

ANNUAL REPORT

OF THE

New Jersey Board of Fish and Game Commissioners

FOR THE

Fiscal Year Commencing July 1, 1922

and Ending June 30, 1923

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1924

**List of Fish and Game Commissioners Holding Office at the
Date of this Report.**

HARRY J. BURLINGTON, *President*, Montvale
CHARLES F. HUNTER, *Vice-President*, Palisade
LEWIS SPINKS, *Treasurer*, Jersey City
ALEX. H. PHILLIPS, Princeton
WILLIAM A. FAUNCE, Atlantic City
GEORGE C. WARREN, JR., Summit
HARRY T. HAGAMAN, Lakewood

WALTER H. FELL, *Secretary*

Office of the Board, State House, Trenton, N. J.

DUNCAN DUNN, *Superintendent of Game Farm*, Forked River
CHARLES O. HAYFORD, *Superintendent of Fish Hatchery*, Hackettstown

List of Fish and Game Wardens Holding Commissions at the date of This Report.

STRATTON, JAMES M., *Protector*, Long Branch
 MATHIS, HOWARD, *Assistant Protector*, Atlantic City
 CUDNEY, HARRY E., *Assistant Protector*, Hackettstown

ASHWORTH, CHRISTOPHER, Sussex
 AVIS, JOHN H., Woodbury
 BAILEY, JOHN B., Washington
 BOBERA, MICHAEL, Trenton
 CONNER, FRED S., Bridgeton
 COX, JOHN F., Washington
 EVERNHAM, JAMES H., Toms River
 DAVISON, ARTHUR, Asbury Park
 DACKERMAN, FRED H., Elizabeth
 EGGERT, JOSEPH S., West Millington
 FOLKER, CHARLES W., Camden
 HALL, FRED J., Bloomfield
 HALL, GERVAS I., Salem
 HUGG, JOHN R., Jamesburg
 KELLEY, THOMAS, Jersey City
 KLEIN, WILLIAM C., Clifton
 LAWRENCE, HARRY R., Newfoundland
 LODER, WILLIAM B., Egg Harbor City
 MATHIS, HOWARD Z., JR., New Gretna
 MIZELL, CHATHAM, Elmer
 MORTON, CHARLES C., Mount Holly
 MOTTRAM, FRANCIS, Park Ridge
 PARK, JOHN J., White House Station
 PHIFER, GEORGE W., Millville
 RIDER, ANSON J., Tuckerton
 ROE, JACOB D., Newton
 SMALL, OTIS C., Hammonton
 SMALL, WILLIAM HENRY, Englewood
 STEEL, WILLIAM, Cape May Court House
 STEUERWALD, CHARLES, South Amboy
 WELSH, CHARLES E., East Millstone
 YOUNG, WILLIAM E., Chester

ANNUAL REPORT.

GENERAL.

Looking back over the year and contemplating the work accomplished, gives our Board no little satisfaction. As was suggested in our last annual report, the Board is ever bearing in mind fish and game conditions in the State for the days immediately before us and the years to come.

Some progressive legislation was enacted, and while from the uninformed there may be some protest on the closing the season for quail in the northern part of the State, and the reducing the bag limit on pheasants, it must be borne in mind that such measures are necessary, and great benefits to the mass of hunters should soon result.

Numerous requests were made to the Board for fish and game for distribution and we were able to satisfy practically all applicants. Anyone desiring fish or game should send to this office for an application blank, and after filling out same, in accordance with the conditions imposed, the application is listed, and the Board does its utmost to comply with the request.

GREATER GAME FARM PRODUCTION.

It appears that the Game Farm at Forked River has about reached the limit of production, and the Board has under consideration plans for a larger annual output of birds. It is believed that the present Farm could be used to supply pheasants and eggs for auxiliary game farms to be conducted by the Board. These farms being widely separated, the danger of disease destroying birds in large numbers would be greatly lessened.

During the year the Board investigated several sites for auxiliary farms to be conducted wholly by the Board, but no decision in the matter has yet been reached. One plan was that land at the Hatchery could be used for hatching eggs and rearing young birds from the State Game Farm.

At present the Board contributes from its funds to two county branch game farms, the Mount Holly Game Farm and the Monmouth County Game Farm, under the act of April 5, 1920. The production at the Mount Holly Farm has not come up to expectations.

Early in July there was a great mortality among birds in one field at the State Game Farm, and our Superintendent was unable to determine the cause of death, as nothing like it had before come under his observation. The live birds were quickly removed to another field. Several specimens of the dead birds were sent to the New Jersey Experimental Station at New Brunswick, but examination showed the birds to be in good condition. Other specimens examined by Dr. Anderson, an authority on poisons, at Squibbs Laboratory, failed to show evidence of poisoning, and in the opinion of Dr. Anderson death was the result of some peculiar condition of the ground which had resulted from unusual heavy rainfalls. In this case the deaths were not due to continued use of the ground, inasmuch as birds were affected on new ground, which had recently been cleared, and which had only been used for raising birds for one year.

We have made arrangements with Professor Smith of the Rockefeller Institute, Princeton, to examine the bodies of any birds diseased or birds which may die at the State Game Farm.

EGG DISTRIBUTION.

During the year the Board made its first distribution of pheasants eggs from our Game Farm to persons who agreed to hatch the same and distribute the birds on lands to which licensed hunters have access. While the raising of pheasants requires much care, and there have been a number of failures by persons not expert in raising them, yet it was believed that there were numerous persons throughout the State who had sufficient knowledge to care for the birds to an age when they could be safely liberated. New York and other states have furnished eggs to persons, and it is believed that the system in those states has been successful.

With each shipment of eggs a pamphlet prepared by Superintendent Dunn of the State Game Farm was sent out giving directions for pheasant breeding.

Persons desiring to hatch pheasant eggs made application to the warden of their county, and he investigated as to whether they were qualified to raise birds, and it was made the duty of the warden to see that the birds when liberated were put out for the benefit of licensed hunters.

HIGH POINT PARK AS A PRESERVE.

The State of New Jersey recently acquired through gift of Colonel Anthony R. Kuser, 2,200 acres of land in Sussex

county, known as High Point Park. The possibility of the use of the park for the production of game was realized by both the High Point Park Commissioners and our Board, and following correspondence with John J. Stanton, Secretary, our Board in April stocked Lake Marcia in the park with brook trout.

The Board has under consideration taking over a house and grounds at High Point Park, at no expense to our Board, for the purpose of raising birds for distribution throughout the State.

The park covers the ridge known in New York state as the Shawangunk Mountain, and in New Jersey as the Blue or Kittatinny range. The property is enclosed with a nine foot woven wire fence, surmounted with continuous barbed wire.

Lake Marcia is a natural body of water, fed entirely by springs, five-eighths of a mile in length and one-quarter of a mile in width, and at places has a depth of 50 feet.

GAME PRESERVES.

On July 11, 1922, the Board leased from Sarah Cooper Hewitt and Eleanor G. Hewitt about 600 acres of land, and from the estate of Amy H. Green; Charles O. Green, Norvin H. Green and Eleanor N. Green, Trustees, about 900 acres, for a period of five years, for the sum of one dollar. The property is known as Ringwood Manor, and is located in Pompton township, Passaic county. The Board has the right from time to time to put fish into the waters on the property, and to take fish from such waters for the purpose of stocking other streams in the State. On September 17th the Board, together with Superintendent Dunn of the Game Farm and Superintendent Hayford of the Hatchery, and Protector Stratton made an inspection of the property.

There is in existence a five-year lease, from October 3, 1921, with the Rossiter Realty Company for the Worthington Game Preserve of 5,000 acres, known as Buckwood Park, in the townships of Knowlton, Blairstown and Pahaquarry in the county of Warren. No game is to be killed by the lessor or lessee, but the Board has the right to capture and remove game from the place.

BREEDER'S LICENSES.

From January 1, 1923 to the date of this report there were 142 licenses, at \$5.00 each, issued to persons to keep in their possession English and Mongolian pheasants, mallard, black and wood ducks, Canada geese, ruffed grouse, rabbits, squirrels, quail and deer in a wholly enclosed preserve. Five years ago there were 106 similar licenses issued.

IN MEMORIAM.

The following resolution adopted by the Board on the death of Commissioner Boulton is a brief but sincere tribute to the deceased.

WHEREAS, Hon. William B. Boulton, who was a member of the Board of Fish and Game Commissioners from November 25, 1919, and who was Treasurer of the Board from December 13, 1920, died at Morristown on Sunday, September 17, 1922, and

WHEREAS, The Board at their meeting held October 10, 1922, desire to place on record in the minutes an expression of their heartfelt sorrow in the loss of their fellow member; therefore, be it

Resolved, That in the death of Commissioner Boulton the State and our Board have been deprived of the unselfish services of one of the State's most distinguished citizens. He was an ideal representative of the fish and game interests of the State, being endowed with a natural love of outdoor life, and eager to do all in his power to pass on the pleasures of hunting and fishing to the humblest citizen. He regarded our wild life as an asset to the State to be preserved for this and future generations. His experience as a hunter and fisherman had been gained in all parts of the country, and he was personally interested in any movement for the conservation of nature's resources. Before his appointment to the Board by his Excellency, Governor Walter E. Edge, he was widely known as a leading member of the American Game Protective and Propagation Association, and for several years served as chairman of that Association's annual conference on game. Commissioner Boulton gave to the State as a member of the Board much of his time and talent, and entered into our work with the same spirit which marked his important activities in civil life. No duty was too small nor too large, but that it had his best attention. It was a real pleasure to sit with him in the meetings of the Board because of his unfailing courtesy, devotion to duty and his enlightened vision, and each member of our Board feels that he has lost a sincere friend.

Resolved, That a copy of these minutes be sent to the family of the deceased by the secretary, and be spread in full upon the minutes of the Board.

RECEIPTS AND EXPENDITURES.

An analysis of the receipts and expenditures during the fiscal year follows:

RECEIPTS.

Hunters' and Anglers' Licenses:

County Clerks' checks to State Treasurer:

Chapter 152, 1914, \$225,712.66

Board's checks to State Treasurer:

Chapter 320, 1915 (Juvenile), 79.00

Chapter 125, 1922 (Woodcock), 2,086.15

..... \$227,877.81

Other Licenses:

Menhaden, \$4,275.00
Pounds, 5,710.00
Breeder's, 765.00

10,750.00

Fines and Penalties:

Chapter 247, 1911, \$16,995.00
Chapter 96, 1922 (Trespass), 457.50

17,452.50

Sales:

Boat ("Adelaide"), \$750.00
Guns, 372.25
Farm and Hatchery, 961.74
Other sales, 247.52

2,331.51

Checks returned to State Treasurer, 100.00

\$258,511.82

EXPENDITURES.

Personal administration (Commissioners), \$695.45
Wardens' salaries, 57,960.00
Wardens' expenses, 12,891.12
Office expenses, 7,319.64
Publicity and Assistant to Treasurer, 1,159.92
Printing and stationery, 4,757.67
Legal expenses (court costs), 84.83
Pensions (Mrs. Hoblitzell), 588.00
Salaries for crew of "New Jersey," 2,473.10
Gasoline and oil for autos, boats, Farm and Hatchery, 9,417.21
Tires and tubes for wardens, 3,365.40
Purchase of autos and boats, 10,107.40
Postage, telephone, telegraph and insurance, 2,296.06
Maintenance, Game Farm, 21,803.10
Equipment, Game Farm, 1,232.01
Extra Labor, Game Farm, 180.00
Additions and improvements, Game Farm, 1,121.39
Maintenance, Fish Hatchery, 24,101.70
Equipment, Fish Hatchery, 1,927.58
Extra Labor, Fish Hatchery, 6,809.24
Additions and improvements, Fish Hatchery, 7,656.06
Maintenance of autos and boats, 12,410.77
Purchase of game and fish, and fish eggs, 23,310.48
Maintenance, Burlington County Branch Farm, 2,161.08
Maintenance, Monmouth County Branch Farm, 1,739.07
Miscellaneous expenses, 3,797.49

..... \$221,365.77

FEDERAL RELATIONS.

Steps were taken to supplement our own fish stocking by obtaining fish from the Bureau of Fisheries. Our wardens were directed to get in touch with persons in their counties who would make proper application to the Bureau of Fisheries for fish, and they were instructed to supervise the distribution of fish when received.

The Bureau supplied 27 applicants with fish, as follows:

Seven with black bass, eleven with brook trout, one with brown trout, one with pike-perch and white fish, one with pike-perch, five with sun-fish and one with white fish. The total number of fish included in the shipments was 782,400, of which 700,000 were fry.

The Board endeavored to obtain directly from the U. S. Bureau of Fisheries some pike-perch eggs and pike-perch, but we were informed they were not in position to supply the same this year.

NEW JERSEY-DELAWARE JOINT COMMISSION.

A commission, consisting of former Commissioner William A. Logue, of Bridgeton; Jeremiah Chambers of Cape May, and Protector James M. Stratton, had conferences during the year with a committee appointed by the Governor of Delaware, consisting of J. Hall Anderson, Dover; Harris Samonisky, Wilmington; and Frederick D. Bendler, Delaware City, for the purpose of agreeing on a concurrent law for the Delaware river and bay between New Jersey and Delaware.

Our Board instructed the Protector that we were opposed to making the proposed concurrent law any more liberal than the present concurrent law with Pennsylvania affecting the Delaware river, it being desirable to have practically the same restrictions for Delaware river and bay between New Jersey and Delaware as are provided for in the upper portion of the Delaware river.

In March, much to our surprise, Protector Stratton received word from J. Hall Anderson that the Delaware Legislature, despite the fact that the Joint Commission had not come to final terms, passed, and their Governor approved, two acts, one act containing some provisions agreed upon and some provisions not considered by the Joint Commission, one of which was a provision forbidding New Jersey residents fishing in their waters, which law was not to become operative until concurred in by New Jersey; the other act simply prohibited New Jersey residents fishing in their waters and took effect immediately. The Commissioners representing New Jersey informed Mr. Anderson that in view of

his law prohibiting residents of New Jersey from fishing in their waters that our Legislature would undoubtedly at its next session pass an act prohibiting the residents of Delaware from fishing in our waters, and further, that the action of the Delaware Legislature would certainly have a deterrent effect on the effort of the two states to obtain uniform legislation.

NEW JERSEY-PENNSYLVANIA PROPOSED COMMISSION.

In reply to a communication from N. R. Buller, Commissioner of Fisheries, Pennsylvania, for advice as to what progress had been made toward the purification of streams in New Jersey and what recommendations we would make to accomplish this, the Board replied that in their opinion after the study of the subject, we believed that drastic pollution legislation would not meet the situation at this time, having in mind the attempt of our Board during the session of the Legislature of 1922 to have enacted a pollution law with teeth in it.

Our Board suggested a joint commission of the Pennsylvania and New Jersey authorities to consider the subject.

To this letter Commissioner Buller replied that the suggestion for a Joint Committee from Pennsylvania and New Jersey was a good one, and that at some time in the near future arrangements should be made.

In July, Commissioner Buller informed us that under reorganization of the government of the State of Pennsylvania, by the Legislature of 1923, all questions covering pollution would come under what is known as "The Sanitary Water Board." He added that the new code for the Board had not been published, but that as soon as possible he would take up the matter with us.

It appears that New York and Pennsylvania have an agreement for the use of eel racks in the Delaware river between those states, and N. R. Buller, Commissioner of Fisheries, Pennsylvania, wrote for the attitude of our Board regarding permitting eel racks in the Delaware river between New Jersey and Pennsylvania. We informed Mr. Buller that before the present concurrent uniform law regulating fishing in the Delaware river between New Jersey and Pennsylvania was passed, eel racks were permitted, but that the framers of the concurrent law found good reasons not to permit the further use of racks. Later we were informed by Mr. Buller that their Department was not in favor of eel racks.

TRESPASS.

With the increase of game in this State, due to stocking by the Board, many streams and farms have become notably valuable

for the wild life they contain. When there was a great scarcity of fish and game, the farmers were rather indifferent to hunters and fishermen, except in a few instances where property was destroyed, and few complaints were heard from the sportsmen as to restrictions.

However, with the greater supply of fish and game, many farms and streams are being posted by property owners, and a very stringent trespass law was enacted by the Legislature of 1922.

Beyond any possibility of doubt the farmer is entitled to a most respectful hearing from the State in protecting his property. Under legal decisions for many years it is held he has no property rights in the game on his land until it is reduced to his actual possession, the ownership being in the State until the game is legally taken.

The Legislature of 1923 modified the 1922 trespass Law in a manner, which, it is believed, will not let down the bars against protection of property, but at the same time it gives more leeway to the licensed hunter and fisherman. Regulations for posting property are made more definite as a warning to sportsmen, and all penalties collected for trespass are to go to the State instead of being shared by an informer. Arrests may still be made without warrant by the owner, occupant, lessee or licensee or any officer of the law. A penalty of \$500 is fixed for trespassers who destroy property.

The Board of Fish and Game Commissioners have no jurisdiction in the matter of enforcing the trespass laws, which are general statutes of the State affecting property. The hunting and fishing license issued by the Board clearly states that it gives no right to trespass.

It appeared that under the old trespass law, agents of farmers and others apprehended persons for trespassing, and would, under threat of arrest, obtain money from hunters, the amount obtained often being less than the penalty. Our Board took up the matter with the Attorney-General, who informed us that a person stopping a trespasser under pretense of arrest had no right to settle the case in any manner, and the course to be pursued was clearly indicated in the law.

AUTOMOBILES.

There are in operation 30 Ford cars and 5 trucks. New Ford cars supplied during the year were 15.

WARDENS' SERVICE.

We are glad to report that there has been a marked improvement in the service rendered by our wardens, except in a few cases which are under consideration.

Through the efficiency record kept by the Board and in accordance with the rules of the Civil Service, we have been able to reward wardens with greater compensation who have shown progress, and a spirit of co-operation. A warden who is slack in his duties is a reflection on the Board, and it is our desire to maintain the service on as high a plane as possible. Our wardens generally understand the situation and respond to the spirit necessary in the performance of their duties. These duties, in the arrest of offenders at times, are not altogether pleasant, but it is the policy of the Board to stand back of them in their enforcement of the law, irrespective of special pleas for leniency. While it may appear in some cases where a warden makes an arrest that an undue hardship is imposed on the defendant in payment of the penalty, yet it must be remembered that in making the arrest the warden is not only representing the Board, but the thousands of law abiding sportsmen who pay a substantial license fee to fish and hunt in the legal season.

In order to bring our warden service in closer touch with the members of our Board, it was decided that there should be a more effective supervision of the work of the wardens, in addition to the efficiency record system now maintained.

The system for many years was to have the wardens under the supervision of a single protector, and it is at once apparent that no one person could keep in close touch with the force distributed in every part of the State. Later, two assistant protectors were appointed, but these assistant protectors had duties other than mere supervision of the wardens in their districts. At the same time the work of the Commission has expanded, and in September the Board asked the Civil Service Commission for the approval of the appointment of two additional assistant protectors, said assistant protectors to be appointed from the rank of wardens now in service. It is proposed to form four districts of the State, with an assistant protector for each district.

The Civil Service Board held an examination for the positions on June 18th, at which time eight of our force appeared for examination.

POLLUTIONS.

It is history that during the session of the 1922 Legislature, the Board failed to secure the enactment of a law, with teeth in it, in order to prevent the pollution of all fresh waters.

Hon. Henry G. Hershfield, of the House of Assembly, re-introduced the 1922 measure during the session of 1923, but it failed to pass.

Respecting tidal waters, our Board has no jurisdiction in the matter of pollutions. The State Board of Health has jurisdiction over tidal waters and fresh waters where pollution affects health, comfort or property, and they have acted along these lines.

The pollution of the Atlantic ocean by oil tankers is a matter within the province of the Federal authorities, and this matter has been taken up by Congress, but no effective law has been passed.

The State Board of Health, after years of litigation, prohibited the City of Phillipsburg from sewerage into the Delaware river, and they have brought a similar suit against the city of Trenton. We understand that preparations are being made by that Board to prevent Camden sewerage into the Delaware river. It is also co-operating with the authorities of Pennsylvania defining methods for prevention of contamination of the Delaware river by municipalities.

Commissioners H. J. Burlington and W. A. Faunce were appointed a committee to represent our Board at a conference of the State League of Municipalities held at Atlantic City on August 10th and 11th, 1922.

Commissioner Burlington reported in reference to the conference that the consensus of opinion was that the final solution of pollution question was not drastic laws, but a campaign of education to be promulgated by a commission on pollution, to be appointed by the Governor of each State. It was learned that in Holland and other countries the Government has a regular dock for the disposal of oil from vessels, and vessels are not allowed to dispose of waste oil at any other place.

Elsewhere in this report we refer to the possibility of a joint commission with Pennsylvania to meet the problem of pollution of the Delaware river.

In June a large number of fish were found dead in the Passaic river, from Little Falls to Paterson, which were undoubtedly killed by accidental discharge of alum due to a breakage at the Montclair Water Company's plant at Little Falls. The Board is fully investigating the matter.

PROSECUTIONS.

During the year there were 760 prosecutions for violations of the fish and game laws; 744 of the defendants were convicted, 11 acquitted, 5 cases pending. In default of payment of penalty imposed by the magistrate, six of the defendants were committed to the County Jail for periods of 20 to 90 days. Five cases were appealed to the Common Pleas Court, and in 39 cases, by reason of youth, old age, extreme poverty, giving information to wardens against other persons, where persons were charged with more than one offense, or other mitigating circumstances sentence was suspended on payment of costs.

Twenty-one hunters' licenses were revoked after the defendants were convicted of violating an act. In one case, it was a second conviction, and any license issued to this person for a period of two years will be void. Seventy-eight guns were confiscated from aliens.

The above number of prosecutions is six less than during the year 1922, when 767 arrests were made, which was the greatest number of prosecutions in the history of the Commission.

Our Board obtains nearly 100% in convictions in prosecutions brought, proving that arrests made are justifiable.

In July there was a round up of violators of the lobster law and the Board obtained in prosecution, penalties aggregating \$260. In the same month in Bergen county two offenders paid \$420 for the possession of 18 robins, two catbirds and illegal possession of firearms. In September in Bergen county an offender paid \$180 for illegal possession of seven song birds, hunting without a license and Sunday gunning. In another case in Bergen county, for a similar offense, a violator paid \$200. In February in Burlington county, three wardens prosecuted three offenders for hunting deer out of season, hunting deer with dogs and for possession of parts of deer, and recovered penalties amounting to \$500.

Several arrests were made for violating the deer law and the defendants paid \$100 each. One person was arrested in Atlantic county for having in possession parts of five deer, and a penalty of \$500 was collected. In Passaic county an offender paid \$50 for hunting rabbits with ferrets. In Camden county an Italian was arrested and fined \$520 for illegal possession of one rabbit and 25 song birds. In Hunterdon county two non-resident aliens, taking song birds, who were without hunting licenses, paid penalties amounting to \$460 and their guns were confiscated.

Special attention was paid to the supervision of several thousand cranberry pickers on the bogs in Burlington county, a great many of whom were aliens, to see that they did not violate the law. Several houses occupied by aliens were searched, and several arrests were made and guns confiscated.

The Board obtained a prosecution in the case against James Marshall and George Holloway for violation of the law making it unlawful for any person to lie in wait for wild water fowl at a distance of more than 100 feet from ice, marsh or meadow, bar or bank or naturally heaped seaweed not covered by water. The defendants were hunting at a point in Barnegat Bay near Barrel Island. The defendants claim that the place at which they were hunting was practically an island, and that they were within the law. The defendants appealed the conviction, and the Attorney-General was requested to defend the case.

In April a special investigation by the Board showed that the point was covered with water, that the highest point of the bar was flooded with two feet of water at 10:45 A. M., and that it would not be high water until noon.

Before the appeal case was heard the members of the Club who claim to control the point attempted to build up the place with cement on the plea that the spot was once an island, and that they were simply restoring the identity of the same. Our Protector notified them that such an act was illegal, and the idea to build up the point was abandoned.

FOXES.

Last year foxes could be hunted with hounds and firearms the entire year, and such an extended period gave an opportunity to many persons to go in the woods and fields with firearms to violate our laws on protected game under the pretense of hunting foxes. The summer months are not the proper time for hunting foxes, their fur during this period not being of any value. A law was passed fixing the fox hunting season in daylight from November 10th to April 30th, except during the deer season.

During the fiscal year there were 866 native foxes killed and reported to the Board.

Permits to keep silver foxes issued to July 10th were as follows:

N. J. Black Fox Farm, E. N. Braesefield, Secretary & Treasurer, Phillipsburg; Ranch located at Port Warren.

Silverplume Foxes, Inc., D. S. Crowe, General Manager, Metropolitan Building, Orange; Ranch located on Black Oak Ridge Road.

W. S. Duguid, Plainfield, R. D. No. 3, Ranch located at Union Village, Warren township, Somerset county.

GAME CONDITIONS.

There is no doubt but that deer are rapidly multiplying in the State, and there was an increase during the year of squirrel, rabbit, grouse, pheasant, geese, brant and duck. There is also an increase in quail in the southern part of the State, but a decrease in the northern section. There appears to be also an increase in woodcock, snipe, curlew, rail and reed birds.

Beaver have been noted in several places in the northern part of the State.

In the northern counties of the State the winter snow was deep, and the weather severe, and without doubt the birds suffered to some extent, but our wardens did considerable work in feeding and providing shelter. In Somerset county 300 ringneck pheasants and two coveys of Hungarian partridge were fed. In Monmouth county several coveys of quail were located and fed in one day. In the southern and middle section of the State there was but little snow and the birds apparently did not suffer. In Cumberland county 20 coveys of quail were located and fed in one day.

It appears that the Hungarian partridge still maintains itself in parts of Somerset county. At the close of the season coveys were reported near Blackwell Mills, Franklin Park, and near Millstone, respectively.

We had some correspondence with foreign game dealers respecting a purchase of Hungarian partridge, but the transportation facilities, due to the troubles in the Ruhr district, were such as to make a shipment inadvisable.

TOTAL GAME DISTRIBUTION.

There was a total distribution in the State of 6,612 pheasants, 5,517 being liberated from the Farm, 29 direct from dealers, 364 from Burlington County Branch Farm, and 702 from Monmouth County Branch Game Farm.

There were also 12 wild turkeys liberated, and 1,619 rabbits.

STATE GAME FARM AND BRANCH FARMS.

Duncan Dunn, Superintendent of the State Game Farm, at Forked River, in his eleventh annual report for the year ending June 30th, 1923, says:

"During the year the following eggs were set and hatched:

Eggs set at Main Farm,	18,000	Young birds hatched,	11,000
Eggs set at Monmouth County Branch Farm,	3,600	" " "	2,000
Eggs set at Burlington County Branch Farm,	3,456	" " "	1,300
Eggs set at Main Farm for Monmouth County Farm, ..	1,400	" " "	600
Eggs unfit for hatching,	2,400		
Eggs shipped through the State to parties to hatch, the birds to be liberated on pub- lic hunting grounds,	6,691		
	<hr/>		<hr/>
	35,547		14,900

"The pheasant record at the Main Farm is as follows:

Birds on hand July 1, 1922, ..	1,144		
Birds purchased and cared for,	2,278		
Total Farm mature birds raised,	4,054		
Estimated number of young birds on hand June 30, 1923, May hatch,	9,000		
		Farm Birds liberated,	4,054
		Purchased birds liberated, ...	1,463
		Purchased birds dead and es- caped,	348
		Estimated number of young birds on hand June 30, 1923, May hatch,	9,000
		Estimated number of breeders on hand June 30, 1923, ...	1,611
	<hr/>		<hr/>
	16,476		16,476

"During the month of July, 1922, a disease started in one of my rearing fields, and before I was able to check it, I lost approximately 2,000 young birds in this field. I took some of the dead birds up to the New Jersey Experiment Station, at New Brunswick, and some to Dr. Anderson, of Squibbs Laboratories, and had them analyzed, but they were unable to find out what the trouble was or help me in any way."

MONMOUTH COUNTY BRANCH GAME FARM.

William Hair, Game Keeper of the Monmouth County Branch Game Farm, P. O. Freehold; express, Farmingdale; in his

second annual report for the fiscal year ending June 30th, 1923, says:

"There were liberated from the farm 700 pheasants, 75% being liberated in Monmouth county in accordance with law, and 80 were caught up during the winter and kept for breeders; 30 of these died and I have on hand, now, 50 old pheasants.

"This spring 3,600 eggs were set and 2,000 young birds were hatched, and 600 day-old pheasants were brought up from the Game Farm at Forked River. Of this lot I lost quite a few, due, no doubt, to the birds getting chilled on the trip up, as the weather was cold on one of the days. I have on hand, now, approximately 1,800 young pheasants."

BURLINGTON COUNTY BRANCH GAME FARM.

Charles C. Morton, Superintendent, and William A. Fenimore, Game Keeper, in the third annual report of the Branch Game Farm at Mt. Holly, Burlington County, say:

"We had a very poor year so far as the pheasants are concerned. We had no trouble with the birds after we got them hatched, but we found that many of the eggs did not hatch, although the hens set perfectly. This was called to the attention of the officers of the League and to the Commissioners and to Superintendent Dunn. The only reason we could find was that possibly the rough roads in bringing the eggs from the State Farm had been the cause of it, although the eggs were perfectly packed by Mr. Dunn before leaving the farm at Forked River and were brought up slowly.

"We liberated, during the year, 362 pheasants, twenty-five per cent of which were liberated in Mercer and Ocean counties, as provided for by law.

"We have on hand at the present time at the Farm, besides this year's hatch, which is nearly large enough to liberate, two hundred bantam hens, twenty mallard and black ducks; wild geese, golden, silver and Lady Amherst pheasants, and some quail."

DEER.

During the recent deer season which included the last two Wednesdays in December, 1922, and the first two Wednesdays in January, 1923, there were 890 bucks legally killed and reported, and 37 does were found dead in the woods by hunters or wardens. This is an increase of 120 deer killed in the season of 1922-23 over the season in 1921, both seasons consisting of four days. An average for 890 deer at 125 pounds each would make a total of 111,250 pounds of venison for food purposes, which if sold at 50 cents a pound would amount to over \$55,000.00.

The following is a list of counties in which deer were killed:

<i>County.</i>	<i>Bucks Legally Killed and Reported.</i>	<i>Does Found Dead in Woods.</i>
Atlantic,	157	4
Bergen,	60	4
Burlington,	253	3
Camden,	10	..
Cape May,	17	..
Cumberland,	58	4
Essex,	2	..
Gloucester,	2	..
Hunterdon,	3	..
Mercer,	5	..
Monmouth,	3	..
Morris,	41	8
Ocean,	148	9
Passaic,	33	5
Somerset,	6	..
Sussex,	49	..
Warren,	43	..
	890	37

There were 3 deer reported as having been killed on cultivated lands, in accordance with the deer law permitting the shooting of deer doing damage to crops.

During the year numerous deer found dead in the woods by hunters or wardens or killed by railroad trains were sent to hospitals and charitable institutions and the carcasses not fit for food were buried by wardens.

In the deer season there were only two slight accidents reported, one in Atlantic and one in Burlington county.

In October, as per arrangement, our Board met a delegation representing the New Jersey County Boards of Agriculture and the State Granges respecting the matter of damage done by deer in Ocean, Cape May and Atlantic counties.

The conference came to a close with the adoption of a motion that the President of our Board appoint a committee of three to confer with a committee of three of the Federation to take up the matter of damage done by deer.

After the conference the Board's committee reported that the farmers had asked for a 15-day open season on deer in Ocean and Atlantic counties for the killing of both bucks and does. The Board's committee recommended an open season of from five days to a week in Atlantic and Ocean counties for both bucks

and does, provided that such a bill would be legal. There was no doubt but that in portions of Atlantic and Ocean counties deer had done damage, but investigation showed the amount was in many cases greatly exaggerated. The Board prepared and had introduced a bill which provided a season for killing deer in this State from December 16th to 22d, both dates inclusive, and permitting the killing of does more than one year old in Ocean and Atlantic counties. The bill passed the Senate, but was lost in the House.

The deer bill enacted in 1923 by the Legislature and signed by the Governor provided for the killing of bucks only throughout the State from December 17th, to December 21st.

In connection with the matter of deer doing damage in this State, the Board was in receipt of an unsolicited letter from a warden, containing a list of 26 farmers, stating the farmers would not notice what little produce the deer would take, and it was their desire to have more deer in their locality.

RABBITS.

There was an unusual scarcity of rabbits reported by hunters, the small number being attributed to extensive forest fires which occurred during the summer of 1922, and to the heavy rains in the spring.

The Board made an early start in order to purchase 2,000 cottontail rabbits for distribution in South Jersey. The order was placed with a dealer who handles large shipments of game, but he reported his inability to complete the order after 681 rabbits had been received. It appears that in Kansas, the shipping point, spring had set in from a month to six weeks earlier than for many years past, and the farmers having commenced to plow would not interest themselves in trapping rabbits, and besides, the rabbits were not going into the traps because of the unusual weather conditions.

Another dealer, however, in that section claimed that he could fill our order, but after shipping 266 rabbits he was unable to supply any more. The Tarman Fur Farms, Quincy, Pa., who obtained their supply from Missouri, and who had furnished the Pennsylvania Commission with rabbits, was then given an order. They guaranteed live arrival of the rabbits at point of destination, and the loss in early shipments was small, but in the later shipments there were numerous dead rabbits, which of course the Board did not pay for.

The net result of our efforts was that 1,619 rabbits were distributed as follows: Atlantic county, 170; Burlington county,

131; Camden county, 169; Cape May county, 164; Cumberland county, 170; Gloucester county, 176; Mercer county, 114; Middlesex county, 68; Monmouth county, 119; Ocean county, 156; Salem county, 182; total, 1,619.

The Board finds that there is a demand for rabbits in northern Jersey and that the supply for southern Jersey this year was not adequate. In view of this, the Board has made arrangements to purchase 9,000 rabbits, to be delivered after the close of the gunning season in the fall.

The rabbits are shipped direct to a warden who puts them out in accordance with a list of applications for rabbits sent to him by the office, and where there is suitable cover for rabbits.

The wardens were instructed not to put rabbits where it was likely they would cause damage to fruit trees.

Investigation has shown that it is not economical to attempt to raise rabbits on Branch Game Farms, inasmuch as they can be bought in the West at a price less than the cost of raising them.

FOREST FIRES.

Severe forest fires burned thousands of acres of game cover in Cape May, Cumberland, Atlantic, Burlington, Ocean and Monmouth counties. Reports indicate that many quail, rabbits, and pheasants were destroyed. Some deer were also burned by being caught in the back fires.

William Lindsay, Deputy State Firewarden, furnishes us a tabulation showing that during the calendar year 1922, there were 1,077 forest fires in the State burning an acreage of 106,086 with a total improved property and forest damage of \$603,756. He adds that incomplete data for the calendar year for 1923 indicates that the loss will be about the same as for the first six months of 1922.

WOODCOCK.

During the first year of the act providing for special license for persons to hunt woodcock from October 1st to November 9th, 1,043 licenses were issued at \$2.00 each.

Their issuance by counties follow:

Atlantic, 21; Bergen, 107; Burlington, 6; Camden, 13; Cape May, 48; Cumberland, 4; Essex, 155; Gloucester, 1; Hudson, 60; Hunterdon, 6; Mercer, 25; Middlesex, 13; Monmouth, 45; Morris, 162; Ocean, 3; Passaic, 157; Salem, 1; Somerset, 48; Sussex, 61; Union, 80; Warren, 16; Outside of State, 11. Total 1,043.

The object of the special license is to permit woodcock shooting in their season, but to keep persons out of the woods or fields with firearms who would go out under the pretense of shooting woodcock but who would shoot other game.

It is apparent that the special woodcock license successfully meets a condition that has been a problem in the State for many years.

The number of licenses issued does not necessarily indicate the number of woodcock hunters in the State. By reason of the flight of the birds there was practically no necessity for hunters in South Jersey to take out licenses, as the birds did not arrive there until after November 9th.

Reports of the wardens made to President Burlington indicated that because of the woodcock licenses there were less persons in the woods or fields prior to the upland game season than were ever known before.

DOGS.

Dogs running at large are destructive to game, and it is a waste of money and effort to stock the fields and woods and then allow dogs to prey upon rabbits and birds. Every dog case should do much to improve the supply of game. In Cape May and Monmouth counties, at the time of writing this report, we had complaints of wild dogs, in remote places, getting their entire living on various animals, and the matter is receiving our attention.

While the law permits training dogs in the fields at any time they must be under control and not allowed to secure game. No good sportsmen will train his dog during the breeding season for rabbits and birds.

An opinion from the Attorney-General's office was to the effect that Chapter 149, Laws of 1922, did not repeal Chapters 72 and 75, Laws of 1916, respecting registration and killing of dogs not properly registered.

REEDBIRDS.

Another effort was made to repeal the law which provides for an open season for reedbirds or bob-o-link. The bill passed the House but failed to go through the Senate. It appears that those in favor of the repeal claim that the reedbird is not the great menace to the rice fields of the South that it formerly was, but it must be noted that the destruction caused by the bird in the rice fields of North Carolina, South Carolina, Georgia and Florida was the reason, after investigation, for the United States Government allowing the killing of reedbirds, by order dated

December 17, 1919, the same not to be sold or offered for sale or wantonly wasted or destroyed, but they may be used for food purposes by the persons killing them, or may be transported to hospitals and charitable institutions for use as food.

CATS.

After many years' efforts, a bill to destroy useless cats was finally written into the laws of the State, the measure following along the lines of the New York law, and it reads as follows:

1. Any person holding a valid hunting and fishing license may, and it shall be the duty of any Fish and Game Warden or peace officer to, humanely destroy any cat found hunting or killing any bird or animal protected by law, or with a dead bird or animal of any species protected by law in its possession; and no action for damages shall be maintained for such killing.

2. This act shall take effect immediately.

One benefit of this law is illustrated in the killing of five pheasants by cats on the property of Mr. Morris, Washington Avenue, Dunellen, the cats being killed by Mr. John Doughty, of Plainfield, a member of the New Jersey Conservation League.

CROW DUCK.

A law was passed prohibiting the pursuing or shooting of crow ducks from boats or vessels propelled in any manner at a greater distance than 100 feet from shore. The object of this law was to prevent the driving of coots (commonly known as crow ducks) which greatly interferes with persons hunting other ducks.

PHEASANTS.

A decided step was taken when the Legislature fixed, at our suggestion, a daily bag limit of two for English pheasants and a seasonal bag limit of 30.

Under the old law it was possible to take 93 pheasants in a season.

Pheasants are becoming thoroughly established in the State, and with proper restrictions and stocking they should greatly multiply and each year afford more hunting for the hunters. The Legislature extended the area in which pheasants shall not be killed, for the reason that it is claimed they eat the Japanese beetle which is destructive to crops. The restricted area is within the limits of the city of Trenton, or the township of Hamilton, in the county of Mercer; or within the limits of the township of Chesterfield, the township of North Hanover, the township

of New Hanover, the township of Pemberton, the township of Woodland, the township of Tabernacle, or the township of Shamong, in the county of Burlington; or within the limits of the township of Waterford, or the township of Winslow, in the county of Camden; or within any of the territory lying between the said townships and the Delaware river.

QUAIL.

A notable protective measure was passed by the Legislature, at the suggestion of our Board, which fixed a closed season on quail in the following northern counties of the State; Warren, Passaic, Bergen, Sussex, Morris, Essex, Hudson, Union, Somerset and Hunterdon.

Quail were formerly abundant in this territory but they are now practically a thing of the past. It is not believed that the growth of towns and villages and the less growth of grain, etc., in the territory are altogether responsible for the absence of the quail. It is rather believed that the territory was over-hunted, at least in districts where quail did abound. Under the present quail law it is possible for a hunter to take 310 quail in a season, in counties where there is an open season.

FISH.

For list of waters stocked see appendix to report.

During the fiscal year ending June 30, 1923, the grand total of fish planted was 59,552,175. Of this supply a greater portion was artificially hatched and reared at the State Fish Hatchery, while the remainder came from netting operations in city reservoirs and canals, and purchase.

The distribution covered every county and was made in line with a scientific survey, which indicates the kind of fish which thrive best under the conditions in each stream. While the majority of the fish were in the fry and fingerling stage, records show that the quota of trout, including brook, brown, rainbow and lake trout, was largely of catchable size when released and afforded immediate improvement of fishing.

Including both large and small mouth, the bass output was the largest since restocking work was undertaken in this State. There was a distribution of approximately 140,000 bass in adult and fingerling sizes.

Perch, as usual, led in the restocking totals. Millions of yellow perch fry were planted from the hatchery and this popular game and food fish is now found in practically all the fresh waters of the State. Other fish distributed in smaller numbers included crappie, sunfish, catfish and pickerel.

The distribution of trout purchased from the Penn Forest Hatchery at Mauch Chunk was commenced in August. Our trucks left the State Fish Hatchery, Hackettstown, in the afternoon, arrived at Penn Forest Hatchery at night, and then left with fish about four o'clock in the morning, transferring the fish to other trucks at Hackettstown, from which the distribution was made. By this method the fish were delivered in the cool part of the day and with very little loss.

Under "Federal Relations" in this report, we have referred to the receipt by various applicants from the U. S. Bureau of Fisheries of 782,400 fish, of which 700,000 were fry, which were planted under the supervision of our wardens.

TROUT AND BASS.

Inclement weather interfered with the trout fishermen at the beginning of the season, but as the waters reached their normal,

fishing was found to be excellent, and no doubt there were more trout fishermen along the streams last spring than at any time in the history of the State. Every stream which possessed conditions capable of sustaining trout life has been stocked. During recent years the fame of our streams has spread to adjoining States and nonresidents join the tens of thousands of New Jersey sportsmen in trying their luck with rod and reel.

The bass is a wonderful game fish and is much sought for by fishermen. Our State has many streams and ponds where the bass thrive. Small mouth, large mouth black bass, rock bass, calico bass and crappie are frequently found in our waters. Every county in the State has more or less noted bass fishing waters.

STATE FISH HATCHERY.

Charles O. Hayford, Superintendent of the Fish Hatchery, Hackettstown, N. J., in his eleventh annual report for the year ending June 30, 1923, says:

"The output of the hatchery for the past fiscal year is shown by the following tabulation:

	<i>Raised July 1, 1922, to June 30, 1923.</i>	<i>Disposed of.</i>	<i>Estimated Number on Hand.</i>
Lake trout 4-8,	3,705	3,705
Brook trout fg. 1-4,	1,201,500	1,181,500	20,000
Brook trout 3-10,	133,840	23,840	110,000
Brook trout 7-11,	7,012	7,012
Brown trout fg. 2-4,	110,000	10,000	100,000
Brown trout 4-12,	32,990	12,990	20,000
Brown trout adult 12-16,	865	465	400
Rainbow trout 2-4,	200,000	200,000
Rainbow trout 4-12,	131,855	61,855	70,000
Large mouth bass fg. 2-4,	19,900	19,900
Large mouth bass No. 1,	210,000	60,000	150,000
Small mouth bass fg. 2-4,	18,450	18,450
Small mouth bass No. 1,	84,000	34,000	50,000
Miscellaneous,	2,215	2,215
Sunfish,	206	206
Yellow Perch fry,	58,000,000	58,000,000
	60,156,538	*59,436,138	720,000

*"In addition to the above there were 50,000 brook trout six to ten inches long ordered from the Penn Forest Brook Trout Company, and of these 49,150 were distributed in natural brook trout streams, and the balance of 850 are to be planted.

"This gives a total distribution of fish handled by the Hatchery of 59,485,288. This, together with 66,887 fish obtained from reservoirs, etc., makes a total distribution for the year of 59,552,175.

"A list of the stocking done by the Board, showing number, kind, and water, is herewith attached. (For list see last pages of annual report.)

"TROUT.—The Department did not plant as many brown trout this year as in the past, due to the change in policy of raising the fingerling brown trout to 8 to 10 inches before planting. On account of the brown trout egg shortage, caused by increased demand, deforestation and disappearance of brook trout in many streams they formerly thrived in, it is necessary to hold over a large quantity of these trout for brood stock, in order to secure eggs for future output.

"The large pools in front of the Superintendent's residence for rearing trout have proved very successful. Due to the large amount of big fish carried in these ponds they are very much admired by the sportsmen who visit the hatchery. I would recommend that the Board build two more large pools of similar type, for rearing large trout, as soon as possible.

"During the past five years I have been working on selective breeding with brook and brown trout. These tests show benefits greater than were anticipated. We now have the third generation of brook trout and the second generation of brown trout, from which the most vigorous and fast growing breeders will be selected. Last year at the age of twenty months many of these brook trout were 10 to 11 inches long. Fingerlings now on hand, bred from these fish are much larger and stronger than any previous stock. A great many of these fish were 4 to 5 inches long on July 1st.

"I have obtained considerable data respecting the use of waters near the Hatchery for an increase in trout production, if such is desirable.

"BASS.—I have been very much interested in the way the different bass culturists, whom I have visited in the past five years, handle their problems. I believe that for each dollar spent for the construction of trout ponds an equal amount should be spent for the construction of bass ponds. The demand for bass is constantly growing. The big expense of bass culture is in building ponds. A great deal of the bass pond embankment can be built with the excavation from the trout ponds, or run right up against the walls of trout ponds. We have two twelve inch pipes of brook and pond water for this work, not fit for trout, except in winter, which would go to waste if not used for pond fish during summer.

"Due to the worst flood in fifteen years, the large mouth bass fingerlings in lake No. 4, on July 1st, were greatly damaged. Therefore, the output of bass fingerlings was not as great as anticipated. Forty thousand bass fingerlings two to four inches long were raised in ponds 5, 6 and 7 which were not bothered by the roily water.

"This spring's hatch of bass has been the best, considering the limited number of breeders on hand. If we had had the breeders at the Hatchery we could have easily hatched one-half million or more bass, as the conditions during the hatching period were exceedingly favorable.

"At the present time a great deal of the sportsmen's money is being spent throughout the United States for the propagation of the salmonid family. It is the belief of a great many of the leading fish culturists that, due to deforestation and many other uncontrollable elements, the time is close at

hand when more money must be spent for the rearing of pond fish than for the first named species. The majority of our ponds and lakes and big streams adapted to perch, bass and pickerel are open to the public, whereas many of the trout streams are privately owned, permitting the owners to close them at any time they desire.

"All experiments and work in bass indicate that we have very favorable conditions at the Hatchery. Therefore, I recommend that the Board secure a large stock of bass breeders at the earliest opportunity.

"Careful selection and proper handling result in parent bass reproducing at the same time, which results in uniform size of fry and which has a tendency to greatly eliminate cannibalism, the greatest obstacle confronting the bass culturist. Another advantage in carrying the brood stock under our new conditions, is that the spawning period can be largely controlled. Parent bass kept in captivity after a period of years become very tame.

"The following table shows the increase in bass output each year beginning 1915, including the present year:

1915,	200	bass	fingerlings.
1916,	5,120	"	"
1917,	9,047	"	"
1918,	15,150	"	"
1918-1919,	24,944	"	"
1919-1920,	36,300	"	"
1920-1921,	73,563	"	"
1921-1922,	101,625	"	"
1922-1923,	132,350	"	"
	<hr/>		
	398,299	"	"

"This table does not include 102,652 bass fry planted during these years. Total output of bass since 1915, 500,951.

"It has been the Commission's policy since 1920 to add one or two bass ponds each year. Next year we will have six large bass ponds and three small ones. Two of the small ponds are used for adult breeders, which are introduced each year. They become more easily domesticated in small pools than in large ones.

"The purchase of 2.65 acres at a cost not exceeding \$600 from Elias H. Bell, the property adjoining the Hatchery, will permit the construction of a road on higher ground, and two more bass ponds. The work can be done with teams and scraper. This road and new ponds will save the purchase and laying of 600 feet of 10-inch iron pipe, giving complete control of ponds on the east side of the State property. All flood waters can be prevented from getting into the bass ponds, during the hatching and early stages of the young bass by spending \$700 to \$800 for ditching and drainage.

"PERCH AND BLUE GILL SUNFISH.—A small number of fry and fingerlings were used for experimental purposes last year. They were very easily raised, taking the various foods very readily and attained the size of two to four inches by November. Larger quantities of these fingerlings can be raised, if the Board so desires.

"Some of the States carry large quantities of perch fry and blue gill adults so that in case they get a poor bass hatch they can utilize the bass pond areas for these fish, thus insuring a constant supply of pond fish of some variety."

"RESERVOIR WORK.—At a meeting of the Hatchery Committee it was decided that the Superintendent, during the month of June, should make a survey of, and put a crew to work on, the various municipal reservoirs, which the Board had permission to net in order to obtain small bass and other fish for propagation purposes.

"On June 1st, Mr. Knechel, the Hatchery foreman, assisted by three of the Hatchery men, and Wardens Hall, Lawrence and Mottram, started this work. Warden Hall's assistance with motor boat, on Boonton Reservoir, was of great value.

"By having Wardens Mottram and Lawrence bring the bass to the Hatchery in their small cars, the Hatchery men were permitted to devote their time to the collection of these bass. There were 26 small truck loads of bass fry netted from the reservoirs. These fry were placed in the new bass ponds at the Hatchery and raised to fingerlings No. 1 before being liberated. These young bass make very rapid growth in a short time, due to myriads of insects, caused by infusion.

"The collection of bass fry was a valuable auxiliary to the Hatchery work. There are only two drawbacks to the reservoir work. First the bass fry run very uneven in size, which results in cannibalism. Second, care has to be used and careful observations made to see that no diseased fry are brought into the Hatchery. Wild bass are more susceptible to Hatchery diseases than those raised in the Hatchery."

NETTING WATERS.

In netting Boonton Reservoir, Morris county, this year, the Board established a camp for the wardens so they could be on hand when netting was practicable. It is best to net early in the morning and late in the evening. The wardens were camped out at the spot for the month, and the average number of wardens engaged in the work was four, and we employed five extra men.

After investigation, the Hatchery Committee authorized the collection of perch eggs in one point of Lake Hopatcong, where the perch frequently spawn, for distribution to other parts of the lake.

We obtained permission from the Delaware and Raritan Canal Company to net the canal when the water was let out in the winter, for fish for stocking. Netting was delayed on account of the fact that heavy rains kept the water at a high level. From the 10th to the 13th of January, the canal was netted but the work had to be discontinued by reason of ice and snow. We succeeded in catching 1420 black bass, 894 perch, 600 crappie, 18,000 bait fish and 32 sunfish. Ninety of the bass, weighing two pounds or more, together with all the bait fish, were planted at the Hatchery, and the balance were sent to lakes in South Jersey

counties. We were unable further to net the canal owing to weather conditions.

TIDAL AND FRESH WATER.

The following ruling was adopted by the Board at its May meeting:

That where tide waters of the Delaware river and bay and tributaries thereof ebb and flow in sluices or over banks or over meadows, which had been banked but the banks having broken, said waters shall come under the law affecting tidal waters.

That where there are sluices in which there are gates so constructed as to absolutely prevent any tide waters going through the gates (where the water backs up on the inside until the tide again ebbs, at which time the gates open), the same shall be considered fresh waters.

PICKEREL.

A year's trial of the law which brought in the opening of the bass and pickerel fishing on the same date, June 15th, gave great dissatisfaction. The reason for the opening dates for bass and pickerel at the same time, in brief, was that many bass were taken by pickerel fisherman when the opening of the bass season came in later, and thousands of bass were hooked and thereby destroyed. It was held by those in favor of having different dates for each fish, that the pickerel spawned early in the spring, and that it was only proper to allow the fish to be taken when it was at its best for food purposes; also that the law of last year prohibiting the taking of pickerel until the bass season opened, gave undue protection to the pickerel in that it allowed the fish to mature, increase, and prey on bass and other fish.

In northern New Jersey, thousands of persons desire to have the opportunity to go fishing for pickerel on their Decoration Day holiday. A law was passed fixing the opening of the pike, pickerel and pike-perch season on May 20th.

PATROLLING WATERS—BOATS.

During the year the State launch "New Jersey" patrolled the Atlantic Ocean, Sandy Hook and Raritan Bay, Delaware Bay and Delaware river and other waters of the State to see that vessels taking menhaden were properly licensed, to see that pounds were properly licensed, to prevent the use of beam trawls, to examine the size and mesh of nets and their use in the legal seasons, and to prevent the taking of food fish in purse nets.

In addition, the boat "Amos" paid particular attention to Sandy Hook and Raritan Bay and the Shrewsbury river for the enforcement of the lobster law.

Our waters were also patrolled by wardens who have in their charge bank skiffs.

Owing to the decrease in the number of boats engaged in taking shad in the Delaware river, the "New Jersey" in May was sent to the lower part of the State to see that persons engaged in taking weakfish and croakers observed the law for the taking of fish as to length of nets and size of mesh, the boat being stationed near the mouth of Dennis Creek, and our wardens patrolled the waters in two bank skiffs.

New boats purchased, 4; small power boats operated, 10; row boats operated, 7; canoes operated, 1; ocean going launch operated, 1.

INCREASE IN SHAD.

Protector James M. Stratton gathered statistics of the shad fishing industry in the Delaware river and bay for the season 1923 which closed June 10th. While there were a less number of boats and nets and men engaged than in 1921, when the last census was taken, the increase in the number of shad caught was more than 50%, and there was a corresponding increase in the value of fish caught.

There was an increase in the catch in all the counties except Salem, Gloucester and Camden, which counties show a decrease. The total catch in 1921 was 20,102, while in 1923 it was 34,160.

Of the total catch in the Delaware Bay, river and their tributaries, which was 34,160, there were 21,700 caught in the Maurice river in Cumberland county. This increase in Maurice river was undoubtedly due to the fact that the State Board of Health a few years ago adopted drastic measures in preventing pollution of the river on account of the large oyster industry at Maurice river and Bivalve, and there has been an increase in the catch of shad since that time, but this year it was greater than ever. Nets used in Maurice river are from 25 to 50 fathoms in length.

In Hunterdon county only hauling seines are used, as the concurrent act between Pennsylvania and New Jersey prohibits the use of gill nets above Trenton Falls.

In operating gill nets in Mercer, Burlington and Camden counties row boats are generally used, and the length of nets is from 25 to 100 fathoms.

In Gloucester, Salem and Cumberland counties, motor boats are used, and the nets are from 250 to 600 fathoms in length.

The statistics follow:

	BOATS AND NETS		MEN ENGAGED		NUMBER OF SHAD CAUGHT		VALUE OF SHAD CAUGHT		VALUE OF BOATS AND NETS	
	1921	1923	1921	1923	1921	1923	1921	1923	1921	1923
Cumberland County,	49	42	84	22,300	\$10,800.00	\$22,600.00	\$19,400	\$10,600		
Salem County,	35	21	42	2,650	8,750.00	3,975.00	15,750	10,500		
Gloucester County,	25	10	20	750	1,925.00	1,125.00	6,000	1,850		
Mercer County,	6	9	22	1,700	2,580.00	2,500.00	930	1,350		
Camden County,	6	4	4	125	370.00	250.00	900	200		
Hunterdon County,	4	9	24	2,435	2,164.50	3,650.00	475	1,125		
Burlington County,	34	21	74	4,200	1,803.00	7,350.00	2,975	2,665		
	159	116	357	34,160	\$28,392.50	\$41,450.00	\$46,430	\$28,290		
	116		254	20,102		28,392.50	28,290			
Decrease,	43		103							
Increase,				14,058		\$13,057.50		\$18,140		

POUNDS.

Following is a summary of the pound fisheries report for the year ending December 31, 1922.

Approximate value of all pounds,	\$780,761.00
Proceeds derived from sale of fish,	919,334.18
Number of pounds of fish caught and disposed of, ...	31,855,886
Licenses issued:	
Atlantic Ocean,	113
Sandy Hook and Raritan Bays,	43
	156
Number of pounds operated,	151
Number of men employed,	659

All of the pounds for which licenses were issued were not operated. Owing to the scarcity of fish and labor it was not practicable to operate a number of the pounds.

Synopsis of New Jersey Fish and Game Legislation 1923

Assembly Bill No. 60, Chapter 85.—Provides that any person holding a valid hunting and fishing license may, and it shall be the duty of any Fish and Game Warden or peace officer, to humanely destroy any cat found hunting or killing any bird or animal protected by law, or with a dead bird or animal of any species protected by law in its possession.

Assembly Bill No. 77, Chapter 15.—Amends section seven of the General Fish and Game act; unlawful to pursue, shoot, shoot at, kill or wound coot (commonly known as crow duck) from boats or vessels propelled in any manner at a greater distance than 100 feet from shore.

Assembly Bill No. 81, Chapter 34.—Provides that no person shall trap any fur-bearing animals, except those having a regular hunting and fishing license, but does not apply to persons under fourteen years of age who are bona fide residents of this State, nor does it apply to the occupant of any farm in this State trapping thereon, who actually resides thereon, or the immediate members of the family of such occupant who also reside on said farm, when it is legal to trap.

Assembly Bill No. 82, Chapter 168.—Fixes the season for hunting foxes, in daylight, with hounds and firearms from November 10th to April 30th, except during deer season.

Assembly Bill No. 112, Chapter 170.—Fixes the season for hunting deer, bucks only, December 17th to December 21st, both dates inclusive.

Assembly Bill No. 161, Chapter 145.—Amends trespass act. Unlawful to trespass upon occupied lands for hunting or fishing, after public notice on the part of the owner, occupant, lessee or licensee thereof, such notice bearing the name of said owner, occupant, lessee or licensee being posted conspicuously on the corners of said property and along the roads or highways abutting said properties and on all boundary lines bordering on adjoining lands, and at each point where a stream enters upon or leaves said property; also unlawful to trespass after being forbidden; Penalty \$20. Arrests may be made without warrant by the owner, occupant, lessee or licensee or any officer of the law, the offender to be taken for trial before a court having jurisdiction. If a person trespasses on posted land or trespasses after being forbidden, in case of prosecution his failure to produce a written permit signed by the owner, occupant, lessee or licensee shall be prima facie proof of his trespassing. Trespassers destroying property may be arrested, without warrant, by the owner, occupant, lessee or licensee, or any officer of the law; penalty \$500. All moneys recovered to go to the Board of Fish and Game Commissioners.

Assembly Bill No. 296, Chapter 91.—Fixes the season for taking skunk, mink, muskrat and otter from November 15th to March 1st.

Senate Bill No. 6, Chapter 20.—Fixes season on pike-perch, pike and pickerel May 20th to November 30th and from January 1 to January 20th.

Senate Bill No. 94, Chapter 22.—Provides for closed season until March 2, 1928, on quail in the counties of Warren, Sussex, Passaic, Bergen, Morris, Essex, Hudson, Union, Somerset and Hunterdon.

Stocking of New Jersey Waters

BY THE NEW JERSEY BOARD OF FISH AND GAME COMMISSIONERS
FOR THE FISCAL YEAR ENDING JUNE 30, 1923

Total Number of Fish Planted, 59,485,288

KEY TO ABBREVIATIONS

FISH		FISH	
B. T.....	Brook Trout	Per.....	Perch
Brn. T.....	Brown Trout	Pic.....	Pickarel
R. T.....	Rainbow Trout	S.....	Sunfish
L. M. B.....	Large Mouth Bass	C.....	Catfish
S. M. B.....	Small Mouth Bass	W. F.....	Whitefish
B.....	Bait Fish	Misc.....	Miscellaneous
Cr.....	Crappie	L. T.....	Lake Trout
SIZE			
Fg.....	Fingerlings	F.....	Fry
		A.....	Adult

ATLANTIC COUNTY

(Mullica River System)

Hammonton Lake—450 L. M. B. Fg., 750,000 Per. F.
Union Lake—300 L. M. B. Fg.

(Great Egg Harbor River System)

Lenape Lake—450 L. M. B. Fg., 750,000 Per. F.

(Absecon River System)

Atlantic City Reservoir—300 L. M. B. Fg.

BERGEN COUNTY

(Hackensack River System)

Closter Brook—668 B. T. Fg.
Demarest Brook—741 B. T. A.
Musquasink Brook—500 R. T. A.
Oradell Reservoir—750,000 Per. F., 400 S. M. B. Fg.
Pascack Creek (upper)—1,250 B. T. A., 950 R. T. A.
Pascack Creek—850 R. T. A.
Pascack Creek (west)—9,000 B. T. Fg.
Teller's Brook—275 B. T. A.
Tenekill Creek—500 R. T. A., 666 B. T. Fg.
Washington Spring Brook—950 B. T. A., 1,000 B. T. Fg.
West Washington Spring Brook—3,000 B. T. Fg.

(Pascack River System)

Bear Brook—525 B. T. A., 8,000 B. T. Fg.
Electric or Silver Lake—31 L. M. B., 523 Per., 41 Cr., 400 S. M. B. Fg., 59 Pic., 1 C., 19 S., 400 Shiners.
Woodcliffe Lake—400 S. M. B. Fg., 750,000 Per. F.

(Passaic River System)

Saddle River—1,900 B. T. A., 666 B. T. Fg., 2,300 R. T. A., 33 L. M. B. A.
40 Brn. T. A., 39 Per. A., 7 Cr., 400 S.
Trib. Saddle River—43,600 B. T. Fg.

(Ramapo River System)

Black Ash Swamp Brook—2,400 B. T. Fg.
Halifax Brook—9,000 B. T. Fg.
Hopper Brook—500 B. T. Fg.
McNamee Brook—3,400 B. T. Fg.
Ormonds Brook—6,000 B. T. Fg.
Panther Brook—1,500 B. T. Fg.

(Saddle River System)

Halley's Brook—1,000 B. T. Fg.
Hopper Brook—3,200 B. T. Fg.
Sprout Brook—4,000 B. T. Fg.
Suydam Brook—3,000 B. T. Fg.
Tallman's Brook—5,400 B. T. Fg.
Van Buskirk's Brook—1,000 B. T. Fg.
Washington Mill Brook—2,000 B. T. Fg.
Mettowe Lake—12 L. M. B. A., 300 Per., 18 Cr.

BURLINGTON COUNTY

(Crosswicks Creek System)

Jones Mill Pond—250,000 Per. F.

(Delaware River System)

Sylvan Lake—400 R. T. A., 1,000 L. M. B. Fg.

(Rancocas Creek System)

Birmingham Lake—250,000 Per. F.
Hunter's Lodge Lake—250,000 Per. F.
Mirror Lake—1,500 L. M. B. F.
New Lisbon Lake—250,000 Per. F.
Norcross Lake—250,000 Per. F., 1,000 L. M. B. F.
Pine Mill Lake—250,000 Per. F.
Rancocas Lake—1,000 L. M. B. F.
Smithville Lake—500 Misc., 1,000 L. M. B. F.
Vincentown Lake—1,000 L. M. B. F.

(Wading River System)

Chatsworth Lake—500,000 Per. F.
Zurn's Lake—1,000 L. M. B. F.

CAMDEN COUNTY

(Delaware River System)

Bottomley Lake—250,000 Per. F.
Blackwood or Good Intent Lake—500,000 Per. F., 300 L. M. B. Fg., 1,000 L. M. B. F.
Bridgeview Lake—1,000 L. M. B. F.
Crystal Lake—250,000 Per. F., 500 L. M. B. F.
Evans Lake—300 L. M. B. Fg., 250,000 Per. F., 1,000 L. M. B. F.
Grenloch Lake—500,000 Per. F., 1,000 L. M. B. F.
Gibbs Lake—300 L. M. B. Fg., 1,000 L. M. B. F.
Haddon Lake—1,000 L. M. B. F.
Kirkwood Lake—300 L. M. B. Fg., 500,000 Per. F., 1,000 L. M. B. F.
Laurel Lake—500 L. M. B. F.
Little Lake—250,000 Per. F.
Silver Lake—500,000 Per. F.
Pillings Lake—300 L. M. B. Fg., 250,000 Per. F., 1,000 L. M. B. F.

(Big Timber Creek System)

Big Lebanon Run—180 B. T. A.
Black Run—187 B. T. A.
Brown's Run—187 B. T. A.
Rattle Snake Run—187 B. T. A.

CAPE MAY COUNTY

Lilly Lake—300 L. M. B. Fg.
Ludlam's Lake—600 L. M. B. Fg., 500,000 Per. F., 2,000 L. M. B. F.
Magnolia Lake—500,000 Per. F.
Rio Grande Lake—300 L. M. B. Fg., 1,000 L. M. B. F.
Rio Grande Water Works Lake—500,000 Per. F.
Sleepy Hollow Lake—2,000 L. M. B. F.

CUMBERLAND COUNTY

(Cedar Creek System)

Cedar Lake—500 L. M. B. F.
Sandwash Lake—300 L. M. B. Fg.

(Cohansey Creek System)

Clark's Lake—500,000 Per. F., 500 L. M. B. F.
East Lake—500,000 Per. F., 500 L. M. B. F.
Mary Elmer Lake—300 L. M. B. Fg., 500,000 Per. F., 1,000 L. M. B. F.
Seeley's Lake—500 L. M. B. F.
Silver Lake—500 L. M. B. F.
Sunset Lake—300 L. M. B. Fg.
Tumbling Dam Lake—500,000 Per. F., 1,500 L. M. B. F.

(Maurice River System)

Buckshootum Lake—1,000 L. M. B. F.
Cumberland Pond—500,000 Per. F.
Duck Pond—500,000 Per. F.
Little Mills Lake—1,000 L. M. B. F.
Union Lake—900 L. M. B. Fg., 1,000,000 Per. F., 3,000 L. M. B. F.

ESSEX COUNTY

(Passaic River System)

Branchbrook Park Lake—400 S. M. B. Fg.
Yanticaw River or Notch Brook—700 B. T. A., 1,450 R. T. A.
Trib. Yanticaw River or Notch Brook—10,000 B. T. Fg.
Weequahic Park Lake—83 L. M. B. A., 300 Per., 21 Cr., 32 Pic., 800 L. M. B. Fg., 202 Misc.

(Rahway River System)

South Mt. Reservation—10 Brn. T. A., 4,200 R. T. A.

GLOUCESTER COUNTY

Alcyon Lake—250,000 Per. F., 1,000 L. M. B. F.
Blank's Lake—250,000 Per. F.
Fries Lake—450 L. M. B. Fg., 1,000 L. M. B. Fg.
Almonesson Lake—1,000 L. M. B. F.
Mitchell's Lake—1,500 L. M. B. F.
Pelican Lake—1,000 L. M. B. F.
Pricketts Lake—300 L. M. B. Fg.
Tyler's Pond—250,000 Per. F., 1,000 L. M. B. F.
Silver Lake—300 L. M. B. Fg., 250,000 Per. F., 1,000 L. M. B. F.
Warner's Lake—450 L. M. B. Fg., 500 L. M. B. F.

HUDSON COUNTY

Hudson Park Lake—1,950 R. T. A.

HUNTERDON COUNTY

(Delaware River System)

Duckworth Creek—6,000 B. T. Fg.
Hakihokake Brook—1,200 B. T. A., 5,000 B. T. Fg.
Little York Brook—3,000 B. T. Fg.
Spring Mills Brook—10,000 B. T. Fg.
Musconetcong River—1,900 R. T. A., 30 Brn. T. A.
Rapp or Holland Brook—3,700 B. T. Fg.
Wichechoke Run—450 R. T. A.

(Lamington River System)

Besembury Mt. Brook—5,000 B. T. Fg.
 Clark Brook—6,000 B. T. Fg.
 Cold or Skillman Brook—4,000 B. T. Fg.
 Rowe Brook & Trib.—15,000 B. T. Fg.

(Musconetcong River System)

Creveling Brook—8,000 B. T. Fg.
 Dairy Run—6,000 B. T. Fg.
 Penwell or Beaty Brook—8,000 B. T. Fg.

(So. Br. Raritan River System)

Colé Brook—105 B. T. A.
 Cakepoulin Brook—450 R. T. A.
 Edmund's Brook—105 B. T. A.
 Frog Hollow Brook—125 B. T. A., 7,400 B. T. Fg.
 High Bridge Pond—1,200 S. M. B. Fg.
 Kingtown Brook—105 B. T. A.
 Prescott Brook & Trib.—3,000 B. T. Fg.
 So. Br. Raritan River—1,600 S. M. B. Fg., 1,500 Brn. T. A., 2,175 R. T. A.
 Teterstown Brook—6,000 B. T. Fg.
 VanNoy & Cress Beds—4,000 B. T. Fg.

(Rockaway River System)

So. Br. Rockaway River—1,200 B. T. A., 500 R. T. A.
 No. Br. Rockaway River—1,400 Brn. T. A., 125 B. T. A., 900 R. T. A., 10,000 B. T. Fg.

(No. Br. Rockaway River System)

Crystal Spring Brook—3,500 B. T. Fg.
 Farley Brook—3,400 B. T. Fg.
 Guinea Hollow Brook—125 B. T. A.
 Groandyke Brook—3,000 B. T. Fg.

(Spruce Run System)

Black Brook—10,000 B. T. Fg.
 Charlestown Mt. Brook—105 B. T. A., 6,000 B. T. Fg.
 Conover Run—2,000 B. T. Fg.
 Field Run—105 B. T. A., 4,000 B. T. Fg.
 Frace Brook—107 B. T. A., 5,000 B. T. Fg.
 Mulhockaway Creek—1,509 B. T. A.
 Green's Brook—125 B. T. A.
 Hoover's Brook—500 R. T. A.

MERCER COUNTY

Lakeside Park Pond—185 Misc.

(Assanpink Creek System)

Lawrence Pond—500,000 Per. F.

(Millstone River System)

Carnegie Lake—1,500,000 Per. F.

(Miry Run System)

Hutchinson Pond—500,000 Per. F.

MIDDLESEX COUNTY

(Lawrence Brook System)

Milltown Lake—500,000 Per. F.
 Oakey's Brook—5,000 B. T. Fg.

(Manalapan River)

Jamesburg Lake—500,000 Per. F.
 Wigwam Brook—475 R. T. A., 5,000 B. T. Fg., 247 B. T. A.

(Millstone River System)

Brainard Lake—1,000,000 Per. F.

(Raritan River System)

Dismal Brook—247 B. T. A.
 Mill Brook—475 R. T. A.
 Weston's Lake—500,000 Per. F.

(Rahway River System)

Sage or Sucker Brook—247 B. T. A., 950 R. T. A., 30 Brn. T. A.

MONMOUTH COUNTY

(Atlantic Ocean System)

Cranberry Brook—2,000 B. T. Fg.
 No. Br. Dead Lake—250,000 Per. F.
 Eatontown Brook & Trib.—5,400 B. T. Fg.
 Spring Lake—250,000 Per. F.
 Takanasse Lake—250,000 Per. F.

(Crosswick Creek System)

Doctor's Creek—700 Brn. T. A.

(Manalapan Brook System)

Ely Pond—250,000 per. F.
 Topenhomez Brook—235 B. T. A., 2,600 B. T. Fg.
 Oakland Mills Lake—250,000 Per. F.

(Manasquan River System)

Allair Pond—250,000 Per. F.
Manasquan River Trib.—9,000 B. T. Fg.

(Raritan River System)

Manalapan Brook—700 Brn. T. A.
Orr's Brook—2,200 B. T. Fg.
Pine Brook—1,141 B. T. A., 5,800 B. T. Fg.
Wemrock Brook—507 B. T. A., 4,000 B. T. Fg.

(Shark River System)

Jumping Brook—2,300 B. T. Fg.
L. Y. Brook—2,900 B. T. Fg.
Sarah Green Brook—500 B. T. Fg.
Shark River—1,868 B. T. A.
Shark River Trib.—20,000 B. T. Fg.

(Swimming River System)

Abrey Brook—1,800 B. T. Fg.
Hockhocks Brook—1,140 B. T. A., 7,300 B. T. Fg.
McC Campbell's Brook—2,500 B. T. Fg.
Marlboro Brook—1,000 B. T. Fg.
Snyder's Brook—375 B. T. A., 3,600 B. T. Fg.
Thompson Brook—450 B. T. Fg.
Willow Brook—508 B. T. A., 3,700 B. T. Fg.
Yellow or Lewis Brook—366 B. T. A., 2,000 B. T. Fg.

(Wreck Pond System)

Stillwell Pond—250,000 Per. F.
No. Br. Wreck Pond Brook—750 B. T. Fg.
So. Br. Wreck Pond Brook—2,700 B. T. Fg.

MORRIS COUNTY

(Delaware River System)

Harrigan or Beaver Brook—4,000 B. T. Fg.
Hurd Brook—2,000 B. T. Fg.
Weldon Brook—6,000 B. T. Fg.

(Musconetcong River System)

Trib. A. B. C.—1,000 B. T. Fg.
Lake Lackawanna—33 L. M. B. A., 300 Per. A., 6 Cr., 12 Pic.
Schooley Mt. Brook—1,200 B. T. Fg.

(Passaic River System)

Asylum Brook—600 B. T. Fg., 450 R. T. A.
Beaver Brook—600 Brn. T. A., 450 R. T. A.
Connet Brook—7,333 B. T. Fg.
Dismal Brook—500 R. T. A., 6,833 B. T. Fg.

Hibernia Brook—700 Brn. T. A.
Leddell's Brook—700 B. T. A.
Mill or Compton—700 B. T. A., 2,000 B. T. Fg.
Passaic River—800 S. M. B. Fg.
Pequanac River—800 S. M. B. Fg.
Pochantas Lake & Whippany River—1,000 Misc., 1,500 R. T. A.
Rockaway River—700 Brn. T. A., 900 R. T. A.
Rockaway River (upper)—500 R. T. A.
Stoney or Taylortown Brook—700 B. T. A., 5,300 B. T. Fg.
Troy Brook—600 Brn. T. A.
Troy Brook Trib.—6,000 B. T. Fg.
Washington Valley Brook—550 B. T. A., 12,700 B. T. Fg., 1,850 R. T. A.
Washington Valley Brook Trib.—3,334 B. T. Fg.
Whippany River—800 B. T. A., 1,700 B. T. Fg.

(Raritan River System)

Black River—991 B. T. A.
Bryant Brook—1,500 B. T. Fg.
Cramer Brook—450 R. T. A.
Pitney Brook—2,950 B. T. Fg.
So. Br. Raritan River—2,100 B. T. A., 2,750 R. T. A., 80 Brn. T. A., 10,000 B. T. Fg.
Rhinehart Brook—2,950 B. T. Fg.
Rhinehart & Pitney Trib.—9,000 B. T. Fg.
Tanners Brook—4,500 B. T. Fg.

(No. Br. Raritan River System)

Burnett Brook—500 R. T. A., 18,400 B. T. Fg., 800 B. T. A.
Cooper Brook—300 B. T. Fg.
Creager Brook—1,500 B. T. Fg.
Delicker Brook—4,000 B. T. Fg.
Harden or Emmons Brook—4,200 B. T. Fg.
Indian Brook—500 R. T. A., 21,500 B. T. Fg., 800 B. T. A.
Peapack Brook—1,541 B. T. A., 5,500 B. T. Fg., 950 R. T. A.
Thompson Brook—1,500 B. T. Fg.
Tiger Brook—3,000 B. T. Fg.

(So. Br. Raritan River System)

Budd Lake—33 L. M. B. A., 300 Per. A., 6 Cr., 12 Pic., 600 S. M. B. Fg., 2,000,000 Per. F.
Budd Lake Brook—24,500 B. T. Fg.
Drakes Brook—3,300 B. T. Fg.
Flanders Brook—2,800 B. T. Fg.
Pleasant Grove Brook—3,000 B. T. Fg.
Stoney Brook—5,600 B. T. Fg.
Turkey Brook—4,000 B. T. Fg.

(Rockaway River System)

Black Swamp Brook—250 R. T. A.
 Cedar Lake—25 L. M. B. A., 500 Per. A., 17 Pic., 45 C., 600 L. M. B. Fg.
 Crooked Brook—450 R. T. A.
 Davis Brook—3,000 B. T. Fg.
 Denmark Lake—600 L. M. B. Fg.
 Green Pond—900 S. M. B. Fg., 2,300 L. T.
 Lake Hopatcong—14,000 L. M. B. Fg., 11,200 S. M. B. Fg., 9,500,000 Per. F.

(Whippany River System)

Burnham Park Lake—800 Per. A.
 Jaque Lake—500 Per. A.
 Allowa Lake—500 Per. A., 45 C. A.
 Longwood Lake—840 L. M. B. Fg., 4,000 S. M. B. Fg., 4,000 S. M. B. F.,
 400 Pic.
 Mt. Freedom Brook—250 B. T. A.
 Crystal Lake—450 R. T. A.
 Cosey Lake—100 Per. Fg., 400 Pic. Fg., 8,000 C. F., 50 S. A.

OCEAN COUNTY

Lake Carasaljo—1,000,000 Per. F.
 Oakford Lake—1,500 L. M. B. F.

PASSAIC COUNTY

Newark Water Co's. Lake—8 L. M. B. A., 24 Per., 59 Pic., 1 C., 20 S., 400
 Shiners.

(Greenwood Lake System)

Belcher's Creek—666 B. T. A., 500 R. T. A., 10,000 B. T. Fg.
 Black Creek—2,300 B. T. Fg.
 Boiling Spring Brook, East—500 B. T. Fg.
 Boiling Spring Brook, West—500 B. T. Fg.
 Cooley Brook—625 B. T. A., 1,800 B. T. Fg.
 West Milford Brook—616 B. T. A., 3,700 B. T. Fg.
 McDonald Brook—500 B. T. Fg.
 Morsetown Brook—2,300 B. T. Fg.

(Passaic River System)

Duddy & Jackson Pond—500 R. T. A.
 Notch Brook—3,200 B. T. Fg.
 Wanaque River—1,400 Brn. T. A.
 West Brook—2,568 B. T. A., 2,650 R. T. A., 23,000 B. T. Fg.

(Ramapo River System)

Pompton Lake—133 L. M. B. A., 723 Per. A., 1,500,000 Per. F., 125 Pic. A.,
 1 C. A., 19 S. A., 400 Shiners, 60 Cr., 900 S. M. B. Fg.
 Pompton River—173 L. M. B. A., 30 Per., 118 Pic., 5,000 B.

(Wanaque River System)

Beaver Dam Brook—1,600 B. T. Fg.
 Blue Mine Brook—3,000 B. T. Fg.
 Burnt Meadow Brook—932 B. T. A., 5,800 B. T. Fg.
 Cyclone Brook—500 B. T. Fg.
 Decker Brook—2,600 B. T. Fg.
 Dry Fall Brook—2,300 B. T. Fg.
 Greenwood Lake—900 S. M. B. Fg., 1,500,000 Per. F.
 Geng Brook—2,000 B. T. Fg.
 Rhinesmith Brook—800 B. T. Fg., 268 B. T. A.
 Sindle Brook—2,500 B. T. Fg.
 Stevens Brook—600 B. T. Fg.

(West Brook System)

Bailey Brook—500 B. T. Fg., 266 B. T. A.

SALEM COUNTY

(Alloway Creek System)

Alloway Lake—500,000 Per. F.
 Cobb's Lake—8 S., 55 Calico B., 300 L. M. B. Fg., 250,000 Per. F.
 Diamond Lake—7 W. Per., 219 S., 252 Calico B., 10 L. M. B. A., 300 L. M.
 B. Fg., 1,000 L. M. B. F.
 Dilks Lake—1,000 L. M. B. F.
 Gibb's Brook, upper branch—4,400 B. T. Fg.
 Hazelhurst Brook—4,400 B. T. Fg.
 Woodmere Lake—10 L. M. B. A., 1 Pike Per., 14 S., 146 Calico B., 14 Yel-
 low Per.

(Muddy Creek System)

Ballingers Lake—1,000 L. M. B. F.
 Centerton Lake—300 L. M. B. Fg., 250,000 Per. F., 1,000 L. M. B. F.
 Elmer Lake—1 S. M. B., 40 Calico B., 300 L. M. B. Fg., 250,000 Per. F.,
 1,000 L. M. B. Fg.

Greenwood Lake—22 White Per., 17 S., 80 Calico B., 16 Yellow Per., 250,
 000 Per. F., 1,000 L. M. B. F., 3 L. M. B. A.

(Salem Creek System)

Avis Lake—300 L. M. B. Fg., 250,000 Per. F., 1,000 L. M. B. F.

SOMERSET COUNTY

(Millstone River System)

Clark Brook—450 R. T. A.
 Hamil or Tenmile Run—450 R. T. A.

(Passaic River System)

Bankers Brook—200 B. T. A., 250 R. T. A.
 Indian Graves Brook—820 B. T. A., 12,000 B. T. Fg., 400 R. T. A.
 Somersetin Brook—821 B. T. A., 10,000 B. T. Fg.

(Raritan River System)

Millstone River—950 S. M. B. Fg.
 West Br. Middle Brook—900 R. T. A.
 Peapack Brook—950 B. T. A., 600 R. T. A.
 No. Br. Raritan River—1,400 R. T. A.

SUSSEX COUNTY

(Delaware River System)

Big Flat Brook—4,000 B. T. Fg.
 Millville or Shimers—1,500 B. T. A., 6,500 B. T. Fg.
 Paulinskill River—1,500 B. T. A., 2,680 R. T. A., 20 Brn. T. A.
 Pequest River—950 R. T. A.
 Weinwrights Brook—1,000 B. T. Fg.
 Westbrook Spring Brook—1,500 B. T. Fg.

(Hudson River System)

Wallkill River—700 Brn. T. A., 700 B. T. A., 8,000 B. T. Fg.

(Big Flat Brook System)

Culvers Lake—60 L. M. B. A., 600 Per. A., 10 Cr., 44 Pic. A., 1,350 S. M. B. Fg., 40 C. A., 1,350 S. M. B. Fg., 1,405 L. T., 1,000,000 Per. F.
 Lake Owassa—500,000 Per. F., 450 S. M. B. Fg.
 Snook Brook—4,000 B. T. Fg.
 Snooktown Brook—5,250 B. T. Fg.
 Tuttlers Corner Brook—1,250 B. T. Fg.
 Little Flat Brook—1,300 B. T. A., 8,250 B. T. Fg.

(Little Flat Brook System)

Crawn Brook—3,000 B. T. Fg.
 Shay or Bier's Kill Brook—8,500 B. T. Fg.
 Saw Mill Brook—3,000 B. T. Fg.

(Musconetcong River System)

Cranberry Lake—3,000 L. M. B. F.
 Lake Lackawanna—750,000 Per. F.
 Smith or Waterloo Pond—500,000 Per. F., 3,000 S. M. B. F.

(Paulinskill River System)

Almshouse Brook—5,750 B. T. Fg.
 Ackerson Brook—7,857 B. T. Fg.
 Beaver Lake—450 S. M. B. Fg.
 Brick Kiln Brook—1,500 B. T. Fg.
 Cases Brook—3,000 B. T. Fg.
 Corson Brook—5,500 B. T. Fg.
 Emmons Brook—3,250 B. T. Fg.
 Fairview Lake—450 S. M. B. Fg., 1,500,000 Per. F.
 Harden Brook—8,857 B. T. Fg.
 Margerum Brook—225 R. T. A.
 Myrtle Grove Brook—4,000 B. T. Fg.
 Morris Brook—4,500 B. T. Fg.
 Pullis Brook—8,857 B. T. Fg.
 Ross Brook—225 R. T. A.
 Roy Brook—3,000 B. T. Fg.
 Rutan Brook—1,250 B. T. Fg.
 Sherred Brook—2,900 B. T. Fg.
 Spring Brook—5,507 B. T. Fg.
 Swartwood Lake—46 L. M. B. A., 600 Per. A., 13 Cr., 32 Pic., 25 C., 1,350 L. M. B. Fg., 1,000,000 Per. F.
 Little Swartwood Lake—450 L. M. B. Fg., 500,000 Per. F.
 Swartwood Spring Brook—4,000 B. T. Fg.
 Trout Brook—10,000 B. T. Fg.

(Pequest River System)

Hibler Brook—5,000 B. T. Fg.
 Hunts Brook—5,000 B. T. Fg.
 Iliffs Lake—600 L. M. B. Fg.
 Tar Hill Brook—7,858 B. T. Fg.
 Trout Brook—7,857 B. T. Fg.

(Pochuck Creek System)

Double Kill—450 R. T. A.
 Race Track Brook—3,000 B. T. Fg.
 Simpson's Brook—3,000 B. T. Fg.
 Spring or Rutherford Brook—3,000 B. T. Fg.

(Rockaway River System)

Bear Pond—800 L. M. B. Fg., 500,000 Per. F., 4,000 S. M. B. F.
 Lake Hopatcong—800 L. M. B. Fg., 8,000,000 Per. F., 10,000 S. M. B. F.

(Van Campens or Mill Brook System)

Cat Swamp Brook—3,333 B. T. Fg.
 Chamberlain Brook—3,334 B. T. Fg.
 Rea Brook—3,333 B. T. Fg.

(Wall kill River System)

Black Ash Swamp or Pochunk Creek—700 B. T. A., 25,000 B. T. Fg.
 Clove Brook—475 R. T. A., 800 Brn. T. A.
 Meadowroad Brook—4,000 B. T. Fg.
 Norman's Brook—2,000 B. T. Fg.
 Papakating River—800 Brn. T. A., 475 R. T. A.
 Parker or Burrows Brook—3,000 B. T. Fg.
 Pine Swamp Brook—3,000 B. T. Fg.
 Sparta Jc. Brook—1,541 B. T. A., 5,000 B. T. Fg.
 West Mt. or Halsey Brook—4,000 B. T. Fg.
 Musconetcong Lake—800 L. M. B. Fg.
 Marcia Lake—550 B. T. A.
 Gibbs Brook—2,400 B. T. Fg.
 Black River—50,000 B. T. Fg.
 Pinkneyville Brook—2,857 B. T. Fg.

UNION COUNTY

(Rahway River System)

Barclay Brook—3,500 B. T. Fg.
 Echo Lake—500,000 Per. F.
 Milton Lake—700 S. M. B. Fg.
 Normahaggin Brook—225 R. T. A., 1,500 B. T. Fg.
 Rahway River—500 R. T. A.
 Reformatory Lake—450 R. T. A.

(Raritan River System)

Blue or Drakes Brook—225 R. T. A.
 Sealey's Pond—500 R. T. A., 500,000 Per. F.
 Middlesex Water Works Lake—250,000 Per. F.
 Rahway Water Work's Lake—250,000 Per. F.
 Spring Brook—200 B. T. Fg.

WARREN COUNTY

(Delaware River System)

Allens Sawmill Brook—500 B. T. Fg.
 Bransville Brook—2,000 B. T. Fg.
 Buckhorn Creek—400 B. T. A., 16,300 B. T. Fg.
 Dunfield Creek—4,700 B. T. Fg.
 Lomison's Glen Brook—2,150 B. T. Fg.
 Lopatcong Creek—450 R. T. A., 13,350 B. T. Fg.
 Musconetcong River—10,000 B. T. Fg., 1,325 Brn. T. A., 4,825 R. T. A., 3,341
 B. T. A.
 Paulinskill River—1,260 Brn. T. A., 2,450 B. T. A., 2,965 R. T. A.
 Pequest River—3,400 B. T. A., 4,250 R. T. A.
 Pequest Springs—83,650 B. T. Fg.
 Pohatcong Creek—13,000 B. T. Fg.
 Van Campens Brook—16,000 B. T. Fg.

(Lopatcong Creek System)

Bird's Lock—500,000 Per. F.
 Guard Lock—706 S. F., 400 L. M. B. Fg., 1,500,000 Per F., 2,000 S. M. B. F.
 Kline Run—500 B. T. Fg.
 Wolf Run—600 B. T. Fg.

(Paulinskill River System)

Blairs or Slabtown Creek—750 B. T. Fg.
 White Pond—800 S. M. B. Fg.

(Pequest River System)

Bacon Run—2,500 B. T. Fg.
 Barker Brook—500 B. T. Fg.
 Bear Creek or Darkmoon—21,334 B. T. Fg.
 Beaver Brook—1,000 B. T. Fg.
 Furnace Brook—6,000 B. T. Fg.
 Huff Brook—500 B. T. Fg.
 Jacksonburg Brook—7,750 B. T. Fg.
 Johnsonburg Brook—6,500 B. T. Fg.
 Mountain Lake—800 S. M. B. Fg., 1,500,000 Per. F.
 Muddy or Buckaloo Brook—5,433 B. T. Fg.
 Silver Lake—900 L. M. B. Fg.
 Trout Brook—5,000 B. T. Fg.
 Trout Brook—6,133 B. T. Fg.

(Musconetcong River System)

Apgar Run—500 B. T. Fg.
 Hatchery Brook—200 B. T. A., 10,000 B. T. Fg., 10,000 Brn. T. Fg.
 Intervale Brook—2,000 B. T. Fg.
 Shurts Run—550 B. T. Fg.
 Slack Springs—500 B. T. Fg.
 Springtown Brook—5,600 B. T. Fg.

(Pohatcong Creek System)

Lows Hollow Brook—9,750 B. T. Fg.
 Mill Brook—5,450 B. T. Fg.
 Roaring Rock—3,800 B. T. Fg., 400 B. T. A.

