

ANNUAL REPORT
OF THE
NEW JERSEY BOARD OF FISH
AND
GAME COMMISSIONERS



974.901
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FOR THE
FISCAL YEAR COMMENCING JULY 1, 1927
AND ENDING JUNE 30, 1928

AMERICAN ANNUAL
OF THE
FISH AND GAME COMMISSIONERS
OF THE
STATE OF NEW JERSEY
AND
THE DISTRICT OF COLUMBIA

FOR THE
FISCAL YEAR COMMENCING JANUARY 1, 1928
AND ENDING DECEMBER 31, 1928

**List of Fish and Game Commissioners Holding Office
at the Date of This Report
June 30, 1928**

- H. J. BURLINGTON, *President* Montvale
CHARLES F. HUNTER, *Vice-President* Palisade
LEWIS SPINKS, *Treasurer* Jersey City
ALEX. H. PHILLIPS Princeton
HARRY M. ARMSTRONG Jersey City
GEORGE C. WARREN, JR. Summit
JAMES R. HENSLER Toms River

WALTER H. FELL, *Secretary*

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

- DUNCAN DUNN, *Superintendent of Game Farms*, P. O. Hackettstown.
MALCOLM DUNN, *Assistant Superintendent of Game Farms*, 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., <i>Protector</i>	Long Branch
CUDNEY, HARRY E., <i>Assistant Protector</i>	Hackettstown
MATHIS, HOWARD Z., <i>Assistant Protector</i>	Mount Holly
ASHWORTH, CHRISTOPHER	Sussex
BAILEY, JOHN B.	Washington
BAKER, EDWIN	Haleyville
BERNIUS, HENRY F.	Newton
CARSON, ROY R.	Atsion
COX, JOHN F.	Washington
CROWLEY, HAROLD M.	Tuckerton
DACKERMANN, FRED H.	Elizabeth
DAVISON, ARTHUR	Belmar, R. D. 1
EGGERT, JOSEPH S.	Perth Amboy
EVERNHAM, JAMES H.	Toms River
GRAHAM, JOHN W.	Swedesboro
HALL, FRED J.	Montclair
HALL, GERVAS I.	Salem
HILL, CHARLES C.	Somerville
HUGG, JOHN R.	Jamesburg
KELLEY, THOMAS	Jersey City
LAWRENCE, HARRY R.	Newfoundland
LODER, WILLIAM B.	Egg Harbor City
MIZELL, CHATHAM	Elmer
MOTTRAM, FRANCIS	Park Ridge
MURROW, THOMAS	West Berlin
NOLAN, THOMAS F.	Trenton
PARK, JOHN J.	White House Station
PAUL, GEORGE R.	Bernardsville
PHIFER, GEORGE W.	Millville
SMALL, OTIS C.	Hammonton
SMALL, WILLIAM H.	Englewood
STEEL, WILLIAM	Cape May Court House
TRELOAR, JAMES H., JR.	Pompton Lakes
YOUNG, WILLIAM E.	Chester

GENERAL

PROGRESS STATEMENT

The following shows progress made by the State Board of Fish and Game Commissioners in the propagation and distribution of fish and game in New Jersey for the past fiscal year as against the previous fiscal year.

GAME DISTRIBUTION

	<i>Pheasants</i>	<i>Rabbits</i>	<i>Hungarian Partridge</i>	<i>Quail</i>	<i>Ducks</i>	<i>Pheasants Hatched by Public</i>
1926-1927	11,598	14,218	326	102	58	4,704
1927-1928	21,661	15,112	431	758	..	4,303

FISH DISTRIBUTION

	<i>Trout Over 6"</i>	<i>Trout Under 6"</i>	<i>Bass</i>	<i>Perch Fry</i>	<i>Shad Fry</i>	<i>Sunfish</i>	<i>Other Fish</i>
1926-1927	297,200	533,900	98,750	75,000,500	.....	389,700	9,133
1927-1928	321,722	336,800	190,300	97,700,000	1,120,000	607,500	58,778

CENSUS OF FISH, GAME AND VERMIN TAKEN IN 1925 AND 1926

	<i>1925</i>	<i>1926</i>
Pheasants	59,638	75,599
Rabbits	422,814	466,563
Gröuse	10,030	11,919
Quail	61,145	68,246
Woodcock	8,142	12,241
Geese	6,772	4,841
Ducks	80,681	63,254
Trout	185,267	205,994
Bass	86,004	111,841
Pickereel	135,358	177,129
Cats	11,052	11,668
Weasels	2,972	4,352
Foxes	969	734

DEER LEGALLY TAKEN

1926	1,730
1927	1,790

It is gratifying to note that there is a large percentage of increase in the number of fish and game taken, with the exception of ducks and geese, as shown by our census, which would indicate that fish and game are increasing in New Jersey.

The estimated value in dollars and cents of the game and fish taken by licensed hunters and fishermen according to the last census is \$995,759.00. This does not include fish and game taken by the farmer or property owner on his own ground, who does not require a license.

There were issued 187,409 licenses in 1927, and 70,644 licensees reported, about 37½%.

2. Expert advice as to the development of certain streams for the better habitation and propagation of fish.
3. Stocking the State Forests of both North and South Jersey with game and game birds.
4. The possibility of using the State Forests for the local propagation of certain game birds.
5. Protection of fish and game on the State Forests and enforcement of the fish and game laws.
6. Extermination of predatory animals injurious to fish and game.

The matter is still under consideration, but has been delayed owing to the serious illness of Commissioner Hunter for a period of over two months.

It must be noted, however, that at present our Board is stocking the State Forests with game and fish, and giving protection to the same.

The Board had under consideration the matter of taking over the whole or part of Camp Dix as a game refuge. It appears that the property is now under control of the U. S. Department of Forest Service. We received word from L. L. Bishop, Forest Supervisor, that plans as to the Dix Camp as related to the National Forest service are now in a state of flux, and until it is known more definitely what the forest service is to do on that area, it is impracticable to attempt to work out the details of a satisfactory game administration policy.

The Board has under consideration the taking over of a large acreage in Gloucester county, with a view of raising game or holding the land as a game sanctuary. A delegation representing the Gloucester Game and Fish Association appeared in the interest of the Board taking over the property. It was stated that George S. McCarty, Piney Hollow, Newfield, would sell the land at a low price or donate the property to the Board for raising game. We expect later to make an inspection of the property, and the matter is in charge of a Committee consisting of Commissioners Hensler, Hunter and Phillips.

MARINE BIOLOGICAL LABORATORY

Hon. Joseph G. Wolber, Senator, from Essex County, introduced a bill in the Legislature to provide for a marine biological laboratory, to be operated under the direction of the Board of Fish and Game Commissioners, and to be financed by a dollar license fee for angling in salt waters. The laboratory was to be established for the purpose of studying life history of species contributing to the fish supply, particularly weakfish. While this measure was not a direct fish and game bill, yet our Board was in entire sympathy with the movement, and on February 6th we met with a committee of net fishermen to whom the proposed law was read.

The bill failed to become a law. There was opposition from points in South Jersey which feared that in view of the license, excursion anglers would be driven across the river to Delaware, as a large number of persons regularly spend their holidays and Sundays at fishing points in this State.

In December, 1927, the Board sat in conference with the following in consideration of the subject of improvement in fishing in the tidal waters: Lewis

Radcliffe, Deputy U. S. Commissioner of Fisheries, and R. A. Nesbit and Elmer Higgins of the same bureau.

At the same time the Board sat in conference with Mr. S. P. Leeds and a Committee of fifteen from Atlantic City. Mr. Leeds, as President of the Atlantic City Chamber of Commerce, some time ago called a meeting of representative citizens of Atlantic City to take up the matter of improvement in fish and game laws and from that meeting a Committee of fifteen was appointed to meet our Board. The Chairman of the Committee of fifteen was Albert J. Perkins, Postmaster, Atlantic City, who is Chairman of the Fish and Game Committee of the Atlantic City Chamber of Commerce.

It appeared from the conference that there was a decrease in the supply of weakfish. It was feared by some fishermen that weakfish would become extinct, and it was held that weakfish should be protected during their spawning season. U. S. Deputy Commissioner Radcliffe stated that in the matter of introduction of bills in the Legislature, no matter what kind of legislation was asked for, the question would be: "Can you defend your bill scientifically" and there should be scientific research in order to support legislation. At the conference President Burlington stated that our Board itself had made a thorough scientific survey of conditions respecting fresh water fish, as to temperature of water, volume, food and forestration, and we were the last word in respect to careful planting of inland fish. He added that a start had already been made respecting the establishment of a statistical laboratory, he having been appointed on such a committee at a meeting of the New Jersey Fish and Game Conservation League.

Commissioner Radcliffe read a form of a bill which had been drafted with a view of securing uniform legislation in States interested in coastal fish.

Our Board decided to cooperate with Mr. Nesbit, Assistant Aquatic Biologist, U. S. Bureau of Fisheries, in submitting to pound owners blanks on which to report their catches to aid the Bureau in their determination of the habits of fishes, provided Mr. Nesbit would furnish the blanks.

BUTTONS FOR LICENSES

The law requiring licensees to hunt and fish to wear a button went into effect January 1st, 1928, and the measure appears to be giving satisfaction.

DISEASES IN RABBITS

In the spring of 1928 there were numerous articles published in the press referring to tularemia prevailing among the rabbits in the western states, and that persons handling and cleaning diseased rabbits were liable to contract the disease. It appears that the disease has prevailed for some time among other animals in the far west. There is no record of disease being spread from one man to another, and a bulletin of the Virginia Board of Health claimed that no one could contract tularemia from a well cooked rabbit or squirrel and no cases have been found in rabbits raised domestically for food.

When there were rumors of this disease in 1924, the State Board of Health reported to us that of four rabbits examined at our request at that time, none

showed evidence of tularemia, and a similar report was given in 1927 on another specimen. In the same year President Burlington submitted specimens to W. B. Bell, in charge of the Division of Biological Investigation, Biological Survey, and a report signed by Karl B. Hanson, Associate Biologist, said:

"Examination of the bladderworms in this specimen revealed that they are those known as "Cysticercus pisiformis", the intermediate stage of the tapeworm, Taenia pisiformis. The adult stage of this tapeworm is usually found in the small intestine of dogs while the cysticercus stage is usually found in the liver, mesentery, and either free or attached in the abdominal cavity of either hares or rabbits. The latter animals acquire these bladderworms as a result of eating grass and other vegetative material that has been contaminated with eggs of Taenia pisiformis voided in the manure of infested dogs."

We received a letter from Mr. Bell, reporting a case of tularemia during November, 1927, at Wildwood, N. J., in the person of Paul Scully.

In March, D. C. Bowen, Director of the State Board of Health, stated that two cases of tularemia had been discovered in Cape May County and it is believed that the persons were infected from rabbits shot shortly after Thanksgiving Day, one rabbit being shot on Two Mile Beach and one on Seven Mile Beach.

Under date of February 27th, Warden Steel of Cape May County, wrote that it had been three years since he had liberated any rabbits on Two Mile Beach or Seven Mile Beach and he had not liberated any rabbits at all on Five Mile Beach.

President Burlington directed the wardens of Cape May, Mercer and Camden counties, to send carcasses of rabbits to the New Jersey State Board of Health for examination, following the receipt of the letter from Mr. Bowen on the subject of tularemia.

Mr. Bowen stated that until the discovery in Cape May County, New Jersey had been listed as one of the few states in which this disease had not appeared, either in humans, or so far as was known, among rabbits. The State Board of Health communicated with the Boards of Health in each township in Cape May and Atlantic counties asking for specimens of rabbits found dead in their sections.

A letter from B. F. Tarman, when shipping us Missouri rabbits, stated that from his own and experience of others in handling rabbits, they treated the disease as if it did not exist; that he had not had any complaint of the disease; that the person who wrote the article on tularemia in the "Country Gentleman" contracted the disease and recovered, and that the rabbits being shipped to us were all fat and in fine condition.

Subsequent to the above, nothing further was heard of the disease in this State until June 26, 1928, when Mr. Bowen wrote us as follows:

"This will acknowledge receipt of your letter of June 22. We have no knowledge that there occurred in New Jersey any case of tularemia subsequent to the case and suspected case mentioned in our letter to you of January 25. At the last time we received

definite information of these two patients, each was apparently well on the way to recovery.

"Carcasses of several rabbits submitted by your Department and by others during the past winter and spring were examined at the Laboratory of this Department and no lesion typical of tularemia was found present in any. Specimens from these carcasses were submitted to the Hygienic Laboratory at Washington for further examination; however, up to this date no report has been received from Washington other than a verbal report from a representative of the Laboratory that in a preliminary examination of the specimens submitted no evidence of tularemia was found."

Mr. Bowen informed us July 1st, that he had a report from Dr. Edward Francis, Surgeon, U. S. Public Health Service, to the effect that specimens from the liver and spleen of rabbits submitted to him by the State Board of Health were injected into guinea pigs, but no evidence of tularemia in any of the specimens was found.

BRANT BEACH ISLAND

The Board took up with the Board of Commerce and Navigation the matter of securing rights for an island containing 3.48 acres of land above, and 42.41 acres of land below high water mark, which had appeared in the vicinity of Brant Beach, the island having been largely made by a mud digger when digging the beach channel in Beach Haven Inlet. We received several communications asking that our Board secure the rights to this island, inasmuch as many of the gunning points in South Jersey were in the hands of private parties. We had Sherman & Sleeper, surveyors, make a survey and we filed formal application for the rights.

The Secretary was informed by J. Spencer Smith, President of the Riparian Board, at a hearing on the question, that the Riparian Board had looked into the matter. They regarded the island in its relation to navigation; while it was made recently, it might disappear some time later by the action of the tides, and for this reason the Riparian Board was not inclined to grant rights to anyone for the property.

FAIR EXHIBITS

We made exhibits of birds and animals at fairs as follows: Gloucester County Grange Carnival, Alcyon Park; Hunterdon County Fair, Flemington; Atlantic County Agricultural Fair, Egg Harbor; Morris County Fair, Morristown; Sussex County Fair, Branchville; Inter-State Fair, Trenton; State Poultry Exhibit, Steeplechase Pier, Atlantic City.

On account of the lack of an adequate water supply at the Inter-State Fair grounds, we have made no exhibit of fish for several years past. The Fair management took up the matter with us, and it was decided to have a fish exhibit at the next fair in connection with a display of game birds and animals. This is one of the outstanding fairs of the United States.

In adding a fish exhibit there will be called to the attention of thousands from within and without the State, a very important condition existing for recreational purposes within our borders.

POLLUTIONS

There were fewer complaints respecting pollution of fresh waters, and undoubtedly the attention given to these cases has tended to make persons observe the law. Two penalties of \$200 each were obtained for pollution of Honey Brook, Mercer County. We regret that the fish and game law against pollutions is not broader in its terms so that more decided action to abate the pollutions could be taken. We have already pointed out that the Legislature has not seen fit to make the law in this respect stronger. We are assisted, however, by the State Board of Health, which has an effective system of enforcement for pollutions of potable waters, which assistance is very valuable.

We note that with the increase of the chapters of the Izaak Walton League there will be increased sentiment among the people to keep the streams fit for fish growth.

VALUE OF INSECTIVOROUS BIRDS

Each year progress is made in the public recognizing the value of insectivorous birds, and not a little of our activities are in the line of protecting such.

Charles P. Shoffner, Secretary of the Liberty Bell Bird Club, which has a membership of 912,000 from coast to coast, in a recent statement said: "The number of insect species is greater by far than that of the species of all other living creatures combined. A single pair of Colorado potato-beetles, if allowed to increase without molestation, would in one season amount to 60,000,000.

"A pair of hop-vine aphid is capable of breeding thirteen times in one year, and the progeny, if they all lived, would be ten sextillions.

"The unrestricted increase of one pair of gypsy moths would in eight years be numerous enough to devour all the foliage in the United States.

"Every year insects cause a loss of more than \$1,300,000,000 to the farmers, truck raisers and fruit growers of the United States.

"A quail taken in a cotton field in Texas had 127 cotton boll weevils in its craw. Another taken in Pennsylvania had 101 potato bugs. A tree swallow's stomach contained forty entire cinch bugs. Two stomachs of pine siskins contained 1900 black olive scales and 300 plant lice. In a night hawk's stomach were found 340 grasshoppers, fifty-two bugs, three beetles and two wasps. The food of meadow larks consists of seventy-two per cent of destructive insects and twenty per cent of weed seeds.

"The cuckoo lives on caterpillars. Fifty-one species of birds eat hairy caterpillars and thirty-eight species feed on plant lice.

"The late Joseph Kalbfus said, 'If there is but a single bird to the acre in Pennsylvania, and that bird eats only 100 bugs or insects a day—and they consume many times that number—14,400 bushels of bugs each day would be consumed.'"

TRESPASSING

We are pleased to report that there have been less complaints from property owners as to hunters and fishermen trespassing. As stated in our last year's report, the Board had posters on linen printed, which read, "This stream and surrounding territory are stocked by the Fish and Game Commission" and then containing a warning that if persons abuse the privilege by lighting fires, leaving refuse around, damaging property, etc., that the State would discontinue stocking; that the property owners' rights must be considered and persons should ask permission to hunt and fish when it is necessary.

We note by the "Western Outdoors," an Oregon publication, that in Tilamook, Washington, the Tilamook Rod and Gun Club has followed with a similar sign as to fishing. In that section farmers are being asked to replace their posting signs with the Rod and Gun Club sign, with the guarantee of the Club that it will cooperate to secure observation of the rules of decency and sportsmanship by those who accept the farmers' hospitality. It is reported that the farmers of the county are taking kindly to the idea.

A fine work for all fish and game clubs would be to conduct a campaign of education against those mighty poor sportsmen, fortunately a small minority, who have no respect for other people's rights. Such persons bring contempt on real sportsmen.

Of course, the property owner has the right to invoke the aid of the trespass law, which is stringent, and which has been a factor in largely cleaning up the situation in this State, but this does not in any manner revoke the obligation which real sportsmen have to assist in every way possible in respect to the farmers' rights.

In this connection it must be understood that there are practically no State owned fresh water streams. The land owner owns the land on either side and underneath unnavigable waters. They have the absolute right to say who shall fish these streams. Of course our Commission refuses to stock streams with trout or stock fields with game where land is posted, but this is not going to help the sportsmen if there is a continued increase in the posted area of the State.

The State owns all the wild life of the State and controls their taking, but the situation is that most of the wild life lives on privately owned land, and the majority of farmers more than meet the sportsmen half way.

ORGANIZATION

The term of Commissioner Harry T. Hagaman, Lakewood, expired November 26, 1927, and the Board adopted a resolution appreciative of his service as Commissioner. He served for a term of five years.

James R. Hensler, of Toms River, successor to Commissioner Hagaman, took up the duties of Commissioner, November 28, 1927.

At the organization meeting held December 13th, the following officers were reelected: President, Harry J. Burlington, Montvale; Vice-President, Dr. Charles F. Hunter, Palisades; Treasurer, Lewis Spinks, Jersey City.

The Committees appointed follow:

Hatchery	Deputies	Game Farm
Mr. Phillips, Chairman, Mr. Spinks, Mr. Warren.	Mr. Spinks, Chairman, Mr. Hunter, Mr. Warren.	Mr. Hunter, Chairman, Mr. Armstrong, Mr. Hensler.
Salt Water	Autos	Boats
Mr. Armstrong, Chairman, Mr. Hensler, Mr. Spinks.	Mr. Warren, Chairman, Mr. Phillips, Mr. Armstrong.	Mr. Armstrong, Chairman, Mr. Spinks, Mr. Hensler.
Game Sanctuaries	Deer Damage	Financial
Mr. Hensler, Chairman, Mr. Hunter, Mr. Phillips.	Mr. Phillips, Chairman, Mr. Armstrong, Mr. Hunter.	Mr. Spinks, Chairman, Mr. Hunter, Mr. Phillips.
Prosecutions	Legislation	Insurance
Mr. Hensler, Chairman, Mr. Warren, Mr. Phillips.	Mr. Hunter, Chairman, Mr. Warren, Mr. Spinks.	Mr. Warren, Chairman, Mr. Armstrong, Mr. Hensler.

The allotment of Counties to Commissioners for their direct supervision follows:

President Burlington	Commissioner Armstrong	Commissioner Phillips
Bergen, Hunterdon, Warren.	Atlantic, Cape May Cumberland.	Mercer, Burlington, Camden.
Commissioner Hunter	Commissioner Spinks	Commissioner Hensler
Passaic Morris, Sussex.	Hudson, Essex, Middlesex.	Ocean, Gloucester, Salem.
	Commissioner Warren	
	Union, Somerset, Monmouth.	

WARDENS' SERVICE

Assistant Protector Howard Mathis, Sr., died January 26th, 1928, having served this Board as a warden from November 15, 1896, to May 10, 1911, and as Assistant Protector from May 11, 1911, to the day of his death, a period of over thirty-one years. A resolution sent to the family of the deceased contained the following: "He had at heart the conservation of fish and game and was painstaking and used excellent judgment in the performance of his duties. Possessed of a pleasing personality and a comprehensive knowledge of the interests he represented, he gave dignity and efficiency to his office, and the Board looked upon him as a rare type of an officer in whom they had the greatest confidence."

The vacancy was temporarily filled by Warden Howard Z. Mathis, Jr., to take effect February 15th.

Edwin Baker, of Haleyville, following certification of a list of eligibles for wardens by the Civil Service Commission, was appointed warden, and went on duty September 15th in Cumberland County, to succeed the late Warden Frederic S. Conner.

Warden Thomas Murrow was transferred from Ocean to Camden County, to take the place of former Warden Charles W. Folker.

Harold M. Crowley, following Civil Service certification, was appointed warden for Ocean County, and went on duty June 1st.

PROSECUTIONS

During the fiscal year there were 948 prosecutions resulting in 936 convictions, 12 acquittals, and in 60 cases by reason of poverty, youth, old age or other mitigating circumstances sentence was suspended on payment of costs; 28 cases were appealed to the Common Pleas Court; in default of the payment of penalty 9 persons were committed to the County Jail for a period of from 10 to 90 days; 70 hunting and fishing licenses were revoked after the defendants were convicted of violating the act, and 25 guns were confiscated from aliens.

The number of prosecutions during the past fiscal year is 36 in excess of the year 1927 when 912 arrests were made. This indicates activity and vigilance on the part of the wardens when it is remembered that there were more fish planted and more birds and rabbits liberated, and more days devoted to the netting of reservoirs than in former years, which kept many of the wardens from actual patrol work in quest of violators, and it should also be noted that nearly 99% of the prosecutions resulted in convictions, which indicates real merit in the arrests.

Following is a list of the offenses with which the defendants were charged and the number of each kind of offense:

Fishing without license	137
Hunting without license	136
Procuring wrong license	81
Firearms in woods	78
Dog running at large	69
Possession of fish under size	42
Sunday gunning	39
Possession of game out of season	39
Killing game out of season	35
Alien firearms	32
Illegal duck shooting	31
Illegal trapping	29
Killing protected game	26
Possession of doe deer	24
Possession of illegal missile	16
Using automatic gun	13
Illegal net fishing	12
Possession of short lobsters	11
Using more than three hooks	8
Using beam trawl	8

Hunting deer illegally	7
Hunting with auto light	7
Mutilating game	7
Illegal fishing	6
Possession of deer	6
Failure to report foxes	6
Hunting on Game Refuge	5
Loaning License	5
Pennsylvanians fishing on Sunday.....	4
Refusal to show license	3
False affidavit to procure bounties	3
Exploding dynamite	3
Possession of spear	3
Selling game	2
Polluting stream	2
Selling artificial bait	1
Fishing at night	1
Using vessel over 40 tons	1
Hunting without woodcock license	1
Impersonating deputy	1
Intoxicated when gunning	1
Shooting from auto	1
Hunting in snow	1
Setting snood	1
Failure to report deer	1
Using artificial bait	1
Using set lines	1
Exceeding bag limit	1

948

In the enforcement of law to prevent the taking of short lobsters in the vicinity of the Highlands, several arrests were made, and retaining cars found containing lobsters destroyed, the owners having escaped. On one occasion it was found that short lobsters had been sold to passengers on an excursion boat, the wardens having noticed a lobster boat pulling away from the excursion boat. The Captain of the excursion boat assisted our wardens in a search, and three persons on board were prosecuted for possessing illegal size lobsters. The defendants evidently knew the laws as the lobsters had been concealed by the purchasers.

In May three persons in Jersey City pleaded guilty to the possession of short lobsters and each was fined \$500.

In May the crew of the cruiser "H. J. Burlington", with its tender, and wardens with bank skiffs made three arrests in the Delaware River and Bay, and seized eight illegal nets, and in June, August and September they arrested six persons for operating beam trawls, and penalties of \$1,200 were collected.

In June Captain Henry Langworthy of the schooner "Wm. A. Morse" was found taking food fish with purse nets in the Atlantic Ocean off Cape May. He was convicted and fined \$1,000.

In August the wardens apprehended a vessel from Atlantic City with food fish in its purse net. The claim was made by the crew that they thought the fish were menhaden, and on the request of the wardens the fish were released.

We kept a sharp lookout on the entire coast to prevent violations of the

laws affecting these waters, both with the State cruiser and bank skiffs. An inspection of numerous vessels took place and it was found that they were only taking menhaden legally.

A nonresident alien violator when arrested had in his possession 10 dead song birds and he paid a penalty of \$380.

One defendant paid \$340 for having in his possession 17 brown trout in excess of the limit permitted by law.

One of the wardens was overpowered by two hunting companions of a person he attempted to arrest for hunting without a license, and the prisoner taken away from him. The next day the two men were arrested by the warden and State troopers, and they paid a fine for interfering with an officer.

In the October term of the Supreme Court the writ of certiorari taken by David Carpenter, who was convicted before Recorder Miles of North Bergen for possession of 240 short lobsters and a penalty of \$4,800 imposed, was dismissed. The records were sent to Recorder Miles with instructions to collect the penalty. The wardens are making an effort to locate and notify the sureties on Carpenter's bond. The Recorder raised the question that the matter was now out of his hands and was properly before the Court of Common Pleas, but the Attorney General decided that such a contention could not be sustained.

Seventeen persons were arrested October 29th on Troy Meadows, Morris county, for hunting ducks after sunset, and each was convicted and a penalty of \$20 each was imposed.

Early in January special attention was given to reported violations in Ocean county. Wardens from other parts of the State were sent to the territory and while at the time the weather was very cold and the ponds and part of the bay were frozen over and few gunners were out, three persons were arrested, two of whom were employed in the U. S. Coast Guard service, the charge being hunting without license.

PUBLICITY REPORT

Newspapers of New Jersey and nearby metropolitan areas have devoted more space than in any previous year to the news of hunting and fishing activities. This is particularly true of the angling sections of many newspapers, which devote columns to the fresh and salt water fishing conditions and to the individual experiences of fishermen. The Department, with bulletins, special articles and photographs, has cooperated with editors in bringing before the public interesting facts connected with the work of the Board and its wardens. Moving pictures also have played an important part in showing what is being done to improve hunting and fishing in the State. In addition to the standard "movies" the Commission is building up a new series of 16 mm. films that can be loaned for exhibition with the popular sized projectors now in use in practically every community.

RECEIPTS, LICENSES, FINES, ETC.

The amount received by the State Treasurer during the fiscal year on account of the Hunters' and Anglers' License Act of April 9, 1914; also acts of

April 14, 1915, juvenile licenses, and March 11, 1922, woodcock licenses was \$292,593.45.

There were 2354 woodcock licenses issued at \$2 each, making receipts therefrom \$4,708.10.

Licenses to steamers and sailing vessels to take menhaden with purse nets within the three-mile limit of our coast during the fiscal year were \$5,700. For the calendar year ending December 31, 1927, there were 28 steamers and 13 sailing vessels licensed to take menhaden.

For the fiscal year there were issued 323 breeders' licenses at \$5 each, total \$1,615, to persons to keep in their possession English and Mongolian pheasants, mallard, black and wood ducks, raccoon, Canada geese, ruffed grouse, rabbits, squirrels, quail and deer in a wholly enclosed preserve.

The aggregate of fines collected for violations of the fish and game laws for the fiscal year amounted to \$27,969.30.

On account of licenses for the operation of fish pounds in the Atlantic Ocean and Sandy Hook bay the receipts during the fiscal year were \$5,610. For the calendar year ending December 31, 1927, there were 132 licenses granted, 111 for the Atlantic Ocean and 21 for Sandy Hook Bay.

Under the law which allows a citizen above the age of 10 years and below the age of 14 to hunt when provided with a special hunting license, and when accompanied by a holder of regular license above the age of 21 years, there were 149 licenses for the fiscal year.

Under the law prohibiting aliens to be possessed of firearms, 25 guns were confiscated.

There were 734 native foxes reported killed during the fiscal year.

There are now in existence twenty permits for persons to raise the black and silver foxes, which industry is increasing in the State. It is against the policy of the Board to grant permits to keep the native foxes, and there is a law prohibiting the liberation of any fox within this State. Of course, the fancy foxes are raised for their fur and not liberated.

CARS, BOATS

We are operating 7 trucks and 25 Ford cars, 10 Chevrolet cars and 2 Buick cars. During the year we bought 10 new Chevrolet cars, 8 of which were replacements and also bought one Buick coupe which was a replacement.

We also operate 14 power boats, 8 row boats and two canoes.

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, Laws 1914.....	\$287,738.20
Board's checks to State Treasurer:	
Chapter 320, Laws 1915 (Juvenile).....	147.15
Chapter 125, Laws 1922 (Woodcock).....	4,708.10
	\$292,593.45

Other Licenses:

Menhaden	\$5,700.00	
Pounds	5,610.00	
Breeders	1,615.00	
	\$12,925.00	

Fines and Penalties:

Chapter 247, Laws 1911	27,969.30	
Chapter 96, Laws 1922 (trespass).....	862.25	
	28,831.55	

Sales:

Farms and Hatchery	1,748.32	
Other Sales	772.55	
	2,520.87	
		44,277.42
		\$336,870.87

Expenditures

Personal Arministration, Commissioners	\$ 508.31
Wardens' Salaries	64,929.10
Wardens' Expenses including stocking	14,838.92
Office Expenses	10,087.85
Publicity and Assistant to Treasurer	1,180.00
Printing and Stationery	10,243.16
Legal Expenses (court costs and services)	529.04
Salaries for crew of "H. J. Burlington"	5,650.00
Gasoline and oil for autos, boats, farm and hatchery.....	7,790.82
Tires and tubes for wardens	3,292.79
Maintenance for autos and boats	8,324.61
Purchase of autos and boats.....	4,249.85
Postage, telephone, telegraph and insurance	2,628.46
Maintenance Forked River Farm	21,129.99
Equipment, Forked River Farm	5,043.90
Extra Help, Forked River Farm	795.03
Additions and Improvements, Forked River Farm	5,688.38
Maintenance, Rockport Farm	17,683.79
Equipment, Rockport Farm	3,373.86
Extra Help, Rockport Farm	2,737.00
Additions and Improvements, Rockport Farm	1,255.39
Maintenance, Fish Hatchery	44,002.23
Equipment, Fish Hatchery	6,604.15
Extra Help, Fish Hatchery	12,814.04
Additions and Improvements, Fish Hatchery.....	22,846.95
Maintenance, Shad Hatchery	1,290.85
Purchase of Land	200.00
Purchase of game, fish and fish eggs	33,347.18
Miscellaneous expenses	8,359.62
	\$321,425.27
Bills outstanding.....	27,581.48
	\$349,006.75

GAME

GAME DISTRIBUTION

The total game distribution for the year was as follows:

25,964 pheasants, 14,620 being liberated from our farms; 4,303 liberated as the result of public distribution of eggs, and 7,041 purchased from dealers; 431 Hungarian partridges; 758 quail; and 15,112 rabbits.

Colonel Anthony R. Kuser, of Bernardsville, donated to the Commission 2,711 ringneck pheasant eggs, 200 Mallard duck eggs and 175 Merganser duck eggs. They were distributed to applicants in Union, Somerset, Warren, Morris, Hunterdon and Bergen counties.

Generally the hunters were well pleased with the results of their quest for birds, rabbits, squirrels and deer in the season of 1927, and with a yearly increase in the number of licenses issued, emphasis is given to the fact that New Jersey now affords good hunting, and that conditions are improving. Detailed game conditions will be found following.

There are signs that there is an increasing number of ducks wintering in this section, particularly in Barnegat Bay and other eastern coastal waters, and also in some fresh water lakes. At Deal Lake, located between Allenhurst and Asbury Park, Monmouth county, about 300 black and Mallard ducks have been counted during the winter.

Are the famous Grouse Plains of Burlington and Ocean counties, which up to a half-century ago, afforded the best native "Prairie Chicken" gunning in the East, to regain their old time status as great hunting grounds? Sportsmen are discussing this question, following the discovery that the grouse or native Jersey pheasant, is returning to the plains in numbers sufficient to attract attention of motorists, as well as to afford increasing sport for hunters.

GAME CONDITIONS IN 1927

Protector J. M. Stratton sent a questionnaire to the wardens respecting game conditions for the following game: Rabbits, pheasants, quail, ruffed grouse, woodcock, squirrels, ducks, geese, brant, Wilson snipe, yellow-legs, (No U. S. Season), rails, Hungarian partridge, the questions being as follows:

Was there good supply of each at beginning of season?

Was there increase or decrease in each killed over former years?

Were hunters pleased?

Were there many cases where bag limit was secured for each?

Was there good hunting for each throughout season or only first few days?

Is each increasing or decreasing? Give special attention to woodcock.

Amount of each left over.

We also requested the estimated number of Hungarian partridge.

There are closed seasons on quail in Warren, Passaic, Bergen, Sussex, Morris, Essex, Hudson, Union, Somerset and Hunterdon Counties, and on ruffed grouse in Essex, Union, Somerset, Hunterdon, Mercer, Middlesex, and Monmouth Counties.

The season was closed throughout the State for Hungarian partridge.

Principal points of the reports from the wardens follow:

Atlantic County. Warden Loder. Rabbits—Good supply, decrease in killed, thinned out. Quail—Good supply, increase in killed, more than usual left over. Ruffed Grouse—Supply not as large, decrease in killed, fair amount left over. Woodcock—Supply decreasing. Squirrel—Good supply, increase in killed, more than ever left over. Ducks, Geese and Brant—Not as many, decreasing, fair supply left over. Wilson Snipe—Good supply, increase in killed, fair amount left over. Yellow-Legs—Good supply. Rails—Good supply, increase in killed, large amount left over. Hungarian Partridge—None. Good hunting for quail, squirrels, Wilson snipe and rails, few days for rabbits and water fowl.

Warden O. C. Small. Rabbits—Good supply, increase in killed, fair supply left over. Pheasants—Supply smaller, decrease in killed, thinned out. Ruffed Grouse—Supply less, decrease in killed, thinned out. Squirrel—Good supply, increase in killed, fair amount left over. Ducks and Geese—Supply not as many, decrease in killed, fair amount left over. Brant—Supply not as many, increase in killed, fair amount left over. Wilson Snipe—Good supply, increase in killed, fair amount left over. Yellow-Legs—Good supply. Rails—Good supply, increase in killed, fair amount left over. Hungarian Partridge—None. Good hunting entire season for rabbits, quail, squirrels, and fair hunting for ducks, geese, brant, Wilson snipe and rails.

Bergen County. Warden W. H. Small. Rabbits and Pheasants—Good supply, killed about the same, thinned out. Quail—None. Ruffed Grouse—Supply not as large, decrease in killed, thinned out. Woodcock—Good supply, increase in killed, increasing. Squirrel—Good supply, increase in killed, large amount left over. Ducks—Supply not as many, decrease in killed, decreasing. Geese, Brant and Wilson Snipe—None. Yellow-Legs—Good supply, increasing. Rails—Good supply, increase in killed, increasing. Hungarian Partridge—40 Hungarian Partridge in county. Fair hunting throughout the season for rabbits and pheasants. Good hunting for woodcock, squirrels and rails.

Warden Mottram. Rabbits and Pheasants—Good supply, increase in killed, large amount left over. Quail—Not many in the county. Ruffed Grouse—Good supply, increase in killed, holding their own. Squirrel—Good supply, increase in killed, large amount left over. Ducks, Geese and Brant—Less than usual. Wilson Snipe—Not as many, decrease in killed. Rails—Decrease in killed. Hungarian Partridge—35 Hungarian partridge in county. Good hunting throughout season for rabbits, pheasants and ruffed grouse.

Burlington County. Wardens Mathis and Carson. Rabbits and Pheasants—Good supply, increase in killed, fair amount left over. Quail—Good supply, increase in killed, large amount left over. Ruffed Grouse—Not as

many, decrease in killed, fair amount left over. Woodcock—Good supply, increase in killed, large amount left over. Squirrel—Good supply, increase in killed, large amount left over. Ducks—Not as many, decrease in killed, fair amount left over. Geese and Brant—Good supply, increase in killed, fair amount left over. Wilson Snipe—Not as many, decrease in killed, thinned out. Yellow-Legs—Good supply. Rails—Good supply, increase in killed, fair amount left over. Good hunting throughout season for rabbits, pheasants, quail, woodcock, squirrels, and certain days for ducks, geese, brant and rails. Located 9 coveys of Hungarian partridge.

Camden County. Warden Murrow. Rabbits—Good supply, increase in killed, holding own. Pheasants—Less than usual, decrease in killed, holding own. Ruffed Grouse—Supply not as many, decrease in killed, decreasing. Quail—Good supply, increase in killed, holding own. Woodcock—Supply less than usual, decrease in killed, decreasing. Squirrel—Good supply, increase in killed, holding own. Ducks—Less than usual decrease in killed, decreasing. Geese—Not as many, decrease in killed, decreasing. Brant—Not as many, decrease in killed, decreasing. Wilson Snipe—Less than usual, decrease in killed, decreasing. Yellow-Legs—Less than usual, decreasing. Rails—Not as many, decrease in killed, decreasing. Hungarian Partridge—Less than usual, decrease in killed, decreasing. Located about one dozen Hungarian partridge. Good hunting for rabbits, quail and squirrels throughout season and for few days for other game.

Cape May County. Warden Steel. Rabbits—Good supply, increase in killed, increasing. Pheasants—Good supply, increase in killed, thinned out. Quail—Good supply, increase in killed, more than ever left. Ruffed Grouse—None. Woodcock—Good supply, normal amount killed, decreasing. Squirrels—Good supply, increase in killed, increasing. Ducks—Not as many, decrease in killed, decreasing. Geese—More than usual, increase in killed, increasing. Brant—None. Wilson Snipe—None. Yellow-Legs—Not as many. Rails—Not as many, decrease in killed, decreasing. Hungarian Partridge—Located two coveys of Hungarian partridge, about 50. Good hunting all season for rabbits, pheasants, quail and squirrel, good few days for woodcock, good for ducks and geese under certain conditions.

Cumberland County. Warden Baker. Rabbits—Not as many, decrease in killed, thinned out. Pheasants—Less than usual, decrease in killed, thinned out. Quail—Good supply, increase in killed, fair amount left. Ruffed Grouse—Not as many, decrease in killed, thinned out. Woodcock—Less than usual, decrease in killed, thinned out. Squirrel—Good supply, increase in killed, fair amount left. Ducks—Less than usual, decrease in killed, fair amount left. Geese and Brant—Good supply, increase in killed, fair amount left. Wilson Snipe—Not as many, decrease in killed, thinned out. Yellow-Legs—Good supply. Rails—Good supply, increase in killed, large amount left. Hungarian Partridge—Located 20. Good hunting throughout season for quail, squirrel, geese, brant and rails, other game first few days.

Warden Phifer. Rabbits and Pheasants—About the same, increase in killed,

holding own. Quail—Good supply, increase in killed, more than ever left. Ruffed Grouse—Not as many, decrease in killed, thinned out. Woodcock—Supply normal, usual number killed, holding own. Squirrel—Good supply, increase in killed, increasing. Ducks, Geese, Brant and Wilson Snipe—Not as many, decrease in killed, thinned out. Yellow-Legs—Good supply. Rails—Good supply, increase in killed, increasing. Hungarian Partridge—Less than usual, located about 20. Good hunting throughout season for rabbits, quail, woodcock and rails.

Essex County. Warden F. J. Hall. Rabbits and Pheasants—Good supply, increase in killed, fair amount left. Woodcock—Good supply, increase in killed, thinned out. Squirrel—Good supply, increase in killed, increasing. Good hunting throughout season for rabbits, pheasants, woodcock and squirrels. No Hungarian partridge.

Gloucester County. Warden Graham. Rabbits—Good supply, increase in killed, increasing. Pheasants and quail—Increased supply, increase in killed, increasing. Ruffed Grouse—No report. Woodcock—About the same as usual. Squirrel—Good supply, increase in killed, increasing. Ducks—Not as many, decrease in killed, decreasing, too much oil on river. Geese—Very few in county. Brant—None. Wilson Snipe—Same as usual. Yellow-Legs—Same as usual. Rails—Good supply, increase in killed, increasing. Located no Hungarian partridge. Good hunting throughout season for squirrel and quail.

Hudson County. Warden Kelley. Rabbits—Good supply, decrease in killed, holding own. Pheasants—Good supply, increase in killed, holding own. No Quail or Ruffed Grouse in county. Woodcock—Good supply, increase in killed, holding own. Ducks, Geese and Brant—Less than usual, decrease in killed, decreasing. Wilson Snipe—Good supply, increase in killed, increasing. Yellow-Legs—Less than usual. Rails—Less than usual, decrease in killed, decreasing. No Hungarian Partridge in county. Good hunting all season for woodcock and Wilson Snipe and first two weeks for rabbits and pheasants.

Hunterdon County. Warden Park. Rabbits—Good supply, increase in killed, increasing. Pheasants—Good supply, increase in killed, thinned out. Woodcock—Less than usual, decrease in killed, hardly holding own. Squirrel—Good supply, increase in killed, holding own. Ducks—Less than usual, decrease in killed. Hungarian Partridge—Good supply, located 75 to 100. Good hunting throughout season for rabbits and squirrels, and only first two weeks for pheasants.

Mercer County. Warden Nolan. Rabbits—Not as many, decrease in killed, thinned out. Pheasants—Good supply, increase in killed, increasing. Quail—Not as many, decrease in killed, decreasing. Woodcock—Good supply, decrease in killed, decreasing. Squirrels—Good supply, decrease in killed, increasing. Ducks—Not as many, decrease in killed, decreasing. Geese—Few along Delaware River, decrease in killed, decreasing. Located no Hungarian Partridge. Good hunting all season for rabbits, pheasants and squirrels, first few days for ducks.

Middlesex County. Warden Eggert. Rabbits—Good supply, increase in killed, holding own. Pheasants—Good supply, increase in killed, increasing. Quail—Not as many, decrease in killed, holding own. Ruffed Grouse—Less than usual. Woodcock—Less than usual, decrease in killed, decreasing. Squirrels and Ducks—Good supply, increase in killed, holding own. Geese—Not as many, decrease in killed, holding own. Brant—Less than usual, decrease in killed, holding own. Wilson Snipe, Rails and Hungarian Partridge—Less than usual, decrease in killed. Yellow-Legs—Less than usual. Good hunting throughout season for rabbits, quail, squirrels, ducks, geese and brant.

Warden Hugg. (South of Raritan River). Rabbits—Not as many, decrease in killed, not increasing. Pheasants—Good supply, increase in killed, increasing. Quail—Less than usual, decrease in killed, not increasing. Ruffed Grouse—About the same. Woodcock—Less than usual, decrease in killed, holding own. Squirrel—Good supply, increase in killed, increasing. Ducks—Good supply, increase in killed, holding own. Yellow-Legs—Not as many. Rails—Less than usual, decrease in killed, not increasing. Hungarian Partridge—None located. Good hunting throughout season for pheasants and squirrels, and first few days for rabbits and quail.

Monmouth County. Warden Davison. Rabbits, Pheasants and Quail—Good supply, increase in killed, increasing. More quail than ever left over. Ruffed Grouse—Increasing wonderfully due to closed season. Woodcock—Not as many, decrease in killed, holding own. Squirrels—Good supply, increase in killed, large amount left over. Ducks, Geese, Brant, Wilson Snipe and Rails—Not as many, decrease in killed. Yellow-Legs—Not as many. Hungarian Partridge—Less than usual, located eight. Good hunting throughout season for rabbits, pheasants, quail, woodcock and squirrels.

Morris County. Warden Lawrence. Rabbits and Pheasants—Good supply, increase in killed, thinned out. Ruffed Grouse—Not as many, decrease in killed, decreasing. Woodcock—Not as many, flight was late, holding own. Squirrel—Good supply, increase in killed, increasing. Ducks, Geese, and Brant—Not as many, decrease in killed, decreasing. Wilson Snipe—Very few, decrease in killed, decreasing. Yellow-Legs—Very few, decreasing. Rails—Very few, decrease in killed, decreasing. Hungarian Partridge—None located in upper end of county. Good hunting for rabbits and fair hunting for squirrels.

Warden Young. Rabbits—Good supply, increase in killed, increasing. Pheasants—Extra good supply, increase in killed, increasing. Quail—Only a few coveys, slowly increasing. Ruffed Grouse—Less than usual, decrease in killed, not increasing. Woodcock—Good supply, increase in killed, decreasing. Squirrel—Good supply, decrease in killed, decreasing. Ducks and Wilson Snipe—Good supply, increase in killed, increasing. Geese and Brant—None. Yellow-Legs—None. Rails—None. Located 16 Hungarian Partridge in the absence of tracking snow. Good hunting throughout season for rabbits, squirrel and ducks, first month for Wilson Snipe and Woodcock, and first two weeks for pheasants.

Ocean County. Warden Evernham. Rabbits, Pheasants and Quail—Good supply, increase in killed, increasing. Ruffed Grouse—Good supply, decrease in killed, increasing. Woodcock—Less than usual, decrease in killed, thinned out. Squirrel, ducks, geese and brant—Good supply, increase in killed, large amount left over. Wilson Snipe—Increased supply, decrease in killed, increasing. Yellow-Legs—Good supply, increasing. Rails—Less than usual, decrease in killed, fair amount left over. Located no Hungarian Partridge but heard of two. Good hunting throughout season.

Passaic County. Warden Treloar. Rabbits—Good supply, increase in killed, holding own. Pheasants—About usual supply, increase in killed, holding own. Quail—Very few. Ruffed Grouse—No visible increase, decrease in killed, holding own. Woodcock—About as usual, increase in killed, increasing. Squirrel—Good supply, increase in killed, increasing. Ducks—Very few. Have not located any Hungarian Partridge for a year. Good hunting for rabbits, pheasants, woodcock and squirrels all season.

Salem County. Warden Mizell. Rabbits—Good supply, decrease in killed, holding own. Pheasants—Good supply, increase in killed, increasing. Quail—Not as many, decrease in killed, not increasing. Ruffed Grouse—Increasing and fair amount left over. Woodcock—Good supply, decrease in killed, increasing. Squirrel—Good supply, increase in killed, increasing. Ducks—Good supply, decrease in killed, not increasing. Geese—Good supply, increase in killed, not increasing. Wilson Snipe—Not as many, decrease in killed, holding own. Yellow-Legs—Less than usual. Rails—Less than usual, decrease in killed, holding own. Located 40 Hungarian Partridge. Good hunting throughout season for rabbits, pheasants and squirrels, and fair for other game except Wilson Snipe which was poor.

Warden Hall. Rabbits, Pheasants, Quail, Ruffed Grouse, Woodcock, Squirrels, Ducks, Wilson Snipe and Rails—Good supply, increase in killed, increasing. No geese nor brant. Yellow-Legs—Good supply. Good hunting throughout season. Located in May some Hungarian Partridge, which nested, but later unable to locate them.

Somerset County. Warden Hill. Rabbits—Good supply, increase in killed, increasing. Pheasants and Squirrels—Good supply, increase in killed, holding own. Woodcock—Less than usual, decrease in killed, hardly holding own. Ducks—Not as many, decrease in killed. Located 200 Hungarian Partridge. Good hunting throughout season for rabbits and squirrels, and first two weeks for pheasants.

Warden Paul. Rabbits and Pheasants—Good supply, increase in killed, holding own. Woodcock—Not as many, decrease in killed, not increasing. Squirrel—Good supply, increase in killed, increasing. Ducks—Not as many, decrease in killed. Wilson Snipe—Less than usual, decrease in killed. Yellow-Legs—None. Rails—None. Hungarian Partridge—Located 4 hens and two male birds. Plenty of quail in summer but they go south in the fall. Good hunting throughout season for rabbits, pheasants and squirrels, and few days for woodcock.

Sussex County. Warden Ashworth. Rabbits, Squirrels and Woodcock—Good supply, increase in killed, increasing. Pheasants—Not as many, decrease in killed, holding own. Ruffed Grouse—Less than usual, decrease in killed, not increasing. Ducks—Not as many, decrease in killed, holding own. Located 11 Hungarian Partridge. Good hunting throughout season on rabbits, pheasants, quail, ruffed grouse, woodcock, squirrels and ducks.

Warden Bernius. Rabbits, Pheasants, Squirrels—Good supply, increase in killed, increasing. Quail—Not as many. Ruffed Grouse and Woodcock—Not as many, decrease in killed, not increasing. Ducks—Not as many, decrease in killed, decreasing. Yellow-Legs—Less than usual. Hungarian Partridge—Less than usual, located 9 birds. Good hunting throughout season for rabbits, pheasants and squirrels.

Union County. Warden Dackermann. Rabbits, Pheasants—Good supply, increase in killed, holding own. Quail—Not as many, slowly increasing. Ruffed Grouse—Not as many, not increasing. Woodcock—Not as many, decrease in killed, holding own. Squirrels—Good supply, decrease in killed, not increasing. Ducks—More than usual, increase in killed, increasing. No feeding grounds for geese or brant. Wilson-Snipe—Not as many, decrease in killed, holding own. Yellow-Legs—Less than usual, not increasing. Rails—Less than usual, decrease in killed, not increasing. Hungarian Partridge—None located. Snipe and rail conditions growing poorer every year due no doubt to Mosquito Commission drying up meadow lands. Good hunting for rabbits, pheasants, woodcock, squirrels, first few days good hunting for ducks.

Warren County. Assistant Protector Cudney and Warden Cox. Rabbits, Pheasants and Squirrels—Good supply, increase in killed, largely increasing. Quail—Only a few in county, supply increasing. Ruffed Grouse—Supply less, decrease in killed, not increasing. Woodcock—Only few in county, usual number killed, holding their own. Ducks—Good supply, only few killed, holding own. Hungarian Partridge—Good supply, increasing, located about 200 in county. Good hunting all season for rabbits, pheasants, ruffed grouse and squirrels.

AUXILIARY GAME FARM

The Board has made arrangements with the E. I. duPont de Nemours and Company, to raise pheasants for the State at their Carney's Point Plant at Pennsgrove. The Board is at no expense in the proposition with the exception of furnishing young pheasant chicks. We believe that this will be a profitable experiment and will largely add to the number of pheasants for the hunters.

At the Carney's Point Plant there is an area of several hundred acres enclosed with a fence which at present is a game sanctuary. It is now well stocked with ringneck pheasants and bob white quail, which take advantage of the fact that they are never disturbed, and fly to the area to feed, nest, etc.

The Company has constructed a small model game farm at the northern end of the area and has employed an experienced game keeper. Fences and pens in construction similar to those on the State Game Farms are used. All birds raised in years to come are to be liberated in the State at the direction of the Board.

FEEDING BIRDS

In the counties of Bergen, Cape May, Hudson, Hunterdon, Middlesex, Monmouth, Passaic, Somerset and Union the wardens report that there was not sufficient snow at any time during the winter to make the feeding of birds necessary. In other counties the wardens report the following number of coveys and the total number of birds of each species located and fed:

Atlantic County, 30 coveys of quail, 286 birds; Burlington County, 18 coveys of quail, 126 birds, 3 coveys of Hungarian partridges, 30 birds; Camden County, 12 coveys of quail, 63 birds, 5 coveys of pheasants, 15 birds; Cumberland County, 95 coveys of quail, 760 birds, and 29 pheasants; Essex County, 6 coveys of pheasants, 53 birds; Gloucester County, 83 coveys of quail, 911 birds, 3 coveys of pheasants, 41 birds; Mercer County, 4 coveys of quail, 27 birds, 20 coveys of pheasants, 154 birds; Morris County, 5 coveys of quail, 54 birds, 40 coveys of pheasants, 376 birds, 1 covey of Hungarian partridges, 11 birds; Ocean County, 6 coveys of quail, 103 birds; Salem County, 53 coveys of quail, 291 birds, 44 pheasants; Sussex County, 28 coveys of quail, 348 birds, 44 coveys of pheasants, 625 birds; Warren County, 25 coveys of quail, 500 birds, 50 coveys of pheasants, 392 birds, 18 coveys of Hungarian partridges, 219 birds.

In Burlington County, John W. Davis of Edgewater Park, fed coveys of quail and Hungarian partridges, and Mr. Harry Reynolds of Lumberton, has found both quail and Hungarian partridges in the county. The Home of the Friend of the Hunting Dog has three coveys of Hungarian partridges and several coveys of quail that they have fed all winter.

FORKED RIVER AND ROCKPORT GAME FARMS

Duncan Dunn, Game Farms Superintendent, in this 16th annual report for the fiscal year ending June 30, 1928, says:

Forked River Farm. We had the usual work of going over all our equipment, repairing same, disinfecting and making new wherever it was needed. In the general line of work we cut the oats and grass in our pens, and carted the same out; plowed and seeded all our pens with oats and grass seed; also 22 acres of land were plowed and seeded with oats and grass seed, and we carted 150 tons of manure from depot. During the heavy snow storm we had last winter we had to shake the snow off our pens to keep them from breaking in, also the snow drifted so bad that we had to open our road several times.

We built an addition on the small tenant house, put in a bath and running water, put new electric pumps in three of the houses on the farm, built two new covered pens 50'x150', also built 36 new hatching boxes, 50 new rearing coops; 100 new bottom boards, 25 quail coops, 5 pens for fancy pheasants and did painting as needed. A contract was made to clear some new land for rearing fields and the trees have all been cut off and stumps pulled from same.

We harvested 12 loads of hay and 7 loads of oats.

There were 22 owls, 19 hawks, 45 crows, 22 opossums, 16 weasels, 27 cats, 3 foxes and approximately 2500 rats killed during the year.

Rockport Farm. We had the work of repairing coops, hatching boxes, etc., and disinfecting, the same as at Forked River Farm.

We built a new addition to the Martenis house consisting of kitchen, bath room and two bed rooms; built new chicken house, 20'x40', laid new floors in three rooms in the Kruger house and two rooms in the Martenis house; dug a drain 3' deep and 180' long and laid pipe in the same for water supply at the Kruger Farm; also installed a bath room at the Kruger house; built a dam across one end of the canal to make a lake on the farm; built 60 new hatching boxes, 100 new rearing coops and two houses 10'x12' for fancy pheasants.

In the general line of work we built fences around our rearing fields and chicken yard, plowed, limed and seeded our pens and 30 acres of land with oats and grass seed, and also carted stones and worked on the road going over to the Kruger farm, cut posts in the mountain to be used around our rearing fields, and painted two rooms in the Superintendent's residence.

Harvested 20 loads of hay and 12 loads of oats.

There were 11 owls, 15 hawks, 20 cats, 27 crows, 11 weasels, 12 skunks and about 2,000 rats killed during the year.

Exhibits were made from both farms at fairs at Egg Harbor, Flemington, Branchville, Morristown, Pitman and Trenton, and at the Atlantic City Poultry Show.

During the year the following eggs were set, hatched and distributed in the State:

Eggs set at Forked River Farm	17,500	Young birds hatched	11,200
Eggs set at Rockport Farm...	14,400	Young birds hatched	9,600
	<u>31,900</u>		<u>20,800</u>
Eggs distributed from Forked River Farm			18,855
Eggs distributed from Rockport Farm			8,981
			<u>27,836</u>

The pheasant record is as follows:

Forked River Farm

Breeding birds on hand 6/30/27	1,557
Birds purchased and cared for	921
Total mature birds raised	7,730
Estimated number young birds on hand 6/30/28	8,800

Rockport Farm

Breeding birds on hand 6/30/27	918
Birds purchased and cared for	100
Total mature birds raised	6,890
Estimated number young birds on hand 6/30/28	7,500

Forked River Farm

Birds liberated	7,730
Estimated number young birds on hand 6/30/28	8,800
Breeding birds on hand 6/30/28	1,574
Birds died	679
Birds escaped	225

Rockport Farm

Birds liberated	6,890
Estimated number young birds on hand 6/30/28	7,500
Breeding birds on hand 6/30/28	953
Birds died	65

34,416

DEER

During 1927 there were 1,790 bucks legally killed and reported, and 77 does and fawns illegally killed by hunters and confiscated by the wardens or found dead in the woods by the wardens.

In 1926 there were 1,730 bucks legally killed and reported, and 78 does and fawns found dead, showing that during 1927 there were 60 more deer legally killed than in 1926, which is the largest number of deer ever killed in this State.

The deer season in 1927 was from December 17th to 21st but the 21st fell on Sunday when no hunting was allowed.

There were no fatal accidents during the deer season, but four persons were injured by stray shot fired by unknown hunters. In 1926 there were no accidents reported during the season.

During the upland game season five deaths resulted from accidents, three self inflicted and two by others. Twenty-four non-fatal accidents were reported, 9 self-inflicted and 15 by others.

There were 34 persons prosecuted for violations of the deer act, possessing or killing of does or fawns, using illegal missiles or hunting deer at night.

The does that were suitable for food purposes were sent to hospitals and charitable institutions. Those not edible were buried by the wardens.

The counties in which the deer were killed are as follows:

County	Bucks Legally Killed and Reported	Does and Fawns Illegally Killed	Persons Injured
Atlantic	185	1	2
Bergen	69	6	..
Burlington	634	42	1
Camden	8	..	..
Cape May	5	..	..
Cumberland	73	..	..
Essex	4	..	..
Gloucester	2	..	..
Hudson	..	..	..
Hunterdon	6	..	..
Mercer	7	..	..
Middlesex	..	..	..
Monmouth	18	3	..
Morris	120	..	..
Ocean	450	21	1
Passaic	61	..	..
Salem	1	..	..
Somerset	10	..	..
Sussex	73	4	..
Union	..	..	..
Warren	64	..	..
	<u>1,790</u>	<u>77</u>	<u>4</u>

The following large penalties were imposed, 34 persons were convicted for illegal deer hunting, such as killing or possessing does or fawns, using illegal missile, hunting deer at night, penalty \$100 each; four nonresidents were convicted for procuring resident licenses, fined \$100 each; three persons paid \$50 each for hunting on State Game Refuge, and penalty of \$50 was imposed upon an offender for hunting from an automobile.

DEER KILLED OTHER THAN DURING DEER SEASON

Killed by train	7
Killed by auto	23
Found drowned	3
Running into fence	4
Found dead in woods	24
Killed by dogs	8
Trespassing on cultivated lands	10
	—
	79

That deer continue to thrive is evident by reports received in April. Warden Carson reported in April that he saw 29 deer in a field not more than five hundred feet from his residence at Atsion, Burlington county, and on the same day Vernon Drayton saw 40 deer while traveling from Baker Place to Atsion, a distance of one and one-half miles. On April 29th, Dr. Ittner saw 33 deer during a trip from his residence in Monmouth county to Bamber in Ocean county. Warden Davison's son saw 12 deer in one field near West Creek in Ocean county.

A recognition of a phase of the Board's work is found in the following editorial from the Trenton State Gazette of January 4, 1928:

A Fair Field for Nimrod

"We in New Jersey, probably by reason of native modesty and lack of pretense, are not disposed to lay claim to any high honors when states which offer attractive grounds for the hunter are under discussion. Our glories lie in other directions. These distinctions should be sufficient in number, to satisfy the pride of a state with a far greater area, but we possess others and why should we refrain from mentioning them? Among them is the fact that notwithstanding that New Jersey is located in the center of one of the most densely congested areas in the country, it is a great deer-hunting state.

"Proof is provided in the reports submitted by game wardens at the close of the annual five-day hunting period. These show that 1,790 bucks were killed by New Jersey sportsmen, this number exceeding the total of last year by 60. So far as the records show, there is no other state in which deer-hunters can follow their sport with such certainty of success.

"One of the especially gratifying features of the deer season just closed was the complete absence of fatal accidents. This fact together with the large kill, reflects creditably upon the regulations adopted by the State to safeguard hunters and also to prevent the deer from being wiped out through indiscriminate killings."

QUAIL

We placed an order with Dr. Frank Kent, San Antonio, Texas, for 500 pairs of quail, which in trade are classed as Bob-white quail. They are smaller than the native quail and of lighter color. From investigation we confidently believe that this bird will remain in our climate and not migrate. Other states have had success with similar birds. We received on account of the above order, shipment being completed in April, 849 live birds. They were distributed as follows:

Hunterdon county	305
Somerset county	356
Burlington and Ocean counties	97
Forked River Game Farm	91

WOODCOCK

The Federal regulations of April 4, 1927, fixed a daily bag limit of four woodcock. The New Jersey law fixes a daily limit of six birds. As the State wardens were not authorized by the Federal authorities to enforce the Federal regulations they can only bring prosecutions under the State law.

After the publication of our 1928 charts and folders the Federal authorities fixed the woodcock season from October 15th to November 14th, both dates inclusive. The season fixed by the State law is from October first to November 30th, and as in the case of the bag limit on woodcock our wardens cannot bring prosecution under the Federal regulations.

PHEASANTS

The advisability of obtaining a new strain of blood for our pheasants is unquestionable, and we obtained from Gaybird Pheasant Farm, England, two shipments of English pheasants. In July we imported 2,250 hens and 1,375 cocks, and in October 1,404 male birds. In March, Gaybird sent us 100 male pheasants gratis to replace birds which had arrived in poor condition in a former shipment.

For the fiscal year of 1928-29 the Board has made arrangements for the importation of 1,000 two year old cock pheasants, 1,000 two year old hen pheasants, and 2,000 thirteen week old cocks.

HUNGARIAN PARTRIDGES

In March we received 431 Hungarian partridges from Gaybird, England. These birds were distributed in localities which have shown favorable conditions for the bird, viz.: Hunterdon, Warren and Somerset counties. The Board decided to purchase 500 pairs of Hungarian partridge for delivery in November, 1928.

GAME CONSERVATION INSTITUTE

The Game Conservation Institute, an experimental game farm and school for the purpose of training men who can take charge of game bird raising

and game restoration work for the State Commissions, agricultural colleges, sportsmen's clubs and private estates, was established at Clinton, N. J., in April, 1928. John C. Huntington, Secretary of the Game Conservation Society, 30 East 42d Street, New York City, is President of the Institute.

The course requires one or two years and the students receive a theoretical and practical education in the production of game. Tuition, books and equipment are furnished without cost by the Society, and the only cost to students is their board, which is said to be approximately one dollar per day. The school commenced with twenty-six students and three instructors. There are ten hours of daily instruction. The Society had to refuse more than one hundred applicants for the course, owing to the limited amount of room. The Institute is on a tract of 1,400 acres, and the students are from all parts of the country. They are at present raising a large number of pheasants and quail.

FISH

Reports indicate that on the first day of the trout season, April 15th, fishermen for trout were very successful; most of them obtained some fish and many obtained the bag limit. Heavy rains and bad weather interfered with the fishing immediately after the opening day and there was an unusual amount of bad weather during the season. However, later in the season there was excellent fishing.

Warden Hugg relates an instance to show that trout fishing is becoming more popular in Middlesex County. He states that last year on the first day of the open season there were 6 fishermen on Wigwam Brook near Jamesburg; this year there were 50 on the opening day on this brook at one time, and over 100 through the day. He took in \$140 more for fishing licenses than he did last year in the same territory.

While it is impracticable to record all the large catches, yet it may be mentioned as indicating opportunities that a resident of Warren County took 105 trout in nine trips. A person in Gloucester County, under date of May 31st, reported that he had been out ten times and his catch so far had been 14 rainbows, 14 native brook, 7 browns and 17 steelheads. The largest was a rainbow measuring 15 inches. A fisherman took on artificial flies, from Wanaque River and West Brook, 105 trout from April 15th to May 20, consisting of rainbows, browns, Loch Levens and natives.

Reports from wardens in all sections in recent years have shown that the white and yellow perch are among the most satisfactory food and game fishes that are caught in Jersey waters, and the increased output of perch, this year, reflects the Commission's desire to supply sufficient fish to meet the increasing popular demand.

FISH DISTRIBUTION

There was a total distribution of 100,694,163 fish in the State, as follows:

From the Fish Hatchery at Hackettstown	79,570,100
From the State Shad Hatchery (including perch)	20,745,000
From the Paradise Brook Trout Hatchery.....	20,000
From Boonton and Orange Reservoirs, and other private sources..	359,063
Total	100,694,163

The Bureau of Fisheries, Washington, D. C., distributed in the State during the fiscal year ending June 30th, 1928, fish as follows:

Catfish	750
Brook Trout	14,750
Loch Leven Trout	3,000
Crappie	1,050

Large Mouth Black Bass	2,213
Small Mouth Black Bass	16
Bream	6,580
Yellow Perch	175

The spring distribution from the Hackettstown Hatchery was commenced March 1st. The report of the Superintendent of the Hatchery, which follows, gives interesting details of the general production. We purchased from the Paradise Brook Trout Hatchery 20,000 brook trout, 8" to 11" long and in the shipment of fish allotted to the extreme southern counties, delivery was made without the loss of a single fish, and there was scarcely any mortality elsewhere.

SHAD HATCHERY

Last year we established a shad hatchery at Pennsville, but in order to get necessary unpolluted waters we made arrangements to do the hatching this year at Hancock's Bridge.

Operations were started early in the spring, and in April nearly thirteen million yellow perch were hatched and planted in the waters of the five southern counties, namely: Atlantic, Cape May, Salem, Cumberland and Gloucester. A large number of yellow perch spawn were taken in the southern part of the State by our wardens, who were able to get these eggs before the shad began to hatch.

The yellow perch spawn in the southern part of the State earlier than in the northern part of the State, and Superintendent Hayford sent about eight million yellow perch eggs from the northern section of the State to the Hancock's Bridge Hatchery, but only one and one-half million of fry were hatched. It appears that eggs taken from the waters of the southern part do much better when hatched in waters adjacent to where obtained than those brought from the northern section.

Protector James M. Stratton obtained statistics of the shad fishing industry in the Delaware River and Bay which show only shad caught by persons operating from the New Jersey shore. There was an increase of 18,566 shad caught over the previous season, and with an increased value of \$18,633. The only decrease was in Salem County where in former years the greatest number of shad were caught.

There was no shad fishing in Gloucester or Camden Counties.

Salem County shows a great decrease in the number of boats and nets in operation, men engaged, also in the number of shad caught, the value of shad caught, and equipment used.

Cumberland County shows an increase of eight more nets in operation than in 1927, with an increase of nearly 10,000 shad caught.

Burlington, Mercer and Hunterdon Counties each show a great increase.

In 1927 seven nets caught 151 shad in Burlington County, while in 1928 sixteen nets caught 4,588 shad.

Ten men with three nets caught 225 shad in Mercer County in 1927. In 1928 twenty-five men with twelve nets caught 6,584 shad.

But one net was operated in Hunterdon County in 1927, which caught 1,034 shad, while six nets caught 3,587 shad in 1928.

In Cumberland County there were 15,501 shad caught in thirty-six nets in 1927, and 25,200 in forty-four nets in 1928.

In Burlington County ten hauling seines and six gill nets were used; the average length of nets was 50 fathoms. There were eleven row boats and five motor boats used.

In Cumberland County there were twenty gill nets and nine hauling seines used in the Maurice River, and the length of nets used was 50 fathoms. In Delaware Bay there were fifteen gill nets, about 400 fathoms in length. There were thirty-five motor boats and nine row boats used in the county.

In Salem County there were thirty-five motor boats and three row boats, thirty-seven gill nets and one hauling seine. The length of gill nets used with the motor boats was about 500 fathoms and the nets used with row boats were 30 fathoms. The length of the hauling seines was 25 fathoms.

Seven hauling seines and five gill nets were used in Mercer County and they were operated with row boats.

In Hunterdon County only hauling seines were used as the law prohibits the use of gill nets above Trenton Falls.

It will be noted from the above that the largest proportional increase in the catch of shad occurred in Burlington, Mercer and Hunterdon Counties, which are the farthest points up the river from the mouth of the Delaware Bay, where the shad enter our waters, and in which Counties last year the catch was practically a failure.

REPORT OF SHAD CAUGHT IN DELAWARE RIVER AND BAY AND TRIBUTARIES—1928

County	Boats and Nets		Men Engaged		No. Shad Caught		Value Shad Caught		Value Boats and Nets	
	1927	1928	1927	1928	1927	1928	1927	1928	1927	1928
Cumberland ..	36	44	61	102	15,501	25,200	\$18,376	\$25,200	\$11,015	\$27,800
Salem	67	38	134	76	24,692	20,210	29,262	24,068	41,300	30,400
Burlington	7	16	16	35	151	4,588	231	4,502	1,850	2,485
Mercer	3	12	10	29	225	6,584	563	10,087	300	1,400
Hunterdon	1	6	6	17	1,034	3,587	1,693	4,901	300	965
	114	116	227	259	41,603	60,169	\$50,125	\$68,758	\$54,765	\$63,050
Increase		2		32		18,566		\$18,633		\$8,285

NETTING OF WATERS

We netted the following waters for fish for stocking:

- Boonton Reservoir, Morris County.
- Stalter's Ice Pond, private waters, Passaic County.
- Balent's Pond, private, Somerset County.
- DuPont Powder Works reservoir, Penns Grove.
- Orange Reservoir, Essex County.
- Gate Hole below dam at Alloway.
- Delaware and Raritan Canal at Millstone.
- Raccoon Creek, between Swedesboro and Bridgeport, (minnows).
- Independent Brick Company Pond, at Kinkora.

We also netted the Hudson River near Nyack, under a permit of the New York Conservation Commission to use a small mesh net, and obtained 5,600 white perch. We expect to continue to obtain a supply of white perch from this source.

The Freehold Chapter of Izaak Walton League planted in Topenemus Lake at Freehold, 1,500 white perch obtained from net fishermen in Barnegat Bay.

STATE FISH HATCHERY

Charles O. Hayford, Superintendent of the Fish Hatchery at Hackettstown, says in his sixteenth annual report for the fiscal year ending June 30, 1928:

The output of the Hackettstown Hatchery for the past fiscal year is shown by the following table:

		Raised July 1, 1927, to June 30, 1928	Disposed of	Estimated Number On Hand
Brook Trout	No. 1	6,400	6,400	
" "	3-4	308,000	58,000	250,000
" "	8-10	12	12	
" "	10-12	865	865	
Loch Leven Trout	No. 2	81,500	81,500	
" " "	2-3	300,000		300,000
" " "	6-7	4,000	4,000	
" " "	6-8	53,250	53,250	
" " "	8-10	2,750	2,750	
" " "	10-12	525	525	
" " "	12-16	6	6	
Brown Trout	2-3	440,000	40,000	400,000
" "	3-4	180,000	150,000	30,000
" "	5-7	90,500	500	90,000
" "	6-8	75,000	75,000	
" "	8-10	28,492	28,492	
" "	8-12	6,000		6,000
" "	9-12	4,060	4,060	
" "	11-13	2,950	2,950	
" "	16-20	460	460	

		Raised July 1, 1927, to June 30, 1928	Disposed of	Estimated Number On Hand
Rainbow Trout	1-2	350,000		350,000
"	3-4	50,000		50,000
"	5-7	80,400	400	80,000
"	6	6,512	6,512	
"	7-9	14,765	14,765	
"	6-10	16,056	16,056	
"	8-12	87,810	87,810	
"	12-14	4,209	4,209	
Large Mouth Bass, fingerling	No. 1	300,000		300,000
"	No. 2	68,000	68,000	
"	No. 3	66,600	66,600	
Small	No. 1	30,000		30,000
"	No. 2	30,000	30,000	
"	No. 3	24,700	24,700	
"	No. 4	1,000	1,000	
Bluegill Sunfish,	No. 1 & No. 2	592,500	592,500	
"	No. 2	15,000	15,000	
Catfish, fingerling	No. 3	58,700	58,700	
Pickereel	12-18	52	52	
Yellow Perch	fry	78,075,000	78,075,000	
Miscellaneous		26	26	
		81,456,100	79,570,100	1,886,000

Output from Hancocks Bridge Hatchery, Salem County:
Fertilized Shad eggs planted, 154,400.

Yellow Perch, fry	18,250,000	18,250,000	
White Perch, fry	1,375,000	1,375,000	
Shad, fry	1,120,000	1,120,000	
	20,745,000	20,745,000	
Total from both Hatcheries	102,201,100	100,315,100	1,886,000

In addition to the above:

Brook Trout 8-12 purchased from Paradise Brook Trout Company			20,000
Various fish netted in State Reservoirs			359,063
Total Distribution			100,694,163

A list of the stocking done by the Board showing number, species, and water will be found in succeeding pages.

Trout. The following table shows distribution of trout 6 inches or larger for the past five years:

1923-24	133,831
1924-25	249,160
1925-26	251,680
1926-27	277,500
1927-28	302,622
	1,214,793

As will be noted, the output of big fish in 1927-28 was the largest in the history of the Hatchery.

Bass. The increase in the propagation of fingerling bass and bluegill sunfish was beyond expectation during the past year. The indications are that next year's output of fingerling bass will exceed any previous year. There is no great difficulty in hatching and distributing large numbers of bass up to one inch long. When we raise them to two and three inches it is a difficult and expensive problem, and requires the constant attention of the fish culturist night and day.

The proper distribution of the water volume and temperature controls means success or failure when we have a season like the past one, excessive wind and rain. If it had not been for our new system of water drainage and storage, instead of this year being our most successful, it would have been an absolute failure.

As soon as we get the rearing pond station developed it will be advisable to use seventy-two of the concrete pools, instead of twenty-four, to produce aquatic insects for bass food. The small dirt ponds produce large quantities of daphnia in a dry year but they were worthless this year on account of so many heavy showers which caused the ponds continually to overflow.

Another thing which caused us a great deal of trouble was a profuse growth of Hydrodictyon, or water netting. Young bass get caught in this and soon die, if we do not have men constantly raking it out. The Hydrodictyon can be eliminated by the introduction of a profuse growth of Vallisneria, Potamogeton crispus and Elodea. These, however, are not desirable until the bass attain a size of 1 to 2 inches in length.

Farm Crops. Harvested 10 tons of corn, 20 loads of hay, and 125 bushels of wheat.

Rearing Pond Station. Indications lead me to believe that the new plant called the rearing pond station will be just as successful as the old one, if not more so. The fish are making a more rapid growth in the new plant which is to be expected on account of the ponds being new.

We had five large ponds ready for operation April 15th. Brook, brown and rainbow trout have grown exceptionally well in these ponds.

We have dams built for two more large pools in the upper end.

We also cleared off ten acres of land.

We built a six room house with all improvements and a garage, with work shop 20x24 feet.

I would recommend building ten more large ponds as soon as possible. This will eliminate our present overcrowding.

Upon completion of the new rearing pond station, if both plants are run to capacity, it will require 300 tons of fish food annually. This alone will cost \$48,000 or more. This cost is not excessive when we consider the value of the output is two and one-half times greater than it was five years ago. Until April, 1928, the bulk of our fish food cost 4½ cents per pound, delivered. The new food contracts were more than doubled. This means the hatchery budget will have to be increased \$30,000 or the output of big fish greatly decreased.

Shad. Due to the removal of the building at Pennsville, where we first hatched shad, and the necessity for unpolluted waters, the shad hatchery equipment was removed to Hancocks Bridge on Alloway Creek, near Delaware Bay. The shad egg-take on the Delaware River was very disappointing. The shad egg-take on Maurice River was as successful as could be expected. As it takes a shad about five years to reach a spawning age, this work should be continued for a number of years in order to obtain definite results from the plantings.

When it is considered that we can hatch millions of yellow and white perch before the shad season starts it will probably be advisable at a later date for the Commission to erect a building for a jar hatchery. As most of the species to be handled are hatched in jars and the station would be operated from the middle of March to the middle of June, the principal expense would be for equipment.

All these tide water streams and canals, as you might say, are natural fish ponds, and contain an abundance of natural fish food. The various rivers and small tributaries in tide water furnish a very good field for stocking with millions of small yellow and white perch and channel catfish, as they contain lots of food. These streams are being slowly depleted of their fish life by reason of over fishing.

I look forward to the time when New Jersey will carry on a more extensive propagation of fish in Delaware Bay, as the Maryland Commission is doing in the Chesapeake Bay.

On April 5th, 1928, we had a fire which destroyed four hay and grain barracks. These barracks were replaced with a hay and grain storage building 24x30 feet, and we collected \$865.50 insurance.

HATCHERY IMPROVEMENTS

New work commenced at the Hatchery was as follows:

Building four large trout ponds on land recently acquired by the Commission for extension of the Hatchery, for the rearing of large trout, for which there is an increasing demand, cleaning out and draining land and the laying of approximately 500 feet of 14 inch cast iron pipe, to cost \$10,000.

The Hatchery extension was acquired for the purpose of ultimately building a series of 28 ponds. With these ponds we can increase our output between two and three hundred thousand annually, of trout 8" to 10" long, which will practically double our present output of big trout which are desired by the anglers. The first four ponds to be built will be the ones most expensive to construct, and they alone are estimated to produce annually 60,000 8" to 10" trout.

Erection of a concrete block house, for storage purposes, paint shop, care of trucks, nets, boats, tanks, live boxes and all equipment used in operating the Hatchery and distributing fish, to cost \$4,000.

Constructing a pond 80'x300', digging drainage and storm channel, building four concrete flumes and dirt dam, which pond and dam will give us complete control of our water supply; the pond will give us rearing capacity of 75,000 to 100,000 8" to 10" trout, by the spring of 1929, to cost \$2,500.

Erection on the new hatchery section of a six room bungalow with improvements for fish culturist on the property, and a one-story building for automobile and pond screens storage, to cost \$6,500. Construction of two dams and corewalls which will give us two ponds about 400' long each, and 40' to 50' wide, allowing the raising of 100,000 2" brook trout fingerlings, at a cost of \$1,000.

We erected a hay and grain storage building at an estimated cost of \$600 to take the place of hay barracks which had been destroyed by fire from an unknown cause. The property was insured, and we received \$865.50 on account of the loss.

The Board purchased 4/10 of an acre of land from Ira Seals et ux, adjoining the Hatchery, for \$200, which was prepared for a station for loading fish.

SURVEY OF STREAMS AND LAKES

The wardens of each county were sent two maps from the State Fish Hatchery showing the lakes and streams within the county, and they noted thereon information as to whether the waters were polluted, private, posted or any reason why they should not be stocked. It is against the policy of the Board to stock any streams to which licensed hunters do not have access. However, where a stream is only partially posted, the Board takes the ground that said stream should be stocked in such areas as are not posted, rather than deprive thousands of the privileges of fishing therein on property not posted.

POUNDS SUMMARY

Following is a summary of the pound fisheries report for the calendar year ending December 31, 1927:

Approximate value of all pounds.....	\$823,423.00
Proceeds derived from sale of fish.....	\$924,624.21
Number of pounds of fish caught and disposed of.....	21,938,490
Licenses issued:	
Atlantic Ocean	111
Sandy Hook and Raritan Bay.....	21
	132
Number of pounds operated.....	122
Number of men employed.....	457

QUESTIONS AND ANSWERS OF GENERAL INTEREST

By invitation President H. J. Burlington was requested by radio broadcasting station WABC, New York City, to use their microphone to reply to some leading questions on hunting and fishing, which had been asked respecting New Jersey conditions, in connection with a program of talks provided by the Izaak Walton League of America. In response to requests that the answers be given a permanent form, as they aroused considerable interest, we are pleased to insert them in this report, as follows:

Question. What is the object of having a special woodcock license?

Answer. The object of a special woodcock license is to keep out of the woods and fields during the month of October all hunters except those who want to hunt woodcock and nothing else. Before the advent of the woodcock license approximately 150,000 men could go afield ostensibly for woodcock and it was claimed that they killed other kinds of game as well, such as pheasants, grouse and rabbits. Under the present license system approximately 2,000 legitimate woodcock hunters go afield in October, which eliminates 148,000 men who went into the field heretofore during the month of October.

Question. Why do you not have the woodcock season open on November 10th the same as the regular upland season, which would eliminate the possibility of other game being killed during October?

Answer. There are two totally different climates in New Jersey which precludes the possibility of making all game seasons uniform. In the northern tier of counties woodcock arrive on the first full moon in October or a little later and by November 10th there are practically no woodcock in the northern end of the State. To prove this, 90% or over of our woodcock licenses are purchased and used in the northern tier of counties. Therefore, the woodcock license and the present season have been found to fit the circumstances better than any other scheme that has been devised so far.

Question. Why do you open the pickerel season in New Jersey on May 20th instead of at the opening of the bass season on June 15th, which would prevent people from catching bass before the season opens?

Answer. The pickerel and bass breeding seasons are entirely different in New Jersey, pickerel breeding as soon as the ice leaves the water, whereas the bass do not begin until May and until the water is at least 50° F. Pickerel are voracious feeders during May while bass are still on the beds, during most of this month, and we know that one large pickerel can destroy more bass in a mouthful than the bass that might be taken by the fishermen during the pickerel season.

Question. Why do you allow fishing through the ice during the first 20 days in January for pickerel?

Answer. This has always been a hard question. The Commission, believes, however, that this much winter recreation should be left to the farmers and their sons who have time during the winter days to enjoy this sport and it would seem that farmers' recreation must be looked to as well as that of the summer sportsman and fisherman, in that the farmer and his boy have not much time for fishing during the summer and fall months, when the corn has to be husked and other things taken care of. Therefore, we believe that the 20 days in January of ice fishing is worth more in recreation than the possible saving of the pickerel.

Question. Why do you not close the quail season in New Jersey for five years if they are scarce?

Answer. Quail are not scarce in New Jersey, and from all accounts we have more quail from Monmouth county south than in the States of North and

South Carolina or Virginia. The speaker has raised nine coveys of quail within five miles of the railroad station in Asbury Park in one afternoon. We have a closed season for five years in the ten northern counties but it is questionable whether this will ever bring the quail back to northern Jersey, and lack of food and cover and the absence of grain farming in that section seems to be the main reasons for this.

Question. Why do you not stick to the old native brook trout for restocking your streams instead of rainbows and browns?

Answer. We have made a scientific study of the waters of our State as to temperatures, volume, bottoms, pollution, deforestation, and we are yearly planting 300,000 trout of from 8" to 18" and of a species to harmonize with the condition of the waters in which we plant them. We have found that this is the most successful method of satisfying the angler and it is very seldom you hear of an empty creel after a day's fishing in New Jersey. I might say that we are putting brook trout of legal catchable size in all streams that are fit to hold the native brook trout. 20,000 of these native brooks, none less than 10" long, have been put out within the past ten days.

Question. Why do you stock streams that are posted?

Answer. We do not stock streams that are posted. As a matter of fact no stream in New Jersey to our knowledge is completely posted. Over 90% of our streams and lakes are open to the public for fishing. There is a standing order that an employe who would put fish in the part of a stream which was posted would lose his position, and we believe that this rule is strictly adhered to. This also applies to the stocking of pheasants.

Question. Why do you confine the shooting of deer to a shotgun? Why not a rifle?

Answer. In the section of New Jersey inhabited by deer the ground is mostly flat. A bullet from a high powered rifle would carry possibly one or two miles. This would be hazardous for the other fellow. When we can show that we have not had a life taken during our deer season as against an average of 50 or 60 per year for other states which allowed the use of rifles, we believe our system to be the best. There is not much chance of a man mistaking another hunter for a deer at 40, 50 or 60 yards at which point he must shoot with the shotgun, whereas with the rifle he could take a shot at something moving seven or eight hundred yards away that might not be a deer. And you can get deer with buckshot, don't forget this, as 1,790 were killed in our little State last year in four days.

Question. Why do you buy rabbits instead of raising them?

Answer. The wisdom of the purchase of rabbits from the West for stocking purposes is unquestionable. It is impracticable to raise rabbits in captivity in view of the price at which they can be purchased. This year we received 15,112 rabbits. The Commission pays only for rabbits received alive.

Question. Why do you have such a large surplus at the end of the year?

Answer. It is an error to say that this Board has or is piling up a surplus. We are compelled to operate within our receipts, and these receipts come principally from the first of November to the first of May, and operating under our receipts we have to be in a position to carry on from May first to November first. The fiscal year ends June 30th, and the balance on hand at that time is necessary to continue our work from July first, the commencement of the fiscal year, to November. Other departments of the State receive an appropriation direct from State funds, and have their entire appropriation available on the first day of the fiscal year.

Question. Are the Fish and Game Commissioners practical men for their jobs?

Answer. Each one from boyhood has been a hunter and fisherman and has first hand information on conditions in New Jersey. Their one object is not only to improve present conditions but to look ahead for future generations and without salary they devote a very large portion of their energies to the good of the State. Our work is thoroughly departmentized and each commissioner takes a keen personal interest in his department. Each commissioner has three counties under his personal supervision. The Board often likes to think of itself as simply a Board of Directors for a huge club composed of the fishermen and hunters of the State who support it.

Question. Why do you pay so much attention to stocking with trout to the exclusion of other kinds of fish?

Answer. We do not pay more attention to the stocking of trout than any other fish, but it so happens that trout may be more easily raised than pond fish and there are hundreds of places throughout the State suitable for trout, and while trout lead in production numbers yet other kinds of fish are not neglected. During the past five years we have planted 663,360 fingerling bass, an average of 132,672 bass per year. This compares with an average of 44,255 for a nine year period beginning 1915. We raise and distribute large numbers of blue gill sunfish and yellow perch. The difficulty in raising bass is that they must multiply naturally while trout can be artificially raised. We believe that at our Hatchery we have solved the problem of feeding young bass and confidently look forward to a much larger production.

Question. Why do you not have a law to prohibit the menhaden steamers from coming so close to the shore and taking food fish?

Answer. I am glad that question has been asked. However, there is much misunderstanding respecting the menhaden catch. I was on a menhaden boat for nearly a week and in the hauls made there was not enough food fish to feed the crew. This and other experiences show that the menhaden boats do not take food fish. The menhaden fish travel in large schools and it only pays the menhaden boats to take menhaden.

Question. Is your Commission interested in salt water fishing?

Answer. Decidedly so. We have a cruiser which patrols the waters of the Atlantic Ocean, Sandy Hook and Raritan Bay and Delaware river and

bay for the enforcement of the laws respecting these waters, assisted by 13 power boats. Last year we established a shad hatchery in Salem County which ought to increase the supply of shad. We have under way means for increasing the lobster catch of the State by the purchasing and breeding of lobster spawn.

At our request, Governor Moore took up with the Federal authorities the matter of acquiring numerous old vessels not now in use which could be blown up in waters along our coast for the purpose of furthering the coastal fishing interests in New Jersey, which would be a benefit both to the commercial fishermen and anglers. These wrecks as has been proven provide a feeding place for fish and such wrecks in existence at present attract fishing excursionists all the way from Little Egg Harbor to Brigantine.

Question. What does the farmer get out of the Fish and Game Commission?

Answer. Our Board protects the insectivorous birds of the State which in turn protect farm crops and forests from destruction. Take away this protection and our State would be a garden state in name only. The annual loss by insect pests to agriculture and forestry in the U. S. has been estimated at over one billion dollars and without the insectivorous birds this loss would be increased a hundred fold.

A law was put on the statute books sponsored by the sportsmen providing for a penalty of \$500 for wilfully destroying property while hunting and fishing. The sportsmen contribute about \$300,000 a year to the protection and propagation of game on open hunting grounds and there is no class of persons that enjoy hunting more than the farmer. The occupant of a farm may hunt on his own ground without a license, and it has recently come to our attention that farmers generally take out a license to hunt on property other than their own, and as a class they have probably the largest representation of all businesses and trades classification among licensed sportsmen, and we continually hear the cry from the so called city and town hunters that the farmers get all the game. I would not be a member of the Fish and Game Commission for a minute if I thought our interests conflicted with the farmer.

1928 FISH AND GAME LEGISLATION

Chapter 8, Approved February 23, 1928.

Illegal to set any trap, snood or snare above level of the ground.

Chapter 46, Approved March 15, 1928.

Continues five year close season on quail in the ten northern counties.

Chapter 79, Approved March 26, 1928.

Permits coots or crow ducks to be shot at a greater distance than 100 feet from shore from row boats the same as other ducks may be shot.

Chapter 144, Approved April 3, 1928.

Prohibits hunting ducks and snipe on Shark river or the shores thereof.

Chapter 220, Approved April 3, 1928.

Authorizes the Fish and Game Commission to appoint six additional wardens and two assistant fish and game protectors.

Chapter 169, Approved April 3, 1928.

Prohibits taking crabs in tidal waters, except Delaware Bay, with a line with more than ten baits attached thereto.

LAWS TO TAKE EFFECT JULY 4, 1928

Chapter 16, Approved March 6, 1928.

Permits shooting gray squirrels and rabbits after making affidavit that they have damaged crops and receiving permit from the Board.

Chapter 47, Approved March 15, 1928.

Prohibits the killing of deer except those having horns at least three inches long.

SUPPLEMENT TO 1926-1927 REPORT

Income

Balance as per last printed report \$124,523.49

Expenditures

Chapter 325, Laws of 1926, paid after June 30, 1927, on requisitions for 1926-27 27,582.68
To Balance 96,940.81

\$124,523.49

REPORT FOR 1927-1928

Income

Balance July 1, 1927 \$96,940.81
Hunters' and Anglers' Licenses:
Chapter 152, Laws 1914,
Chapter 320, Laws 1915 (Juvenile),
Chapter 125, Laws 1922 (Woodcock) \$292,593.45
Chapter 153, Laws 1918.
Menhaden Licenses \$5,700.00
Pound Licenses 5,610.00
Breeders' Licenses 1,615.00
Sales, Farms and Hatchery 1,748.32
Sundries 1,634.80
16,308.12
Chapter 247, Laws 1911, Fines 27,969.30

336,870.87

\$433,811.68

Expenditures

Chapter 318, Laws 1927 321,425.27
Requisitions outstanding 27,581.48
Account Balance 84,804.93

112,386.41

\$433,811.68

Account Balance June 30, 1928 \$ 84,804.93

STOCKING OF NEW JERSEY WATERS

By the New Jersey Board of Fish and Game Commissioners
For the Fiscal Year Ending June 30, 1928

Total Number of Fish Planted from All Sources—100,694,163

KEY TO ABBREVIATIONS

Fish		Fish	
Bt.	Brook Trout	Pic.	Pickerel
Brnt.	Brown Trout	S.	Sunfish
Rt.	Rainbow Trout	B.	Bait Fish
Lt.	Loch Leven Trout	Cr.	Crappie
Lmb.	Large Mouth Bass	Wper.	White Perch
Smb.	Small Mouth Bass	Yper.	Yellow Perch
Bs.	Bluegill Sunfish	Shad	Shad
C.	Catfish	Misc.	Miscellaneous

SIZE

fg. fingerlings
f. fry
a. adults

ATLANTIC COUNTY

(Great Egg Harbor System)

Egg Harbor River—Penny Pot—1,500 Bsfg.
Lenape Lake—Mays Landing—1,200 Lmbfg, 7,500,000 Yperf.
Mare Run—Emitsville—3,000 Bsfg.

(Mullica River System)

Hammonton Lake—Hammonton—1,200 Lmbfg, 450 Rta, 16,500 Bsfg, 2,100,000 Yperf.

BERGEN COUNTY

(Hackensack River System)

Closter Brook—Closter—433 Rta, 771 Brnta.
Demarest Brook—Demarest—300 Rta, 75 Brnta.
Demarest Pond—Demarest—133 Rta, 658 Brnta.
Dyers Brook—Northvale—916 Btfg, 666 Ltfg, 200 Rta.
Dyers Pond—Northvale—1,500 Bsfg.
Echo Lake—Westwood—250 Smbfg, 1,500 Bsfg.
Hackensack River—Oradell—500 Rta.
Harrington Lake—Harrington Park—175 Pera, 175 Cra, 175 Sa.
Musquasink Creek—Westwood—2,000 Brntfg.
Oradell Reservoir—Oradell—3,000 Bsfg, 1,575,000 Yperf, 175 Pera, 175 Cra, 175 Sa.
Pascack Creek—Woodcliff Lake—2,400 Rta, 916 Btfg, 650 Lta, 666 Ltfg, 6,000 Brntfg, 650 Bta, 2,400 Brnta.
West Pascack Creek—Woodcliff Lake—916 Btfg, 666 Ltfg.

Teller's Brook—Riverdale—916 Btfg, 666 Ltfg, 2,000 Brntfg, 113 Bta.
Tenekill Creek—Closter—450 Bta, 300 Rta, 512 Brnta.
Washington Spring Brook—Cherry Hill—5,000 Brntfg, 150 Bta, 1,084 Rta,
1,034 Brnta.
West Washington Spring Brook—Spring Valley—150 Bta, 450 Rta.

(Pascack Creek System)

Bear Creek—Woodcliff Lake—916 Btfg, 666 Ltfg, 2,000 Brntfg, 112 Bta.
Electric Lake—Montvale—250 Smbfg, 4,500 Bsf, 16 Pica, 1,050 Pera, 175 Cra,
175 Sa, 19 Lmba.
Mettowe Lake—Montvale—250 Smbfg, 1,500 Bsf.
Woodcliff Lake—Woodcliff Lake—250 Smbfg, 4,500 Bsf, 175 Pera, 175 Cra,
175 Sa.

(Passaic River System)

Saddle River—Saddle River—825 Bta, 3,000 Rta, 920 Btfg, 670 Ltfg, 6,000
Brntfg, 3,200 Brnta.
Saddle River Tributary—5,000 Brntfg.

(Saddle River System)

Sprout Brook—Midland Township—5,000 Brntfg.

BURLINGTON COUNTY

(Delaware River System)

Bread & Cheese Run—Tabernacle—375 Rta, 75 Brnta.
Brick Yard Lake—Kinkora—500 Lmbfg, 4,000 Bsf.
Kinkora Lake—Kinkora—50 Smbfg, 100 Pera, 75 Cra.
Sylvan Lake—Burlington—1,000 Lmbfg, 50 Smbfg, 4,000 Bsf, 500 Rta, 100
Pera, 225,000 Yperf, 165 Cra.

(Mullica River System)

Atsion Lake—Atsion—4,500 Bsf, 225,000 Yperf, 45 Pica.

(Rancocas Creek System)

Cedar Lake—Eayrstown—3,000 Bsf, 225,000 Yperf, 125 Smbfg.
Durand's Lake—Mt. Holly—225,000 Yperf.
Hunter's Lodge Lake—Brown's Mill—500 Lmbfg, 1,500 Bsf.
Little Pine Lake—Brown's Mill—500 Lmbfg, 3,000 Bsf, 225,000 Yperf.
Mirror Lake—Brown's Mill—500 Lmbfg, 3,000 Bsf, 450,000 Yperf.
Norcross Lake—Pemberton—500 Lmbfg, 2,000 Bsf, 225,000 Yperf.
New Lisbon Lake—New Lisbon—2,000 Bsf.
Ockanickin Lake—Near Medford—25 Rta, 25 Brnta.
Rancocas Creek—Rancocas—225,000 Yperf, 8,000 Brntfg.
Smithville Lake—Smithville—500 Lmbfg, 2,000 Bsf, 225,000 Yperf, 75 Cra,
50 Smbfg, 100 Pera.
Vincentown Lake—Vincentown—225,000 Yperf, 800 Lmbfg, 50 Cra.

(Wading River System)

Chatsworth Lake—Chatsworth—2,000 Bsf, 450,000 Yperf.
Cotoxen Lake—Kirby's Mills—800 Lmbfg, 250 Pera.

CAMDEN COUNTY

(Delaware River System)

Good Intent Lake—Blackwood—400 Lmbfg, 1,500 Bsf, 505,000 Yperf, 25 Pera.
Bridgeview Lake—Gibbsboro—400 Lmbfg, 250,000 Yperf.
Crystal Lake—Westmount—900,000 Yperf.
Evans Lake—Haddonfield—1,500 Bsf, 450,000 Yperf.
Grenloch Lake—Grenloch—800 Lmbfg, 250,000 Yperf, 25 Pera.
Gibbsboro Lake—Gibbsboro—1,500 Bsf.
Haddon Lake—Mt. Ephraim—400 Lmbfg, 450,000 Yperf.
Haddonfield Lake—Haddonfield—1,500 Bsf.
Hopkins Lake—Haddonfield—225,000 Yperf.
Kirkwood Lake—Kirkwood—400 Lmbfg, 1,500 Bsf.
Lakeside Lake—Kirkwood—250,000 Yperf, 39 Pera, 7 Cra, 9 Pica.
Laurel Lake—Laurel Springs—1,500 Bsf, 225,000 Yperf.
Little Lake—Gibbsboro—225,000 Yperf.

(Mullica River System)

Atco Lake—Atco—1,500 Bsf, 250,000 Yperf, 125 Smbfg.

(Timber Creek System)

Back Run—Berlin—150 Rta, 100 Bta.
Bottomley Lake—Clementon—400 Lmbfg, 450,000 Yperf.
Brown's Run—Turnersville—140 Rta.
Cheesman Run—Laurel Springs—130 Rta.
Clementon Lake—Clementon—1,500 Bsf, 250,000 Yperf.
Gibbs Lake—Clementon—400 Lmbfg, 50 Cra.
Lakeview Lake—Gibbsboro—400 Lmbfg, 250 Pera.
Big Lebanon Run—Turnersville—3,000 Brntfg, 245 Rta, 150 Brnta.
Little Lebanon Run—Turnersville—135 Rta, 100 Brnta.
Overbrook Lake—Overbrook—225,000 Yperf.
Pilling Lake—Clementon—400 Lmbfg, 225,000 Yperf.
Rattlesnake Run—Turnersville—50 Rta.
Silver Lake—Clementon—225,000 Yperf.
Trout Run—Near Clementon—150 Rta, 150 Bta.

CAPE MAY COUNTY

(Delaware River System)

County Alms House Pond—Cape May Court House—1,600 Lmbfg, 500,000
Yperf, 3,000 Bsf.
Dennisville Pond—Dennisville—3,000 Bsf.
Ludlam's Pond—Dennisville—800 Lmbfg.
Rio Grande Pond—Rio Grande—3,000 Bsf, 750,000 Yperf.
Sleepy Hollow Lake—Middle Township—500,000 Yperf.

(Tuckahoe River System)

Tuckahoe River—Tuckahoe—500,000 Yperf.

CUMBERLAND COUNTY

(Cedar Creek System)

Crystal Lake—Cedarville—500,000 Yperf, 3,000 Bsf.

(Cohansey Creek System)

Clarks Lake—Bridgeton—500,000 Yperf.
East Lake—Bridgeton—3,000 Bsf, 250,000 Yperf.
Elmer Lake—Bridgeton—800 Lmbfg, 4,500 Bsf, 250,000 Yperf.
Tumbling Dam Lake—Bridgeton—800 Lmbfg, 1,500 Bsf, 500,000 Yperf.

(Maurice River System)

Berryman Stream—Near Millville—250,000 Yperf.
Buckshootum Lake—Millville—800 Lmbfg, 3,000 Bsf, 1,000,000 Yperf.
Cumberland Pond—Near Millville—400 Lmbfg, 250,000 Yperf, 1,500 Bsf.
Frie's Stream—Near Millville—250,000 Yperf.
Little Mill Stream—Millville—250,000 Yperf.
Little Mill Lake—Millville—400 Lmbfg, 1,500 Bsf.
Union Lake—Millville—800 Lmbfg, 3,000 Bsf, 500,000 Yperf.

ESSEX COUNTY

(Passaic River System)

Branchbrook Park Lake—Branch Brook Park—450,000 Yperf, 3,000 Bsf, 900 Lmbfg, 1,000 Cfg.
Military Park Lake—Newark—200 Sa.
Passaic River—Swinefield—38 Lmbfg, 20 Cra, 32 Pica.
Weequahic Park Lake—Newark—900,000 Yperf, 500 Pera, 3,000 Bsf, 900 Lmbfg, 1,000 Cfg.
Yanticaw or Notch Brook—Essex Park—1,275 Rta, 250 Bta, 153 Brnta.

(Rahway River System)

So. Mt. Reservation—Bloomfield—3,125 Rta, 2,703 Brnta.

GLOUCESTER COUNTY

(Mantua Creek System)

Alcyon Lake—Pitman—25 Cra, 25,000 B, 800 Lmbfg, 3,000 Bsf, 125 Smbfg, 150 Pera.
Edwards Run—Near Barnsboro—100 Rta.
Mantua Creek—Pitman—200 Rta, 50 Bta, 50 Brnta.
Porch Run—Near Pitman—100 Rta.
Tyrell's Run—Above Tyrell's Pond—50 Rta.
Wadsworth Lake—Pitman—800 Lmbfg.
Wenonah Lake—Wenonah—400 Lmbfg, 3,000 Bsf, 20,000 B.

(Maurice River System)

George McCarter's Lake—Newfield—4,500 Bsf.
Iona Lake—Iona—800 Lmbfg, 1,500 Bsf, 500,000 Yperf, 30,000 B.
Kandle Creek—Franklinville—200 Rta, 75 Bta, 75 Brnta.
Malaga Lake—Malaga—150 Pera, 25 Cra, 35,000 B, 400 Lmbfg, 1,500 Bsf, 500,000 Yperf, 125 Smbfg.
Silver Lake—Clayton—800 Lmbfg, 1,500 Bsf.
Wilson Lake—Clayton—400 Lmbfg, 3,000 Bsf, 500,000 Yperf, 30,000 B.

(Raccoon Creek System)

Raccoon Creek Tributary—Ewing—25 Rta.
Wright's Pond—South of Ewan—50 Rta.

(Timber Creek System)

Almonesson Lake—Almonesson—500,000 Yperf, 25,000 B.
Bell's Lake—Woodbury—400 Lmbfg, 500,000 Yperf, 30,000 B.
Grenloch Lake—Grenloch—25,000 B.
Little Lebanon Run—Near Turnersville—3,000 Brntfg.
Turnersville Lake—Turnersville—500,000 Yperf, 15,000 B.

HUDSON COUNTY

(Hudson River System)

Hudson County Park Lake—Jersey City—1,200 Lmbfg, 1,200 Cfg, 4,000 Bsf, 900 Rta, 250 Bta.
Hudson County Exhibit—26 Misc.

HUNTERDON COUNTY

(Delaware River System)

Duckworth Creek—Milford—650 Btfg.
Hakihokake Creek—Little York—650 Btfg, 250 Rta.
Little York Brook—Little York—650 Btfg, 500 Bta, 250 Rta, 1,200 Brnta.
Lacatang Creek—Stockton—500 Rta.
Musconetcong River—Penwell to Asbury—2,610 Brnta, 1,750 Rta, 1,250 Lta, 8,000 Brntfg.
Sergeantsville Brook—Sergeantsville—250 Rta, 350 Brnta.
Spring Mills Brook—Spring Mills—650 Btfg.
Wichecheoke Run—Sergeantsville—500 Rta, 300 Brnta.

(Musconetcong River System)

Creveling Brook—Near Asbury—650 Btfg.
Dairy Run—Changewater—2,403 Ltfg.
Pennwell or Beaty's Brook—Penwell—250 Brnta, 2,403 Ltfg, 1,670 Brntfg, 250 Bta, 250 Rta.
Point Mt. Creek—Anderson—2,403 Ltfg.

(Raritan River System)

Little Brook—Califon—5,000 Brntfg.
Nishisakawick Creek—Frenchtown—500 Rta.
No. Br. Raritan River—White House—8,000 Brntfg, 1,125 Rta, 100 Brnta.
Spruce Run—Clinton—5,000 Brntfg, 1,400 Rta, 3,420 Brnta.
Solitude Lake—High Bridge—6,000 Bsf, 500 Smbfg, 1,350,000 Yperf.

(Rockaway River System)

Apgar's Run—Mountainville—1,153 Ltfg.
Clinton Lake—Clinton—300 Pera.
Hoover's Brook—Lebanon—250 Rta, 250 Brnta.
Hoover's Lake—Clinton—700 Brnta.
So. Br. Rockaway River—Lebanon to White House—5,350 Rta, 11,785 Brnta, 1,400 Lta, 1,200 Btfg, 900 Bta, 50 Cra.
No. Br. Rockaway River—New Germantown to White House—500 Bta, 2,000 Rta, 3,090 Brnta.

(Spruce Run System)

Black Brook—Van Syckles—650 Btfg.
Conover Run—Near Clinton—650 Btfg.
Frace Run—Van Syckles—650 Btfg.
Mulhockaway Creek—Van Syckles—650 Btfg, 500 Bta, 2,000 Rta, 2,155 Brnta.
Pattensburg Brook—Van Syckles—650 Btfg.

MERCER COUNTY

(Assanpink Creek System)

Lawrence Pond—Lawrence Station—3,000 Bsf, 450,000 Yperf.

(Millstone River System)

Carnegie Lake—Princeton—650 Pera, 100 Cra, 5,000 Lmbfg, 6,000 Bsf, 900,000 Yperf, 125 Smbfg.

Etra Lake—Etra—4,000 Bsf, 450,000 Yperf.

Mill Pond—Between Princeton Junction and Plainsboro—450,000 Yperf.

Peddie Lake—Hightstown—4,000 Bsf.

Stony Brook—Pennington—3,000 Bsf, 800 Lmbfg.

(Miry Run System)

Hutchinson's Pond—Robbinsville—450,000 Yperf.

Reed's Mill Pond—Mercerville—450,000 Yperf.

Shabbyconk Creek—Ewing Township—3,000 Bsf, 1,600 Lmbfg, 450,000 Yperf, 70 Smbfg, 125 Pera, 10 Pica.

MIDDLESEX COUNTY

(Lawrence River System)

Milltown Pond—Milltown—450,000 Yperf, 800 Lmbfg.

Oakey Brook—Franklin Park—501 Rta.

(Manalapan River System)

Bloomfield Lake—Old Bridge—1,000 Lmbfg.

Helmetta Pond—Helmetta—2,000 Bsf, 225,000 Yperf, 100 Pera, 25 Pica.

Jamesburg Pond—Jamesburg—4,000 Lmbfg, 16,000 Bsf, 450,000 Yperf, 100 Smbfg, 80 Pera, 40 Cra.

Manalapan River—Jamesburg—1,100 Brnta.

Matchponix Brook—Old Bridge—800 Brnta.

Spottswood Lake—Spottswood—4,000 Bsf, 225,000 Yperf, 100 Pera, 25 Pica.

Wigwam Brook—Jamesburg—200 Rta, 250 Bta, 300 Brnta.

(Millstone River System)

Brainard Lake—Cranbury—1,000 Lmbfg, 2,000 Bsf, 450,000 Yperf, 80 Pera, 15 Pica.

Plainsboro Lake—Plainsboro—1,000 Lmbfg, 2,000 Bsf, 450,000 Yperf.

(Rahway River System)

Sage or Sucker Brook—Metuchen—499 Rta.

(Raritan River System)

Bonhamptown Lake—Bonhamptown—30 Lmba, 725 Pera, 33 Pica.

Farrington Lake—Near New Brunswick—5,000 Lmbfg, 2,000 Bsf, 100 Smbfg, 900,000 Yperf, 1,660 Pera, 830 Cra.

Mill Pond—Metuchen—450,000 Yperf, 25 Smbfg, 50 Pera.

Mill Brook—Bonhamptown—200 Rta.

Nelson's Lake—New Brunswick—26 Smbfg, 23 Pera, 14 Cra, 12 Pica.

Silver Lake—Near Piscatawaytown—450,000 Yperf.

Weston's Mill Lake—New Brunswick—450,000 Yperf, 100 Smbfg, 60 Pera, 30 Cra, 2,400 Lmbfg.

(South River System)

Genese Lake—Near Old Bridge—13 Lmba, 350 Pera, 7 Cra, 19 Pica.

MONMOUTH COUNTY

(Atlantic Ocean System)

Back Creek—Villa Park—400 Lmbfg.

Como Lake—Como—225,000 Yperf.

Deal Lake—Allenhurst—1,000 Lmbfg, 225,000 Yperf.

Manasquan River—Ardena—5,000 Brntfg, 1,700 Brnta.

Osborne's Pond—Bailey's Corner—2,000 Bsf, 100 Rta, 400 Lmbfg, 225,000 Yperf.

Old Mill Pond—Villa Park—100 Rta, 400 Lmbfg.

Spring Lake—Spring Lake—225,000 Yperf.

Takanasee Lake—Long Branch—500 Lmbfg.

(Delaware River System)

Connine Pond—Allentown—1,000 Lmbfg, 225,000 Yperf.

Doctor's Creek—Red Valley to Allentown—600 Brnta.

(Doctor's Creek System)

Imlaystown Lake—Imlaystown—1,000 Lmbfg, 225,000 Yperf.

Red Valley Lake—Red Valley—225,000 Yperf.

(Manalapan River System)

Englishtown Pond—Englishtown—2,000 Bsf, 450,000 Yperf.

Factory Pond—Clayton Corners—2,000 Bsf, 225,000 Yperf.

Millhurst or Black Mills Lake—Millhurst—2,000 Bsf, 450,000 Yperf, 500 Lmbfg.

Oakland Lake—Southburg—225,000 Yperf.

Topenemus Lake—Freehold—1,500 Pera, 1,000 Lmbfg, 4,000 Bsf, 675,000 Yperf, 200 Smbfg, 300 Pera.

Topenemus Brook—Englishtown—250 Rta.

(Manasquan River System)

Allaire Pond—Allaire—2,000 Bsf, 100 Rta, 225,000 Yperf, 800 Lmbfg.

(Raritan River System)

Manalapan River—Jamesburg—5,000 Brntfg, 705 Brnta.

Matawan Lake—Matawan—1,000 Lmbfg.

Pine Brook—Englishtown—835 Btfg, 250 Bta.

Wemrock Brook—Englishtown—250 Rta.

(Shark River System)

Hurley's Pond—Glendola—100 Rta, 225,000 Yperf, 400 Lmbfg.

L. Y. Brook—Hamilton—833 Btfg.

Shark River—Belmar—833 Btfg, 500 Bta.

Shark River Tributary—6,400 Btfg.

(Swimming River System)

Hockhocks Brook—Tinton Falls—833 Btfg, 250 Bta.

Hop Brook—Holmdel—175 Rta.

Lewis Brook—Tinton Falls—165 Rta.

McCampbell's Brook—Holmdel—250 Bta.

Obrey's Brook—Tinton Falls—833 Btfg.

Snyders Brook—Colts Neck—165 Rta.

Tintern Manor Lake—Lincroft—150 Smbfg, 200 Pera, 50 Cra, 1,000 Lmbfg.

Tinton Falls Brook—Tinton Falls—833 Btfg.

Willow Brook—Holmdel—250 Bta.

MORRIS COUNTY

(Delaware River System)

Musconetcong River—Near Hackettstown—2,080 Rta, 6,310 Brnta.

(Musconetcong River System)

Electric Brook—Schooley's Mt.—700 Brnta, 100 Rta.
Goods Brook—Near Hackettstown—1,153 Ltfg, 1,666 Brntfg.
Harrigan or Beaver Brook—Hurdstown—1,166 Btfg, 250 Rta, 200 Brnta.
Musconetcong Lake—Stanhope—7,600 Lmbfg, 9,000 Bsfg, 1,000 Cfg, 800 Pera, 1,800,000 Yperf, 200 Cra, 51 Pica, 44 Lmba.
Schooley's Mt. Brook—Schooley's Mt.—1,164 Ltfg, 1,666 Brntfg, 750 Rta.
Weldon Brook—Hurdstown—1,168 Btfg, 500 Rta, 200 Brnta.

(Passaic River System)

Beaver Brook—Rockaway—2,500 Brntfg, 1,000 Rta, 200 Brnta.
Connett Brook—Brookside—5,000 Ltfg, 850 Rta, 550 Brnta.
Dismal Brook—Brookside—5,000 Ltfg, 750 Rta, 1,300 Brnta.
Hibernia Lake—Hibernia—58 Lmba, 400 Pera, 1 Cra, 57 Pica.
Hibernia Brook—Hibernia—2,500 Brntfg.
Morris Plains Brook—Morris Plains—500 Rta.
Pequannock River—New Foundland—490 Rta, 510 Brnta.
Rockaway River—Denville to Longwood Pond—800 Lta, 8,000 Bsfg, 1,850 Rta, 10,715 Brnta.
Stony or Taylortown Brook—Taylortown—2,500 Brntfg.
Troy Hills Brook—Troy Hills—500 Rta.
Washington Valley Brook—Morristown to Mendham—2,460 Rta, 1,330 Brnta.
Washington Valley Brook Tributary—5,000 Ltfg, 2,666 Brntfg.

(Raritan River System)

Black River—Milltown to Pottersville—3,700 Rta, 475 Bta, 5,840 Brnta.
Hacklebarney Lake—Hacklebarney—500 Pera, 100 Ca.
Pinney Brook—Hacklebarney—5,000 Ltfg.
So. Br. Raritan River—Budd Lake to Naughtright—3,000 Btfg, 2,920 Rta, 1,550 Bta, 8,025 Brnta.
Rhinehart Brook—Pottersville—5,000 Ltfg.

(No. Br. Raritan River System)

Burnett Brook—Ralston—1,250 Btfg, 225 Bta, 1,050 Rta, 2,200 Brnta.
Burnett Brook Tributary—2,668 Brntfg.
Crystal Lake—Chester—500 Rta.
Hardens or Emmons Brook—Pottersville—1,500 Btfg.
Indian Brook—Ralston—1,250 Btfg, 225 Bta, 1,050 Rta, 1,450 Brnta.
Indian Brook Tributary—2,666 Brntfg.
Peapack Brook—Chester to Gladstone—1,500 Btfg, 1,400 Rta, 1,700 Brnta.

(So. Br. Raritan River System)

Budd Lake—Budd Lake—4,500 Lmbfg, 5,000 Smbfg, 15,000 Bsfg, 3,000 Cfg, 1,350,000 Yperf, 2,600 Pera, 200 Cra, 100 Lmba, 75 Pica.
Budd Lake Brook—Budd Lake—1,050 Rta, 2,920 Brnta.
Flanders Brook—Flanders—250 Rta.

(Rockaway River System)

Army Pond—Kenvil—375 Smbfg, 2,250 Bsfg.
Arrowhead Lake—Denville—450,000 Yperf, 600 Pera, 100 Cra, 20 Lmba, 11 Pica.

Cedar Lake—Denville—1,200 Lmbfg, 4,500 Bsfg, 1,125,000 Yperf, 59 Lmba, 600 Pera, 25 Pica.
Crooked Brook—Montville—2,500 Brntfg, 600 Rta, 200 Brnta.
Cooks Lake—Denville—15 Lmba, 300 Pera, 4 Cra, 4 Pica.
Cozy Lake—Longwood—500 Lmbfg, 4,500 Bsfg, 450,000 Yperf, 300 Pera, 100 Cra.
Dean Brook—Denville—250 Brnta.
Denville Brook—Union—500 Rta.
Estling Lake—Denville—13 Lmba, 350 Pera, 18 Pica.
Green Pond—New Foundland—5,700 Smbfg, 16,000 Bsfg, 250 Rta, 1,400 Pera, 1,575,000 Yperf, 50 Lmba, 1 Cra, 45 Pica.
Lake Hopatcong—Lake Hopatcong—10,000 Smbfg, 2,400 Lmbfg, 19,500 Bsfg, 2,500 Cfg, 2,025,000 Yperf, 1,500 Pera, 500 Cra, 500 S.
Hopewell Brook—Hopewell—1,166 Btfg, 500 Bta, 250 Brnta.
Indian Lake—Denville—20 Lmba, 600 Pera, 6 Cra, 18 Pica.
Longwood Pond—Longwood—3,000 Smbfg, 33,000 Bsfg, 1,000 Lmbfg, 1,500 Cfg, 1,125,000 Yperf.
Mill Brook—Dover—500 Rta.
Moosepack Lake—Oak Ridge—500 Lmbfg, 4,500 Bsfg, 450,000 Yperf, 17 Lmba, 500 Pera, 4 Cra, 40 Pica.
Navy Pond—Kenvil—375 Smbfg, 2,250 Bsfg.
Rainbow Lake—Denville—400 Pera, 100 Cra, 14 Lmba, 15 Pica.
Rock Ridge Lake—Denville—20 Lmba, 400 Pera, 20 Pica.
Stickle Brook—Rockaway—500 Brnta.

(Whippany River System)

Black Brook—Floran Park—250 Rta.
Burnham Park Lake—Morristown—50 Cra, 150 S, 250 Pera.
Pochantas Lake—Morristown—700 Lta, 500 Rta, 900,000 Yperf, 10 Lmba, 200 Pera, 3 Cra, 13 Pica.

OCEAN COUNTY

(Metedeconk River System)

Jackson Mills Lake—Jackson Mills—2,000 Lmbfg, 900,000 Yperf, 250 Pera, 250 Cra.
Laurelton Lake—Laurelton—2,000 Lmbfg.
New Egypt Lake—New Egypt—900,000 Yperf, 150 Smbfg.

PASSAIC COUNTY

(Greenwood Lake System)

Belcher's Creek—West Milford—500 Rta.
Cooley Brook—Greenwood Lake—250 Rta.
West Milford Brook—West Milford—250 Rta.

(Passaic River System)

Bailey Brook—Stonetown—250 Rta.
Preakness Brook—Preakness—700 Rta.
Wanaque River—Greenwood Lake—2,550 Rta, 11,100 Brnta, 8,000 Brntfg, 1,200 Bta.
West Brook—Upper Macopin—1,100 Rta, 400 Brnta.

(Pequannock River System)

Kampfe Lake—Near Butler—1,400 Pera, 200 Cra, 87 Lmba, 16 Pica.

(Pompton River System)

Packanack Lake—Wayne—40 Lmba, 500 Pera, 25 Pica.

(Ramapo River System)

Pompton Lakes—Pompton—5,100 Lmbfg, 3,000 Smbfg, 3,000 Cfg, 18,000 Bsf, 2,475,000 Yperf, 2,800 Pera, 60 Lmba, 45 Pica.

(Wanaque River System)

Burnt Meadow Brook—Stonetown—250 Rta.
Greenwood Lake—Greenwood Lake—7,500 Lmbfg, 24,000 Bsf, 1,000 Cfg, 2,475,000 Yperf, 1,800 Pera.

SALEM COUNTY

(Delaware River System)

Fishing Creek Near Hancock's Bridge—125,000 Wperf.
Hope Creek—Near Hancock's Bridge—125,000 Wperf.
Delaware River—84,000 Fertilized shad eggs.
Mad Horse Creek—Near Hancock's Bridge—125,000 Wperf.
Oldmans Creek—Above Jessop's—175 Rta.

(Alloway Creek System)

Alloway Creek—Alloway—14,400 Fertilized shad eggs, 125,000 Wperf.
Alloway or Diamond Lake—Alloway—800 Lmbfg, 3,000 Bsf, 500,000 Yperf, 1,150 Smbfg, 100 Pera, 150 S, 100 Misc.
Ballinger's Mill Lake—Aldine—400 Lmbfg.
Cobbs Lake—Alloway—400 Lmbfg, 3,000 Bsf.
Cold Run—Below Watson's Pond—50 Rta.
Cooper's Creek—Harmersville—125,000 Wperf.
Diamond Creek—Alloway—11 Smbfg, 14 Pera, 7 B, 8 S.
Hazelhurst Run—Alloway—50 Rta, 125 Bta, 125 Brnta.
Old Creek—Hancock's Bridge—125,000 Wperf.
Sycamore Lake—Alloway—250,000 Wperf.
Watson's Lake—Aldine—250,000 Yperf.

(Maurice River System)

Bostock Lake—Norma—500,000 Yperf.
Centreton Lake—Centreton—800 Lmbfg, 1,500 Bsf, 250,000 Yperf.
Elmer Lake—Elmer—400 Lmbfg, 3,000 Bsf, 250,000 Yperf.
Maurice River—Millville—56,000 Fertilized shad eggs, 97,600 Shadf, 125,000 Wperf.
Rainbow Lake—Near Norma—500,000 Yperf.
Union Grove Lake—Near Centreton—400 Lmbfg, 3,000 Bsf, 250,000 Yperf.
Willow Grove Lake—Willow Grove—1,500 Bsf, 500,000 Yperf.

(Muddy Creek System)

Palatine Lake—Palatine—500,000 Yperf.

(Salem Creek System)

Avis Lake—Woodstown—400 Lmbfg, 250,000 Yperf.
Fenwick Creek—Salem—125,000 Wperf.
Hester's Stopping—Salem—500,000 Yperf.
Mannington Lake—Salem—1,500 Bsf.
Mannington Creek—Br. of Salem Creek—500,000 Yperf.

Memorial Lake—Woodstown—800 Lmbfg, 3,000 Bsf.
Pioneer Pond—Salem—1,500 Bsf.
Richmontown Lake—Woodstown—500 Smbfg, 1,000 Pera, 500 Pica, 200 Sa.
Salem Creek—Salem—125,000 Wperf.
Woodstown Lake—Woodstown—250,000 Yperf.

(Stoe Creek System)

Canton Creek—Canton—125,000 Wperf.
Stoe Creek—Canton—125,000 Wperf.

SOMERSET COUNTY

(Millstone River System)

Clark's Brook—Franklin Park—367 Rta.
Hamil or Ten Mile Run—Griggstown—499 Rta.

(Passaic River System)

Somersetinn or Indian Graves—Bernardsville—1,000 Rta, 500 Bta, 2,300 Brnta.

(Raritan River System)

Middle Brook—Boundbrook—533 Rta.
Millstone River—Rocky Hill—2,600 Ca, 75 Smbfg, 200 Pera, 100 Sa.
Peapack Brook—Gladstone—475 Rta, 2,550 Brnta.
No. Br. Raritan River—Far Hills—1,750 Rta, 1,750 Brnta, 2,600 Ca, 25 Smbfg, 100 Pera, 100 Sa.
So. Br. Raritan River—Neshanic—2,600 Cta, 75 Smbfg, 200 Pera, 100 Sa.
Duke's Park—Somerville—In exchange—1,600 Lmbfg, 4,000 Bsf.

SUSSEX COUNTY

(Delaware River System)

Big Flat Brook—Between Club and Flatbrookville—5,750 Btfg, 1,900 Lta, 1,000 Bta, 2,550 Rta, 7,340 Brnta.
Little Flat Brook—Layton—1,750 Btfg, 250 Bta, 500 Rta, 300 Brnta.
Mill Brook—Montague Township—3,500 Btfg.
Millville or Shimers Brook—Millville—500 Rta.
Paulinskill River—Lafayette to Stillwater—500 Bta, 3,050 Rta, 6,310 Brnta.
Paulinskill River Tributary—12,500 Brntfg, 10,000 Ltfg.
Pequest River—Brighton to Springdale—2,575 Rta.

(Big Flat Brook System)

Snook Pond—Near Culvers—375 Smbfg, 5,000 Bsf.
Stokes Reservation—In the Reservation—10,000 Brntfg.

(Hudson River System)

Wallkill River—Sparta to Franklin—1,500 Btfg, 2,850 Rta, 1,250 Brnta.

Musconetcong River System)

Cranberry Lake—Cranberry—4,500 Lmbfg, 15,000 Bsf, 3,000 Cfg, 1,350,000 Yperf.
Musconetcong Lake—Stanhope—2,500 Cfg, 7,500 Bsf.
Waterloo Pond—Waterloo—1,350,000 Yperf.

(Paulinskill River System)

Culvers Lake—Culvers—1,350,000 Yperf, 6,500 Smbfg, 5,000 Cfg, 18,000 Bsf, 50 Lmba, 1,500 Pera, 12 Cra, 55 Pica.
Fairview Lake—Near Hardwick—4,000 Lmbfg, 1,500 Smbfg, 13,500 Bsf, 1,575,000 Yperf.
Owassa Lake—Near Culvers—4,000 Lmbfg, 400 Smbfg, 50 Lmba, 7,000 Cfg, 21,000 Bsf, 1,350,000 Yperf, 950 Pera, 81 Pica.
Quicks Pond—N. of Swartwood—1,000 Cfg, 3,000 Bsf, 900,000 Yperf.
Spring Brook—Lafayette—12,500 Brntfg.
Big Swartwood Lake—Swartwood—4,000 Lmbfg, 1,500 Smbfg, 7 Cra, 63 Pica, 5,500 Cfg, 21,000 Bsf, 1,800,000 Yperf, 57 Lmba, 1,950 Pera.
Little Swartwood Lake—Swartwood—2,000 Lmbfg, 750 Smbfg, 1,500 Cfg, 6,000 Bsf, 900,000 Yperf.

(Pequest River System)

Lenape Lake—Andover—675,000 Yperf, 100 Pera.

(Pochuck Creek System)

Doublekill—Vernon—50 Bta, 400 Rta, 1,110 Brnta.

(Rockaway River System)

Bear Pond—Lake Hopatcong—3,000 Lmbfg, 675,000 Yperf.
Lake Hopatcong—Lake Hopatcong—13,725,000 Yperf.

(Wallkill River System)

Black or Pochuck Creek—McAfee—500 Bta, 2,350 Brnta, 3,000 Btfg, 1,000 Rta.
Clove Brook—Sussex—1,500 Brnta, 500 Rta.
Grinell Lake—Monroe—675,000 Yperf, 100 Lmba, 800 Pera, 11 Cra, 60 Pica.
Mohawk Lake—Sparta—500 Lmbfg, 2,000 Cfg, 33,000 Bsf, 1,000 Smbfg, 52 Pica, 5 Lmba, 900 Pera, 900 Cra.
Papakating River—Sussex—1,150 Brnta, 500 Rta.
Rutherford Lake—Colesville—1,100 Bsf, 375 Smbfg.
Sparta Junction Brook—Sparta—1,500 Btfg, 500 Rta, 450 Brnta.
Wallkill Lake—Franklin—6,000 Bsf.

UNION COUNTY

(Rahway River System)

Ash Brook—Ashbrook—75 Bta.
Echo Lake—Mountainville—2,900 Lmbfg, 500 Cfg, 1,500 Bsf, 450,000 Yperf, 1,100 Pera, 500 Cra, 59 Lmba, 31 Pica.
Normahaggin Brook—Cranford—791 Brnta, 500 Btfg, 2,500 Ltfg, 876 Rta, 100 Bta.
Rahway River—Rahway—1,143 Brnta, 2,000 Lmbfg, 6,500 Brntfg, 1,425 Rta.
Rahway River Tributary—500 Btfg, 2,500 Ltfg.
Reformatory Lake—Rahway—500 Rta.
Surprise Lake—Summit—3,200 Lmbfg, 450,000 Yperf, 13 Lmba, 325 Pera, 18 Pica.
Westfield Park Lake—Westfield—21 Lmba, 200 Pera, 13 Pica.

(Raritan River System)

Blue Brook—Summit—500 Btfg, 2,500 Ltfg, 3,500 Brntfg.
Seeley's Pond—Scotch Plains—450,000 Yperf, 500 Cfg, 1,500 Bsf, 450 Rta, 75 Bta, 516 Brnta, 300 Pera, 200 Cra.

WARREN COUNTY

(Delaware River System)

Buckhorn Creek—Roxburg—1,000 Btfg, 250 Bta, 300 Rta.
Delaware River—Brottsmansville to Copper Mine—9,000 Smbfg.
Dunfield Creek—Dunfield—250 Bta, 650 Rta, 250 Brnta.
Lominson's Glen Brook—Summerfield—1,000 Btfg, 300 Rta.
Lopatcong Creek—Above Phillipsburg—1,000 Btfg, 1,900 Rta, 300 Brnta.
Musconetcong River—Waterloo to Penwell—1,662 Bta, 6,862 Rta, 1,131 Lta, 9,821 Brnta.
Paulinskill River—Stillwater to Paulina—2,200 Lta, 2,525 Rta, 1,050 Bta, 5,750 Brnta.
Pequest River—Townsbury to Belvidere—2,500 Btfg, 18,600 Rta, 1,865 Bta, 1,200 Brnta.
Pohatcong Creek—Washington—500 Rta.
Pophandusing Brook—Belvidere—125 Rta, 125 Brnta.
Silver Lake—Hope—1,500 Lmbfg, 15,000 Bsf, 3,500 Cfg, 1,350,000 Yperf.
Van Campens Brook—Millbrook—250 Bta, 250 Rta, 250 Brnta.

(Musconetcong River System)

Andersontown Brook—Andersontown—1,153 Ltfg, 1,666 Brntfg.
Belnap Brook—Hackettstown—1,153 Ltfg.
Guard Lock—Near Hackettstown—800 Pera, 500 Cra, 10 Pica, 300 Sa, 1,575,000 Yperf.
Hances Brook—Beatystown—2,403 Ltfg, 1,666 Brntfg.
Saxon Falls—Waterloo—250 Brnta.
Shurts Run—Above Asbury—2,403 Ltfg.
Springtown Run—Port Colden—2,403 Ltfg.
Stephensburg Brook—Stephensburg—2,403 Ltfg, 1,666 Brntfg.
Van Atta Run—Penwell—2,403 Ltfg.
Hatchery Pools—From Reservoirs—294 Lmba, 550 Pera, 47 Lmbfg, 59,000 B, 238 Smbfg.

(Paulinskill River System)

Blair Hall Run—Blairstown—2,000 Ltfg, 1,000 Brntfg.
Blairs Creek—Blairstown—5,333 Brntfg, 2,000 Ltfg, 715 Rta.
Cedar Lake—Blairstown—9,000 Bsf, 2,500 Cfg, 1,350,000 Yperf.
Catfish Pond—Blairstown—14 Lmba, 110 Pera, 3 Cra, 15 Pica.
Columbia Dam—Columbia—750 Smbfg, 3,000 Cfg, 10,500 Bsf, 1,350,000 Yperf.
Jacksonburg Brook—Jacksonburg—2,000 Ltfg, 5,334 Brntfg, 250 Bta, 250 Rta, 1,150 Brnta.
Kalarma Run—Kalarma—1,000 Brntfg.
White Lake—Marksboro—12,000 Bsf, 2,500 Cfg, 2,700,000 Yperf.

(Pequest River System)

Bear Creek—Long Bridge—3,000 Btfg, 225 Bta, 500 Rta.
Beaver Brook—Hope—2,000 Ltfg, 4,750 Rta, 500 Brnta.
Mt. Lake—Near Buttzville—4,500 Lmbfg, 15,000 Bsf, 3,500 Cfg, 14 Lmba, 1,350,000 Yperf, 4 Cra, 14 Pica.
Yards Creek—Hainesburg—2,000 Ltfg, 5,333 Brntfg, 425 Rta, 1,075 Brnta.

(Pohatcong Creek System)

Mill Brook—Boadway—1,000 Btfg.
Roaring Rock—Brass Castle—1,000 Btfg, 750 Rta.

