New Jersey Outdoors

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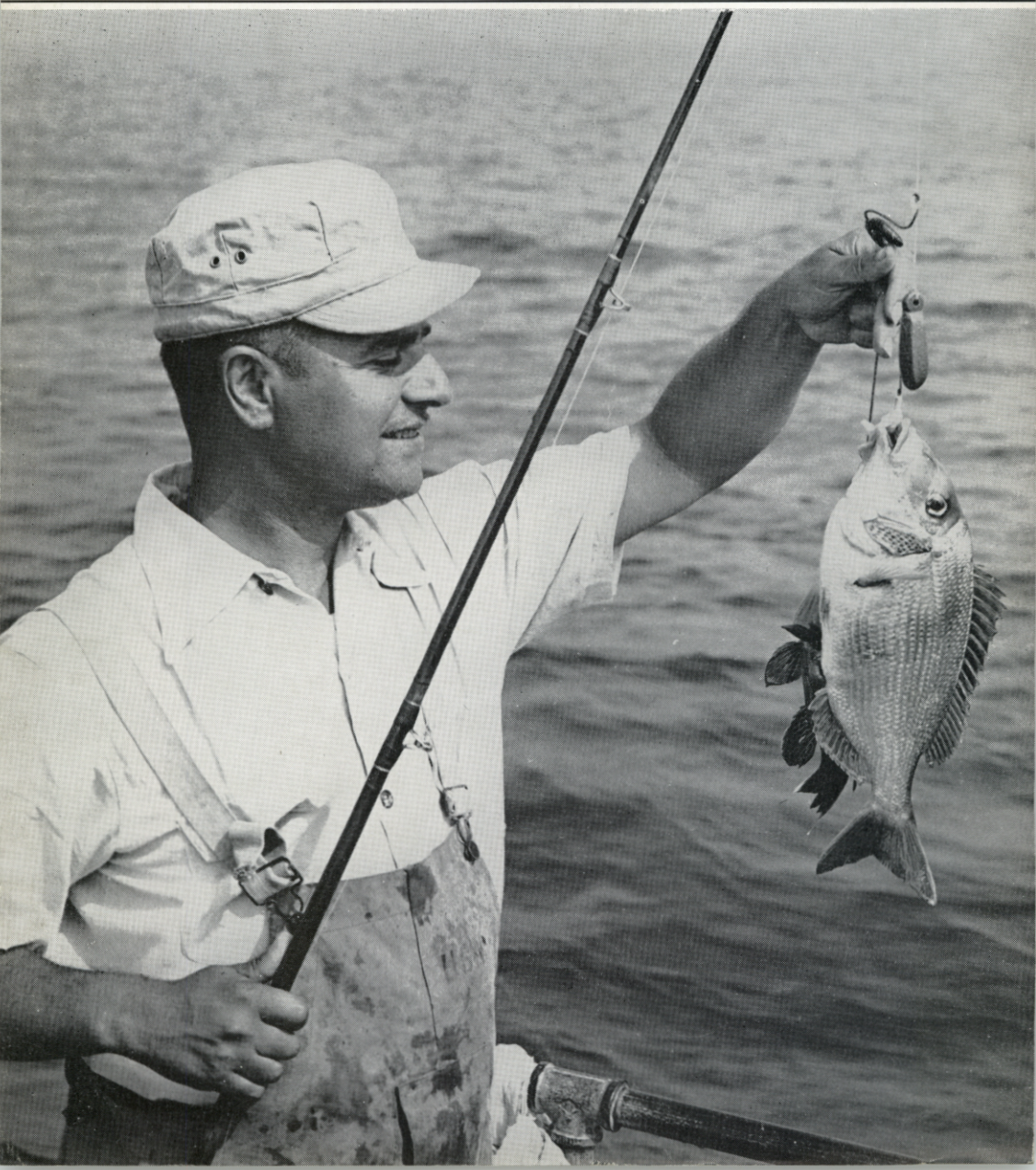

Photograph by Raymond G. Wilson

NEW STATE FEDERATION OFFICERS INSTALLED

The new officers of the New Jersey State Federation of Sportsmen's Clubs were installed during the Federation's Fifth Annual Conservation Convention held this past May in Stokes State Forest. In the above photograph center right, President Anthony Ordille is sworn in by Jules Marron. At the left, left to right, are the Board of Governor members John Cavagnaro, Wesley Duncan, Al Diaz, Roy Williams, and Joseph Alampi. At the right, left to right, are the Federation officers Earl Chambers, Jack Burns, James Charlesworth, Lester Godown, and William Meyer.

New Jersey Outdoors

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IN THIS ISSUE

Cover—THE PORGY, SALTWATER PANFISH

The porgy is one of the most popular fish with New Jersey's saltwater fishermen.

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Fauna of New Jersey

The Porgy

Our Saltwater Panfish

By ALBAN R. ESSBACH, Assistant Fisheries Biologist

EACH SPRING toward the end of May or the first part of June, depending on weather conditions, vast hordes of scup or porgy, *Stenotomus versicolor,* annually take up residence in the warming coastal waters of our state.

In New Jersey, the commercial fishery landings of porgies currently constitute the largest of any species commonly landed for human consumption. This is also true in our neighboring states of New York, Rhode Island, and Connecticut. A total of almost 9 million pounds was landed at New Jersey ports in 1958, with a progressive increase to 9.4 and 10.4 million pounds in 1959 and 1960 respectively. Over 14 million pounds was landed at New York ports in 1958. In recent years, the only species that has surpassed porgies in total landings has been the menhaden, or "mossbunker," a non-food fish used for the manufacture of fish oil and meal.

When the total annual sport fishery catch of porgies is added to the commercial take, the grand total harvest of these much sought "ocean panfish" becomes even more tremendous. In 1954, for example, data from New Jersey's Marine Sport Fishery Inventory show that 2 million pounds of porgies were caught by sport fishermen, while 7.1 million pounds were taken by commercial men. In spite of this heavy fishing pressure, biological indications of adverse stock depletion are not in evidence, and the porgy population continues to remain at a high level.

Feeding Habits

The porgy is a school fish, therefore, its foraging is done in various sized congregations. When a school is located, sport fishing is often fast and furious as these greedy feeders converge on baited hooks. Catches of two and even three to a line are fairly common. They prefer a bottom type that varies from smooth to rocky, and seldom rise above it. The adult fish prey on crustaceans, annelid worms, hydroids, young squid, mussels, clams and, in fact, on whatever invertebrates the particular bottom over which they live may afford. Old wrecks studded with marine growth are also fav-

The porgy, or scup, is New Jersey's saltwater panfish ➟

orite haunts. They will eat fish fry to some extent and various free-floating forms of crustaceans and mollusks. The very young porgies feed almost entirely on minute marine crustaceans called copepods. Small pieces of clams, crabs, and sea worms are favored baits for catching the adult fish.

Occurrence

When porgies are inshore during the summer months they are found usually within five miles of our coast and in most cases closer. They frequent the bays, (particularly Sandy Hook), various rocky bottom areas, and old wrecks. When offshore during the winter months they occupy a warm band of water that runs generally from Marthas' Vineyard to Cape Hatteras in depths of 300 to 400 feet. Porgies are very sensitive to cold water and large numbers have perished in sudden cold spells in shallow water. Their preference is for temperatures of at least 45° F., with 50°-60° F. temperatures most acceptable during winter offshore. To reach this warmer water during winter, the porgies from adjacent state waters have to travel at least 60 to 100 miles, while most of our New Jersey fish migrate south 200 to 300 miles and winter about 75 miles off Virginia and Maryland. Some have been tagged in Sandy Hook Bay and recaptured as far south as Cape Hatteras and one was caught near Savannah, Georgia. (A total of 3,800 porgies have been tagged in Sandy Hook Bay by Division biologists during 1959 and 1960 as part of a Dingell-Johnson research program.)

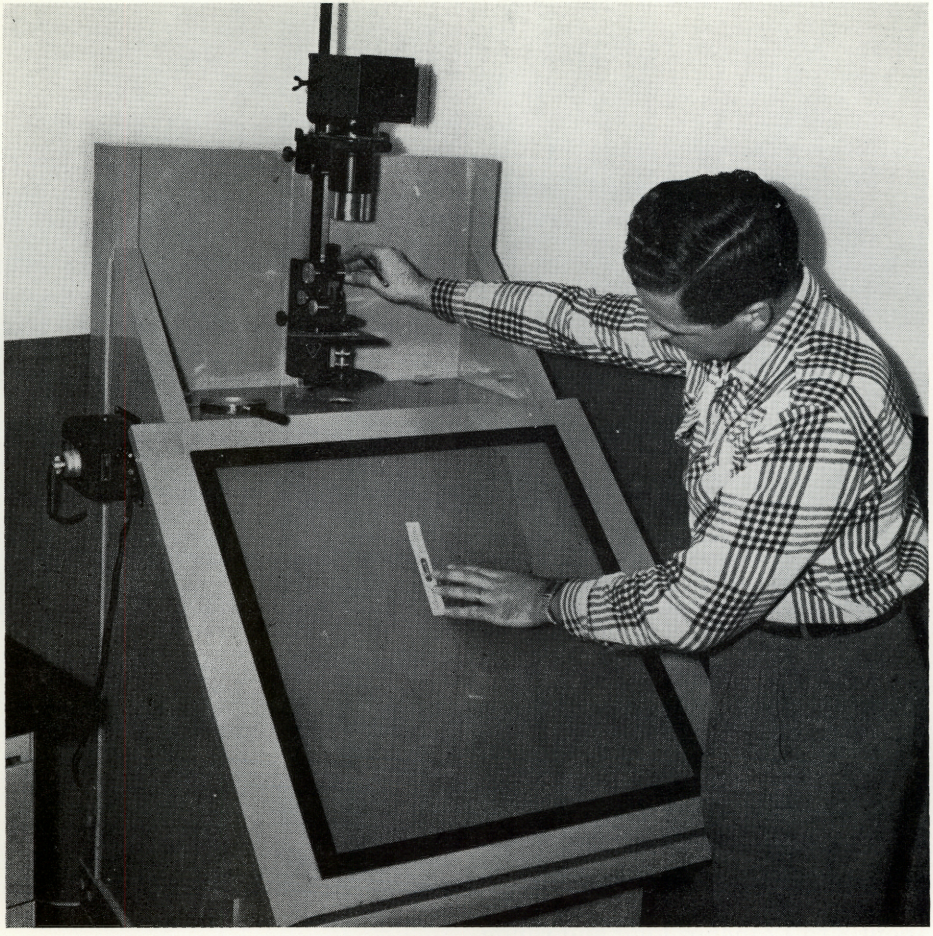
Sizes

Porges are reported to reach a length of 18 inches and three to four pounds, but these patriarchs are quite rare. Most of the older adult fish are 12 to 14 inches and 1 to 2 pounds apiece. If you are out fishing on the briny and happen to run into a school of the 12-inch and larger "shad-porgies" as they are called, be ready for some real fun, especially if your tackle is a bit on the lighter side. One 12- to 14-inch porgy hooked in 30 to 40 feet of water can really give you a commendable scrap all the way up. Most of the porgies that frequent the bays are generally smaller fish of about eight to ten inches in length.

Spawning

In our waters porgies begin spawning in mid to late June and usually reach the peak of activity during the first two weeks of July depending on weather conditions. This is based on observations in Sandy Hook Bay, probably the prime porgy spawning ground in our entire coastal area.

The eggs are bouyant, transparent, spherical, and rather small (about .9 mm in diameter). The incubation period is about 40 hours at 72°F. It is not likely that development can proceed normally in water colder than 50°F. The



Author Essbach reading fish scales to determine age of fish

larvae are about two mm. when hatched and absorb their yolk sac within three days. The young grow fast during their first summer in the bays; and, by late September and early October, when ready to depart for the winter grounds, they have reached lengths of three to four inches.

Age and Growth

Scale reading, or age determinations were conducted on several thousand porgies at the Marine Fisheries Laboratory, Island Beach, as part of the local porgy study now in its final stages. The interpretation of winter marks or annuli on the porgy scales taken from fish up to about eight years of age was relatively routine and considered accurate. However, reading the scales of larger and older fish is increasingly difficult, since the growth rings are much closer together, the scale itself is thicker, and in very old fish the

. . . *The Porgy*

recently formed annuli practically overlap.

Most of the porgies harvested by sport and commercial fishermen in the Sandy Hook Bay area and other coastal grounds are from about 8 to 12 inches long and range in age from two to about eight years. Some of the larger fish that could be aged with fairly good accuracy were found to be about 12 to 15, or more, years of age at lengths of 14 to 16 inches. Therefore, it can be said that the porgy is a long-lived fish exhibiting relatively slower growth beyond six to eight years of age. It appears that when a porgy has reached a length of around 15 to 16 inches, little, if any additional linear growth occurs. Rather, the fish gains slightly in weight at this point in its life. On the basis of growth data that have been accumulated and studied to date, it is quite conceivable that some of the old patriarch porgies that approach the four-pound class may be as old as 20 years. However, as previously stated, these occur rarely.

Commercial Fishing

Three primary types of commercial gear are currently used in Jersey waters and elsewhere for harvesting these tasty ocean pansters.

Pound nets are stationary rigs staked into the bottom of the bays and ocean. Porgies are caught in these by following long leaders of netting that lead into pockets from which there is little chance of escape. The fish are removed by drawing the pocket close together, opening it, and then bail-

ing the catch into the pound boat with large, power operated pound buckets or scoops.

Otter trawlers use the principle of finding the fish and then catching them, rather than letting the fish catch themselves as is the case with pound nets. In otter trawling a specialized net attached to cables or ropes is dragged along the bottom in areas where fish have been located on

Photographs by Bernard

The porgy is important commercially

echo sounding equipment. This net is much like a huge fish with mouth agape moving along in pursuit of prey. It is held open by floats and weights and is kept spread by specialized boards that run along the bottom much like sleds. These are known as otter boards or doors. The fish funnel into this gear and are concentrated in the comparatively narrow, elongated end of the net. The entire rig is winched to the surface and the catch released by opening the tightly packed cod-end.

Purse seining is still another type of fishing. The school is located on echo sounding gear and then it is encircled with a very long, deeply hung net. Once the school of fish is surrounded the weighted bottom line of the net, known as the purse line, is drawn closed. This draws the bottom of the net together and the school is trapped. The float line of the net, with its many cork or plastic floats attached, is directly on the surface, thereby preventing escapement. The net is then hauled aboard until the catch is concentrated in a small area alongside. Bailing the fish into the hold completes the operation.

What might aptly be termed the "porgy center of New Jersey" is located at Belford on Sandy Hook Bay. Here, during the months of June through September, great quantities of porgies from Sandy Hook and Raritan Bays and the adjacent ocean are landed. These fish are, for the most part, of medium size (about 8 to 10 inches) and are in high demand in some southern states. A porgy of this size, minus its head and tail, makes a very desirable and tasty morsel for the fry-pan trade. During the winter fishery porgies are taken by the larger offshore trawlers

working in the warm-water band well off the coast. One of the fishing grounds is located along the edge of the Hudson Canyon, a distance of about 100 miles southeast of New York City. The other popular trawling ground is about 75 miles east of the Virginia and Maryland coastlines. In both of these areas most of the porgies are taken at depths of 300 to 400 feet. Point Pleasant and the Cape May area are the principal ports for the winter trawl fishery.

Sport Fishing

When porgies are inshore during the summer and early fall they supply many thousands of manhours of enjoyable recreation to a vast and growing legion of sport fishermen. Whether caught from a bobbing rowboat in the bay or a rolling party boat in the ocean, porgies are quite capable of furnishing good sport and subsequent good eating.

Probably the most widely used bait for porgies is the clam. Used sparingly on the hook in small chunks or strips, it is very attractive to these greedy feeders. However, at times when they are in a finicky mood, blood or sand worms are usually irresistable.

Medium to light weight tackle is definitely in order if one is to appreciate the zippy sporting tussle that a hooked porgy affords. Don't ruin your fun with a broomstick type of rod. The author has caught them in the bays on light freshwater bait casting rods and even on flyrods. This is indeed outstanding sport.

Standard terminal tackle consists of a dipsy or roller sinker of appropriate weight for tide or current conditions attached to the line with a snap swivel, plus one bottom hook and a second top-hook rigged about two feet higher. A fairly long shanked hook of about size 1/0 is used. For ocean fishing over the wrecks and other areas where the water is fairly deep regular ocean boat reels or conventional surf reels are required. In the shallower bays where porgies are caught at depths of about 15 to 20 feet, the smaller bay reels or heavy fresh water reels add to the full appreciation of the scrappy capabilities of these fish.

If you've never met Mr. Porgy from either the hook and line or from the eating standpoint, make it a point to do so and find out why our "saltwater panfish" occupies such a popular niche in the overall fishery economy of New Jersey.

Management

The Division of Fish and Game, in cooperation with the Fish and Wildlife Service and the New York Conservation Department, is completing a detailed study of the porgy populations from Cape May to Cape Cod. A great deal of information has been secured, which will be invaluable as the basis for sound management recommendations for this species.

The porgy is a long-lived and

rather prolific fish, thus not as subject to extreme fluctuations as short-lived fishes, for example bluefish. On the other hand, such species are not likely to recover as quickly from factors that might bring about a decline in the breeding population—for example, pollution or over-fishing—either sport or commercial.

Present studies indicate that Raritan Bay is one of the most important nursery and spawning areas within the confines of our state. Management plans must give serious consideration to this fact—thereby insuring that these fish will be protected from pollution and the possibilities of over-fishing. In addition, periodic checks on the age composition of the harvest of both commercial and sport catches will need to be conducted to insure that an adequate escapement is taking place throughout the range of these Raritan Bay porgies.

At present there appears to be no need for any minimum size or gear restrictions beyond those already in force. With much important basic information now available to fishery scientists, and with the occasional checks that are planned, we can look forward to abundant populations of porgies furnishing sport and recreation to countless generations yet unborn.

Edw. A. Scheckler

The porgy is the favorite fish of thousands of fishermen

Bass Bugging

For Largemouth Bass

(*Continued from the June issue*)

By WALTER AUGUSTYNIAK, Murray Hill Fishing Club

The first part of this article dealt with the choice and use of tackle. This section covers the selection of the lake and the time for fishing.

Condition 2, selecting the lake, is much easier to put across to the reader. It has recently been established that largemouth bass are one of the most intelligent of freshwater fish. They learn, or become conditioned, to certain types of lures or lure presentations rather quickly. Since there is very little serious bass bugging done in New Jersey, it follows that this style of fishing for bass should be very effective. The converse of this statement can also be true; that is, if a lake is bass bugged rather heavily, then there will be very few bass caught in this manner. This is exactly the case in Luzerne county, Pennsylvania, where there are so many anglers after bass with fly rods. Most of these anglers have given up fishing in their own localities, but go and reap the harvest of bass in nearby New Jersey and New York lakes. Next time you see a serious fly fisherman on one of our lakes, ask him where he's from.

If you find your favorite bass lake shows a sudden crop of fly fishermen, it's best you abandon it for a part of the season and hope the others eventually do the same. Give some other lakes a try with bass bugs. You may be surprised with beginner's luck. I had that sort of experience during the 1961 season. I gave up fly fishing Farrington Lake when I realized that for the previous two weeks, practically all the anglers were swishing a fly rod, and my catches consisted of a few small bass. I subsequently tried two new lakes and landed a 3-pounder from each lake the first times out. Could it have been that these bass just hadn't seen a bass bug in a long time?

Time of Day and Season

Condition 3, time of day and year is last but still very important. Having properly equipped ourselves, and on the right lake, we now come to the when-to-fish part. You will find the most and the biggest bass caught early and late in the day, and either early in the spring or late in the fall. Water temperature, more than any other factor, governs the activities of bass (and for other species of fish as well). Bass will seek water of a specific tempera-

ture no matter what season of the year it happens to be. The largemouth's activities do not appreciably begin until the water temperature reaches about 60°F. In the spring, the shallows will warm up well ahead of the deep waters. It follows then, that a serious fisherman should keep his eye on the temperature in the shallows at his favorite lake, and get ready to abandon all other responsibilities when the temperature hits that magic range.

Spring Fishing

When the water warms to about 70°, largemouth bass reach the peak of their activity. You will then find them on their spawning nests throughout the entire day. Bass bugging at this time is just short of phenomenal. They will be found anywhere in from one to five feet of water where there is cover of some sort: lily pads, bull rushes, underwater weed beds, sunken logs, and fallen trees. The bass do not spook easily at this time, so you can afford to row in close and inspect the area as you fish. Thus you can stake out certain areas to hit later with a little finesse. You'll usually find that at this time the bass will be quiet feeders, that is, grab the bug without erupting the water. You should keep a sharp lookout, and when you see the bug disappear, give the bass a second or two to gulp it down before you set the hook.

In central New Jersey most lakes are at this stage during the first two or three weeks of May. In most parts of northern New Jersey this period will be about two weeks later. This, of course, is after an average winter, and pertains specifically to bass bugging for largemouth bass.

In Warmer Waters

After the water temperature climbs into the mid 70's, the bass will forsake the shallows and seek a deepwater sanctuary where the water temperature will be about 70°. This new area will have to provide cover for them but not necessarily food. Underwater weed beds, overhanging ledge, drop-offs near lily pads, and weedy shore areas are but a few typical sanctuaries. The bass will stay in these sanctuaries practically all day except to make a few sorties into the shallows where the abundant food supply exists. The feeding area will usually abound with vegetation. During this period, usually the entire summer, bass bugging should be tried only during the very early or late daylight hours.

The fisherman will have to be extremely quiet during this period. Fish very close to the weedy areas. If you have no success, you may have to go into the lily pads or weeds. Try every pocket or pothole that you can toss the bug into. Worry about how you're going to get him out of the weeds after you hook him. When the bass strikes in this part of the season, the water will explode and you'll have to set the hook fast. Many times he'll miss the bug entirely, but you'll get him if you re-visit that spot at the next feeding time or the next time you're out on this lake.

. . . *Bass Bugging*

In fact, you may find this to be a hot spot for bugs all summer long.

When September rolls around and the first few cold nights chill the surface of the water, the bass seem to come to life again. The fishing pressure diminishes, much few hot spots which may be difficult to locate in a large lake. So stick to a lake you know pretty well, one that's not too deep.

The bass you encounter will almost all be big. The little ones that you're used to catching all summer just aren't around. Bass bug as you would in the spring

Table II. Box Score of Bass Catches Using Bass Bugs

Month	Hours Fished	Length in Inches 9-12	12-15	15-18	18+	Total Bass	Bass /Hour
			1960				
April	21½	13	2	1	0	16	.75
May	40	39	7	6	4	56	1.40
June	12½	4	8	5	1	14	1.12
July	15½	5	0	0	0	5	.32
August	17½	4	4	1	0	9	.51
September	14	10	4	1	1	16	1.14
October	16	5	0	0	0	5	.31
Totals	137	80	25	14	6	121	.88
			1961				
April	9	2	1	0	0	3	.33
May	39	11	22	4	0	37	.95
June	29	11	4	4	1	20	.70
July	10	2	4	0	0	6	.66
August	6	3	1	0	0	4	.66
September	29	9	6	4	0	19	.65
October	13	3	1	1	0	5	.38
November	12	2	4	1	1	8	.66
Totals	147	43	43	14	2	102	.70

For both years, 75 percent of the fishing was done on Farrington Lake in central New Jersey and on a small lake in northern New Jersey.

to the advantage of the fly fisherman. By putting in time, you can catch some nice bass, especially if you're in the right areas. However, the best of the fall fishing doesn't take place until late October or sometimes early November. This period is likely to be very short, a week or possibly two. The optimum shallow water temperature is roughly in the low 60's. All the action is likely to take place in a except use a stouter leader. The bass are reckless and gulp down everything that moves. If, however, you see signs of bass raising around you but are not taking bass bugs, tie on a large flyrod hula popper. This is where you'll need your 9-foot fly rod. You will also find that at this time of the year, the evening fishing will be much more productive than the morning.

Table II is a box score of my

bass catches during the past two seasons using bass bugs and poppers. My first two seasons were not too successful and I prefer to charge them off to experience. The score would look much better if I had had the experience to handle those big ones that got away.

Other Fishing

I would like to conclude by making some remarks on some other ways to amuse yourself with bass bugs and poppers. In the spring you can spend practically the entire day using your fly rod to catch other species besides bass. You may also find it to help you with your bass fishing. I have, with bass bugs, taken many bluegill, sunfish, rock bass, pickerel, some crappies, a few yellow perch, and even a northern pike. Pickerel are very active along the shores early in the spring and late in the fall. It is very difficult to land the big ones because the leader gets chewed off long before the fish gets played out. I have, however, landed a few 18- and 19-inch pickerel. Unfortunately, many good bass bugs are lost to pickerel. They seldom hit a bass bug in the summer.

Rock bass live in the same environment as do smallmouth bass, and both go for bass bugs in the spring and early summer. As for bluegills, I believe the fly rod and the bluegill go together like a "horse and carriage". Taken on a light fly rod, the scrappy bluegill can be more fun than bass. I go for bluegills and sunnies early in the spring when everyone else has trout fever. You can, with poppers and small flies, get the biggest bluegills in the lake. Work the very shallows where the water is one or two feet deep, and where there is shore tree cover and some vegetation, when they are on their nests, they can be taken in large numbers with little effort and much satisfaction. The bluegill will whack at the popper fiercely to drive it away. You may have to throw it back over his nest four or five times before you get him to grab it. Then you have to be very fast in setting the hook. The bluegill nests are usually in large colonies, so when you find one, you won't need to push the boat around until you catch his neighbors' too.

Bluegills and sunfish spawn very closely after largemouth and in much the same environment. Some fishermen resent their presence, but I like to loaf the whole day by fishing for them up while waiting for the evening and the bass. Many times I've been surprised by picking up two or three bass consecutively. That meant it was time to switch to a heavier line and a bigger bug, and to make longer casts. Remember, when switching to bass, wait that second or two before setting the hook. The time you spend fly fishing for bluegills can be used to your advantage by practising to acquire form and distance in fly casting. Why not do it in the spring and find out how scrappy the little cousin of the bass can be? #

FOR A PLACE TO FISH

By JAMES L. BARKER

DESPITE THE FACT that New Jersey is the fourth smallest state in land area, it has been richly endowed with 120 miles of coastline and close to 1,000 miles of bay frontage. About 4,000 miles of rivers and streams wind across its surface and some 54,000 acres of lakes and ponds dot the landscape.

Our coastal and inland waters contain such a vast variety of fish, that the most ardent sportsman as well as the occasional bait dunker may find equal satisfaction and enjoyment.

New Jersey's coastal sport fishery is so diversified that no elaboration of the privately owned facilities will be attempted here. There are presently two reprints available which list most of the available facilities, type of fishing, and the best time to expect the peak activity.[1] Our privately owned inland fishing facilities are likewise too numerous to attempt to list. Suffice it to say that most of our larger lakes have such facilities, many of which are available to the general public.

Many lakes and ponds are managed for various warm-water game fish, such as bass and pickerel, along with a variety of panfish species. Generally, these are not crowded with fishermen and, if the power boats and water skiers have not taken over, provide an opportunity for many relaxing hours for those who prefer fishing in still waters.

Nearly all of the suitable waters to which the public has access are stocked annually with trout.[2] You can expect plenty of activity and company on the opening day of trout season on any of the heavily stocked waters. In fact, you may even detect a "carnival atmosphere" in many localities complete with hot dogs and hot coffee. Even when the fish are not cooperating one fact appears evident everyone is having a good time.

If you are the type of trout fisherman who likes to be alone and does not mind walking "back in," or if you just like to fish for trout from spring to fall, there are areas you should consider. Aside from the major trout streams, there are many smaller back-in-the-woods tributaries in the northern portion of the state that offer excellent native trout fishing.[3]

Every year increasing numbers of fishermen are realizing that many state and federal lands provide excellent fishing opportunities.

The Public Shooting and Fishing Grounds, the State Parks, and State Forests, as well as one Federal-owned tract are open to all sportsmen licensed to fish in New Jersey. The Division's grounds were purchased with a portion of your license dollars, the Parks and Forests, and the Federal land from

your tax money. These lands are yours to use. Passage of the Green Acres Bond Issue last November will insure the availability of funds to purchase additional lands for recreational purposes, including fishing.

Because of New Jersey's geologic history and pattern of economic development most of our public lands are located in the northwestern and southern parts of the state. However, with our modern highway systems, each area is readily accessible and within easy reach for a day's fishing.

The accompanying map is presented for your convenience in locating the various tracts of state and federal-owned land open to fishermen. The scale and outlines are only approximate and do not show exceptions to the boundaries. Additional information concerning the facilities available and the kinds of fish one may expect to catch are given on the following pages. Please bear in mind that conditions at any of the listed tracts are subject to change and if any questions arise the local conservation officer, or park or forest superintendent should be contacted. #

1. *Coastal Sport Fishing Facilities, 120 Miles of Salt Water Fishing . . . on the New Jersey Coast,* August, 1957, issue of New Jersey Outdoors.
2. See annual stocking list for waters stocked.
3. See *"Native Trout"* in the May, 1960, issue of New Jersey Outdoors.

NOTE: References herein cited are available by writing to the Division of Fish and Game. Individual maps of lakes available to the public are being prepared for general distribution. If you have a particular lake in mind you may wish to inquire as the availability of reprints—USGS maps and coastal charts may be secured at many sporting goods stores, or through the Department of Conservation and Economic Development, 520 East State Street, Trenton, New Jersey.

In addition to topographic maps, the fishermen explorer may do well to secure a map of the county he wishes to "check out." County maps may be obtained by writing to the County Engineer of the respective county.

Other reprints from New Jersey Outdoors of general interest feature the largemouth and smallmouth bass, chain pickerel, yellow perch, striped bass, bluefish, carp fishing (with bow and arrow) walleye, and herring. More detailed articles on fisheries management are also available upon request.

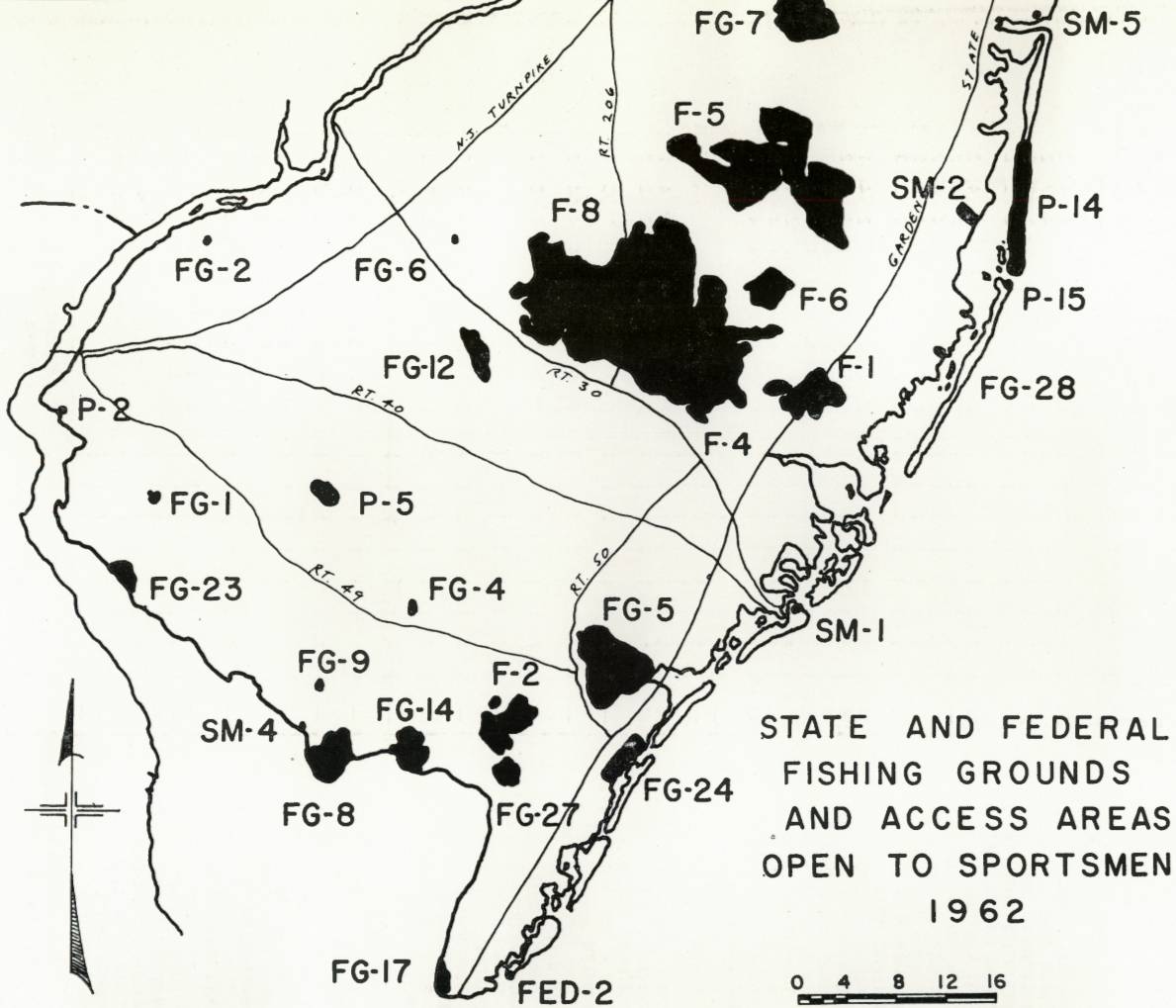
PLACES TO FISH IN NEW JERSEY

Name of lake, pond, stream, or access point.	Surface Acreage	FACILITIES AVAILABLE: Bank Fishing	Boat Launching	Boat Liveries	Outboards Permitted	Bathing	Picnicking	Cabins	Camp Sites	Trout	L.M. Bass	S.M. Bass	Pickerel	Catfish	Perch	Suckers	Carp	Other Sunfish	Tidal Salt Water Fish	No Fish
M— MISCELLANEOUS																				
1 Delaware & Raritan Canal	500	§	§	‡	‡	‡	‡	‡	‡	3	1	2	2	1	2†	2	2	1		
FED— FEDERAL																				
2 Cold Spring Inlet - No. Jetty	—	§	‡	‡	‡	‡	‡	‡	‡										§	
SM— STATE MARINAS																				
1 Atlantic City	—																		§	
2 Forked River	—																		§	
3 Leonardo	—																		§	
4 Fortescue	—																		§	
5 Pt. Pleasant	—																		§	

* Abundant during stocking season. § Yes 1 Abundant 3 Rare

† Walleyed pike present. ‡ No 2 Present 4 None

P-4
FG-11
F-7
F-3
P-11
P-6
RT. 15
FG-22
RT. 23
RT. 202
P-10
RT. 206
F-9
P-7
P-9
FG-20
FG-10
RT. 46
RT. 46
P-13
P-8
RT. 202
FG-19
PARKWAY
P-3
FG-15
FG-16
RT. 22
RT. 22
STATE
N.J. TURNPIKE
GARDEN
M-1
RT. 202
RT. 206
D-1
FG-26
P-1
SM-3
FG-18
FG-25
P-12
FG-13
PARKWAY
FG-3



STATE AND FEDERAL FISHING GROUNDS AND ACCESS AREAS OPEN TO SPORTSMEN 1962

0 4 8 12 16
SCALE IN MILES

NOTE - EXCEPTIONS NOT SHOWN

PLACES TO FISH IN NEW JERSEY

	FISH & GAME LANDS Name of lake, pond, stream, or access point.	FACILITIES AVAILABLE Surface Acreage	Bank Fishing	Boat Launching	Boat Liveries	Outboards Permitted	Bathing	Picnicking	Cabins	Camp Sites	FISHING AVAILABLE Trout	L.M. Bass	S.M. Bass	Pickerel	Catfish	Perch	Suckers	Carp	Other Sunfish	Tidal	Salt Water Fish	No Fish
FG—																						
1	**MASKELL'S MILLS**	20	§	§	‡	§	‡	‡	‡	‡	4	2	4	2	2	2	4	4	2			
2	**LOGAN POND**	3.5	§	§	‡	‡	‡	‡	‡	‡	2*	2	4	3	2	2	4	2	2			
3	**IMLAYSTOWN LAKE**	27	§	§	§	§	‡	‡	‡	‡	4	2	4	2	2	3	2	2	2			
4	**MENANTICO SAND POND**	62	§	§	‡	§	‡	‡	‡	‡	4	1	4	1	2	2	2	1	2			
5	**CORBIN CITY-TUCKAHOE**																					
	Tuckahoe Lake	10	§	§	‡	§	‡	‡	‡	‡	4	2	4	1	1	3	4	4	2			
	Cape May Co. Imps.	—	§	§	‡	‡	‡	‡	‡	‡	4	1	4	2	1	1	4	4	2			
	Atlantic Co. Imps.	—	§	§	‡	‡	‡	‡	‡	‡	4	2	4	1	1	1	4	4	2			
	Tuckahoe River	—	§	§	‡	§	‡	‡	‡	‡	4	2	4	1	1	1	4	4	2	§		
6	**ROWANDS POND**	5	§	§	‡	‡	‡	‡	‡	‡	1*	2	4	2	2	2	3	3	2			
7	**COLLIERS MILLS**																					
	Colliers Mills Pond	17	§	§	§	‡	‡	‡	‡		1*	2	4	1	2	2	2	4	1			
	Turnmill Pond	100	§	§	‡	‡	‡	‡	‡	‡	4	2	4	2	2	2	2	4	2			
	Upper Shannoc Pond	7.5	§	§	‡	‡	‡	‡	‡	‡	4	4	4	2	4	4	4	4	3			
	Middle Shannoc Pond	6.0	§	§	‡	‡	‡	‡	‡	‡	4	4	4	2	2	4	3	4	3			
	Lower Shannoc Pond	7.8	§	§	‡	‡	‡	‡	‡	‡	4	4	4	2	2	2	2	4	2			
	Butterfly Pond	—	§	§	‡	‡	‡	‡	‡	‡	4	4	4	2	2	4	4	4	2			
	Success Lake	40	§	§	‡	‡	‡	‡	‡	‡	4	4	4	2	2	4	4	4	2			
8	**EGG ISLAND**																					
	King Pond	—	§	§	‡	§	‡	‡	‡	‡										§		
	Streight Creek	—	§	§	‡	§	‡	‡	‡	‡										§		
	Oranoaken Creek	—	§	§	‡	§	‡	‡	‡	‡										§		
9	**SHAW'S MILLS POND**	30	§	§	‡	§	‡	‡	‡	‡	2*	2	4	2	2	4	2	4	2			
10	**COLUMBIA LAKE**	60	§	‡	‡	‡	‡	‡	‡	‡	3	2	3	2	1	2	2	2	2			
11	**FLATBROOK VALLEY**																					
	Big & Little Flat Brooks	—	§	‡	‡	‡	‡	‡	‡	‡	1	3	2	2	2	2	2	2	2			
12	**WINSLOW**																					
	Great Egg Harbor River	—	§	§	‡	§	‡	‡	‡	‡	4	4	4	1	1	4	4	4	2			
13	**VAN NEST**																					
	Assunpink Creek	—	§	‡	‡	‡	‡	‡	‡	‡	1*	3	4	2	3	3	2	3	2			
14	**CADWALADER**																					
	Maurice River	—	§	§	‡	§	‡	‡	‡	‡										§		
15	**CLINTON**																					
	Black Brook	—	§	‡	‡	‡	‡	‡	‡	‡	1	4	4	4	4	4	4	4	3			
16	**KEN LOCKWOOD**																					
	So. Br. Raritan River	—	§	‡	‡	‡	‡	‡	‡	‡	1	2	2	3	3	2	2	3	2			
17	**WITMER STONE**																					
	Delaware Bay	—	§	§	‡	§	‡	‡	‡	‡												§
18	**RAVEN ROCK**																					
	Delaware River	—	§	§	‡	§	‡	‡	‡	‡	3	2	2	3	1	1†	1	1	1			
19	**PEQUEST**																					
	Pequest River	—	§	‡	‡	‡	‡	‡	‡	‡	1	2	2	4	3	3	2	2	2			
20	**BERKSHIRE VALLEY**																					
	Rockaway River	—	§	‡	‡	‡	‡	‡	‡	‡	1*	2	1	2	2	2	2	3	2			
21	**QUAIL FARM POND**	1.3	§	‡	‡	‡	‡	‡	‡	‡	4	2	4	4	4	4	4	4	2			
22	**HAMBURG MT.**																					
	Tribs. of Black River Creek	—	§	‡	‡	‡	‡	‡	‡	‡	1	4	4	4	4	4	4	4	2			
23	**MAD HORSE CREEK**																					
	Stowe Creek	—	§	§	‡	§	‡	‡	‡	‡	4	4	4	4	1	1	4	4	4	§		
	Malportis Creek	—	§	§	‡	§	‡	‡	‡	‡	4	4	4	4	1	1	4	4	4	§		
24	**MARMORA MARSH**	—	§	§	‡	§	‡	‡	‡	‡												§
25	**BALDWIN CREEK LAKE**	18	§	§	‡	‡	‡	‡	‡	‡												
26	**STONY BROOK LAKE**	11	§	§	‡	‡	‡	‡	‡	‡												
27	**DENNIS CREEK**	—	‡	§	‡	§	‡	‡	‡	‡												
28	**MANAHAWKIN**	—	‡	§	‡	§	‡	‡	‡	‡												§

Experimental Species Combinations

Experimental Species Combinations

*** Abundant during stocking season.**
† Walleyed pike present.

§ Yes
‡ No

1 Abundant
2 Present
3 Rare
4 None

Note: The places to fish listed in the accompanying tables are keyed by their numbers with the locations shown on the companion map. The symbol FG— denotes Fish and Games lands, F— signifies Forest lands, and P— designates Park lands.

	STATE FORESTS & PARKS Name of lake, pond, stream, or access point.	FACILITIES AVAILABLE Surface Acreage	Bank Fishing	Boat Launching	Boat Liveries	Outboards Permitted	Bathing	Picnicking	Cabins	Camp Sites	FISHING AVAILABLE Trout	L.M. Bass	S.M. Bass	Pickerel	Catfish	Perch	Suckers	Carp	Other Sunfish	Tidal	Salt Water Fish	No Fish
F—																						
1	**BASS RIVER**—Lake Absegami	63	§	§	‡	‡	§	§	§	§	4	4	4	2	1	4	1	4	2			
2	**BELLEPLAIN**																					
	Lake Nummy	26	§	§	‡	‡	§	§	‡	§	4	4	4	3	2	4	4	4	2			
	East Creek Lake	62	§	§	‡	‡	§	§	‡	‡	4	3	4	1	1	3	4	4	2			
	East Creek	—	§	‡	‡	†	‡	§	‡	‡	4	3	4	1	1	3	4	4	2			
3	**A. S. HEWITT**																					
	West Pond	5	‡	‡	‡	‡	‡	‡	‡	§												§
	Surprise Lake	20	‡	‡	‡	‡	‡	‡	‡	§												§
4	**GREEN BANK**—Mullica River	—	§	§	‡	§	‡	§	‡	‡	4	3	4	2	2	4	2	4	2	§		
5	**LEBANON**																					
	Pakim Pond	5.2	§	§	‡	‡	§	§	§	§	4	4	4	2	1	4	2	4	2			
	Deep Hollow Pond	3	§	§	‡	‡	§	§	§	§	4	4	4	2	1	4	2	4	2			
6	**PENN**																					
	Lake Oswego	92	§	§	‡	‡	§	§	‡	§	4	4	4	2	2	4	2	4	2			
	Oswego River	—	§	§	‡	‡	‡	§	‡	§	4	4	4	2	2	4	2	4	2			
7	**STOKES**																					
	Lake Ocquittunk	8.4	§	§	‡	‡	§	§	§	§	1*	3	4	3	2	4	2	4	2			
	Lake Wapalanne	5.6	§	§	‡	‡	‡	§	§	§	1*	4	4	4	4	4	4	4	4			
	Stony Lake	15.7	§	§	‡	‡	‡	‡	§	§	1*	4	4	4	4	4	4	4	4			
	Big Flat Brook	—	§	‡	‡	‡	§	§	§	§	1	3	2	3	3	4	2	2	2			
8	**WHARTON**																					
	Atsion Lake	62	§	§	‡	‡	§	§	‡	§	4	4	4	2	2	4	2	4	2			
	Harrisville Lake	40	§	§	‡	‡	§	§	‡	§	4	4	4	2	2	4	2	4	2			
	Batsto Lake	40	§	§	‡	‡	§	§	‡	§	4	4	4	2	2	4	2	4	2			
	Batsto River	—	§	§	‡	§	§	§	‡	§	4	2	4	2	2	4	2	4	2			
	Wading River	—	§	§	‡	§	§	§	‡	§	4	4	4	2	2	4	2	4	2			
9	**WORTHINGTON**																					
	Sunfish Pond	41.1	§	§	‡	‡	§	§	‡	§												§
	Delaware River	—	§	§	‡	§	§	§	‡	‡	3	3	1	4	3	4†	1	2	2			
P—																						
1	**CHEESEQUAKE**																					
	Hook's Lake	10	§	§	‡	‡	§	§	‡	‡	1*	2	4	4	2	4	4	2	2			
	Hook's Creek	—	§	‡	‡	‡	‡	§	‡	‡										§		
2	**FT. MOTT**—Delaware River	—	§	‡	‡	‡	§	§	‡	‡										§		
3	**HACKLEBARNY**																					
	Black River	—	§	‡	‡	‡	‡	§	‡	‡	1	2	2	3	3	3	2	4	2			
	Trout Brook	—	§	‡	‡	‡	‡	§	‡	‡	2	4	4	4	4	4	4	4	3			
4	**HIGH POINT**																					
	Saw Mill Lake	20	§	§	‡	‡	§	§	§	‡	1*	4	4	4	4	4	4	4	4			
	Lake Marcia	19.2	§	§	‡	‡	§	§	‡	‡	4	4	4	4	2	2	4	4	2			
	Lake Steenykill	30	§	§	‡	‡	§	§	§	§	4	4	1	4	2	4	4	4	2			
	Big Flat Brook	—	§	‡	‡	‡	‡	§	§	§	1	3	3	3	3	3	2	3	2			
5	**PARVIN**																					
	Parvin Lake	95	§	§	§	‡	§	§	§	§	4	2	4	2	1	1	2	2	1			
	Thundergust Lake	14	§	§	‡	‡	§	§	§	§	4	2	4	2	2	2	2	1	2			
	Muddy Run	—	§	§	‡	‡	‡	§	§	§	4	2	4	2	2	2	2	2	2			
6	**RINGWOOD**																					
	Ringwood Mill Pond	2	§	‡	‡	‡	‡	§	‡	‡	1*	3	2	4	2	4	2	4	1			
	Ringwood River	—	§	‡	‡	‡	‡	§	‡	‡	1*	4	2	4	2	4	2	4	1			
7	**CRANBERRY LAKE**	179	§	§	‡	§	§	§	‡	‡	4	2	2	2	2	2	2	4	2			
8	**LAKE MUSCONETCONG**	329	§	§	§	§	§	§	‡	‡	3	1	3	1	2	1	3	3	1			
9	**LAKE HOPATCONG**	2685	§	x	x	§	§	§	‡	‡	1	1	2	1	1	1†	2	3	1			
10	**BIG SWARTSWOOD LAKE**	494	§	x	§	‡	§	‡	‡	‡	1	1	2	1	2	1	2	3	1			
11	**GREENWOOD LAKE**	1920	x	x	x	§	x	x	‡	‡	1	1	2	1	2	1	2	4	2			
12	**WASHINGTON CROSSING**										3	2	2	3	1	2*	1	1	2			
	Delaware River	—	§	‡	‡	‡	‡	§	‡	‡												
13	**STEPHENS**—Musconetcong River	—	§	‡	‡	‡	‡	§	‡	‡	1	3	2	3	2	3	1	2	2			
14	**ISLAND BEACH**	—	§	‡	‡	‡	§	§	‡	‡											§	
15	**BARNEGAT LIGHT**	—	§	‡	x	§	‡	‡	‡	‡												
D-1	**SANDY HOOK PARK**	—	§	‡	‡	‡	‡	‡	‡	‡											§	

x Not on Park Lands or not State operated.

*** Abundant during stocking season.** **§ Yes** **1 Abundant** **3 Rare**

† Walleyed pike present. **‡ No** **2 Present** **4 None**

A report on the program for

Weed Control

on Lake Hopatcong

By AMOS W. HORROCKS, *Conservation Officer,* and
ROLAND F. SMITH, *Assistant Chief,* Bureau of Fisheries Management

When Lake Hopatcong was surveyed by the Division of Fish and Game in 1950, thirty-six species of rooted aquatic plants were collected. None was considered a nuisance, though one species indentified only to the genus *Myriophyllum* was recorded as occurring "frequently." No one could foresee its increase to where it would greatly restrict the lake's recreational use, and consequently become a serious detriment to the many businesses surrounding this largest and most popular of New Jersey lakes.

By 1957 milfoil was occurring in sufficient abundance to cause complaints from lake front owners and boating enthusiasts. Test plots to evaluate the effectiveness of some of the newer herbicides were set up during the summers of 1957 and 1958. By 1958 fishermen were more frequent in adding their voice to the complaining groups and the weed problem had reached serious proportions.

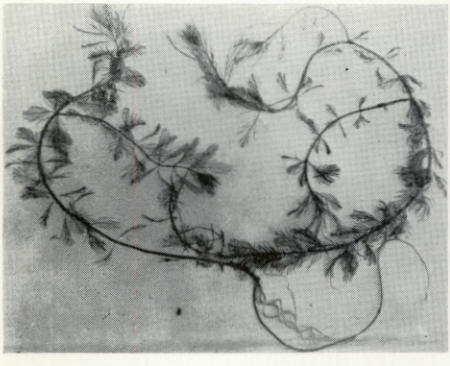
In the fall of 1958 a group of local citizens were appointed to the Lake Hopatcong Advisory Committee. State personnel were assigned as consultants to this committee. The weed situation was one of the first problems taken under consideration by this committee and recommendations were made for active state support.

In July of 1959 funds were made available by the State Legislature to the Department of Conservation and Economic Development for the

Surveys revealed that about 40% of Lake Hopatcong was infested with water weeds

control of aquatic weeds in Lake Hopatcong. However, it was felt that an all out program was too premature for the 1959 season so water-front owners were encouraged to undertake their own weed control. The Lake Advisory Committee, working with the Division of Fish and Game, acted as consultant and coordinator to those interested in doing this work; they also attempted to exert some control over the type of chemicals that were applied and the commercial applicators contracted for the work.

Additional test plots were set out in preparation for the large scale operations to be undertaken



Milfoil, problem weed in Lake Hopatcong

by the state. Detailed surveys of the distribution and composition of the weed beds were initiated in the fall of 1958, 1959, also in the spring of 1960. This enabled us to determine the magnitude of the problem and to evaluate the effectiveness of the various herbicides being employed.

These surveys revealed that approximately 40% of the lake's 2,685 acres was infested with weeds, most of which was milfoil, *Myriophyllum spicatum.* Next in abundance was pondweed, *Potomogeton amplifolius.* During 1958 and 1959 about 25% of the lake area was barely usable because of the severe infestation of milfoil.

Methods and Procedure

The sampling of the bottom of Lake Hopatcong in 1959 was accomplished with an Ekman dredge and grapple hook. In the spring of 1960 a fathometer was employed with considerable success in connection with Ekman dredge, grappling hook and Scuba equipment. For the most part, weed beds could be easily distinguished; *Potomogeton amplifolius,* was easily recognized because of its height.

The treatment of the entire infested areas with herbicide could have proven extremely costly. Fortunately, Lake Hopatcong can be partially lowered and the decision was made to attempt to control the milfoil in the shallow areas by freezing. It was decided to lower the lake 7 feet for this purpose. The remaining areas of infestation —mostly between the 7 and 14 foot contour lines—would be treated with 2, 4-D granules—about 750 acres.

A thirty-foot barge with an eight foot beam was made available to the project by the Bureau of Navigation. A twelve by two-foot platform was secured across the stern, at each end of which was

mounted a seeder. These were powered by two 12-volt batteries which lasted approximately twenty hours before requiring a recharge.

The barge was operated at speeds and the seeder set at readings for the various granules to give the desired distribution of herbicide. The areas to be treated were marked out in suitably sized plots marked with poles and flags or buoys. The swath of the seeders using different size granules controlled the placement of the markers.

It had been assumed that the diffusion of the chemicals was only five to ten feet, thus keeping the barge on a course sufficiently true to remain within this margin of tolerance proved to be a serious obstacle. The final solution was to use two walkie-talkie radios; one was given to the barge operator, and the other to a man on shore. The person on shore could line the barge with any given marker and advise the operator the course to follow.

It had been expected that where the bottom had been exposed, seed germination would create a problem by late summer, at least in local areas. Plans called for treating these areas with herbicides.

Results

1. *Evaluation of the weed control program*:

The main objective was control of the milfoil. In this respect the program must be considered an unqualified success. By mid-August, checks in the lake proper indicated that live strands of milfoil were all but non-existent. In contrast, a

Authors Horrocks and Smith identify weeds

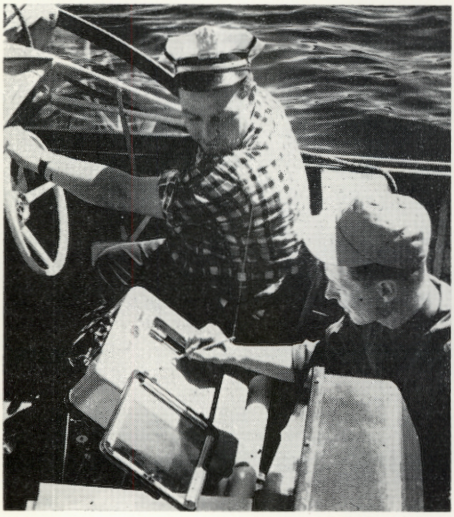
private lagoon development contiguous to Lake Hopatcong, where no treatment was undertaken, remained badly infested.

There was no evidence of regrowth or seed germination in those areas where the bottom had been exposed and frozen. We have no explanation for this except to note that there appears to be a greater diffusion of herbicide from large treated areas than has been generally assumed. For example, half of a sixty-acre cove was set aside as a control and left untreated. The other half, plus approximately 290 acres adjacent to this cove was treated at the rate of 20 pounds active ingredient per acre. All of the milfoil, including that in the control area disappeared over a three week period.

Where there was inadequate

draining of the exposed bottom area, leaving shallow pools, no control by freezing was obtained, necessitating herbicidal treatment. Apparently, the water under the ice acted as an insulation, protecting the milfoil from freezing. It was observed that fragments were trapped in the ice and as the lake level was raised, they broke loose to reinfest other areas of exposed bottom. These infestations also appear to have been controlled by diffusion from treated areas.

The effect of the hormone could generally be seen after about 6



The extent of each weed bed was established with the aid of a fathometer

days, when the tops of the milfoil would start to collapse. Within two weeks the stems were defoliated and lying on the bottom; after about three weeks little trace of the plants could be found.

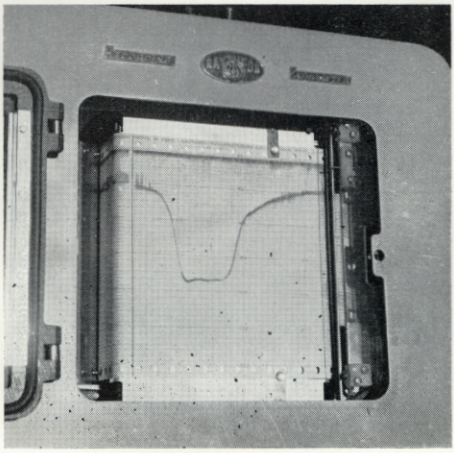
No significant control of any of the Potomogetons nor of the tape grass, *Vallisneria americana,* was observed. Many of the areas successfully treated in 1959 were taken over by tape grass and this plant also succeeded the milfoil during 1960. This had been expected since tape grass succession in plots where milfoil had been successfully controlled has been reported.

During the latter part of the 1960 season tape grass became so abundant in some sections of the lake as to become a serious nuisance. Since this condition prevailed during late summer and was far less extensive covering about 250 acres, the magnitude of the problem never reached that created by milfoil.

2. *Side effects:*

a. Water color

During the summers of 1958 and 1959 Lake Hopatcong achieved a

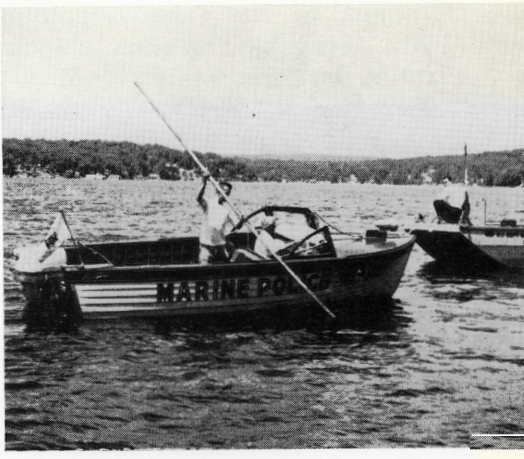


Close-up of the fathometer

clarity that had not been seen in years; the visibility disk disappeared at a depth of 23 feet during August 1959. In 1950 the vis-

. . . *Weed Control*

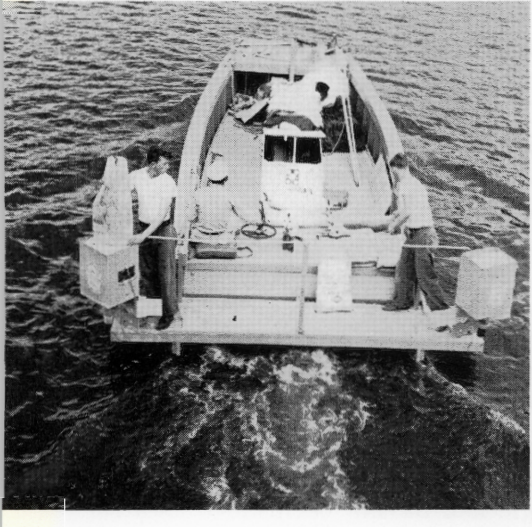
Sections of Lake Hopatcong to be treated for weed control were marked with 16-foot poles placed along the 7- and 14-foot contours



The barge, as seen from ahead, showing sacks of chemicals, pilot at the wheel, and operators at the hoppers

The barge pilot was kept on course by means of two-way radio contact with a guide on the land

A 15-acre weeded area on nearby Lake Musconetcong was treated experimentally by helicopter



Stern view of the barge showing chemical spreaders in operation. The crew could treat an acre of weeds about every three minutes

A small boat with one hopper was used to treat shallow areas not affected by the winter drawdown

. . . *Weed Control*

ibility disk disappeared at depths ranging between 6 and 8 feet; during the summer of 1954 visibility disk readings up to 14 feet were recorded.

It had been predicted that if the weed control program was successful the water clarity in 1960 would

Before control the weeds were thick

be appreciably reduced. Observations during the 1960 summer season did indicate a greater coloring of the water. Comments also were received from skin divers to the effect that underwater visibility was much reduced from previous years. In support of this is the recording of a visibility disk reading of 9.5 feet on August 24th.

To what effect these changes may alter conditions for fish life has not been determined.

b. Taste and odor

The 2, 4-D granules are known to be contaminated with phenols. While the possibility of Lake Hopatcong water acquiring an objectionable taste or ordor was not considered to be important, this could be a serious factor for lakes and impoundments used for water supply.

In an attempt to evaluate this factor arrangements were made with the State Health Department to check for phenols. Water samples were collected under a variety of conditions, preserved with copper sulfate, and delivered to the State Laboratory. None of these samples was found to contain sufficient traces of phenols or phenol derivatives to impart an objectionable taste to drinking water. However, samples collected and analyzed at Rutgers University indicated the presence of phenols in concentrations sufficient to impart an objectionable taste to the water. In support of this we have a few reliable reports from residents at the lake who reported detecting a medicinal odor in Hopatcong water used to make tea.

c. Effect on fish life

There was no evidence of a single fish having been killed as a result of the herbicide program. No complaints were received of objectionable tastes in the fish; a few fishermen claimed that fishing dropped off for a time where the herbicides were introduced.

Two causes of concern are the possible effect on game fish from the lowering of the lake and the destruction of pickerel spawning habitat.

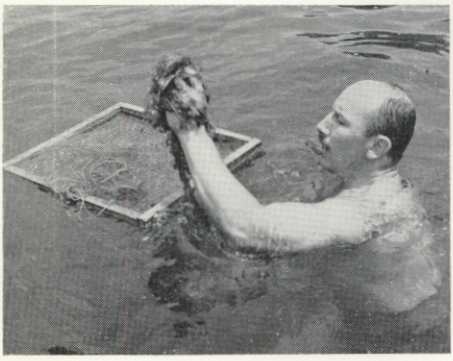
Evidence at Lake Musconetcong and elsewhere that a properly con-

ducted drawdown can actually improve fishing, especially for yellow perch and pickerel. Whether or not the drawdown in Lake Hopatcong will destroy too much pickerel spawning habitat has not as yet been determined. Checks during the past summer revealed poor pickerel spawning success, but this occurred in neighboring lakes where nothing was done to the habitat.

Summary and Conclusion

1. In recent years, at least a fourth of the area of Lake Hopatcong had been rendered useless for boating, swimming and fishing because of heavy infestations of milfoil *Myriophyllum spicatum.*

2. A combination of winter drawdown to freeze the exposed plants, and application of 2, 4-D granules has effectively controlled this plant. Present observations



After treatment weeds were reduced

suggests that this control will be adequate for at least two seasons.

3. Tape grass, *Vallisneria americana* has succeeded much of the milfoil, and may reach nuisance proportions. The fact that this condition is much more localized and occurs only during the latter part of the summer makes this a problem of much less magnitude than that presented by milfoil.

4. Pondweeds did not increase during the past year and the evidence suggests that they will continue to be at least as abundant as in the past. To date this infestation has not reached serious proportions.

5. Present evidence suggests the possibility of phenol contamination from the use of at least some of the commercially produced 2, 4-D granules. This problem warrants further study.

Recommendations

1. A winter drawdown of Lake Hopatcong to a depth of eight feet is recommended for 1960-61 in an attempt to control the tape grass. Additional drawdowns will be recommended when necessary.

2. Herbicidal control of the more dense growths of tape grass and pondweed should be attempted. This will require some additional field testing with chemicals which appear to have a greater herbicidal effect on these plants than does the 2, 4-D granules.

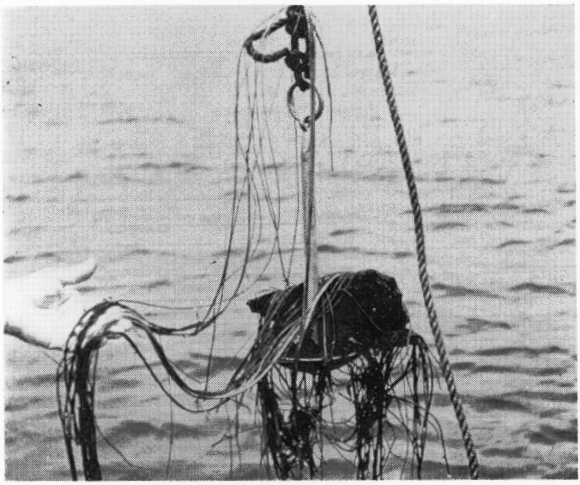
3. Spring and fall surveys should be continued to keep abreast of changes in composition and distribution of the rooted aquatics. This will enable us to plan for the next season's weed control program and evaluate the results of current operations.

4. Checks to evaluate any

changes in the fish population should be continued. These include rotenone sampling in selected coves, and the complete census of ice fishermen now in its eleventh year.

5. A full time technician or biologist will be needed if the program outlined above is to be carried out. Summer personnel will need to be employed to assist in the field program. In addition to the work at Lake Hopatcong, this person would be able to undertake investigational herbicide projects, coordinate the field research programs of chemical companies wishing to test new products in New Jersey, and conduct extension activities on lakes throughout the state. The latter is a service that is coming into increasing demand in our state.

6. Fish and Game funds are inadequate to support the above program. Since a great deal of the proposed extension work would take place on private waters where Fish and Game monies cannot be spent, it is recommended that a modest appropriation be made from general funds on an annual basis. #



Milfoil from Lake Hopatcong 13 days after the treatment

The weed control program conducted at Lake Hopatcong was one of the largest such projects ever undertaken. Its success must be attributed to the excellent inter-agency cooperation within the Department of Conservation and Economic Development. Fish and Game, Forests and Parks, and Navigation personnel worked together on the venture. Since Fish and Game biologists had tested a variety of chemicals and techniques in advance, the program was sound and effective.

The weed control project has satisfactorily reduced the main plant nuisances for at least three summers. (The economic gains to the Lake Hopatcong area are very significant, incidently.) Biologists expect that follow-up work will be required.

COUNCIL HIGHLIGHTS

MAY MEETING

The regular monthly meeting of the Fish and Game Council was held in Wildwood on May 8. The officials present included the following: Chairman McCormick, Councilmen Kelly, McCloskey, Hart, Lunsford, Frome, and Bohm, Director Underhill, and the Division of Fish and Game staff. Charles Canale and James Charlesworth were also in attendance.

On Setting Hunting Seasons

Chairman McCormick appointed Captain Hart as chairman of a committee composed of the three farmer representatives on the Council and three sportsmen to be designated by Captain Hart from three diffrent sections of the state. The committee will explore the possibilities of having an earlier hunting season. The Council has long recognized the biological desirability of having early seasons when game supplies are high and the weather is good. But, landowners and sportsmen have never fully agreed on the best way to handle this problem.

Tentative Hunting Seasons

On motion of Councilman Kelly, seconded by Councilman McCloskey and approval of the Council, the **tentative** hunting seasons for 1962 were set as follows:

Small game season	November 10 to December 8
Deer, bow and arrow	October 6 to November 9
Deer, firearms	December 10 to December 15

Federal Outdoor Recreation Program

The Director called the Council's attention to two bills which are pending in Congress, Senate—3117, which authorizes a new Federal Outdoor Recreation Program, and Senate—3318, which provides the financing for the program. The Director stated that this subject was discussed with the Commissioner's office. The feeling is that this administration is in general support of the policies of the Washington administration. But, New Jersey finds itself in a dilemma in that the controversial boat tax, which is included in Senate—3318, is one of the principal sources of revenue for financing the program. And, it would, in effect, be discriminatory to New Jersey since the bulk of the Federal lands that would be bought under this program would be inland and have little impact on the boating public in a state such as New Jersey. Because of this boating interests are opposing the bill.

The Department is in favor of the program but is opposed to the

boat tax as written. The Director said that one method for obtaining revenue, which is in the legislature, is a use-sticker to be placed on cars indicating that the passengers would be entitled to use the various facilities afforded under the program. Most people seem to go along with this suggestion.

Chairman McCormick stated that he has not heard of anyone who was in favor of the boat tax. The Director commented that, in general, the sentiment is in favor of an expanded Federal program for outdoor recreation but with a more equitable means of financing.

Council Members Toured Area

Since no representatives of the press or sportsmen's groups were present after lunch, no open meeting was held. After the Council adjourned, the members made a tour of the Cape May section to view several possible acquisition areas. #

Converting Blowfish to Sea Squab

Two standard techniques are used to prepare blowfish for cooking, but regardless of the technique used, the hands should be protected with gloves as the blowfish has a rough skin and handling a couple dozen will leave one's hands well "sand papered". The simplest method is as follows:

1. Grasp fish's head in left hand with body protruding between thumb and forefinger.
2. Cut downward close to skull until backbone is encountered.
3. Grasp body with right hand and break backbone where cut was made.
4. Grasp broken backbone with right hand and pull, turning body inside out and, removing backbone with a slab of meat on either side.

A more complicated but faster (with practice) technique:

1. Place fish on cutting board, belly up.
2. Grasp lose belly skin in left hand.
3. With a sharp knife held flat against the underside of the fish, cut away the belly, beginning behind the anal fin and cutting forward until the head is reached.
4. Twist knife 90° and cut down through backbone but not through the skin of the back.
5. Holding the backbone with the knife pull on the head with the left hand, and stripping the skin off the back and meat.

PAUL E. HAMER,
Senior Fisheries Biologist.

VIOLATORS ROUNDUP

MARCH, 1962

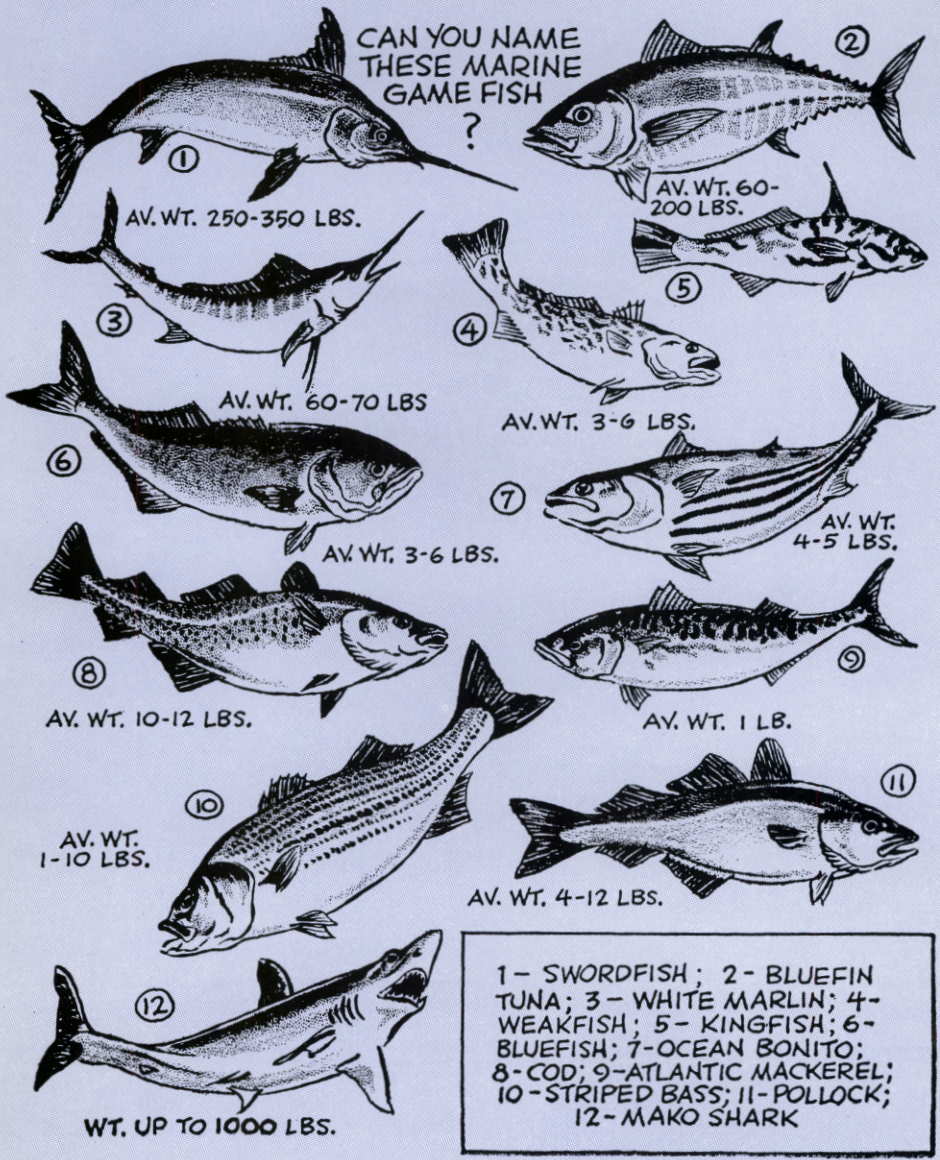
Defendant	*Offense*	*Penalty*
John Kinascyuk, 120 Tinton Ave., Eatontown	Hunt deer at night	100
John Kinascyuk, 120 Tinton Ave., Eatontown	Illegal missile	100
John Kinascyuk, 120 Tinton Ave., Eatontown	Loaded gun in auto	20
Lewis Lolli, 217 Wood St., Vineland	Hunt on Sunday	20
Lewis Lolli, 217 Wood St., Vineland	Illegal missile	100
Charles Hyson, 393 Hudson St., Hackensack	Hunt no license	20
Charlotte Lolli, 217 Wood St., Vineland	Illegal firearm	20
Wm. Dean, Maple Ave., Estell Manor	Permit maintenance for unlawful taking of game	20
Maurice Mitchell, 626 Woodland Ave., Brielle	Illegal missile	100
Maurice Mitchell, 626 Woodland Ave., Brielle	Illegal missile	100
Ernest Lattimer, 1739 Brand Park, So. Belmar	Illegal firearm	20
Garrett Bush, Amwell Rd., Belle Mead	Uncased firearm	Jail
Lewis Dellermo, 207 Parker St., Newark	Illegal firearm	20
Frederick Johnson, 10 Poplar Rd., Stelton	Hunt pheasants closed season	20
Ronald Cucinotta, 6523 Walter Ave., Pennsauken	Negligent use of weapon	100
Stanley Springsteadak, 421 Smith St., Millville	Uncased firearm	Prob., 100
Stanley Springsteadak, 421 Smith St., Millville	Gunning on revoked list	100 Prob.
John Mason 3rd., 606 E. Mulberry St., Millville	Hunt no license	20
John Mason 3rd., 606 E. Mulberry St., Millville	Uncased firearm	100
John Mason 3rd., 606 E. Mulberry St., Millville	Loaded gun in auto	20
John Mason 3rd., 606 E. Mulberry St., Millville	Hunt aid of lights	20
Manson Seay, Shiloh Ave., Box 132, Rosenhayn	Hunt deer at night	100
Manson Seay, Shiloh Ave., Box 132, Rosenhayn	Hunt aid of lights	20
Manson Seay, Shiloh Ave., Box 132, Rosenhayn	Hunting on Sunday	20
John Seay, Parvins Mill Rd., Bridgeton	Hunting on Sunday	20
John Seay, Parvins Mill Rd., Bridgeton	Hunt aid of lights	20
John Seay, Parvins Mill Rd., Bridgeton	Hunt deer at night	100
Douglas Taylor, 111 Chestnut Drive, Wayne	Loaded gun in auto	20
George Dodd, 4 Sylvan Way, Summit	Loaded gun in auto	20
Geo. Ernst, 166 Gravel Hill Rd., Smoke Rise, Kinnelon	Kill deer closed season	100
Richard Leonard, 3207 Atlantic Ave., Longport	Hunt no license	20
Robert Petrick, 21 Dogwood Rd., Morris Plains	Loaded gun in auto	20
Louis Levano, N. Brewster Rd., Vineland	Illegal poss. deer	100
John Williams, 17 Middle Ave., Millville	Tag not displayed	5
John Fahmie, 48 Zeliff Ave., Little Falls	Illegal firearm	20
Leroy Readdy, Market St., E. Millstone	Tag not displayed	5
Lewis Sanvale, 1811 Palisade Ave., Union City	Illegal poss. game birds	400
Lewis Sanvale, 1811 Palisade Ave., Union City	No lic. to keep game birds	50
Jack L. Smith, 39 Putnam St., Somervile	Kill deer closed season	100
John P. Fentio, 404-42nd St., Union City	Hunt deer at night	100
John P. Fentio, 404-42nd St., Union City	Hunt deer closed season	100
John P. Fentio, 404-42nd St., Union City	Use rifle to hunt	20
Frank Hajtovik, 282 Washington Ave., Dover	Illegal firearm	20
Anthony Cannotuna, 173 Sandford Ave., Kearny	Illegal missile	100
Rancis Dalpias, 70 W. Cherry St., Rahway	Illegal firearm	20
Wm. Van Orden, 126 Hackett Pl., Rutherford	Loaded gun in auto	20
Robert Jacques, 17 Bruce Ct., Milltown	Loaded gun in auto	20
Robert Becker, 106 South Ave., Fanwood	Illegal firearm	20
Guida Zema, 24 Bachman Pl., Irvington	Loaded gun in auto	20

. . . *Violators Roundup*

Defendant	*Offense*	*Penalty*
Theodore Graner, 370 Thomas St., Phillipsburg	Loaded gun in auto	20
Henry Pressley, 379 Peshine Ave., Newark	Loaded gun in auto	20
Wm. Eisele, Box 58, Dorchester	Illegal firearm	20
Lewis Harrum, 115 Berlin Rd., Gibbsboro	Uncased firearm	100
John Adell, Jr., 28 Lantana Way, Lawrence Harbor	Loaded gun in auto	20
Ronald Reid, 365 Union St., Trenton	Uncased shotgun	100
A. Wm. Potts, Woodruff Rd., New Egypt	Uncased shotgun	100
Jos. Ricchiuti, 1508-82nd St., No. Bergen	Shotgun on State game refuge	50
Richard Bounds, 716 Campe St., Egg Harbor	Illegal poss. deer	100
David Hartman, 16½ Prospect St., New Brunswick	Transport untagged deer	100
Alphonse Licata, 635-1st Ave., Elizabeth	Discharge firearm across road	20
Anthony Prisco, 100 Ridgedale Ave., Morristown	Fail to tag deer	100
Thomas Boardman, P. O. Box 123, Greystone Park	Loaded gun in auto	20
J. Winfied Conover, Jr., 251 N. New Road, Absecon	Illegal poss. 2 striped bass	40
Dale Benecoter, 1300 W. Champlain St., Manville	Shoot from roadway	20
Dale Benecoter, 1300 W. Champlain St., Manville	Hunt deer before hours	100
Charles Todano, 143 Willoughby Rd., Fanwood	Loaded gun in auto	20
Wm. Wanca, 49 Pomona Blvd., Cliffwood Beach	Attempt shoot illegal deer	100
Ernest Chanti, 511 Cherry St., Roebling	Loaded gun in auto	20
Adam Wiyner 11 Davidson St., Clifton	Loaded gun in auto	20
Daniel DeCamp, Dock Rd., West Creek	Illegal missile	100
Robt. Toleman, Box 150, Rt. 206, Vincentown	Uncased firearm	100
John Toleman, Box 150, Rt. 206, Vincentown	Uncased firearm	100
John A. Reily, 79 Jarvis St., Pemberton	Loaded gun in auto	20
John A. Reily, 79 Jarvis St., Pemberton	Hunt deer at night	100
Thomas P. Koszarek, 4613 Almond St., Phila, Pa.	Fish no license	20
Kenneth Doerflein, 532 Groove St., Irvington	Firearm on Sunday	20
Ken Kletyin, 1059 Anna St., Elizabeth	Uncased firearm	100
Joseph Grossi, 951 Madison Ave., Elizabeth	Uncased firearm	100
Carmine Pici, 79 Douglas Drive, Montville	Illegal firearm	100
Otto Drimel 56 Goodwin Ave., E. Paterson	Kill deer closed season	100
Donald Webb, Main St., Mauricetown	Poss. muskrat by illegal means	20
LeRoy Lee, R. D., Mauricetown	Poss. muskrat by illegal means	20
Benj. Allan, 809 New Brunswick Ave., So. Plainfield	Illegal missile	100
Nicholas Demarco, 23 Belmont Ave., Dover	Dump refuse on State land	50
Richard Robbins, 410 W. McNeal St., Millville	Attempt take muskrat by illegal means	20
George Ungemah, 697 S. 19th St., Newark	Firearm on Sunday	20
Vito Vulpi, 88 S. Essex Ave., Orange	Attempt take deer closed season	100
Vito Vulpi, 88 S. Essex Ave., Orange	Hunt deer at night	100
Steve Rella, 579 Beech St., Orange	Poss. deer closed season	100
Steve Rella, 579 Beech St., Orange	Uncased firearm	100
Jay C. Platt, Penny Hill Rd., Dorchester	Attempt take muskrat by illegal means	20
James J. Summers, 4838 N. Bouvier St., Phila, Pa.	Fish no license	20
Alex Woodward, 520 Noble St., Phila, Pa.	Fish no license	20
Joseph Andros, Jr., 447 Roxborough Ave., Phila, Pa.	Fish no license	20
Russell Hyson, Terrace Ave., Tuckahoe	Uncased weapon	100
Joe Gardner, 1416 W. Lenox St., Phila, Pa.	Fish no license	20

Fur, Fin and Campfire

By JACK SORDS



1 – SWORDFISH; 2 – BLUEFIN TUNA; 3 – WHITE MARLIN; 4 – WEAKFISH; 5 – KINGFISH; 6 – BLUEFISH; 7 – OCEAN BONITO; 8 – COD; 9 – ATLANTIC MACKEREL; 10 – STRIPED BASS; 11 – POLLOCK; 12 – MAKO SHARK

The record weight for the fish above may far exceed the average weights given. For example, the New Jersey record for bluefin tuna is 787 pounds

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