

ANNUAL REPORT

OF THE

New Jersey
Department of Conservation
Division of Fish and Game



For the Fiscal Year
Commencing July 1, 1946
and Ending June 30, 1947

THE UNIVERSITY OF CHICAGO

Department of Chemistry
Division of Physical and Inorganic Chemistry

For the fiscal year
Commencing July 1, 1957
and ending June 30, 1958

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION
DIVISION OF FISH AND GAME
TRENTON

*To His Excellency, Alfred E. Driscoll, Governor, and Members of
the Senate and General Assembly of the State of New Jersey:*

As required by law, we submit herewith the annual report of the work of the Division of Fish and Game for the fiscal year covering the period from July 1, 1946, to June 30, 1947.

Very respectfully,

HIRAM B. D. BLAUVELT, *Chairman,*
ARTHUR F. FORAN,
FRANK J. VALGENTI, JR.,
MARVIN A. SPAULDING,
HAROLD W. LAAUWE,
W. STEELMAN MATHIS,
HAROLD E. LONGSDORF,
HARRISON COOK,
JOSEPH AYERS,

Council Members.

STATE OF NEW YORK
DEPARTMENT OF CONSERVATION
DIVISION OF FISH AND GAME

REPORT

In the following report the Division of Fish and Game of the State of New York presents the results of the work done during the fiscal year ending June 30, 1917. The report is published in accordance with the provisions of the Fish and Game Law, Chapter 108 of the Laws of 1915, as amended.

Very respectfully,

- Frank B. Rowland, Director
- James B. Winters, Jr., Deputy Director
- Harvey A. Jones, Chief Fish and Game Warden
- W. Lawrence Smith, Chief Game Warden
- Harvey H. Johnson, Chief Fish and Game Inspector
- James A. Smith, Chief Fish and Game Inspector

Charles H. Smith, Chief Fish and Game Inspector

**LIST OF COUNCIL MEMBERS HOLDING OFFICE
AT THE DATE OF THIS REPORT**

June 30, 1947

HIRAM B. D. BLAUVELT, *Chairman*.....Oradell
FRANK J. VALGENTI, JR.....Madison
HAROLD W. LAAUWE.....Preakness
ARTHUR F. FORAN.....Flemington
W. STEELMAN MATHIS.....Toms River
HAROLD E. LONGSDORF.....Mount Holly
JOSEPH AYERS.....Andover
MARVIN A. SPAULDING.....Trenton
HARRISON COOK.....Absecon

ANNE E. SULLIVAN, *Secretary*
OFFICE, State House Annex, Trenton, N. J.

MALCOLM DUNN, *Superintendent of Game Farm*, Forked River
ROBERT BUNTAIN, *Superintendent of Game Farm*, Hackettstown
CHARLES O. HAYFORD, *Superintendent of Fish Hatchery*, Hackettstown
EDWARD H. ROTH, *Superintendent of Quail Farm*, Holmansville
L. G. MACNAMARA, *Superintendent of Game Management*, Pittstown
JULES MARRON, *Supervisor of Public Relations*, Bevans

**LIST OF FISH AND GAME WARDENS HOLDING COMMISSION
AT THE DATE OF THIS REPORT**

FREDERICK C. CRAIG, *Protector*.....Hackettstow
 G. I. HALL, *Assistant Protector*.....Salen
 JAMES H. TRELOAR, *Assistant Protector*.....Newtow
 JOHN R. HUGG, *Assistant Protector*.....West Caldwell

ALFRED F. BAKLEY.....Washington
 DAVID W. BROCKER.....Denville
 FRANK T. CLARK.....Hackettstown
 OSCAR S. CLARK.....Vineland
 WILLIAM P. COFFIN.....Somerville
 STANLEY COOK.....Van Hiseville
 HERBERT G. COTTRELL.....Belmar
 CLIFFORD CUDNEY.....Jamesburg
 ANDREW DRYSDALE.....Gladstone
 MATTHEW W. ENGELS.....Mays Landing
 J. HOWARD FERRY.....Jersey City
 WESLEY GIBBS.....Yardville
 JOHN W. GRAHAM.....Swedesboro
 GEORGE E. GROVES.....Bridgeton
 RICHARD K. HALL.....Audubon
 J. LESTER HYDE.....Newton
 ALFRED S. JONES.....Salem
 FRANCIS L. JONES.....Stone Harbor
 JAMES L. KILPATRICK.....Tuckerton
 NORMAN P. KRAEUTER.....Clinton
 HARRY MORRISON.....Sussex
 CARL W. NEWMAN.....Dover
 THOMAS F. NOLAN.....Mercerville
 JOHN C. O'DOWD.....Trenton
 EUGENE W. O'NEILL.....Clinton
 DANA J. SAXTON.....Absecon
 ANDREW SHRAW.....Springfield
 LEO F. SHURR.....Glen Gardner
 THOMAS L. SPENCER.....Hackensack
 GARRET WESTERVELD.....Paterson
 ROY H. WILLIAMS.....Pompton Lakes

FOREWORD

BY

HIRAM B. D. BLAUVELT, *Chairman*

This report speaks for itself. It shows much hard work done by your Council, department heads and general staff, and many sound, permanent accomplishments. Long-range policies have been initiated in game propagation, habitat improvement, and pond development at the hatcheries, which will yield beneficial results for many years to come.

The regular monthly meetings of the Fish and Game Division Council have been opened to the general public, as well as the press, and it is gratifying to note that interested sportsmen's groups and delegates from rod and gun clubs and field trial associations have all availed themselves of the privilege of such attendance.

For the first time, the Council met with the representatives of the New Jersey Farm Bureau with a view toward resolving mutual problems, with the result that farmer relations today are probably on a more understanding and co-operative basis in this State than they have been for some time past, and compare very favorably with similar farmer relations in some of our larger neighboring states.

EDUCATIONAL PROGRAM

Violations have increased in such an alarming manner, that the Council approached Governor Driscoll about the possibility of initiating educational courses in the public schools of the State to train the younger generations as to what constitutes a genuine sportsman. The Governor was very receptive to the idea and felt that the State could well sponsor a motion picture of such a nature, as well as courses, with the full weight of the State Department of Education behind it. As a result of this moral support and considerable work on the part of the Division's Conservation Education Department, numerous sportsmen's clubs and conservation clubs have been started in many public schools. Clinton High School recently set up a special course in conservation for its students, a fine advance step in a highly desirable direction.

PHEASANT PROJECTS

One of the most successful projects has been the Council's Day-Old Pheasant Chick Raising Program, which is being done by 4-H Groups, Boy Scouts, Rod and Gun Clubs, Future Farmers of America, and similar youth organizations. It has been very productive in rearing pheasants and has produced economical birds for the sportsmen, as well as money for the youngsters, which is spent right here in the

State and frequently used by them toward their own educational expenses.

It is hoped that further research on the question of artificial propagation of the popular common rabbit, which it is now impossible to raise in captivity as pheasants and quail are today, might enable youth groups to have another cash farm crop for sports purposes.

A program of banding every pheasant and quail released has been instituted as a permanent policy. These are durable, non-rusting aluminum leg-bands with serial numbers on them and the request: "Notify N. J. Div. of Fish & Game, Trenton—(Serial Number)."

The response of the sportsmen throughout the State in returning these bands for tabulation and wildlife study has been excellent, and a great deal has been learned about the survival, drift, feeding and living habits of our game-birds after they have been released from such returned bands. Through similar scientific approaches, it is hoped effective propagation, long-range planning, as well as habitat development work, will be guided by the actual facts brought back from the hunting fields in this way.

Modern farming methods have been one of the principal reasons for the decrease in game in every State. The tractor farms too clean, eliminates weeds, hedge-rows, and gleanings in grain fields, reducing to a minimum cereal waste and spillage formerly utilized by wildlife for food. The modern tractor also moves too fast, and it is said that 95% of nesting game-birds and many rabbits are destroyed by the mowing machine. Frequently the mother bird is actually decapitated on the nest or rising at the last moment has both legs cut off. I have been in touch with the engineering department of one of the largest manufacturers of agricultural machinery in the United States, to see whether possibly some sort of a flushing bar could be devised for the modern mowing tractor, similar to that formerly successful on the horse-drawn mowing machine, which would save these game-bird mothers and their young chicks. Farmers have indicated great receptiveness towards this idea and if something is worked out it will undoubtedly be taken up by other farming machine manufacturers and enjoy wide use throughout the United States. Its effect on increased game populations everywhere in this country would be tremendous.

CROW ROOST SURVEY

The common crow has long been recognized as one of the worst wildlife bandits in the whole gangsterdom of vermin. For the first time in New Jersey a complete crow roost census has been made of the State telling sportsmen where crows can be found congregating in large numbers to roost, so helping sportsmen to exterminate them as a serious menace to young wildlife, also a pest and economic loss to the farmer.

ELECTRONICS ON GAME FARMS

Investigation was made into the possibility of applying the new science of electronics to our incubators on the State game farms. Though not ready yet, this will eventually come, scientists promising us an almost 100% hatchability of game-bird eggs through scientific egg-selection for fertility, livability and discardance of eggs otherwise unsuitable for setting. Losses from crippled chicks, mongols, and other birth abnormalities are so avoided, maximum production capacity of all incubators ensured, with the consequent saving of time, labor, electric current, supervision, etc.

POND BUILDING PROGRAMS

In one aspect, some of the mid-Western States have far surpassed the East, namely in their Pond-Building Programs. Some States have built as many as 2,000 and 3,000 farm ponds of 2 to 3 acres and larger. New Jersey should not lag behind in this respect and we have been hoping, through the co-operation of the U. S. Soil Conservation Division in the State, the New Jersey State Board of Agriculture, and the Farmers' Bureau, to work out an extensive farm ponds construction program which is so important to soil conservation on every individual farm and to the whole wildlife population in the area surrounding such ponds. Federal Pitman-Robertson Funds, as recommended by Dr. Gabrielson, will be devoted to this purpose.

WARM-WATER FISH

The undersigned has long been a staunch advocate of placing greater emphasis on pond-fish. As a kid, he spent most his spare time on the creeks, sloughs, cut-offs, and later the lakes of the Hackensack River, fishing for "sunnies," catfish, eels, perch, pickerel and other warm-water fish. It has been my contention that the first sunnies, roaches, shiners, chubs, etc., caught by youngsters are what make out of them future adult fishermen. Trout require very cold waters and have not been noted for their reproductive powers in the streams of this State. On the other hand, most of the fishing waters of the State are warmer temperatures than can support the stocking or natural propagation of trout, and yet that species is the heaviest and most popularly fished. With the strong support of Colonel Foran who has succeeded me as Chairman of the Council, and other members of the Division, for the first time our New Jersey Hatcheries have gone into a program which in the future will prove productive in raising pond-fish for stocking purposes. This should be not only enthusiastically welcomed by the row-boat fishermen and summer sportsmen, but as a recreational asset of the State should benefit the mountain resorts, the lake and summer camp regions and all other portions of the State where fresh water fishing is a popular attraction.

LICENSE FOR BOW AND ARROW

For the first time in the history of the State, legislation was enacted providing a special bow-and-arrow deer season. This Council is proud of the return of such sportmanship to our woods and welcomes those who impose upon themselves such severe handicaps in the pursuit of game.

To show the calibre of these bow and arrow hunters, they themselves have urgently requested that a special bow and arrow license of \$3.15 be imposed upon their fraternity, because they realize that with unusually mounting high costs, the present license fees are far too low. License fees are set by the Legislature and a bill to enact their request of a \$3.15 Bow and Arrow License has been drawn and will be presented to the next Legislature. Their chances of getting anything except pure sport for their money are almost nil. If there is any finer sportmanship than this, it would be hard to find it!

SAFETY AND FOREST FIRES

Laxity in the handling of firearms has increased due, possibly, to the war. The New Jersey State Safety Council has come to our assistance and produced a very fine colored motion picture on the safer handling of firearms, and has provided us with thousands of safety placards and safety booklets on the proper method of handling guns to prevent accidents and avoid forest fires. Educational work of this type is invaluable and has saved the lives of many hunters, as well as protected both State and private forests against the devastation of fires.

"N. J. DUCKS, LTD."

A source of great concern to all sportsmen conservationists is the rapid decrease in the wildfowl population, especially wild ducks which have formerly supported so much of the gunning pressure in this State. Since my appointment to the Fish and Game Commission, April 9, 1945, I have been personally making studies as to what could be done here **within the State** to improve and increase the wild duck population here. Certainly "Ducks Unlimited," which is a non-profit organization supported entirely by voluntary contributions has done a wonderful job in bringing back the Canadian breeding grounds of all wildfowl. However, I have felt New Jersey itself should try to do something along these lines within its own limits. The ground work has been laid to incorporate a non-profit organization here to be known as "N. J. Ducks, Ltd." which can receive contributions similar to those given by sportsmen to the National Organization "Ducks Unlimited," the directors to be three drawn from members of the Fish and Game Council, and five from prominent citizens of the State who are deeply interested in sport, the subject of waterfowl habitat and duck population improvement. This project will not be able to get under way until the spring of 1948, but it should prove effective with the expenditure of very little money. Some of the states have spent large sums within their States on wild duck projects without noticeable success. I feel our humble project which largely requires little money expenditure but much work and especially co-operation

on the part of duck gunners and sportsmen's clubs themselves, as well as local municipalities, will prove to be an unqualified success. The idea may well spread to other States as well. It is not difficult to visualize "New York Ducks, Ltd.," "Pennsylvania Ducks, Ltd.," "Maryland Ducks, Ltd." all working within the overall pattern of the highly successful and necessary international "Ducks Unlimited" of Canada and the Americas.

EEL GRASS

Worthy of especial mention are the successful attempts to bring back the once extensive eel grass beds to the New Jersey Shore Area. Preliminary plantings have secured a foothold and future prospects look bright. Eel grass was once one of the most important wildfowl water-grown feeds and its recovery will do much to bring the wild ducks back to our coasts.

MUSKRAT INDUSTRY

Not enough attention is paid to New Jersey mammals. The beaver will never again be much more than a curiosity, but few residents of the State realize that in the ordinary, humble muskrat we have a half-million dollar (\$500,000) industry. Steps to improve breeding and fur quality, control illegal trapping, eliminate disease, etc., are things for the suggested Wild-life Chair to work on. The improvement of this important cash crop deserves real study for it will in time contribute much towards the cost of such work. Many of the same persons who engage in trapping are also sportsmen who participate in upland hunting and enjoy wildfowl gunning. It should be strongly noted that the measures to improve good muskrat management are identically those which are urgently needed to benefit all ducks and marsh wildlife.

WILD-LIFE RESEARCH

A project initiated but still to be realized is the establishment of a Wild-life Chair at Rutgers State University. The Council unanimously passed the following resolution:

"RESOLVED, That the Fish and Game Council petition the Governor and Legislature through the Commissioner of Conservation, to establish a Wildlife Management and Research Chair at the State University for the study of fish and game problems with sufficient additional funds appropriated to the State University to afford adequate experimentation and research in diseases, scientific breeding, propagation, feeds, etc., not only for food and economic value, sports and recreational good, but for the general welfare of our citizens as a whole in the conservation and use of our wildlife and the natural resources of our State." Adopted unanimously by Commissioners, Division of Fish and Game, Department of Conservation, Meeting of July 10, 1945.

From both the short-range and long-range point of view this is most important to wildlife and the future of hunting and fishing in

the State of New Jersey. With today's costs the Division has only to lose one year's production at one of the game farms or the hatchery and the loss would pay for several years of such basic and applied research. Not to have these stand-by and operating facilities is not only gambling but extremely unsound, like a going business trying to get by without carrying any insurance.

Heretofore Rutgers State University has been most co-operative and always generously helped us out, without recompense whatsoever, with our game bird diseases, fish disease problems at the Hatcheries in every respect out of the goodness of their own private hearts. We otherwise would have incurred some of those heavy losses through the ravages of epidemic diseases. This Division and every single sportsman in the State is deeply indebted to Rutgers and the fine Professors on her staff for much unselfish, entirely unrequited, extra-curriculum work done for us by those hard-working scientists and experts in husbandry. They cannot be thanked enough. (Also the Wildlife Chair should be forthcoming soon.)

NEW GAME BIRDS

Conservation departments of all States should be on the alert for new game-birds species which might be successfully introduced into this country to take the place of some of our American native species which seem to be losing ground, due to one cause or another, like the ruffed grouse. I have made a continuous study of this subject for the past 15 years, and especially so since becoming chairman of this council. A couple more new "foreign" game-birds like the pheasant and the Hungarian partridge established here would be of tremendous importance.

The wild guinea fowl holds real possibilities. The writer analyzed these in Africa while on overseas duty during the war, where they constitute a major game-bird, and feels they have many of the necessary qualities: Alert to man and vermin, good foragers for food, hardy against rough weather and disease, prolific breeders, good edibility, sporty flight. Objections: They run ahead of a dog before flushing like a cock pheasant and the possibility of drifting in from the fields into farmyards and houses where their flavor might make them vulnerable to potting from the back porch or kitchen window. Some day we will hear more of the African guinea-fowl in America.

Most of the research should probably be directed towards deep woods living birds, where most of our unposted marginal land available for hunting remains today, to help replace and take some shooting pressure off our disappearing grouse. I have been in touch with Sweden about possibly importing the black-cock, or cock-o' the woods. Since usually the disease or parasite chain is broken with the egg, it has been considered to import the eggs and hatch them here. They are a hardy and a sporty bird, and might do well in our ruffed grouse habitats.

Again, Lester G. MacNamara, Superintendent of N. J. Wildlife Management, has brought to my attention the "Bamboo Partridge" which seems to have many ruffed grouse characteristics and I instructed him to make a complete research of this species as a possible new "deep-woods" species.

Lastly, I have done a great deal of research, even to the extent of breeding it myself, on the Reeves Pheasant which has the reputation of being the real woods pheasant, just as the Ring-neck is a grain-plains pheasant. Pennsylvania, I believe, once tried the Reeves but finally abandoned the species and traded their breeding stock to Michigan where very serious and only moderately successful efforts were made to establish them in the southern wooded portion of the State. Several large moors in Scotland are reported to have met with some success with Reeves, but my own study convinces me the Reeves is no answer to our grouse or pheasant problem. They are hardy but they do not reach adulthood for two years and the hens lay eggs only sparsely which precludes any extensive game-farm propagation, while in the wild the cocks are combative and tend to break up the nestings of all other birds in the area.

Science may again come to our rescue in the quest for new game-birds through electronics. Experiments seem to have "shocked" ordinary chicken breeds into giant sizes. It is not beyond the realm of projection that a present hardy bird species with many inherent game-like characteristics, such as the common starling, be electronicized into say quail-size or larger and through certain mutations of genes imparted such quail habits as increased ground-feeding, covey grouping tendencies, laying well to the dog, etc. The tough, self-reliant English sparrow is another subject highly qualified for such experiment.

STATE CO-OPERATION

Nor must this Foreword be concluded without extending appreciation and thanks to other New Jersey State Departments who have been very co-operative. They are: Department of Education, which, every summer, has been running a Conservation Workshop at the State Teachers College for biology and other interested teachers from the schools of our local municipalities; State Police, who render such fine co-operation to our Game Wardens whenever requested; Department of Agriculture; Department of Health on water pollution problems; the Attorney-General and his office for fine legal advice promptly rendered; the Purchase and Property Division of the Department of Taxation and Finance, and State fiscal executives; the Palisades Interstate Park Commission for its fine co-operation with regard to the Hudson River shad fisheries; and last, but not least, the entire Department of Conservation, of which the Division of Fish and Game is an integral part, which has always been sympathetic and helpful in our particular divisional problems.

THE FUTURE

Hunting and fishing in a State as small as New Jersey presents many difficulties. In actual land area it is one of the smallest of all the States. Farms and fields are further shrinking annually due to increased density of population. We are growing into a primary industrial State with some of the largest industries in the United States located here. We are sandwiched in between New York and Philadelphia, two of the largest cities in the United States, with Newark, Jersey City, Camden and Trenton all being sizeable cities

in their own right. It would certainly seem to speak pretty well for this Division of Fish and Game that any hunting or fishing at all survives today under such present conditions. Even though the problems are getting more difficult and the pressure greater on forests, fields, and streams, I feel that such progress has been made in a comparatively short while that hunting and fishing not only can but will survive in New Jersey. It has been and will be an increasingly tough job to provide it, but as you can readily see from reading this report which follows, much fine work has been done towards that end, and I am convinced that with the proper planning, management and vision and above all the proper attitude of true sportsmanship on the part of the hunter and the fisherman themselves, there still remain many years of good outdoor sport for the citizens of New Jersey in this State.

SUMMARY OF ACTIVITIES 1946-1947

The following is a brief summary of propagation and liberation of fish and game, and wildlife conservation activities during the fiscal year beginning July 1, 1946, and ending June 30, 1947.

FISH AND GAME LIBERATION

Pheasants—39,743, of which number 19,460 were propagated and distributed from state-owned farms; 11,937 purchased from licensed dealers; 8,346 raised to adult stage by 4-H Clubs and others from day-old chicks hatched at State farms.

Quail—13,452, all raised at the State Quail Farm.

Rabbits—39,639, all purchased from the west.

Fish—932,076 propagated and distributed from the State-owned hatcheries comprised of the following: trout over legal size, 416,480; bluegill sunfish, 235,350; large-mouth bass, 128,816; small-mouth bass, 126,430; tadpoles, 25,000.

In addition, 87,459 adult fish, as listed, were netted from various reservoirs and other closed waters and re-distributed: yellow perch, 32,146; white perch, 700; large-mouth bass, 2,707; small-mouth bass, 71; calico bass, 2,600; pickerel, 1,239; sunfish, 15,241; bluegills, 150; catfish, 5,570; shiners, 15,600; miscellaneous 11,435.

* * * * *

The market value of all fish and game liberated was	\$477,646.25
The receipts from resident and non-resident hunters' and anglers' licenses were	\$582,811.60

LAW ENFORCEMENT

There was a substantial increase in the number of prosecutions for violations of the fish and game laws. Arrests were made in 1,405 cases, and penalties totaling \$47,792.64 collected.

LICENSES ISSUED

1945	1946
195,866	244,431

1946 DEER KILL

The total number of legal deer taken during the five-day open season was 3,043. This was the greatest number of these animals ever taken during any open season since the turn of the century.

LATEST REPORT OF FISH AND GAME TAKEN

The 1945 tabulation of fish and game taken reveals that with the increased license holders during that year most of the game species taken correspondingly increased; however, the fish taken registered a decline. This may be accounted for by the fact that only 30% of the licensees reported their bag. A comparison of kill census figures follows:

	1944	1945
Deer	2,633	2,704
Pheasants	135,765	158,982
Quail	25,445	21,599
Rabbits	488,722	588,083
Gray squirrels	285,596	200,857
Grouse	4,289	4,446
Woodcock	2,520	3,007
Ducks	79,238	84,482
Geese	888	1,944
Trout	299,992	293,926
Bass	181,523	161,494
Pickrel	98,036	77,796
Skunk	2,925	4,012
Mink	245	317
Muskrat	176,112	157,604

PREDATORY VERMIN CONTROL

The following tabulation shows the predatory animals taken by the sportsmen during 1945, as compared with the previous year:

	1944	1945
Cats	3,788	6,425
Weasels	1,261	2,484
Red squirrels	1,116	4,985
Foxes	1,754	2,248

There were also taken 47,026 predatory birds and animals by the wardens, wildlife managers, trappers, and holders of special vermin permits.

GAME MANAGEMENT

Restoration of habitat for game birds and animals was stressed this year. In addition, emphasis was placed on the evolvment and development of a plan whereby sportsmen would be allowed the use of farmers' lands in a co-operative manner.

Experimental food plants were carefully studied in an effort to develop an adequate food facility for southern New Jersey. Major development activities were directed to the restoration of waterfowl environment in order that local production would supplement decreased waterfowl numbers.

Under Federal Aid-to-Wildlife work a research project was started in respect to waterfowl known as project 16-R. Under project 11-D-6, 3,950 feet of dike were constructed, 3,815 feet of sod wall erected, two spillways built and three salt ponds installed.

LEGISLATION

Chapter 164—Approved May 20, 1947. Fixes the season on pheasant, quail, rabbit, squirrel, grouse and partridge, from November 10th to December 10th.

Chapter 239—Approved June 2, 1947. Fixes deer season from December 12th to December 16th, and, if any of said days fall upon a Sunday, then to December 17th. Also provides for a special season from December 7th, to December 11th, inclusive, for the killing of deer with bow and arrow exclusively, and prohibits any person from using or having in possession or under control, any poison arrow, arrow with explosive tips, or any bow drawn, held or released by mechanical means.

Chapter 319—Approved June 20, 1947. Permits the training of raccoon dogs between the hours of sunset and sunrise for a period of four weeks prior to the last week preceding the opening of the raccoon season.

Chapter 68—Approved April 17, 1947. Allows the taking of striped bass at any time of the year in the manner known as angling with rod and line.

Chapter 48—Approved April 9, 1947. Prohibits fishing on the opening day of trout season before 8:00 A. M.

Chapter 163—Approved May 20, 1947. Provides that on and after January 1, 1948 the fees for licenses to hunt or fish shall be as follows:

Resident hunting	\$3.15
Resident fishing	3.15
Non-resident and alien fishing	5.50
Non-resident and alien hunting	15.50

Chapter 159—Approved May 20, 1947. Permits the Division of Fish and Game to designate agents to issue licenses.

Chapter 64—Approved April 17, 1947. Eliminates the necessity for the use of a clerk's official seal on hunting and fishing licenses.

Chapter 297—Approved on June 18, 1947. Prohibits any person fishing through the ice in the Navesink and Shrewsbury River to cut a hole larger than ten inches in diameter or within fifteen feet of any other hole in the ice.

Chapter 303—Approved June 18, 1947. Provides for the revocation of a hunting and fishing license for two years, and upon conviction for a second violation, a permanent forfeit of license as an additional penalty to be levied on any person who shall cause injury, or destroy crops, orchards, fences, building or live stock, while hunting or fishing on the property of others.

Chapter 334—Approved June 25, 1947. Provides that the Board of Chosen Freeholders may pay, out of the county funds, the sum of not more than ten dollars as a bounty on fox, and no bounty on fox shall be paid to any employee of the Division of Fish and Game.

GENERAL

ELECTION OF CHAIRMAN

The nine original members of the Council continued to hold office during this year. At the meeting in July, Hiram B. D. Blauvelt, of Oradell, was selected to serve as Chairman during the period covered by this report.

WARDENS' SERVICE

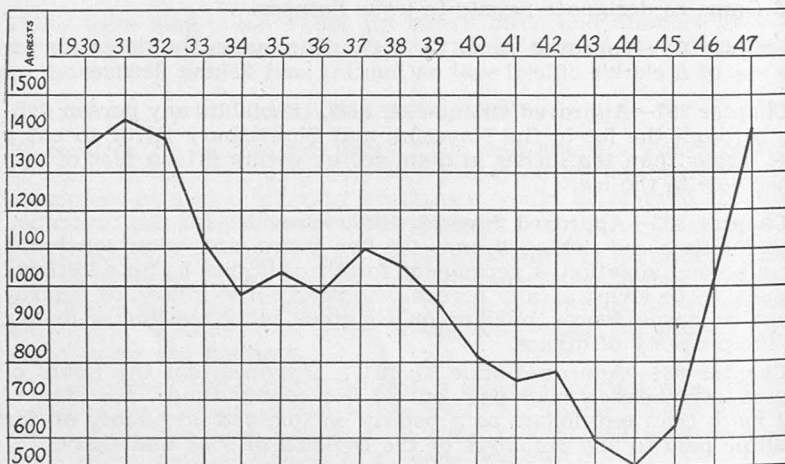
The Division regrets to report the loss of two capable men of this department during the past year and expresses sorrow over the untimely passing of these employees. Assistant Protector Charles C. Hill passed away on April 30, 1947, after 22 years' service in the Wardens Force, and Alfred J. Perkins met his death on November 23, 1946, as the result of an automobile collision while in performance of duty as Monmouth County Warden, in which capacity he had served for seven years.

PROSECUTIONS

A 32% increase in prosecutions for flagrant violations of the fish and game laws was made by the Warden Force. In addition, 1,018 written warnings were handed out. This rise in prosecutions may be attributed in part to a general increase in violations due to unsettled conditions following the war, the high price and shortage of meat, and to the increased efficiency and better equipment of the Warden Force.

Although the peak in violations due to the above causes may shortly be reached, the increase in persons interested in hunting and fishing will result in greater competition for our supply of fish and game, and this in turn may require still stricter regulations to save certain species from extermination.

It is interesting to note a comparison of the number of arrests over a period of years as shown on the graph below:



The number of arrests made by each Warden, Deputy Wardens and other complainants, together with warnings issued during the fiscal year is as follows:

	<i>Arrests</i>	<i>Warnings</i>
A. Jones	80	46
Graham	78	9
Williams	74	60
Groves	72	13
Newman	69	66
Spencer	59	34
Engels	58	79
Nolan	55	15
F. Clark	55	19
Coffin	50	97
Brockner	47	59
Kilpatrick	43	10
O'Dowd	42	37
Westerveld	37	38
Shurr	32	85
Cottrell	31	51
Gibbs	31	16
Hyde	31	14
Cudney	29	60
Shraw	27	4
O. Clark	24	22
Cook	23	3
Morrison	20	59
F. Jones	19	1
Kraeuter	18	7
Bakley	18	20
Ferry	17	13
Saxton	17	7
Woodlin	16	2
Drysdale	16	47
Perkins	15	9
R. Hall	10	6
O'Neill	10	9
Mathis	6	
Treloar	4	1
Craig	4	
Hugg	4	
G. Hall	2	
Deputy Wardens	134	
Other complainants	30	
	<hr/>	<hr/>
	1,405	1,018

Sentence was suspended in 66 cases, 18 defendants committed to jail, 10 placed on probation and two given time to make payment, 33 cases appealed by the defendants, nine dismissed, and one gun was confiscated, and 66 licenses revoked.

A grouping of the various offenses for which prosecutions were brought follows:

LICENSE VIOLATIONS: Fishing without, 277; hunting without, 125; false information, 52; procuring wrong, 14; loaning, 7; altering, 4; refusing to show, 3; trapping without, 8.

FISHING VIOLATIONS: Closed season, 33; undersized fish, 14; taking illegal, 10; beam trawling, 6; illegal netting, 8; excess bag limit, 4; trout before hours, 2.

HUNTING VIOLATIONS: Using lights, 51; closed season, 24; on Sunday, 42; waterfowl after hours, 92; from power boat, 14; hen pheasant, 7; illegal hunting, 7; excess bag limit, 4; protected birds, 9.

DEER VIOLATIONS: Closed season, 71; at night, 37; doe or other illegal deer, 39; mutilation, 7.

FIREARMS VIOLATIONS: Loaded in auto, 114; illegal guns, 106; closed season, 49; illegal missile, 76; alien, 1; discharging from highway, 1.

TRAPPING VIOLATIONS: Closed season, 21; untagged beaver, 3; illegal trapping, 3; stealing traps, 1.

MISCELLANEOUS VIOLATIONS: Dog at large, 24; resisting or interference with officer, 16; dogs at night, 8; trespass on hatchery, 3; undersized lobster, 3; pollution, 2; drawing waters, 1; unlawful sale game, 1; illegal posting, 1.

Prosecutions according to districts were as follows:

First District:

Sussex, Warren, Passaic, and Hunterdon Counties 307

Second District:

Bergen, Essex, Hudson, Middlesex, Somerset, Union and Morris Counties 393

Third District:

Mercer, Monmouth, Ocean, and Burlington Counties 322

Fourth District:

Cape May, Camden, Cumberland, Gloucester, Salem, and Atlantic Counties 383

1,405

REDUCTION IN THE DEPUTY WARDEN FORCE

A long overdue change was made in the Deputy Warden set-up which had been in force for a great many years. Over a period of time through appointments by the various Commissioners, the Deputy Wardens numbered a total of 2,276. The great majority of these men were sportsmen of the highest caliber, willing and anxious to devote, without recompense, their time and ability to better enforce the laws without which our game and fish could not survive. There were, however, a few who used their enforcement powers unwisely, thus casting reflection on the whole. Many could not be actively on call because of more pressing needs to earn a living. It was therefore decided to recall the appointments of all Deputies, with the exception of a very few active ones who could arrange to be on call at all times when their assistance might be needed for law enforcement work. This resulted in a reduction of Deputy Wardens in the entire State from 2,276 to 168, 22 of whom were employees of the Division. A policy of allowing a maximum of 10 Deputies to each county was also adopted. The Deputies to be retained were to be selected by the Wardens of each county.

The fact that law enforcement was not hampered by thus reducing the Deputy Warden Force is shown by the actual arrest figures. During the fiscal year 1945-46, the final year in which the large Deputy Force was in operation, 58 arrests were made by Deputies. In the fiscal year 1946-47, the arrests made by the reduced force totaled 134.

SPECIAL CONSERVATION OFFICERS

A plan was formulated to retain the active interest of many of the former Deputy Wardens, whose interest was principally in the conservation of our wildlife and who had been of inestimable service in such activities as shelter building, winter feeding, and predator control. These men were invited to become affiliated with the department as Special Conservation Officers and have been furnished an identification card, as follows:

NEW JERSEY
DEPARTMENT OF CONSERVATION
DIVISION OF FISH AND GAME

The Fish and Game Council Reposing
SPECIAL TRUST AND CONFIDENCE

IN

*Hereby appoints and authorizes you to serve as
Special Conservation Officer*

Date
Chairman

Special Conservation Officer's Pledge

I agree to feed all wildlife during the critical months of winter—promote a broad conservation program including predator control—advocate improvement to our inland fresh waters and the conservation of our salt water resources—stand guard against pollution and polluting practices—cooperate with State Game Wardens by promptly reporting all violations—assist in planting and preservation of good game-cover, propagation of game, and prompt return of game-bird bands and fish tags—exert full precautions against forest-fires—act as a true sportsman at all times—handle firearms and drive automobiles carefully—and through education, carry the sportsman's creed to others and support those laws and policies designed to improve and conserve fish and wildlife in the State of New Jersey.

.....
Signature

This plan met with wide-spread enthusiasm and at present we have 1,763 of these officers on our rolls.

PUBLIC RELATIONS AND EDUCATIONAL ACTIVITIES

The program of public relations and conservation education of the Fish and Game Division was aimed toward developing a greater appreciation of the value of the natural resources of New Jersey and a concept of how these resources may properly be utilized to increase the products of our renewable resources and the protection and wise use of our rapidly depleting unrennewable ones.

State-wise education of our youth in conservation principles is regarded as one of the most powerful factors for developing a proper appreciation of the natural resources of the State. Hence, the annual report of this Division shows that more than 60,000 New Jersey boys and girls have viewed the colored motion pictures and exhibits, and have heard the conservation lectures. Summer camps, Boy and Girl Scouts, father and son gatherings, 4-H Clubs, Future Farmers of America, older farm youth groups, Junior Conservationists of New Jersey, and Junior Sportmen's Clubs were the groups requesting the programs. Many schools of the State have devoted entire seasonal assembly and discussion periods to conservation. A continuous demand for conservation programs, information, displays, and mounted materials and specimens comes from these various groups. The lack of personnel compels the distribution of only a limited supply. The enthusiastic response from the schools to the extension service offered by this Division is encouraging.

The plan of organizing clubs in the high schools to be known as Junior Conservationists of New Jersey was put into action this year, with plans of having such an organization in every high school in the State. Those clubs which have been formed have already contributed to bringing public attention to the need of conservation and restoration practices. One group from the Teaneck High School Club conducts a wildlife sanctuary, and another group from the same club was outstanding in a pheasant rearing project in this comparatively metropolitan community. Their achievements have won nationwide publicity and requests for the program have come from many states, Mexico and South America.

An aggregate of over 265,000 people have either viewed the seven major exhibits, consisting of over 7,000 feet of display, during 41 days of exhibit throughout the State, or have heard the 318 programs or taken part in 16 conferences conducted in co-operation with this Division. The adult groups requesting the programs were: service clubs, garden clubs, nature clubs, church groups, school faculties, colleges, parent-teachers' associations, veterans' organizations, YMCA forums, granges, agricultural associations, township committeemen's associations and sportsmen's clubs. Among the conferences participated in were the First Conservation Workshop for Teachers, conducted for ten days at the Trenton State Teachers College, the two-day Teachers Faculty Institute Conservation Conference, Rutgers University Conservation Education Unification Meeting, State Department of Education conference in reference to an outside grant for the production of a conservation film entitled "Resources Limited" and text books on conservation for school use, and the annual State Grange and Farm Bureau Conferences.

The Day-Old Pheasant Chick Rearing Program was again conducted in 15 counties of the State and the participants reared 8,346

healthy birds. Reports of naturally propagated birds were received in areas where habitat improvement, winter feeding and predator control were conducted as part of the Chick Program. The 4-H Game Bird Rearing Club has increased in membership, and the project now includes a hardening period before releasing for the birds reared. This part of the project has helped to produce a better bird, capable of adopting his new environment more readily. Members of the various participating organizations have constructed permanent brooder houses and large runs, and some have installed bottled gas brooders as a precautionary measure in the event of electric power failure. This constitutes a large investment by such individuals or groups, and indicates a continued interest and enthusiasm for our pheasant rearing program.

This division also carries on a multitude of minor functions and acts as a service agency for dissemination of information on hunting, fishing, conservation, magazine articles, radio scripts, and distribution of literature, and is working with agricultural associations, granges, Farm Bureau and County Agents, and other organizations, as well as individual landowners, to formulate a better understanding between the sportsmen and the Division and for sane land use.

As the most lasting antidote to the basic problem of conservation of the State's resources, soil, water, forests, minerals, fish and wildlife, the education of its people in conservation practices is essential. This Division will continue to foster such conservation education, with the aid of the various State departments.

GAME

GAME FARM REPORTS

Forked River Farm

The pheasant record at this farm for the calendar year of 1946 was as follows:

Breeding birds on hand January 1, 1946	37
Young birds on hand January 1, 1946	2,167
Received from Rockport Farm	400
Eggs laid	36,621
Eggs purchased	2,965
Eggs set	34,215
Birds hatched	21,411
	<hr/>
	24,015
Spring distribution	645
Fall distribution	6,916
Day-old chicks distributed	6,495
Birds died or escaped	3,925
Breeding birds on hand December 31, 1946	1,356
Birds held for Spring distribution	4,678
	<hr/>
	24,015

Rockport Farm

The pheasant record at this farm for the calendar year of 1946 was as follows:

Breeding birds on hand January 1, 1946	1,112
Young birds on hand January 1, 1946	3,351
Eggs laid	30,514
Eggs purchased	1,994
Eggs distributed	1,980
Eggs set	28,150
Birds hatched	18,965
	<hr/>
	23,428
Spring distribution	2,600
Turned over to Forked River Farm	400
Fall distribution	7,674
Day-old chicks distributed	8,384
Birds died or escaped	1,794
Breeding birds on hand December 31, 1946	1,296
Birds held for Spring distribution	1,280
	<hr/>
	23,428

Quail Farm

The quail record for the calendar year of 1946 was as follows:

Breeding birds on hand January 1, 1946	1,318
Young birds on hand January 1, 1946	5,295
Eggs laid	29,318
Eggs set	26,033
Birds hatched	20,087
	<hr/>
	26,700
Spring distribution	5,224
Fall distribution	7,221
Day-old chicks distributed	400
Birds died or escaped	5,787
Breeding birds on hand December 31, 1946	291
Birds held for Spring distribution	7,777
	<hr/>
	26,700

WILDLIFE MANAGEMENT ACTIVITIES

An increase in personnel and replacement of equipment crystalized the activities of the Wildlife Management Unit into a clear-cut program based on proper land utilization, restoration of wildlife populations and proper management of our renewable wildlife resource.

A careful study of farmer-co-operative plans that are being used or those that were in use in the past in various states was made. From the investigation the Plainsboro Plan was evolved and used experimentally. The plan is still in experimental use and the number of units has been increased to three so that the desirability and performance of the plan can be better evaluated. Experimental units are located at Plainsboro, Swartswood Lake and Sidney, N. J.

As a complement to the Plainsboro Plan, a program for work on farmlands has been developed and will be placed in operation. This is an important step because the productive wildlife land in New Jersey has been shrinking. There is a definite relationship between land use and wildlife. If we are to produce wildlife for the future we must take steps to insure an adequate future supply of food and cover.

The acquisition for public shooting and fishing grounds purposes of the U. S. Army Target Range, Millville, N. J., by purchase from the U. S. Army represents a significant and progressive step on the part of the Division of Fish and Game in assuring public hunting and fishing for the future. This vast area was acquired by the U. S. Government in 1942-43 and served as a training ground for the U. S. Army Air Corps during the recent world conflict. At the conclusion of hostilities, the area was declared surplus and was purchased without delay by the Division of Fish and Game.

This area is located in Cumberland county, New Jersey and is about five miles south of Millville and 11 miles east of Bridgeton. It is bounded on the north by Buckshutem Road, on the west by the Cedarville and Newport Roads, on the south by the Central Railroad of New Jersey, and on the east by a meandering line that is in the proximity of the Millville-Mauricetown Road. The area adjoins the

Haleyville Public Shooting and Fishing Grounds on the southeast. The recently purchased area contains 7,395 acres which is adjacent to 1,748.92 acres previously purchased, making a total of 9,143.92 acres in a unit available to the sportsmen of this State.

The area needs much development in order to furnish adequate food and cover facilities for large wildlife concentrations. The general terrain of the area with its gentle undulations and interspersal of streams which are Joshua Branch, Gravelly Run, Buckshutem Run, Northwest Branch, Mill Branch and Cedar Run Branch, lends itself easily to development wherein the interests of the hunter and angler will receive equal consideration.

The acquisition of submarginal lands and the subsequent development thereof is one of the better ways to insure a wildlife population of the future. Eventually the existing pitch pine, short-leaf-pine, scrub oak, chestnut oak and white oak will be interspersed with fields containing various food plants coupled with greenbrier, sweet fern, laurel, blueberry and huckleberry backed by dense stands of southern white cedar, sweet gum and maple to furnish a habitat for the bulk of our wildlife species.

Restoration will be the keynote of this area which will enhance the days spent in the field by the hunter and save for posterity a huge acreage for the sportsman of tomorrow.

In addition, seven additional areas were inspected and plans are underway to acquire those that show good potentialities for hunting and fishing.

The improvement and maintenance of the vital facility of wildlife food received extensive consideration during the year. A total of 408 food patches, 77 acres of corn, 10 acres of soy-beans, and 10.5 acres of rye was planted on the Public Shooting and Fishing Grounds throughout the State. Interested sportsmen and sportsmen's organizations fostered food patch planting programs. Organizations taking an active interest in improving food for wildlife were the Metuchen Rod and Gun Club, Metuchen, N. J.; 6666 Deer Club, Weymouth, N. J.; Salem Beagle Club; H. Bozarth, Bordentown; H. Jordan, Cresskill; A. W. Kremetz, Newark; Veterans Administration, Lyons; Boy Scouts of America, Woodport, Italian-American Sportsmen's Club, Trenton, and U. S. Army, Fort Dix. Plantings consisted mainly of N. J. Food Patch Mixtures No. 1 and No. 2, but in addition, plantings of Japanese millet, German millet, Atlas sorgo, Dwarf milo, Lincoln soy-beans, Taratary buckwheat, Lespedeza bi-color, Lespedeza cyrtobotria, lespedeza sericea, and Reed canary grass were made. There were also 1876 bu. of corn produced for food to be used on State Game Farms and for winter food during periods of inclement weather. Approximately 1,500 sheaves of wheat were produced by the Wildlife Managers to be used for winter feeding by field personnel.

Habitat improvement throughout the State was further accelerated by the distribution of 6,710 food and cover shrubs to conservationists, sportsmen and landowners. The plants distributed consisted of *Celastrus scandens*, *Berberis thunbergi*, *Viburnum opulus*, *Crataegus* sp., *Rosa* sp., *Juglans nigra*, *Juglans cinerea*, *Prunus* sp., *Morus alba*, *Morus rubra* and *Corylus Americana*. These assortments were

dug and packed in the nursery maintained by this Division and delivered to the following for planting:

	<i>No. Plants</i>
1. G. H. Ganzhorn, Upper Saddle River, N. J.	150
2. J. C. Titchworth, Towaco, N. J.	450
3. H. Brarmann, Bergenfield, N. J.	400
4. E. Miller, Madison, N. J.	200
5. C. C. Burley, Summit, N. J.	50
6. J. Macko, Somerville, N. J.	200
7. K. Holmsen, Flemington, N. J.	300
8. C. C. Burley, Jr., Plainfield, N. J.	200
9. W. O. Buchanan, Flemington, N. J.	150
10. F. McCausland, Somerville, N. J.	75
11. E. Schulman, Somerville, N. J.	75
12. H. C. Taylor, Martinsville, N. J.	100
13. B. J. McKenna, Murray Hill, N. J.	100
14. E. Birk, Frenchtown, N. J.	200
15. Elizabeth Rod & Gun Club, Baptistown, N. J.	300
16. J. Belonsoff, Ringoes, N. J.	250
17. G. Kusant, Stockton, N. J.	300
18. D. H. Barry, Helmetta, N. J.	50
19. S. Peps, Perrineville, N. J.	200
20. D. E. Ballard, Hammonton, N. J.	100
21. D. A. Black, Merchantville, N. J.	200
22. West Shore Rod & Gun Club, Budd Lake, N. J.	300
23. C. Apgar, Annandale, N. J.	75
24. W. A. Fuchs, Lakewood, N. J.	150
25. R. L. Taylor, Lakewood, N. J.	200
26. N. C. Poole, South Amboy, N. J.	50
27. Winterset Acres, Frenchtown, N. J.	200
28. S. Stover, Frenchtown, N. J.	200
29. C. P. Sollmann, Lamington, N. J.	100
30. W. S. Hasslachs, South Amboy, N. J.	200
31. A. S. Agricola, Englishtown, N. J.	75
32. E. R. Closs, Sparta, N. J.	100
33. T. Haven, Freehold, N. J.	200
34. H. Mittelstedt, Englishtown, N. J.	200
35. Middlesex County Federated Sportsmen	610
Total	6710

The age of the plants delivered was from five to seven years and they had been moved to transplant beds at one to two years of age. This widespread interest in habitat improvement exceeded expectations. Advice was given to all parties in regard to a planting pattern. The program will materially help to improve what has become one of our limiting factors in wildlife populations.

General improvement and maintenance work accomplished on state-owned land during the year was varied in character and broad in scope. Major items were 83.5 acres of land cleared, 3,800 ft. of roadway constructed, 2,400 ft. of ditch line cleared, 7,260 ft. of boundary were brushed, two wells were pulled and 3,100 ft. of pipe dismantled, one well shelter constructed, 1,000 ft. of bridle path constructed, one culvert installed, 960 cu. yds. of gravel hauled, one bridge replaced, and nine deer traps, one duck trap and two crow traps were constructed.

Under Federal Aid to Wildlife projects, continued restoration and study of waterfowl habitat were emphasized. Project 11-D-6 operating on the Tuckahoe-Corbin City Public Shooting and Fishing Grounds showed 3,950 ft. of dike constructed, 3,815 ft. of sod wall erected, two spillways built and three salt ponds installed. Other activities included fire hazard reduction, building and repairing drag-line mats, equipment service and repair, and road and dike maintenance.

A general impetus existed in field trials throughout the State. A total of 13 field trials was held on state-owned land and a total of 54 trials was held within the State. Of this number, 22 were beagle trials, two were confined to Brittany spaniels, eight were limited to raccoon hounds, one was for daschunds, one trial for fox hounds and 20 trials tested the mettle of pointers and setters. The beagle and raccoon dog trials made a substantial addition to the wildlife population of the State in that the sponsoring organizations secured and liberated the wildlife species in which they are interested. Raccoon enthusiasts purchased and liberated 19 raccoon to insure the success of their trials and the beagle fraternity held 63 organized trials within the State with 3,972 entries and liberated 2,787 rabbits to insure adequate sport. It is also known that respective members of beagle organizations purchased and liberated rabbits on their own volition. Inasmuch as many of these animals are either liberated on or make their way to open ground, there is a beneficial result to the sportsmen of New Jersey.

The management of our deer herd continued to be an important activity and crop damage remained a major factor for consideration.

Complaints of deer damage increased from 115 in 1945-46 to 161 in 1946-47. The number of permits to kill deer was reduced from 99 in 1945-46 to 75 permits in 1946-47. Definite strides were made in reducing crop damage through the use of an improved version of the electric fence. Co-operating land-owners furnished all materials and Wildlife Managers, with helpers, erected the fences and placed them in operation. During the interval of June 30, 1946, to July 1, 1947, a total of nine electric fences was installed. Farms on which electric fences were built are as follows:

1. G. E. Webster, Morris Plains
2. Chris Dingler, Livingston
3. Galletta Bros., Weymouth
4. A. Robinson, Tabernacle
5. F. Miller, Indian Mills
6. R. Condo, Waterford
7. H. C. Stollenwerk, Egg Harbor
8. B. Wenman, Berkeley Heights
9. L. Felton, East Vineland

Permanent fences of mesh wire were constructed at the following locations:

1. F. Hammell, Tabernacle
2. W. Grossman, Whiting
3. H. Samuelson, Lanoka Harbor

During the year 23 complaints of beaver damage were received and a total of 20 beaver was removed to new locations where their activities would not interfere with human interests. After the controlled beaver trapping season through which 187 animals were removed by special license, the complaints received were insignificant. It is a policy of the Division, when any desirable small animal causes a nuisance through its activities or presence, to remove the animal alive to a new location where it will not conflict with the citizens of New Jersey. In carrying out this policy a total of 471 squirrels was live-trapped in metropolitan areas and moved to new locations in rural districts where their presence was desired. In a similar manner and with the same intent a total of 39 rabbits were live-trapped and reliberated.

In order to reduce apparent predation on the public shooting and fishing grounds, a total of 22 foxes, 122 hawks, 21 owls, 26 cats, 58 rats, 24 opossum, 22 weasels, 13 skunks and 135 crows were trapped or killed.

Consistent progress has been made in quality and quantity of birds produced at the State Game Farms. Considerable renovation and repair has been accomplished in respect to buildings and appurtenances. An open pen has been added to the Forked River unit but facilities for increased production are behind schedule due to the inability to secure wire and materials. Five 90-ft. experimental rearing pens were completed at the State Quail Farm and have performed satisfactorily to date. This is a part of the policy that has been set up by the Division of Fish and Game wherein birds liberated from the State Game Farms will be properly hardened and conditioned so that they will be better able to cope with the rigors of the wild.

During the Fall of 1946 a total of 14,590 pheasants was stocked from State Game Farms, with 7,674 birds being shipped from the Rockport Pheasant Farm and 6,916 birds distributed from the Forked River unit. During the Spring of 1947 a total of 4,870 pheasants was liberated, with 1,175 birds from the Rockport unit and 3,695 pheasants from the Forked River unit. The annual production of birds for liberation from both units was 19,460 birds, with Forked River Game Farm producing 10,611 pheasants and the Rockport Game Farm producing 8,849 pheasants. In addition, the Rockport Game Farm produced 9,100 pheasant chicks and Forked River Game Farm produced 9,998 pheasant chicks for distribution to 4-H Clubs, sportsmen's clubs and interested individuals. These chicks yielded a return of 8,346 birds for liberation.

To augment the supply of pheasants a total of 11,937 pheasants was purchased from commercial breeders, bringing the total liberation for the year to 39,743 birds. This represents an increase of 8,908 pheasants over the previous year.

The State Quail Farm liberated 7,221 bob-whites during the Fall of 1946 and completed a Spring liberation of 6,231, bringing the total annual production to 13,452 quail. This represents an increase of 674 above the previous year's production.

Rabbit distribution for the year was 39,639, which represents an increase of 19,116 over that of the previous year.

An extensive banding program was innovated with the intent to evaluate properly the results of the pheasant and quail stocking program. Some interesting and definite data has accrued from this effort; as the program continues the information will become more significant. Better pheasant management methods will result and be based on factual data, inasmuch as irrefutable information will be on hand in regard to pheasant survival, the percentage of liberated birds that fall to the hunter's gun, the extent and degree of drift, the proper age for liberation, the comparable survival of hardened birds to those reared in strict confinement, and the percentage of the annual kill that accrues from liberated pheasants.

DEER

The 1946 deer season resulted in the greatest deer kill recorded since protection was given this game species many years ago. The following shows the number of deer taken in each county during the five-day open season:

<i>County</i>	<i>Number Legal Bucks</i>	<i>Illegal Bucks, Does or Fawns</i>
Atlantic	252	11
Bergen	67	6
Burlington	609	24
Camden	75	..
Cape May	41	1
Cumberland	112	5
Essex	49	1
Gloucester	13	..
Hunterdon	111	8
Mercer	61	11
Middlesex	7	..
Monmouth	56	2
Morris	358	14
Ocean	442	6
Passaic	152	5
Salem .....	..	..
Somerset	119	11
Sussex	328	5
Union	12	..
Warren	179	8
	3,043	118

Throughout the rest of the year there were 611 deer killed by automobiles, trains, under permits, and in various other ways.

HUNTING ACCIDENTS

There were 28 hunting accidents reported during the year, three of which proved to be fatal. Six of the accidents were self-inflicted. Deer hunting resulted in four accidents, two persons dying as a result of injuries received.

FISH

REPORT OF HATCHERY OPERATIONS

	Inches	Raised July 1, 1946 to June 30, 1947	Disposed of	Estimated Number on Hand
Brook trout	3-4	250,000		
" "	4-5	65,000		250,000
" "	6-8	30,000		65,000
" "	7-9	15,000		30,000
" "	8-10	66,625	15,000	
" "	10-12	35,250	61,625	5,000
" "	12	11,000	35,250	
" "	12-14	13,389	11,000	
Brown trout			13,389	
" "	2-3	200,000		
" "	3-4	200,000		200,000
" "	6-7	50,000		200,000
" "	7-9	70,000		50,000
" "	8-10	71,992	20,000	
" "	10-12	56,633	61,992	10,000
" "	12	3,000	56,633	
" "	12-14	6,735	3,000	
Rainbow trout			6,735	
" "	2-3	300,000		
" "	5-7	75,000		300,000
" "	7-9	25,000		75,000
" "	8-10	59,305		25,000
" "	10-12	56,825	59,305	
" "	12	11,000	56,825	
" "	12-14	4,726	11,000	
Large mouth bass			4,726	
" " "	1-2	250,000		
" " "	2	4,000		250,000
" " "	2-3	81,150		
" " "	3-4	30,700		81,150
" " "	4	8,000		30,700
" " "	5	3,950		8,000
" " "	6	2,000		3,950
" " "	9-12	16		2,000
" " "			16	1,000
Small mouth bass				
" " "	1-2	50,000		
" " "	2-3	10,000		50,000
" " "	3	29,250		
" " "	3-4	51,790		29,250
" " "	4-5	24,855		51,790
" " "	5-6	7,325		24,855
" " "	6-7	2,180		7,325
" " "	9-12	350		2,180
" " "	12	250		350
" " "	12-16	300		250
" " "	14-18	130		300
" " "			130	130

	Inches	Raised July 1, 1946 to June 30, 1947	Disposed of	Estimated Number on Hand
Bluegill sunfish	1-2	84,000	84,000	.....
" "	2-3	198,500	135,500	64,000
" "	3	13,500	13,500	.....
" "	8	550	550	.....
" "	6-9	2,800	2,800	.....
Tadpoles		25,000	25,000	.....
		<hr/> 2,557,076	<hr/> 932,076	<hr/> 1,625,000

A survey and plans were made for building ten large ponds and 3,000 feet of storm channel on the hatchery addition purchased in 1946, and six bass ponds were laid out on the 16¼-acre addition acquired this year. With the construction of these ponds, it is expected that the output of pond fish will be doubled.

The water system at the Willow Grove Street hatchery on the east side of Hackettstown was rearranged. The new arrangement provided six combination ponds which are used for trout in Winter and bass and bluegill propagation in the Summer, thus producing a double crop.

In the past years, a great many trout have been lost with furunculosis and "red spot." Furunculosis is one of the most serious bacterial diseases with which hatcheries have had to contend. In some cases whole hatcheries have been wiped out by this disease. Dr. Gutsell of the Fish and Wildlife Service worked out a successful treatment for furunculosis by adding to the food for a period of ten days eight grams of sulfamerazine per hundred pounds of fish. This method of treatment, while practical where a pond of trout could be netted and weighed, could not be applied when a pond was frozen over. A method was worked out at the hatchery, using the amount of food normally consumed by the pond of fish to be treated, as a basis for calculating the dosage of the sulfa drug, and an outbreak was effectively controlled by feeding 0.5 per cent sulfamerazine for the ten-day period.

There were no serious losses from the common external parasites, such as gyrodactylus or trichodina, which are treated by the dip method with a 1 to 500 solution of acetic acid for one minute, or the internal parasite, octomitus salmonis, which is treated by the addition of 0.2 per cent calomel or 0.2 per cent carbarsonne to the food.

The usual amount of bacterial gill infection was encountered and was treated by the dip method, using a 1 to 2,000 solution of copper sulphate for one minute.

There was a substantial increase in the size, number and value of pond fish produced during the fiscal year. Weather conditions were favorable for good hatches of both large and small mouth bass and bluegill sunfish. Diseases were kept at a minimum through constant microscopic examinations and the use of salt and formalin in treatment.

Good results were obtained with commercial fertilizers in producing natural food for the small bass and bluegills. However, fertilizer is most effective when producing a small number of pond fish per acre, but top results are not obtained when a maximum number of large

pond fish per acre is desired; therefore, the natural food must be supplemented by a meat or fish diet after the bass and bluegills reach a size of two inches.

A trap was designed to catch small bass and bluegill sunfish and quite some labor was saved in removing fish from the ponds by this method.

A large number of bluegill sunfish were successfully carried through the Winter for Spring stocking. This was the first time this had been done, and the size of the fish was doubled during the hold-over.

Experiments, using 2, 4-D as a herbicide on obnoxious aquatic plants, are being conducted at the hatchery. Good results have been obtained on emergent plants such as cattail, round stem bulrush, willow and arrow weed. While not producing results as quickly as was expected, it does show promise of controlling the underwater plants.

NETTING OPERATIONS

Fish reclamation work resulted in the netting of the following fish from reservoirs and other private sources, which were redistributed in open waters:

Yellow perch	32,146
White perch	700
Large mouth bass	2,707
Pickrel	1,239
Small mouth bass	71
Sunfish	15,241
Bluegill sunfish	150
Calico bass	2,600
Catfish	5,570
Shiners	15,600
Miscellaneous	11,435
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	87,459

FISH DISTRIBUTED BY FEDERAL GOVERNMENT

The Fish and Wildlife Service, of the United States Department of the Interior, reports the following fish distributed in the State of New Jersey during the calendar year 1946:

Brook trout	1,000
Rainbow trout	4,000
Large mouth bass	17,711
Small mouth bass	485
Crappie	174
Bluegill sunfish	20,691
	<hr/>
	44,061

POUND FISHERIES' SUMMARY

The following is a summary of the pound fisheries' reports for the calendar year ending December, 1946:

Approximate value of all pounds	\$1,070,401.77
Proceeds derived from sale of fish	\$1,519,254.99
Number of pounds of fish caught and disposed of	34,772,450

Licenses issued:

Atlantic Ocean	127
Sandy Hook and Raritan Bay	46
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Number of pounds operated	154
Number of men employed	331

MENHADEN AND FOOD FISH LICENSES

There were 49 vessels licensed to take menhaden with purse or shirred nets within the three-mile limit during the calendar year of 1946, and 133 vessels licensed to take food fish in the area between the two-and three-mile limit.

STRIPED BASS LICENSES

During the fiscal year, there were 529 licenses issued to 104 persons for the netting of striped bass. Haul seine licenses granted numbered 33 and gill nets 496.

SPECIAL NETTING LICENSES

Special licenses for the use of various specified nets in tidal waters were granted as follows during the fiscal year:

Drifting gill net	66
Hauling seine	36
Flounder fyke	94
Miniature fyke	1,764
Fyke	109
Shad	284
Staked gill	263
Bait seine	20

DELAWARE RIVER SHAD INDUSTRY

County	Boats		Nets		Men Engaged		Number Shad Caught		Pounds Shad Caught		Value Shad Caught		Value Boats and Nets	
	1946	1947	1946	1947	1946	1947	1946	1947	1946	1947	1946	1947	1946	1947
Burlington ...	3	3	4	4	9	8	55	190	210	785	\$60.00	\$340.00	\$600	\$435
Cumberland ..	32	30	25	23	42	38	14,110	21,350	57,594	81,491	14,078.50	16,943.30	7,974	9,750
Gloucester	4	1	4	1	7	2	1,850	200	6,900	1,000	1,100.00	200.00	1,000	5
Hunterdon	4	5	3	4	11	13	200	1,238	500	4,338	175.00	1,178.00	400	860
88 Mercer	3	3	3	4	9	8	40	83	170	382	34.00	121.00	1,025	1,025
Salem	12	5	12	5	23	10	758	436	3,695	1,744	923.75	438.50	3,475	2,550
	58	47	51	41	101	79	17,013	23,497	69,069	89,740	\$16,371.25	\$19,220.80	\$14,474	\$14,625

HUDSON RIVER SHAD INDUSTRY

Boats		Nets Owned		Men Engaged		Pounds Caught		Number Shad Caught		Value Shad Caught		Value Boats and Nets	
1946	1947	1946	1947	1946	1947	1946	1947	1946	1947	1946	1947	1946	1947
226	203	182	154	264	232	1,525,243	1,024,392	437,689	282,121	\$240,637.63	\$161,447.21	\$198,440	\$183,485

GENERAL FUND
SUPPLEMENT TO 1945-46 REPORT

Income

Balance as per last printed report \$141,900.55

Expenditures

Chapter 52, Laws of 1945 \$51,776.97
 To balance 90,123.58

 \$141,900.55

REPORT FOR 1946-47

Income

Balance, July 1, 1946 \$90,123.58
 Hunters' and anglers' licenses:

Revised Statutes, Title 23, Chapter 3:

Sec. 11-12 (regular)	\$449,412.80	
Sec. 3 (juvenile) ..	1,196.00	
Sec. 25 (woodcock)	2,622.00	
Agents' fees	1,838.60	
Duplicate licenses .	303.00	
Delinquencies	40.00	
	<hr/>	\$455,412.40

Revised Statutes, Title 53, Chapter 18, Section 21:

Menhaden licenses	\$29,460.00	
Food fish licenses	5,550.00	
Breeders' licenses	1,418.00	
Pound licenses ...	7,440.00	
Shad licenses	1,525.00	
Striped bass licenses	786.00	
Net licenses	2,111.50	
Deputy fees	24.00	
Carp permits	410.00	
Sales and sundries	3,436.35	
Map and book sales	2.95	
Beaver licenses ...	500.00	
	<hr/>	\$52,663.80

Fines, Revised Statutes, Title 23, Chapter 10, Sec. 19	47,792.64	
Trespass, Revised Statutes, Title 23, Chapter 7, Sec. 5	572.00	
Refunds (duplicate payments and salaries)	501.33	
Credit refunds on autos	1,166.97	
Damage claim to auto	50.00	
	<hr/>	\$558,159.14
		<hr/>
		\$648,282.72

Expenditures

Chapter 111, Laws of 1946, expenditures	*\$532,185.40
Cash balance, July 1, 1947	\$116,097.32
Requisitions outstanding against this balance	42,943.15
Account balance, July 1, 1947	\$73,154.17

*Analysis of Expenditures

	<i>Actually Paid</i>	<i>Bills Outstanding</i>	<i>Total</i>
Personal administration	\$1,563.99	\$27.00	\$1,590.99
Carpenter and helper	3,600.00	.....	3,600.00
Office:			
Wages	22,259.52	.....	22,259.52
Other expenses	701.62	344.37	1,046.00
Rent	5,000.00	.....	5,000.00
Public relations:			
Wages	2,623.50	.....	2,623.50
War adjustment	24.00	.....	24.00
Other expenses	2,100.16	.....	2,100.16
Publicity—wages	1,020.00	.....	1,020.00
War adjustment	120.00	.....	120.00
Printing, stationery, etc.	5,267.48	93.81	5,361.29
Hunting and fishing licenses	2,700.00	.....	2,700.00
Legal expenses	92.15	10.25	102.40
Committee to study fishing problem in New Jersey waters and bays ..	300.00	.....	300.00
Coastal patrol:			
Wages	8,570.00	.....	8,570.00
Maintenance	4,384.65	509.75	4,894.40
Gas and oil	1,613.12	782.21	2,395.33
Wardens' service:			
Salaries	96,526.60	.....	96,526.60
War adjustment	50.00	.....	50.00
Expenses including uniforms ..	1,568.36	5,954.00	7,522.36
Assistance in deer woods	1,258.00	.....	1,258.00
Tires and tubes	2,581.32	67.19	2,648.51
Gas and oil	7,357.27	1,314.31	8,671.58
Maintenance	12,033.54	1,495.32	13,528.86
Replacement of autos .....	.....	1,060.92	1,060.92
Replacement of boats and motors	1,085.00	.....	1,085.00
Purchase of binoculars	2,439.50	.....	2,439.50
Predator control:			
Wages	13,040.00	.....	13,040.00
Other expenses	3,274.21	1,007.11	4,281.32
Fish distribution:			
Wages	12,280.52	.....	12,280.52
Other expenses	4,038.14	453.35	4,491.49
Netting expenses	84.00	.....	84.00
Replacement of trucks .....	.....	5,705.42	5,705.42

	<i>Actually Paid</i>	<i>Bills Outstanding</i>	<i>Total</i>
Fish hatchery:			
Wages	\$54,978.57	\$143.44	\$55,122.01
War adjustment	120.00	.....	120.00
Food	69,470.92	6,376.75	75,847.67
Other expenses	17,485.33	11,444.62	28,929.95
Purchase of game from outside sources			
	64,810.90	172.70	64,983.60
Forked River Farm:			
Wages	16,729.50	120.00	16,849.50
War adjustment	360.00	.....	360.00
Food	16,830.00	.....	16,830.00
Other expenses	6,995.03	1,679.13	8,674.16
Rockport Farm:			
Wages	9,687.20	.....	9,687.20
War adjustment	24.00	.....	24.00
Food	14,953.68	2,297.33	17,251.01
Other expenses	4,284.72	.....	4,284.72
Quail Farm:			
Wages	14,243.20	120.00	14,363.20
War adjustment	80.00	.....	80.00
Food	4,463.50	333.05	4,801.55
Other expenses	5,784.78	634.25	6,419.03
Postage, telephone, telegraph and insurance			
	7,932.85	396.04	8,328.89
Miscellaneous expenses (includes fair exhibits, medical, etc.) ..			
	1,031.83	395.83	1,427.66
Fish and game tags	300.00	.....	300.00
Refunds on salaries	412.50	.....	412.50
Refunds of fines, etc.	675.95	.....	675.95
Compensation—Josephine Perkins .	974.28	.....	974.28
	<u>\$532,185.40</u>	<u>\$42,943.15</u>	<u>\$575,128.55</u>

**PUBLIC SHOOTING AND FISHING GROUNDS FUND
SUPPLEMENT TO 1945-46 REPORT**

Income

Balance as per last printed report \$174,209.76

Expenditures

Bills paid after June 30, 1946, for:

Purchase of land, 1944-45	\$1,743.19	
Federal aid, 1945-46	1,762.88	
Other bills, 1945-46	935.65	
		<u>4,441.72</u>
To balance		169,768.04
		<u>\$174,209.76</u>

REPORT FOR 1946-47

Income

Balance July 1, 1946		\$169,768.04
Receipts from U. S. for Federal Aid		
Account, 1945-46	\$3,420.38	
Receipts from U. S. for Federal Aid		
Account, 1946-47	4,622.27	
Receipts from hunters' and anglers'		
licenses	131,560.20	
Miscellaneous	4,010.81	
Refunds	171.00	
	143,784.66	\$313,552.70

Expenditures

Expenditures	*\$170,664.40
Cash balance, July 1, 1947	\$142,888.30
Requisitions outstanding against this balance	9,602.17
Account balance, July 1, 1947	\$133,286.13

*Analysis of Expenditures

	<i>Bills Paid</i>	<i>Bills Outstanding</i>	<i>Total</i>
Regular employees' salaries	\$33,633.70	.....	\$33,633.70
Extra help wages	1,474.10	43.45	1,517.55
Pension payments for employees in service	62.16	.....	62.16
Fuel, light and power	231.76	9.82	241.58
Office supplies	37.93	23.15	61.08
Motor vehicular supplies	2,767.03	757.06	3,524.09
Replacement of motor vehicles ...	3,206.00	1,145.00	4,351.00
Purchase of game	39,935.25	.....	39,935.25
Operating materials and supplies ..	2,424.91	1,555.74	3,980.65
Other materials and supplies	33.78	.....	33.78
Printing	138.57	.....	138.57
Traveling expenses	1,067.44	.....	1,067.44
Insurance	770.36	2.58	772.94
Rental garage	55.00	.....	55.00
Telephone	439.35	8.20	447.55
Freight	15.58	.....	15.58
Miscellaneous expenses	27.82	.....	27.82
Repairs to equipment and grounds	2,592.97	259.31	2,852.28
Purchase of land	66,087.47	.....	66,087.47
New equipment	1,466.91	1,274.00	2,740.91
Expenses under Federal Aid-to-Wild- life Act:			
Salaries	11,450.00	.....	11,450.00
Fuel, light and power	114.08	50.71	164.79
Office supplies	17.36	.....	17.36
Motor vehicular supplies	661.57	180.81	842.38
Operating materials	105.34	2,665.70	2,771.04
Traveling expenses	945.95	60.00	1,005.95
Telephone	23.45	.....	23.45
Miscellaneous expenses	91.16	.....	91.16
Repairs to equipment	731.40	1,196.39	1,927.79
New equipment	56.00	370.25	426.25
	\$170,664.40	\$9,602.17	\$180,266.57

STOCKING OF NEW JERSEY WATERS
 By the New Jersey Division of Fish and Game
 for the Fiscal Year Ending June 30, 1947

Total Number of Fish Planted from all Sources—1,019,535

KEY TO ABBREVIATIONS

Bt	Brook Trout	Yper	Yellow Perch
Brnt	Brown Trout	Wper	White Perch
Rt	Rainbow Trout	Pic	Pickrel
Lmb	Large Mouth Bass	Pw	Pollywog
Smb	Small Mouth Bass	S	Sunfish
Bs	Bluegill Sunfish	C	Catfish
Cb	Calico Bass	Misc	Miscellaneous
Sh	Shiner		

Size

a	Adult
Fg	Fingerling

ATLANTIC COUNTY

Bargaintown Lake—Bargaintown—1,000 Lmbfg.
 Hammonton Lake—Hammonton—1,900 Rta, 1,000 Lmbfg.
 Lenape Lake—Mays Landing—500 Lmbfg.

BERGEN COUNTY

Babbits Brook—Wyckoff—725 Bta, 725 Brnta.
 Bear Brook—Woodcliff Lake—1,150 Bta, 900 Brnta.
 Boiling Spring Brook—Old Tappan—100 Bta, 100 Brnta.
 Glen Gray Boy Scout Pond—Hohokus Township—600 Ypera.
 Hackensack River—Oradell—250 Bta, 1,250 Brnta, 2,000 Rta.
 Norwood Brook—Norwood—250 Bta, 250 Brnta.
 Pascack Creek—Westwood—1,000 Bta, 500 Brnta, 525 Rta.
 Ramapo River—Oakland—200 Bta, 2,625 Brnta, 2,225 Rta.
 Saddle River—Saddle River—6,000 Smbfg, 5,000 Bsf, 2,025 Bta, 1,500 Brnta, 1,500 Rta.
 Tamerack Boy Scout Pond—Oakland—1,000 Ypera.
 Tellers Brook—Montvale—50 Bta, 50 Brnta.
 Tenekill Creek—Closter—1,250 Bta, 250 Brnta.
 Valentine Brook—Allendale—225 Bta, 1,225 Brnta.
 Waldwick Pond—Waldwick—300 Ypera, 300 Sa.
 Willow Lake—Little Ferry—2,000 Rta.
 Yaw Paw Boy Scout Pond—Darlington—600 Ypera.

BURLINGTON COUNTY

Abseque Lake—Bass River Tract—1,000 Lmbfg.
 Atsion Lake—Atsion—700 Lmbfg, 150 Bsa.
 Harrisville Lake—Harrisville—1,000 Lmbfg.
 Indian Mills Lakes—Indian Mills—800 Lmbfg, 200 Bsa.
 Moorestown Lake—Moorestown—1,000 Rta, 5,350 Lmbfg, 1,500 Bsf.
 Oswego Lake—Harrisville—1,000 Lmbfg.
 Sylvan Lake—Burlington—1,000 Rta, 1,000 Lmbfg, 1,500 Bsf.

CAMDEN COUNTY

Atco Lake—Atco—500 Rta, 500 Lmbfg.
Back Run—Berlin—300 Bta.
Big Lebanon Run—Turnersville—925 Bta, 175 Brnta.
Blackwood Lake—Blackwood—1,000 Lmbfg.
Bottomleys Lake—Clementon—500 Lmbfg.
Clementon Lake—Clementon—1,000 Lmbfg.
Columbia Lake—Maple Shade—400 Rta.
Cooper Park Lake—Cooper Lake—100 Lmba, 2,000 Lmbfg, 8,000 Bsf.
Ellisburg Creek—Ellisburg—425 Bta, 175 Brnta, 300 Rta.
Evans Lake—Haddonfield—2,000 Lmbfg, 4,000 Bsf.
Gibbsboro Lake—Gibbsboro—500 Lmbfg.
Grenloch Lake—Grenloch—1,000 Lmbfg.
Ireland Lake—Near Clementon—500 Lmbfg.
Laurel Lake—Laurel—1,000 Lmbfg.
Munn's Lake—Haddonfield—300 Rta, 100 Lmba, 2,000 Lmbfg.
Overbrook Lake—Near Clementon—500 Lmbfg.
Pillings Lake—Clementon—1,000 Lmbfg.
Rowands Lake—Clementon—25 Bta, 25 Brnta, 750 Rta.
Square Circle Lake—Gibbsboro—500 Lmbfg.
Woodcrest Brook—Woodcrest—700 Bta.

CAPE MAY COUNTY

Alms House Pond—Cape May Court House—1,500 Bsf.
Davis Lake—Cape May—500 Bsf.
Dennisville Pond—Dennisville—300 Lmbfg, 1,000 Bsf.
East Creek Pond—Eldora—600 Lmbfg, 1,000 Bsf.
Lilly Lake—Cape May—1,000 Bsf.
Ludlam's Lake—Dennisville—1,000 Bsf.
Nummy Lake—Belleplain State Forest—600 Lmbfg, 1,000 Bsf.
Pickle Pond—Eldora—1,000 Bsf.
Rio Grande Lake—Rio Grande—1,500 Bsf.
Tuckahoe Public Shooting Grounds Lake—Tuckahoe—500 Bsf.

CUMBERLAND COUNTY

Cedarville Pond—Cedarville—500 Lmbfg, 2,000 Bsf.
Clark Pond—Bridgeton—400 Lmbfg, 2,000 Bsf.
Cumberland Pond—Millville—200 Lmbfg.
East Lake—Bridgeton—200 Lmbfg, 2,000 Bsf.
Grant Ave. Pond—Vineland—300 Lmbfg.
Laurel Lake—Millville—400 Lmbfg.
Manantico Brook—Millville—1,250 Bta.
Manaway Creek—Newfield—500 Bta.
Mary Elmer Lake—Bridgeton—500 Lmbfg, 2,000 Bsf.
Muddy Run—Millville—250 Bta.
Pickel Factory Pond—Delmont—500 Lmbfg.
Shaw's Mill Pond—Newport—2,000 Bsf.
Union Lake—Millville—4,000 Lmbfg, 150 Bsa, 150 Ypera, 100 Wpera,
2,100 Cba, 100 Lmba, 500 Sh.

ESSEX COUNTY

Branch Brook Park Lake—Newark—3,850 Lmbfg, 1,000 Ca, 300 Wpera,
54 Pica, 95 Cba, 4,500 Misc, 159 Lmba, 975 Sa, 975 Ypera.
Clark's Pond—Bloomfield—1,400 Rta, 500 Lmbfg, 2,000 Bsf.
Notch Brook—Bloomfield—300 Bta.
So. Mt. Reservation—South Orange—420 Bta, 600 Brnta, 2,125 Rta, 250
Lmbfg, 2,000 Bsf, 500 Sa, 500 Ypera.
Verona Lake—Verona—25 Bta, 2,000 Rta, 3,850 Lmbfg.

GLOUCESTER COUNTY

Almonesson Lake—Almonesson—600 Bta, 700 Lmbfg, 2,500 Bsf.
Bell's Lake—Woodbury—300 Lmbfg.
Franklinville Lake—Franklinville—500 Lmbfg, 2,500 Bsf.
Gilman Lake—Ewan—500 Rta, 700 Lmbfg, 2,500 Bsf.
Iona Lake—Iona—800 Lmbfg, 2,500 Bsf.
Malaga Lake—Malaga—700 Lmbfg, 2,500 Bsf.
Oberts Lake—Glassboro—500 Rta, 500 Lmbfg, 2,500 Bsf.
Woodbury Heights Lake—Woodbury Heights—400 Rta.

HUDSON COUNTY

Hudson County Park Lake—North Bergen—25 Bta, 2,000 Brnta, 1,000 Lmbfg.

HUNTERDON COUNTY

Alexauken Creek—Mt. Airy to Lambertville—450 Bta, 550 Brnta.
Beatys Brook—Penwell—700 Bta.
Beaver Brook—Clinton—300 Bta, 100 Brnta.
Black Brook—Clinton Tract—678 Bta, 485 Brnta, 37 Rta.
Boulder Hill Brook—Boulder Hill—400 Bta.
Capoulin Creek—Pittstown—250 Bta, 250 Brnta.
Cold Brook—Whitehouse—200 Bta.
Cramers Brook—Allerton—100 Bta.
Everittstown Brook—Everittstown—150 Bta, 75 Brnta.
Frenchtown Brook—Frenchtown—450 Bta.
Guinea Hollow Brook—Guinea Hollow—400 Bta.
Jutland Brook—Jutland—300 Bta, 200 Brnta.
Lingerts Pond—Clinton—150 Bta, 50 Brnta, 550 Rta.
Little York Brook—Little York—300 Bta, 750 Brnta.
Lockatong Creek—Milltown—1,425 Bta, 225 Rta.
Milford Brook—Milford—200 Brnta.
Mt. Pleasant Brook—Mt. Pleasant—200 Brnta.
Mulhockaway Creek—Clinton Tract—1,647 Bta, 1,765 Brnta, 578 Rta.
Musconetcong River—Penwell to Bloomsbury—4,301 Bta, 3,712 Brnta, 4,101 Rta.
Norton Brook—Norton—250 Bta.
Prescott Brook—Stanton—1,300 Bta.
Raritan River, South Branch—Lower Valley to Hamden—4,625 Bta, 14,075 Brnta, 6,430 Rta, 11,000 Smbfg, 400 Bsa.
Rockaway River, North Branch—Mountainville—1,350 Bta, 1,150 Brnta.
Rockaway River, South Branch—Lebanon—150 Bta, 150 Brnta, 500 Rta.
Saw Mill Brook—Mountainville—200 Bta.
Spring Mills Brook—Spring Mills—100 Bta, 100 Brnta.
Spruce Run—Pleasant Grove to Glen Gardner—1,000 Bta, 2,000 Brnta.
Tetertown Brook—Tetertown—600 Bta, 300 Brnta.
Wickecheoke Run—Prallsville—675 Bta, 300 Brnta, 75 Rta.

MERCER COUNTY

Assunpink Creek—Lawrence Station—1,300 Bta, 225 Brnta, 200 Rta.
Carnegie Lake—Princeton—2,000 Lmbfg, 2,000 Bsf.
Doctors Creek—Allentown—200 Bta, 200 Brnta.
Etra Pond—Etra—2,500 Lmbfg, 2,000 Bsf.
Gropp's Lake—Hamilton Township—1,500 Lmbfg, 2,000 Bsf.
Grovers Pond—Grovers Mills—500 Lmbfg.
Peddle Lake—Hightstown—1,000 Lmbfg.
Stoney Brook—Woodsville—1,225 Bta, 2,025 Brnta, 400 Rta.
Whiteheads Pond—Hamilton Township—1,000 Lmbfg.

MIDDLESEX COUNTY

Ambrose Brook—Middlesex Borough—150 Bta, 150 Brnta.
Brainerds Brook—Cranbury—125 Bta, 125 Brnta.
Duhernal Lake—Spotswood—1,500 Lmbfg.
Farington Lake—Near New Brunswick—2,000 Lmbfg, 150 Smba.
Helmetta Lake—Helmetta—500 Lmbfg.
Johnson Park Lake—New Brunswick—3,000 Bsf, 1,000 Ypera.
Lawrence Brook—Milltown—125 Bta, 125 Brnta.
Manalapan River—Jamesburg—125 Bta, 125 Brnta.
Manalapan Lake—Jamesburg—500 Lmbfg.
Matchponix Brook—Spotswood—1,500 Bta, 1,250 Brnta, 335 Rta.
Mill Pond—Bonhampton—100 Bta, 100 Brnta.
Mill Brook—Bonhampton—25 Bta, 25 Brnta.
New Market Lake—New Market—3,000 Bsf, 1,000 Ypera.
Plainsboro Lake—Plainsboro—500 Lmbfg.
Roosevelt Park Lake—Metuchen—14 Bta, 2,075 Brnta, 2,000 Bsf.
Silver Lake—Piscataway—4,000 Bsf, 1,000 Ypera.
Spotswood Lake—Spotswood—500 Lmbfg.
Spring Lake—South Plainfield—1,000 Ypera.
Victor Cromwell Lake—Middlesex Borough—3,000 Bsf, 500 Ypera.
Weston Mill Lake—Near New Brunswick—1,000 Lmbfg.

MONMOUTH COUNTY

Big Brook—Marlboro—125 Bta, 125 Brnta.
Como Lake—Como—3,000 Lmbfg.
Deal Lake—Allenhurst—2,500 Lmbfg.
Franklin Park Lake—West Long Branch—300 Rta, 2,250 Lmbfg, 2,000 Bsf.
Garvey's Pond—Navesink—450 Rta.
Hockhocks Brook—Tinton Falls—125 Bta, 125 Brnta.
Hop Brook—Holmdel—125 Bta.
Manalapan River—Milhurst—125 Bta, 125 Brnta.
Manasquan River—Adelphia—1,275 Bta, 3,010 Brnta, 550 Rta.
Manassie Brook—Farmingdale—50 Rta.
Marsh Bog Brook—Squawkum—50 Rta.
Matchponix Brook—Englishtown—125 Bta, 125 Brnta.
McGaillards Brook—Englishtown—125 Bta, 125 Brnta.
Metedeconk River—North Branch—North of Lakewood—1,225 Bta.
Mine Brook—Colts Neck—150 Bta.
Mingamahone Brook—Farmingdale—200 Bta.
Nicholas Pond—Allaire—300 Rta, 300 Lmbfg.
Old Mill Pond—Villa Park—300 Brnta, 700 Lmbfg.
Osbornes Pond—Baileys Corner—300 Rta, 3,000 Lmbfg.
Passaquanasqua Creek—Adelphia—100 Bta.
Pine Brook—Tinton Falls—125 Bta, 125 Brnta.
Shadow Lake—Red Bank—1,050 Bta, 2,000 Lmbfg, 2,000 Bsf.
Shark River—Hamilton—275 Bta, 700 Brnta.
Spring Lake—Spring Lake—1,100 Rta, 3,000 Lmbfg.
Squawkum Brook—Baileys Corner—50 Rta.
Sunrise Lake—Red Bank—400 Rta, 2,000 Bsf.
Takanassee Lake—Long Branch—1,250 Lmbfg.
Topenemus Lake—Freehold—900 Rta, 2,000 Lmbfg.
Willow Brook—Holmdel—125 Bta.
Wreck Pond, North Branch—Hurley's Mills—300 Rta.
Yellow Brook—Colts Neck—600 Bta, 700 Brnta.

MORRIS COUNTY

Baker's Mill Pond—Berkshire—2,000 Bsf.
Beaver Brook—Lincoln Park—150 Bta, 150 Brnta.
Beaver Brook—Rockaway—450 Bta, 150 Brnta.

Black River—Milltown—540 Bta, 1,710 Brnta, 2,290 Rta.
 Budd Lake—Budd Lake—83 Lmba, 2,400 Smbfg, 200 Bsa, 3,000 Bsf, 1,370
 Ypera, 530 Ca, 1,000 Sa, 200 Wpera, 94 Pica, 275 Cba, 3,000 Misc.
 Bungalow Brook—Schooleys Mt.—300 Brnta.
 Burnett Brook—Ralston—300 Bta.
 Burnham Park Lake—Morristown—10 Bta, 490 Rta, 600 Lmbfg, 1,250
 Bsf.
 Cooks Pond—Denville—1,000 Smbfg, 2,000 Bsf.
 Crooked Brook—Montville—300 Brnta.
 Crystal Lake—Chester—850 Rta.
 Den Brook—Union Hill—300 Bta, 300 Brnta.
 Electric Brook—Schooleys Mt.—150 Bta, 150 Brnta.
 Estling Lake—Denville—500 Smbfg, 3,500 Bsf.
 Fayson Lake—Taylortown—135 Lmba, 365 Ypera, 250 Sa, 30 Pica.
 Flanders Brook—Flanders—150 Bta, 150 Brnta.
 Green Pond—Newfoundland—3,000 Rta, 25 Lmba, 180 Smba, 6,000 Smbfg,
 5 Pica, 90 Misc.
 Hacklebarney Pond—Hacklebarney—500 Smbfg, 100 Bsa, 3,500 Bsf.
 Hiawatha Lake—Parsippany—2,000 Bsf.
 Hibernia Brook—Hibernia—150 Bta, 150 Brnta.
 Hillery's Pond—Boonton—3,000 Bsf.
 Hopatcong Lake—Lake Hopatcong—16 Lmba, 140 Smba, 6,250 Smbfg,
 5,000 Bsf, 25 Wpera, 25 Pica, 32 Cba, 3,750 Sh, 750 Misc.
 Hourigan Brook—Hurdstown—200 Brnta.
 Indian Brook—Mendham—850 Bta, 250 Brnta.
 Indian Lake—Denville—100 Lmba, 1,000 Smbfg, 7,000 Bsf, 443 Ypera,
 412 Sa, 21 Pica.
 Jockey Hollow Brook—Jockey Hollow—150 Bta, 150 Brnta.
 Kikeout Brook—Butler—20 Bta, 1,000 Brnta, 1,000 Rta.
 Ledgewood Brook—Ledgewood—150 Bta, 150 Brnta.
 Longwood Lake—Longwood—133 Lmba, 4,000 Lmbfg, 6,000 Bsf, 358
 Ypera, 250 Sa, 26 Pica.
 Malapardis Brook—Malapardis—300 Brnta.
 Meriden Brook—Rockaway—150 Bta, 150 Brnta.
 Mill Brook—Centre Grove—300 Bta, 300 Brnta.
 Mt. Hope Pond—Mt. Hope—1,500 Rta, 1,000 Smbfg.
 Mt. Tabor Brook—Mt. Tabor—450 Bta, 150 Brnta.
 Musconetcong Lake—Netcong—9 Lmba, 2,200 Lmbfg, 5 Smba, 1,000
 Bsf, 3 Pica, 40 Misc.
 Musconetcong River—Guard Lock to Penwell—3,675 Bta, 4,075 Brnta,
 5,175 Rta.
 Pequannock River—Charlottesville—1,000 Brnta.
 Primrose Brook—Morristown—300 Bta.
 Raritan River, South Branch—Y. M. C. A. Camp to Middle Valley—2,800
 Bta, 7,400 Brnta, 6,405 Rta.
 Reservoir Brook—Brookside—300 Bta.
 Rockaway Park Lake—Rockaway—1,000 Smbfg, 150 Bsa, 2,000 Bsf.
 Rockaway River—Milton to Boonton—11,150 Bta, 7,650 Brnta, 4,415 Rta,
 3,000 Smbfg, 150 Bsa, 1,000 Bsf.
 Rolling Mill Pond—Dover—11 Lmba, 150 Bsa, 1,000 Bsf, 4 Pica, 50 Misc.
 Saw Mill Brook—Pequannock—450 Brnta.
 Speedwell Lake—Morristown—859 Rta, 1,500 Lmbfg, 100 Bsa, 1,250 Bsf.
 Spring Brook—Pompton Plains—150 Brnta.
 Stirling Pond—Stirling—1,100 Rta.
 Stoney Brook—Montville—300 Brnta.
 Towaco Brook—Towaco—150 Bta, 150 Brnta.
 Troy Brook—Parsippany—300 Brnta.
 Turkey Brook—Mt. Olive—300 Bta.
 Washington Pond—Wharton—2,000 Bsf.
 Washington Valley Brook—Morristown—800 Brnta, 9 Rta.

Wharton Mill Pond—Wharton—1,000 Smbfg, 150 Bsa.
Wills Brook—Netcong—150 Bta, 150 Brnta.

OCEAN COUNTY

Carasaljo Lake—Lakewood—1,000 Lmbfg.
Colliers Mill Lake—Colliers Mills—1,000 Lmbfg.
Jackson Mills Lake—Jackson Mills—1,000 Lmbfg.
Manahawkin Lake—Manahawkin—1,000 Lmbfg.
Metedeconk River, North Branch—Lakewood—250 Bta, 250 Brnta.
Metedeconk River, South Branch—Lakewood—250 Bta, 250 Brnta.
Pine Lake—Toms River—2,000 Lmbfg.
Pohatcong Lake—Tuckerton—1,000 Lmbfg.
Toms River, North Branch—Holmsville—500 Bta, 500 Brnta.

PASSAIC COUNTY

Belcher's Creek—Milford—125 Bta, 175 Rta.
Cooleys Brook—Hewitt—75 Bta, 125 Rta.
Goffle Brook—Hawthorne—200 Bta, 300 Brnta.
Greenwood Lake—Hewitt—4,750 Lmbfg, 100 Smba, 5,250 Smbfg.
High Mt. Brook—Midvale—250 Bta.
Lindy Lake—Macopin—113 Lmba, 2,000 Lmbfg, 2,000 Bsf, 473 Ypera,
462 Sa, 36 Pica.
Nosenzo Lake—Near Macopin—250 Rta, 1,000 Lmbfg.
Oldham's Pond—Haledon—200 Bta, 300 Brnta, 2 Lmba, 2,000 Bsf, 25
Ypera, 25 Sa, 150 Pica.
Pequannock River—Smith Mills—1,350 Brnta, 500 Rta.
Pompton Lakes—Pompton Lakes—61 Lmba, 4,300 Lmbfg, 14 Smba, 4,000
Bsf, 875 Ypera, 879 Sa, 23 Pica, 205 Misc.
Pompton River—Pompton Plains—1110 Bta, 2,535 Brnta, 1,865 Rta.
Ringwood Brook—Ringwood—560 Bta, 150 Brnta, 350 Rta.
Simonds Pond—Preakness—10 Ca, 25 Sa, 100 Pica.
Singac Brook—Mt. View—250 Brnta, 250 Rta.
Twin Lakes—Pompton Plains—2,000 Lmbfg.
Wanaque River—Pompton Lakes—1,250 Bta, 3,100 Brnta, 2,250 Rta.

SALEM COUNTY

Alloway Lake—Alloway—1,250 Lmbfg, 1,500 Bsf.
Avis Lake—Richmonton—1,000 Bsf.
Ballingers Mill Lake—Aldine—750 Bsf.
Camp Edge Lake—Alloway—600 Lmbfg, 500 Bsf.
Camp Kearney Lake—Woodstown—250 Lmbfg.
Camp Roosevelt Lake—Aldine—750 Bsf.
Cocked Hat Pond—Alloway—1,000 Rta.
Deepwater Canal—Deepwater—250 Lmbfg, 1,500 Bsf.
Memorial Lake—Woodstown—250 Lmbfg.
Parvin Lake—Centreton—800 Lmbfg, 1,500 Bsf.
Penns Grove Sand Wash Pond—Penns Grove—1,000 Rta.
Rainbow Lake—Norma—1,000 Bsf.
Willow Grove Lake—Newfield—600 Lmbfg, 500 Bsf.
Woodstown Lake—Woodstown—1,000 Bsf.

SOMERSET COUNTY

Cattail Brook—Zion—150 Bta, 150 Brnta.
Green Brook—North Plainfield—300 Bta.
Harrison Brook—Liberty Corner—600 Bta.
Indian Graves Brook—Bernardsville—300 Bta.
Lamington River—Burnt Mills—600 Bta.
Lindaberry Pond—Bernardsville—250 Sa, 250 Ypera.

Middle Brook—Mountainside—600 Brnta.
 Passaic River—Basking Ridge—1,510 Bta, 500 Rta.
 Peapack Brook—Gladstone—600 Bta.
 Peters Brook—Somerville—300 Bta.
 Raritan River, North Branch—Far Hills—2,450 Bta, 1,275 Brnta, 1,048 Rta.
 Raritan River, South Branch—Neshanic Station—610 Bta, 500 Rta, 8,000 Smbfg.
 Stoney Brook—Watchung—300 Bta.

SUSSEX COUNTY

Alms House Brook—Myrtle Grove—175 Bta, 275 Brnta, 100 Rta.
 Andover Junction Brook—Andover Junction—700 Bta, 500 Brnta, 250 Rta.
 Bear Pond—Lake Hopatcong—3,500 Smbfg, 1,000 Bsf, 5,000 Pw.
 Beaver Run Brook—Beaver Run—150 Bta, 150 Brnta.
 Biers Kill Brook—Hainesville—50 Bta, 50 Brnta.
 Big Flat Brook, Upper—High Point Park—2,110 Bta, 3,885 Brnta, 3,250 Rta.
 Big Flat Brook, Lower—Haney's Mills—5,175 Bta, 12,780 Brnta, 5,490 Rta.
 Black Brook—Beaver Lake—300 Brnta.
 Clove Brook—Sussex—810 Bta, 275 Brnta, 2,340 Rta.
 Clove Acres Lake—Sussex—1,500 Smbfg.
 Cranberry Lake—Cranberry Lake—181 Lmba, 6 Smba, 200 Bsa, 3,000 Smbfg, 5,000 Bsf, 977 Ypera, 925 Sa, 50 Wpera, 5,000 Pw, 115 Pica, 65 Cba, 7,500 Sh, 1,500 Misc.
 Culvers Lake—Culvers Lake—117 Lmba, 7 Smba, 3,000 Smbfg, 7,000 Bsf, 684 Ypera, 675 Sa, 101 Pica, 40 Misc.
 Culvers Lake Brook—Branchville—200 Bta.
 Dark Moon Brook—Johnsonburg—350 Bta.
 Delaware River—Milford Bridge to Belvidere—4,000 Smbfg.
 Dragon Brook—Cranberry Lake—350 Bta, 350 Brnta.
 Fairview Lake—Near Hardwick—115 Smba, 1,500 Smbfg, 7,000 Bsf.
 Gardners Pond—Andover—500 Smbfg.
 Glen Brook—Stillwater—200 Bta.
 Glenwood Brook—Glenwood—150 Brnta.
 Grinnell Lake—Monroe—220 Brnta, 1,000 Smbfg, 3,500 Bsf, 621 Ypera, 600 Sa, 47 Pica.
 Hopatcong Lake—Lake Hopatcong—150 Lmba, 50 Smba, 6,250 Smbfg, 5,000 Bsf, 1,625 Ypera, 1,677 Sa, 25 Wpera, 120 Pica, 33 Cba, 3,750 Sh, 750 Misc.
 Iliff Lake—Andover—1,500 Smbfg, 3,000 Bsf, 5,000 Pw.
 Kemah Lake—Halsey—87 Lmba, 1,500 Smbfg, 3,500 Bsf, 1,360 Ypera, 30 Ca, 1,350 Sa, 64 Pica.
 Kittatiny Lake—Culvers Lake—1,000 Smbfg, 4,000 Cfg.
 Kymers Brook—Andover—75 Bta, 75 Brnta.
 Lackawanna Lake—Andover—14 Lmba, 3,000 Lmbfg, 2 Smba, 200 Bsa, 3,000 Bsf, 5,000 Pw, 1 Pica, 50 Misc.
 Lenape Lake—Andover—107 Lmba, 433 Ypera, 412 Sa, 21 Pica.
 Little Flat Brook—Layton—1,000 Bta, 2,000 Brnta, 1,020 Rta.
 Lone Pine Lake—Flatbrookville—1,500 Smbfg.
 Lubbers Run—Cranberry Lake—550 Bta, 1,500 Brnta.
 Madeline Mulford Lake—Stokes State Forest—900 Rta.
 Margerum Brook—Stockholm—150 Brnta.
 McMickles Pond—Andover—400 Ypera, 400 Sa.
 Mill Brook—Montague Township—200 Bta, 200 Brnta.
 Morris Pond—Fredon—50 Bta, 250 Rta.
 Musconetcong Lake—Stanhope—278 Lmba, 2,200 Lmbfg, 2,000 Smbfg, 100 Bsa, 1,000 Bsf, 1,257 Ypera, 1,062 Sa, 42 Pica.
 Musconetcong River—Fountain to Forbes—2,760 Bta, 1,150 Brnta, 2,250 Rta.

Muskrat Pond—Waterloo—300 Lmba, 100 Sa, 100 Sh.
 Neldon Brook—Above Swartswood—200 Bta.
 Ocquittunk Lake—Stokes State Park—1,350 Rta.
 Owassa Lake—Near Culvers Lake—74 Lmba, 115 Smba, 2,000 Smbfg,
 5,000 Bsf, 528 Ypera, 500 Sa, 39 Pica.
 Pacock Brook—Stockholm—50 Brnta.
 Papakating Creek—Sussex—375 Bta, 375 Brnta.
 Papakating Creek, West Branch—Sussex—175 Bta, 175 Brnta.
 Paulinskill Lake—Swartswood—16 Lmba, 122 Smba, 2,000 Smbfg, 100
 Bsa, 50 Misc.
 Paulinskill River—Lafayette to Stillwater—4,445 Bta, 4,000 Brnta, 2,025
 Rta.
 Pequest River—Springdale to Huntsville—1,725 Bta, 1,350 Brnta, 450 Rta.
 Pond Brook—Middleville—200 Bta, 100 Brnta.
 Quarry Brook—Quarryville—150 Brnta.
 Quicks Pond—North of Swartswood—1,500 Smbfg, 5,000 Bsf.
 Roy's Spring Brook—Stillwater—350 Bta.
 Saw Mill Lake—High Point Park—2,850 Rta.
 Saw Mill Brook—High Point Park—1,000 Brnta.
 Shay Lake—Stokes State Park—2,000 Smbfg.
 Shimers Brook—Montague Township—200 Bta, 200 Brnta.
 Skellinger's Lake—Stokes State Park—1,450 Rta.
 Sparta Glen Brook—Sparta Glen—400 Brnta.
 Sparta Junction Brook—Sparta Junction—75 Brnta, 75 Rta.
 Steenykill Lake—High Point Park—1,500 Smbfg.
 Swartswood Lake—Swartswood Lake—105 Lmba, 5,000 Smbfg, 78 Smba,
 1,479 Ypera, 1,475 Sa, 40 Pica, 60 Misc.
 Tar Hill Brook—Tar Hill—175 Bta, 175 Brnta.
 Tillman Brook—Wallpack—50 Bta.
 Trout Brook—Above Tranquility—200 Bta, 50 Brnta, 50 Rta.
 Tuttle's Corner Brook—Tuttle's Corner—150 Bta, 150 Brnta.
 Walkill River—Sparta—1,050 Bta, 475 Brnta, 2,500 Rta.
 Wawayanda Lake—Andover Jc.—1,500 Smbfg, 3,000 Bsf.

UNION COUNTY

American Felt Company Pond—Clark Township—400 Smbfg.
 Briant's Pond—Summit—400 Smbfg, 1,000 Ypera.
 Echo Lakes—Mountainside—800 Smbfg, 1,000 Ypera.
 Green Brook—Scotch Plains—125 Brnta, 125 Rta.
 Jackson Pond—Rahway—500 Smbfg.
 Kenilworth Lake—Kenilworth—200 Smbfg, 500 Ypera.
 McGilvary's Lake—Linden—2,000 Bsf, 800 Ypera.
 Milton Lake—Rahway—400 Smbfg, 600 Ypera.
 Mindowaskin Lake—Westfield—200 Smbfg, 2,500 Bsf, 1,000 Ypera.
 Nomahegan Lake—Cranford—200 Smbfg, 2,000 Bsf, 500 Ypera.
 Rahway Park Lake—Rahway—400 Smbfg.
 Rahway River—Springfield—275 Bta, 1,340 Brnta, 3,335 Rta.
 Seeley's Pond—Scotch Plains—500 Smbfg, 1,000 Ypera.
 Surprise Lake—Summit—600 Smbfg, 1,000 Ypera.
 Taylor Park Lake—Millburn—800 Ypera.
 Tomaque Lake—Westfield—2,000 Bsf.
 Warinanco Lake—Roselle—400 Smbfg, 1,000 Ypera.

WARREN COUNTY

Bear Creek—Johnsonburg—700 Brnta.
 Beaver Brook—Hope—375 Bta, 1,275 Brnta.
 Blairs Creek—Blairstown—425 Bta, 175 Brnta, 1,150 Rta.
 Buckaloo Swamp Brook—Hope—150 Bta, 150 Brnta.
 Catfish Pond—Blairstown—100 Bsa.

Cedar Lake—Blairstown—1,000 Rta, 7 Lmba, 7 Smba, 100 Bsa, 3,500 Bsf,
 2 Pica, 100 Misc.
 Columbia Lake—Columbia—2,500 Smbfg, 2,500 Bsf.
 Dark Moon Brook—Johnsonburg—300 Brnta.
 Delawanna Creek—Delawanna—125 Bta, 425 Brnta.
 Delaware River—Belvidere to Milford Bridge—7,000 Smbfg.
 Ebenezer Brook—Ebenezer—150 Brnta.
 Furnace Brook—Oxford—700 Bta, 700 Brnta.
 Guard Lock—Saxton Falls—9 Lmba, 3,000 Lmbfg, 100 Bsa, 2,000 Bsf,
 5,000 Pw, 34 Pica, 200 Misc.
 Jacksonburg Brook—Jacksonburg—875 Bta, 875 Brnta.
 Lominson's Glen Brook—Lominson's Glen—400 Bta, 400 Brnta.
 Lopatcong Creek—Harmony—855 Bta, 250 Brnta.
 Mt. Lake—Buttzeville—99 Lmba, 3,000 Smbfg, 3,500 Bsf, 793 Ypera, 737
 Sa, 40 Pica.
 Musconetcong River—Guard Lock to Penwell—8,374 Bta, 8,388 Brnta,
 9,454 Rta.
 Paulina Lake—Paulina—2,000 Smbfg.
 Paulinskill River—Stillwater to Paulina—7,000 Bta, 5,000 Brnta, 2,040
 Rta.
 Pequest River—Townsbury to Belvidere—7,050 Bta, 3,150 Brnta, 2,115
 Rta.
 Pohatcong Creek—Mt. Bethel—4,690 Bta, 2,575 Brnta, 1,750 Rta.
 Silver Lake—Hope—1,000 Rta, 2,500 Smbfg, 100 Bsa, 3,500 Bsf.
 Susquehanna Lake—Blairstown—1,000 Rta, 12 Lmba, 10 Smba, 2,000
 Smbfg, 100 Bsa, 3,500 Bsf, 2 Pica, 50 Misc.
 Triple Brook—Hope—250 Brnta.
 Trout Brook—Hope—125 Bta, 425 Brnta.
 Van Campens Brook—Millbrook—375 Bta, 1,275 Brnta.
 Wasigan Brook—Ebenezer—150 Brnta.
 White Lake—Marksboro—1,000 Rta, 2,000 Smbfg, 300 Bsa, 3,500 Bsf.
 Yards Creek—Hainesburg—150 Bta, 900 Brnta.