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Outdoors

VOL. 14, NO. 2

DIVISION OF FISH AND GAME

AUGUST, 1963



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Published monthly by the State of New Jersey Division of Fish and Game
in the interest of conservation and restoration of wildlife and
the betterment of hunting and fishing in New Jersey.

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Cover—"BASS FISHING"—*Mercury Outboard Motors*

Summer bass fishing, especially late in the evening, during the dark of night, and in the early hours of morning, can be rewarding.

Vol. 14, No. 2

August, 1963

Publication Office: DIVISION OF FISH AND GAME,
230 West State Street, Trenton 25, New Jersey

Editor: R. Adams

Second class postage paid at Trenton, N. J., and additional mailing office.

Subscription: \$1.00 a year, by check or money order, payable to Division of Fish and Game. Cash is forwarded at sender's risk. No stamps please.

Change of address: Should be reported directly to the Editor. Send both old and new address. The Post Office will not forward copies unless forwarding postage is provided by subscriber. Copies not delivered through failure to send change of address six weeks in advance cannot be replaced.

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A Shocking Story

Fisheries biologists of the Division of Fish and Game in their fisheries management work use electro-fishing gear to shock and capture fish.

By EDGERTON GRANT

"You ought to see how the fish are coming in up at Bear Pond!" Bob Stewart exclaimed. "The water is so clear that you can really watch them."

"The pickerel look just like miniature torpedoes," Seymour Liebovitz agreed. "Our gear is really getting them."

Before rod and reel fishermen get too excited about this unusual action, it should be explained that Bob and Seymour are fisheries biologists experimenting with the use of electro-fishing gear on lakes. Shocking is strictly taboo as an angling technique.

I met Bob and Seymour at the bridge over the River Styx the fol-

. . . Shocking

lowing Thursday evening. Lake shocking is most effective at night when fish are nearer the surface. Night operation also lessens the problem of small boys who persistently wish to row dangerously close to the intriguing equipment. The biologists and their crew had spent the afternoon setting up the equipment and making brief forays to test the conductivity of the water and the effect of various ways of taping the electrodes. After a bite of supper they would return for a real run until one or two A.M.

I had gone out with Bob and Seymour earlier in the summer on another lake. Tonight I wanted to see the improved results they were getting and to further compare lake techniques with those I had seen used on the Big Flat Brook.

One biologist I had talked to stated, "Shocking is the only really new development in fisheries' work since St. Peter cast nets on the Lake of Galilee."

A Common Tool

The technique was first developed in Germany and has become a common tool in stream management in most of the United States. Bob Hayford, Chief of Fisheries Management, made the first experiments in New Jersey about fourteen years ago. The building of a permanent control box and basic equipment by Councilman Harry Kelly led to effective work on

streams and experiments on lakes. Councilman Kelly frequently accompanied biologists on shocking trips.

Stewart briefed me prior to my first trip. Uses of shocking include taking samples to estimate fish populations, capturing fish to tag and examine and selective fishing.

Advantages

For the latter use shocking has several advantages. Particular species can be separated from the fish captured while other fish are released unharmed. For instance, trash fish can be removed from a body of water while desirable species such as trout and bass can be released.

I saw other uses Bob mentioned in actual operation: tagging, together with experimentation, on lakes, and both tagging and sampling on the Flat Brook. Biologist Ken Compton estimates that the sample comprised close to 80% of the fish in the section of stream shocked.

Shocking of streams is far more advanced in practical results than lake work. I journeyed to the Big Flat Brook to see for myself. I came prepared with hip boots, since I had been warned that the only way to see anything was to wade. I was glad to have them on as I thrashed through the dewy woods to catch up with the boat that had already moved upstream before my arrival.

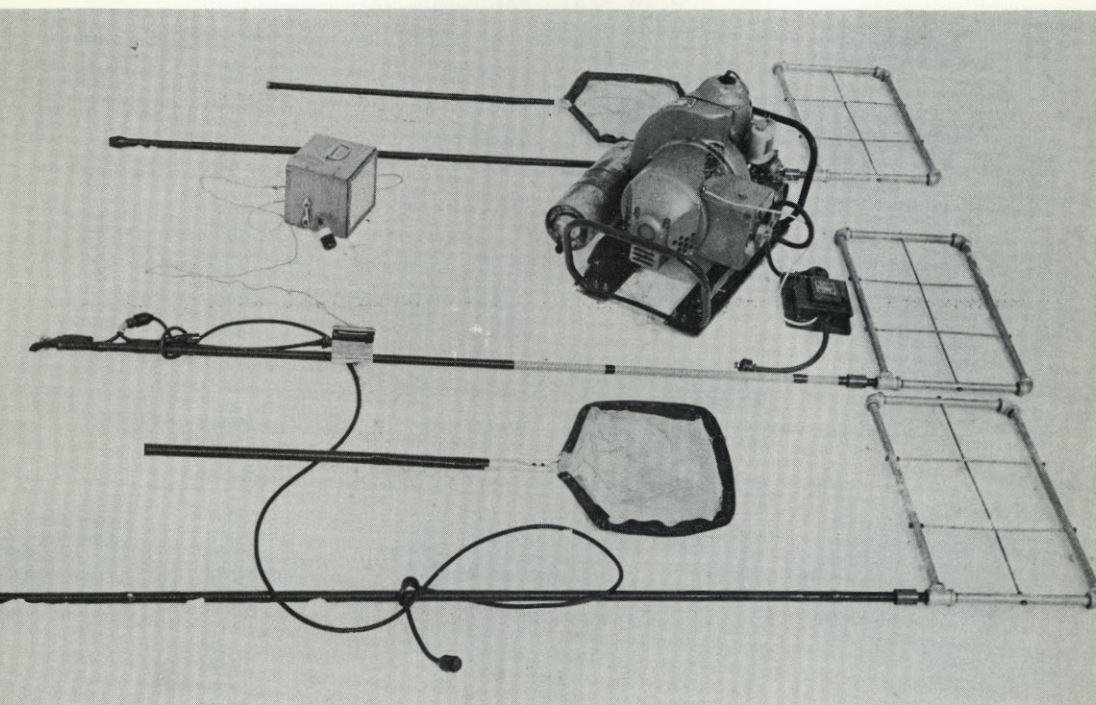
After making my presence known and learning the right way

to hitch up my boots I joined Bruce Pyle and his crew in midstream. All of them wore chest-high waders and rubber gloves. The boat served as conveyance for the generator, control box and other equipment. The problems encountered by the two boat pushers at shallow spots soon made it apparent why no one rode.

In addition to pushing, pulling or prodding the boat and the "live

men each holding an electrode on a long insulated pole. The electrodes are wire grids resembling shallow, rectangular dip nets in appearance. Insulated wires connected them to the control box. Alternating current is used on streams, since it creates the most effective field.

Men with dip nets walked behind the electrodes. The water was so clear that they easily saw the fish



Equipment used by the fish shocking crew includes: control box, generator, lines, electrodes, and nets

box" holding fish for tagging, one of the pushers stood ready to throw the safety switch at a moment's notice. The other helped the netters whenever the boat was moving easily.

Ahead of the boat moved three

which were readily nettable in their stunned condition. If a fish did "wake up" he came to life with a vengeance. Netters also watched to see that the wires did not snag, but this rarely happened.

Since a spare net was available,

. . . Shocking

I tried to help out, keeping a good distance from the electrodes. I learned that netting is an art as a result of spotting a good sized trout. I am tempted to say he was "Out colder than a fish", but it would be truer to describe him as colder than any fish of the day. I made one good swipe and came up with nothing. Fortunately, he was still stunned on the second try, since he turned out to be the biggest trout we took.

No Mishaps

Although no mishaps occurred on this trip, I learned that someone occasionally falls. The use of a light current lessens the chance of a serious accident, and workers are keenly aware that there is danger involved.

Periodically we would stop to count, weigh and measure all the fish. The trout were also tagged,

and scale samples were taken before the fish were returned to the stream.

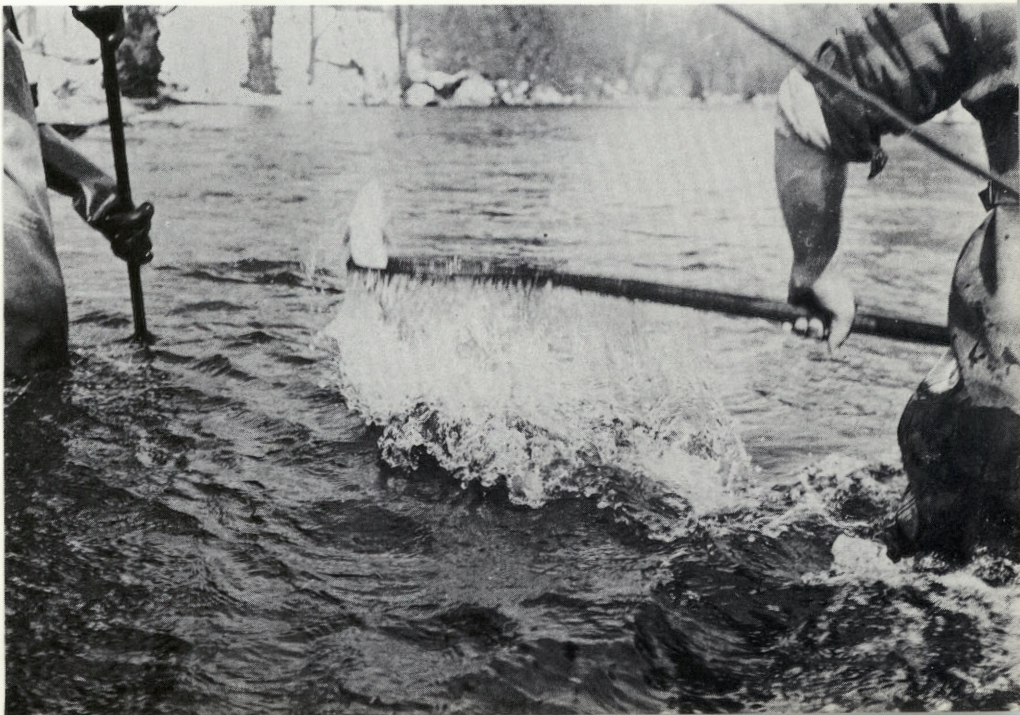
Lake shocking involves very different techniques. It is, if anything, more colorful and, due to the nighttime operation, more hazardous.

The entire operation must be conducted from the boat, driven by an outboard motor. A wooden framework extends from the square bow. Two electrodes shaped like car-radio antennae (in fact they are antennae) dangle from the front of this. Both carry a positive charge, with the boat itself serving as the negative pole. Pulsating direct current draws the fish into the electric field.

Two rubber-gloved netters kneel in the bow. They must be alert not only for fish, but also for rocks and weeds.

The control box is in the center of the boat. Seymour sits by it watching the current and prepared

Netting the stunned fish sometimes calls for quick action



to throw the safety switch. He is trying to produce a shock that will stun fish deeper in the lake. He must do so without increasing the current to a level that would kill fish or endanger workers. Occasionally conductive water or experimentation will blow a fuse, causing Seymour to fumble wildly to make the switch.

A man in the stern runs the motor. He must drive the boat slowly and stand ready to stop or turn on a quick signal from the netters. He dare not stop too suddenly lest netters tumble into the charged water. Generator fumes add to his discomfort.

An Eerie Sight

The boat presented an eerie sight from the rear seat on the first dark night I went out. The netters stood out as black silhouettes, illuminated by the green glow from underwater lights. Seymour's face stood out a ghastly red from two lights on the control box.

Rocks would loom up suddenly, threatening and once smashing light bulbs. When the one bulb broke, all went out, since they are wired in series. This meant shutting off the generator and the control box with its two little lights.

The entire process of raising, and lowering the lights was done by flashlight.

On that first trip I was impressed more by the color of the operation than the results. Bob tagged a number of bass, but it was obvious that there were many more in the lake. The visit to the Flat Brook made me much more convinced of

the effectiveness of shocking, and the reports from Bear Pond intrigued me.

Soon after we got out it became apparent that substantial progress had been made in a couple of months. I was permitted to stand right behind Bob, the one netter. Here I could really see the action of the fish in the clear water, and there was much more action to see. Many feet away partially affected pickerel would thrash to avoid the shock. Others were pulled right into the field. Perch and sunfish just flipped over, but bass and, especially, pickerel really exploded when they realized, too late, that something was wrong. On our first trip around the lake dozens of fish slammed right into the boat. Bob moved the electrodes forward for the next run.

Occasionally I glanced behind and, reassuringly, saw the most dormant sunfish dazedly revive, flip back over and swim away.

The lake was an ideal one because of its lack of rocks. The single netter was an improvement. There was less jerking and elbow knocking, and not a single bass escaped. What would have happened if Bob had wanted to capture pickerel could have been another story.

As we tagged and released the bass afterwards, Bob said that tag returns from earlier trips had been most encouraging. Thus, even as visible progress is being made in still imperfect techniques, the scientists are making good use of this colorful modern tool. #

The Role of Tidal Marshes In Estuarine Production

By EUGENE P. ODUM, University of Georgia

This timely contribution from the University of Georgia Marine Institute should help us all to understand and appreciate more fully our New Jersey tidal marshes

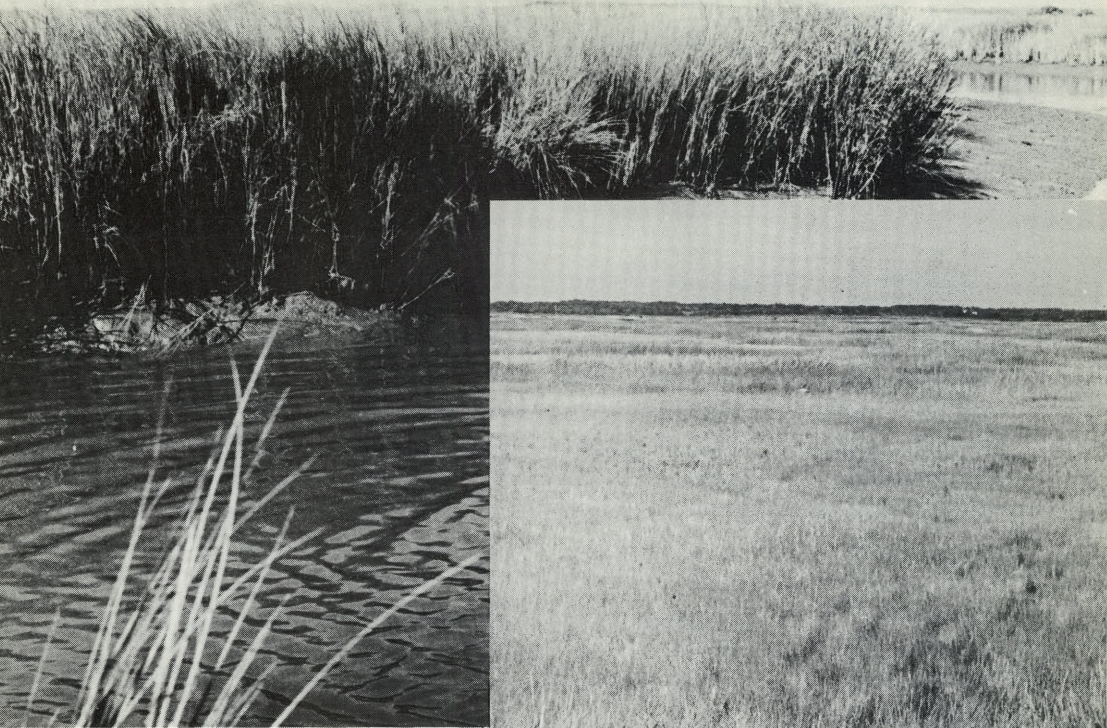
Part II

We now come to a third great reason why estuaries are productive, namely, a year-round crop production. We seem to have here a good example of natural homeostasis which is to say that the system tends to maintain a constant rate in a changing seasonal environment. Thus, not only do the mud algae function and produce at all seasons, but so does marsh grass and phytoplankton. The marsh grass produces at least two crops a year. In contrast, a cotton crop only grows for a few months, with zero growth for many months. The annual production of the marsh, or the estuary as a whole, may be double or triple that of ordinary agriculture simply because it grows twice or three times as long. Even in northern latitudes we suspect production by microflora may occur when land plants are inactive. And remember that the estuary fertilizes itself, plants and harvests several

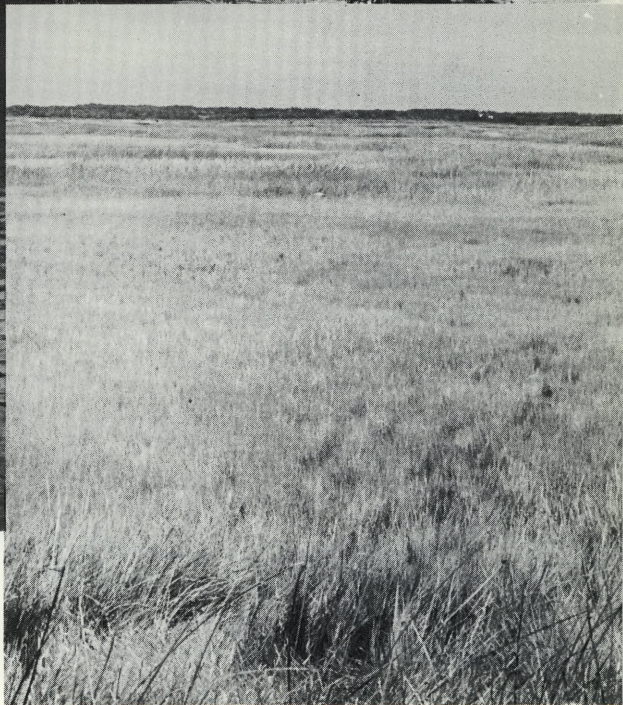
different crops without the human labor that would be needed to produce a multiple crop on land!

Since determining total ecosystem productivity is such an important first step in the understanding of any environment, it would be well to review methods of measurement. The future student in this field must be much better trained in physics, chemistry and radiology than are most of us in the present generation. The possibilities opened by development of radioisotope tracer technics have scarcely been touched on the environmental level, but such technics must be approached with caution by well-trained people. There is no sharp line between the good and the bad in regard to radio-active wastes. In tracer amounts such wastes can be useful in that they provide tools to tell us what goes on.

To close out the discussion I would like to reemphasize two big



*The entire estuary
must be considered
as one unit*



points. As our work at Sapelo has made crystal clear, we must consider the entire estuary—the sounds, creeks, mud and sand flats, the marshes—as *one unit*, regardless of whether it is one or one hundred miles wide. The marshes, for example, clearly produce an excess of organic matter over what is used in the marsh, and this excess is exported into the water where it is used by the rich life there. Another of our former students, Dr. Alfred E. Smalley,

obtained some good data on this point in connection with his doctoral thesis. He found that less than 5 per cent of the net production by *Spartina* marsh grass is consumed “on the stalk” as it were, by insects and other eaters of or grazers on growing grass (Smalley, 1959; Odum and Smalley, 1959). The high salinity and fierce tidal action seems to provide a natural insecticide! Even grass eaten by the salt marsh grasshoppers is not all lost because two-

. . . Tidal Marshes

thirds of what the grasshopper ingests passes through the alimentary canal undigested and becomes part of the detrital export. Who knows but what grasshopper feces may even be included in food of shellfish!

Most of the tremendous production of salt marshes is destined to be used in the form as organic detritus. As grass dies and falls into the water (and this process goes on continually) the abundant microorganisms convert it into particles rich in bacterial and algae

called conservationists and engineers also view these estuarine environments as would a dry land farmer. On land, production and harvest occurs all on the same spot; in tidal estuaries there is a constant transport system which results in the separation of production and utilization in both time and space. By analogy we could think of the marshes, and probably also the mud and sand flats, as the great "wheat fields" which feed the teeming "cities" of fish and other organisms living in the creeks and sounds. The point of all this is that if we decide to

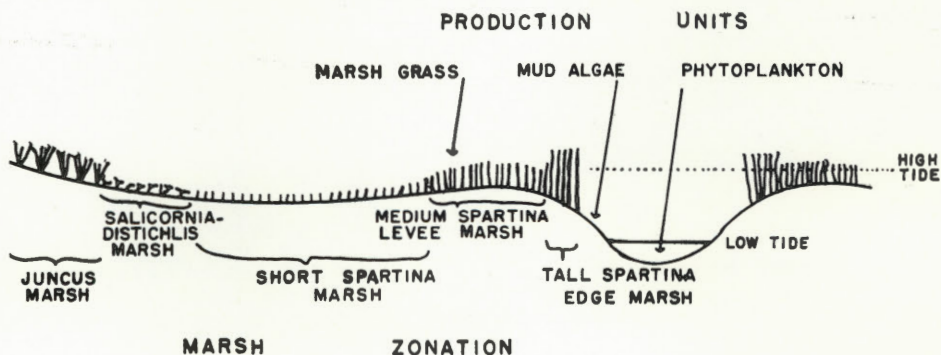


Fig. 1. Marsh fertility is the sum of three different production units

growth and full of proteins, carbohydrates, and vitamins. This organic detritus is then distributed throughout the system.

When the average citizen looks at the vast green marshes of the southeast he is likely to regard them as wastelands because he sees no direct use by man, when, as a matter of fact, he is looking at an important source of sea food!

Unfortunately, too many so-

spend a lot of money to dike off the marshes and make lettuce fields out of them, then we must figure on the loss of much of the energy which supports the sea food. In America I believe we need high quality, protein-rich sea food more than we need more lettuce grown at heavy tax-payer expense! We have plenty of land for land-crops without converting the potentially more useful wetlands.

The best approach is probably to think of the estuarine situation as a gradient. One such gradient is shown in *Figure 1* and another sort of two-dimensional gradient is shown in *Figure 2*. The kind of plants and animals change as one

tions are to be approached with caution. A few years ago a man was awarded a prize for draining a salt marsh and producing a large crop; the next year, as the area continued to dry out, the accumulated sulfates turned into sulfuric

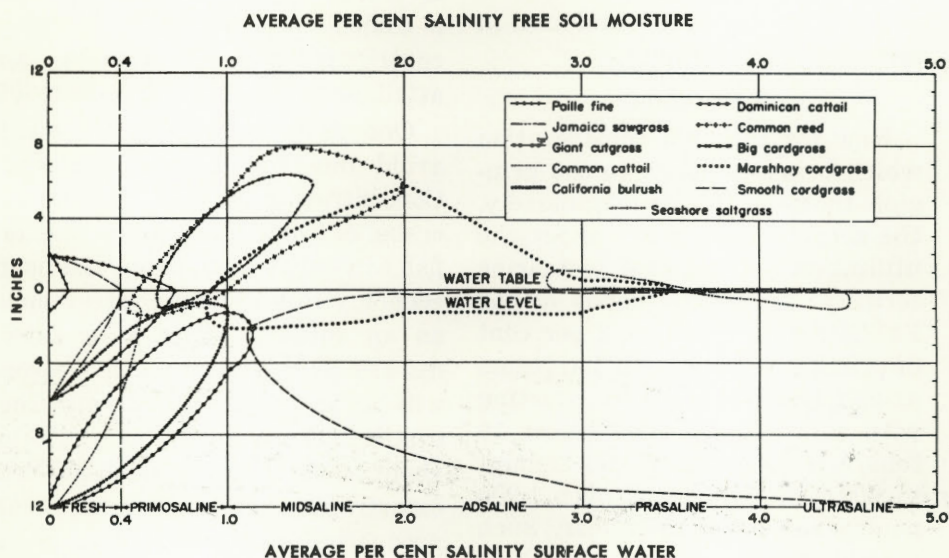


Fig. 2. Marsh Plants—Approximate ranges of species dominance in relation to water and salinity

goes from land or fresh-water to the sea, but the principles of ecology do not change. As already emphasized the entire gradient must be considered as a single or, at most, as two or three major functional units.

As far as management is concerned, drainage and cultivation of land or semi-aquatic crops can be considered at the far "left end" of the chart (*Figure 1*). In the middle of the gradient diking, drainage and large scale modifica-

acid and the area became an absolute desert (this is the "cat clay" situation)! It appears that the early rice culturists in the southeast were lucky in their use of brackish and salt marsh areas because their drainage systems were inefficient! Better mechanical engineering, it turns out, would have produced biological disaster.

Towards the "right end" of our gradients where *Spartina* grasses, marine grasses, mud algae, and phytoplankton are king, it is clear

. . . Tidal Marshes

that utilization of existing productivity is in order; not conversion at great expense to some other unadapted system. The strongly intertidal portion of estuaries should be considered in terms of "marine farming" and not in terms of land farming.

Utilization

Now for the final consideration which brings us back to the principle theme of this article; namely, the need to learn more about the utilization of natural estuarine fertility. In marine ponds of the Phillipines as much as 3 per cent of primary production is harvested as fish (Hickling, 1948). Starting with a primary production of 10 tons/acre/year this would amount to 600 pounds dry, or over 1,200 pounds wet, weight per year. Such a yield-to-man may seem small in comparison with the 10 to 20 per cent conversion of corn to hogs in the most efficient mid-west agriculture. The two, however, are not directly comparable because a lot of fertilizer, machines and human labor are involved in the corn-hog system which are not needed in the estuarine system. Also, harvest in estuaries involves carnivores (flesh eaters) as well as herbivores (plant eaters). At present, of course, on our Atlantic coast we harvest only a very small part of one per cent of primary production. If we obtained 1 or 2 per cent in sea food, that would be excellent.

As already stressed, the problem

is that we do not know enough about how energy flows in the system. Since there are at least three very different primary crops, all interrelated, there follows a large number of different consumer energy flows. Because of this great diversity, getting a large harvest is difficult, yet this very diversity contributes a great stability—an attribute we don't want to destroy!

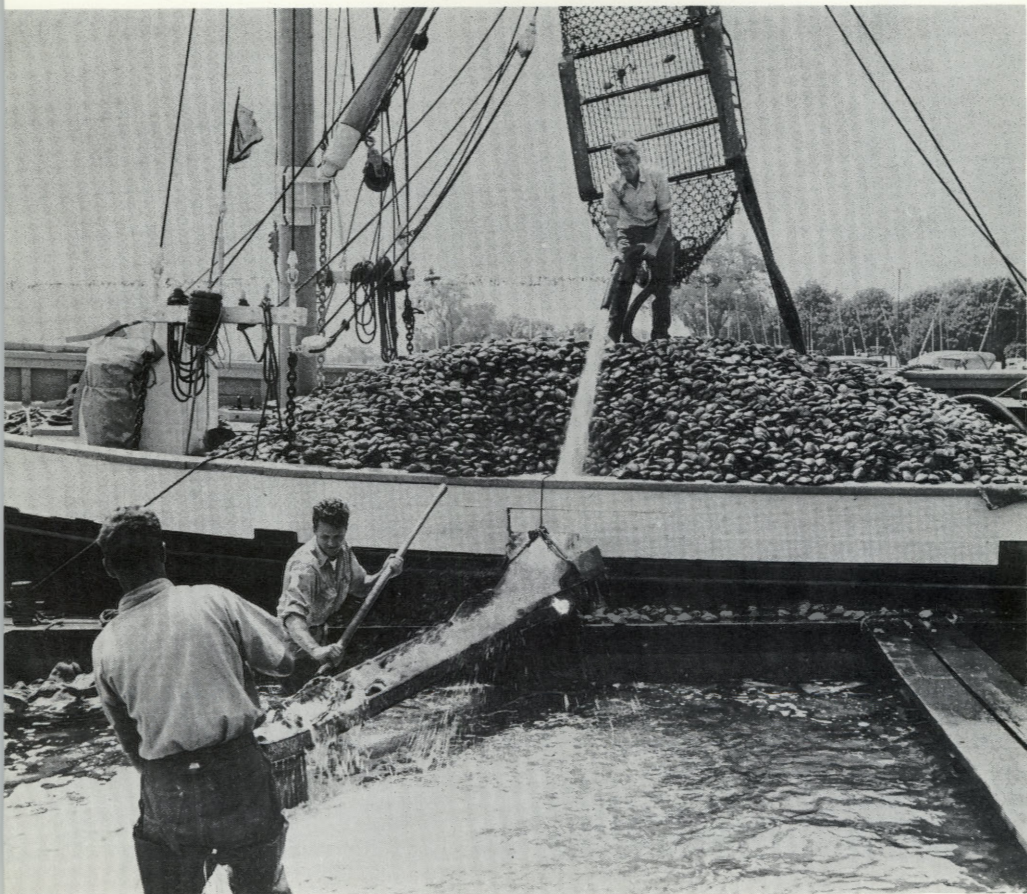
One thing is certain; we must avoid one-crop harvest systems. Concentrating only on oysters, or crabs, or shrimp or one species of fish can only lead to boom and bust economy in a diverse system such as an estuary. Sooner or later disease or an unfavorable season will hit any particular item in the system. There is little man can do about such. However, such species catastrophes rarely affect the *total productivity of the system as a whole*; the accumulated energy simply goes into some other form. I even suspect that excessive pressure of specialized fishing may produce enough stress on a population to "encourage Nature to try another energy path" as it were! In any event we should be prepared with gear, know-how and markets to utilize all possible crops, and we should be prepared to vary the pressure from year to year depending on what crop is abundant.

Two Courses

Clearly, then, two courses are open to us if we desire more from our estuaries; we can try simplifying the food chain so as to channel

more energy into the most readily harvestable products, or we can learn how to harvest what comes naturally. I believe we will need to do a little bit of both; it will be dangerous to push either approach

aries which are not based on biological considerations. In many cases conservationists are not asked to evaluate the consequences until after the change has been made! Changes necessary for



We harvest only a very small portion of primary production

to an extreme. Too great a simplification may destroy the self-fertilizing and transport systems and bring boom and bust; too great a diversity makes harvest difficult.

Nowadays, of course, we are observing a lot of change in estu-

navigation, for example, are not necessarily bad, especially if biological as well as physical aspects can be considered. We need to think more in terms of *biological engineering*. The engineer won't understand us if we talk in terms

. . . Tidal Marshes

of Latin scientific names or purely biological jargon. If we talk in terms of energy flows, calories, im-

for areas having a natural unity is one answer. These could be modelled after the highly successful soil conservation district program with the stipulation that



Estuarine conservation districts are urgently needed

ports and exports, or balance sheets he will not only understand us but he might even consider our suggestions!

Planning Needed

Above all, some sort of unified planning is overdue. "Estuarine conservation districts" established

persons trained in aquatic and wetland ecology be involved on the technical side, and not persons trained only in conventional agriculture. In this way an individual marsh owner could be advised what is best not only for his property but for the region as a whole.

Another possibility, of course, would be to establish a sort of TVA of estuaries.

Summary

To sum up, we have hit upon the following major points: (1) Estuaries are among the most naturally fertile areas of the world because of efficient nutrient exchange, flowing water, accessibility to light and year-round primary production. (2) In such fertile systems the emphasis for both study and management should be on utilization as well as production, and the approach must be functional, not merely descriptive. (3) Coastal laboratories for basic work, preferably tied in with graduate schools, are greatly needed for both training and research. Applied as well as pure research starts from the same basic ecological principles. (4) Because of the great importance of exports and imports and the diversity of production and consumption units, the entire estuary must be considered as a whole. (5) Size of standing crop of small organisms is no indication of function; inconspicuous algae growing on exposed mud and sand areas may fix as much energy on an area basis as phytoplankton intertidal marsh grass. (6) One-crop harvest procedures can only result in boom and bust economy

in naturally diverse systems; increased yield for man can be obtained not so much by attempts to increase primary production as by multiple harvest of whatever develops and/or channeling energy flow into desired components. (7) There is great need to think in terms of biological engineering if we are to cope with proposed man-made alterations which originate from other than biological motives. Establishment of "estuarine conservation districts," in which private and governmental interests co-operate, are urgently needed if the pitfalls of narrow "agronomic" thinking are to be avoided.

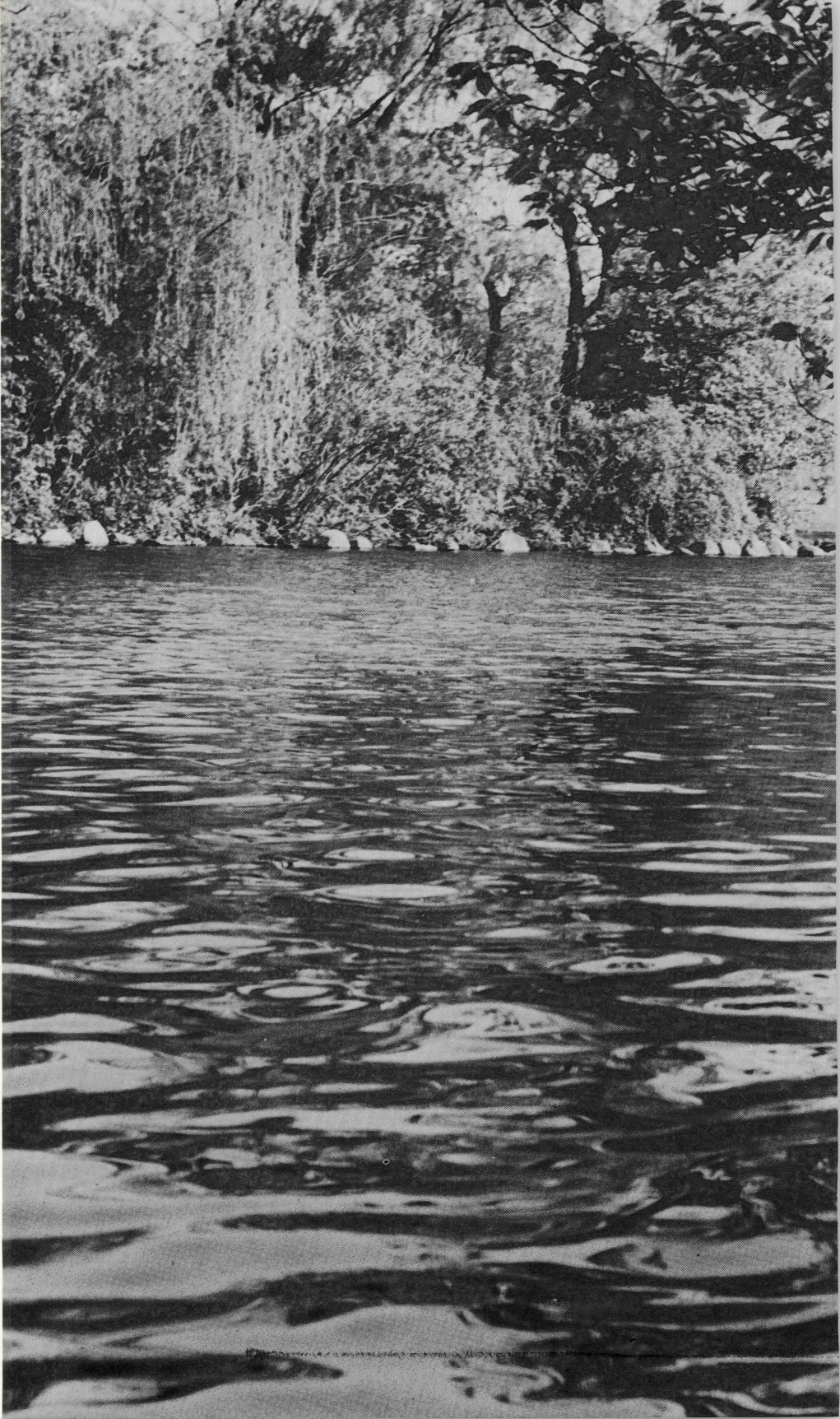
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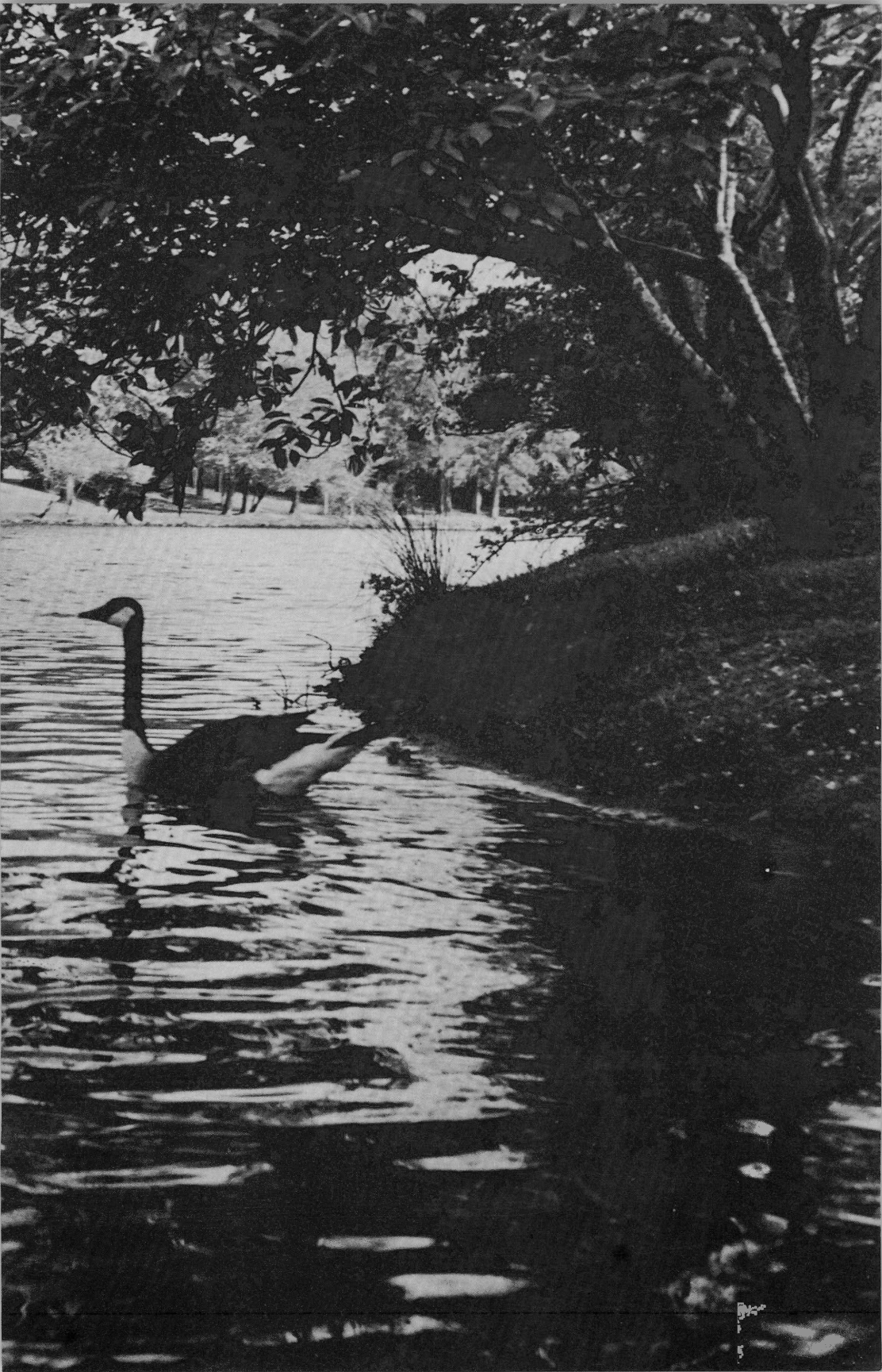
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COOL WATERS

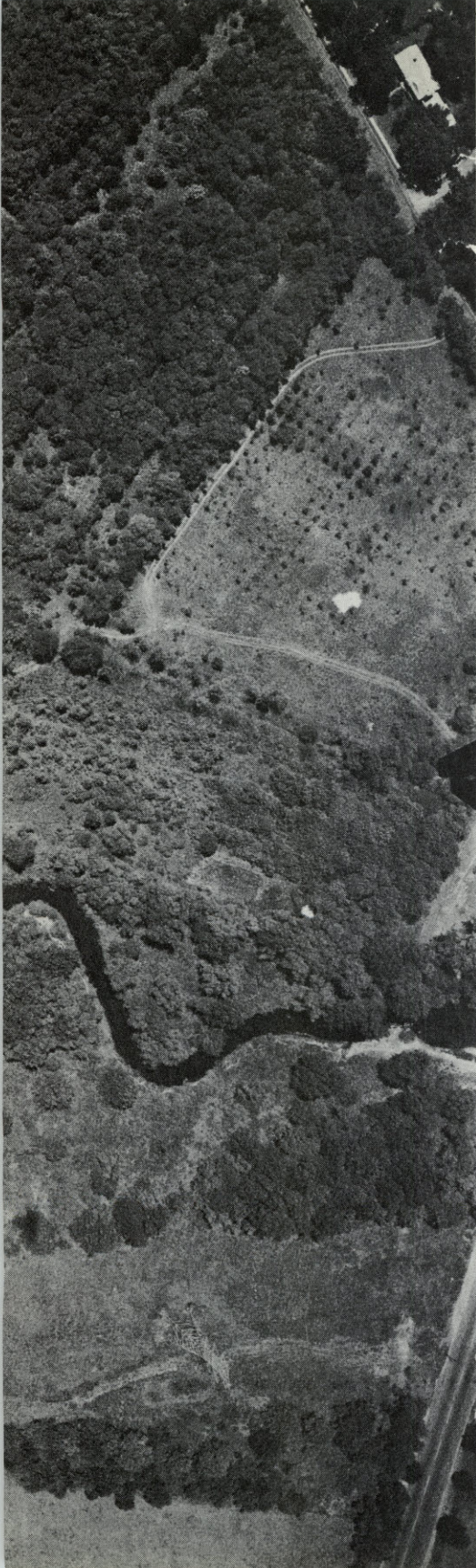
A Canada goose drifts serenely on the rippled surface of the cool waters of Verona Lake in the town of Verona.

Photograph by PAUL SPIGEL







An aerial photograph showing a river winding through a wooded area. A prominent feature is a semi-circular channel, known as an oxbow, that branches off from the main river. The surrounding terrain is densely forested, and a road is visible in the upper right corner.

THE ASSUNPINK

Oxbow

By JAMES L. BARKER

Fishermen in the Trenton area may have a new "fishin' hole" if an idea Fish and Game fisheries biologists got from a farmer's irrigation lagoon pays off. It will be on the Van Nest Refuge, along the Assunpink Creek, just upstream from Old Quaker Bridge road.

The new fishing area was created with the idea of copying something that Mother Nature has been doing for generations. When a stream's course is changed, the old channel is often left as a small pond or oxbow. Under certain conditions these oxbows can provide very good fishing, which of course is the idea behind this scheme.

As illustrated by this aerial photograph, the "off-stream" channel or artificial "oxbow" is cut in the shape of a semi-circle at right angles to the stream bed, with a lagoon attached for good measure. This was accomplished last summer with a drag-line. The channels are about forty feet wide and have a maximum depth of eight feet.

As already mentioned, real oxbows often provide excellent fishing areas. This is because of certain natural occurrences that add up to big fish and plenty of them. To begin with, true oxbows are created when natural forces straighten the curves in a mean-

Photograph by Latham Studio

. . . Oxbow

dering stream. Eventually, the old stream takes up the new and shorter course; the old loop that was once the stream channel is now cut off from the new channel. Eventually it may become completely land-locked to form an oxbow lake. Oxbows are often deeper than the new stream channel, and therefore tend to concentrate fish after the annual spring floods. The highly fertile flood waters also bring in new supplies of nutrients, enabling the fish to grow at an exceptionally rapid rate. This yearly exchange of water and rapid growth rate all add up to some excellent fishing.

What we have done on the Assunpink is to create, in our own way, an "artificial oxbow" and lagoon that we hope will duplicate the conditions of a natural oxbow. It is also hoped that during low floods in the Assunpink, fish will migrate into this deeper area where they will be more available for harvest.

If the "oxbow" works as well as expected, this technique can be employed to provide a fishery in stream sections where natural habitat is lacking, or destroyed by

the activities of man, such as in channel "improvements" to drain swamps, etc. It also might be employed in marsh areas off small streams where the terrain does not permit the construction of conventional ponds.

Incidentally, several other fringe benefits are likely to occur from these "oxbows". They should provide excellent nesting and resting areas for ducks. They can also provide an excellent place for skating.

The Van Nest "oxbow" is along a section of the Assunpink that is stocked with trout in the spring. It is anticipated that many of the trout will find their way into this deeper, quiet water area and be more available for fishermen. It also has received an experimental stocking of largemouth bass and channel catfish, but it is hoped that wandering warmwater game fish will move in from the Assunpink during the summer.

Incidentally, some of these fish will be tagged. Fishermen catching tagged fish anywhere in the Assunpink are urged to report their catch. If this pilot operation should prove feasible it is anticipated that more will be developed in appropriate areas throughout the state.

PUT OUT THAT FIRE

By ROBERT NEVINS

Take a helpful little hint,
for those out on a camping trip.
A good suggestion and my advice:
Put out that campfire and check it twice.
Remember that forest fires can really start,
by careless campers that aren't too smart.

Farrington Lake

Lake Farrington, located just outside of Milltown at an elevation of 32 feet, is one of the reservoirs for the New Brunswick area. It is an artificial impoundment made in 1926 by the damming of Lawrence Brook. Since that time, the water level has remained relatively stable, except when it was lowered six feet around 1935 for work on the banks and during the drought of 1949, when its level again fell approximately six feet. It has an area of 290 acres, a mean depth of 23 feet. The bottom is predominately muck, and the color of the water is brown-clear. The shoreline consist of about 85% wooded area, 2% grass and pasture, 3% park-land, 5% brush and 5% swamp. The littoral, or shallow area is comprised of roughly 80% gravel, 5% mud, 5% sand, and 10% muck and debris.

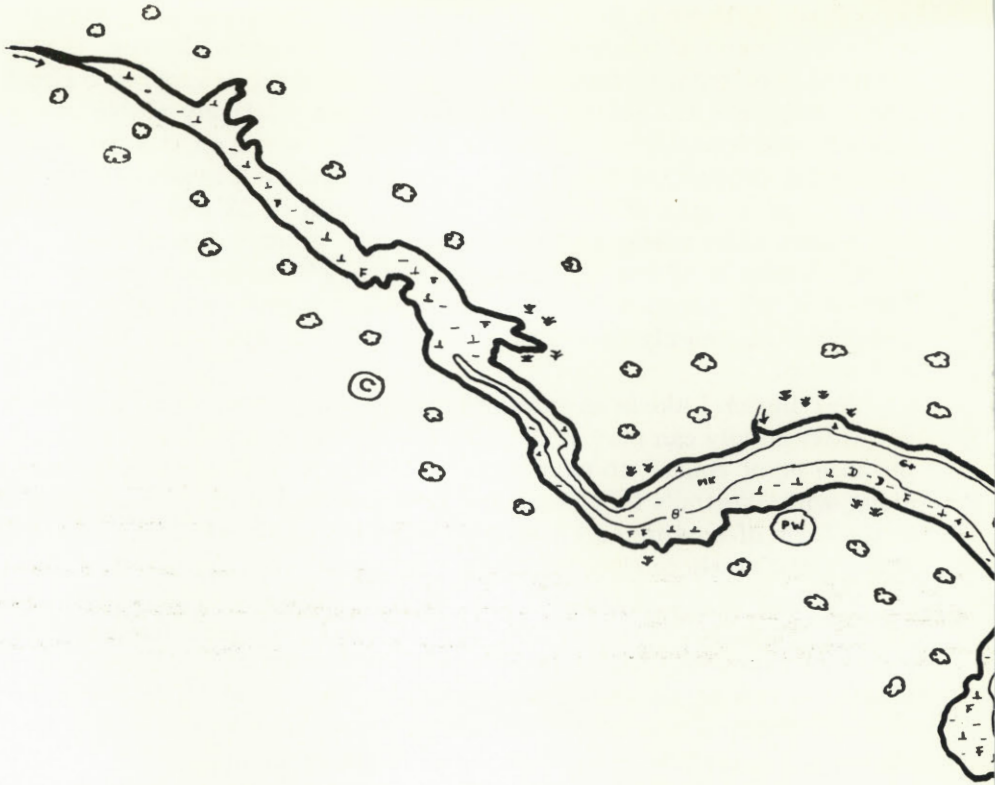
Farrington Lake is an excellent example of the double role a municipal water supply can play in the lives of its local inhabitants. Its primary purpose is, of course, to supply water to the New Brunswick area but, along with Weston's Mill Pond, it offers excellent recreational facilities in the form of boating and fishing to thousands of local inhabitants who would have nowhere else to go.

Because of its proximity to a thickly populated area, Farrington receives considerable fishing pressure. There are several dozen cottages located around the lake, two boys camps, and three boat liveries. Usually this lake, like most lakes in New Jersey over 15 feet in depth, becomes thermally stratified by late summer. The water is only very slightly acid, making it suitable for all types of game fish.

Farrington Lake has in recent years experienced both good and bad reputations. It was excellent until the drought of 1949. After a few bad years, it recovered and became excellent again until the recent drought of 1958. Now, once again, it seems the largemouth bass fishing is getting good. There are reports of frequent catches of large (five- and six-pound) bass from different parts of the lake using different lures at different times of day (or night). Last May there were two six-pound bass caught (and weighed in) the same evening from different ends of the lake. The rate of growth of bass seems to be good. During the past two years, the average size of bass caught seems to be 10 to 12 inches.

The pickerel reputation, on the other hand, has steadily declined over the past few years. Pickerel caught today are plentiful in number but pitiful in size. Ten to fourteen inches is the average length of those caught recently and any in the 18-inch range are considered a prize.

The panfish situation, seems to be favorable to Farrington fisherman. Yellow perch caught recently have been of excellent size, running up to 12 and 13 inches. There does not, however, seem to be frequent

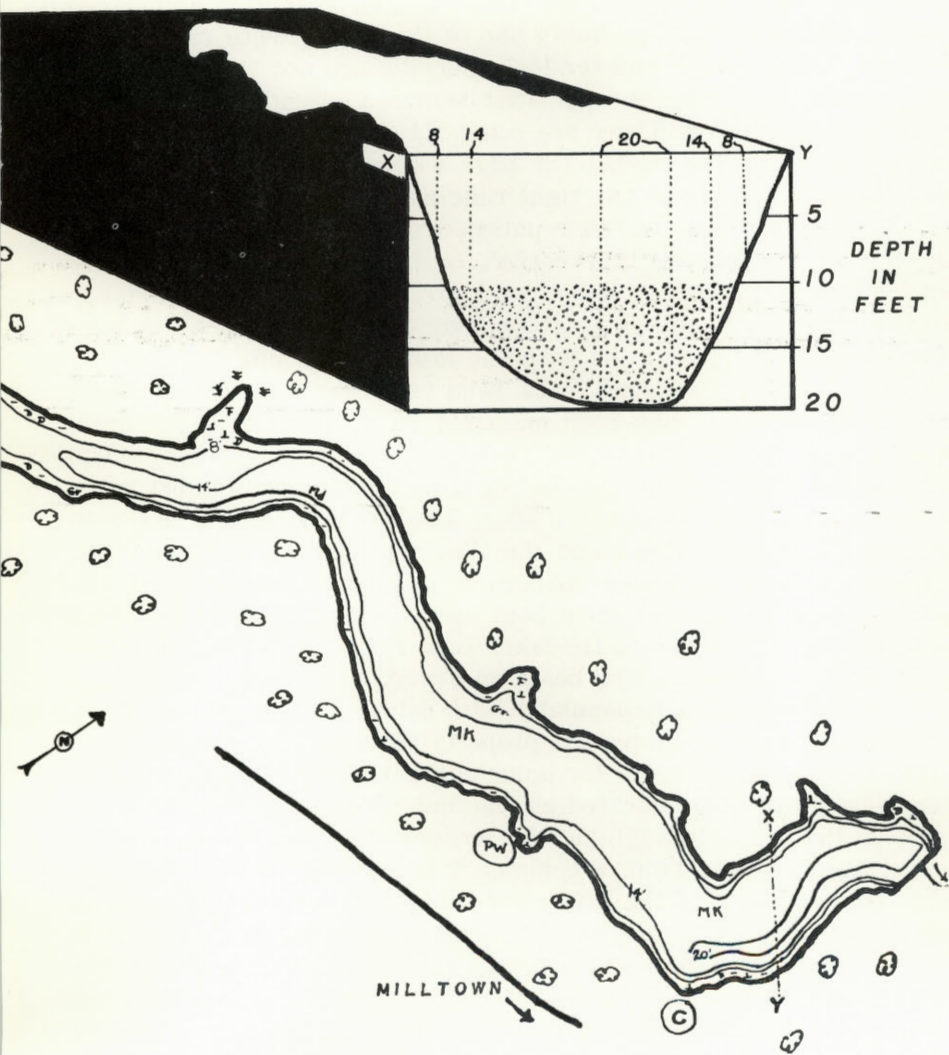


FARRINGTON LAKE

MIDDLESEX COUNTY

0 200 400
SCALE IN YARDS

MEAN DEPTH = 6 FEET
AREA = 290 ACRES



. . . Farrington Lake

large numbers caught, which may show lack of abundance, but more likely, it may indicate the inability of fisherman to locate and catch perch. This is certainly the case in many of our good yellow perch waters in New Jersey today. There have also been a few catches of white perch recently and of decent size.

Probably the most sought after fish in Farrington Lake are the bluegill and the redbreasted sunfish. These are, at present, in abundance and of excellent size, with probably one of the best growth rates of all New Jersey lakes. Nine- and ten-inch bluegills are not too uncommon in Farrington. Only the pumpkinseed shows a slightly poorer than average rate of growth. There are some old timers who literally take big bluegills out by the bushel (or bag) early in May each year. Of course, they rendezvous at the right time and place for these catches.

Calico bass, too, enjoy a fair reputation, especially in the springtime when they are in schools. The catfish, or brown bullhead, is heavily fished for here because it attains a good size, but its present abundance is not too certain. An experimental stocking of channel catfish has been undertaken here in cooperation with the local Lions Club.

Farrington has, for many years, been receiving a regular stocking of trout. The program has been managed on a "put and take" basis with little hope for holdovers and no hope of natural spawning. The lake is usually stocked a few days before trout season opens and receives an additional stocking sometime in May. The stocking usually has been done from the Church Street and the Washington Place bridges. But, last spring, a more extensive stocking was undertaken—such as the area adjacent to the eastern-most boat livery at the inlet end and near some of the feeder streams to the lake. Last spring found an unusually large barrage of fishermen and boats on Farrington on opening day.

The shoreline is usually populated with fishermen most of the season since there is not too much private property adjoining the water. There are also many suitable spots for launching car-top boats and some of the more-used ones are indicated on the map. No outboard motors are allowed on the lake, although electric motors are occasionally seen.

Farrington suffers from a common lake malady in New Jersey—weeds. The one-third of the lake at the inlet end becomes heavy with weeds by midsummer. It becomes difficult to fish and navigate. It is not known whether there is any program contemplated for weed control for Farrington in the near future. It should be obvious that weedless lures are recommended, as are also bass bugs. Farrington has also become a favorite spot for night plugging. This is probably the only method of hooking a lunker bass in the summer in this busy lake.

—WALTER AUGUSTYNIAK,
Murray Hill Fishing Club.

New State Record Rainbow Trout



A rainbow trout caught recently in Lake Hopatcong has been recognized as the new state record for rainbow trout caught in New Jersey. The big rainbow officially weighed 7 pounds, 15 ounces. Abe Bush of Elizabeth took the prize on salmon eggs and a six-pound-test line after a 35-minute battle.

—Courtesy of Bill Backus

Wildlife Deserves a Brake

Floyd Dipple, Quakertown, N. J., is employed at Brainards, N. J., and travels by automobile to and from his work each day. During the interval of March 20 to May 20, he kept meticulous records of wildlife that was killed in the 24-mile route to and from his place of work, or a total of 48 miles a day.

During the two-month work period, he observed and recorded the following wildlife on the roadways between Quakertown and Brainards:

Deer	8	Undetermined	17
Jack Rabbit	1	Rabbits	47
Owl	1	Dogs	2
Bull Frog	1	Opposum	11
Pheasants	11	Raccoons	6
Squirrels	6	Muskrats	4
Red Fox	1	Skunks	5
Snake	1	Cats	8
Rat	1	Birds	52
Wild Duck	1	Weasels	2
		Pigeons	2

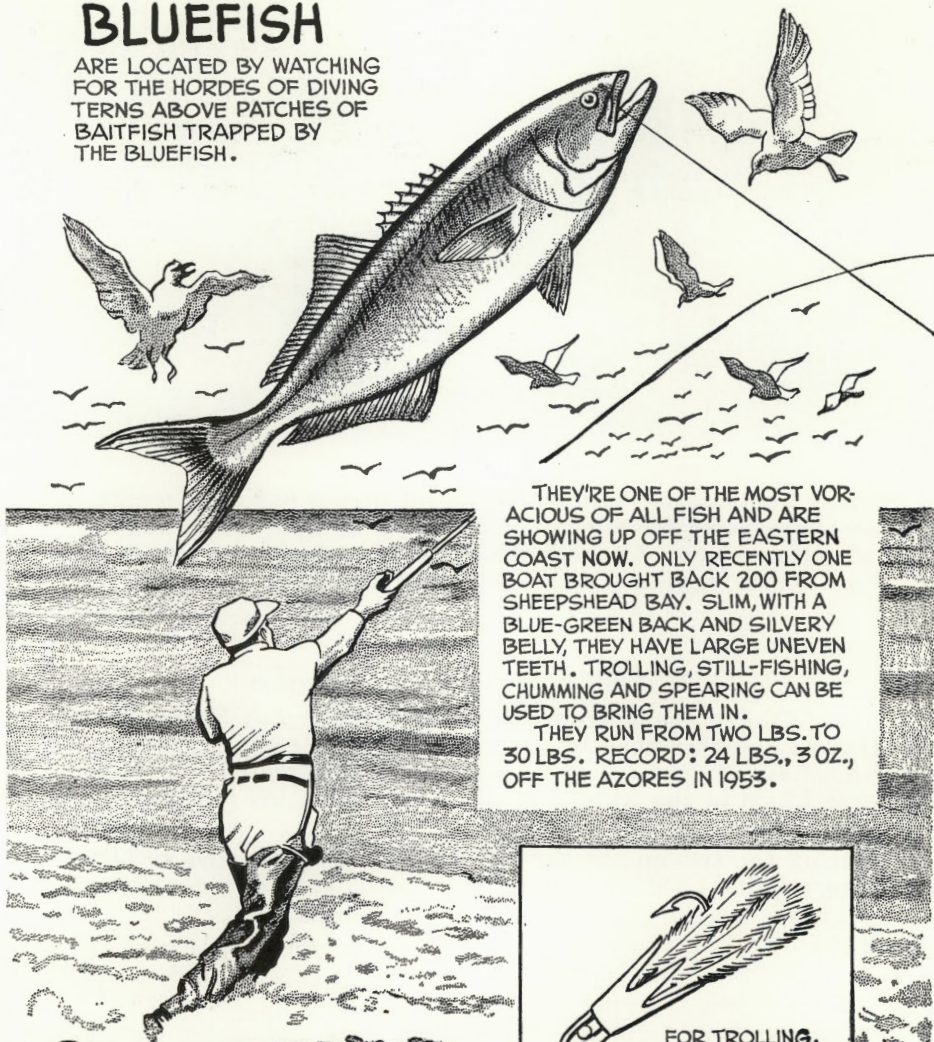
This represents 188 head of various forms of wildlife, which is an appreciable amount of mortality in a comparably short stretch of macadam and concrete highway.

Fur, Fin ^{and} Campfire

By JACK SHERIDAN

BLUEFISH

ARE LOCATED BY WATCHING FOR THE HORDES OF DIVING TERNS ABOVE PATCHES OF BAITFISH TRAPPED BY THE BLUEFISH.



THEY'RE ONE OF THE MOST VORACIOUS OF ALL FISH AND ARE SHOWING UP OFF THE EASTERN COAST NOW. ONLY RECENTLY ONE BOAT BROUGHT BACK 200 FROM SHEEPSHEAD BAY. SLIM, WITH A BLUE-GREEN BACK AND SILVERY BELLY, THEY HAVE LARGE UNEVEN TEETH. TROLLING, STILL-FISHING, CHUMMING AND SPEARING CAN BE USED TO BRING THEM IN.

THEY RUN FROM TWO LBS. TO 30 LBS. RECORD: 24 LBS., 3 OZ., OFF THE AZORES IN 1953.



FOR TROLLING,
A FEATHERED JIG
LET OUT UP TO 250 FT.
ASTERIN IS A FAVORITE

SURF CASTING PAYS OFF IN THE FALL WHEN THE BAITFISH ARE IN THE SURF. USE A STRONG LEADER BECAUSE THE BLUES CAN BITE THROUGH OTHER TYPES.

The New Jersey state record bluefish is an 18-pound, 10-ounce blue taken by Edw. Schlitz near Barnegat Light in 1960.

COUNCIL HIGHLIGHTS

MAY MEETING

The open session of the regular monthly meeting of the Fish and Game Council was held in Trenton on May 14. In addition to the Council, the following persons were present: John Russack, Roy Williams, Edward Jackson, Bill Backus, Henry Schaefer, and Herb Blackwell.

Chairman's Comments

Chairman Hart called the meeting to order and announced that the three new Council members were present. He reiterated his earlier statement that he was sure that all the Council members could be counted on to do the best job possible in fulfilling their duties as members of the Council. He gave assurance that his fullest cooperation could be expected. He emphasized that he was sure the Council, working cooperatively, would make every effort to provide the best possible hunting and fishing for the residents of New Jersey.

At the request of Councilman Godown, the Chairman added her name to the list of members to serve on the Bow and Arrow Committee. He also added Councilman McCloskey's name to the Hatchery Committee.

The Chairman announced that, because there will be times when he will be unable to attend the Council meetings, he was appointing Councilman Ralph McNeel as Vice-chairman to serve in that capacity when the Chairman is unable to conduct the meetings.

Deer Census

Charles Wright, Biometric Analyst, who statistically analyzed the results of the deer census and prepared the report, explained to the Council the procedures followed in performing these operations. He pointed out that the procedure of conducting the census and analyzing the results is based on established practices used by statisticians and is not merely a method originating in New Jersey.

License Revocation Appeals

An appellant, whose license privileges had been revoked, appeared before the Council with his attorney, and appealed for the reinstatement of his license. His first conviction had been for not displaying his license tag, and his second conviction was for trespassing. He stated that his license tag was not displayed because it rained while he was hunting and he had changed his jacket and forgotten to change his tag at the same time. In view of the sincerity of the appellant and the minor nature of the offenses, the Council passed a motion reinstating his license privileges but recommended that he be cautioned that any further arrests would result in the sustained loss of his license privileges.

A second appellant, whose license had been revoked, appeared

. . . Council Highlights

before the Council with his attorney and appealed for the reinstatement of his license. His first conviction was for hunting waterfowl after hours and his second conviction was for two ducks over the legal limit. His attorney presented a copy of a letter sent by the Conservation Officer who made the arrest to the magistrate before whom the case was heard. In this letter the Conservation Officer advised the judge that positive identification of the defendant could not be made. The attorney pointed out that other defendants arrested at the same time were acquitted on the substance of this letter but that his client had pled guilty and paid his fine. In the case of the two ducks over the legal limit—at the time of apprehension the appellant was hunting with several companions and when approached by the Conservation Officer the remainder of his companions each claimed ownership of two ducks, the legal limit, and more or less left the appellant “holding the bag” for two ducks which were in possession of the group above the legal limit. In view of the circumstances at the time of the two apprehensions and because the Council believed that he was sincere in his motives, the Council passed a motion reinstating the appellant’s license but warned him that any future serious violation would result in the sustained revocation of his license privileges.

Councilman Godown stated that hunting waterfowl after hours appears to be a flagrant violation and she felt it was very important that the Conservation Officers first check the guns of anyone suspected of hunting after hours.

1963 Deer Season

George N. Alpaugh, Chief of the Bureau of Wildlife Management, explained to the Council the reasoning of the Wildlife Management Bureau in making the suggestions for the 1963 deer seasons. He said that the seasons suggested were similar to those of last year but that some slight changes had been made in delineating the areas to be covered by the party permits. In the Sussex area a change was made to draw off some of the concentration of hunters in the Stokes Forest. In Cumberland County the Bureau had recommended a bucks only season since, for some unknown reason, the deer population has been decreasing in that county for the last several years. As far as the effects on the deer herds of the recent forest fires is concerned, Mr. Alpaugh stated the Wildlife Management Bureau is more concerned with the temporary loss of habitat and feels that not too many deer were lost as a result of the fires. If the party permit system is adopted, one change recommended is the use of an arm band to replace the permit. Once a deer

is shot, the arm band would be divided into various sections—tag to be affixed to deer, reporting card to be completed, and so forth. This arm band is to be fashioned after one used successfully in New York.

1963 Game Seasons

For the benefit of the sportsmen and members of the press present the Director advised that the Council had been given the suggestions for the 1963 deer season and these suggestions would receive publicity in the form of press releases. Then, prior to the June meeting, the Council would be sent the suggestions for the small game season. This would allow the Council time in June to consider and act on establishing the seasons for 1963. The public hearing could then be held in July and the seasons determined in time to have the compendiums printed by August 15 and distributed throughout the state by September 1. The waterfowl season will not be included in the regular compendium but will be sent out as a single sheet. This is necessary because the waterfowl seasons can not be set until sometime in August when the Federal Government sends out the framework of dates. By sending this out separately, the printing of the compendiums will not be delayed and they should be available by September 1.

The Fish Code

Similarly, the tentative fish code should be considered by the Council at their August meeting and the public hearing can then be held in September. This should allow ample time to have the fish compendiums printed and distributed prior to the middle of December.

Coastal Patrol Report

Newman Mathis, Acting Chief of Coastal Patrol, reported to the Council that all boats, equipment and engines are in A-1 condition. Shad fishing in the Hudson River started out very light but increased as the month progressed. Sport fishing for shad in the Delaware River increased tremendously over last year.

Fisheries Management Report

Robert A. Hayford, Chief of Fisheries Management, advised the Council that within the next few days the distribution of over 440,000 trout would have been made from the hatchery. The last remaining 100,000 would be distributed during the month. We were fortunate in securing 50,000 additional trout from the national Fish Hatcheries. He advised that work is progressing on the Pequest Hatchery and concrete was poured for the main flumes

Mr. Hayford reported that he had looked over the property owned by Dr. Ratcliffe and being offered for sale as possible access to Pompton Lakes. He stated that the ground is very high and then drops off

. . . Council Highlights

precipitously and would require considerable fill. The asking price is \$50,000 for four acres. If the site is to receive any further consideration, Mr. Hayford thought it should be checked by the Director and interested Councilmen. Edward Jackson expressed the opinion that it was nothing but a mud hole and gives access to the river and not to the lake.

Councilman Charlesworth inquired when bass would again be stocked in South Jersey waters. Mr. Hayford advised that in the past bass were reared very successfully at the hatchery but that ponds formerly used for this purpose had been turned over to trout rearing and no change could be made without cutting down the trout. He said that he and Director MacNamara had given some thought to this matter and that Mr. MacNamara believed there were ponds on some of the public shooting grounds which could be used for holding warm water fish until their size increased. The matter was left in the hands of the Fish Committee to consider and make recommendations.

Artificial Reefs

Bill Backus informed the Council of a program under consideration which would benefit fishing in the Atlantic Ocean by creating artificial reefs. This would be done by taking abandoned barges and hulks, of which there are hundreds from Alpine southward, patching them, pumping them out, and floating them. They could then be loaded with rubble and debris and taken out and sunk in the Atlantic Ocean in a pre-designed pattern. Mr. Backus was very enthusiastic about the potentialities of such a program and sought to arouse interest in it. Initially, he said, it would cost about \$50,000 for a survey and the program itself would cost about \$1½ million. He said that a meeting concerning this program was scheduled for the end of May.

Chairman Hart assured Mr. Backus that the Council is dedicated to do everything that can be done to benefit recreation and if there is anything that can be done to promote such a program, he was sure the Council would be wholeheartedly in favor of it. #

The Division of Fish and Game notes with sorrow the passing of Conservation Officer Amos W. Horrocks of Middlesex County. Conservation Officer Horrocks, who was notably dedicated to conservation in New Jersey, will be missed by the members of the Council, his co-workers, and the sportsmen he served so well.

VIOLATORS ROUNDUP

APRIL 1963

<i>Defendant</i>	<i>Offense</i>	<i>Penalty</i>
Joseph Obal, 222 Main St., Sayreville	Hunt no license	20
Clayton C. Brown, Jr., William St., Rio Grande	Uncased firearm	100
Joseph B. Caruso, 240 South St., Jersey City	Discharge firearm upon road	20
Pearl Markowitz, 419 London Ave., Egg Harbor	Illegal missile	100
John Welter, 2009 W. Broad St., Scotch Plains	Gun on Sunday	20
Ronald Westrick, 819 College St., Westfield	Gun on Sunday	20
Placido J. Arena, Crown Point Rd., Paulsboro	Hunt closed season	20
Placido J. Arena, Crown Point Rd., Paulsboro	Hunt closed season	20
Placido J. Arena, Crown Point Rd., Paulsboro	Hunt closed season	20
Thomas Rogers, Box 56A R.D., Flanders	Hunt no license	20
Soren Godwin, 101 Grant St., Moorestown	Angle closed waters	20
Wm. Kraenbring, 240 Pine St., Maple Shade	Angle closed waters	20
Gordon Caldwell, 303 White Birch Dr., Riverton	Angle closed waters	20
Betty Hammett, 715 Smith Lane, Mt. Holly	Fish no license	20
Joseph Farquhar, 636 Ferry Ave., Camden	Fish no license	20
Norman Maddocks, 2212 Lk. Heights Terr., Spring Lake Heights	Hunt no license	20
Walter Surran, Main St., Corbin City	Trap no license	20
Wayne H. Smith, 362 South Ave., Bridgeton	Uncased firearm	100
Clifford Armstrong, Bellplain Rd., Delmont	Hunt aid of lights	20
Charles A. Kohansky, 213 W. Foundry St., Millville	Fish no license	20
Dolph G. Hall, Mill St., West Creek	Poss. 2 ducks closed season	40
Norman Crawford, 201 N. Chelsea Ave., Atlantic City	Hunt no license	20
Hershel Ridgeway, N. West Blvd., Vineland	Fish no license	20
Tony DeMarco, 54 Howard Blvd., Metuchen	Poss. deer no license	50
Raymond Wojkiewicz, 107 Ernston Rd., Parlin	Tag not displayed	5
Alvester B. Williams, Rt. 3 Box 279A, Elm City, N. C.	Fish no license	20
Walter Sparbame, 173 Washington Ave., Dover	Fish no license	20
Ethan Osborn, 517 Elmer St., Vineland	Fish no license	20
John T. Gadsby 3rd, 2971 Quaker Bridge Rd., Trenton	Illegal missile	100
John T. Gadsby 3rd, 2971 Quaker Bridge Rd., Trenton	Firearm on Sunday	20
Clarence Russell, 51 Southampton Dr., Levittown, N.J.	Pheasant closed season	20
Clarence Russell, 51 Southampton Dr., Levittown, N.J.	Hunt no license	20
Floyd Regn, 253 White Horse Pk., Berlin	Loaded gun in auto	20
Beverly Burkley, 228 Bater Ave., Atlantic City	Illegal poss. striped bass	20
Frank Bauman, Henry Ave., Bridgeton	Fish no license	20
Frank Ruzecka, 1687 Forge Pond Rd., Brick Twp.	Rifle in woods on Sunday	20
Charles White, 832 Ross St., Toms River	Hunt on Sunday	20
Lawrence Wehrhahn, 320 E. Palisades Blvd., Palisades Park	Trout closed season	20
John D. Forrest, 151 Intervale Rd., Mt. Lakes	Hunt on Sunday	20
Richard Hoffman, 37 Faith St., Rockaway	Hunt on Sunday	20
George Kehrast, 75 N. River Dr., Pennsville	Hunt no license	20
George Kehrast, 75 N. River Dr., Pennsville	Hunt closed season	20
Joe L. Freeman, 152 Sitgreaves St., Phillipsburg	Hunt on Sunday	20
John H. Altmeier, 2420 N. Howard St., Phila., Pa.	Angle no license	20
Louis M. Beam, Rt. 513, Middle Valley	Hunt no license	20
Louis Haas, N. Church Rd., Hamburg	Angle closed waters	20
James Tift, 124 N. Church Rd., Toms River	Fish no license	20
Albert Bernard, Village Rd. West, Dutch Neck	Illegal missile	100
John B. Brown, 315 Ardmore Ave., Trenton	Fish no license	20
Theodis Moye, 205 W. Hanover St., Trenton	Fish no license	20
Joseph Gaines, Broadway Rd., Cranbury	Illegal poss. pheasant	20

. . . Violators Roundup

<i>Defendant</i>	<i>Offense</i>	<i>Penalty</i>
George E. Crose, 13 Stevens Ave., Trenton	Fish closed waters	20
George E. Crose, 13 Stevens Ave., Trenton	Fish no license	20
Albert Bernard, Village Rd. West, Dutch Neck	Rifle no permit	20
John Rodzicz, Rt. 23, Franklin	Angle closed waters	20
Theodore Butch, 174 S. Moety Dr., Milltown	Angle closed waters	20
Michael Pacillio, 506 Bridgeboro Rd., Riverside	Discharge firearm near dwelling	20
Wm. Butler, 1933 Broad St., East Riverton	Fish no license	20
Fred Goldman, 105 Vernon Lane, Morrisville	Fish no license	20
Thomas P. Devlin, 2118 Anchor St., Philadelphia, Pa.	Fish no license	20
David S. Schultheis, P.O. Box 42, New Egypt	Fish no license	20
James Cleveland, P.O. Box 196, Browns Mills	Largemouth bass over limit	20
Wilford Nickens, 1214 Magnolia Ave., Camden	Fish no license	20
Robert Armbruster, 1 Waxwing St., Camden	Fish no license	20
Chris Pappas, 36 Davis Ave., Dover	Angle closed season	20
John Biderman, 1070 Niagara Rd., Camden	Fish no license	20
Stanley Mayimek, Jr., 506 Mt. Prospect Ave., Clifton	Angle closed season	20
Joseph Riotta, 36 Merselis Ave., Clifton	Angle closed season	20
Ralph Groom, 181 Locust St., Trenton	Angle closed season	20
Frederick Swanson, 513 E. Broad St., Millville	Fish no license	20
John Swanson, Sugarman Ave., Millville	Fish no license	20
Francis Toscano, 637 Plum St., Vineland	Fish no license	20
John E. Sullivan, 149-22-45th Ave., Flushing, N. Y.	Fish no license	20
Michael W. Farley, E-45 Bayshore Dr., South Amboy	Kill other than game bird	20
Michael W. Farley, E-45 Bayshore Dr., South Amboy	Hunt no license	20
Kennish P. Jared, Mendham Rd., Chester	Fish no license	20
Joseph Zelinski, 28 Durand Pl., Irvington	Trout over limit	20

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The DO NOTS of safe boating are usually more dramatic than the DO'S. And, that's the reason this not-too-able seaman is pictured in action. He has forgotten two important safe boating rules: 1. Always tie your boat securely to the dock. 2. Don't board your boat with your arms loaded with equipment.

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Of My Country—
Its Soils and Minerals
Its Forests, Waters,
and Wildlife***