

ANNUAL REPORT

OF THE

Board of Fish and Game Commissioners

FOR THE

974.901

F63

Year Ending October 31, 1917

New Jersey Reformatory Print
Rahway, N. J.

LIST OF FISH AND GAME COMMISSIONERS

Holding Office at the Date of This Report.

WILLIAM A. LOGUE, <i>Treasurer</i>	Bridgeton, N. J.
ERNEST NAPIER, <i>President</i>	East Orange, N. J.
WILLIAM A. FAUNCE.....	Atlantic City, N. J.
BERNARD M. SHANLEY, JR.....	Newark, N. J.
ROBERTSON S. WARD.....	East Orange, N. J.
AMOS H. RADCLIFFE.....	Paterson, N. J.
HAROLD CHAFEY.....	Point Pleasant, N. J.

WALTER H. FELL, *Secretary*,

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

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

STRATTON, JAMES M., <i>Protector</i>	Long Branch
MATHIS, HOWARD, <i>Assistant Protector</i>	New Gretna
CUDNEY, HARRY E., <i>Assistant Protector</i>	Hackettstown

AVIS, JOHN.....	Woodbury
BAILEY, JOHN B.....	Washington
CONNER, FRED S.....	Bridgeton
COX, JOHN F.....	Washington
EVERNHAM, JAMES H.....	Bayville
FOLKER, CHARLES W.....	Camden
HALL, FRED J.....	Bloomfield
HALL, GERVA S I.....	Salem
HILLIARD, PHINEAS K.....	Manahawkin
HOBLITZEL, WILLIAM.....	Rahway
KLEIN, WILLIAM C.....	Clifton
LODER, WILLIAM B.....	Egg Harbor City
LOVELESS, HARRY M.....	Trenton
MORTON, CHARLES C.....	Mt. Holly
PARK, JOHN J.....	White House Station
PHIFER, GEORGE W.....	Ormond, P. O. Millville
RIDER, ANSON J.....	Tuckerton
ROE, JACOB D.....	Newton
SMALL, OTIS C.....	Hammonton
SMALL, WILLIAM HENRY.....	Englewood
STEEL, WILLIAM.....	Capè May Court House
STUERWALD, CHARLES.....	South Amboy
THOMPSON, DAVID A., JR.....	Salem
THORNE, GARRET P.....	Holmdel, P. O. Matawan
WELSH, CHARLES E.....	East Millstone
YOUNG, WILLIAM E.....	Chester

LETTER OF TRANSMITTAL.

To His Excellency, Walter E. Edge, Governor, and to the Members of the Senate and General Assembly of the State of New Jersey:

As required by law, we submit herewith the annual report of the work of the Board of Fish and Game Commissioners for the year ending October 31st, 1917.

Very respectfully,

ERNEST NAPIER,
WILLIAM A. LOGUE,
WILLIAM A. FAUNCE,
B. M. SHANLEY, JR.,
HAROLD CHAFEY,
AMOS H. RADCLIFFE,
ROBERTSON S. WARD,

Commissioners.

ANNUAL REPORT.

In these war days the word conservation takes on a new meaning. It is no longer regarded as a pet expression of theorists in governmental work in relation to land, forests and waters, the wild life living within them, and to our industrial enterprises. Conserving coal, lumber, clothing, food and other supplies for many months past has been a work of the National Government conceded to be equal in importance to the raising of an army. Without doubt, at this writing no word is more familiar at the firesides of our country than the word conservation.

New Jersey has long been engaged in conserving its natural resources, and in educating its people as to their value, and the Board of Fish and Game Commissioners, particularly in recent years, has taken no unimportant part in protecting, preserving and increasing the fish and game of the State. This has been accomplished despite the multiplied means and methods of modern life to seek out and capture our wild life, and it should be noted that our department is self-sustaining as to maintenance. Agriculture being dependent on the unceasing activities of insectivorous birds, their protection by the Board in itself is a most vital affair of the State. From our inland and boundary waters, New Jersey being almost an island, the fishing industry commands and interests the attention of all. From our fields no little food supply is secured. The wild life in our fields and woods has kept alive to thousands the knowledge of the use of firearms, which knowledge is a factor for a people arming themselves in the cause of

freedom. Still further, in our people largely engaged in hunting and fishing there accrue the well-recognized benefits of life outdoors.

The importance of New Jersey's area of fresh water is noted when it is learned that we have 710 square miles of inland water area, as compared with the following: New Hampshire, 300 square miles; Vermont, 430 square miles; Massachusetts, 275 square miles; Rhode Island, 197 square miles; Connecticut, 145 square miles; Pennsylvania, 230 square miles; New York, 1,550 square miles.

Conference With Wardens.—At a conference which the Board held with all the wardens at the Fish Hatchery September 29th, the wardens were impressed by the commissioners with the necessity of seeing that the laws were properly enforced. It was explained to them that the Board stood in every instance for the full enforcement of the game laws and that the Board would stand back, as its record would prove, of any warden who is active in his duties in prevention of violations. The wilful violator of the laws was the person the Board was after particularly, and he should be shown no quarter. This class included both the poor and rich violators. At the same time, the wardens were urged to bear in mind that in the enforcement of the laws the best interest of the State was at all times to be conserved.

An innocent and first offender, if apprehended, should not be treated with the same severity as an old offender. A sense of right and justice should always prompt the warden in the exercise of his judgment as to the bringing of actual prosecution, and the warden must always bear in mind that back of him was the law-abiding sense of the State, even though the offender might have powerful friends. It did not seem possible to the Board that ignorance of the law was a valid excuse in the cases of persons of standing and intelligence. Every person in the State able to carry a gun certainly has knowledge that there are restrictions against the indiscriminate killing of game, and with such knowledge, if he is a law-abiding citizen, it is his duty to inform himself what these restrictions are. Particularly for the past two years, nearly every newspaper in the State has in many issues, through the work of the Board and the enterprise of the newspapers themselves, published the fish and game seasons, and, besides this, the Board has been very active in sending out such information.

The wardens were also urged to get in contact with the hunters and fishermen of the State by word of mouth, and inform them just what the Board is doing at the Game Farm at Forked River and the Hatchery at Hackettstown. The hunter and fisherman should be made to feel that he is a partner with the Board in its work and that when he pays a dollar

for his license he is receiving a dividend in the way of an opportunity to engage in not only an alluring pastime but in a work which relates directly to the high cost of living. The hunter and fisherman should be made to feel that the members of the Board, who serve without compensation, are his agents in conserving the fish and game supply for his use and increasing the same. While the Board is satisfied that at present there is a better feeling of comradeship between the hunters and fishermen of the State and the Board of Fish and Game Commissioners than has ever existed in the history of the State, yet the real facts should be brought to the attention of every individual hunter and fisherman. The Board was of the opinion that the great body of our citizens were law-abiding, and the essence of the wardens' duties was to protect our crops in the protection of insectivorous birds and make hunting and fishing good for those who pay a license and engage in the same.

Organization.—The Board organized on December 12th with the re-election of Commissioner Napier as President, Commissioner Shanley as Acting President, and Commissioner Logue as Treasurer. On November 25th, 1917, Commissioner Logue will have completed a period of ten years as Treasurer of the Board.

The Legislature, by an act approved March 23d, 1917, amended the act of September 25th, 1907, respecting the appointment of members of the Board, the new act increasing the membership from four to seven. By authority of the act Governor Edge appointed the following as members of the Board: Harold Chafey, of Point Pleasant, Ocean County; Amos H. Radcliffe, of Paterson, Passaic County, and Robertson S. Ward, of East Orange, Essex County, who were confirmed by the Senate on March 23d. The various counties were allotted for direct supervision by Commissioners as follows:

Robertson S. Ward.....	Essex	Middlesex	Morris
Bernard M. Shanley, Jr.....	Hunterdon	Somerset	Sussex
Harold Chafey.....	Camden	Mercer	Monmouth
Ernest Napier.....	Warren	Union	Ocean
Amos H. Radcliffe.....	Hudson	Bergen	Passaic
William A. Logue.....	Salem	Cumberland	Gloucester
W. A. Faunce.....	Atlantic	Cape May	Burlington

Receipts, Fines, Etc.—The amount received by the State Treasurer during the year on account of the Hunters' and Anglers' License Act of April 9th, 1914, was \$108,653.65.

The aggregate of fines collected for violations of the fish and game laws amounted for the year to \$8,865.53, an increase over last year of \$2,535.42.

For license to steamers and sailing vessels to take menhaden with purse nets within the three-mile limit of our coast there was received \$2,625, as compared with \$5,325 for last year. Many of the steamers used by the menhaden fishermen were taken over by the Government to be used in coast patrol service during the period of the war. This accounts for the decrease in receipts. At the date of this report there are 12 steamers and 19 sailing vessels holding licenses to take menhaden, a decrease of 10 steamers and 3 sailing vessels. The fees for steamers range from \$100 to \$200, according to tonnage, while the flat rate for sailing vessels is \$25. The licenses are for the calendar year.

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 \$5,950. For the calendar year for which licenses were issued there were 147 licenses granted, 112 for the Atlantic Ocean and 35 for the above-mentioned bay, an increase of four as compared with last year.

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 license, and when accompanied by a holder of a regular license above the age of 21 years, 23 licenses were issued during the fiscal year.

For the period between the close of the quail season in 1916 and March 31, 1917, 1,552 permits were issued to hunt foxes.

There were 9 permits issued to destroy starling colonies, as against 19 last year. While starlings are protected as insectivorous birds, they may be destroyed on a permit from the Board following an application from the governing body of a municipality stating that starlings have become a nuisance in said municipality.

Pound Fisheries Reports.—Following is a summary of the pound fisheries reports for the year ending December 31st, 1916:

Approximate value of all Pounds.....	\$555,301.51
Proceeds derived from sale of fish.....	847,151.41
Number of pounds of fish caught and disposed of.....	26,465,012
Licenses issued—	
Atlantic Ocean	102
Sandy Hook and Raritan Bays.....	41
	143
Number of pounds operated.....	136
Number of men employed.....	696

Prosecutions.—There were 450 prosecutions within the fiscal year; 440 of the defendants were convicted, 7 acquitted, 1 case withdrawn, and two of the defendants have not yet been apprehended. In default of payment of the penalties, 11 were

committed to county jail for periods of 10 to 30 days each; 9 cases were appealed to the Common Pleas Court, and in 15 cases, by reason of the youth, poverty or other extenuating circumstances, sentences were suspended on payment of costs.

Four hunters' licenses were revoked, and the guns of 58 aliens were confiscated.

The number of prosecutions is 57 in excess of the number for the year ending October 31st, 1916. This is no doubt due to the activity of the wardens, as there was no new legislation enacted with which the hunters and fishermen were not familiar.

We have inaugurated a policy of sending to each warden each month a complete list of prosecutions in order that each warden may compare his work with the work of the other wardens.

Federal Migratory Game Law.—The Federal authorities made no changes in the New Jersey season for migratory game for 1917, except to amend a regulation so that it shall read as follows:

"A daily closed season on all migratory game and insectivorous birds shall extend from sunset to half an hour before sunrise."

Patrolling Waters.—The State's launch "New Jersey" patrolled the Atlantic Ocean, Sandy Hook Bay, Raritan Bay, Delaware River and Bay, in the supervision of the pound net and menhaden fishing industry, and for the enforcement of the laws pertaining to these waters.

Ford Cars, Motorcycles, Small Boats.—New Ford cars were supplied as follows: Assistant Protector Howard Mathis, renewal; Game Farm, renewal; and Wardens, Fred J. Hall, William E. Young, John J. Park, William Hoblitzell, Phineas K. Hilliard and William Steel.

Ford cars are operated by the following:

Assistant Protectors—Howard Mathis, New Gretna, Burlington Co.; Harry E. Cudney, Hackettstown, Warren Co.

Wardens—William H. Small, Englewood, Bergen Co.; Jacob D. Roe, Newton, Sussex Co.; William Steel, Cape May Court House, Cape May Co.; Fred J. Hall, Bloomfield, Essex Co.; William E. Young, Chester, Morris Co.; John J. Park, White House Station, Hunterdon Co.; William Hoblitzell, Rahway, Union Co.; Phineas K. Hilliard, Manahawkin, Ocean Co.

Superintendents—Charles O. Hayford, Hatchery, Hackettstown, Warren Co.; Duncan Dunn, State Game Farm, Forked River, Ocean Co.

Motorcycles are operated by the following wardens:

James H. Evernham; Bayville, Ocean Co.; William C. Klein, Clifton, Passaic Co.; Charles C. Morton, Mount Holly, Burlington Co.

Small power boats are operated by the following wardens:

William B. Loder, Egg Harbor City, Atlantic Co.; William H. Small,

Englewood, Bergen Co.; William Steel, Cape May Court House, Cape May Co.; William E. Young, Chester, Morris Co.; Anson J. Rider, Tuckerton, Ocean Co.; James H. Evernham, Bayville, Ocean Co.; Phineas K. Hilliard, Manahawkin, Ocean Co.; Jacob D. Roe, Newton, Sussex Co.

Three Garford trucks are stationed at the Fish Hatchery for the distribution of fish, etc.

Game Stocking.—During the year we sent out from the Game Farm 3,400 English Ring-necked pheasants, making a spring and fall distribution; also 91 quail and 50 rabbits, and we distributed in all the counties of the State, except Hudson, direct from New Mexico, 4,435 rabbits. This shipment of live rabbits is one of the largest on record.

The supply of game, particularly in South Jersey, was greater than it has been in the past 20 years. This statement may be controverted by hunters who may not have had great success, but observation before the open season by those qualified is proof of the assertion. It may be asked what becomes of the birds when the hunting season opens. It will not do to say that they read the game laws, but experience has shown that they become wary and seek the swamps and inaccessible places in large numbers, and again are seen in large numbers after the open season.

There seems, however, to have been a decrease in the number of woodcock, which was no doubt due to the extremely dry weather. There was also a notable decrease in the number of forest fires, as only one large fire was reported, that being west of Barnegat, which occurred on November 11th, and burned several hundred acres.

With the first snowfall a circular letter was sent to each warden instructing him to locate coveys of quail and pheasants, and to feed and build shelter for them. By reason of this precaution a large number of birds were carried over during the bad weather.

Complaint was made that residents of Pennsylvania during December shot duck from motor boats on the Delaware River, opposite Burlington County. When our wardens attempted to make arrests the offenders escaped to Pennsylvania beyond our jurisdiction. We took up this matter with Secretary Kalbfus, of the Pennsylvania Commission, who advised us that he would look after the violators.

Fish Stocking.—During the year the fish distribution was as follows:

FROM THE STATE HATCHERY (For details see Hatchery Report).....	17,831,421
FROM DELAWARE AND RARITAN CANAL—	
Adult Black Bass.....	962
Adult White and Yellow Perch.....	580
Adult Crappie.....	135
Adult Pickerel.....	123
Bait Fish.....	3,000

FROM ORANGE AND BOONTON RESERVOIRS AND OTHER	4,800
PRIVATE WATERS—	
Adult Black-Bass.....	100
Adult Pickerel.....	577
White and Yellow Perch, Shiners, Sunfish, etc.....	18,100
	18,777
FROM THE DELAWARE RIVER—	
Shad Fry.....	1,500,000
Grand Total.....	19,354,998

The 1,500,000 shad fry were hatched at the Torresdale Hatchery of the Pennsylvania Fish and Game Commission, and were planted by our wardens in the Delaware River, above Delaware Water Gap.

The planting of Chinook salmon was confined to the four lakes in which this species had heretofore been planted, namely, Mountain Lake, Warren County; Culvers Lake, Sussex County; Lake Hopatcong and Green Pond, Morris County.

There was a decided improvement noted in the catches by anglers in our fresh waters, which was undoubtedly due to the State's stocking. A lake in South Jersey was netted for suckers under the direction of the Commission, and during the netting there were caught 59 rainbow trout 7 to 20 inches in length, and 23 brook trout 10 to 14 inches in length, which were, of course, released. When the opening date of the trout season came more than 300 trout were caught in the lake on the first day, the species being both rainbow and brook, and the fish were from 10 to 18 inches in length.

State Game Farm.—In April, 1917, 10,389 acres of land were added to the Game Farm. This land was acquired by condemnation from the Tilton estate, the price paid being \$722.52.

The Board entered into a contract to clear 15 acres of woodland at the Game Farm, it being found that more arable land was needed for the operation of the Farm.

Duncan Dunn, Superintendent of the State Game Farm, in his fifth annual report, says:

I had seven men employed from November 1st, 1916, until March 1st, 1917, eight men from March 1st until April 1st, 1917, and nine men from April 1st until the present. Three men are kept busy the year round looking after and feeding the pheasants, ducks and deer, trapping vermin and going around the deer park fence every day; two extra men help with this work in the summer, when we have the hatching hens to take care of. One man has the chickens to look after and clean, and do the chores around the buildings. One man has charge of the team and does farming, and carting, etc. Two men are kept busy helping with the carting and farming, repairing buildings, painting fences; bird pens and any other necessary work.

The snow storm in April, 1917, was very heavy, as it was a wet snow and stuck to the pens. The men worked two days and one night removing the snow from the pens to keep them from breaking in.

A team and two men were busy for two months in filling in a pen in which water would lay during wet spells.

We cart all the feed from the depot each month; also carted a carload of coal, carload of corn on the cob, and seven carloads of manure, and spread the latter on the fields. We had several snow storms during the winter which blocked the roads to bird pens, and they had to be opened with men with team. We cut and put in ice house sixty tons of ice. I spent several days in assisting in the taking of moving pictures of our operations.

We cut off four acres of wood and pulled all the stumps of same and carted them away. We manured this ground and plowed and seeded it down in oats. We spent two weeks in scraping, rolling and edging up main drive. One man was busy a month mending fish nets from the Hatchery.

In the spring I am kept busy preparing for the rearing season, in dipping all my utensils in a disinfectant; we have 550 rearing coops, 700 bottom boards, 200 feed boards, 150 frames and 600 hatching boxes. Put sod in all the hatching boxes and carted all the coops, frames, etc., to the rearing fields. Burned off the meadows and fields on the farm, trimmed up the brush in the rabbit warrens, carted good wood to saw mill and burned up the brush. Plowed up all the pheasant pens, limed them and seeded them down in grass. One man spends two days a week in summer caring for lawns and shrubs. During the hatching season one man is out every other day looking for setting hens. Plowed up ground and planted ten acres of corn, six acres of oats, four acres of buckwheat and four acres of millet. Built 1,900 feet of fence along road leading to meadows.

This season was the worst for breeding game I ever experienced. With heavy rains the fields were under water at different times.

I set 8,000 English pheasant eggs and hatched out 6,500. We turned out 1,700 pheasants in March and 1,700 in August, and I have 1,690 on hand to turn out. I also shipped out 50 rabbits and 91 quail which had been raised on the farm. We had three wild turkeys for breeders, hatched out 45, lost 16 one night by a fox, seven another night by a horned owl, and have 20 on hand. Raised 45 mallard ducks from seven breeders, and from one pair each of golden, silver and Lady Amherst pheasants I raised 30 birds. I have 600 chickens on hand, 18 head of geese, and I estimate 75 head of deer.

Rebuilt 200 boxes for shipping out pheasants and 50 boxes for shipping out rabbits. Harvested 20 tons of hay, seven tons of oats and 150 bushels of corn. Cut and hauled thirty-five loads of logs from woods and sawed it up for fire wood; also cut and hauled 20 loads of brush for breeding pens.

We were troubled a great deal with vermin, especially hawks, owls and cats. We killed the following vermin: 40 cats, 10 weasels, 9 opos-

sums, 11 raccoons, 450 rats, 106 crows, 35 owls and 50 hawks.

State Hatchery.—Charles O. Hayford, Superintendent of the State Fish Hatchery, in his fifth annual report, says:

In submitting to you my fifth annual report I am satisfied our present policy is the one for us to continue.

Brook Trout; Speckled Trout (*Salvelinus fontinalis*). The streams to be stocked should not rise above 68 degrees in temperature during the summer. Brook trout will not live and thrive in warmer waters. It has been found in various parts of the state that certain streams formerly abounding in brook trout will no longer support this species and in many cases it is quite evident that this is directly due to the cutting off of the forests and the consequent increase in temperature of the waters through exposure to the sun. The banks of the streams should bear trees or tall shrubs in order to provide the necessary shade and coolness. Where the vegetation has been removed, black alder or quickly growing willows may be advantageously planted along the banks. It is useless to place trout in waters made impure with sewage, mill, dairy or other refuse, for they are peculiarly sensitive to pollution and will not remain in such waters. The best places for planting are the rivulets and spring feeders, tributary to the larger streams, into which the fish will work their way as they grow. Rearing pools on the streams, and side pools built of rock and sod are particularly advantageous for brook trout.

Rainbow Trout (*Salmo Irideus*). This is a native of the mountain streams of the Pacific coast, where it occasionally descends to the lower stretches of the rivers and even passes out to sea. It has been extensively introduced in the east, and is fairly established in New York. Its flesh is much esteemed, and its game qualities are scarcely inferior to the brook trout's. Its food as well as its habitat is similar to that of the latter species, and both fishes will live in harmony in the same waters. The rainbow, however, seems to show a tendency to work downstream, passing over dams and falls that it cannot ascend again, thus abandoning the headwaters. It has been introduced with great success into lakes that are landlocked, so that it cannot escape. Such lakes should have a small tributary stream, up which the rainbow can run to spawn. The same planting methods may be employed for either species.

Brown Trout (*Salmo fario*). The brown trout is a native of Europe, and has become acclimatized in many parts of the United States. It is very hardy, and ranks as one of the finest game fishes. It lives in clear, cool, rapid streams. Its food habits are in general similar to those of the two preceding species, but since this fish grows to a much larger size and preys upon the other, it should never be introduced into waters already supplied with native trout. It withstands a higher summer temperature than the brook trout, and has replaced that species in certain waters where the surrounding forests have been largely cleared away.

Small-mouth Black Bass (*Micropterus dolomieu*). On account of shortage of breeders we were unable to operate bass ponds to full capacity this year. This gamey and important fish thrives in pure, rapid and fairly clear streams as well as in lakes and ponds. Its food consists of

craw fish, frogs, insects and larvae, minnows, worms and crustaceans. This is our first year in the propagation of small-mouth bass through all its stages from the eggs to the fingerlings. The results have been most satisfactory and pleasing. From nine nests we raised 8,250 fingerling bass 2-4. Next year we will have six ponds available for the propagation of bass. We have approximately 30 acres that are available with abundant water supply for the propagation of bass. This land should be developed as far as possible, as the principal cost is in the construction and getting started. There will be no costs for plucks, frozen butter fish for feed same as for trout, as three years' past experiments show we can create infusion of an abundance of Daphnia, Corix and Bosmina for feed.

Chinook Salmon (*Oncorhynchus tshawytscha*). The propagation of Chinook Salmon in past years has been very successful. Massachusetts has been meeting with very good success stocking her inland lakes that were screened. Coming year should prove whether stocking of New Jersey waters is a success.

Yellow Perch (*Perca flavescens*). As there are a great many creeks, canals and small ponds in the state that the ringed or yellow perch will thrive in, and as he is an elegant little pan fish and obtains a size from ½ to 2 pounds, whose eggs are easily collected and hatched, I would recommend that we build a battery that will hatch at least 100 million perch annually.

Cat Fish (*Amiurus nebulosus*). As there are a great many swamps and low places owned by farmers that could easily be dammed up, making ponds of small area, I would recommend that a pond be built for the propagation of catfish so that breeders might be furnished to any one desiring them. The catfish will inhabit and thrive in shallow ponds. They are very prolific, and once established give surprising results.

Screening of Ponds and Lakes. As there are various types of screens now in use in the various state departments for landlocking various species of fish that have a tendency to migrate, I would suggest that a careful study be made of ponds and lakes of the state as to cost and best methods of screening. Experience shows that every dollar spent in screening is well spent.

Between August 26th and September 4th I attended the meeting of the American Fisheries Society at St. Paul, and visited hatcheries in Michigan, Wisconsin and Minnesota, where I gathered much valuable information in regard to construction and management.

Between September 24th and 28th we gave an exhibit at the Interstate Fair held at Trenton. The exhibit was a grand success and was largely attended. We received every courtesy and aid from the Fair management.

We raised 1,000 bushels corn, 350 bushels oats, estimated; broke up and crushed 3,500 tons stone, estimated; built 500 feet of walks, 4 feet wide; built 2,750 feet of road base of crushed stone, 7½ feet wide, ready for top surface; built 30,000 square feet lawn; finished bass ponds 5, 6, 7, and two-thirds completed bass pond 8; built shed on side of barn 28 feet long, 10 feet wide, 12 feet high; harvested 250 tons ice, cut 5 loads hay, limed and cleaned up 20 acres of fields.

	Raised from Nov. 1, 1916, to Oct. 31, 1917	Disposed of	Estimated No. on hand Nov. 1, 1917
Fingerling Brook Trout, 2-6.....	368,425	365,425	3,000
Yearling Brook Trout, 7-10.....	29,121	28,871	250
Two-year-old Brook Trout, 10-12.....	1,115	1,090	25
Fingerling Rainbow Trout, 2-4.....	297,675	47,675	250,000
Yearling Rainbow Trout, 6-7.....	160,911	70,911	90,000
Two-year-old Rainbow Trout, 10-12	22,137	17,137	5,000
Five-year-old Rainbow Trout, 18-24..	100	.....	100
Fingerling Brown Trout, 3-4.....	100,000	.....	100,000
Yearling Brown Trout, 6-10.....	21,000	9,000	12,000
Two-year-old Brown Trout, 8-12.....	1,343	543	800
Four-year-old Brown Trout, 16-24....	1,000	.....	1,000
Fingerling Steelhead Trout, 2-3.....	40,000	.....	40,000
Four-year-old Steelhead Trout, 16-24	700	.....	700
Fingerling Chinook Salmon, 2-7.....	293,375	283,875	9,500
Yearling Chinook Salmon, 7-9.....	1,290	1,290	.....
Large-mouth Bass, 3-6.....	768	768	.....
Large-mouth Bass, breeders.....	30	.....	30
Small-mouth Bass, 3-4.....	9,000	8,250	750
Small-mouth Bass, breeders.....	89	29	60
Cat Fish.....	400	.....	400
Yellow Perch.....	17,000,000	17,000,000	.....
	18,348,479	17,834,864	513,615
Planted for State stocking.....			17,831,421
Fish sold.....			2,750
Experimental purposes.....			693
Estimated number on hand.....			513,615
			18,348,479

Damage by Deer.—There were a number of complaints in the early spring respecting damage done to crops by deer. In some cases forest fires in 1916 had destroyed the shrubbery on which the deer would have fed in the spring, and the animals became bolder than ever known before, in seeking food. It was shown on careful investigation that the amount of damage claimed in many instances was grossly exaggerated. Governor Edge, Acting Governor Gaunt and the Board took up the situation, and the following letter was sent to our wardens and given wide publicity:

Many letters have been received by the Governor of this State, also by this Department, with reference to damage done by deer to growing crops. There is no law under which a person can collect, or this department can pay, for damage done by deer; but as all the State and Federal authorities are urging the people to utilize their land and plant to the maximum, it is evident that every precaution should be taken to prevent deer from inflicting any damage.

You are hereby directed to render all the assistance possible with this object in view. You should get in touch with the farmers and make every effort possible to keep the deer from destroying their crops.

I am advised that the best methods for the planter are to run a wire or rope along the property and attach tin cans or bells thereto; or to shoot at the deer with very small shot, or have them chased from the property by dogs.

I trust you will see that this privilege is not abused by unscrupulous persons who would hunt the deer with dogs and use large shot for the purpose of slaughter and not for the protection of growing crops.

You will, therefore, please get at this work at once; and if you are not able to take care of the matter in your county, additional assistance will be sent to you.

Deer Killed.—During the last three Wednesdays in October and the first Wednesday in November, 1916, there were 255 deer killed and gathered by the hunters. On days between the above mentioned Wednesdays and after the deer season had finally closed, six deer were found dead in the woods.

There were no persons killed or injured while hunting deer, which is probably due to the act which confines the killing to deer having horns visible above the hair, thus causing the hunter to look carefully before shooting in order to determine the sex of the deer.

The number of deer killed and found dead in each county is as follows:

County	Bucks Killed	Found Dead
Atlantic County	47	3
Bergen County	5	....
Cape May County	20	....
Cumberland County	79	2
Ocean County	21	....
Warren County	25	....
Sussex County	2	....
Morris County	3	....
Hunterdon County	1	....
Burlington County	52	1
Total	255	6

Worthington Game Refuge.—The Worthington Game Refuge, containing 7,000 acres of forest land, known as Buckwood Park, Warren County, was given attention by the Board, and it is believed that the protection afforded will do much to increase the game within the surrounding country and State.

During the 1916 open season eight regular wardens patrolled the refuge and no violator was apprehended. Wardens Cox and Bailey, who have spent considerable of their time on the refuge, shot two dogs, prosecuted the owner, trapped vermin and trapped a few grouse, but the grouse were so wild that they would not stand transportation.

A large deer trap was erected and 6 deer caught; 2 were

shipped to Salem and 2 to the Game Farm, but the other 2 were released on the refuge. The winter was very open, giving considerable feed for the deer, making capture difficult. A small building was erected for shelter for the wardens.

Publications and Moving Pictures.—The Commission believes that public appreciation of the aims of conservation is essential to constructive work and necessary to win the public's co-operation therefor. It has been found in the publicity work already undertaken that the public is quick to respond to suggestions that lend strength to the movement to maintain the State's fame as the State that offers the best opportunities for outdoor recreations.

Our use of moving pictures in telling the story of fish and game propagation is one of the newest means of acquainting the people with our work. These films were prepared for world-wide exhibition by a firm of national reputation, from an all-season filming enterprise, showing the work at the State Fish Hatchery, at the State Game Farm, on the Buckwood Park reserve, and also illustrating the activities of the wardens. In return for courtesies shown their operators, the firm presented the commission with a complete film, sufficient for an hour's interesting and educational entertainment.

About a dozen exhibitions have been given and the requests for the films are becoming more frequent under the new arrangement for loaning them for the use of organizations at a minimum fee of \$5.00 and transportation charges. When it is necessary for the commission to provide an operator, moving picture machine and equipment, the flat charge is \$25. In some of the recent exhibitions the films have been successfully presented at benefit entertainments for the Red Cross and other organizations.

Newspapers and magazines are the chief channel through which knowledge of the commission's work reaches the public. A news letter, "New Jersey Fish and Game," published usually each month, is issued to newspapers and magazines of New Jersey and some nearby States. A survey shows that through this source between 400 and 500 columns of interesting news regarding hunting and fishing in New Jersey have appeared in the newspapers of the State and of Philadelphia and New York City during the last year.

During the year we also issued 15,000 fish and game law books, 40,000 small charts in English, 2,000 large charts in English; 2,000 charts in Italian, 2,000 charts in Hungarian, and 1,500 annual reports of the Board.

In addition we printed the \$1 Residents' Hunting and Fishing license, the \$2 Non-Residents' and Aliens' Fishing license, and the \$10 Non-Residents' and Aliens' Hunting and Fishing license for more than 500 selling agencies in the State.

We improved the identification questions on the back of the license cards, with a view of preventing aliens securing the resident license.

Netted Insectivorous Birds.—A prosecution of unusual interest was that of Martin Pennetti, of Paterson, who was arrested for trapping 25 insectivorous birds, including chipping sparrows, robins, larks and thrushes, by the use of silk nets. This man had six nets in his possession, three of which were in use at the time of his arrest, and each net cost \$30 to make. The device consisted of a centre net of one inch mesh, and on either side of this centre net was a net of eight inch mesh. The device was set on poles on city dumps or fields and baited with food. When birds gathered the owner of the net would scare them and they would fly into the net, and get caught in pockets formed by the meshes. When the birds were caught the offender would go along the nets and crush the birds' skulls. He claimed that he sold the birds for three cents apiece for food, and that some days he made as high as \$15.

In reference to the above case, the Commission received letters from as far away as California. Erroneous newspaper reports had been published concerning the case, but the principal one was that the New Jersey Board of Fish and Game Commissioners had sent a person to prison for 1,000 days for killing English sparrows. This is only one instance of how fish and game cases have become exaggerated. The birds which were caught are valuable insectivorous birds and are fully protected by law. The English sparrow (*passer domesticus*) is not protected by law.

Destroyers of Shad Arrested.—In co-operation with the State of Pennsylvania seven residents of New Jersey and two residents of Pennsylvania each paid a penalty of \$20 for using fyke nets with wing walls in the Delaware river above Lehigh Junction. The device used is probably the most destructive that could be used in the river. The fyke net is set in a small opening of wing walls erected in "V" shape. When the water does not run over the walls the fish must go in the funnel of the fyke. Thousands of young dead shad were found in the nets, in live eel boxes and along the shore. The device is set principally to catch eels, but by reason of its construction it catches all kinds of fish moving down stream.

Italian Violators Punished.—Proceedings were instituted in Morris County against 22 alien Italians for taking out resident licenses to which they were not entitled. Twenty of the defendants were convicted and paid the penalty, and two were not apprehended because they had left the State.

Lobster Fishermen Fined.—We were active in looking

after violations of the lobster act in Raritan and Sandy Hook Bays. It is a difficult matter to detect violations while a person is engaged in actually catching lobsters, as when he sees a boat coming near him he throws the short lobsters overboard. It seems that the only way to stop these violations is to obtain search warrants to search restaurants and hotels along the shore. This was done in the three cases and we secured convictions.

Sturgeon.—The sturgeon season, it is claimed by the fishermen in Salem and Cumberland counties, was more profitable than any in the last ten years. There were 60 men engaged in the business, operating 30 boats and nets, and the catch was 130 sturgeon. The average price for the caviar was \$2.75 per pound. The sturgeon meat dressed brought 26c. per pound and 13c. in the rough.

The boats used for sturgeon fishing are the same as those used for shad, while the nets are somewhat shorter, and made of much heavier twine.

Shad.—James M. Stratton, Protector, prepared the following report on the shad fishing industry in the Delaware river and bay for the season of 1917, which closed June 10th, and also a comparison with the year 1916. The figures apply only to New Jersey fishermen, and were obtained from the wardens and others in the counties where the fishing was done:

The comparison for the counties of Cumberland, Salem, Gloucester, Burlington and Mercer, a census of which was taken last year, shows that this year there are 252 men and 125 boats and nets less in the business, the decrease in value of boats and nets being \$41,640, and the decrease in the catch of shad being 66,719. However, by reason of the advance in price of shad, the amount realized by the fishermen was only \$2,647.80 less than last year.

The average length of nets used by the fishermen in the Delaware river and bay in Cumberland and Salem counties is about 700 fathoms, and the average cost of a boat and net about \$700, and the average catch per net was 1,200 shad.

In Gloucester, Camden, Burlington and Mercer counties, 125 to 200 fathoms is the maximum length of nets, and the average value of a boat and net is about \$125 to \$200, and 230 shad were the average catch per net.

The counties in the lower part of the State show a decrease in the number of shad caught, while Mercer County, which is at the head of tide water navigation, shows an increase of 400 shad over 1916.

It was difficult to get statistics from Camden County, but it is known that 56 men, operating 28 boats and nets valued at \$3,220, began fishing the first of the season, but many failing to catch any fish, then discontinued the business and sought other employment.

As no gill nets are permitted above Trenton Falls the fishing in Hunterdon County and a part of Mercer County is confined to hauling seines, five of which were in operation occasionally, as there was difficulty in obtaining men, and it is believed by the fishermen that a considerable number of shad went up the river. They base their information by reason of the fact that two seines on the Pennsylvania shore at New Hope, which were operated almost continually, caught 2,100 shad.

A comparison of the totals for 1916 and 1917 show a smaller decrease under each title than do the statistics by counties. This is accounted for because figures for 1917 in Camden and Hunterdon counties are all increases, as no figures in these counties were obtainable in 1916.

STATISTICS OF THE SHAD FISHING INDUSTRY OF THE DELAWARE RIVER AND BAY.

	Boats and Nets — Men Engaged —		Number Shad Caught —		Value of Shad Caught —		Value of Boats and Nets	
	Decrease	Increase	Decrease	Increase	1917	Increase since 1916	Decrease since 1916	1917
Cumberland	50	37	100	74	60,000	3,000	\$ 51,000.00	\$16,350.00
Salisbury	108	18	216	36	84,000	19,200	71,400.00	4,320.00
Gloucester	26	41	52	82	6,000	40,000	5,400.00	22,200.00
Burlington	46	26	92	51	6,748	5,119	6,073.20	2,707.80
Mercer	3	3	38	9	3,800	400	4,750.00	1,590.00
Camden	..	..	*36	..	*400	..	*400.00	..
Hunterdon	..	..	*25	..	*970	..	*1,067.00	..
	281	125	579	252	161,918	67,319	\$140,090.20	\$22,260.00
						400	\$24,907.80	\$119,770.00
								\$41,640.00

* Indicates increase for 1917; no figures for 1916.

RECAPITULATION BY COUNTIES FOR 1917.

	Boats and Nets	Men Engaged	Number Shad Caught	Value of Shad Caught	Value of Boats and Nets
Cumberland	50	100	60,000	\$51,000.00	\$35,000.00
Salem	108	216	84,000	71,400.00	64,800.00
Gloucester	26	52	6,000	5,400.00	8,450.00
Burlington	46	92	6,748	6,073.20	5,175.00
Mercer	18	38	3,800	4,750.00	2,625.00
Camden	28	56	400	400.00	3,220.00
Hunterdon	5	25	970	1,067.00	500.00
	281	579	161,918	\$140,090.20	\$119,770.00

COMPARISON AS TO TOTALS FOR 1916 AND 1917.

1916	373	750	227,467	\$141,271.00	\$157,690.00
1917	281	579	161,918	140,090.20	119,770.00
Decrease	92	171	65,549	\$ 1,180.80	\$ 37,920.00

Wardens Appointed.—Warden Harry W. D. White, of Salem, resigned owing to ill health, and Gervas I. Hall, 22 Union Street, Salem, was appointed in his place, and went on duty March 1st.

John F. Cox, of Warren County, was appointed warden and commenced his duties May 15th.

John B. Bailey, also of Warren County, was appointed warden, and commenced his duties September 1st. Each of these wardens was appointed following examination by the Civil Service Commission and certification of his name to the Board.

Miscellaneous.—In October the Board moved to new offices on the third floor of the Capitol, our old quarters having proved too small for the business of the Board.

On February 7th the Appropriation Committee of the Legislature visited the Hatchery.

In July the Board furnished for J. L. Jacobs & Company, Efficiency Engineers, representing the State Civil Service Commission, 61 cards containing data respecting the Board's employees, the cards containing questions prepared by the Efficiency Engineer.

Together with other enterprises the Board has had to meet the demands of the higher cost of living by increasing wages in several departments.

Regular meetings of the Board were held each month, and there were several special meetings, and our members frequently came to the Capitol in winter time in connection with consideration of fish and game matters before the Legislature.

Numerous complaints of pollutions of streams were received by the Board and referred to the State Board of Health.

NEW JERSEY LEGISLATION IN 1917.

Chapter 38. Permits shooting water wild fowl from sand bars.

Chapter 47. Prohibits taking eels in tidal waters by spear, dredge, rake or otherwise drawn or attached to a boat.

Chapter 85. Amends breeders' license act by permitting the keeping of wood ducks and prohibiting hunting on Sunday and hunting deer with dogs at any time on licensed game preserves.

Chapter 96. Increases the Board of Fish and Game Commissioners to seven members.

Chapter 118. Permits persons to exercise and train dogs during the months of September and October.

Chapter 160. Permits the taking of carp and suckers with nets under ice from the first day of December to the first day of March.

Chapter 179. Makes it mandatory on the Board of Freeholders of all counties to pay bounties on foxes.

Chapter 196. Permits fishermen to retain all fish caught in eel pots and fyke nets without wings in Delaware river and bay, between New Jersey and Delaware.

SUPPLEMENT TO 1915-16 REPORT.

To Conform with Requisition System.

INCOME.

Balance as per statement in last printed report, October 31, 1916	\$31,260.27
Less Lapse—	
Chapter No. 41, Act of 1908, Account.....	\$ 702.38
Chapter No. 247, Laws 1911, Fines.....	828.11
	<u>1,530.49</u>
	\$29,729.78

EXPENDITURES.

Paid after November 1, 1916, on requisitions for 1915-1916—	
Hunters' and Anglers' License Fund, Chapter No. 152, Laws of 1914.....	\$4,191.04
Chapter No. 41, Act of 1908, Account.....	194.11
Chapter No. 247, Laws of 1911, Fines.....	432.11
	<u>4,817.26</u>
To Balance	24,912.52
	\$29,729.78

FINANCIAL STATEMENT.

INCOME.

Balance November 1, 1916, Hunters' and Anglers' Fund, Chapter No. 152, Laws 1914.....	\$ 24,912.52
Receipts—	
Hunters' and Anglers' License Fund, Chapter No. 152, Laws 1914.....	\$108,653.65
Chapter No. 41; Act of 1908, Account—	
Menhaden Licenses	\$2,625.00
Pound Licenses	5,950.00
Breeders' Licenses	600.00
Sales, Farm and Hatchery.....	936.27
Sundries	829.55
	<u>10,940.82</u>
Chapter No. 247, Laws of 1911—	
Fines Account	8,865.53
	<u>128,460.00</u>
	\$153,372.52

EXPENDITURES.

Hunters' and Anglers' License Fund, Chapter No. 152, Laws 1914.....	\$103,863.09
Chapter No. 41, Laws 1908.....	7,870.73
Chapter No. 247, Laws 1911, Fines.....	5,501.66
	<u>117,235.48</u>
To Balance	*36,137.04
	\$153,372.52

* Cash balance subject to outstanding requisitions and lapses, \$11,406.46.

