandy Hook State Park. Fishermen holding season permits are not required to pay entrance or parking fees.

Fishing is also permitted on a day to day basis. The state charges $1 for each passenger car or motorcycle entering the park. There is a $5 fee for each bus and reservations are required at least five days in advance to bring a bus into the park. □



Garey with his bluefish. It weighed about seven pounds.

get that * bleeping beaver out of my yard

photos by the Author

by
Robert McDowell

Nearly extinct in 1920, the beaver's problem now is the lack of suitable habitat which causes conflicts with man.

*Expletive deleted

Russ Spinks

Beaver dams can hold back large volumes of water. This has beneficial effects for large numbers of wildlife species. However, if this water covers property or a road this causes conflicts between people and beavers.

The damming activities of beavers can conflict with man's use of the land.

Is the beaver a good guy or a bad guy?

If one is of the persuasion that allows for the determination of animals as good guys or bad guys, and I suspect that most people are, then the beaver would probably be considered one of the good guys. That feeling for this large, tree chewing, rodent persists until the beaver moves into the neighborhood, and then some people change their minds, quickly.

The beaver engages in activities he is best known for: cutting trees, building dams, constructing a lodge, and digging canals; and these activities are not always welcome by the former beaver lovers. The beaver's new neighbors then call the Division of Fish, Game and Shellfisheries and say, "A beaver just moved into the brook behind my house and he is cutting my trees and flooding my yard. I like beavers but • * ! ! $ * #".

This phone call begins a chain of events in the Division's Bureau of Wildlife Management designed to try to keep the beaver in his new home. Facts about the when and where of the problem are gathered by Fred Carlson, Senior Wildlife Biologist in charge of wildlife control. A wildlife control representative is sent to the scene to discuss the problem of the new beaver neighbor with the landowner. The landowner is told that the last resort will be the removal of the beaver by live trapping. If the problem is caused by beaver damming activities and associated flooding, then a device known as a flume may be suggested and installed. When this long, hollow, wooden box is inserted into the dam, the flume maintains a low water level because it is so constructed that the water enters the side of the box under water and exits out the end downstream from the dam. This fools the beaver and does not block the flow, allowing the beaver to dam away and still not raise the water level. In some cases this procedure has been successful in keeping people and beavers good neighbors.

If the problem is ornamental, in that trees are being cut and used for building materials, the control representative will recommend fencing. However, some of these conflicts are not easily solved with fence or flume. In these cases tolerance of beaver activities is offered as a solution and if the beaver is doing no real damage, this solution works.

If the landowner, beaver, and wildlife control representative cannot resolve the problem, any other way, then the beaver is trapped in a Bailey live trap and removed to another area with fewer beavers. This solution sounds simple, however, it is becoming more

The problem of flooding can frequently be solved with the insertion of a flume in the dam. This keeps the beaver busy damming and maintains the water at a low level.

When the only solution is the removal of the beaver the Wildlife Control Representative uses the Bailey live trap to move the offending rodent.

All beavers that are moved to a new location are ear-tagged to identify them. Movements are traced and information is gathered with this management technique.

difficult each year to find suitable beaver habitat far enough removed from people to avoid reoccurring conflicts. In the past 12 years the Division of Fish, Game and Shellfisheries has live trapped and moved 1000 beavers at a cost of $170.00 per animal.

Due to the increased conflicts with man and decreasing habitat more information on beaver habitat requirements and the status of the State's beaver population was needed. In 1970 the Division instituted the Beaver Research Project staffed with two wildlife biologists. Facts on the condition of the State's beaver population such as location and number of colonies, reproductive potential, along with sex and age distribution are gathered each year. This information is used to set the trapping season. In 1973 the Fish and Game Council set a beaver trapping season for the month of February, 1974 issuing only 40 permits and setting a bag limit of 3 beavers per trapper. Only the counties of Sussex, Ocean, Atlantic, Burlington, Camden, and Gloucester, were open to trapping. This season was designed to allow sport trappers to harvest the surplus animals from the healthy populations in those counties. Thus, since the first permit season in 1947, the sport trapper has played a role in the proper management of this furbearer. By annually thinning the beaver population, the limited habitat is protected from the devastating effects of overpopulation.

In the 1920's beavers were virtually extinct in New Jersey. Through cooperation with other states a restocking program was successful and today, where there is suitable habitat, beavers are present. There are over 100 established colonies in the more remote areas of the 11 counties populated with beavers. The factors limiting the beaver population in New Jersey are the amount of good habitat and the tolerance of man, not the well-regulated activities of trappers. Until we stop polluting streams, draining swamps, diverting rivers, and making phone calls that end in "I like beavers but •*!!$!#", the beaver population of New Jersey will have little room to expand.

We repeat the question. Is the beaver a good guy or a bad guy?

This is determined by how people view him, not his position in the natural world. The results of beaver activity on the ecosystem are neither good or bad, they just cause changes. All change in the biological community is good for some organisms and bad for others.

Does man dare judge any animal as being "good" or "bad" or should man manage for all wildlife on an equal basis? □

The beaver is located in a new area, hopefully free of conflict with man.

Since a bowhunter must be close to his quarry to score an effective hit, camouflage gear is a decided asset for the successful taking of whitetails.

bows arrows and whitetails

By Howard Brant

As the subtle autumn woodlands feel the sting of early frost and the Garden State is splashed with nature's colorful artistic brush, the hunter is stirred from his summertime lethargy because the onset of fall heralds the arrival of the hunting seasons.

In golden October the sportsman turns his attention to such game birds as woodcock and waterfowl but without doubt the single most important and popular game sought by the hunter during this time is the wary and totally unpredictable whitetailed deer.

Traditionally whitetailed deer hunting in New Jersey is synonymous with the scattergun and buckshot. However, in the past decade or so another breed of deer hunter has emerged—the sportsman who takes to deer country with the most ancient of weapons—the bow and arrow.

Initially ridiculed by advocates of the smoothbore and buckshot as a wholly ineffective deer-taking weapon, the bow with its silent but deadly broadhead shaft has opened the eyes of the hunting fraternity everywhere. No mere toy, the bow and arrow is efficient and humane—and in recent years everything from woodchucks to the elusive whitetail have fallen before it.

Deer hunting with the bow and arrow is unique. The traditional "deer drive" does not have its place in the bowhunting world. The bowhunter, because of the very nature of his weapon, must patiently wait for game to approach well within range of his bow before he can effectively score.

There's no question the bow and arrow is thoroughly capable of bowling over any whitetail but the nature of the weapon requires that the hunter wait for the animal to approach well within 30 yards distance before he can consistently score. And the path to the target must be totally void of brush since the smallest twig can deflect an arrow from its intended flight path.

The fluorescent orange material required for the firearm deerhunter is not used by the bowhunters and camouflage clothing is a decided asset. Many bowhunters not only use camouflage suits but paint their faces and exposed portions of their hands with camouflage paint to better blend with the habitat.

In the past decade bowhunter success in the field has skyrocketed. In the Garden State alone more than 1,200 whitetailed deer are annually harvested by bowhunters. The woodlands are strangely silent during the bow season. Despite the abundance of hunters about, there is no resounding bark of scatterguns, for the release of a hunting arrow is silent. This silence can be an advantage since the bowhunter can often get two or even three or more shots away at a deer before the animal spooks or the archer connects.

So you'd like to go bowhunting and you ask what equipment is necessary? Foremost to remember in purchasing your initial bowhunting tackle is that archery is not a game of strength—but skill. Let the mis-informed struggle with heavyweight bows, they won't hit anything with them anyway. A bow of 40 to 50 pounds draw weight is sufficient and quite capable of tumbling any whitetail you'll encounter.

A hunting bow should be of laminated construction and what is termed a "working recurve." A laminated or "composite" working recurved bow will toss an arrow at far greater velocity ("cast" is the archer's term for velocity) than just about any other type with the single exception of the revolutionary new "compound" bow.

And remember, the greater the cast of an arrow, the flatter its trajectory curve and the better opportunity you have to correctly judge elevation. Elevation misjudgement is the most common error of bowhunters and annually accounts for most missed deer.

In selecting a bow, pull it back to full draw and if you cannot maintain a solid and steady hold for at least three seconds, then the bow is far too heavy for you—don't buy it for you'll miss more than you hit with it.

Speaking of drawing a bow, never draw it without an arrow either nocked (where it is safe to do so) or held parallel to the bowstring as a guide. A bow at full draw is said to be 8/10's broken. Thus if you over-drew the bow without some sort of guide line, it could conceivably shatter. Never draw a bow and release the string without an arrow nocked either for here too it can cause the bow to break.

Most modern, composite recurved hunting bows are manufactured with a high-gloss finish which shines like a mirror. Therefore, in the field, cover the bow limbs with some sort of camouflage tape or cloth. If you employ tape, wax the bow limbs with a good furniture wax before applying. Keep the bow strung to the proper height (braced) as described by the manufacturer. Most hunting bows are "braced" so that the string is some six to eight inches from the bow face. One can increase or decrease the brace height by simply twisting or untwisting the bowstring. A half dozen such twists can change the brace height as much as one inch.

Keep the bow braced to the correct string height; add camouflage tape to both limbs; a pair of brush buttons, string silencers and a nocking point and your bow is ready for the field.

An important part of the archer's gear are his arrows. Any quality bow is capable of tossing an arrow into a target but the secret to bowhunter success lies with the arrow itself, for without top-grade arrows your hunting success can be a total failure. It is better to purchase a less expensive bow but don't spare the expense when buying arrows.

Arrows for hunting are constructed of several materials—wood (Port Orford Cedar is tops) plus fiberglass and aluminum with either fiberglass or aluminum the best. Arrows are available in various lengths with the most common length 28 inches. Arrows should be purchased according to your individual arm length and although 28 inches is standard most archers, surprisingly, utilize and require arrows of lesser lengths.

A handy formula to determine proper arrow length is to stretch your arms full length so that their span can be measured. Measure from one fingertip across your chest to the other fingertip. If your arm spread measures between 57 and 59 inches, you need a 24 to 25 inch arrow; 60 to 62 inches, a 25 to 26 inch arrow; 63 to 65 inches, 26 to 27 inch arrows; 66 to 68 inches, 27 to 28 inch arrows; 69 to 71 inches, 28 to 29 inch arrows; 72 to 74 inches, 29 to 30 inch arrows and 75 to 77 inches, 30 to 31 inch arrows.

Most over-the-counter bows are weighed at the standard 28-inch draw length and if you use a shorter arrow the poundage or draw weight of your bow decreases. For example: A hunting bow marked 50 pounds will pull or draw 50 pounds at 28 inches. But for every inch drawn less than 28 inches it will lose two to three pounds. Thus, a bow marked 50 pounds will draw only 45-46 pounds with a 26 inch arrow. Conversely, if you draw a 29-inch arrow, the 50-pound bow will increase its draw weight to some 52-53 pounds.

There are a number of broadhead blades manufactured today and all such steel blades perform well. It's simply a matter of preference. However, every broadhead must be razor sharp. We cannot over emphasize this. A correctly sharpened broadhead should be capable of providing one with a respectable shave!

When purchasing arrows buy them by the "matched" dozen so they are uniformly matched in weight and "spine" (stiffness) to your particular bow. When an arrow is released from a conventional hunting bow it bends for the first several feet of its flight due to the force of the released string. Hence the spine of an arrow must correspond to your individual bow weight. Too light a spine or a too stiff spine will deflect an arrow either to the right or left of your target.

A bowhunter will also require a quiver of sorts to carry his arrows. Many bowhunters utilize a bow-quiver which attaches to the bow itself. But again this is a matter of personal preference. Purchase a bow, center-back, or side quiver according to your individual needs. The bowhunter will further require an armguard and a three-finger shooting glove or a tab.

After purchasing your tackle the next step is practice, practice, and PRACTICE. Although not a difficult weapon to master, the bow and arrow

does require constant use to acquire uniformity in shooting style and to be consistently on target. If you can't consistently put your arrows into a target the size of a dinner plate at 20 yards distance you'd better practice some more.

So you've acquired the proper equipment and are consistently shooting respectable scores on the practice butt, then you are ready—and as the smell of woodsmoke and the haunting scent of the autumnal forest fills the air it's time to hightail it to deer country.

Pre-season scouting will pay off for the bowhunter. During the bow and arrow deer season whitetails are not usually spooked as is the case during the firearm season.

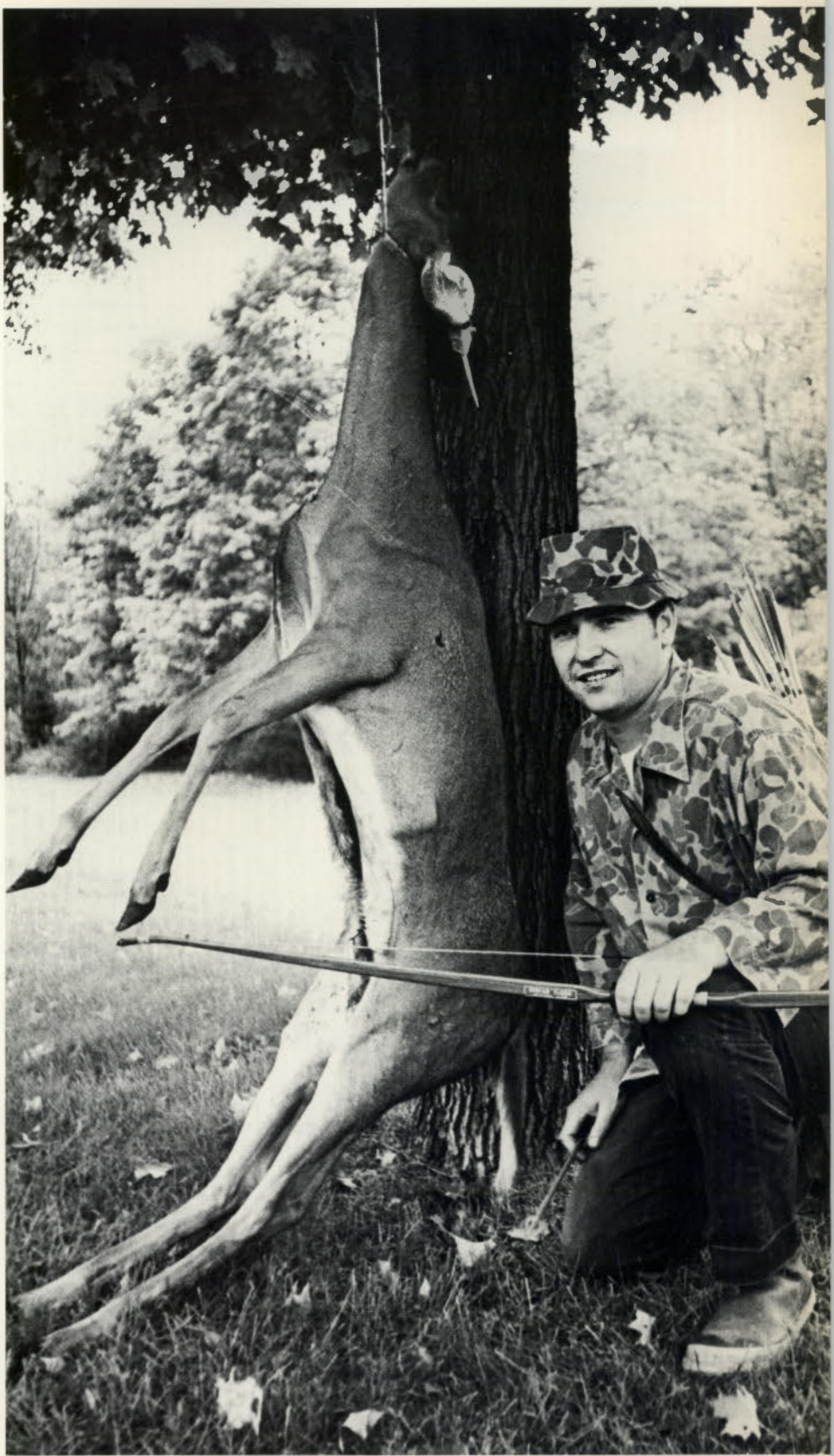
Deer will continue to utilize their customary trails to watering, feeding and bedding grounds. Look for these well-used "runways" between such areas and select your stand several yards from the active trail. Clear excess brush from the anticipated shooting area so it won't interfere when a deer eventually does amble by.

Many staunch bowhunters also employ tree-stands or platforms perched several feet above ground and, judging by their success, these elevated platforms work well. If you decide to use a tree stand be sure you build it several weeks before the onset of the deer season to allow deer to become accustomed to this addition.

Early dawn and the late twilight hours are the ideal times for the bowhunter to be afield. During the midday hours the whitetail is content to find a secluded glade and bed down, but during the dawn and dusk hours they are moving, seeking food and water and it is at these times when runway watching pays off.

A successful bowhunter—Richard Lowack of Belleville—poses with a whitetail bagged from a tree stand during the height of the bow and arrow deer hunting season.

The bow is truly a capable and effective weapon at close range but it is not designed for the wholesale slaughter of game. However for the true sportsman—the bow and arrow is a logical choice. The deer has all the advantages and the woodland scene provides the glorious background to be afield. □



Photos by Author

CO'S CORNER

by Conservation Officer Carlton Smith

Editors Note: *Something new has been added. Starting with this issue of New Jersey Outdoors we will regularly publish a new feature called CO's CORNER. As the name implies it will contain news and notes from and about our Conservation Officers. We've had numerous requests for a law enforcement news column and we believe it will be read with interest by all of our subscribers. We invite and will appreciate your comments and suggestions about CO's CORNER or any other feature of NEW JERSEY OUTDOORS.*

WE'RE ON THE GROW!

There are six new conservation officers now in training who will be added to our field patrol force. Assigned to the Northern District are James E. Wiles and John L. Mihatov. Alex Haleta and Richard Schiller are the Central District's new officers. And CO's Frank S. Shoemaker, Jr., and Gregory Huljack go to the Southern District.

ANYBODY LOSE AN ALLIGATOR?

That's a question that Conservation Officer Walt Mabey was ready to ask recently when he received a report of an alligator seen in a Gloucester county lake. The continuing investigation conducted by Officer Mabey failed to turn up a 'gator or even a reasonable facsimile. Nothing you can get your teeth into on that report, Walt—or do we have that a little backwards?

SCENTS AND NON*SCENTS*!

When one thinks of skunks one usually thinks of their (ugh) scent. But some people think of skunks in terms of pets—the descented variety, of course. Skunks, just as many other animals, can contract rabies unless innoculated against this dangerous disease. Which point brings us to an incident related by Conservation Officer Bruce Young while on assignment to pick-up a pet skunk suspected of possibly becoming rabid. Upon the approach of Officer Young the pet skunk's owner grabbed the animal, ran to his car, locked himself in so the pet couldn't be seized for examination, and sped off. Officer Young persevered, however, and overtook the fleeing car to seize the skunk for examination by a veterinarian. Good tracking job, Bruce—especially when you didn't even have a scent to follow.

RIGHT ON TARGET!

Conservation Officers, just like all other law enforcement officers who are armed, are required to take firearms training regularly. We're proud to mention that during the past year two of our officers shot a perfect score of 100. They are Conservation Officer Nevins, our firearms training instructor, and Asst. District Conservation Officer Mulvey. Congratulations men—you're an inspiration and challenge to the rest of us.

HUNTER ORANGE—IT'S THE LAW

New Jersey hunters must wear a daylight fluorescent orange color cap or outer garment containing at least 200 square inches of orange fluorescent material.

This law applies to all persons while hunting deer, rabbit, hare, squirrel, fox, or game birds, other than waterfowl, with firearms in New Jersey.

The penalty for violation will be $50 for each offense.

This law does not apply to bow hunters.

Other states which have adopted similar hunter's orange provisions have reported a decrease in hunting accidents because of its use.

Wondering How to Contact Your Local CO?

Recently the Division of Fish, Game & Shellfisheries established three regional offices for the convenience of sportsmen and all others who may want information or want to report an incident. These 3 offices—listed below—are manned daily Monday through Friday from 9 A.M. to 5 P.M. At other times, such as after hours and on Saturdays, Sundays and holidays, your message will be recorded and a call-back made to you by a Conservation Officer.

You'll find these offices listed in all fish and game compendiums. We've listed them below along with the areas each office covers for your reference and convenience in contacting the proper office in your County.

NORTHERN DISTRICT 201-879-7108
Black River Wildlife Management Area
North Road, Chester, N.J. 07930
Serving Sussex, Warren, Passaic, Bergen, Morris, Hudson, Hunterdon, Somerset, Union and Essex counties.

CENTRAL DISTRICT 609-259-2120
Assunpink Wildlife Management Area
RD #3, Robbinsville, N.J. 08691
Serving Middlesex, Mercer, Monmouth, Ocean and Burlington counties.

SOUTHERN DISTRICT 609-629-0555
Inskip Tract
Piney Hollow Rd., P.O. Box 388, Williamstown, N.J.
Serving Atlantic, Cape May, Camden, Cumberland, Gloucester and Salem counties.

Environmental News

N.J. BUYS VALUABLE SEASHORE WETLANDS

The State of New Jersey recently acquired one of the most valuable wetlands to be found along the Atlantic seaboard. The Seacoast Products Inc. Port Monmouth, New Jersey, made available to the state Department of Environmental Protection a total of 6,500 acres of wetlands located along Great Bay Blvd. in Ocean County and around Absecon in Atlantic County.

Commissioner David Bardin announced that the 6,500 acres of wetlands will be acquired over a two-year period at a cost of one million dollars made available through the U.S. Fish and Wildlife Service Federal Aid to Fish and Wildlife Restoration Program. The funds for this program are obtained through the federal excise tax on arms, ammunition and fishing tackle.

David H. Clarke, president of Seacoast Products Inc., made it possible for the State of New Jersey to obtain the federal funding by making available at net cost to the state, 25 percent of the total acreage (1600 acres) which was utilized as an in-kind contribution to acquire the 75 percent federal funding.

The 6,500 acres of prime wetlands of value to wildlife, fish, multiple-use recreation in the form of fishing, hunting, crabbing, clamming, boating, nature study and other outdoor activities. The area will be administered by the Division of Fish, Game and Shellfisheries as a wildlife management area and open to the public for recreational use.

The State Fish and Game Council consider the acquisition of the Seacoast Properties as one of the most significant tidal marsh acquisitions in the state's history. The 6,500 acres of Great Bay and Absecon Wetlands acquired from the Seacoast Properties Inc. is near the 12,000 Brigantine National Wildlife Refuge and also other state-owned wetlands in the immediate vicinity.

State ownership of this critical 6,500 acres will preserve one of the most valuable wetlands on the Atlantic coast. These wetlands presently provide the necessary habitat and support the food chain responsible for maintaining both the commercial and sport fishery in addition to wildlife and also a wide variety of multiple-use recreational pursuits. □

OIL SPILL EMERGENCY — CALL...

To help speed up its system of containing and cleaning up oil spills, a special task force of the department has stockpiled special materials at four strategic locations in the state.

DEP's Oil and Hazardous Materials special force has fitted out the sites with the tools needed for the cleanup jobs—booms, shovels, rakes, chemical dispersants, absorbing materials and other equipment used in spill cleanup techniques.

In addition to the stockpiles, the state has on order a one-ton 12-foot trailer which will be equipped with the same equipment, according to Commissioner Bardin. "The trailer will give our men more mobility and the stockpiles will make us more flexible and efficient in effecting speedier containment of spills," said Bardin.

During emergencies the stockpiled materials can be made available to any local or county government agency that requests them.

The DEP special four-man force provides the expertise in spill containment, not the actual manpower. The force has the experience and training, according to Bardin, to direct the strategy of cleaning up spills; and he notes that the DEP cooperates closely with the U.S. Coast Guard, the U.S. Environmental Agency and the DEP's own Marine Police in covering major oil spills, especially those in the bays, estuaries and other navigable waterways.

(Continued on page 16D, Col. 3)

NEW SEWERAGE PROJECTS WILL CREATE MANY JOBS

DEP has certified for funding six sewerage projects worth $133 million to the federal Environmental Protection Agency (EPA) in the last four months.

"These six projects when completed," said Commissioner Bardin, "will handle up to 41 million gallons a day of sewage which could otherwise pollute our waterways."

After consultation with State Labor and Industry Commissioner, Joseph A. Hoffman, Bardin estimated that the construction of these facilities would provide over 8,000 job opportunities, including over 3,300 construction jobs and over 5,000 supporting jobs.

"This effect on employment," Bardin said, "shows that restoring our environment creates jobs—and good jobs—for many people in the state."

(Continued on page 16D, Col. 3)

Over 112,000 Job Opportunities

DEP PROJECTS AID STATE'S ECONOMY

More than $400 million in federal money allotted to New Jersey for construction grants for wastewater facilities should be apportioned by the end of fiscal year 1975. This federal money is made up of the remaining fiscal year 1974 funds plus those allotted for 1975. The program is administered by DEP's Division of Water Resources.

According to the Office of Business Economics within the state department of Labor and Industry, the $400 million would provide more than 112,000 job opportunities during the construction phase (short term): over 21,000 construction jobs, more than 30,000 related jobs; and more than 61,000 jobs would result from employment spending their earnings in the economy.

Of these, approximately 16,650 would be new jobs created because of the funds and would continue over the length of the construction period. In addition,

(Continued on page 16D, Col. 3)

Dr. Glenn L. Paulson

Scientist named to DEP

NEW ASSISTANT COMMISSIONER

Dr. Glenn L. Paulson, 32, of New York City, has been appointed assistant commissioner for science by Commissioner David J. Bardin. Effective August 19 Paulson took charge of DEP's scientific assessment of such complex problems as the recovery of energy or recyclable resources from waste materials, oil exploration on the Outer Continental Shelf, deepwater ports and nuclear power plants; also, scientific assessments of toxic materials, environmental contaminants, and fluoridation of public water supplies.

Paulson, from 1971 until assuming the DEP position, was head of the Scientific Support Program of the Natural Resources Defense Council, Inc., a nonprofit public interest environmental law firm with offices in New York City, Washington, D.C. and Palo Alto, California. He is a member of the Effluent Standards and Water Quality Information Agency of the federal Environmental Protection Agency and a member of the Committee on Occupational Health and Safety of the American Public Health Association. Paulson is also a member of the board of directors of the Scientists' Institute for Public Information.

Author of several environmental publications, Paulson received his doctor of philosophy degree in ecology and environmental sciences from the Rockefeller University in 1972. He was awarded an honorary doctor of science degree from Long Island University in 1972.

Dr. Paulson received his bachelor's degree in chemistry from Northwestern University in 1963. □

Of Things to Come

COASTAL AREA PERMIT REQUIRES MORE OPEN SPACE

Environmental Commissioner David J. Bardin approved a 137-unit single-family housing development on 47 acres in Dover Township (Ocean County) provided the developer makes provisions for adequate amounts of open space and recreation areas as part of the project.

The developer, Robert Kamien of Bricktown, must also meet additional conditions laid down by the Department of Environmental Protection which are designed to minimize potential adverse environmental impacts and guard against the threat of natural resource limitations. A permit will be issued by DEP under the Coastal Area Facility Review Act of 1973 when the developer complies with the conditions spelled out in Bardin's decision.

Noting that the Dover Township Master Plan of 1972 pointed out deficiencies in neighborhood and community level parks, Bardin asked the developer to consult local and county recreation officials and submit to DEP proposals for resolving the open space problem in the fast-growing township.

"The initiative for open space and recreation development should come from the developer himself, in consultation with local recreation officials," said Bardin. The department's basic responsibility is to encourage the developer to use the energy, imagination, and initiative unique to a free enterprise system to meet local and neighborhood needs. The long-run result of this policy should be a variety of recreation opportunities and open space land uses."

Potable water supply was another problem addressed by Bardin in a 9-page opinion. The Toms River Water Company, which would supply water to the project, now has insufficient storage capacity and must certify that the additional capacity will be provided in accordance with DEP regulations.

Bardin cautioned about the adverse consequences of urban sprawl and said that this area of Ocean County is one of the nation's fastest-growing in the last decade.

Another major condition of the Bardin opinion requires the developer to monitor carbon monoxide in the vicinity of the site over a continuous 14-day period and certify to DEP that air quality standards would not be exceeded. □

William A. Munroe

CHIEF OF AIR POLLUTION CONTROL RETIRES

William A. Munroe, 60, of New Brunswick, chief of DEP's Bureau of Air Pollution Control, retired July 1 after more than 27 years of state service, nearly all of which involved some aspect of air pollution control.

Munroe, who joined the state Department of Health in 1946 as an industrial hygiene engineer, specialized in air pollution control. He participated in the development of New Jersey's Air Pollution Control Act of 1954—the first statewide air pollution control legislation to be enacted in the United States. Munroe became the first administrator of the act and subsequently, in December 1958, was named chief of the Air Sanitation Program, forerunner of the current bureau. In February 1967, the air sanitation program was placed in the newly created Division of Clean Air and Water in the state Department of Health. When the Department of Environmental Protection was created by law on April 22, 1970, the air program became a bureau in the new department's Division of Environmental Quality, Munroe continuing as chief.

Munroe played a principal part in development and enforcement of the state's air pollution control code—15 chapters of which were in effect at the time of his retirement.

Herbert I. Wortreich, 52, of West Caldwell, was named acting chief, Bureau of Air Pollution control. Wortreich, who has been with the state clean air program for 16 years, was assistant chief of the bureau for the past year and before that was supervisor of all field enforcement and technical services. □

COASTAL ZONE INVENTORY AIDED BY FEDERAL FUNDS

Environmental Protection Commissioner David J. Bardin has invited full public participation in the planning program for the state's coastal area. As a first step he is soliciting items to be included in the inventory of the state's coastal area resources and facilities, which is the beginning of the planning process.

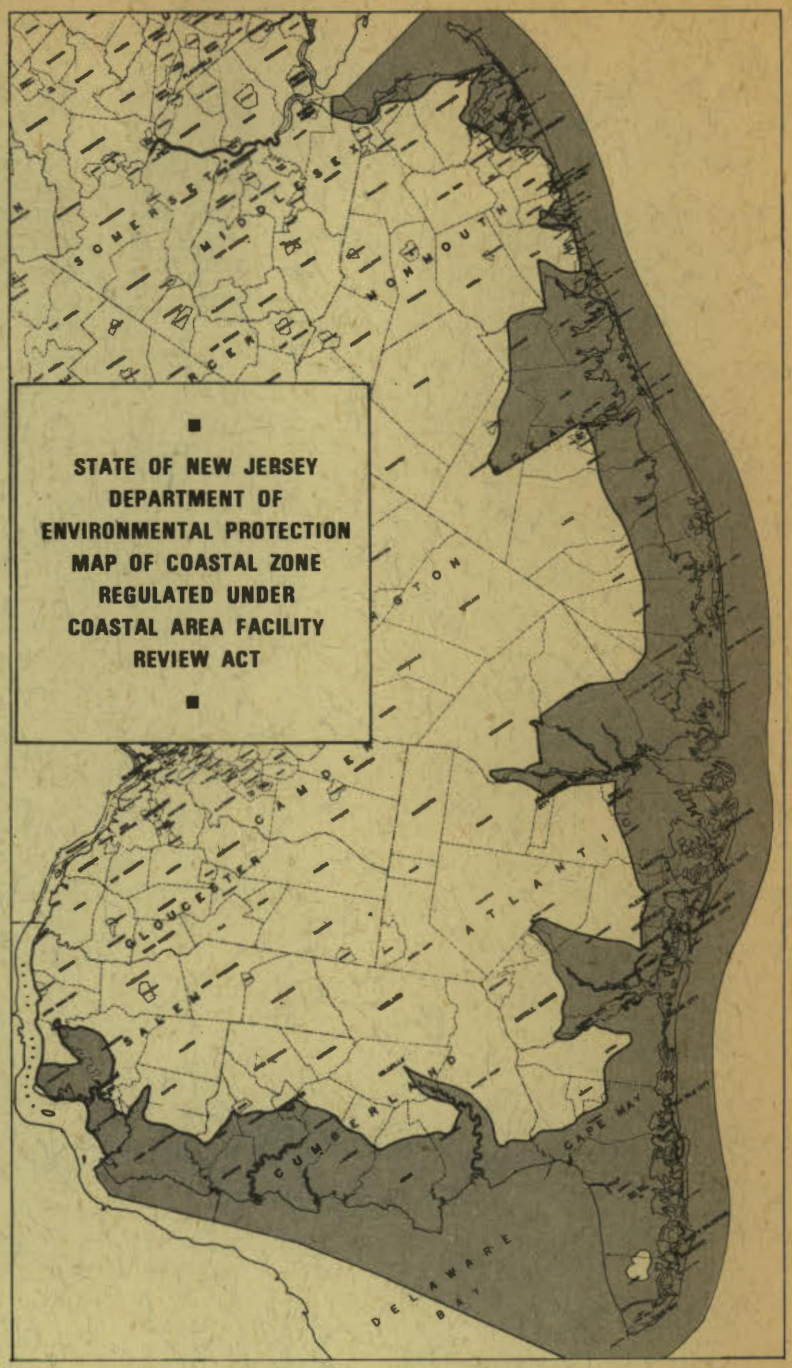
The department is developing the coastal zone management program as required by the Coastal Area Facilities Review Act passed last June. The planning will be financed largely by federal grants. An initial $275,000 grant from the National Oceanic and Atmospheric Administrator has been received for the first year of the three-year planning program.

The department will have the assistance of many specialists and experts in assembling the coastal area inventory. Nevertheless, Commissioner Bardin stressed the importance of public participation by both individuals and groups who have something to contribute.

"A plan for the use of the coastal area will only be as good as the public participation in its preparation," said Bardin.

The overall goal of the program is to plan, regulate and control land and water uses of coastal area resources so as to enhance the environment, prevent further degradation, and at the same time achieve maximum utilization of these resources by present and future generations.

Deputy DEP Commissioner Thomas V. Seessel explained that the inventory will include five basic parameters: natural resources; current land use; mean high water line; wetlands delineation; identification of all agencies with coastal zone responsibilities, and the extent of those responsibilities.



Additional elements of the first-year program are: development of a monitoring system to detect natural and man-made changes within the coastal zone; development of a land use-resource impact model to determine land use capability; development of socio-economic factors needed for management program formulation and implementation; also investigation of computerized information storage, retrieval and analysis systems to aid in utilizing data in the management decision process. Map shows the area regulated under the Coastal Area Facility Review Act. □

News Capsules

DEP RECREATION GRANTS: SUMMER FUN FOR YOUTH

More than 260,000 disadvantaged youngsters from all over New Jersey were given the opportunity to enjoy a variety of recreational and cultural outings this summer through the DEP administered Youth Conservation and Recreation Program. The department approved $525,000 in direct grants to 70 youth-serving agencies throughout the state for this purpose. The money for the program has been provided each year (the program began in 1968) by the state legislature.

The legislature this year appropriated $600,000 for the program. The $75,000 balance of this year's funds were used by DEP to initiate a pilot project, the Youth Conservation Corps Camp at Stokes State Forest. □

STUDENT ASSIGNMENTS: WATER POLLUTION CONTROL

Ninety-three college students worked on a summer-long program to help clean up the waters of New Jersey. The students, all New Jersey residents, participated in a summer intern program conducted by DEP's Division of Water Resources. Most of the interns were assigned to the Bureau of Water Pollution Control but some worked on other water-related projects.

The students came from various counties and their duties took them to most sections of the state. They performed water sampling and monitoring activities, and conducted surveys of where polluting materials entered streams. The interns also carried out de-snagging operations and debris removal from lakes and waterways. □

WATER RESOURCES MOVES

DEP's Division of Water Resources is now housed in offices at 1474 Prospect Street in Trenton. The division includes the following bureaus: Water Pollution Control, Water Resources Planning and Management, Water Facility Operations, Water Control, Potable Water and Geology. Both the mailing address and general information phone number remain the same: Mailing address, P.O. Box 2809, Trenton 08625; and phone: 609-292-2204. □

CANOE FLEET INSPECTS TOCKS ISLAND

Coursing down the free-flowing, scenic Delaware River on a hot August day, a fleet of about 50 canoes and powerboats generated a lot of press coverage.

In the lead canoes were Governor Brendan T. Byrne and Environmental Commissioner David J. Bardin who were conducting a first-hand, 13-mile tour of the proposed Tocks Island Dam project. Representatives of the news media and a contingent of technical experts and environmental groups made up the entourage while others watched from the shoreline.

The canoe trip began below the Wallpack Bend of the Delaware near Depew Island and proceeded southward where vast stretches of the picturesque valley would be flooded under 30 feet of water if the Tocks Dam is built. It would create a 37-mile-long reservoir reaching northward to Port Jervis, New York; its water surface, approximately 12,425 acres. Farther along the river, at the southern tip of Tocks Island, a guide pointed to a hillside where the top of the dam would reach — 160 feet above the river.

Initially proposed more than a decade ago by the Army Corps of Engineers, the Tocks reservoir would be used for recreation, water and power supply and flood control. But serious questions have been raised about the project by environmentalists, local residents, the Byrne administration and other groups.

At Tocks Island, Governor Byrne held a news conference in which he stressed the importance of the complete environmental and economic assessment of the proposed Tocks project now being carried out by Commissioner Bardin.

"This trip served to reinforce my belief that this area shouldn't be destroyed unless there is a compelling reason," said the governor. He has opposed construction of the dam until the full impact of the project has been determined. □

AUTO EMISSIONS HOTLINE

A special hotline has been established by the department to assist motorists whose autos have been rejected for exhaust pollution.

By calling 609-292-6715, motorists can obtain the names and addresses of garages in their areas which have state-approved exhaust testing equipment. DEP has a listing of over 2,000 such garages which is continually updated. (The state in no way endorses products or services but offers the list as a convenience.)

The hotline service is available 8:45 a.m. to 4:45 p.m. Monday through Friday.

DEP also reminds motorists that if their cars failed only the emissions test, the vehicles may be reinspected without a wait in line by going directly to the exit end of the inspection lane. □

NEW SEWERAGE PROJECTS

(continued from page 16A)

The projects forwarded to EPA are: Ocean County Northern System; Long Beach Interceptor; Ocean County Southern System; Wayne Township Treatment Plant; Southern and Western Monmouth Systems; and the interceptor line for the Rockaway Valley System. EPA has thus far approved three of these involving a total cost of $83 million: the two Ocean County projects, and the Western Monmouth project. Federal approval is awaited for the others. □

DEP PROJECTS

(Continued from page 16A)

an estimated 13,350 new jobs would be generated on a long term basis to operate the completed facilities. In total, combining the short (construction phase) and long term (operating phase) employment impact, the Department of Labor and Industry estimates that a total of approximately 30,000 new jobs for New Jerseyans will result as a direct input of the $400 million into the state's economy. □

OIL SPILL — CALL . . .

(continued from page 16A)

The four stockpile locations are: Nacote Creek Fisheries laboratories, Route 9, Atlantic County; New Jersey Marine Police Station, Ocean Avenue, Monmouth Beach; New Jersey Marine Police Station at Lake Hoptacong's eastern shore; and the Operations Building for DEP's Water Facility Operations at Spruce Run Reservoir, Clinton.

Marine Police personnel are available to assist in oil spill emergencies and volunteer fire companies often pitch in to help clean up spills. Reports of spills should be telephoned to the department at 609-292-5560 during regular business hours 8:45 a.m. to 4:45 p.m., Monday through Friday, or to the DEP Hotline 609-292-7172 at any time, day or night. □

FOR INFORMATION WRITE TO NJO FEATURES, BOX 1809 TRENTON, N.J. 08625

Dale Gaskill, NRA Staff, conducts workshop.

Hunter Safety Workshop at Glassboro State College.

hunter safety

INSTRUCTORS WORKSHOP

By Bill Nevins and George Aber

Photos supplied by Authors

For the first time in approximately twenty years the New Jersey Division of Fish, Game and Shellfisheries has conducted a State-wide Hunter Safety and Archery Safety Instructor's Workshop. The program was put together by the Hunter Safety Coordinators and the National Rifle Association of America.

To minimize travel time, workshops were conducted at four separate locations throughout the state, utilizing facilities obtained through the cooperation of the Conservation Officers and Hunter Safety Instructors.

Dale Gaskill and Don Ide, National Rifle Association Staff personnel, provided the instruction, which covered diverse subjects related to the New Jersey Hunter Safety and Education Program. The new instructor's guide and student manual materials were reviewed, and the two instructor training films shown. All were well received by the instructor group. One outstanding film, entitled "Before You Hunt", which deals primarily with hunting ethics, will be made available for public viewing in the near future.

Other aspects of the Workshop were rather basic as this type of program was geared to introduce the more recently appointed instructors to hunter safety procedures. However, we feel sure that even the "old timer" instructors received some very valuable information and are more knowledgeable about the challenge of providing up to date hunter safety and outdoor recreation education to all of New Jersey's hunters.

The instructors in attendance received the new "Instructor's Manual", "The Hunter Safety Instructor's Guide" and the newly designed instructor shoulder patch.

Over half of the State's total instructor force—shotgun, rifle and archery—attended the four-hour sessions which totalled about 550 registrations. This response bolsters our confidence in the instructor's interest in the new program and as a result we feel our program will be strengthened.

Plans are in the mill for future instructor workshops which call for an entirely different program. Emphasis will be on teaching techniques and the use of standardized training aids. The teaching staff will consist of the State Coordinators and volunteer State Instructors. The sessions will be about six hours in length and will be confined to groups not larger than fifty instructors per session.

It is hoped that in the future, through our expanded hunter education programs, we will be able to bring to the attention of all of the citizens of the State of New Jersey the important message regarding the hunter's role in conservation, and the importance of wildlife management in our constantly changing state. □

Looking at New York City skyline from within Sawmill Creek Marsh.

Pintails wintering in Sawmill Marsh, garbage in background.

IN SPITE OF IT ALL WILDLIFE PERSISTS IN THE HACKENSACK MEADOWS

by D. J. Smith, *Naturalist,*
Hackensack Meadowlands Development Commission

Discovering the varied life forms of the Hackensack Meadowlands surprises and shocks most people since their own environmental analysis of the Hackensack Meadows is conducted while travelling along the New Jersey Turnpike or one of the many major roadways which crisscross the area.

Photographs supplied by author

Located just six miles west of New York City, and covering thirty-two square miles this area is politically termed the Hackensack Meadowlands. Dividing the area in an eastern and western section is the Hackensack River which originates in Rockland County, New York and empties into Newark Bay. The river is tidally affected from Newark Bay to the Oradell Reservoir Dam in Oradell, New Jersey.

From Kearny and Secaucus in the south to Little Ferry and Ridgefield in the north, lies approximately 6000 acres of open meadowlands. Of this acreage some 3,000 acres are tidally flowed and the rest remain diked and drained by the Bergen and Hudson County Mosquito Commissions.

While driving through this area one cannot avoid noticing the garbage dumps or ever-continuing development. All this tends to overshadow the life cycle this river estuary plays in our environment.

Aerial view of interior of meadows

Sawmill Creek Wildlife Management Area sign viewed from turnpike.

Diked areas may be low in productivity and overgrown with common reed. However, the tidally flowed sections contain an abundance and variety of life that surpise all who venture forth to observe the marshes.

The largest of these tidally flowed areas is the Sawmill Creek Tidal Marsh, which stretches out for approximately 1000 acres on both sides of the New Jersey Turnpike's western spur in the towns of Kearny and Lyndhurst. Here the Division of Fish, Game and Shellfisheries along with the Hackensack Meadowlands Development Commission has taken over, through a permit issued by the State's Natural Resource Council, some 750 acres of salt marsh as a wildlife management area. This area has been claimed by the State as riparian land (all land at or below mean high tide).

Approximately thirty years prior to 1950, Sawmill Creek had been diked and drained by the Bergen and Hudson County Mosquito Commission and was overgrown with the common reed. During the autumn of 1950 a severe hurricane washed out the dikes and tide gates and allowed the area to be flowed by the tide and reclaimed by nature as a salt marsh.

The first noticeable change of the reclamation of the salt marsh was the dying off of the common reed, in all but the higher dredge spoil areas. This made way for large mud flats at low tide and shallow bays at high tide. Next on the edges of these areas began to appear salt marsh cord grass and its associated marine animal life.

The life forms of this area are best observed from a boat or canoe at or near low tide. As you enter the creeks, watch closely along the banks and you will notice fiddler crabs feeding on mud algea or in courtship display; never far from their burrows and quick to disappear into them if one should make a sudden move or loud noise. Two species are found here: the larger red-jointed, and the smaller marsh fiddler. Further down near the water line and below it are brackish mud crabs. These mud crabs are a choice diet of the canvasback ducks, which winter in the Sawmill Creek. The most important crab to the local residents is the blue claw, which are abundant, and provide thousands of hours of enjoyment for those people catching them.

Walking along one of the sandy bottom creeks and examining the underside of rocks and other material, one can find acorn barnacles, and conrad's false mussel. Closer examination of the bottom will reveal clam worms and snails.

Checking the higher areas of the creek banks, diamondback terrapins, can be seen in good numbers during May and June.

In the water, killifish are very numerous along with

Young killdeer

Greater yellow legs sandpiper

grass shrimp, carp, American eel, and a lesser number of white perch.

Birds utilizing the marsh have also increased in numbers and species diversity. Irving Black of the Newark Museum did a study from 1961-1969 and published a report in 1970 listing some 207 species for the area. This list has since been lengthened to 230 under the watchful eye of Richard Kane, director of Sherman Audubon Sanctuary, Bernardsville, New Jersey.

As your boat moves through the marsh you will hear the pleasant songs of the long-billed marsh wren and the red-wing blackbird. Standing motionless along the banks waiting to catch a killifish will surely be a least bittern, or a green heron.

Looking across the flats you will see snowy egrets, and perhaps a great blue heron. And no one ever makes a trip into this marsh during the spring and summer without hearing that familiar yuk-yuk-yuk of the Florida gallinule. And if you are very quiet you will see an old mud hen with its big footed clumsy young feeding on algea along the edges of the flats and creeks. A sudden move and the hen will give the alarm call, and the young will quickly hide in the reeds.

The meadows boast a breeding list of birds which includes eight species of waterfowl: mallard, black duck, gadwall, blue-winged teal, green-winged teal, wood duck, ruddy duck and Canada goose.

During the late winter and early spring the area is a great resting and feeding stop for waterfowl migrating north. Pintails, green-winged teal, widgeon and black ducks being the most common. Wintering birds of prey include the rough-legged hawk, red-tailed hawk, American kestrel, marsh hawk and the short eared owl; the latter can number 20 to 30 in a flock.

From mid-August to early November the spectacular shore bird migration through this area can be seen. Local as well as distant bird-watching groups now journey into the meadowlands past the garbage dumps and out to the edges of the marsh to observe many species of shorebirds. Such sights as a flock of 50 to 100 golden plover, although unusual in this day and age, can still be seen in the meadows along with black-bellied plover and stilt sandpipers just to mention a few.

Mammals found in the meadowlands include fox, both gray and red, striped skunk, opossum, long-tailed weasal, raccoon, meadow vole, norway rat, cottontail rabbit, and the muskrat. Some 25 muskrat trappers accounted for over 14,000 muskrats during the 1973 to 1974 trapping season, throughout this entire district.

Game fish have only been recorded on a few occasions. Although a more intensive effort must be made

Blue-winged teal hen with brood.

Florida gallinule day-old chick in nest.

to find out which species other than carp, eel and white perch come to or pass through an abundant food supply, it is felt that the water quality of Newark Bay and the Hackensack River itself must be improved before a sizable game fish population can be maintained. Although the pollution of the river went on for many years unchecked, the tide is finally being turned. The Hackensack Meadowlands Development Commission is working closely with the New Jersey Department of Environmental Protection's Bureau of Water Pollution Control, the Environmental Protection Agency's water pollution section and, in the case of oil spills, with the United States Coast Guard to improve the water quality of the estuary. Hopefully, with the improvement of the water quality, fishing along with the present hunting, crabbing, bird watching, boating and canoeing will continue to be available to the public.

In this area of our state where man's disregard for his environment is so ever-present and overwhelming, life continues to exist. Let us hope that man will keep on demanding that these areas continue to be preserved, not only for their proven scientific importance to our planet, but also for the enjoyment people can mentally derive from them.

I hope in the future there will always be a place for people to sit in a duckblind and watch waterfowl descend to a spread of decoys. A place where, on a morning in May, you can walk afield and watch the blue-winged teal in aerial courtship display or a killdeer feign wing injury when you walk too close to its nest.

And maybe next time it will be you or your children who will see, as I have, a pair of whistling swans glide out of the New York City skyline and land in Sawmill Creek, tired from a long journey and so glad to have a place to rest. □

Stilt sandpipers in spring plumage nesting and feeding in meadows on their way to their tundra breeding grounds.

CLAPPER RAIL PROSPECTS IN 1974

Clapper Rail production in 1974 began with one of the largest breeding stocks in recent years. Large numbers of birds returned from their winter sojourn in coastal marshes between Charleston, South Carolina and Jacksonville, Florida. Breeders arrived the first week in April and by the first week in June, large numbers of nests had been made and clutches started. Unfortunately, two storms during the middle of June arrived just when many chicks were hatching or had just hatched, and it is feared that many were lost. Clappers are determined breeders, fortunately, and in recent years many birds have successfully produced two broods. Those which lost clutches of eggs usually renested, so that large numbers of young rails are usually produced each year. This year appears to be a fairly good year, unless the birds are forced to suffer another storm during August. At present, this year's prospects for the clapper rail hunter appear to be excellent, with a 70-day season and a 10-bird daily bag.

☆☆☆

1974 CONTROLLED HUNTING PROGRAM

The Division will expand the controlled hunting program to include five wildlife management areas in 1974. The wildlife management areas selected for limited hunter density are the 3,000-acre Black River area in Morris County, the 3,800-acre Assunpink area in Monmouth County, the 750-acre Port Republic area in Atlantic County, the 900-acre Clinton area in Hunterdon County and the 1,200-acre Whittingham area in Sussex County.

Hunter numbers will be controlled on the following five Saturdays and two week days on the Black River, Assunpink and Port Republic areas; November 9, 16, 23, 28, 29, 30 and December 7, 1974. Hunter numbers will be controlled on November 16, 23, 28, 29, 30 and December 7, 1974 on the Clinton and Whittingham areas. Registration will begin at 5 A.M. All hunters must check out by 12 noon. Registration is not required after 12 noon.

Area hunter quotas are as follows: Black River—400; Assunpink—475; Port Republic—100; Clinton—200; and Whittingham—250. Hunters will be admitted on a first come-first served basis. No reservations will be accepted and hunters must register in person.

Each registrant in possession of a current hunting license will be issued an arm band and each car a windshield tag. Anyone found hunting without proper registration on these areas on the dates specified will be prosecuted.

Photos supplied by Author

Silt generated by upstream development activities are deposited well downstream of the source. In this instance hundreds of tons of eroded materials moved over a mile downstream blanketing aquatic life in its wake and impairing navigation.

what MUDDIES our waters

By D. J. Jacangelo,
Senior Fisheries Biologist
Bureau of Fisheries Pollution Unit

What is silt? One dictionary defines it as follows: fine sand, earthy matter or the like carried by moving or running water and deposited as sediment. It is this "earthy matter" that makes water muddy and is sometimes called siltation.

And siltation is the greatest pollution threat to the conservation of our water resouces — whether they be streams, rivers, lakes, or reservoirs.

As can be well imagined, the phenomenon of silt transport by water is as old as the water itself. Siltation does occur naturally and its occurrence is dependent upon various factors such as topology, geological characteristics of the soil strata, vegetation, rainfall rate, and other climatic conditions. But the current concern with siltation reflects our recognition of the fact that the activities of man have been accelerating siltation at a rate which closely parallels his developmental practices. While background data is unavailable on the silt load in streams near dense population centers prior to development, monitoring over the past 20 or 30 years has indicated that in general, as the population density in a given area increases (along with commensurate increases in the construction of roads, buildings, etc.) there is a parallel increase in the amount of silt carried by the drainage coursing through such areas. This, despite differences in the various regions of the state, is exemplified in the following table:

URBANIZATION CHARACTER (OF THE LAND)	LOCALE	ANNUAL SUSPENDED-SEDIMENT YIELD (TONS/SQ. MILE)
Undeveloped	Pine Barrens	10-40
Moderately heavy (Development)	Delaware River land slopes (except vicinity of Philadelphia)	25-100
Dense Development	Philadelphia area	500 (estimated — in some streams)
Forested & relatively undeveloped	Northwest	25-100 (estimated)
Highly Developed	Northeast	3-5 times greater than Northwest Above
Saturated	Trenton vicinity & urban area adjacent to New York City	Several thousand (estimated)

Predevelopment deforestation—drainage from construction site (light area) caused tons of silt to enter a nearby stream (top center).

Eroded gullies—some up to 40 feet deep, resulted after this development site was stripped of its natural vegetative cover and later abandoned.

The magnitude of the siltation problem is best illustrated by the fact that the damage caused annually by silt deposition in the waters of this country alone, is estimated at more than half a billion dollars. And further, it has been estimated that the erosion from acreage undergoing development (for—highways, houses, or shopping centers)is about 10 times greater than that from land in cultivated row crops, 200 times greater than on land in pasture, and 2,000 times greater than on land in timber.

Interestingly, the siltation aspects of developmental practices might only be a surface manifestation of a problem which runs much deeper. For example, based upon recent investigations reported in an experimental forest in New England, it has been brought to light that the destruction of vegetative cover in a given area, which is not an uncommon pre-development practice, results in a great loss of nutrients from the affected area or ecosystem. Evidently, the greater quantities of water which are able to pass through a vegetationless system tends to readily purge nutrients from the ground. In fact, the data collected in the course of this experiment indicated that the deforestation resulted in fundamental changes in the nitrification process which ultimately led to accelerated enrichment (or eutrophication) of the stream in the deforested watershed.

Of extreme importance is the recognition of the effects of siltation upon fish and other aquatic forms. Generally, abnormal turbidity or muddiness induced by inorganic silting materials (e.g.—clay) are considered detrimental to fish. However, the level at which the direct harmful effects of siltation to fish will be realized is not clear in all cases. At any rate, it is accepted that turbidities of 3,000 milligrams per liter are considered dangerous to fish if exposure continues over a period of 10 days. As muddiness increases, the duration of exposure necessary to induce fish distress is lessened. Thus, where turbidity approaches the 20,000 milligram per liter level fish distress becomes readily apparent, while levels between 50,000 and 200,000 milligrams per liter are considered fatal.

Post-mortem inspection of fish exposed to lethal turbidity

Stream engulfed—rain washed sand from a nearby excavation site severely restricted the flow in this stream, changing its depth from nearly 4 feet to less than six inches.

levels reveal an abnormal build-up of soil in the gill area. Considering that the soil particles are an abrasive to the delicate gill membranes with which a fish "breathes", it is not unlikely that some damage to fish gills result from any level of siltation. The normal defensive reaction built into the physiology of a fish, would tend to protect the damaged or irritated gill surface through the deposit of mucus, etc. Unfortunately, however, in a high level turbidity situation, the abrasive action of the soil particles can simply overwhelm the fish's defensive mechanism which, in turn, seriously impairs its breathing efficiency. The net effect of such impairment results in the distress and possibly the death of the fish.

With respect to the indirect effects of siltation upon fish, considerably more information is available. For example, it is recognized that silt can obliterate nesting habitat and destroy fish eggs. Similarly, it has been shown that aquatic invertebrates and plant photosynthetic processes, upon which fish populations are ultimately dependent, are much more susceptible to siltation and associated turbidity than are adult fish. In this respect, it is not unusual to find reports indicating that a reduction in numbers of bottom organisms is greatest in silted areas. Similarly, inasmuch as sediment (and associated muddiness) is believed to destroy algae by various actions, none the least of which is shutting off the light needed by algae for photosynthesis, it is not unlikely that silt can drastically interfere with the basic food chain in the aquatic ecosystem.

This fact is demonstrated for warmwater fish populations in an experiment involving some 39 farm ponds conducted by Buck (1956). In this experiment, the ponds were classified into three categories based upon turbidity as follows:

Clear ponds—turbidity less than 25 ppm.
Intermediate ponds—turbidity from 25 to 100 ppm.
Muddy ponds—turbidity greater than 100 ppm.

The fish populations of these ponds were removed and the ponds then were restocked with either largemouth bass and bluegills or largemouth bass and redear sunfish. Two seasons after this restocking, the fish populations in the pond were again evaluated and the average total weight of all fish produced in the ponds within the three categories determined. If was found, that the weight of fish produced in clear ponds was approximately 1.7 times greater than that of intermediate ponds and some 5.5 times greater than that recorded for muddy ponds. Similarly, in this same experiment, average net plankton volumes in surface water were also evaluated. In clear ponds, the average volume was 8 times greater than in intermediate ponds and 12.8 times greater than in muddy ponds.

A great degree of concern has arisen in the wake of our national trend toward environmental conservation and that, within the framework of this trend, siltation has been recognized as the greater single pollutant of our water system. Specifically, having recognized that a substantial amount of the siltation load introduced into a water course reflects, in a large measure, man's developmental activities in the adjoining land area, it is suggested that increased demands by our growing population with its present life style will ultimately result in more development which will be paralleled by increasing silt loads in our water courses. The predicted doubling of our population in the next 50 years, likewise suggests that the hazards of erosion and resulting sedimentation removal costs will also be on the increase unless effective measures for erosion control are widely adopted and enforced.

The problem of siltation in New Jersey is of particular import because of our high degree of industrialization and density of population. Expectedly, the growing needs of our population will be reflected in even greater development demands. Fortunately, this siltation problem is the object of considerable interest in our state and strides are being made to resolve it. For example, Soil Conservation Districts are providing assistance to municipalities through the issuance of a model ordinance and erosion prevention guidelines. Similarly, Senate Bill No. 806, Soil Erosion and Sediment Control Act, would require the submitting or erosion and sediment control plans before approval of construction.

Perhaps in the light of recent awareness, we can now appreciate the words of W. C. Lowdermilk, formerly Assistant Chief, Soil Conservation Service, who in 1939 broadcast what has been called the "Eleventh Commandment":

"Thou shalt inherit the Holy Earth as a faithful steward, conserving its resources and productivity from generation to generation. Thou shalt safeguard thy fields from soil erosion, thy living waters from drying up, thy forests from desolation, and protect thy hills from overgrazing by thy herds, that thy descendents may have abundance forever. If any shall fail in this stewardship of the land, thy fruitful fields shall become sterile stony ground and wasting gullies, and thy descendants shall decrease and live in poverty or perish from off the face of the earth." Amen. □

OSPREY EGG TRANSPLANT PROGRAM A SUCCESS

By

Pete McLain, *Project Leader*
and Teddy Schubert, *Conservation Officer*
Endangered and Nongame Project

← *During April, helicopter surveillance was made of the active osprey nests on Barnegat Bay through the courtesy of the Ocean County Mosquito Commission. Five osprey nests were located and on May 2, biologists with the Nongame Section flew to Maryland and brought back 16 Maryland eggs which were transplanted in the five active New Jersey nests. Pete McLain holding up two young ospreys.*

Ospreys may have a new lease on life along the Jersey shore due to the work of the New Jersey Division of Fish, Game and Shellfisheries Endangered and Nongame Species Project. The osprey, locally called "fish-hawk," has shown a marked decline during the past ten years and been declared an Endangered Species in New Jersey. At Island Beach State Park in Ocean County, where six years ago a total of 12 osprey nests were counted, only one was present in 1974. The same is true all along the north and central Jersey coast where presently only a remnant of nesting ospreys remain. At Sandy Hook Gateway National Recreation Area, only three young were produced in five nests in 1974.

The cause of the decline of the Jersey osprey is thought to be the heavy use of pesticides for mosquito control in the 1950's and early 1960's. The osprey, being at the top of the food chain and feeding extensively on fish which had accumulated DDT and other pesticides in their bodies, absorbed enough poison to

Day-old ospreys. A total of 12 of the 16 Maryland eggs transplanted hatched in New Jersey nests.

One of the four Maryland hatched ospreys ready to leave the nest. All young ospreys were banded with Fish and Wildlife Service bands and color bands for later identification.

A "cherry picker" supplied by the New Jersey Central Power and Light Company was used to transplant the osprey eggs into the only nest at Island Beach State Park.

Photos supplied by authors

Jim Collis of WNBC Television, New York, making one of the two nationally televised television programs of the New Jersey Osprey Egg Transplant.

render them infertile. As a result the ospreys produced thin-shelled eggs which would not stand incubation.

The New Jersey Endangered and Nongame Species Project became operational in January, 1974, as a result of Assembly Bill A-2151 which made $100,000 available for endangered and nongame projects management. One of the first jobs was an April aerial inventory of the osprey population from Toms River to Atlantic City.

The survey showed only five active nests where ten years ago there had been over fifty. To try and combat the infertile eggs problem, the biologists on the Endangered Species Project contacted Administrator Ralph Bitely of the Maryland Department of Natural Resources. Then, working with Bud Halla of the Maryland Nongame Project, our biologists located five osprey nests in the Chesapeake Bay near Crisfield.

After all local arrangements were finalized, the New Jersey biologists flew to Maryland, removed 16 eggs from the Maryland nests, returned them to Barnegat Bay and transplanted them into five active Jersey nests. The eggs that were replaced in the five New Jersey nests were taken to the Edward Roth Quail Farm for incubation in the event that some might be fertile.

Then the five nests were observed bi-weekly by a helicopter supplied by the Ocean County Mosquito Control Commission. The first Maryland osprey eggs hatched on May 22, and by May 30th, a total of 12 of the 16 eggs transplanted from Maryland had hatched. One nest was deserted by the adults when human interference frightened the birds during the late stage of incubation.

During the interval of May 23 to July 10, a total of eight of the young birds died. Two day-old chicks were lost at hatching. Three were lost to the suspected predation of a great horned owl. Three were lost when the adults deserted the nest for unknown reasons when the young birds were half grown. However, by mid-July, a total of four young ospreys had fledged. These birds were banded with standard Fish and Wildlife Service bands and also with green plastic color bands which will enable us to identify the birds at a distance.

Although no young ospreys were produced on Barnegat Bay in 1973, this year we fledged four young. Next year, armed with information and experience gained from our Maryland-New Jersey egg transplant, we hope to expand the program to Sandy Hook and farther south along the coast.

It's possible that by catching the remaining osprey nests in New Jersey early enough and by conducting an egg transplant, we may be able to develop a strain of resident ospreys which are free from pesticide residues. Since DDT has not been used on the New Jersey wetlands for the past six years, it may not be a threat to the young ospreys produced from the transplant program. Hopefully, the osprey in New Jersey will gradually start to increase in numbers and eventually be removed from the Endangered Species List. □

Pete McLain, project leader, and Teddy Schubert, a conservation officer on the Endangered and Nongame Project with one of the young ospreys.

from the commissioner

Our magazine is growing . . . a planned growth to meet the environmental challenges confronting our state.

In terms of the magnitude and variety of environmental problems, New Jersey has one foot in the 21st century; it therefore previews the future pollution problems that will beset other areas. The Department of Environmental Protection must grapple with this broad spectrum of interrelated problems, which we feel can best be shared with our public in one departmental publication.

Beginning with this issue, *New Jersey Outdoors* introduces a new feature, the Environmental News, to our readers. This feature is a descendant of the former Environmental Times; although new to our magazine, the "Times" was a respected old friend to a host of New Jersey readers for the past seven years.

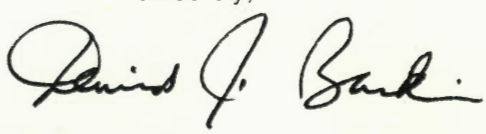
The scarcity and high costs of printing paper, and the higher production costs resulting from the printing of two publications, have prompted us to incorporate the newsletter format of the "Times" into *New Jersey Outdoors* magazine.

We welcome the readers of the "Times" to subscribe to this expanded publication; and to our loyal *New Jersey Outdoors* subscribers, we offer a reward in the form of additional pages of pertinent information about our New Jersey natural resources; what we are doing about conserving them and making them available to all of us.

We need your support and counsel to help us carry out our editorial credo: "This publication is dedicated to the wise management and conservation of our natural resources and to foster a greater appreciation of the outdoors."

Please invite your friends and acquaintances to become *New Jersey Outdoors* subscribers by completing and mailing the attached subscription notices so that we may make this a self-sustaining publication serving the great public which cares about the conservation of our resources.

Sincerely,



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Department of Environmental Protection

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urban fishing

Each year the Essex County Park Commission conducts a fishing program in three County parks. Through this program thousands of urban children have their first exposure to the art of fishing.

This experience takes the form of the traditional cane pole type fishing; however at two of the parks, Verona and Orange, the young angler is exposed to spin casting equipment on his second or third visit.

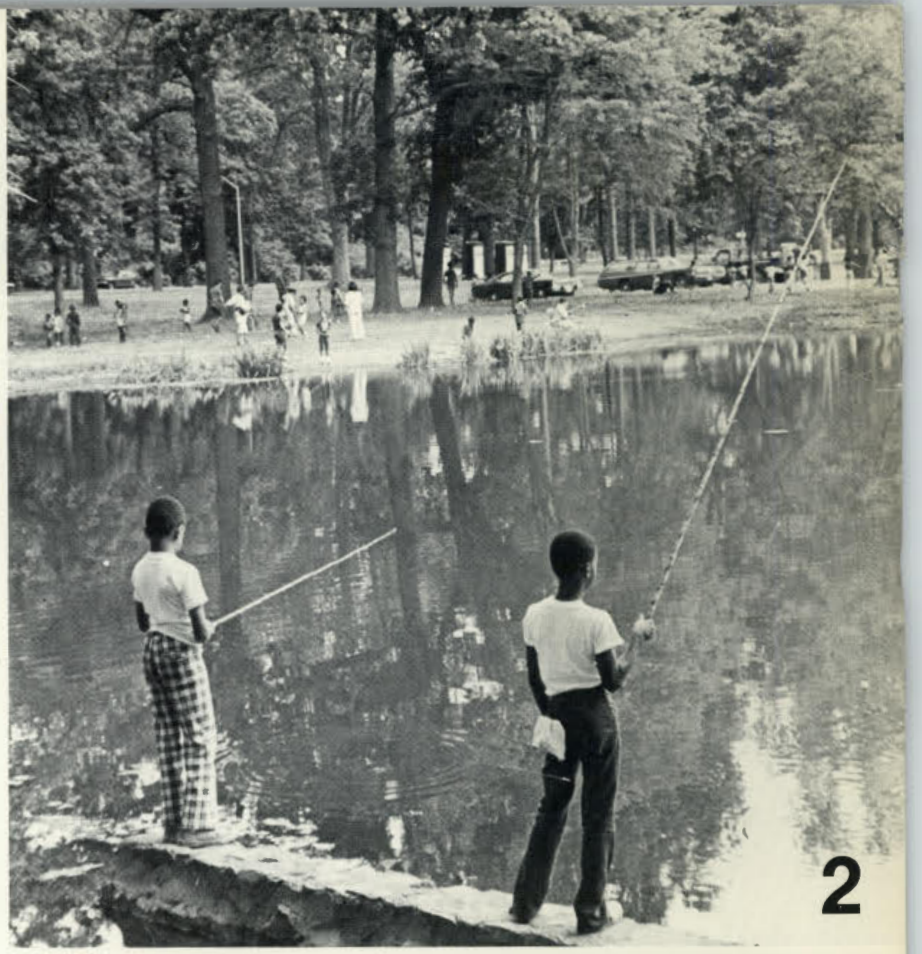
The Division of Fish, Game and Shellfisheries supplies assistance to the program in the form of technical advice on the condition of the fish population in the ponds, and also stocks panfish of catchable size where needed. In addition, the Division's Information and Education Unit conducts programs on wildlife ecology and fisheries biology.

1. Bob McDowell conducts a "what is it", "can I touch it", and hands on session after the pond is seined. The large quantity of young pumpkin seed sunfish indicate good reproduction of this species.

2. Urban children soon find out that fishing requires patience.

3. A lesson in fisheries biology includes the seining of the pond. Not only are the children interested but the activity attracts passersby. Bob McDowell and Gary Fillmore bring in the seine to satisfy the curiosity of all the onlookers.

4. Gary Fillmore seines Clarks Pond in Newark's Branchbrook Park as the children anxiously wait to see what is in the net.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