







BIENNIAL REPORT

For Period Ending December 31, 1963

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State of Florida

Game and Fresh Water Fish Commission

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Biennial Report

GAME AND FRESH WATER FISH
COMMISSION

of the

STATE OF FLORIDA

BIENNIUM ENDING
December 31, 1944



Submitting Report

Tallahassee, Florida

February 15, 1945

Mr. L. G. Bruce, Chairman
Game and Fresh Water Fish Commission
State of Florida

Sir:

I am submitting herewith the report of the work of the Game and Fresh Water Fish Commission of the State of Florida for the conservation of Florida's Wildlife Resources during the biennium closing December 31, 1944.

Respectfully yours.



I. N. KENNEDY,
Director.

177873

Commission of

GAME AND FRESH WATER FISH

STATE OF FLORIDA

FIRST CONGRESSIONAL DISTRICT

L. G. Bruce, Bartow; appointed January 7, 1943, until next Senate; confirmed by Senate with term to expire January 6, 1948.

SECOND CONGRESSIONAL DISTRICT

Lester Varn, Jacksonville; appointed January 7, 1943, until next Senate; confirmed by Senate with term to expire January 4, 1946.

THIRD CONGRESSIONAL DISTRICT

L. G. Morris, Monticello; appointed January 7, 1943, until next Senate; confirmed by Senate with term to expire January 6, 1947.

FOURTH CONGRESSIONAL DISTRICT

John W. Corbett, Ft. Pierce; appointed January 7, 1943, until next Senate; confirmed by Senate with term to expire January 5, 1945.

FIFTH CONGRESSIONAL DISTRICT

John S. Clardy, Ocala; appointed January 25, 1943, until next Senate; confirmed by Senate with term to expire January 24, 1944; reappointed to serve until next Senate.

L. G. BRUCE, Chairman
I. N. KENNEDY, Director
Tallahassee, Florida

OFFICE PERSONNEL

I. N. Kennedy, Director
Alice S. Burr, Secretary

C. R. Phillips, Auditor
Edith Bevan, Stenographer

Letter of Transmittal

Tallahassee, Florida
February 15, 1945

To His Excellency
Millard F. Caldwell
Governor of the State of Florida

Sir:

I have the honor of transmitting herewith the biennial report of work that has been done for the conservation of Florida's wildlife resources, as directed by the Game and Fresh Water Fish Commission during the period closing December 31, 1942.

Respectfully submitted,

L. G. BRUCE
Chairman

Enforcement Personnel

FIRST CONSERVATION DISTRICT

D. F. SMOAK, Chief Conservation Officer

Conservation Officers: G. L. Abbott, H. C. Bigbie, Ira Brewer, A. H. Carlton, J. L. Cathcart, J. W. Crum, Roscoe Godwin, James S. Goff, H. A. Graham, Elam Murphy, James T. Philbin, S. B. Snell, Thomas Stanaland, Leffy L. Taylor, Frank Turner, C. E. Watson, C. C. Youmans.

SECOND CONSERVATION DISTRICT

ROBERT T. HEAGY, Jr., Chief Conservation Officer

Conservation Officers: J. F. Cauthen, D. D. Conner, G. C. Hill, Henry Howell, Fred Kirkland, W. B. Lucas, I. W. McCall, J. W. Mikell, Lester Mikell, Richard G. Pittman, Mark Read, J. A. Revels, J. W. Simmons, D. H. Smith, J. J. Walker, Von Walker.

THIRD CONSERVATION DISTRICT

BEN H. COX, Chief Conservation Officer

Conservation Officers: J. M. Atkins, C. P. Bush, Lothair Chester, J. J. Cotten, Joe Dykes, Henry B. Foster, Henry F. French, J. C. Gerrell, T. L. Griffin, Robert L. Haire, J. D. Hopkins, Sam Hunter, J. O. Johnson, Allen Legrone, A. D. Livingston, D. D. Miller, H. C. Pelt, T. G. Steele, W. L. Stelts, J. E. Wiggins.

FOURTH CONSERVATION DISTRICT

EARL J. RICOU, Chief Conservation Officer

Conservation Officers: J. Ray Barnes, Engram Hazellief, Axel Jenson, J. S. Lanier, R. R. Merritt, John S. Odom, Homer Rhode, Jr., Erwin Winte, Curtis E. Wright.

FIFTH CONSERVATION DISTRICT

C.S.J. FINLEY, Chief Conservation Officer

Conservation Officers: J. O. Buckles, Grady Cason, Charlie Clark, S. C. Collier, H. R. Daugharty, E. M. Ferrell, Leo Godwin, D. C. Land, Tom W. Lanier, H. L. Lungren, Roy J. Osteen, J. R. Parker, Hatton Perkins, R. Remington, E. H. Richey, LeRoy Rooks, Vanness Seckinger, W. C. Tanner, L. A. Tindall, George Townsend, J. C. Trice, J. B. Walker, Mallory Welch.

Introduction

The 1941 session of the Florida Legislature adopted a Constitutional Amendment creating the Game and Fresh Water Fish Commission, and on November 3, 1942, the voters of Florida ratified this amendment by a large majority.

Under the Constitutional Amendment a five-man Commission was provided, to be appointed by the Governor for five-year staggered terms, one from each Congressional District as existing on January 1, 1941. The Constitutional Amendment provided that from and after January 1, 1943, this five-man Commission should be charged with the management, restoration, conservation and regulation of the birds, game, fur-bearing animals, and fresh water fish of the State of Florida, and the acquisition, establishment, control and management of hatcheries, sanctuaries, refuges, reservations, and all other property owned or used for such purpose by the State of Florida.

The five men chosen by the Governor to assume this important duty were:

First District—L. G. Bruce of Bartow, appointed January 7, 1943, for a five-year term.

Second District—Lester Varn of Jacksonville, appointed January 5, 1943, for a three-year term.

Third District—L. G. Morris of Monticello, appointed January 7, 1943, for a four-year term.

Fourth District—J. W. Corbett of Fort Pierce, appointed January 7, 1943, for a two-year term.

Fifth District—John S. Clardy of Ocala, appointed January 25, 1943, for a one-year term.

These appointments were all later confirmed by the 1943 Senate.

The members of the Commission receive no compensation for their services. Each Commissioner receives his necessary traveling or other expenses incurred while engaged in the discharge of his official duties, but this expense allowance is limited by law to \$600.00 in any one year.

The new Commission held its organization meeting on January 25, 1943, at which time Commissioner L. G. Bruce of the First District was selected as Chairman.

I. N. Kennedy, who had served in the capacity of Executive Secretary under the old Commission, was employed in the capacity of Director.

Among the powers granted to the Commission by the Constitutional Amendment was the power to fix bag limits, fix open and closed seasons on a state-wide, regional or local basis, as it deemed appropriate, to regulate the manner and method of taking, transporting, storing and using birds, game, fur-bearing animals, fresh water fish, reptiles and amphibians and to acquire by purchase, gift, or otherwise, all property necessary, useful, or convenient for the use of the Commission in the exercise of its powers.

Under the Constitutional Amendment, the right to enact license laws and fix penalties for violations of the laws and rules and regulations of the Commission remained a power of the Legislature. The Legislature is also empowered to enact laws in aid of but not inconsistent with the provisions of the Amendment.

Many and varied have been the problems which confronted the new Game and Fresh Water Fish Commission, foremost of which was the formulation of Rules and Regulations governing methods of taking, and seasons during which game, fur-bearing animals and fresh water fish may be taken. The Constitutional Amendment failed to provide a method of formulating Rules and Regulations by the Commission, and it was not until after the 1943 session of the Legislature provided the method by passing Committee Substitute for House Bill No. 705, which later became Chapter 21945, Acts of 1943, that any action along this line could be taken by the Commission.

Prior to the enactment and ratification of the Constitutional Amendment, there were on the statute books of Florida 13 general laws dealing with the conservation of wildlife resources and a total of 187 special or local laws on the same subject. The enforcement of these numerous laws had resulted in much confusion in the minds of the sportsmen over the State, especially with regard to seasons and bag limits.

With the adoption of the Constitutional Amendment, some of the general laws and practically all of the special laws were repealed, and the Commission sought to replace them by the adoption of rules and regulations which would relieve the

confusion, and at the same time provide ample protection for Florida's wildlife resources.

With no precedent set for them to follow, it is possible that the Commission has yet much ground to cover before their rules and regulations will be satisfactory in every respect. They are moving forward slowly with only one thought in mind—complete protection for wildlife. It is felt, however, that the sportsmen have been able to follow their favorite sports with much less confusion as to the application of the law under the provisions of the Constitutional Amendment than under the provisions of the numerous laws which had previously been enacted.

During the past two years the Commission has been faced with the responsibility of restocking the areas in Florida in which deer had been slaughtered by the Live Stock Sanitary Board in connection with tick eradication work.

Federal funds allocated to the State under the provisions of the Pittman-Robertson Act were greatly reduced because of war activities, thus making it necessary for the Commission to find some other way for financing its five-year land acquisition project begun in 1941.

The operation of fish hatcheries in the State has become increasingly difficult with the induction into the Armed Services of all able bodied men in draft age. This same thing has occurred among the personnel of our Field Force—the men charged with the enforcement of all laws, rules and regulations governing the protection of our wildlife resources.

To all of this, however, there is a bright side. The Commission had at first felt that the war, with the resulting rationing of gasoline and scarcity of shotgun shells would drastically reduce the revenue upon which the Commission would have to operate. To the contrary, however, our revenue, derived solely from the sale of hunting, fishing, and trapping licenses, together with a few commercial licenses, has continued to increase. This would seem to indicate clearly that even in times of stress, recreation, particularly that derived from hunting and fishing, remains an important factor in the everyday life of the individual. For this reason, if for no other, the Commission is particularly conscious of the responsibility resting on its shoulders.

The detail report which follows covers every phase of the work undertaken by the Commission during the past two years.

LICENSES

Funds for the operation of the Game and Fresh Water Fish Commission are derived solely from the sale of hunting, fishing and trapping licenses together with a small number of commercial licenses. Hunting, fishing and trapping licenses are sold by the several County Judges over the State who receive a small fee authorized by law for the service they render in that connection. Commercial licenses are sold direct from the office of the Commission in Tallahassee.

The only exemptions authorized by law are to children under the age of 15 and to residents over the age of 65, also residents fishing with not more than three poles and lines at any one time in the county of their legal residence are not required to have a license.

Men in the Armed Service stationed in Florida are extended the same privileges as those given residents of the State.

FISHING

Series A—Resident State, Fresh Water.....	\$ 1.25
Series B—Non-Resident State, Fresh Water.....	5.50
Series C—Non-Resident, 10-Day Continuous Fishing, Fresh Water	2.25

License required to take fresh water fish from St. Johns River, including Doctor's Lake, North to the Florida East Coast Railway Bridge in Duval County, or in the waters of Lake Okeechobee or in that part of Crescent Lake and Dunn's Creek in Putnam County.

License not required of residents to fish non-commercially with three poles and lines in county of legal residence.

Use of more than a single pole and line at any one time anywhere else in the State prohibited.

GAME*

Series I—Resident County Game.....	\$ 1.25
Series J—Resident, Other Than Home County.....	3.25
Series K—Resident, State.....	5.50
Series L—Non-Resident, State.....	25.50
Series M—Non-Resident, 10-Day Continuous.....	10.50
Series M-1—Non-Resident County, Owners of and paying taxes on 3,000 acres of land.....	10.50

Series Y—Guide, required for guiding hunting parties.
 Guides may not take game or carry rifle or shotgun while conducting party. Issued from Office of Commission, Tallahassee 10.50

Alien Hunting—Issued from Office of Commission, Tallahassee 50.00

TRAPPING*

Series N—Resident, County..... \$ 3.25

Series O—Non-Resident, County 25.50

Series P—Resident, State..... 25.50

Series Q—Resident of County Other Than Home..... 10.50

Series R—Non-Resident, State.....100.50

*Report of Game and Fur-bearers taken in **previous season** must be filed with County Judge when applying for hunting or trapping license. Failure to file data on blank form attached to application is cause for refusal of license.

COMMERCIAL LICENSES

(Issued from Office of Commission, Tallahassee)

DEALERS IN ALLIGATOR SKINS AND GREEN OR DRIED FURS (SKINS)

Series S—Resident Local Dealer or Buyer (must not solicit by mail, advertise, travel to buy or employ agents to buy).....\$10.00

Series T-1—Resident State Dealer or Buyer.....100.00

Series T-2—Agent for Licensed “Resident State Dealer or Buyer” 5.00

FRESH-WATER FISH DEALERS

Series U—Resident Retail. May sell to consumer or dealer. If he takes fish must have also license for boat\$ 5.00

Series V—Resident Wholesale, (to sell or ship by half-barrel or in bulk)..... 50.00

Non-Resident or Alien, (to sell to consumer or wholesaler). If holder catches fish must secure license for taking and license for boat..... 50.00

Non-Resident Wholesale, (to sell or ship half-barrel, barrel or bulk).....500.00

BOATS FOR HIRE

Series W—Required for each boat rented for hunting,
or fishing in fresh waters:

18 feet length.....	\$ 1.50
19-21 feet length.....	4.00
21-25 feet length.....	15.00
Over 25 feet length.....	25.00

COMMERCIAL BOATS

Series X—Resident, fish boat twenty feet long, five foot beam and under.....	\$ 1.00
Ten cents for each additional foot in length of beam.	
Non-Resident, fish boat.....	10.00

GAME FARM

Series Z—For operating privately owned Game Farms	\$ 5.00
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Winter Haven Fish Hatchery.

*The
Commission's
Report*

Florida's Wildlife Today

It is the belief of the Commission that the game situation throughout the State of Florida remains very satisfactory. A survey made following the close of the 1943-44 hunting season by members of our Field Force indicated that all species of game were holding their own, and that some were showing a decided increase in population, this in the face of the fact that vast areas of Florida have been taken over by the War Department for training bases, and other large areas made into grazing ranges to meet the ever increasing demands of the cattle industry in Florida. There are several contributing factors. First, we have had good seasons during the past two years which have made it possible for the young to reach maturity. Second, the rationing of gasoline and the scarcity of shotgun shells has made it impossible for hunters to go into the woods as often as they would under normal conditions. There has also been a gradual decrease in the number of persons purchasing hunting licenses. During the fiscal year ending June 30, 1942, 66,405 persons purchased hunting licenses in Florida. During the year ending June 30, 1943, this number was reduced to 65,096, and for the year ending June 30, 1944, there was a further reduction to 51,123. Fresh water fishing for which Florida is known the world over is still the main attraction. Even though the number of persons purchasing fishing licenses shows a slight decrease, 80,009 licenses were sold during the period ending June 30, 1944. When considering this figure, it must be remembered that under the present license law, residents of Florida may fish with not more than three poles in the county of their legal residence without purchasing a license. Men in the Armed Forces stationed in Florida are considered residents insofar as licenses to hunt and fish are concerned. Fur-bearers, which because of the weather conditions in Florida, do not produce pelts which bring top prices on the fur market, are decidedly on the increase. In addition to this, war conditions, which brought higher prices for furs, has caused greater interest in this wildlife resource. Records show that 1,995 persons purchased trapping licenses during the 1942-43 period.

There follows a brief report on each species of wildlife to be found in Florida.

GAME ANIMALS

We have two game animals in Florida—deer and squirrel.
DEER

Deer, which suffered such a setback when laws passed in 1937, 1939 and 1941 authorized their slaughter by the Live Stock Sanitary Board as a part of its cattle fever ticket eradication program, are now on the increase. The tick eradication work has been completed and a deer restocking program has been started to rebuild the deer population in Florida. The recent survey shows an estimated deer population of 25,202. The areas where restocking is being carried on have been closed to the taking of deer and it is believed that the deer population will show an even greater increase within a short time. Our last available kill report shows a total of 1,293 deer killed.

SQUIRREL

There are two species of squirrel found in Florida, the gray or cat squirrel, and the fox squirrel. The gray squirrel has increased to such a point that they are becoming troublesome in some sections of the State. The Commission is confronted almost daily with requests for permits to destroy squirrel which are damaging personal property, an evidence of the great increase in squirrel population. The fox squirrel, which several years ago was almost extinct in Florida is making a slow comeback. Our survey shows an estimated squirrel population of 683,000. Our last kill report taken for 1942-43 hunting season and covering 40 of the 67 counties in Florida, shows a total of 193,768 squirrel taken by sportsmen.

GAME BIRDS

There are three birds in Florida classified as game birds—quail, wild turkey and marsh hens.

QUAIL

This species of game bird continues to hold the limelight in the eyes of Florida sportsmen. During the 1941-42 hunting season 577,126 quail were killed by Florida hunters according to information contained in reports received from 39 of the 67 counties in the State. In 1942-43, 349,553 quail were reported

killed in 40 of our 67 counties. These figures show quite a contrast when compared with the reported kill in 1939-40 of 677,548 and of 735,690 in 1938-39. The rationing of gasoline and scarcity of shotgun shells is largely responsible for this reduction in the number of quail taken. The game survey reveals an estimated quail population of 730,800 at the close of the 1943-44 hunting season. A good breeding season together with the continued scarcity of shotgun shells in 1944-45 leads the Commission to believe that the present quail population is far in excess of that number.

WILD TURKEY

While Florida does not boast to be one of the leading States in the Union insofar as wild turkey is concerned, Florida does boast, however, to be one of the few remaining States where the pure strain of the bronze wild turkey can still be found. The Commission has felt that reductions in season and bag limits and the complete closing of certain areas over the State to the taking of turkey were far better methods of conserving Florida's turkey population than the importation of other strains of wild turkey. That they have been successful is revealed by the figures shown in our game kill reports. In 1941-42, 1,622 wild turkey were killed. In 1942-43 this number was increased to 3,126. Our game survey shows that we still have an estimated turkey population of 26,643.

Stretching Net for Trapping Quail.



MARSH HENS

Marsh hens are plentiful, especially along the upper East Coast line of the State. The fact that they are hunted by very few, keeps the marsh hen well in the upper bracket as far as population is concerned.

MIGRATORY BIRDS

Migratory birds are under the complete control of the U. S. Fish and Wildlife Service. Any change in population is immediately reflected by changes in seasons and bag limits. The past two years have shown a decided increase in population of migratory birds and the resulting extensions in seasons and bags.

DOVE

During the 1942-43 season when dove were still feeling the effects of the freeze which in January of 1940 killed thousands of them, the season was set in Florida from December 1 to December 30 all over the State. In 1943-44 dove had made sufficient comeback to warrant the U. S. Fish and Wild-

Placing Quail in Shipping Crate.



life Service extending the season from December 1 to January 11. For 1944-45 the season was set from November 20 to January 15, for all of Florida except Dade, Broward and Monroe Counties which were permitted to return to a season from October 1 to October 31. Reports from the field indicate that there are more dove in Florida today than there has been for a number of years back, and sportsmen report being able to take the day's bag practically every time they were hunted. There was a reported kill of 159,379 dove during the 1942-43 hunting season.

DUCK

Duck, which several years ago had been reduced to such a low population as to cause the Fish and Wildlife Service officials to fear they would soon become extinct, have made a remarkable recovery. Due to weather conditions in Florida the Commission had been trying to have the duck season extended into the month of January. For years this has been denied them as being biologically unsound from a conservation

Locating Quail to be Trapped.



standpoint. In 1944-45, the duck population was such that the season in Florida was set from November 2 to January 20, and the day's bag which had been established at 10 was extended to include an addition of 5 singly or in the aggregate of mallards, pintails, or widgeons. 70,917 ducks were reported killed in 1942-43 as compared with 51,115 during the previous year. Florida, because of its late season does not get the benefit of the first flight of duck. It is only during January and February that the duck finally reach this State, and for this reason the Commission hopes that soon Florida will be placed in a zone to itself and the hunting of duck permitted at least through the entire month of January, if not until February 15, the close of our regular hunting season.

GEESE

Geese are on the increase although not in the same proportion as duck. Most of the area in Florida where geese

Deer in Shipping Crates.



were hunted in former years has been taken over by the U. S. Fish and Wildlife Service as a migratory game breeding ground and for this reason the hunting of geese is carried on on a very limited scale here. Kill reports for the last two seasons show 477 in 1941-42 and 384 in 1942-43. The same situation applies to geese as to ducks, in that Florida might well be placed in a separate zone which would permit the taking of this bird through January or possibly into February without any harmful effects to the United States conservation program.

FUR-BEARING ANIMALS

For the purpose of better protecting the fur-bearing animals which need such protection and removing protection from those species which are considered more or less predators, the Commission has divided Florida fur-bearing animals into two groups. The muskrat, raccoon, beaver, mink and otter are in the group given full protection; the skunk, red and gray fox, bear, opossum, panther, bobcat, civet cat, hare or rabbit, are unprotected and may be taken at any time and in any manner.

A Scene From Bear Creek



MUSKRAT

There are very few muskrat to be found in Florida. Several years ago the Commission purchased from the State of Louisiana some muskrat which were liberated in territory similar to that from which they were taken. Recent investigations show that while some survived, the survival was not in sufficient number to warrant the Commission continuing this effort to increase the muskrat population. Our most recent take record for this fur-bearer shows only 96, taken during the year 1942-43.

RACCOON

This animal is decidedly on the increase in Florida. Their numbers have become so great in some sections of the State that the Commission has been forced to grant permission for their destruction in order to avoid damage to personal property. In the citrus section, raccoon have been known to make deep inroads into the citrus crops. This is the most popular of our fur-bearers, since they are to be found in numbers that it makes it profitable for trappers to take them in spite of the fact that Florida pelts do not bring such high prices.

MINK AND BEAVER

These animals are not found in sufficient numbers in Florida for the Commission to be able to determine even approximately what the population is. They are so scattered that it is not often that they can be taken at all. When they are taken, the price of the pelt is quite a reward to the fortunate trapper. It is hoped that their number will increase.

Deer Woods in Choctawhatchee National Forest (Eglin Field Military Reservation)



OTTER

The taking of otter in Florida was prohibited entirely until several years ago. They have returned in sufficient numbers for the Commission to feel that they might again be taken without endangering the supply. Their pelts are considered more valuable than that of the raccoon. Recent surveys indicate that their number is still on the increase in Florida in spite of the fact that they are being taken in ever increasing numbers.

ALLIGATOR

The alligator, which until recent years, was considered more of an attraction to the tourists than an attraction to business, came into its own with the beginning of the war. The use of leather was greatly restricted for civilian use at that time, and the attention of the manufacturers turned to the alligator as a source of supply to replace the shortage of leather. The increase in price in alligator hides was tremendous and it became evident that something would have to be done to protect them or they would soon be extinct. With this in mind, and under the powers granted by the Constitutional Amendment, the Commission closed entirely eighteen counties in the southern portion of the State; then made it unlawful to take or sell alligators less than four feet in length; provided a state-wide closed season during which alligators could not be taken; prohibited possession of alligators, their hides, teeth or eggs during such closed season. It is hoped that with these restrictions, alligators will be able to return to something approximating their former number. It is also hoped

Trail Through Deer Woods, Choctawhatchee National Forest



that the Legislature will see fit to enact some additional laws giving further protection to the alligator and the alligator industry in Florida. These should include a license for those who trap or take alligators, a special license for dealers in alligator hides and some provision for alligator farms where alligators are raised in captivity.

FRESH WATER FISH

Fresh water fishing in Florida has long been a world renowned attraction. Principal species of fresh water fish to be found in this State are the large mouth black bass, which grows to such a size in Florida that it became necessary to place Florida in a group by itself in fishing contests carried on over the country, speckled perch or crappie, red breast bream, warmouth perch, bluegill or copperhead, and the stump-knocker. These fish are to be found wherever fresh water is found, the number and size depending on the amount of food available in the waters. It is very seldom that a sportsman goes fishing and is not rewarded with an ample catch. Except for black bass, on which a closed season on fresh water fish was necessary to keep up the supply, fresh water fish may be taken the year round in Florida.

The Commission operates three fish hatcheries and the Federal Government one hatchery from which large liberations are made each year. This practice, together with a strict observance of bag limits set for each species should assure Florida remaining in the forefront insofar as fresh water fish is concerned.

Wawahitchka Fish Hatchery.



In Memoriam

THIS space is dedicated to those Conservation Officers of the Game and Fresh Water Fish Commission whose deaths occurred during the past two years. In recognition of their years of service to the conservation of their State's wildlife, tribute is hereby paid:

J. J. Clinton, Fort Lauderdale, Florida.

W. C. Jones, Holt, Florida.

The Commission's Activities

The activities of the Game and Fresh Water Fish Commission did not change with the passage and approval of the Constitutional Amendment. The Commission was simply given broader powers in matters of conservation in that they were authorized to establish seasons and bag limits when and if they were needed without having to wait until the Legislature could meet to take the necessary action. This power, to some extent, served to do away with the confusion which had resulted from the enforcement of special acts which were passed by the Legislature to take care of a particular condition in a particular county within the State.

CONSERVATION OFFICERS

At the present time there are employed in the field 90 Conservation Officers, serving under the direct supervision of 5 Chief Conservation Officers. These men are charged with the responsibility of enforcing laws passed by the Legislature for the conservation of wildlife resources and also the Rules and Regulations of the Commission, authorized under the Amendment.

While law enforcement is a Conservation Officer's chief duty, it is not his only duty. Conservation Officers represent the Commission in their particular locality before local sportsmen's organizations and educational institutions. They also are called upon to do salvage work when climatic or other conditions make it necessary to save fish or wildlife from destruction. Theirs is a twenty-four hour a day job, three hundred and sixty-five days in the year.

LAW ENFORCEMENT

The major activity of the Commission is that of law enforcement. This work is carried on by the Chief Conservation Officers and Conservation officers who make up the Commission's Field Force.

When arrests are made for a violation of the fish and game laws or rules and regulations of the Commission, the Conservation Officer making the arrest is allowed the same fee as

that allowed Sheriffs. Mileage for transporting the violator is allowed and included in the court cost. Any fine resulting from a conviction goes to the County where the arrest is made. The arresting fee and court cost is paid to the Game and Fresh Water Fish Commission. During the last two years, the Commission has collected \$10,339.88 from this source.

ARRESTS AND CONVICTIONS

During the biennium covered by this report, Conservation Officers employed by the Game and Fresh Water Fish Commission made a total of 1,270 arrests resulting in 1,095 convictions and 140 acquittals. Thirty-five cases are still pending. With but very few exceptions, all cases for violations of the game and fish laws and rules and regulations are tried in the County Judge's Court. The cooperation given by these County Officials has been most gratifying to the Commission and has been the cause for much greater respect of conservation laws by the general public.

You will note from the tabulation which follows that "Hunting without a license", "Fishing without a license", and "Trapping without a license" are the cause of more than one-third of the total number of arrests. The next highest number of arrests were made for "Possession of undersize fish." "Taking bass in closed season" and "Netting in the fresh waters" brought the next in number for fishing violations. "Taking game in closed season" caused the arrest of 91 persons during the past two years, while "Hunting with unplugged gun" and "Hunting on closed day" followed with 40 and 35.

Clearing Lake Maggiore in Pinellas County.



The tabulation of arrests by counties is also very interesting. 22 counties show a conviction for every arrest made during the past two years while 6 counties had no arrests for game law violations.

FISH AND FISHING

Fishing without license	386
Possession of undersize fish	140
Taking bass in closed season	72
Netting in fresh water	66
Exceeding bag limit on fish	27
Fishing closed waters	22
Fishing with more than one pole	18
Possession of cast nets and traps	15
Dynamiting fish	13
Taking fish with gig	10
Taking fish with wire trap	8
Renting boats without license	8
Selling fish without license	7
Fishing with improper license	6
Selling black bass	5
Fishing with bream for bait	4
Fishing with cast net	3
Selling fresh water fish in closed county	2
Fish dealer in possession of black bass	2
Fishing with goard	1

 815

GAME AND HUNTING

Hunting without license	102
Taking game during closed season	91
Hunting with unplugged gun	40
Hunting on closed day	35
Possession of gun and dog in breeding ground	33
Hunting during closed season	29
Taking doe deer	17
Taking dove in closed season	15
Possession of firearms in National Forest	12
Hunting in breeding ground	7
Taking deer at night with light	6
Possession of deer with sex identification removed	6
Exceeding bag limit on game	5
Shooting on Tamiami Trail	5
Hunting deer with light	4
Taking duck during closed season	4
Tapping quail	3

Shooting coot with motor boat	3
Shooting quail on ground	2
Shooting dove after sunset	2
Hunting over baited area	2
Taking marsh hens from motor boat	2
Killing non-game birds	2
Hunting without permit in National Forest	1
Exceeding bag limit on deer	1

430

TRAPPING

Trapping without license	8
Taking and possession of hides in closed season	6
Taking alligator in closed season	4
Trapping during closed season	4
Illegal setting of traps	2
Trapping in breeding ground	1

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ARRESTS AND CONVICTIONS FOR 1943 AND 1944

County	Arrests	Convictions	Acquittals	Pending
Alachua	35	30	5	.....
Baker	11	9	1	1
Bay	5	3	2	.....
Eradford				
Brevard	10	9	1	.....
Broward	4	3	.....	1
Calhoun	28	22	5	1
Charlotte	19	18	1	.....
Citrus	14	14	.....	.....
Clay	4	4	.....	.....
Collier				
Columbia	7	7	.....	.....
Dade	33	32	1	.....
DeSoto	3	3	.....	.....
Dixie	14	9	5	.....
Duval	12	5	5	2
Escambia	9	8	1	.....
Flagler	5	5	.....	.....
Franklin	2	2	.....	.....
Gadsden	10	10	.....	.....
Gilchrist	15	15	.....	.....
Glades	43	40	1	1
Gulf	65	53	12	.....
Hamilton	14	14	.....	.....

County	Arrests	Convictions	Acquittals	Pending
Hardee	7	5	2	.....
Hendry	27	26	1	.....
Hernando	35	29	5	1
Highlands	15	15	.....	.....
Hillsborough	7	7	.....	.....
Holmes	4	3	.....	1
Indian River	4	4	.....	.....
Jackson	82	64	15	3
Jefferson	23	6	10	7
Lafayette	18	16	2	.....
Lake	47	45	2	.....
Lee	14	14	.....	.....
Leon	23	22	.....	1
Levy	18	15	2	1
Liberty	10	10	.....	.....
Madison	15	13	2	.....
Manatee				
Marion	30	29	1	.....
Martin	10	9	1	.....
Monroe				
Nassau	4	4	.....	.....
Okaloosa	43	23	14	6
Okeechobee	5	3	2	.....
Orange	23	19	3	1
Osceola	1	1	.....	.....
Palm Beach	10	9	1	.....
Pasco	26	26	.....	.....
Pinellas	9	9	.....	.....
Polk	107	96	10	1
Putnam	3	3	.....	.....
St. Johns	58	55	3	.....
St. Lucie				
Santa Rosa	23	23	.....	.....
Sarasota	26	25	1	.....
Seminole	12	11	1	.....
Sumter	8	8	.....	.....
Suwannee	21	9	12	.....
Taylor	13	12	.....	1
Union				
Volusia	19	19	.....	.....
Wakulla	20	33	2	5
Walton	36	29	6	1
Washington	33	31	2	1
Total	1270	1095	140	35

RESTOCKING

Until just recently, the Commission's program of restocking has been mainly with quail and fresh water fish. Some experiments were carried on with wild guineas purchased from Cuba, and some chukars were purchased and liberated in Florida in an effort to propagate them here. These efforts met with little or no success. Since Florida is one of the few remaining states where the pure strain of the bronze wild turkey is still found, the Commission feels that any effort to restock with turkeys brought into Florida might result in the loss of this pure strain. For this reason it was considered better to give proper protection to those turkeys remaining in the State rather than import them. A strict observation of the season and bag limit on turkey should take care of the situation. Following the killing of deer by the State Live Stock Sanitary Board in connection with tick eradication work, it became necessary for the Commission to broaden its restocking program to include deer.

GAME SANCTUARIES, REFUGES, RESERVATIONS

Under the rules and regulations promulgated by the Commission the following definitions have been given to areas closed by order of the Commission:

Sanctuary—An area within which hunting, fishing and trapping is prohibited for an indefinite period of time.

Refuge—An area within which hunting, and/or fishing, and/or trapping is prohibited for an indefinite period of time.

Reservation—An area within which hunting, and/or fishing, and/or trapping is prohibited for a term of years set by the Commission.

One of the Fish Ponds at Holt Hatchery.



At the present time, the Commission has 103 of these closed areas in the State, 2 Sanctuaries, 39 Refuges and 62 Reservations.

Within these closed areas Conservation Officers are continually at work removing predators in an effort to protect the wildlife which propagates there under natural conditions and under full protection. During a six months period, one of our officers reported the killing of 124 fox, 9 wildcats and 11 skunks.

Trapped Quail.



In areas where hunting, fishing or trapping is prohibited, it is a violation of the law to be found there with gun, fishing tackle or any device which might be used for trapping. Dogs are also prohibited within the closed areas. Quite a number of arrests were made on these charges during the past two years.

These closed areas are all posted and it is a violation of the rules and regulations to remove or deface any of the posters.

QUAIL RESTOCKING

Following the close of the hunting season each year Conservation Officers go into the closed areas over the State and trap quail. This is necessary in order to break up the covies of birds which have not been hunted. Several of the birds are liberated where they are trapped, in order to leave sufficient stock for next year's breeding. The others are liberated in pairs in open territory where they propagate and furnish hunting for the next open season. In this manner 14,263 quail were trapped during the past two years thus furnishing 7,131 covies of quail for the hunters to shoot during the open hunting season in addition to those which were already in the open territory over the State.

The Commission at one time operated a quail hatchery in connection with the Game Farm at Holt, Florida, but this has had to be discontinued due to inability to secure proper feed during war times. It is possible that operation of this hatchery

Deer: Corral at Holt Hatchery.



will be resumed when the war is over. Quail hatched at the Game Farm were liberated in pairs in closed areas over the State where they were left to propagate naturally for a period of time before being trapped for liberation in open territory.

FISH HATCHERIES

The Commission is operating three fish hatcheries, one at Eagle Lake near Winter Haven, Florida, one at Holt, Florida, and one at Wewahitchka, Florida. One Federal Hatchery, located at Welaka, Florida, is also in operation.

From the hatcheries at Eagle Lake, Holt and Welaka a total of 7,120,081 fingerling fish have found their way into Florida fresh waters. Fish from the Wewahitchka Hatchery are turned into the Dead Lakes in Gulf and Calhoun Counties.

The following tabulation will show a breakdown of fish distributions from the three hatcheries:

	1942-43		1943-44	
	Bass	Bream	Bass	Bream
Winter Haven	308,000	.....	326,500	.....
Holt .....	.....	2,236,000	.....	3,929,000
Welaka .....	.....	214,631	58,435	47,605

One of the Fish Ponds at Wewahitchka Hatchery.



DEER RESTOCKING

During 1937, 1939 and 1941 local laws were passed by the Florida Legislature which provided for the slaughter of deer by the Live Stock Sanitary Board in connection with tick eradication work. These local laws applied to Orange, Osceola, Highlands, Glades, Hendry and Collier Counties. The killing of these deer has made it necessary that the Commission restock these counties, when they have been declared to be tick free.

The 1941 session of the Legislature appropriated the sum of \$50,000.00 to be used for deer restocking in the areas where deer had been killed in tick eradication work. The 1943 session of the Legislature made a similar appropriation. This money was to be expended by the Live Stock Sanitary Board in cooperation with the Game and Fresh Water Fish Commission.

Deer restocking has been carried on through two channels—

Deer Taken in Ocala National Forest



the live trapping of deer from Federal-owned lands and the purchase of deer through commercial agencies.

Tick eradication work is complete in Orange, Osceola, Glades and Highlands Counties and the restocking work is well under-way in these counties. The work in Collier and Hendry Counties is complete but the Live Stock Sanitary Board has not yet authorized the starting of restocking.

Finding Virginia White Tail deer which may be purchased is the big problem. To date the Commission has been successful in locating and bringing into Florida 440 deer to be used to replace the deer which were killed.

In addition to the appropriation referred to, the laws providing for the slaughter of deer in Collier and Hendry County also made provision for a deer restocking fund. The Hendry County law provided for the payment by the Live Stock Sanitary Board to the Game and Fresh Water Fish Commission

Liberated Deer.



of \$25.00 for each deer killed. This has resulted in the sum of \$4,575.00, which money will be used to restock deer in Henry County.

The Collier County law provided for a special \$5.00 license in addition to the regular hunting license. This has resulted in the sum of \$3,680.00 which will be used in Collier County.

The Commission also has a deer corral in connection with the Game Farm at Holt, Florida, which contains at the present time an estimated herd of 60 deer.



Garfish—One of of Our Worst Predators

LAKE AND STREAM IMPROVEMENT

The Commission is constantly confronted with the necessity of clearing lakes and streams of various predatory or rough fish. This is done by use of seines operated by members of our field force or by persons under contract with the Commission. During these operations rough fish are taken out of the waters while all game fish caught in the seines are immediately returned to the waters.

The garfish, which is our only true predatory fish, presents our biggest problem. The Commission is at present trying to work out some satisfactory method of destroying this predator. This will also be included in the Commission's postwar program. The water hyacinth which is fast covering numerous bodies of fresh water in Florida is another problem as yet unsolved by the Commission. Any method yet tried has proven so expensive that it is prohibitive. Experiments are still being made and it is hoped that a solution to this problem will soon be provided. This will also be included in the Commission's postwar program.

In 1943 and 1944 water improvement work has been carried on in Lake Trafford in Collier County, Lake Rosalee in Polk County and in Lake Maggiore in Pinellas County. The problem of securing labor with which to carry on this phase of the Commission's activity has been the main thing confronting the Commission. This has greatly limited the amount of water clearance work which the Commission has been able to do during the past two years.

COOPERATION

Since there are several departments of the State's Government concerned with the conservation of Florida's natural resources, it is to be expected that the program carried on by each of these departments will eventually come in contact with the programs being followed by the others. Cooperation between these various State Agencies is absolutely essential if any of the programs are to be successful. The following paragraphs will touch briefly on the subject of cooperation with the other conservation agencies.

STATE BOARD OF CONSERVATION

Under a plan started more than two years ago whereby Conservation Agents employed by the State Board of Conservation held Honorary Game Warden Commissions from this Department, and Conservation Officers employed by the Commission are issued Honorary Conservation Agent Commissions by the State Board of Conservation, these two State Departments have continued to assist each other in the enforcement of laws relating to fresh and salt water fishing in Florida. It is believed that much good has been accomplished by this cooperative agreement between the two Departments.

STATE OF GEORGIA

Since the St. Marys River forms part of the boundary line between the State of Georgia and the State of Florida, it is almost necessary that the Rules and Regulations which apply to this body of water be the same in both states and that Officers of both States have full authority on either bank of the river. This has been arranged by having Georgia Officers covering the area adjoining the St. Marys River made Honorary Wardens for Florida while Florida Officers hold Honorary Commissions issued by the State of Georgia. It has also been arranged that seasons for taking fresh water fish from this body of water be the same.

U. S. FOREST SERVICE

BIENNIAL REPORT

on Apalachicola, Ocala, and Osceola Wildlife Management Areas

Under the cooperative agreement between the Commission of Game and Fresh Water Fish and the U. S. Forest Service, Wildlife Management Areas were established in the Ocala National Forest, Osceola National Forest and the Apalachicola National Forest. Game Management Plans for the areas stipulated reduced seasons, bag limits, planting of stock and the restocking of lakes and streams with fish from Federal hatcheries. Forest Rangers and Forest Guards in the National Forests have been appointed Honorary Game Wardens with full authority to enforce game and fish laws. Two residences have been constructed by the U. S. Forest Service in the Ocala National Forest for the use of the full time Conservation Officers of the state. One residence on the Osceola National at the Olustee Guard Station has been constructed by the Forest Service for the use of the Conservation Officer in charge. It is planned to build a similar structure in the Apalachicola Management Area when the funds become available.

Beginning with 1938, annual supervised deer hunts have been held on the Ocala National Forest. During the month of December, 1944, 3,804 hunters paid for permits to hunt. This was a record year, not only in attendance but also in the number of deer killed. Four hundred and twenty-eight deer were checked out at the eleven stations operated under the supervision of the district ranger.

Following is table showing some pertinent statistics relative to hunts for 1943 and 1944:

	1943	1944
Number of Permits issued	2847	3805
Number of Deer killed	240	428
Ratio of Deer killed to number of permits ...	8.4%	11.3%
Number of arrests	1	10
Antler Point Data:		
Spike		128
3-Point		8
4-Point		34
5-Point		18
6-Point		32
7-Point		21
8-Point		79
9-Point		24
10-Point		13
11-Point		5
12-Point		4
13-Point		1
Unspecified		55
Shed		6

Tabulation of Hunters by Conservation Districts for the year 1944:

Conservation District	Key Cities in District	Number of Percentage	
		Permits	of Total
1.	Tampa and Lakeland	737	19.4
2.	Jacksonville and Gainesville	1002	26.3
3.	Tallahassee and Pensacola	37	1.0
4.	Miami and West Palm Beach	74	1.9
5.	Ocala and Orlando	1955	51.4
Totals		3805	100.00

Fur Trapping Record	Apalachicola	Ocala
	1944	1944
Fox	61	17
Raccoon	629	65
Opossum	17	21
Skunk	0	0
Wild Cat	28	2
Otter	11	

Six of the deer killed in the 1944 season had already shed their antlers when taken. How the hunters knew them to be

bucks is very much of a mystery. The deer as a rule were only in a fair condition, no doubt due to a total lack of acorns upon which they usually fatten. However, about ten per cent were found to be fat, which would indicate that there are some fattening foods on the Management Area other than mast.

During the 1944 hunt fewer deer were observed with screw-worms than in the previous year's hunt. In fact there was considerable alarm over this condition of the deer in 1943, but 1944 observations showed a reduction in the infection. In 1943 it was not uncommon to find a deer carcass in the area with the only apparent cause being screw-worm. It was feared that the disease would reduce the number of fawns, but at the beginning of the 1944 season there was a larger number of young deer than ever before.

Estimated deer population at the end of 1943 was 9,000. At the end of 1944 the census was approximated at 9,050. Despite disease and the take of hunters, the population remains stable.

There was a vast improvement in law enforcement work in 1944 as compared with 1943. Continued efforts will be made to improve this phase of the management of the Ocala area in future hunts.

CORLAND L. JONES

UNITED STATES ARMY

During the biennium covered by this report, annual hunts have been carried on in Eglin Field Military Reservation, formerly the Choctawhatchee National Forest. These hunts are conducted through cooperation between the Game and Fresh Water Fish Commission and the United States Army. Permits are issued free of charge by the Commanding Officer to persons wishing to avail themselves of the privilege of hunting deer within certain areas in the Reservation. The only restrictions are that hunters must be in possession of a valid hunting license, be checked into the Reservation on arriving and checked out when leaving, and confine their hunting to those areas set out on the permits. All kills must be reported and hunters are also required to observe legal bag limits established by the Commission for other portions of the State.

During 1943 approximately 1,800 permits were issued and 300 deer reported killed within the Reservation. In 1944 approximately 2,500 permits were issued and 425 deer reported killed. These hunts are increasing in popularity as evidenced by the increase in the number of permits issued.

FLORIDA FOREST AND PARK SERVICE

The Commission for several years has cooperated with the State Forest and Park Service in an effort to provide recreational facilities in the several State Forests and Parks. Through this program of cooperation the Commission has established game breeding grounds in the following areas:

O'Leno State Forest in Alachua and Columbia Counties.
Pine Log State Forest in Bay and Washington Counties.
Gold Head Branch State Park in Clay County.
Suwannee River State Park in Hamilton and Suwannee Counties.

Highlands Hammock State Park and Botanical Garden and Arboretum in Highlands County.

Hillsborough River State Park in Hillsborough County.
Florida Caverns State Park in Jackson County.
Torreya State Park in Liberty County.
Myakka River State Park in Manatee and Sarasota Counties.
Cary State Forest and Ft. Clinch State Park in Nassau County.

In all of these areas wildlife is given the same protection as that given to other Game Breeding Grounds. Predator control is carried on by members of the Commission's Field Force and wildlife is on an increase. This adds greatly to the value of the areas from a recreational standpoint.

U. S. FISH AND WILDLIFE SERVICE

The U. S. Fish and Wildlife Service, the Federal Agency charged with the conservation of fish and migratory birds, has been of great assistance to the Commission in all matters pertaining to conservation of our wildlife resources. On the other hand, the Commission has endeavored to cooperate with the U. S. Fish and Wildlife Service at all times. Conservation Officers of the Commission hold U. S. Game Warden appointments from the Fish and Wildlife Service and are fully qualified to make arrests for violations of Federal Regulations as well as for violations of Commission Regulations. Each year members of our Field Force assist in making a waterfowl inventory which is used by the Fish and Wildlife Service when considering Regulations for taking migratory game birds.

The Commission also permits the use of its tank truck for delivery of fish from the Federal Hatchery located at Welaka, Florida. In return, a great many applications for fish filed

with the Commission are filled with fish coming from the Federal Hatchery. Hunting seasons in Florida are not definitely established until after the Fish and Wildlife Service has set the seasons for taking migratory birds in order that the Commission may set its Regulations to conform with those established by the Federal Government.

MISCELLANEOUS

MEETINGS OF THE COMMISSION

Meetings of the Game and Fresh Water Fish Commission were held more frequently during the past two years than has been customary due to the fact that it was necessary to formulate Rules and Regulations as provided by the Constitutional Amendment. A schedule of meetings held follows:

Date	Place
January 25, 1943	Tallahassee
February 25, 1943	Jacksonville
June 14, 1943	Jacksonville
July 19, 1943	Jacksonville
July 29, 1943	Jacksonville
August 16, 1943	Jacksonville
September 2, 1943	Jacksonville
September 9, 1943	Jacksonville
January 24, 1944	Tallahassee
May 29, 1944	Jacksonville
July 24, 1944	Jacksonville
August 14, 1944	Jacksonville
September 18, 1944	Jacksonville
December 7, 1944	Tallahassee

FEDERAL-AID-TO-WILDLIFE

Because of a reduction in the amount of money included in the budget of the U. S. Department of Interior, Florida's program made possible under the provisions of the Pittman-Robertson Act has been greatly reduced during the past biennium. In 1943 Florida received from this source an allocation of \$12,374.48 as compared with \$34,290.56 allocated to Florida during 1941. In 1944, this amount was reduced to \$11,061.79.

Florida had previously operated the following projects, approved under the Federal-Aid-to-Wildlife program:

- 2-D Northeast Florida Quail Habitat Restoration.
- 3-D Northwest Florida Quail Habitat Restoration.

- 4-L Lake County Land Acquisition.
- 5-L Marion County Land Acquisition.
- 6-D Lake County Development.
- 7-D Marion County Development.
- 8-L Charlotte County Land Acquisition.
- 9-D Clark-Ray-Johnson Leased Land Development.
- 10-D Deer Restocking.

In 1943, Projects 2-D and 3-D were combined and the work carried on by a single project leader. 6-D, 7-D, and 9-D were extended, to be carried out when it was possible to purchase materials necessary to complete these development projects. 8-L, which was a five year land acquisition project, was extended to take care of the purchase of another segment of the land under option to purchase.

In 1944, Projects 6-D, 7-D and 9-D were again extended, since it was still impossible to purchase the necessary materials. 8-L was again extended to take care of the purchase of another segment of land in Charlotte County.

Under the Pittman-Robertson program, the Commission has purchased 640 acres of land in Lake County, 1,280 acres of land in Marion County and when the Charlotte County land acquisition project has been completed, the Commission will own approximately 55,000 acres of land in that County.

HUNTING ACCIDENTS

Included in the reports which come annually to the office of the Game and Fresh Water Fish Commission is the one dealing with accidents due directly to hunting. In 1942-43 there were 26 such accidents reported to the Commission. Of these 6 were fatal, 5 were serious and 15 of a minor nature. During 1943-44, there were 16 accidents reported, of which none were fatal, 5 were serious and 11 minor.

EDUCATION AND PUBLICITY

This phase of the Commission's work has been greatly retarded during the past two years. The Educational Director was called to the Army and publication of the Commission's monthly magazine was discontinued due to conditions brought about by the War. It is hoped that we will be in position to resume publication at an early date.

The rationing of tires and gasoline and congested travel conditions served further to reduce the Commission's participation in other phases of conservation education formerly carried on. No Fair Exhibits have been prepared and no wildlife contests of any kind have been held.

MOVING PICTURES

Calls are continuing to come in for permission to show the Commission's motion picture "Our Heritage." Requests to show the film in other States are not at all uncommon. During the past two years these requests have been received from the States of New York, Illinois, Louisiana, Ohio and Georgia. The picture has been shown twelve times in the State of Illinois. In addition to this, copies of the film are constantly on the move through all parts of Florida where it is shown before schools, sportsmen's organizations, civic clubs and other interested groups.

The Commission plans at a very early date to have another picture made which will help to bring conservation of wildlife even more vividly before the public eye.

NEWS STORIES AND OTHER PUBLICITY

Possibly the most valuable piece of publicity which has ever come to the Commission was a story written by Harold Titus and appearing in the February 1944 issue of Field and Stream. Material for this story was furnished by the Commission. Pictures of Florida scenes were furnished by the Commission and also by Dave Newell, Editor of Field and Stream and one time resident of Florida. This article was the means of bringing Florida and the work of the Commission before the eyes of the Nation and the value of such publicity cannot be estimated in any terms.

The Florida Highways magazine has also carried several articles with reference to the work of the Commission and the value of Florida's wildlife resources. In addition to this, the Commission, from time to time, has furnished to the press of the State, articles which tend to keep the public advised as to the work which they are doing.

SOURCE OF REVENUE DURING BIENNIUM ENDING JUNE 30, 1944
CLASSIFIED LIST OF LICENSES SOLD

Fishing Licenses—					
Series A—Resident State	\$1.00	59,071	\$ 59,071.00	64,003	\$ 64,003.00
Series B—Non-Resident State	5.00	5,425	27,125.00	7,432	37,160.00
Series C—Non-Resident 10-day Trip	2.00	7,508	15,016.00	8,604	17,208.00
Total	-----	72,004	\$101,212.00	80,039	\$118,371.00
Hunting Licenses—					
Series I—Resident County	\$1.00	44,580	\$ 44,580.00	29,034	\$ 29,034.00
Series J—Resident County, Other than Home	3.00	457	1,371.00	413	1,239.00
Series K—Resident State	5.00	19,631	98,155.00	21,068	105,340.00
Series L—Non-Resident	25.00	122	3,050.00	164	4,100.00
Series M—Non-Resident, 10-day Trip	10.00	291	2,910.00	418	4,180.00
Series 1-M—Non-Resident 3,000 Acre Owner	10.00	17	170.00	16	160.00
Alien License	50.00	-----	-----	-----	-----
Total	-----	65,098	\$150,236.00	51,113	\$144,053.00
Trapping Licenses—					
Series N—Resident	\$3.00	1,418	\$ 4,254.00	1,928	\$ 5,784.00
Series O—Non-Resident County	25.00	1	25.00	1	25.00
Series P—Resident State	25.00	5	125.00	18	450.00
Series Q—Resident Other than Home County	10.00	25	250.00	48	480.00
Total	-----	1,449	\$ 4,654.00	1,995	\$ 6,739.00
TOTAL LICENSE SALES	-----	138,551	\$256,102.00	133,147	\$269,163.00

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GAME AND FRESH WATER FISH COMMISSION

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**STATEMENT OF
Receipts and Disbursements**

July 1, 1942 to June 30, 1943

RECEIPTS

Balance on hand June 30, 1942		\$111,541.07
Hunting Licenses	\$150,161.00	
Fishing Licenses	96,396.00	
Trapping Licenses	4,597.00	
U. S. Forest Permits	2,052.98	\$253,206.98

COMMERCIAL LICENSES

Retail Fish Dealers	\$ 2,750.00		
Wholesale Fish Dealers	700.00		
Commercial Boat	403.20		
Boat for Hire	2,906.50		
Game Farm Licenses	75.00		
Wholesale Fur Dealers and Agents	1,130.00		
Local Fur Dealers	200.00		
Guide Licenses	210.00	\$ 8,374.70	
Court Costs	\$ 4,604.46		
Miscellaneous	4,448.26		
Confiscated Boats	228.00		
Confiscated Fish	27.84		
Sale of Old Equipment	350.00		
Confiscated Furs and Hides	107.75		
Previous Year's Licenses	556.00	\$ 10,322.31	\$271,903.99
Receipts from Pittman- Robertson		29,495.30	29,495.30
			<u>\$412,940.36</u>

DISBURSEMENTS**ADMINISTRATION**

Office Salaries	\$ 10,403.10
Traveling, Executive Secretary	1,112.60
Traveling, Commissioners	1,051.81
Miscellaneous	937.64
Office Supplies	257.36
Postal, Telephone and Tele- graph	954.91
Printing and Stationery	2,766.18
Premium on Bonds	40.00
	\$ 17,523.60

FIELD EXPENSE

Salaries, Conservation Of- ficers	\$100,449.60	
Traveling, Conservation Of- ficers	78,923.35	
Legal Expense	100.00	
Miscellaneous, Field	2,159.33	
Premium on Compensation Insurance	1,129.33	
Premium on Bonds	495.00	
Equipment Purchased	995.23	
Maintenance of Equipment	998.05	
Rewards Paid	50.00	
Restocking	491.10	\$185,790.99

EDUCATION

Salaries	\$ 300.00	
Miscellaneous	11.86	
Moving Pictures	46.53	358.39

HATCHERIES

Blackwater Game Farm and
Hatchery:

Salaries	\$ 2,775.00	
Labor	890.50	
Supplies	132.48	
Express	2.28	
Feed	388.85	
Fertilizer	66.42	
Gas and Oil	612.25	
Insurance	53.08	
Repairs to Equipment	60.00	
Truck Repairs	716.18	
Restocking	45.00	\$ 5,742.04

Wewahitchka Hatchery:

Salaries	\$ 200.00	
Labor	9.00	
Gas and Oil	8.75	
Repairs	166.01	\$ 383.76

Winter Haven Hatchery:

Salaries	\$ 3,247.40	
Labor	46.00	
Traveling	234.75	
Land Purchased	875.00	
Improvements	164.80	
Repairs to Equipment	225.00	
Supplies	116.19	

Truck Operation	401.69			
Gas and Oil	546.77			
Insurance on Truck	69.90	\$ 5,927.50	\$215,726.28	
Relief of E. L. Smith (Acts 1939)	600.00			
Pittman-Robertson Expendi- tures	47,034.15	47,634.15	47,634.15	

CASH ACCOUNT

Balance in State Treasury .	\$130,798.83			
Balance in Lewis State Bank	23,376.85	154,175.68		
Less County Judges' Credits	20.75			
Less Hendry County Deer Restocking Fund Reserve	4,575.00	4,595.75	149,579.93	
			<u>412,940.36</u>	

GAME AND FRESH WATER FISH COMMISSION

STATEMENT OF Receipts and Disbursements

July 1, 1943, to June 30, 1944

RECEIPTS

Balance on hand June 30, 1943	\$149,574.93	
Hunting Licenses	\$143,861.00	
Fishing Licenses	114,683.00	
Trapping	6,727.00	\$265,271.00
U. S. Forest Permits	2,871.62	2,871.62

COMMERCIAL LICENSES

Retail Fish Dealers	\$ 3,975.00		
Wholesale Fish Dealers	1,200.00		
Commercial Boat	545.60		
Boat for Hire	2,965.00		
Game Farm Licenses	40.00		
Wholesale Fur Dealers and Agents	1,415.00		
Local Fur Dealers	160.00		
Guide Licenses	160.00	10,460.60	
Court Costs	6,945.35		
Miscellaneous	2,255.88		
Confiscated Boats, Nets and Motors	677.00		
Confiscated Fish	81.60		
Sale of Old Equipment	825.00		
Confiscated Furs and Hides	140.75		
Previous Year's Licenses	4,971.00	15,896.58	294,499.80
Receipts from Pittman- Robertson		16,487.79	16,487.79
Refunds		53.91	53.91
			\$460,616.43

DISBURSEMENTS

ADMINISTRATION

Office Salaries	\$ 10,995.02
Traveling Director	1,394.50
Traveling Commissioners	885.32
Miscellaneous	538.25
Office Supplies	228.52
Postage, Telephone and Tele- graph	1,177.87
Printing and Stationery	2,725.98
Premium on Bonds	45.00
	\$ 17,990.46

FIELD EXPENSES

Salaries, Conservation Of- ficers	\$ 91,934.73		
Traveling, Conservation Of- ficers	75,352.29		
Premium on Bonds	320.00		
Legal Expense	211.29		
Miscellaneous, Field	3,262.27		
Premium on Compensation Insurance	665.53		
Equipment Purchased	519.50		
Maintenance of Equipment	750.51		
Rewards Paid	200.00		
Restocking	152.95	\$173,369.07	

HATCHERIES

Blackwater Game Farm and
Hatchery:

Salaries	\$ 2,600.00		
Labor	804.66		
Supplies	32.63		
Express and Telegrams	15.97		
Feed	177.27		
Fertilizer and Seed	169.65		
Gas and Oil	430.69		
Insurance	178.88		
Repairs to Equipment	200.72		
Truck Repairs	324.96	\$ 4,935.43	

Wewahitchka Hatchery:

Salaries	\$ 480.00		
Supplies	3.75		
Gas and Oil	10.75	494.50	

Winter Haven Hatchery:

Salaries	\$ 4,402.50		
Labor	99.00		
Traveling	325.95		
Repairs to Equipment	145.88		
Supplies	139.54		
Truck Operation	246.71		
Gas and Oil	476.94		
Insurance on Truck	70.30	5,906.82	202,696.28
Relief of E. L. Smith (Acts 1939)	600.00		
Relief of J. A. McKeithen (Acts 1941)	812.50		
Pittman-Robertson Expendi- tures	21,451.22	22,863.72	22,863.72

CASH ACCOUNT

Balance in State Treasury	\$237,377.07		
Due from County Judges	2,586.00	239,963.07	
Less Hendry County Deer Restocking Fund Reserve	4,575.00		
Less Cancelled Warrant Ac- count	331.64	4,906.64	235,056.43
			<u>\$460,616.43</u>

GAME AND FRESH WATER FISH COMMISSION

STATEMENT OF
Receipts and Disbursements

July 1st, 1944 to December 31st, 1944

RECEIPTS

Balance on hand June 30, 1944			\$235,056.43
Hunting Licenses	\$186,297.00		
Fishing Licenses	54,244.00		
Trapping	4,221.00	\$244,762.00	
U. S. Forest Permits	3,796.34	3,796.34	

COMMERCIAL LICENSES

Retail Fish Dealers	\$ 3,435.00		
Wholesale Fish Dealers	1,550.00		
Commercial Boat	434.20		
Boat for Hire	3,084.00		
Game Farm Licenses	65.00		
Wholesale Fur Dealers and Agents	995.00		
Local Fur Dealers	50.00		
Guide Licenses	130.00	9,743.20	
Court Costs	2,132.38		
Miscellaneous	2,987.25		
Confiscated Boats	422.25		
Confiscated Fish	133.27		
Sale of Old Equipment	595.50		
Confiscated Furs and Hides	4.55		
Previous Year's Licenses	3,892.00	10,167.20	268,468.74
Cancelled Warrant Account	331.64		
Refunds	56.49	388.13	388.13
			<u>\$503,913.30</u>

DISBURSEMENTS

ADMINISTRATION

Office Salaries	\$ 5,626.23		
Traveling Director	638.20		
Traveling Commissioners	694.31		
Miscellaneous	289.33		
Office Supplies	216.82		
Postage, Telephone and Tele- graph	733.15		
Printing and Stationery	2,682.81		
Premium on Bonds	35.00	\$ 10,915.85	

FIELD EXPENSES

Salaries, Chief Conservation Officers	\$ 4,275.00		
Salaries, Conservation Officers	44,983.87		
Traveling, Chief Conservation Officers	5,442.00		
Traveling, Conservation Officers	34,903.46		
Premium on Bonds	245.00		
Legal Advertising	190.23		
Legal Expense	125.00		
Miscellaneous, Field	1,616.98		
Premium on Compensation Insurance	1,367.62		
Equipment Purchased	651.57		
Maintenance of Equipment	587.54		
Rewards Paid	200.00	\$ 94,588.27	

HATCHERIES

Blackwater Game Farm and Hatchery:

Salaries	\$ 900.00		
Labor	1,066.21		
Supplies	17.78		
Express and Telegrams	8.09		
Feed	107.35		
Fertilizer and Seed	12.00		
Gas and Oil	425.59		
Truck Repairs	745.45	\$ 3,282.47	

Wewahitchka Hatchery:

Salaries	\$ 240.00		
Labor	16.00		
Supplies	2.75		
Gas and Oil	12.45	\$ 271.20	

Winter Haven Hatchery:

Salaries	\$ 1,879.99		
Labor	120.00		
Traveling	192.47		
Supplies	152.83		
Truck Operation	279.81		
Gas and Oil	234.01	2,859.11	111,916.90
Publicity and Education Salary	200.00	200.00	200.00
Relief of E. L. Smith (Acts 1939)	300.00		

Pittman-Robertson Expenditures	68,734.41			
Refunds	100.00	69,134.41	69,134.41	
CASH ACCOUNT				
Balance in State Treasury	\$302,329.43			
Balance in Lewis State Bank	24,923.56	327,252.99		
Less County Judge's Credit	16.00			
Less Hendry County Deer Restocking Fund Reserve	4,575.00	\$ 4,591.00	\$322,661.99	
			<u> </u>	
			\$503,913.30	

In their Country's Service

- ★ Edward Griffin
- ★ Bill Hendry
- ★ Kelly Parker
- ★ Randolph Saxon
- ★ George T. Sharpe
- ★ James M. Shaw
- ★ Howard K. Stalls





BIENNIAL REPORT

For Period Ending December 31, 1946



State of Florida

Game and Fresh Water Fish Commission

University
of Florida
Libraries



Biennial Report

GAME AND FRESH WATER FISH
COMMISSION

of the

STATE OF FLORIDA

BIENNIUM ENDING

December 31, 1946



Submitting Report

Tallahassee, Florida

Mr. L. G. Morris, Chairman
Game and Fresh Water Fish Commission
State of Florida

Sir:

I am submitting herewith the report of the work of the Game and Fresh Water Fish Commission of the State of Florida for the conservation of Florida's Wildlife Resources during the biennium closing December 31, 1946.

Respectfully yours,

A handwritten signature in black ink, appearing to read "I. N. Kennedy". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

I. N. KENNEDY,
Director.

205459

**GAME AND FRESH WATER FISH
COMMISSION
STATE OF FLORIDA**

FIRST CONGRESSIONAL DISTRICT

L. G. Bruce, Bartow, Florida

SECOND CONGRESSIONAL DISTRICT

Lester Varn, Jacksonville, Florida

THIRD CONGRESSIONAL DISTRICT

L. G. Morris, Monticello, Florida

FOURTH CONGRESSIONAL DISTRICT

J. W. Corbett, Ft. Pierce, Florida

FIFTH CONGRESSIONAL DISTRICT

John S. Clardy, Ocala, Florida

L. G. MORRIS, Chairman
I. N. KENNEDY, Director
Tallahassee, Florida

OFFICE PERSONNEL

I. N. Kennedy, Director
Alice S. Burr, Secretary
C. R. Phillips, Auditor
Edith Bevan, Stenographer
Olive Yancey, Stenographer
Betty Sisk, Stenographer
J. F. Parramore, Publicity Director
John F. Dequine, Fisheries Biologist
Earl Frye, Wildlife Biologist (Pittman-Robertson)

Letter of Transmittal

Tallahassee, Florida

To His Excellency
Millard F. Caldwell
Governor of the State of Florida

Sir:

I have the honor of transmitting herewith the biennial report of work that has been done for the conservation of Florida's wildlife resources, as directed by the Game and Fresh Water Fish Commission during the period closing December 31, 1946.

Respectfully submitted

A handwritten signature in black ink, appearing to read "L. G. Morris". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

L. G. MORRIS,
Chairman.



Enforcement Personnel

FIRST CONSERVATION DISTRICT

D. F. SMOAK, Chief Conservation Officer

Conservation Officers: G. L. Abbott, A. A. Albritton, J. E. Albritton, Ralph C. Beville, H. C. Bigbie, Dewey Boyd, Ira Brewer, E. P. Campbell, J. L. Cathcart, R. N. Cook, R. E. Croyal, J. W. Crum, E. E. Douglas, J. H. Douglas, Roscoe Godwin, M. E. Grantham, John N. Hardin, Thomas F. Kirk, L. F. Lowe, A. B. Nathe, James T. Philbin, J. L. Powers, G. W. Shackelford, W. W. Sheretz, S. B. Snell, Thomas Stanaland, E. S. Sumner, Leffy L. Taylor, Oscar J. Taylor, Frank Turner, Carl C. Walker, C. E. Watson, E. M. White, Walter Whitehead, H. O. Whittle, C. C. Youmans.

SECOND CONSERVATION DISTRICT

LESTER MIKELL, Chief Conservation Officer

Conservation Officers: Dan N. Adams, William C. Arline, T. M. Baker, James J. Clary, John S. Croft, Jessie W. Dukes, B. F. Folsom, John F. Futch, George H. Green, Martin V. B. Green, L. L. Harvey, George A. Hendry, G. C. Hill, Henry Howell, James O. Hudson, Lum Hudson, M. L. Johns, J. P. Jones, Fred Kirkland, B. E. Leggett, A. S. McEwen, J. O. McMullen, Robert K. Mitchell, M. L. Nobles, C. E. North, Broward Padgett, Leslie B. Pigue, Mark Read, J. A. Revels, M. C. Sikes, J. W. Simmons, D. H. Smith, Joe C. Smith, Howard K. Stalls, Herbert Stokes, L. A. Stokes, J. J. Walker, Von Walker, D. A. Yarbrough.

THIRD CONSERVATION DISTRICT

FRANCIS E. VILLAR, Chief Conservation Officer

T. G. STEELE, Ass't. Chief Conservation Officer

Conservation Officers: O. L. Allen, George Y. Arrants, J. M. Atkins, George V. Atkinson, W. L. Boyd, C. P. Bush, F. J. Chambless, Lothair Chester, Lee Duggar, Joe B. Dykes, John Elderkin, James Fields, J. C. Gerrell, T. L. Griffin, Leslie A. Harrell, J. H. Harrison, H. E. Helms, R. K. Henderson, R. N. Hill, J. D. Hopkins, Sam Hunter, J. O. Johnson, Walter Larkins, B. W. Lee, Allen Legrone, R. E. Little, A. D. Livingston, Malcolm H. McCoy, S. P. McDonald, D. D. Miller, H. C. Pelt, S. B. Spears, W. J. Stewart, W. L. Stelts, W. M. Stokes, Jr., O. L. Vause, E. E. Whiddon, Virge Williams, I. R. Willingham.

FOURTH CONSERVATION DISTRICT

CURTIS E. WRIGHT, Acting Chief Conservation Officer

Conservation Officers: J. Ray Barnes, L. E. Bunnell, G. M. Cooper, J. O. Cross, T. J. Daigneau, Robert A. Dyches, I. R. Gidden, Ralph W. Hartman, Vernon W. Hays, Axel Jensen, J. S. Lanier, Harney R. McCain, R. R. Merritt, W. J. Newton, George N. Trumble, Erwin Winte, K. A. Wood.

FIFTH CONSERVATION DISTRICT

C. J. FINLEY, Chief Conservation Officer

Conservation Officers: J. D. Beveridge, L. R. Bronson, J. O. Buckles, Grady Cason, Charlie Clark, Wayne A. Clifton, S. C. Collier, Levander DeLong, M. J. Dreggors, E. M. Ferrell, E. S. Hill, Leo Godwin, D. C. Land, Tom W. Lanier, H. L. Lungren, Robert M. Moore, Alvin Pacetti, J. R. Parker, V. R. Perryman, R. Remington, E. H. Richey, Vanness Seckinger, W. C. Tanner, M. P. Thompson, L. A. Tindall, George Townsend, J. C. Trice, J. B. Walker, Mallory Welch, W. H. Wiggins.

Introduction

The Game and Fresh Water Fish Commission of Florida as it exists today was created by a Constitutional Amendment, passed by the 1941 session of the Legislature and ratified by the voters of Florida on November 3, 1942. It is a five man board, with members appointed by the Governor for a five-year term. One member is appointed for each of the Congressional Districts as they existed in 1941.

The Commission is comprised of the following members:

First District—L. G. Bruce of Bartow. Mr. Bruce's present term of office will expire January 6, 1948.

Second District—Lester Varn of Jacksonville. Mr. Varn has just been reappointed to serve until the 1947 Senate.

Third District—L. G. Morris of Monticello. Mr. Morris's term of office expires January 6, 1947.

Fourth District—J. W. Corbett of Ft. Pierce. Mr. Corbett is serving under an appointment which expires with the next Senate.

Fifth District—John S. Clardy of Ocala. Mr. Clardy was appointed to a term of office expiring with the 1945 session of the Senate but for some reason, his appointment was not certified to the Senate, and he is holding office pending another appointment and confirmation by the Senate.

The fact that each succeeding Governor has seen fit to re-appoint these five men upon expiration of their various terms of office is proof of their fitness for the jobs which they hold. Each of them is now finishing better than five years of service as Members of the Commission.

No compensation was allowed under the law for Commission Members. They receive only their necessary traveling or other expenses incurred in connection with their official duties.

In January of 1946, Mr. L. G. Morris, Commissioner for the Third District, was elected as Chairman. I. N. Kennedy is serving in the capacity of Director. The duties of the Commission are many and varied. The most important one is the establishing of seasons, methods of taking and bag limits for the many species of fresh water fish and wildlife found within the State.

Other duties are the restocking of woods and streams when found necessary, the closing of areas as Breeding Grounds, the removal of predators to both fish and wildlife.

In establishing seasons and bag limits which will prevail during a given hunting, fishing or trapping season, the Commission has adopted a policy of requesting the various sportsmen organizations to be on hand and make their recommendations prior to final approval. Notification of the meeting when hunting, fishing and trapping regulations are to be approved is also placed in every newspaper in the State and the public is cordially invited to attend and make whatever recommendations they wish.

Restocking of both woods and streams has been carried on through operation of fish hatcheries by the Commission and the purchasing from outside sources of quail and deer.

To assist in predator removal the Commission during the past two years has carried on a bounty program which called for the expenditure of some \$40,875.15. Funds which came to Florida from the operation of the Pittman-Robertson Act—Federal Aid to Wildlife Restoration Act—were greatly reduced during the war period. The first allocation of funds coming to Florida from this source following the war amounted to \$31,285.61. This amount must be matched with \$10,428.54 of State funds, making a total of \$41,714.15 which is available this year for operation of Federal Aid Projects. At the present time we have in operation two Federal Aid Projects, with three others approved but not yet in operation.

Our Field Force which came in for such a reduction during war periods now shows an increase from 90 Conservation Officers as of December 31, 1944, to 162 as of December 31, 1946.

The Game and Fresh Water Fish Commission is financed entirely from funds derived from the sale of hunting, fishing and trapping licenses together with a small number of commercial licenses. During the fiscal year 1944-45 total receipts to the Game and Fresh Water Fish Commission amounted to \$371,789.12. In the fiscal year 1945-46 the total amount of money coming to the Commission was \$545,180.23. With this increase of funds available for the operation of the Commission, increase in the salary and travel allowance for Conservation Officers was made possible. Today the monthly average salary of Conservation officers is \$235.00 as compared with \$165.00 for the year 1944.

A detailed account of all of the activities of the Game and

Fresh Water Fish Commission during the past two years follows :

LICENSES

Hunting, fishing and trapping licenses are sold by the several County Judges over the State, who are permitted a fee of 25c for each license \$3.00 or less and 50c for each license costing over \$3.00. From this source the County Judges in Florida received during 1944-45 a total of \$50,583.50 and in 1945-46 a total of \$50,295.25. Commercial licenses are sold direct from the office of the Game and Fresh Water Fish Commission in Tallahassee.

The only exemptions permitted under the law are to children under the age of 15 and residents over the age of 65 years. Another provision of the law permits residents fishing with not more than three poles and lines at any one time in the county of their legal residence to do so without being required to purchase a license.

FISHING

Series A—Resident State, Fresh Water	\$2.00
Series B—Non-Resident State, Fresh Water	7.50
Series C—Non-Resident, 10-Day Continuous Fishing, Fresh Water	2.25

License required to take fresh water fish from St. Johns River, including Doctor's Lake, North to the Florida East Coast Railway Bridge in Duval County, or in the waters of Lake Okeechobee or in that part of Crescent Lake and Dunn's Creek in Putnam County.

License not required of residents to fish non-commercially with three poles and lines in county of legal residence.

Use of more than a single pole and line at any one time anywhere else in the State prohibited.

GAME*

Series I—Resident County Game	\$ 2.00
Series J—Resident, Other Than Home County	4.50
Series K—Resident, State	7.50
Series L—Non-Resident, State	26.50
Series M-1—Non-Resident County, Owners of and paying taxes on 3.000 acres of land	11.50

Series Y—Guide, required for guiding hunting parties. Guides may not take game or carry rifle or shotgun while conducting party. Issued from office of Commission, Tallahassee	10.00
Alien Hunting—Issued from office of Commission, Tallahassee	50.00

TRAPPING*

Series N—Resident, County	\$ 3.25
Series O—Non-Resident, County	25.50
Series P—Resident, State	25.50
Series Q—Resident of County Other Than Home ...	10.50
Series R—Non-Resident, State	100.50

COMMERCIAL LICENSES

(Issued from Office of Commission, Tallahassee)

DEALERS IN ALLIGATOR SKINS AND GREEN OR DRIED FURS (SKINS)

Series S—Resident local dealer or buyer (must not solicit by mail, advertise, travel to buy or employ agents to buy).....	\$ 10.00
Series T-1—Resident State Dealer or Buyer.....	100.00
Series T-2—Agent for licensed "Resident State Dealer or Buyer"	5.00

FRESH WATER FISH DEALERS

Series U—Resident retail. May sell to consumer or dealer. If he takes fish must have also license for boat	\$ 5.00
Series V—Resident Wholesale, (to sell or ship by half-barrel, barrel or in bulk).....	50.00
Non-resident or Alien, (to sell to consumer or wholesaler). If holder catches fish must secure license for taking and license for boat.....	50.00
Non-Resident Wholesale (to sell or ship in half-barrel, barrel or bulk).....	500.00

* Report of Game and Fur-bearers taken in *previous season* must be filed with County Judge when applying for hunting or trapping license. Failure to file data on blank form attached to application is cause for refusal of license.

BOATS FOR HIRE

Series W—Required for each boat rented for hunting, or fishing in fresh waters:

18 feet length.....	\$ 1.50
19-21 feet length.....	4.00
21-25 feet length.....	15.00
Over 25 feet length	25.00

COMMERCIAL BOATS

Series X—Resident, fish boat twenty feet long, five foot beam and under..... \$ 1.00

Ten cents for each additional foot in length of beam.

Non-Resident, fish boat 10.00

GAME FARM

Series Z—For operating privately owned Game Farms \$ 5.00

*The
Commission's
Report*

Florida's Wildlife Today

The supply of game in Florida, while not entirely satisfactory, cannot be said to be alarmingly low. The question which gives the Commission most concern is the constantly increasing number of hunters and the yearly decreasing number of acres of land which remain open to hunting as the cattle industry continues to grow. At the present time the Commission has a Wildlife Biologist working on this matter in an effort to arrive at a solution. The species of wildlife most gravely affected by the cattle industry is quail, but of course, deer, turkey and squirrel come in for their share as acre after acre of what used to be open hunting territory is fenced, cleared and made into improved pasture land where no cover is left for wildlife.

During the fiscal year ending June 30, 1945, the number of hunting licenses sold totaled 68,366; 752 non-resident and 67,614 resident. For the fiscal year ending June 30, 1946, the number of hunting licenses jumped to 76,317. 1,087 non-resident and 75,230 resident. Sales of licenses so far in 1946-47 indicate a still further increase.

If the number of hunters continues to increase it is going to be necessary to reduce the seasons during which game may be taken and also make a reduction in the day's bag of each species taken, if we are going to continue to have an adequate supply of game on hand.

Fresh water fishing still remains Florida's top attraction. For the fiscal year 1944-45 the total number of fishing licenses was 92,181. This included 18,899 non-resident licenses and 73,282 resident licenses. In 1945-46 the total number of fishing licenses sold amounted to 84,689, 25,669 non-resident and 59,020 resident. These figures, of course, do not take into consideration the number of residents who confine their fishing to their home counties and, therefore, are not required to have a license to fish with pole and line. By bringing to a close the commercial seining and sale of all fresh water fish in Florida, the Commission hopes to be able to retain its bountiful supply of game fresh water fish during the years to come, even in the face of the increasing number of persons who seek this form of recreation.

Fur bearers in Florida amount to very little. Due to the fact that our warm climate makes it impossible for the animals to produce prime furs, this industry does not amount to a great deal in the State. During 1944-45, 1,480 persons purchased trappers licenses. In 1945-46 the number of trappers stood at 1,459. In addition to this, 13 fur dealer's licenses were sold during 1944-45 and 15 in 1945-46.

During the past two years, the Commission has secured the services of a Wildlife Biologist and a Fisheries Biologist. A scientific study of the supply of fish and wildlife on hand is being made. At the same time programs are being formulated with a view to increasing this supply.

The following is a brief summary report of the species of wildlife found in Florida.

GAME ANIMALS

Florida has two species of wildlife classified as "Game Animals." These are the deer and the squirrel.

DEER

The deer population in Florida was greatly decreased when local laws gave to the State Live Stock Sanitary Board authority to kill deer in areas which were found to be infested with cattle fever tick. According to available figures 731 deer were killed in Orange and Osceola Counties, 136 were killed in Glades and Highlands Counties, 183 were killed in Hendry County, and 8,428 were killed in Collier County, bringing the total number of deer killed in tick eradication work to 9,478. Since these deer were killed in our most densely populated areas, it is only natural that our deer population suffered greatly. It is on the increase, however, and it is hoped that before many years pass, our deer will be restored to their former number. The last available kill figures on deer stands at 2,241 as compared with 1,929 during the previous year.

SQUIRREL

There are two species of squirrel found in Florida, the gray or cat squirrel and the fox squirrel. The squirrel population varies in different sections of the State. In the Northern and Western portion squirrel are very numerous while down in the central portion of the State some Counties report that they are almost completely gone and that restocking is going to be necessary. Fox squirrel, which at one time were very numerous in most sections of the State were almost completely wiped out by disease several years ago. They are making a come back

now and in an effort to preserve this species, the Commission set the number which could be taken at 3. Cat or gray squirrel are more numerous and the day's bag on them stands at 10. The last kill record on squirrel was 264,535 as compared with 325,429 for the year previous.

GAME BIRDS

We have three birds in Florida classified as "Game Birds," the quail, wild turkey and marsh hen.

QUAIL

Quail still remains the hunter's favorite game bird. During 1945-46 hunting season this game bird became so scarce in Florida as to cause grave concern and the Commission received several requests to close the State entirely to the hunting of quail until they could make a come back. Rather than take this drastic action the Commission reduced the day's bag from 15 to 12, hoping that this reduction would have the necessary result on the quail population. Reports coming in to the office prior to the opening of the 1946-47 hunting season seem to indicate approximately a 75% increase, but the kill figures for this period will not be available until the 1947-48 hunting licenses are sold. The last kill figures which are available are for the year 1944-45 during which 448,715 quail were killed.

WILD TURKEY

The wild turkey population in Florida is definitely on the increase. Because of this the Commission has seen fit to increase the bag limits from 1 per day and three for the season to 2 per day and four for the season. The last kill record shows that 3,690 turkey were killed during 1944-45. This was prior to the increase in bag limits, however, so no comparison is readily available at this time. Reports from the field indicate approximately a 20% increase of turkey for the 1946-47 hunting season.

MARSH HENS

Marsh hens are found only along the upper East Coast line of the State. They are found in great numbers there and are easily taken during the open season which begins on September 15 and runs to November 20. A day's bag of 20 is permitted, but no kill records are available on this species.

MIGRATORY BIRDS

Migratory birds are controlled by the U. S. Fish and Wildlife Service. Any decrease in population is immediately reflected by a decrease in bag limits and a reduction in the length

of time during which they may be taken. Once the season is established by the Wildlife Service, a State may shorten it or reduce the bag limit but in no case may a State have a longer season or a larger bag.

DOVE

The dove population in Florida is controlled by two things—the hatching season for our native dove which are quite numerous, and the influx of the migratory dove which come yearly to Florida. The first migration of dove into Florida comes during the month of October and the birds are to be found principally in Dade, Broward and Monroe Counties where we have no native dove. To provide hunting of dove for these three counties, the Wildlife Service permits dove to be taken there during the month of October. In the remainder of the State where native dove are to be found the season begins on November 20, and extends through January 18, and the bag set at 10.

Dove are definitely on the increase in Florida. They have made a marked come back since 1940 when so many of them were killed by the unprecedented cold weather. The last kill record for this bird showed 277,231 killed as compared to a low of 159,379. All indications for 1946-47 point to a good season for dove.

DUCK

The duck population over the country has again been hit by disaster. Reports coming from the U. S. Fish and Wildlife Service warn of a very greatly reduced supply for the 1946-47 hunting season. The season in 1944-45 and 1945-46 was established from November 2 to January 20. For 1946-47 the season was set from November 23 to January 6. In addition to this reduced season, the day's bag has been reduced from 10 to 7, and sportsmen have been requested to refrain from taking the full day's bag on every day hunted. The last available kill report on duck showed 98,078 killed during 1944-45.

GEESE

Geese are found principally on the upper West Coast of Florida. The greater portion of the area where they were hunted in years gone by has been acquired by the U. S. Fish and Wildlife Service as a Migratory Bird Refuge. This leaves very little area where sportsmen who wish to take this species of migratory bird may hunt. The last kill record of geese was 1,003. This figure is high compared with kill records of previous years. They may be taken during the same period approved for duck and the day's bag has been set at 2.

FUR-BEARING ANIMALS

Fur-bearing animals in Florida are divided into two groups—the ones protected and for which a season is set, and the ones unprotected which may be taken at any time and in any manner. In the first group is the muskrat, raccoon, beaver, mink and otter. In the unprotected group is the skunk, red and gray fox, bear, opossum, panther, bobcat, civet cat and rabbit.

RACCOON

From the standpoint of number of furs taken, the raccoon leads among the fur-bearers. During 1944-45, 14,389 raccoon were reported taken in Florida. In 1945-46 12,858 raccoon were taken. Reports indicate that raccoon are very numerous in Florida.

OPOSSUM

The opossum is next in rank. In 1944-45, 4,512 opossum were reported trapped, but in 1945-46 this number dropped to 1,004. The opossum was declared to be a predator and a bounty of 50c was paid for each one killed. In this manner 32,346 were killed. The population, however, still remains high.

32,346 Killed During 1945-46



RED AND GRAY FOX

The fox was placed on the predator list and a bounty of \$1.00 offered for everyone killed. This accounted for 8,409. In addition to this, 1,457 were reported taken by trappers during 1944-45 and 250 were trapped during 1945-46.

SKUNK

Trappers accounted for 1,721 skunk during 1944-45 and 374 were trapped during 1945-46. The skunk was also placed on the predator list with a bounty of 50c offered for each one killed. This accounted for 9,544 being destroyed.

MUSKRAT

Very few muskrat are found in Florida. The Commission tried to stock them in Florida several years ago but the venture met with very little success. In 1944-45, 36 were reported taken by trappers.

OTTER

Of all the fur bearers to be found in Florida, the otter pelt brings the highest price. They are very scarce, however, and only 15 were reported taken during 1944-45. This number was increased to 379 during the 1945-46 fiscal year.

MINK

Mink are evidently on the increase in Florida, judging by the take record reported. In 1944-45, 120 were reported taken while in 1945-46 this number jumped to 461.

ALLIGATOR

Efforts are being made to restore our alligator population to something of its previous number. A closed season during the months of March, April and May has been established and in addition, it is unlawful to take alligators under four feet in length. It is hoped that the Legislature will see fit to provide a license for those who take alligators as well as a special license for those who deal in alligator hides and for operators of alligator farms.

FRESH WATER FISH

Florida's fresh water fishing is world renowned. In Florida the black bass grow to a size which exceeds those in every other portion of the country and other species of fresh water fish are to be found in every section of the State during the full twelve months in the year. It is very seldom that fishing parties fail to bring home a good catch of fresh water fish.

Perhaps the most forward step taken in wildlife conservation was taken by the Commission during the period covered by this report. In October of 1946 it became unlawful to take fresh water fish commercially and the sale of fresh water fish, whether the fish were taken in Florida or from waters of another State was prohibited. Prior to this action by the Commission fresh water fish had been seined commercially in the St. Johns River from the Volusia Bar North and in Lake Okeechobee under a law which designated those two bodies of water as salt water and placed them under the supervision of the State Board of Conservation. The Constitutional Amendment which created the Game and Fresh Water Fish Commission as a Constitutional body, placed the control of fresh water fish under the jurisdiction of the Commission regardless of where fresh water fish were found and also gave to the Commission the power to fix bag limits, open and closed seasons on a state-wide, regional or local basis, and to regulate the manner and method of taking, transporting, storing and using fresh water fish. Until the ratification of the Constitutional Amendment, the Game and Fresh Water Fish Commission had jurisdiction only over fresh water fish found in the fresh waters of the State. Clothed with this authority and power, the Commission adopted the regulation which put a stop to taking of fresh water fish by any method other than hook and line, rod and reel, bob, spinner, troll or trot line and prohibited the sale of fresh water fish except catfish, garfish, mudfish or blackfish. These last named fish may be taken commercially by methods approved by the Commission and under permits issued by the Commission.

There has been quite a bit of criticism of the Commission for prohibiting the sale of fresh water fish, the criticism being based upon the fact that such action meant the death of one of Florida's outstanding industries. The Commission would like to call attention to the fact that the major portion of the fresh water fish being sold are catfish. Catfish may still be sold, and there is no intention on the part of the Commission to cripple any industry.

The Commission operates three fish hatcheries from which fish are taken for restocking the waters of the State. There is also one Federal hatchery located at Welaka, Florida, from which fish are placed in Florida waters.

In Memoriam

ON December 22, 1946, George T. Sharpe, Conservation Officer for Broward County, was killed in line of duty while making an air patrol trip in an effort to apprehend illegal deer killers.

This space is dedicated to him in recognition of his faithful service to the conservation of Florida's wildlife.

The Commission's Activities

The Game and Fresh Water Fish Commission is completing four full years' operation under the Constitutional Amendment creating the Department as a Constitutional agency. We feel that much progress has been made. During the past two years the Commission has been able to increase its force of Conservation Officers, thereby insuring better enforcement of the laws. Salaries have been increased and expense allowances have been made more adequate. A Fisheries Biologist and a Wildlife Biologist have joined the staff of the Commission and it is planned that these two Departments will develop into a division sufficient to take care of all wildlife problems in a scientific manner. The seasons for taking game, fresh water fish and fur bearing animals as established by the Commission under powers granted by the Constitutional Amendment have served to do away with a great deal of the confusion which had resulted from the numerous local laws on the statute books, and the methods for taking and bag limits approved have assisted greatly in conserving Florida's wildlife resources. It is interesting to note the numbers of other States which are attempting to have their Game and Fish Departments placed under a management similar to that now in operation in Florida.

CONSERVATION OFFICERS

Law enforcement constitutes approximately 70% of the work carried on by the Commission. To do this important work the Commission employs a field force of 162 Conservation Officers. These men work under the direct supervision of five Chief Conservation Officers one for each of the five Conservation Districts.

In addition to law enforcement work, Conservation Officers are required to assist in restocking programs and predator control work, as well as represent the Commission locally in all matters pertaining to conservation. With the end of the War and the return to civilian life, the Commission is gradually building up its force of Conservation Officers to a number which will be able to give full protection to every section of the State.

LAW ENFORCEMENT

The major activity of the Commission is law enforcement. Our Conservation Officers are permitted the same fee for making arrests as that paid to Sheriffs and their deputies. In addition to this they are permitted to charge mileage of 12¹/₂¢ per mile three ways or 37¹/₂¢ per mile one way for transporting violators to court. The fee and mileage are assessed by the Court as costs in the case and the entire amount paid into the County Fine and Forfeiture Fund. Later upon invoice to the County from the Game and Fresh Water Fish Commission this amount is paid to the Commission by County Warrant. During the period covered by this report the Commission received \$13,517.05 from this source.

ARRESTS AND CONVICTIONS

It might be interesting to note that when the Commission made its last Biennial Report there were reported a total of 1,270 arrests for game law violations. These arrests resulted in 1,095 convictions, 140 acquittals and when the report went to press there were 35 cases still pending.

During the two year period covered by this report there were 1,971 arrests made for game law violations which resulted in 1,779 convictions, 178 acquittals and 14 cases pending. Another interesting fact is that 26 counties out of the 67 in Florida show a conviction for every arrest made. When our last report was made 22 counties showed convictions for every arrest made.

Since most of the work of the Commission is shown by Districts, another interesting comparison would be the number of arrests made by Districts as compared with those of the last report.

	1944-45	1945-46
First District	337	445
Second District	201	422
Third District	436	699
Fourth District	66	111
Fifth District	230	294

From the tabulation which follows you will note that violations of fishing laws caused the greater portion of arrests. 645 persons were arrested on the charge of "Fishing Without a License" while 221 were apprehended for "Possession of Under-sized Fish." Next in line is "Taking Bass in Closed Season" which caused the arrest of 112.

In game law violations "Taking Game During Closed Season" leads with 199, followed by "Hunting Without License" for which 99 persons were arrested.

Trapping law violations caused the arrest of 40 persons during the two year period covered by this report. The leading violation in this group is "Taking Alligators in Closed Season" which caused the arrest of 16 persons.

Except for a very few cases, all violations of the fish and game laws are tried in the County Judges' Courts. The Commission appreciates very much the cooperation given them by the several County Judges in Florida as reflected by the large number of convictions resulting from arrests made.

The tabulation of arrests by counties is also very interesting. Out of the 67 counties only one, Union, shows no arrests. Polk County leads with 119 arrests followed closely by Gulf with 106 arrests.

FISH AND FISHING

Fishing without license	645
Possession of undersized fish	221
Taking bass in closed season	112
Fishing with cast net or seine	70
Exceeding the bag limit on fish	63
Possession of cast nets or traps	44
Taking fish with gig	23
Fishing in closed waters	22
Fishing with more than one pole	21
Dynamiting fish	17
Taking fish with wire traps or baskets	16
Netting in fresh waters	14
Selling black bass	9
Selling fresh water fish	8
Fishing with bream for bait	5
Shooting fish	5
Fishing with gourd or iron	3
Fishing with jug	2
Renting boat without license	1
Interfering with Officer	1
Fishing with set pole and line	1
Transporting seine	1
Fishing with improper license	1

GAME AND HUNTING

Taking game during closed season	199
Hunting without a license	99
Possession of gun and dog in closed area	66
Hunting with unplugged gun	55
Hunting on closed day	39
Taking dove in closed season	33
Taking deer at night with light	16
Shooting on Tamiami Trail, Road 26 and Road 27	15
Hunting in breeding ground	14
Hunting over baited area	14
Taking duck in closed season	11
Hunting with light	11
Taking doe deer	9
Exceeding bag limit on game	7
Killing non-game birds	7
Possession of deer with sex identification removed	5
Hunting during closed season	4
Shooting waterfowl from motor boat	4
Shooting dove after sunset	4
Molesting game	4
Trapping quail	3
Hunting with improper license	3
Game on storage ten days after close of season	3
Taking marsh hen with motor boat	1
	<hr/>
	626

TRAPPING

Taking alligators in closed season	16
Trapping during closed season	9
Possession of hides in closed season	7
Trapping without license	5
Trapping in breeding ground	2
Possession of undersize alligators	1
	<hr/>
	40

ARRESTS AND CONVICTIONS FOR 1945 AND 1946

County	Arrests	Convictions	Acquittals	Pending
Alachua	59	56	3	
Baker	5	4	1	
Bay	42	37	5	

Bradford	3	3		
Brevard	8	8		
Broward	10	10		
Calhoun	34	30	4	
Charlotte	12	12		
Citrus	18	17	1	
Clay	10	10		
Collier	22	22		
Columbia	27	25	2	
Dade	48	44	4	
DeSoto	14	13	1	
Dixie	32	24	8	
Duval	43	21	12	10
Escambia	38	38		
Flagler	3	3		
Franklin	9	9		
Gadsden	39	38	1	
Gilchrist	9	7	2	
Glades	31	30		1
Gulf	106	95	11	
Hamilton	22	22		
Hardee	11	11		
Hendry	41	41		
Hernando	78	64	13	1
Highlands	20	20		
Hillsborough	25	25		
Holmes	17	15	2	
Indian River	3	3		
Jackson	75	68	7	
Jefferson	21	15	6	
Lafayette	28	25	3	
Lake	28	27	1	
Lee	30	27	2	1
Leon	39	33	6	
Levy	16	16		
Liberty	35	26	9	
Madison	17	14	3	
Manatee	5	5		
Marion	44	42	2	
Martin	11	11		
Monroe	3	3		
Nassau	83	80	3	
Okaloosa	56	46	10	
Okeechobee	3	3		
Orange	35	30	5	
Osceola	5	5		
Palm Beach	8	8		
Pasco	12	12		
Pinellas	35	35		
Polk	119	112	7	
Putnam	21	18	3	
St. Johns	67	67		
St. Lucie	3	1	2	
Santa Rosa	41	36	5	
Sarasota	12	12		
Seminole	25	23	2	
Sumter	16	16		

Suwannee	39	32	7	...
Taylor	29	21	8	...
Union
Volusia	24	23	1	...
Wakulla	45	42	3	...
Walton	51	42	8	1
Washington	51	46	5	...
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Total	1971	1779	178	14

Conservation Officer Trapping Quail



RESTOCKING

The Game and Fresh Water Fish Commission carries on restocking programs for fresh water fish, quail and deer. No restocking in turkey is being done because the Commission is anxious to retain in Florida the pure strain of bronze turkeys which are native to this State. An attempt has been made to preserve this species and to increase the population by reducing bag limits and shortening seasons, and in one section of the State, by prohibiting the taking of turkey hens.

GAME SANCTUARIES, REFUGES, RESERVATIONS

As another means of preserving our wildlife resources, the Commission maintains 118 closed areas over the State, located in 54 of our 67 counties. Within these areas predators are controlled and wildlife lives unmolested by hunters and trappers. The surplus which results from such protection is trapped and liberated in open areas where it later furnishes game for the Florida sportsmen.

QUAIL RESTOCKING

Quail restocking is carried on in two different ways. First quail are trapped in closed areas and liberated in pairs in open territory, and second, wild-trapped quail are purchased and

Placing Leg Band on Quail



liberated in pairs in open territory. Both of these methods have proved more successful than using pen-raised birds from the quail hatchery formerly operated at Holt, Florida. During the two years covered by this report Conservation Officers trapped and transported to open territory 1954 quail. Following the 1945-46 hunting season during which quail population apparently reached an alarmingly low figure, the Commission purchased some 16,000 quail which were distributed equally over the State. Orders have been placed for 40,000 quail which will be liberated over the State following the close of the 1946-47 hunting season. Quail purchased and liberated are banded with leg bands each bearing a number and "Notify Florida Game Commission." Bands sent in to the Tallahassee office indicate good results from the liberation of purchased birds.

FISH RESTOCKING

The Commission operates three fish hatcheries, one at Winter Haven, Florida, where black bass are propagated, one at Holt, Florida, where bream are propagated and one at We-wahitchka which furnishes fish for the Dead Lakes in Gulf and Calhoun Counties.

Fish Biologist Makes Survey of Lake Sue



In addition to this, there is a Federal Fish Hatchery located at Welaka, Florida, from which many fish find their way into the fresh waters of this State.

The following tabulation reflects the number of fish placed in Florida fresh waters from state and federal hatcheries in Florida during the period covered by this report:

	1944-45		1945-46	
	Bass	Bream	Bass	Bream
Winter Haven	341,000		425,000	
Holt		3,563,000		4,053,600
Welaka		50,350	30,375	

DEER RESTOCKING

After the counties which had been declared tick infested and in which deer had been killed thereby declaring it be tick free, it became necessary to start the long process of restocking the areas where the deer had been removed.

At one time the Commission employed a deer trapper and set up a Federal Aid to Wildlife Restoration Project for securing deer for restocking purposes. At the beginning of the war, it became necessary that other means of securing deer be found. No species except the Virginia Whitetail, a native of Florida, was to be used. This species of deer was found in the State of Wisconsin and trappers and game farms were found there which could supply our needs. The Legislature appropriated \$25,000 yearly for the two years covered by this Report to be used for this purpose and restocking got under way.

At first the deer were purchased for \$75.00 each. Before the end of the second year, the price was increased to \$90.00 and it was at this figure that deer were being purchased when a second outbreak of Texas fever tick put an end to deer restocking, at least for the time being. The \$25,000 which had been appropriated for deer restocking for 1946-47 was transferred to another fund to be used in tick eradication work in the counties where the new outbreaks occurred.

Since deer restocking began a total of 807 deer have been liberated in Florida. The money which resulted from the operation of the local laws applying to Hendry and Collier Counties still remains to be used. Hendry County has to its credit \$4,575.00 with which deer may be purchased and Collier County has \$3,680.00.

PREDATOR CONTROL

In January of 1945, at the request of sportsmen over the State, the Game and Fresh Water Fish Commission began a bounty program on predator control in an effort to determine whether the bounty method was the answer to predator control in Florida. Under the bounty program \$2.00 was offered for each bobcat taken, \$1.00 for each fox and armadillo and 50c for each skunk and opossum. Bounty was claimed by presenting the two front feet of each animal taken. In an experimentation carried on in the Third District a bounty of 25c was offered for each pair of garfish bills brought in. The Bounty has now been reduced to 10c. The first appropriation of \$15,000 for animals and \$5,000 for garfish was soon expended and an additional appropriation was necessary. In direct connection with the bounty program was a program to analyze the stomach content of the animals on which bounty was offered. This analysis was made possible through the cooperation of the Biology Departments of the several colleges located in Florida.

During the two years covered by this report a total expenditure of \$35,768.00 was made which resulted in the death of 8,409 fox, 1,786 bobcat, 9,544 skunk, 32,346 opossum and 2,842 armadillos. In addition to this \$7,949.75 was paid for garfish. To date a total of 33,014 garfish have been accounted for in this manner.

HYACINTH CONTROL

The menace of hyacinths in Florida has grown to such proportions that the U. S. Engineers have stepped into the picture. Experiments are being made all over the State in methods of hyacinth eradication, using various mechanical devices as well as chemicals. Should the results of these experiments warrant it, a Federal appropriation will probably be made and a large scale hyacinth eradication program started in Florida. Methods heretofore tried by the Game and Fresh Water Fish Commission have proved so costly as to make them prohibitive when considered in the light of the numerous bodies of water on which such a program would apply. It is hoped that an early report by the U. S. Engineers will be available and that a state-wide program will soon get under way, financed, if not in full at least in part by Federal funds.

COOPERATION

Florida has a number of agencies concerned primarily with conservation, operating within the State. It is only natural to assume that each one of these agencies at some time or other will run across efforts of another conservation agency.

State agencies concerned with conservation are the Florida Forest and Park Service and the State Board of Conservation. Federal agencies are the U. S. Forest Service, the U. S. Fish and Wildlife Service and the Soil Conservation Service.

THE SOIL CONSERVATION SERVICE'S Report To STATE OF FLORIDA GAME AND FRESH WATER FISH COMMISSION

For the Period Ending December 31, 1946

Farmers, ranchers, and grove owners, cooperating with organized Soil Conservation Districts in Florida are today applying soil and water conservation practices to cropland, range, and pasture land, and land best adapted to the production of wildlife crops. Because the things these farmers and ranchers must do to conserve and protect their soil and water resources are in a large measure the very things they should do to make their lands more habitable for wildlife, Soil Conservation Districts may well become one of the greatest forces for the conservation and natural increase of Florida wildlife.

Soil destruction and depletion and wildlife destruction were born of the same process. It is an established fact that the permanence of both our soils and our wildlife is conditioned on vegetation. Vegetation is the keynote of the program and recommended practices of the U. S. Soil Conservation Service. The proper coordination of the recommended practices of the Service which include pasture improvement, contour cultivation, terracing, reforestation, the construction of farm ponds and the proper management and development of small natural ponds, will materially affect the natural increase of the State's game and fresh water fish by restoring proper living conditions for them. Wildlife finds its place in a pattern of well-used land.

Throughout Florida there is a pressing need for better use of land and water and better adjustment of agriculture to the physical environment. The Soil Conservation Service recognizes farm ponds, both natural ponds and constructed ponds, as a key to water conservation in Florida and as potentially valuable also

in increasing opportunities for fishing provided they are properly constructed, stocked, and managed for that purpose. The Service biologist is at present making studies on twenty-three small ponds ranging in size from one-tenth of an acre to 12 acres. These ponds are located in eight Soil Conservation Districts in peninsular Florida, viz: Polk Soil Conservation District, Istokpoga Soil Conservation District, Pinellas Soil Conservation District, Gulf Soil Conservation District, Alachua Soil Conservation District, Oklawaha Soil Conservation District, Santa Fe Soil Conservation District, and the Withlacoochee Land Use Project.

The pond studies include fertilization to increase the per acre production of fish; the use of 2-4D on Water Hyacinths and other pond weeds; and the renovation of ponds by killing fish with Rotenone. Without the support and cooperation of the Game and Fresh Water Fish Commission, much of the work being done on fresh water ponds would not be possible.

In land management for upland game, the Soil Conservation Service has under consideration several plants which will do a two fold job of increasing the fertility of the soil as well as providing additional food during the season of the year when natural foods are relatively scarce. For the present the Service biologist is making extensive field trials with Bicolor Lespedeza. This perennial legume has proved successful in all southeastern states except Florida. In Florida Bicolor grows well but does not always make good seed.

In keeping with the Service policy of cooperatin with the Game and Fresh Water Fish Commission, a soil survey is being made on the experimental area of the Game and Fresh Water Fish Commission in Charlotte County. It is anticipated that the survey will be developed into a soil and water conservation plan within the next year.

FLORIDA FOREST AND PARK SERVICE

The Florida Forest and Park Service maintains areas over several sections of the State where forest conservation and restoration programs are carried on and where recreational facilities are furnished to the public. Within these areas wildlife is protected under a cooperative agreement with the Game and Fresh Water Fish Commission. The following areas are closed as Breeding Grounds under this agreement:

O'Leno State Forest in Alachua and Columbia Counties.

Pine Log State Forest in Bay and Washington Counties.

Gold Head Branch State Park in Clay County.

Suwannee River State Park in Hamilton and Suwannee Counties.

Highlands Hammock State Park and Botanical Garden and Arboretum in Highlands County.

Hillsborough River State Park in Hillsborough County.

Florida Caverns State Park in Jackson County.

Torreya State Park in Liberty County.

Myakka River State Park in Manatee and Sarasota Counties.

Cary State Forest and Ft. Clinch State Park in Nassau County.

In addition to the areas named above, Blackwater River Forest is also closed under agreement with the Game and Fresh Water Fish Commission. It is within the Blackwater River area that one of the State Fish Hatcheries is located. The hatchery came to the Commission under agreement with the Florida Forest and Park Service, which had received it under an agreement with the U. S. Soil Conservation Service.

STATE BOARD OF CONSERVATION

Conservation Agents, the members of the field force for the State Board of Conservation, and Conservation Officers, the members of the field force for the Game and Fresh Water Fish Commission, must work together if all fish conservation laws are to be observed. For this reason the members of the Conservation Department's field force hold commissions issued by the Game and Fresh Water Fish Commission and members of the Commission's field force hold commissions issued by the State Board of Conservation. In cases of violations of the law of either Department arrests may be made by officers of either. Persons apprehended are immediately turned over to the officers of the Department concerned.

STATE OF GEORGIA

The boundary between the State of Florida and the State of Georgia is the St. Marys River. For this reason it is necessary that seasons must coincide and that some workable agreement be reached between the two States. To this end, holders of valid Georgia fishing licenses are permitted to fish the Florida side of the St. Marys River without being required to purchase

Florida licenses, and holders of valid Florida licenses are permitted to fish the Georgia side of the river without Georgia license. Fishing parties fishing the river, however, are required to take off from the banks of the river in the State in which they are residents.

U. S. FISH AND WILDLIFE SERVICE

Conservation Officers employed by the Game and Fresh Water Fish Commission hold deputy commissions from the U. S. Fish and Wildlife Service and employees of the U. S. Fish and Wildlife Service are issued commissions by the Game and Fresh Water Fish Commission. Persons arrested for violation of the Federal laws are, for the most part tried in County Court in the same manner as are violators of State laws. Members of the field force also cooperate and assist in the Big Game Census and the Migratory Bird Census taken each year by the U. S. Fish and Wildlife Service.

EVERGLADES NATIONAL WILDLIFE REFUGE

Of particular note is the newly created Everglades National Wildlife Refuge. This Refuge is located in Dade and Monroe Counties and the entire area will be posted and closed to hunting, trapping or to any disturbance of animal or plant life. Violators are prosecuted in County Court in the same manner as are violators of the game laws. Federal personnel have been issued full commissions by both the Game and Fresh Water Fish Commission and the State Board of Conservation.

FEDERAL AID TO WILDLIFE RESTORATION

Supervision of the U. S. Fish and Wildlife Service is required with Pittman-Robertson Federal Aid to Wildlife Restoration. Florida has two Pittman-Robertson Projects under operation at the present time. Three others have been approved but are not yet under operation.

A brief report of the work undertaken with the two projects now in operation follows:

CHARLOTTE COUNTY QUAIL PROJECTS

In January, 1946, a Wildlife Biologist was employed by the Game and Fresh Water Fish Commission to investigate factors affecting quail abundance in South Florida. The research work was to be conducted on a 60,000 acre tract of flatwoods land

in Charlotte County purchased by the Game and Fresh Water Fish Commission with the aid of Federal Aid funds. As of July 1, 1946, this work was designated a Federal Aid project to be financed through the Federal Aid program and entitled the Charlotte County Quail Investigation. At the same time a second Federal Aid project, entitled Charlotte County Quail Project, was set up for the *development* of the area for quail. Both these projects are under the immediate direction of O. E. Frye, Jr., Wildlife Biologist, with administrative and technical supervision from the Game and Fresh Water Fish Commission, the U. S. Fish and Wildlife Service, and the University of Florida.

The primary object of the research project is to determine the effect of fire, grazing, and disking upon vegetation and their consequent influence upon the quail population, and to use the information obtained in arriving at a sound management plan for quail in the type of territory studied. Additional phases of the research problem include the determination of the "normal" number of quail on different types of land; and studies of plants that can be cultivated for the production of quail food, of the food habits of quail in Charlotte County, of the effect of excessive rainfall on breeding quail, of the reproductive capacity of quail under shooting and protection from shooting, and of native plants of importance to quail. Throughout the studies consideration is given primary land uses, and management procedures will be worked out that are compatible with cattle and timber production.

Tentative conclusions from the study, pending further investigations, are: 1. That most plants planted for quail food in other parts of the Southeast are unsuccessful in southern Florida flatwoods. 2. That the natural food of quail in Charlotte County is composed largely of seeds of grasses and sedges and differs greatly from that of quail in other parts of the Southeast. 3. That fire, when properly controlled, is beneficial to quail in Charlotte County. 4. That disking on lands protected from grazing causes a greatly increased production of important annual quail food plants.

The primary object of the development project is to put into effect management procedures worked out on the research project. One man, Herbert Allgood, is employed on the development project. Among his duties on the project area are maintenance of roads, bridges, and fences, planting of quail foods, plowing of fire lanes, controlled burning, and incidental to his other duties—protection of the project area from hunting or other unlawful trespasses.

The fall quail census of the project area indicates a population of between nine and ten thousand birds. Plans are being made by the Game and Fresh Water Fish Commission to trap three thousand of these birds for restocking throughout the state.

BIENNIAL REPORT

on

Apalachicola, Ocala and Osceola Wildlife Management Areas

The Wildlife Management Areas established on the Apalachicola, Ocala and Osceola National Forests are operated under the terms of a cooperative agreement between the Commissioner of Game and Fresh Water Fish and the U. S. Forest Service. Annually, game management plans for the areas are prepared stipulating seasons, bag limits, stocking plans and law enforcement organization.

Apalachicola Management Area

This area embraces 198,500 acres in Franklin County. During 1945 and 1946 the area remained closed to hunting of deer, squirrel and game birds since stocking was not considered adequate to open it to hunting. Trapping of fur bearers was permitted but due to the low price of furs only a small number of trappers were induced to take the field.

During the period November 18 to 23, 1945, two 3-day bear hunts were held. This was a new form of hunting on Florida's Management Areas but it attracted 57 enthusiastic bear hunters. Although in the six days of the hunt only one bear was killed, about 20 were jumped and chased. Failure to kill more bear was due to hunter inexperience and insufficient good bear dogs. Much good publicity resulted from the bear hunt and another hunt is planned for 1947.

Ocala Management Area

This area located in Marion, Lake and Putnam Counties includes 296,000 acres with a National Game Refuge of 78,000 acres in the central portion. Three resident game wardens are employed by the State. The well known supervised deer hunt was held again in 1945 and 1946 during the month of December.

In 1946 a record number of 3,931 hunters paid for permits to hunt, although the number of deer checked out of the eleven checking stations was the least since 1943. The following table

summarizes pertinent statistics relative to the hunt for 1945 and 1946:

	1945	1946
Number of permits issued	3,368	3,931
Number of deer killed	338	322
Number of arrests	0	3

In 1945, 38 per cent of the deer killed were spike bucks and in 1946, 36 per cent. Each year there were 35 illegally killed doe deer picked up by game wardens and Forest officers. About half of them were salvaged and turned over to non-profit institutions for food. It is known that a large number of deer are killed but not checked out through the checking stations. Some are consumed in the hunt camps on the forest and others are taken out under the fence and across the Oklawaha and St. Johns Rivers. No effective means has been found to stop this illegal traffic of game.

Most of the deer killed were in good condition. In 1945, 80 per cent were classified as in good or better condition, 19% fair and 1% poor, while in 1946, 92% were classified as good or better, 6% fair and 2% poor. Three deer in 1945 reflected screw worm condition and one in 1946. Some few deer had ticks.

Despite the fact that the condition of the deer are indicated to be good and the record of hunter take has not increased, there is a marked reduction in the size of the deer herd. This became evident in 1945 and was more noticeable in 1946. The factors contributing to this reduction in the herd are not definitely known, and will require a careful study. A change in the management plan will, no doubt, be in order.

Small game killed and checked out during the hunt on the Ocala were as follows:

	1945	1946
Squirrel	544	680
Duck	16	70
Quail	2	24

The area was open for trapping of fur bearing animals, but due to low price of fur only a few raccoon were taken.

Osceola Management Area

This area of 107,000 acres in Columbia and Baker Counties remained closed to all forms of hunting in 1945 and 1946. It is hoped that the deer population will be sufficient by the end of 1947 to permit a small hunt. Law enforcement has been good this past year.

J. B. DAHL

CHOCTAWHATCHEE NATIONAL FOREST

(Eglin Field Military Reservation)

For the first time since the beginning of the War a supervised hunt was conducted in the Choctawhatchee National Forest through cooperation with the Military Authorities there and the Game and Fresh Water Fish Commission in December of 1946.

During this hunt 4,060 Resident Hunting Permits were sold at a price of \$1.00 each. 44 Non-resident Permits, costing \$5.00 each were sold. The \$4,280.00 collected in this manner is to be spent by the Federal Government to restock the area with quail and turkey and to plant food for deer, turkey and quail. There were 540 buck deer taken and 35 doe deer were found dead.

There were a total of 21 arrests made during the hunt, 4 for killing doe deer, 4 for possession of doe deer, 1 for attempting to take deer, 3 for hunting within the Breeding Ground and 10 for having unplugged guns within the forest area.

Choctawhatchee National Forest comprises approximately 347,000 acres of land located in Walton, Okaloosa and Santa Rosa Counties.

The hunt was conducted by 12 Conservation Officers representing the Game and Fresh Water Fish Commission and 14 Forest Patrol Officers representing the Military Authorities

There were no accidents during the period of the hunt.

It is estimated that a population of 2,000 deer still remain in the Forest.

FEDERAL FISH HATCHERY

Fish produced at the Federal Fish Hatchery at Welaka, Florida, are distributed by the Game and Fresh Water Fish Commission's specially constructed fish tank truck. When all applications for fish filed with the Federal hatchery have been filled, the remainder of fish on hand are turned over to the Game and Fresh Water Fish Commission to be used to fill applications for fish filed with them.

MISCELLANEOUS

During the period covered by this report it became neces-

sary for the Game and Fresh Water Fish Commission to hold the following meetings:

Date	Place
January 29, 1945	Tampa
March 29, 1945	Gainesville
April 12, 1945	Jacksonville
May 10, 1945	Tallahassee
June 18, 1945	West Palm Beach
July 9, 1945	Tallahassee
September 17, 1945	Orlando
October 12, 1945	Jacksonville
January 7, 1946	Tallahassee
March 4, 1946	Jacksonville
April 4, 1946	Jacksonville
July 11, 1946	Ocala
August 8, 1946	Jacksonville
August 29, 1946	Jacksonville
October 8, 1946	Jacksonville

HUNTING ACCIDENTS

Among reports compiled by the Game and Fresh Water Fish Commission is one having to do with accidents due directly to hunting. During 1944-45 there were 38 accidents. 22 of these were of a minor nature, 8 were serious and 8 were fatal. In 1945-46 there were 44 accidents. Of this number 21 were minor, 8 serious and 15 were fatal.

EDUCATION AND PUBLICITY

Florida Game and Fish

The Game and Fresh Water Fish Commission is glad to report that "Florida Game and Fish" the Commission's monthly magazine, is again being published. Publication of the magazine was brought to a close when the editor entered the Armed Services. During the war period it was impossible to find a person to fill the position of editor and publication did not begin again until May of 1946.

This magazine is available to anyone wishing to receive it. There is no subscription fee. Simply address a postcard to the Commission requesting that your name be placed on the monthly mailing list and the magazine will be sent to you.

The magazine is a monthly report of the activities of the Game and Fresh Water Fish Commission. Included also are

articles of a technical nature and reports covering the activities of other conservation organizations, both Federal and from other States. The publication also carries a monthly list of all arrests and convictions for violations of the game laws.

MOVING PICTURES

The Game and Fresh Water Fish Commission has added two more short reels to its moving picture supply. One of these has to do with Sunfish and the other with Wild Animals of North America.

The film, "Our Heritage" continued to be much in demand in spite of the fact that it is now several years old. During the two year period for which this report is made, the film has been shown in Wyoming, Illinois, Louisiana, South Carolina, Montana, Michigan and Ohio, and in every section of the State of Florida.

FAIR EXHIBITS

The Commission is again participating in various Fairs over the State. In February of 1946 an exhibit was placed in the State Fair at Tampa, Florida. We expect to have an exhibit in Tampa again in February of 1947. Exhibits were also placed in Pensacola and in Melbourne.

SOURCES OF REVENUE DURING BIENNIUM ENDING
JUNE 30, 1946
Classified List of Licenses Sold by County Judges

	FISCAL YEAR ENDING JUNE 30, 1945			FISCAL YEAR ENDING JUNE 30, 1946		
	Price	No. Issued	Amount	Price	No. Issued	Amount
FISHING LICENSES						
Series A—Resident State	\$ 4.00	73,282	\$ 73,282.00	\$ 1.75	59,020	\$ 103,285.00
Series B—Non-Resident State	5.00	9,898	49,490.00	7.00	4,877	34,139.00
Series C—Non-Resident 10-Day Trip	2.00	9,001	18,002.00	2.00	20,792	41,584.00
Total		92,181	\$ 140,774.00		84,689	\$ 179,008.00
HUNTING LICENSES						
Series I—Resident County	\$ 1.00	37,536	\$ 37,536.00	\$ 1.75	42,529	\$74,425.75
Series J—Resident County, Other Than Home	3.00	455	1,365.00	1.00	516	2,064.00
Series K—Resident State	5.00	29,623	148,115.00	7.00	32,185	225,295.00
Series L—Non-Resident	25.00	258	6,450.00	26.00	356	9,256.00
Series M—Non-Resident 10-Day Trip	10.00	481	4,810.00	11.00	714	7,854.00
Series M-1—Non-Resident 3000 Acre Owner	10.00	13	130.00	11.00	17	187.00
Total		68,366	\$ 198,406.00		76,317	\$ 319,081.75
TRAPPING LICENSES						
Series N—Resident	\$ 3.00	1,446	\$ 1,338.00	\$ 3.00	1,408	\$ 4,224.00
Series O—Non-Resident County	25.00			25.00	2	50.00
Series P—Resident State	25.00	11	275.00	25.00	26	650.00
Series Q—Resident Other than Home County	10.00	23	230.00	10.00	23	230.00
Total		1,480	\$ 4,843.00		1,459	\$ 5,154.00

GAME AND FRESH WATER FISH COMMISSION
STATEMENT OF
July 1, 1944 to June 30, 1945

RECEIPTS

Balance on Hand July 1, 1944	\$		\$	\$235,056.43
Hunting Licenses		198,406.00		
Fishing Licenses		138,166.00		
Trapping		4,843.00	341,415.00	
U. S. Forest Permits		3,851.84	3,851.84	
<i>Commercial Licenses</i>				
Retail Fish Dealers		5,210.00		
Wholesale Fish Dealers		1,700.00		
Commercial Boat		661.70		
Boat for Hire		3,442.00		
Game Farm Licenses		100.00		
Wholesale Fur Dealers and Agents		1,015.00		
Local Fur Dealers		70.00		
Guide Licenses		130.00	12,328.70	
Court Costs		3,791.37		
Miscellaneous		4,289.23		
Confiscated Boats, Nets and Motors		564.25		
Confiscated Fish		225.80		
Sale of Old Equipment		860.50		
Confiscated Furs and Hides		4.55		
Previous Year's Licenses		3,880.00	13,615.70	371,789.12
Cancelled Warrant Account		495.69		
Refunds		82.19	577.88	577.88
				\$606,845.55

DISBURSEMENTS

Administration

Office Salaries	\$	12,059.31	\$	\$
Traveling Director		1,414.23		
Traveling Commissioners		2,032.16		
Miscellaneous		1,175.72		
Office Supplies		351.76		
Postage, Telephone and Telegraph		1,679.43		
Printing and Stationery		4,323.91		

Premium on Bonds	35.00	23,071.52
<i>Field Expense</i>		
Salaries Conservation		
Officers	105,371.14	
Traveling Conservation		
Officers	90,658.38	
Telephone and Telegraph		
Expense Chief Conserva-		
tion Officers	179.76	
Premium on Bonds	520.00	
Legal Advertising	244.24	
Legal Expense	625.00	
Miscellaneous Field	2,693.40	
Premium Compensation Ins.	1,367.62	
Equipment Purchased	2,842.32	
Maintenance of Equipment	1,274.45	
Restocking	4,526.65	
Rewards	300.00	210,602.96
<i>Hatcheries</i>		
Blackwater Game Farm and		
Hatchery		
Salaries	1,800.00	
Labor	1,490.91	
Supplies	56.03	
Express and Telegrams	8.09	
Feed	173.05	
Fertilizer and Seed	108.27	
Gas and Oil	593.37	
Insurance	215.58	
Repairs to Equipment	None	
Truck Repairs	848.10	5,293.40
Wewahitchka Hatchery		
Salaries	320.00	
Labor	16.00	
Supplies	2.75	
Gas and Oil	12.45	
Improvements	343.80	
Insurance	74.25	769.25
Winter Haven Hatchery		
Salaries	3,427.67	
Labor	422.85	
Traveling	367.07	
Repairs to Equipment	398.10	
Supplies	232.72	
Truck Operation	504.28	

Gas and Oil	539.96		
Insurance on Truck	63.30		
Drainage Tax	75.05	6,031.00	
Bounty on Predator Animals	1,911.50		
Bounty on Gar Fish	192.25	2,103.75	
Publicity and Education			
Salaries	300.00	300.00	248,171.88
Relief of E. L. Smith (Acts 1939)	300.00		
Pittman-Robertson Expenditures	73,995.16		
Refunds	306.30	73,601.46	73,601.46
<i>Cash Account</i>			
Balance in State Treasury	261,918.60		
Balance in Lewis State Bank	27,825.61	289,744.21	
Less Hendry County Deer Restocking Fund Reserve	4,575.00		
Less County Judge's Credit	97.00	4,672.00	285,072.21
			<u>\$606,845.55</u>

GAME AND FRESH WATER FISH COMMISSION

STATEMENT OF

July 1, 1945 to June 30, 1946

RECEIPTS

Balance on Hand July 1, 1945 \$	\$	\$284,576.52
Hunting Licenses	319,067.75	
Fishing Licenses	178,718.25	
Trapping Licenses	5,154.00	
Alien Hunting Licenses	50.00	
U. S. Forest Permits	7,982.32	510,972.32
<i>Commercial Licenses</i>		
Retail Fish Dealers	7,460.00	
Wholesale Fish Dealers	1,900.00	
Commercial Boat Licenses	1,014.40	
Boat for Hire	4,420.50	
Game Farm Licenses	145.00	
Wholesale Fur Dealers and Agents	1,005.00	
Local Fur Dealers	90.00	
Guide Licenses	190.00	16,224.90

Court Costs	9,725.68		
Miscellaneous	2,995.72		
Confiscated Boats, Nets and Motors	283.45		
Confiscated Fish	88.83	13,093.68	
Confiscated Furs and Hides	29.95	29.95	
Sale of Old Equipment	2,193.58	2,193.58	
Previous Year's Licenses	2,608.00		
Refunds	57.80	2,665.80	545,180.23
Pittman-Robertson	23,905.62	23,905.62	23,905.62
			\$853,662.37

DISBURSEMENTS

Administration

Office Salaries	\$ 16,052.83	\$	\$
Attorney's Salary	2,300.00		
Traveling Director	1,941.88		
Traveling Attorney	91.59		
Traveling Commissioners	1,121.30		
Miscellaneous	4,076.97		
Office Supplies	599.91		
Postage, Telephone, Telegraph	2,585.92		
Printing and Stationery	7,016.71		
Premium on Bonds	42.55		
Legal Expense	635.90	36,465.56	

Field Expense

Salaries, Conservation Officers	179,645.29		
Traveling, Conservation Officers	147,562.83		
Tel. & Tel. Chief Conservation Officers	664.39		
Premium on Bonds	1,185.00		
Legal Advertising	463.87		
Miscellaneous Field	1,491.26		
Premium on Compensation Insurance	1,147.04		
Equipment Purchases	8,962.12		
Maintenance of Equipment	2,231.75		
Restocking	29,533.61		
Rewards	250.00	373,137.16	

Hatcheries

Blackwater Game Farm and Hatchery		
Salaries	2,100.00	
Labor	1,590.10	
Supplies	186.13	
Express and Telegrams	1.02	
Feed	49.85	
Fertilizer and Seed	95.92	
Gas and Oil	516.04	
Repairs to Equipment	830.00	
Truck and Equipment	2,225.00	
Truck Repairs	252.51	
Insurance	139.58	
Restocking	86.68	8,072.83
Wawahitchka Hatchery		
Labor	45.00	
Improvements	236.68	
Insurance	74.25	
Electricity	2.00	
Supplies	1.20	359.13
Winter Haven Hatchery		
Salaries	4,804.46	
Labor	165.00	
Traveling	471.72	
Supplies	516.29	
Truck Repairs	622.71	
Gas and Oil	430.50	
Insurance on Truck	29.65	
Power and Lights	56.46	
Pumping Water and Equipment	1,063.91	8,160.70
Publicity and Education		
Salaries	548.00	
Traveling	699.03	
Fair Expense	359.34	
Moving Picture	256.95	2,049.79
Charlotte Game Management Area		
Salary, Game Technician	1,116.13	
Traveling, Game Technician	952.91	
Labor	356.50	
Seed and Fertilizer	139.98	
Land Cultivation	1,320.00	
Miscellaneous	352.93	

Truck Repairs	110.88		
Gas and Oil	193.73		
Equipment	90.00		
Taxes on Land	1,736.03		
Removing Wood	144.00		
Land Purchase	1,251.00	7,764.09	
<i>Hyacinth Control</i>			
Salary	375.00		
Traveling	400.00		
Removing Hyacinth	1,000.00	1,775.00	
Refunds	18.00	18.00	
Bounty on Predator Animals	33,856.50		
Bounty on Garfish	7,019.25	40,875.75	478,678.01

CASH ACCOUNT

Balance in State Treasury	379,428.09		
Due from County Judge's	790.21	380,218.30	
Less Hendry County Deer Restocking Fund	4,575.00		
Less Cancelled Warrant Account	658.94	5,233.94	374,984.36
			<u>\$853,662.37</u>

Agenda for 1947-48

SUGGESTIONS FOR IMMEDIATE GAME RESEARCH AND MANAGEMENT WORK IN FLORIDA

O. E. FRYE, JR.—*Wildlife Biologist*

No attempt is made here to discuss all the wildlife work which would be desirable for Florida. A few brief suggestions are made for work that appears feasible with the funds and personnel that should be available in the next two years. These suggestions concern only research and management work on the three most important non-migratory game species in the state—the bobwhite quail, the wild turkey, and the white tailed deer.

Not discussed are the equally important administrative and educational phases of the conservation program other than to emphasize the crying need for better enforcement of game regulations and an active educational program.

There are of course different problems associated with each of the three mentioned species, but for immediate practical purposes the problems of deer and turkey management appear identical, in contrast to those of quail management.

Quail, largely because of their smaller size and consequent decreased "meat" value, are much less likely than deer and turkey to be totally exterminated from a given locality. As a result there are few areas of suitable quail habitat in the state where some breeding stock is not present.

This is not believed to be true of deer and turkey. There are apparently many areas of suitable deer and turkey habitat now completely unpopulated with these species because of overshooting.

Basically, then, the primary problems of quail management are habitat improvement and protection, with emphasis on habitat improvement; whereas the primary problems of deer and turkey management are restocking and protection, with emphasis on protection. Protection refers in all cases to protection from man.

The present policy of restocking quail over the state is possibly only a temporary measure to bolster the quail population until a sound habitat improvement plan can be worked out

and applied; although there are indications that annual releases of quail may be a worthwhile permanent conservation measure in open flatwoods areas where the birds are particularly vulnerable to overshooting.

Methods of improving quail habitats on farms have been worked out for several southeastern states. These methods or minor modifications of them can probably be applied to much of the farming area of north and central Florida. Beginnings should be made in the near future on an active game farm program for the state—possibly built around a number of farmer-sportsman cooperative agreements.

As yet no practicable quail management plan has been found for the large cattle ranching areas, particularly in the southern half of the state. Because of this the Charlotte County Quail Project was begun. It is at present the primary game research and management project in Florida. A brief description of the work that has been done and that will be done in the next two years is given in the discussion of the Charlotte County Quail Project on page 38.

In addition to the Charlotte County project, studies will be made—through banding of all birds released—of the value of the quail restocking program; particularly of the comparative survival of native and Mexican birds.

The only wildlife biologist employed by the state of Florida is engaged in the previously discussed quail investigations. Within the next two years every effort should be made to employ at least three more trained biologists—one to work with deer, one with turkey, and the other with quail.

The primary duties of the quail biologist should be the instigation of a quail management program in the northern part of the state and a statewide survey of quail habitats. The survey should take the form of a quail census made during the fall and winter on the different types of territory occurring in Florida.

The first duty of the deer and turkey biologists should be a statewide survey of deer and turkey habitats. Immediately upon completion of this survey a program of transplanting deer and turkey in suitable and *adequately protected* areas should be begun.

As far as possible, wild trapped native stock should be used in this program.

Research projects on turkey and deer in Florida are definitely needed and should ordinarily precede the suggested management program; but in view of the fact that there are such strong indications that the absence of deer and turkey from many Florida areas is due primarily to overshooting, it appears that an immediate carefully planned stocking program based only on the experience of other states is justifiable.

In their monthly meeting of January 27, the Game and Fresh Water Fish Commission agreed to set aside \$25,000 to be used in the study of Florida's wildlife through the writer's program. \$5,000 of this appropriation will be used for the deer and turkey project with Pitman-Robertson funds to match this amount, and \$20,000 will be spent for the study of the quail situation.

OUTLINE OF FISHERIES WORK FOR 1947

JOHN F. DEQUINE, *Fisheries Biologist*

1. Office of Chief Fisheries Biologist

Chief Fisheries Biologist's duties will comprise supervision, planning, and administration of all fish hatcheries, biological investigation and other activities relating to fisheries problems, in addition to consultation with clubs and other interested groups in undertaking of rearing ponds or other related projects.

One of the Commission's Fish Transporting Trucks



II. OPERATION AND MAINTENANCE OF FISH HATCHERIES

The State owned fish hatcheries at Holt, Wewahitchka, and Eagle Lake will be operated to supply bream and bass fingerlings for stocking public waters. Some improvement in the methods used is being made and every effort is anticipated toward obtaining greatest production at reasonable costs. Reconstruction and repairs to existing structures are now being arranged.

III. BIOLOGICAL INVESTIGATION

A. *Lake Okechobee Survey*

It will be necessary to employ a full time biologist to obtain information and data leading to a sound management program for this lake, the main object of the survey. Most important facts to be sought in this work will be:

1. Present fish population, and inter-relationship between present species.
2. Potential annual yield of food and game fishes to determine amounts which can be taken without damage to seed stock.
3. Effect of various types of fishing gear on game and

Placing Fingerlings In Escambia River



food fishes, with emphasis on determining proper equipment for use by commercial fishermen to harvest the annual crop of food fishes and control predatory species.

4. Formulation of enforceable regulations benefiting spawning conditions and habitat for both game and food fishes, with emphasis during the first year on the game species.

5. Accurate records of catches by sports fisherman, as a basis for future comparison.

B. Statewide Water Classification and Special Biological Problems

This project also would require a full time biologist during the first year, and some labor and equipment. If satisfactory results are obtained at the end of the first year, expansion and continuation would be set up for subsequent work.

Most important facts to be studied will include:

1. Analysis and classification of lakes and streams throughout the State as a basis for stocking and other management recommendations which will result in increased catches by sports fishermen.

2. Methods and effects of a gar-mudfish control program on waters with high populations of these species.

3. Determination of the effectiveness of stocking with hatchery raised fish by tagging and offering rewards for the return of the tags with the information desired.

4. Gathering of material which will eventually be used in publication of a descriptive list of all Florida species of fresh water fish, illustrated with photographs of the more important fishes with a key to the fishes that can be used by the average sports fishermen.

C. St. Johns River Survey

This project, which will also require a full-time biologist, will concentrate on determining the same factors sought in the Lake Okeechobee Survey.

IV. NEW HATCHERY CONSTRUCTION

Approval has been obtained from the Commission to locate and start construction on a new Fish Hatchery, to be located as near the center of the state as is practicable. A sum of \$16,200 has been set up to cover the costs of location and engineering, and for the beginning of the construction during the year. Suitable sites are now being inspected and sought for this hatchery which will be designed to operate as efficiently as modern hatchery engineering can make it.

FLORIDA WILDLIFE FEDERATION REVEALS FUTURE PLANS

Seeks \$100,000 to Protect State's Wildlife

A plan to raise \$100,000 to protect Florida's \$100,000,000 wildlife resources, has been presented to the officers and directors of the *Florida Wildlife Federation* by Ralph G. Cooksey, St. Petersburg, President of the Federation. The plan, which includes enlarging the Federation membership to 50,000, also outlines the method by which the money will be raised.

Committees will be formed in each county of Florida under five district Vice Presidents, with proportionate quotas of the general fund to raise. Mass meetings and money raising drives will be staged in each county until the entire amount needed for the conservation fight ahead is raised.

Cooksey, under instructions from the Federation, named a committee to go to Tallahassee Monday, January 27th, in the reorganization meeting of the Florida State Game and Fresh Water Fish Commission.

The committee recommended to the Game and Fresh Water Fish Commission that the wages and qualifications of wardens be raised and that they be uniformed, with the exception of 10 wardens who will be secret and act as undercover agents to prevent wildlife poaching.

The 10-point plan recommended by Cooksey consisted of organizing hunting and fishing clubs in every city and town in Florida; the distribution of educational material to every club; obtain enough wardens to protect every one of the 30,000 lakes in Florida; enlist the cooperation of all Junior Chambers of Commerce, civic clubs, realty boards, women's clubs, fraternal organizations and others; to restock all lands in Florida with game; aid in training conservation officers; assure the enforcement of conservation laws; work closely with the state commissions forestry departments and state parks; to create more game preserves.

A headquarters office to handle details of carrying out the program has been set up in St. Petersburg in the Chamber of Commerce building, where E. C. Wimer, Gulfport, has assumed the duties of executive director.

Attending the meeting which endorsed the Wildlife Federation plan and personally endorsing it were E. A. Markham, Gulfport, Treasurer; George A. Speer, Sanford, Recording Secretary; Porter Lansing, Sanford, District Vice President; Bill

Willman, West Palm Beach, District Vice President; O. E. Frye, Game and Fresh Water Fish biologist; J. F. DeQuine, Game and Fresh Water Fish biologist; Frank D. Smoak, Game and Fresh Water Fish Commissioner; R. B. Norton, Clearwater and James B. Ober, Miami, Directors; L. G. Bruce, Game and Fresh Water Fish Commissioner; E. D. Farr, Game and Fresh Water Fish Attorney; A. S. Houghton, Secretary American Game Association; Col. Percy M. Hansen, Tampa, Publisher of the Florida Sportsman; E. C. Wimer, Gulfport, Executive Director and Ralph G. Cooksey, St. Petersburg, President.

A \$100,000.00 Plan with a \$100,000,000.00 Annual Return for Florida

We present herewith the outline of a plan for the Florida Wildlife Federation and Commercial and Civic Organizations, based on a working period of ten years, which can and will do what many of us have been thinking of and planning for, even before the close of the war.

Using the natural resources Florida now has, and by conserving, developing, protecting, and publicizing our fishing, hunting, and recreational advantages, Florida has unlimited possibilities for the development of a \$100,000,000.00 industry.

NOW is the time to get this plan underway and to provide the benefits for our people and create additional business and revenue for the State.

Here's how this can be accomplished—

1. Stimulate and build a wildlife Federation with a membership of 50,000 or better, made up of fishing, hunting and conservation clubs from every part of the State of Florida: all working together to restore Florida's game, fish, and recreational advantages, and enjoy the advantages for years to come.
2. A \$100,000.00 Fund to conserve and develop fish and game, and to provide better recreational facilities throughout Florida.
3. An Educational Plan, informing our people of the need of conservation, the recreational benefits, and the enormous dollars and cents returns possible on their small individual investment in this well planned conservation and business development objective.
4. Make Florida known as the Nation's No. 1 Hunting and Fishing Paradise. We are blessed with ideal climate; over 30,000 fresh water lakes, streams, rivers and creeks, salt water bays, bayous, passes, the Gulf, and an ocean with-

out end. The glades and other natural game refuges, semi-tropical growth, and beauty unsurpassed, give us advantages unnumbered. Let's make use of these natural facilities and resources; give the benefits to our people; sell them to the world and thereby profit.

5. Work with and enlist the cooperation and support of the State Chamber, Chambers of Commerce, Junior Chambers, Civic Clubs, Realty Boards, Women's Clubs, Fraternal bodies, and other organizations of this State in this \$100,000,000.00 development or industry, which will benefit every interior and coastal section of Florida.
6. Propagate game and fish; restock, protect and develop such all over Florida, using our God-given supply to build from, and importing and developing other game adaptable to our particular and superb climate.
7. Aid in the training of conservation officers, properly fitting them for their work in all its branches, and making possible compensation which will attract and hold men of experience, knowledge and integrity.
8. Enforce our conservation laws; create new laws, and amend present laws so that all will be in keeping with conditions; provide sane, just and proper protection for game, fish and the individual sportsman.
9. Closely work with the State Game and Fresh Water Fish Commission, the State Conservation Department, the State Forestry Department, the State Parks, and City organizations, looking to the betterment of conditions having to do with our game and fish conservation, recreation and the sane development of our natural resources.
10. To create more game preserves and to provide hunting grounds and game for all kinds of hunting for those who abide by the laws and rules of this State.

Respectfully submitted,

Ralph G. Cooksey, President

FLORIDA WILDLIFE FEDERATION

OFFICES:

Chamber of Commerce Building
Fourth Street & First Avenue, South
St. Petersburg, Florida.

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BIENNIAL REPORT

Florida

GAME & FRESH WATER FISH
COMMISSION

1947-48

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1947-48



C. MORGAN
DIRECTOR

Game and Fresh Water Fish Commission

TALLAHASSEE, FLORIDA
31 December 1948

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- J. W. CORBETT, CHAIRMAN
FORT PIERCE, FOURTH DISTRICT
- CECIL M. WEBB, TAMPA
FIRST DISTRICT
- MILTON H. BAXLEY, GAINESVILLE
SECOND DISTRICT
- LOUIS G. MORRIS, MONTICELLO
THIRD DISTRICT
- ELLIS F. DAVIS, KISSIMEE
FIFTH DISTRICT
- LARL D. FARR, PUNTA GORDA
ATTORNEY

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Hon.
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Corbett
Chairman

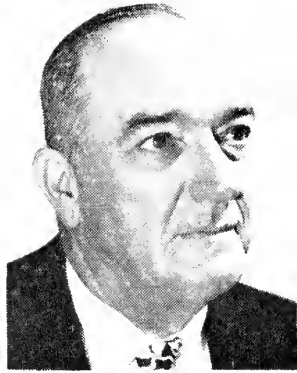
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Florida
GAME
& FRESH WATER FISH
COMMISSION



BIENNIUM ENDING DECEMBER 31, 1948



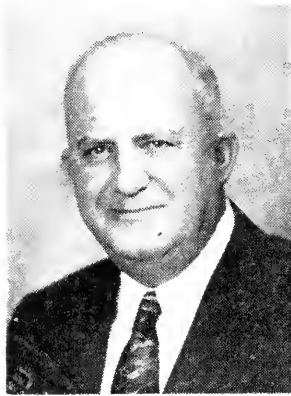
J. W. CORBETT
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CECIL M. WEBB
Commissioner



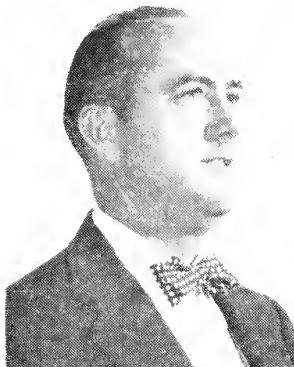
BEN C. MORGAN
Director



ELLIS F. DAVIS
Commissioner



LOUIS G. MORRIS
Commissioner



COLEMAN NEWMAN
Assistant Director

The People of The State of Florida

Governor

Game & Fresh Water Fish Commission
Five Members

Director

Assistant Director

General Administration

Accounting Division

Fish Management Division

Game Management Division
(Including Pittman-Robertson)

Law Enforcement Division

Legal Division
(Including Special Investigation)

Information and Education Division

Public Relations Division

Fish Culture

Hatchery

Restocking

Fish Rescue

Fish Investigation

Fish Population

Rough Fish Control

Five Chief Wildlife Officers

Wildlife Officers

Publications

Press Relations

Visual Education

Fairs & Exhibits

Restocking

Research

Land Acquisition

Development

ORGANIZATIONAL CHART OF THE GAME AND FRESH WATER FISH COMMISSION

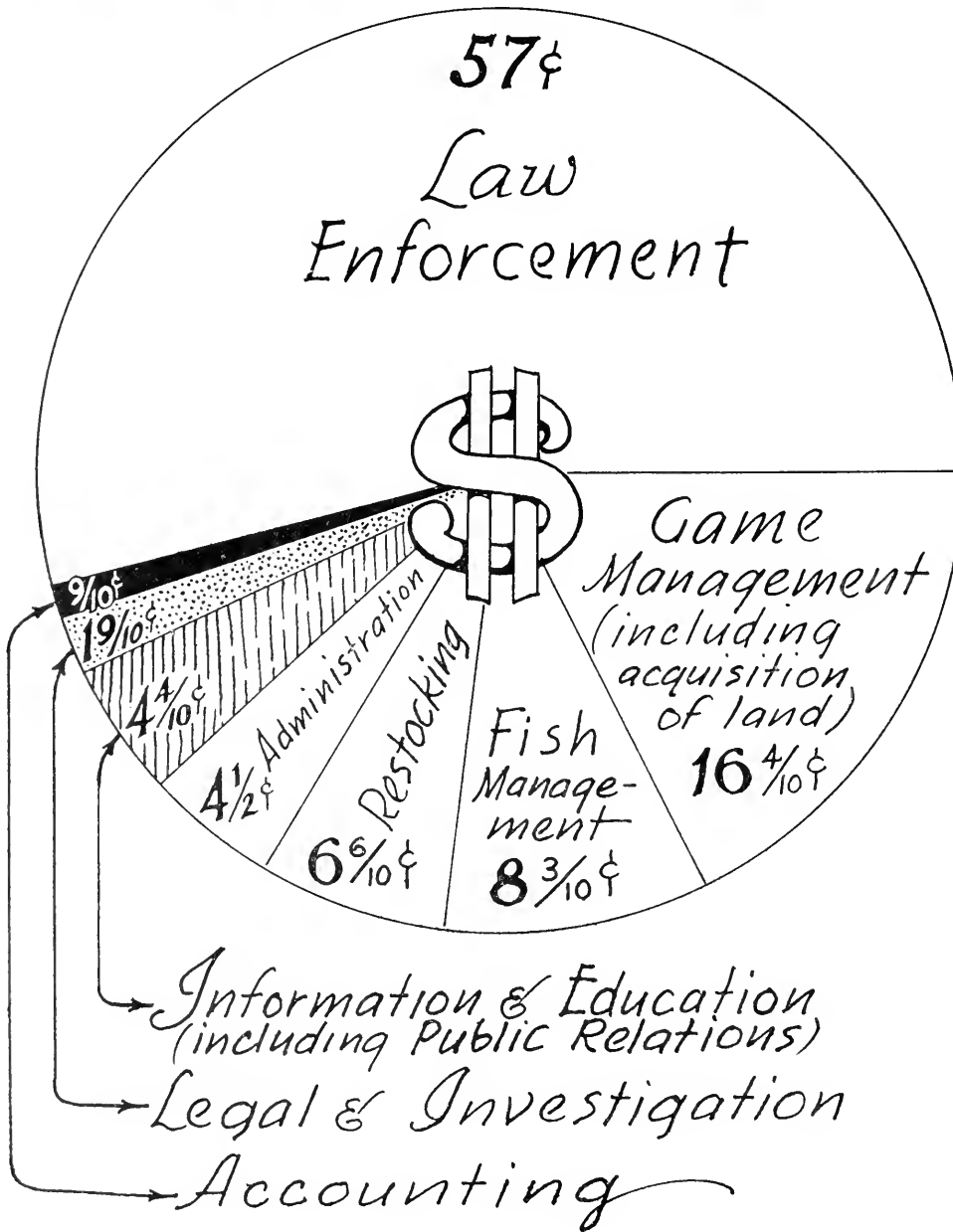
The
COMMISSION'S
REPORT



BEN C. MORGAN
Director

COLEMAN NEWMAN
Assistant Director

FLORIDA'S CONSERVATION DOLLAR



GENERAL ACTIVITIES

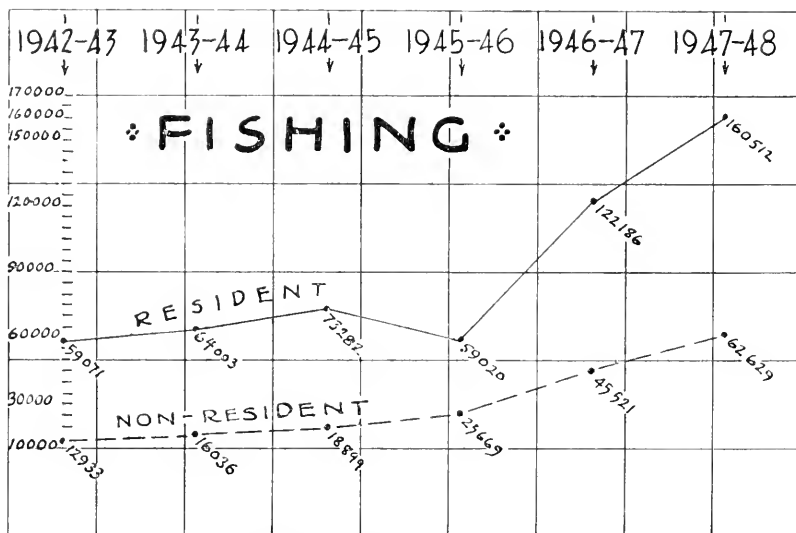
DURING 1947-48 the Game and Fresh Water Fish Commission made perhaps the greatest progress in Florida conservation history. The Commission has seen a terrific expansion in man power and activities, and a streamlining of general policy as well. Until two years ago, Florida's conservation set-up had ranked fairly well in the South. However, compared to the states throughout in the north, it ranked rather low. At present, however, the state's conservation program is generally regarded as one of the top ten in the nation. Considering that many northern states have had full-fledged, comprehensive conservation programs in action for more than two decades, it is gratifying to see Florida rated along with them.

Two years ago the Game and Fresh Water Fish Commission had less than 200 employees, 170 of them wildlife officers. Despite the fact that the state had been beset with game and fisheries problems for years, no technical or biological staff had ever been organized. Conservation education and public relations had not been developed to any extent. Law enforcement was not what it should have been. Today the Commission has a total of 291 employees, 228 of whom are wildlife officers; 40 are biologists, technicians or specialists in other fields, and 23 are general administrative employees or laborers.

Staff expansion was not the only signs of progress during the past biennium. A few of the more prominent steps taken by the Commission was the setting up of a fisheries investigation program, the establishment of game survey and game restoration projects and a land acquisition program, the appointment of a new director and assistant director, the creation of a division of information and education, purchase of uniforms for wildlife officers, purchase of vehicles and other equipment for the law enforcement branch, establishment of a state-wide quail survey and trapping program, heavy restocking of deer and turkey, formulating a plan whereby cattlemen in southwest Florida would open their rangelands to hunters, the setting up of a two-way radio communication system for wildlife officers, the requirement of an oath of office for all wardens, and the establishment of an annual school for law enforcement officers. Those are a few of the major steps taken by the Commission. Consolidated and viewed in all their detail, this represents a terrific expansion program.

Increased Hunting and Fishing Pressure

The reasons for such an advanced program are obvious. At the end of the war it became apparent the limited facilities of the Game and Fresh Water Fish Commission could no longer compete with the tremendously-increased pressure on our game and fish resources. The army of hunters and fishermen had mounted with alarming rapidity. During the fiscal year of 1946-47 more than 168,000 fishing licenses were sold, as compared to slightly over 72,000 in 1942-43. Hunting pressure had also shown a terrific increase. In four years hunting license sales went from 65,000 to over 100,000. The figures continued to climb in 1947-48. During the past fiscal year over 223,000 fishing licenses were sold to break all records. Hunting licenses continued to run over the 100,000 mark. With this terrific expansion in hunting and fishing, it was obvious the agency charged with regulating the sports had to be expanded also.



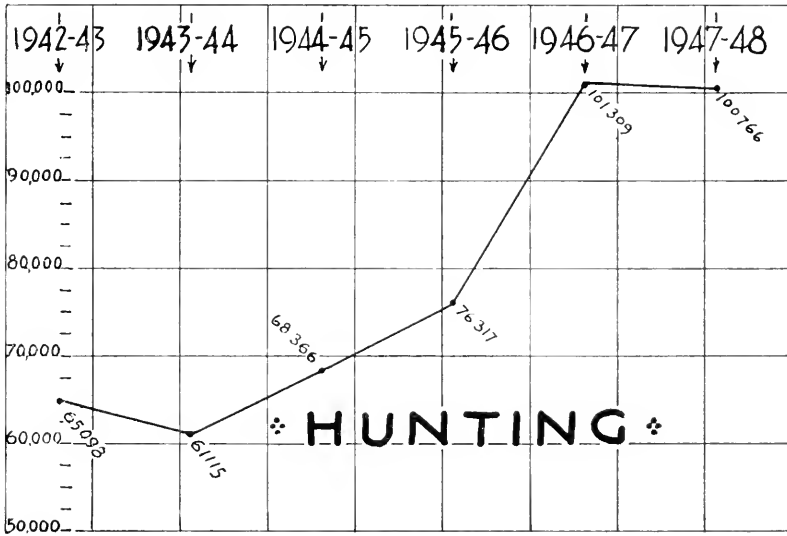
The above chart shows increased fishing pressure over the past five years.

Economic Value of Wildlife

In addition to this, Florida sportsmen and citizens alike had begun at last to see the crying need for a comprehensive, long-range wildlife conservation program. Mr. Average Citizen began to realize that our game and fish resources possessed economic value as well as recreational value. A survey by a national magazine last year showed that hunting and fishing was a \$4,000,000,000 a year business in the United States. Figures taken from the Department of Commerce

and the U. S. Fish and Wildlife Service showed that more than 25,000,000 people throughout the nation participated in these too great outdoor sports. The income from the hunting and fishing, it was found, was one-third larger than the nation's retail gasoline sales and twice as big as the nation's retail liquor sales. After a lengthy survey, the U. S. Fish and Wildlife Service placed a dollar value stamp on the various species of wildlife. They found that every pound of bass caught in our lakes contributed approximately \$2.00 to our state economy. They found it cost the sportsmen more than \$100 to kill a deer, \$10 to kill a goose and \$5 to kill a duck. All this adds up to a big business in hunting and fishing.

In Florida, these figures were even more significant. Being primarily a tourist state, one of Florida's greatest attractions is fishing. A survey by the Game and Fresh Water Fish Commission last year indicated that resident, licensed anglers alone spent more than



The sale of hunting licenses has also shown a sharp increase since 1942.

\$56,000,000 for fresh water fishing. Taking these facts—increased hunting and fishing pressure, and the new found economic importance of the two outdoor sports—into consideration the Commission, the sportsmen and the people realize that a more streamlined conservation program had to be established.

LICENSE SALES BY COUNTIES

	1947-1948		1947-1948	
	FISHING		HUNTING	
	Resident	Non-Resident	Resident	Non-Resident
Alachua	4737	634	3615	14
Baker	768	20	574	5
Bay	5843	974	1563	20
Bradford	994	104	471	9
Brevard	996	524	1279	17
Broward	2974	901	774	4
Calhoun	1826	4696	875	41
Charlotte	321	171	275	58
Citrus	2345	3208	1101	68
Clay	1063	146	779	5
Collier	232	57	186	
Columbia	1114	195	1148	12
Dade	4918	423	3252	9
DeSoto	1235	109	702	5
Dixie	240	102	821	13
Duval	16176	465	6520	32
Escambia	5719	269	4160	8
Flagler	173	35	372	2
Franklin	329	512	487	10
Gadsden	2393	2994	2426	6
Gilchrist	501	20	628	4
Glades	661	311	172	4
Gulf	1365	2097	820	28
Hamilton	224	422	542	12
Hardee	1430	89	821	3
Hendry	1766	742	563	4
Hernando	1224	156	1144	4
Highlands	2574	1022	639	8
Hillsborough	15379	377	5850	16
Holmes	1340	2447	832	27
Indian River	777	182	396	8
Jackson	1495	1157	2124	31
Jefferson	466	741	727	147
Lafayette	568	35	529	1

Organization

The Commission itself was reorganized and revamped in the spring of 1947. A new director was hired to replace Dr. I. N. Kennedy, who had resigned. The salary of the new director was set at \$8,500 a year in order to attract and keep a man of high caliber. A new budget was approved and the entire Commission reorganized on a departmental basis.

Today the Commission is separated into 7 divisions which function directly under the supervision of the director. The policy and rules and regulations of the Commission are formulated by five non-salaried Commissioners—one from each conservation district. The divisions that make up the Commission are Accounting Division, the Fish Management Division, Game Management Division, Law Enforcement Division, Division of Information and Education, Legal and Investigating Division and the Public Relations Division.

LICENSE SALES BY COUNTIES

Lake	4096	4884	2343	37
Lee	1475	471	992	19
Leon	3424	3028	3445	245
Levy	852	177	1894	19
Liberty	561	393	539	16
Madison	632	168	756	27
Manatee	1929	298	953	5
Marion	5253	5086	4103	78
Martin	621	438	245	8
Monroe	9	5	36	2
Nassau	360	175	1240	8
Okaloosa	1178	666	2229	48
Okeechobee	1224	777	305	2
Orange	11232	3402	3133	33
Osceola	1235	718	747	8
Palm Beach	4819	760	1696	6
Pasco	2018	251	1121	9
Pinellas	5442	695	1597	15
Polk	10796	1776	5494	10
Putnam	1465	998	1877	12
St. Johns	643	131	2147	6
St. Lucie	1034	215	552	5
Santa Rosa	1075	265	1763	8
Sarasota	1385	290	808	9
Seminole	2471	439	1192	7
Sumter	2228	672	1492	22
Suwannee	1209	51	1157	13
Taylor	590	411	1477	14
Union	301	19	823	
Volusia	3833	1240	3579	16
Wakulla	774	1573	922	107
Walton	805	1869	1357	38
Washington	1377	3951	681	17
TOTAL	160,512	62,629	99,262	1,526

The Accounting Division consists of four employees to keep an account of all the receipts and disbursements plus the maintaining of statistical records.

The Fish Management Division is divided into two sections, the Fish Culture Section, which has charge of all artificial propagation and restocking activities, and the Fisheries Investigation Section under which population surveys, rough fish control studies and similar scientific projects are carried out.

The Game Management Division, which is largely supported through federal aid funds, under the Pittman-Robertson Act, has charge of setting up game surveys, game restoration projects and a land acquisition program.

The Law Enforcement Division, of course, is the biggest and perhaps the most important of them all. It is charged with the enforcement of all rules and regulations put into effect by the Commission.

The Division of Information and Education is charged with the handling of all relations with the press, the preparation of all Commission publications, the administration of a visual education program and the setting up of wildlife exhibits at fairs and exposition.

The Legal Division handles all the Commission's legal matters plus special investigations in certain law enforcement situations.

The Public Relations Division consists of two men whose general objectives fall under the Division of Information and Education but who are administratively separate.

Increased Expenditure

This tremendous expansion program has, of course, cost money. During the fiscal year of 1947-48 Commission operating budget ran slightly over a million dollars as compared to \$321,000 three years before. This year the operating budget is over \$1,500,000. Much of this capital outlay, however, has gone into the purchase of equipment and will represent both increased efficiency and economy in the long run. Much of it has also gone into the purchase or lease of lands for public hunting.

This is one of the most serious problems confronting Florida. While hunting pressure has increased, the acreage of valuable hunting land has decreased. It is estimated that more than 75% of Florida's best game territory is posted against public hunting. The solution of this problem is one of the top projects of the Commission. During the past biennium the agency has purchased 52,000 acres of land to be used for public shooting, and leased 110,000 more. Through arrangement with the U. S. Forest Service, U. S. Air Force and the Florida Forest Service and by lease and outright purchase, the Commission has now made available some 2,106,956 acres of public shooting area. Below is a list of the areas owned by or under a cooperative wildlife management agreement with the Game and Fresh Water Fish Commission.

PUBLIC HUNTING AREAS

Area	Location	Acres	Owned By
Eglin Field	West Florida	450,000	U. S. Government
Apalachicola National Forest	West Florida	638,217	(Air Force)
Osceola National Forest ...	Northeast Florida ..	161,814	U. S. Forest Service
Ocala National Forest			U. S. Forest Service
Gulf Hammock Wildlife Management Area	Central Florida	441,925	U. S. Forest Service
Charlotte County Wildlife Management Area	Levy County	110,000	Robinson Land & Lumber Co.
Palm Beach County Wildlife Management Area ..	Charlotte County .	61,000	
Blackwater State Forest ...	Palm Beach County	52,000	Game & Fresh Water Fish Comm.
	West Florida	182,000	Game & Fresh Water Fish Comm.
TOTAL		2,106,956	Florida Forest & Park Service

All of the above areas except two owned by the Game and Fresh Water Fish Commission are now open to public hunting. The Charlotte County Area is being used to produce quail for restocking other parts

of the state. The Palm Beach County Area has only recently been purchased and will be protected from hunting for five years to permit game populations to build up. On all the areas listed a portion is set aside as a breeding ground.

Restocking

More than \$100,000 has been set aside in the current operating budget for restocking purposes. Restocking, though not the answer to all of our wildlife problems, is an important and necessary part of any long range conservation plan. During the past two years important restocking projects have been carried out for quail, deer and turkey, and, of course, for bass and bream and other species of game fish. In 1947 31,075 quail were purchased from Mexico at \$2.00 each and released in shot-out areas over the state. In 1948, however, the Mexican government clamped an embargo on quail and none could be imported for restocking. As a substitute the Commission launched a state wide quail trapping program whereby birds would be taken from citrus groves, suburban areas and other places inaccessible to hunters and transplanted in sections where the quail population is low. Under this plan land owners on whose property quail are trapped will be paid 50 cents a bird. Trapping is under the supervision of Commission biologists and wildlife officers. It is estimated that more than 100,000 birds can be obtained in this manner.

During the biennium 474 white tail deer have been imported from Wisconsin and released throughout the state. Thirty-five of these deer were released in 1947 and 439 in 1948. The deer cost \$90 a piece. Two hundred of them were purchased out of Game Commission funds. The remainder were purchased from funds received from the Live-stock Sanitary Board as a reimbursement for the more than 9,000 deer slaughtered during the tick eradication program several years ago. The Commission plans to continue restocking deer habitats at the rate of about 200 a year.

In 1947 337 half-wild turkeys were also purchased by the Commission for restocking purposes. Biologists, however, have questioned the effectiveness of restocking with semi-tame turkeys. Instead, this year the Commission plans to trap wild birds from overstocked sections of the State and move them to sparsely populated areas.

During the calendar years 1947-48, the Fish Management Division released \$376,000 fingerling fish in waters throughout the state. These fish were produced at a cost of \$5.34 per thousand at the Commission's three hatcheries—Winter Haven, Wewachitchka and Holt. A total of 194 bodies of water were restocked with fish in 1947 and a total of 171 waters received fingerlings in 1948.

Scientific Research

In spite of the comparatively short time the Game and Fish Commission's research program has been in effect, a great deal has been accomplished. Scientific investigation is recognized as one of the fundamentals in wildlife and fish conservation. Until two years ago there has been little or none in Florida. During the report period, however, there have been numerous important surveys and studies made of Florida's wildlife and fisheries.

In the fisheries division, individual lake studies have been made in 13 counties in addition to spot surveys throughout the State and the two long range, comprehensive research programs now under way on Lake Okeechobee and St. Johns River.

In the game management division there has been a quail research and development program instituted in Charlotte County. A state wide census of deer and turkey population and a state wide water fowl restoration program has been launched and in North Florida a project has been started to develop farm game habitat. In 1949 a state wide quail census will get underway.

These various research programs have already begun to contribute toward wiser and better game and fish management. Many pre-conceived ideas have been contradicted and many new ideas developed. It was found, for instance, that controlled burning and limited grazing is an aid to quail production in the southern part of the state. It was also found that considerably too much emphasis has been placed on predator control and restocking. Through scientific wildlife investigation, the commission has now learned habitat improvement and protection is the best medicine for a sick game supply. In fisheries, biologists found that in many cases the state's problem was one of too many fish instead of not enough. Biological surveys in practically every section of the state indicated that over-population rather than scarcity was the reason for poor fishing. It was found that a body of water would support only a certain poundage of fish and that in many waters fish were too numerous to allow any number to reach a legal size. For this reason in 1948 the Commission abolished all legal size limits on fresh water fish. It also removed closed seasons except in a few local areas. Biological investigation had proven that it was useless to close a season in an effort to protect spawning fish, since it was found fish in Florida waters spawn virtually every month out of the year. Findings like these will help the Commission pursue a wise path toward effective game and fish restoration.

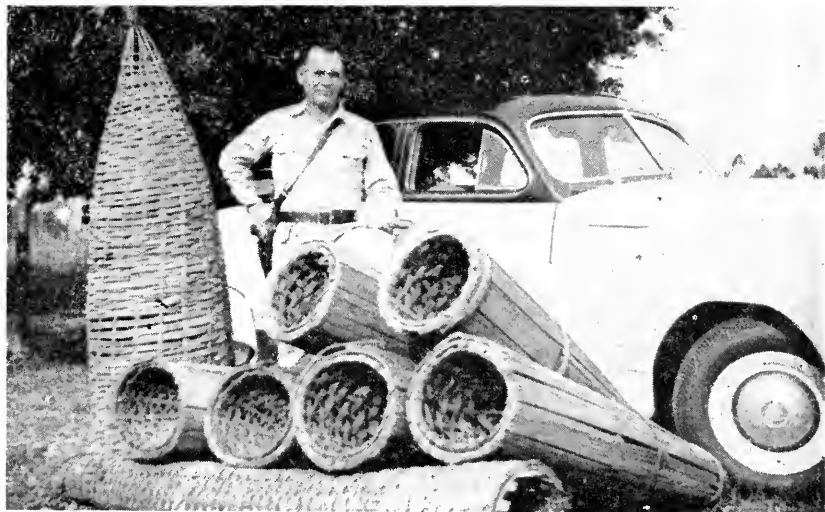
Commercial Fishing

One of the most controversial subjects with which the Commission has had to deal during this report period was the netting of

game fish on Lake Okeechobee and St. Johns River. These two bodies of water were closed to netting in 1946 by the Commission. Commercial fishermen appealed the matter to the State Supreme Court which early in 1947 upheld the authority of the Commission. In the 1947 session of the legislature a total of five bills were passed designed to allow the resumption of netting on the two bodies. In the course of time all five of these legislative acts were found to be unconstitutional and the Supreme Court once again affirmed the right of the Commission to regulate fishing on Lake Okeechobee and the St. Johns River.

Meanwhile the fish management division had begun investigation on the two bodies of water to determine definitely whether or not commercial netting was detrimental to fish supplies. The research program on the two bodies was outlined to cover a two to five year period. At the same time the Commission had agreed to allow commercial netters, under a special permit system, to take catfish and other rough fish by means of traps and pound nets. Early in 1948 the Commission appointed a 14-man committee to study the situation on the two lakes and make recommendations. The committee recommended that the Commission enlarge its biological staff in order to shorten the survey. Acting on the recommendation of the committee the Commission granted additional funds to the fish management division, and adopted a plan whereby commercial netters could participate in the scientific survey. Under this program at least preliminary answers to the controversial commercial fishing question are expected to be available some time in 1949.

Illegal fish traps confiscated by wildlife officers.



U. S. Forest Wildlife Management Areas

The Wildlife Management Areas established on the Apalachicola, Ocala and Osceola National Forests are operated under the terms of a cooperative agreement between the Commission of Game and Fresh Water Fish and the U. S. Forest Service. Game management plans for the areas are prepared stipulating seasons, bag limits, stocking plans and law enforcement organization. Beginning in 1948, special management rules for the management areas were incorporated in the Wildlife Code of the State of Florida.

Apalachicola Forest

During 1947 and 1948 the Apalachicola Forest management area remained closed to the hunting of deer, squirrel and game birds, since these populations have not been adequate for general hunting. However, during this recovery period, the management area is in effect a breeding ground and has improved hunting in open season areas adjacent to it.

Bear hunts were conducted in 1947 and 1948. The 1947 hunts consisted of six hunts of three days each. A total of 89 bear hunters bagged three bear. The same system of hunts was conducted in 1948. The 35 bear hunters failed to bag a bear, due, primarily, to failure on the part of the dogs used.

These nets were taken from fresh water lakes in Okalooso County.



Osceola Forest

This management area has remained closed to all hunting during 1947 and 1948. The deer population is increasing and each year better hunting is reported in adjacent areas. A bear hunt in 1949 is under consideration.

Many improvements in the boundaries and administration of the Florida National Forests Cooperative Wildlife Management Areas are under consideration. Constructive criticisms are being received from the hunters in increasing numbers each year, indicating a growing realization on the part of the hunter that these facilities are for them to use and enjoy in a manner which will produce an annual game crop.

Ocala Forest

Florida employs three wildlife officers who are regularly assigned to the Ocala management area and adjacent territory. The 10th and 11th Annual Ocala Hunts were conducted in 1947 and 1948, respectively. A record number of 3957 hunters participated in 1947. The following is a summary of the 1947 and 1948 hunts:

	1947	1948
Adult Hunters (over 18 years old)	3550	3477
Youths	407	345
<hr/>	<hr/>	<hr/>
Total	3957	3822
Legal Deer Kill		
Spike Buck	155	56
3 points or more	219	231
Unknown	8	0
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Total	382	287
Crippling losses (legal bucks)	8	13
Illegal and dog killed deer		
Does salvaged	13	20
Does not salvaged	13	25
Illegal Bucks salvaged		10
Illegal Bucks not salvaged		7
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Total known losses	31	75
Arrests	10	5
Convictions	4	3

The 1948 Hunt was the first one under the spike law; which partly accounts for 95 less legal deer being killed in 1948. However, many hunters moved outside the management area after the third to fifth day and got their buck, without having to turn their permit in. At least 20 of the deer losses were due to being chased or caught by dogs. Spike bucks represented 42% of the 1947 kill. The 1948 legal deer kill was classified by condition groups as follows: Excellent—23%; Good 50%; Fair—24%; Poor—3%.

Salvage deer were turned over to non-profit institutions for use on their menus. The legal kill record for 1948 is complete; the losses are nearly complete. About 38% of the hunters in 1948 have reported their kill of other game, which is shown below in comparison to 1947 reports, which were very incomplete:

Species	1947	1948
Squirrels	440	1134
Quail	81	54
Bear	1	2
Waterfowl	11	57
Furbearers	No season	19
Other	No season	20

There was one non-fatal gun accident in 1948; none in 1947. One hunter died of a heart attack while hunting each year.

No trapping permits were issued in either 1947 or 1948, indicating the present lack of interest in harvesting furbearers.



Wildlife officers net stranded fish from a South Florida drainage ditch for removal to deep water.

Florida Wildlife Federation

The Game and Fresh Water Fish Commission has made a great deal of progress during the past two years. Much of it could not have been accomplished without the help of the Florida Wildlife Federation and other sportsmens' clubs in the state. The Federation and its able president, Ralph G. Cooksey, originally recommended many of the most successful innovations put into effect by the Commission. It was the Federation that first recommended a division of information and

education. Other recommendations made by the organization including uniforming of the officers, uniform hunting seasons and a study of the state's pollution problem. The Wildlife Federation was reorganized in November 1946 after having been virtually dormant for some time. Ralph Cooksey, prominent St. Petersburg businessman was elected its first president and has been re-elected each succeeding year.

In 1947, shortly after the Federation's reorganization, it boasted 23 clubs and a total membership of 6,000. Today it has a total of 66 affiliates with an active membership of over 16,000. Federation officials have been instrumental in forming many of these new clubs. It has in its 2 years of progress established an educational service which works closely with the Commission's Division of Information and Education. To date the Federation has prepared two free booklets on conservation activities and has in the mill several more. In addition, it offers a free speaker service to every sportsmen's club in the state. Through its activities more and more sportsmen are finding that a united front is the strongest weapon against the forces that would exploit our wildlife resources.

Trapping

There is considerable trapping in Florida, but generally speaking fur sales cannot be considered economically important in the overall game and fish picture. There is a total of 11 licensed fur dealers throughout the state. During the trapping season of 1946-47 these dealers handled a gross volume of 9,908 furs. Raccoon pelts constituted the heaviest fur traffic. A total of 5,400 were shipped out of the state. Next in volume was alligator hides with a total of 1,711 handled. In addition, dealers handled 446 otter furs, 195 opossum hides, 104 mink, 76 fox, 62 skunk, 13 wildcat and 5 civit cats.

During the 1947-48 season fur-dealing slumped considerably. Only 4,320 hides were handled during that period. 2,219 of these were raccoon and 476 alligator. The remainder was made up of other species. These figures, of course, do not include furs shipped out of the state by individual trappers.

Future Plans

The commission has made much progress in the past two years, but it hopes to make even more as time goes by. For one thing, it hopes to develop Florida into the wild turkey capitol of America. At present we have about 35,000 birds in the state, a population second only to Texas. This, however, is only a fraction of the population that can be developed. Biologists estimate there are more than 8,000,000 acres of top-flight turkey range in Florida. Beginning this year, the commission will start restocking these various areas at the rate of

about 300 wild-trapped turkeys per year. With such restocking and added protection, game technicians feel that within 15 years the state can boast a turkey population of more than 150,000 and support an annual kill of at least 30,000. If this is accomplished, Florida will soon be to the turkey hunters what the Dakotas are to the pheasant hunters.

The same situation exists relative to deer. According to a census taken last year, Florida now has about 32,000 whitetails. By judicious restocking and careful protection, biologists say the number can be increased to at least 400,000 in a period of from 10 to 15 years. This would compare favorably to stocks in such deer-hunting meccas as Pennsylvania, Michigan and Wisconsin.

The commission hopes within the next few years to establish a permanent training school for would-be wildlife officers. Rookie officers would be given at least six weeks intensive training and examinations before being allowed to take the field.

Next year the commission hopes to embark seriously on a state-wide hyacinth eradication program. This problem is fast becoming a terrific detriment to fresh water fishing. If it is not controlled, it could very well, within a few years, virtually destroy the vast fish resources the state has labored so long to preserve. Hyacinth eradication will necessarily be a widespread and expensive proposition, costing at least a half-million dollars a year. It can not be carried on unless a new source of revenue is found; however, it is hoped that the next session of legislature will see fit to consider possible revenues to carry out this important work.

The commission also hopes to continue and expand its scientific research program. Within a period of five years it is hoped that careful study can be made of virtually every fresh water body in the state in an effort to improve sports fishing. More and more study will be devoted to quail, dove and waterfowl. From these studies will come the solution to our wildlife problems.

A vastly more expanded conservation education program will be activated. More work will be done in the schools in an effort to train the sportsmen of tomorrow in the ways of conservation. Text books will be prepared and visual educational facilities will be explored to the fullest. All this will cost money; perhaps a great deal of money. However, every modern sportsman knows that the dollars spent for conservation today are buying a priceless heritage for the generation of tomorrow.

GAME MANAGEMENT DIVISION



O. EARL FRYE, JR.
Chief Wildlife Biologist

GAME MANAGEMENT

THE past two years were marked by the greatest period of progress in wildlife management in the history of conservation in Florida. Three major factors combined to bring this about: (1) The Constitutional Amendment of 1942, which enabled the Game and Fresh Water Fish Commission to proceed in wildlife restoration with a minimum of political interference. (2) The demand backed by sportsmen for sound wildlife management practices to procure better hunting on the ever decreasing hunting territory for the ever increasing army of hunters. (3) The increase in the Federal Aid (Pittman-Robertson) appropriation which made funds available for a constructive research, development and land acquisition program.

This period has witnessed an increase in employment of men trained in the science of wildlife management; a greater emphasis on sound wildlife management practices such as habitat improvement; the enlargement of the research program designed to diagnose the basic causes for game shortages and to work out methods for remedying such shortages; and a great increase in the amount of land acquired for development as public hunting areas. At the same time there has been a decrease in such popular, but generally unproductive, so called conservation measures as hap-hazard restocking and predator control.

There is a gradual, almost reluctant, acceptance of a realistic viewpoint toward wildlife management; a realization that wildlife management is not simply restocking with game, employment of additional game wardens, or setting of hunting seasons, but instead is a tremendous complexity of biological, human, and economic relationships.

Florida has definitely passed through the "save what we have left", politically run, phase of wildlife management and is headed toward a progressive program that will result in an increased harvestable surplus of game for the Florida sportsman.

The most important game birds and mammals of Florida are the bobwhite quail, the white tailed deer, the wild turkey, the several breeds of wild ducks and geese, the mourning dove and the grey squirrel. These animals will be taken up individually in the following discussion with brief remarks as to the steps that have been taken toward their management. The Federal Aid projects mentioned in the foregoing discussion will be treated in detail under the report of Federal Aid activities.

Quail

There are three primary clear cut factors that have been operating to reduce quail in Florida in recent years. These are: (1) The increased mechanized "clean" farming in farming areas. The first farming operations in Florida with their small fields, rail fences and general crops resulted in the production of ideal quail habitat. With the advent of mechanized equipment the fields were enlarged, fence rows cleaned out, and large acreages planted to one cash crop such as cotton, and quail decreased. (2) The growing of dense stands of unburned slash pine for pulpwood in north and west Florida. The paper mills in Florida have caused a demand for enormous quantities of young pine for pulpwood. This has resulted in the growth, largely through fire protection, of dense stands of slash pine and a heavy understory of wiregrass and other vegetation that combine to produce very poor quail habitat. (3) The disking of tremendous acreages of formerly good quail territory in south Florida for improved pasture. Here the removal of palmetto cover has resulted in complete elimination of quail from such areas. Quail must have cover to survive.

Unfortunately for quail, these practices are all of great importance to the economy of the state and cannot therefore be sacrificed for the welfare of quail. On the other hand, there are minor modifications of all three practices that can result in substantial benefits to quail if sufficient inducement can be found to influence the landowner to apply the remedial measures.

The importance of overhunting of quail has been greatly over-emphasized. Because of the distribution of areas such as dense woodlands or citrus groves where the birds are comparatively safe from the hunter, and the fact that quail hunting becomes no longer worthwhile long before all breeding stock is eliminated from a large area, quail have rarely been reduced to such an extent that they cannot build up to the carrying capacity of the land within two normal years. The problem of quail management in the state is clearly, then, one of increasing the carrying capacity of the land through habitat improvement.

On the other hand, it is believed that in certain areas, such as the open flatwoods of south Florida where birds are particularly vulnerable to overshooting, quail are reduced every year below the normal breeding population of the area. Under such conditions careful restocking with wild quail is believed to be worthwhile. Following this thought 31,075 Mexican quail were imported at a cost of approximately \$2.00 each in the spring of 1947 and released throughout the state. No birds could be purchased in 1948 due to a ruling against shipping of quail from Mexico.

During the past two years a number of quail have been trapped from various breeding grounds and urban areas by wildlife officers, notably in south Florida, and released in open territory. With the exception of 2,083 trapped from the Charlotte County Game Man-



Wild quail feed under a trap near Welaka. Extensive quail trapping is now being carried out throughout the state.

agement area in 1947, no accurate record of the number of birds so handled is available. In consideration of this background a project was begun in the summer of 1948 under the leadership of a trained biologist to organize a statewide quail trapping program to utilize birds now "going to waste" on breeding grounds and in urban areas. Careful records are being kept of the success of this project to determine if the results justify the expenditure of funds in trapping these birds.

In addition to the quail restocking efforts three Federal Aid projects dealing specifically with quail, were carried out or were started during the past two years. These projects are discussed in the portion of this report dealing with Federal Aid activities.

Deer

The situation with regard to deer is entirely different from that outlined for quail. Whereas the primary factor that can increase quail in Florida is habitat improvement, the primary deer management procedure is protection against overhunting. There is a tremendous amount of satisfactory deer habitat in Florida that is now underpopulated. On such areas deer can be increased tremendously, simply by protection against overhunting and judicious restocking.

One important illegal hunting practice that has helped decimate the Florida deer population has been that of "jacklighting" deer at night. In using this method the hunter blinds the deer with a bright light and is able to approach within easy gunshot range. A recent ruling by the Game and Fresh Water Fish Commission making

illegal the possession of a light and gun at night for the obvious purpose of molesting game has gone, and will continue to go, a long way toward stamping out this completely unsportsmanlike practice:

The deer population in Florida has shown a definite increase in the past few years due to three major factors: (1) Better enforcement of game laws; (2) The posting of large tracts of land by cattlemen and other private interests. (3) The general movement of homesteaders from rural areas, particularly in the ranching areas of south Florida.

The Florida deer population suffered a tremendous blow during the deer slaughtering tick eradication campaign of 1939 to 1944. During this period an official total of 9,478 deer were slaughtered in Orange, Osceola, Glades, Highlands, Hendry and Collier Counties. Since 1942 Florida has made extensive efforts to replace these deer. In the spring of 1947, 35 deer were released in the Ocala National Forest. This represented a decrease from previous years since the money which had previously been made available for deer purchase by the Livestock Sanitary Board was used by them to control a new outbreak of the Texas fever tick in Florida. In the spring of 1948 a total of 439 deer were purchased, at a cost of \$90.00 each, for restocking purposes. Of this total 239 were bought with Livestock Sanitary Board funds and the remaining 200 were bought with Game and Fresh Water Fish Commission funds. These animals were released in various places over the state, particularly in those counties where deer were slaughtered during the tick eradication campaign.

The deer released in the past two years were purchased from Wisconsin and as yet no conclusive information has been obtained relative to their survival in the entirely different habitat offered by Florida.

Beginning with the 1948 release all deer were tagged with numbered aluminum ear tags in an effort to determine their survival after release in Florida.

Turkey

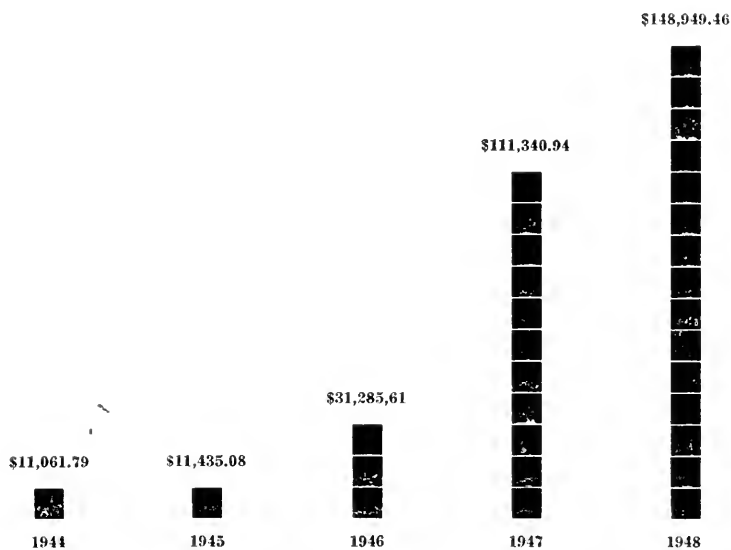
As with deer, the immediate problems of turkey management in Florida are protection from man and the restocking of key areas. The recently completed Florida deer and turkey survey indicates that Florida probably has more good turkey habitat and more turkey than any state except Texas. At the same time it has shown that much of the turkey habitat is underpopulated.

Florida has recently completed plans for a long range turkey restoration program under the direction of a trained biologist. This program is based largely on the establishment of key restoration and management areas over the state. Such areas will be restocked with wild-trapped, native Florida turkeys where necessary. Arrangements are being made to trap turkeys on several areas over the state, particularly on lands in Glades County belonging to Lykes Brothers, Incorporated.

The two Federal Aid research projects mentioned in the discussion of deer, also dealt with turkey. As a general rule factors influencing one species are important to the other.

During the period covered by this report the game commission purchased 337 half wild turkeys which were liberated in Marion, Lake, Osceola, Seminole, Orange, Volusia, St. Johns, Putnam, and Brevard Counties. The Commission is aware of the fact that the half wild turkey is a poor substitute for the native wild trapped bird for restocking purposes, but felt that in the absence of a readily available stock of wild birds this action might be justified. In other states extensive studies on the survival of half wild turkeys have been conducted, and it has been found that only under the most careful protection from overhunting have these birds been able to survive. Many of the claims of success made by advocates of the use of domestic turkeys in Florida seem to be without foundation. It appears that most of the increase in turkeys on areas restocked with tame birds can be attributed to the remaining wild stock that was given an opportunity to increase as a result of the protection from overhunting that accompanied the restocking efforts. There is no doubt that semi-domestic turkeys can be raised under semi-domestic conditions but the end result is a half wild baryard fowl that has lost much of its true sporting value and is unable to cope with heavy hunting pressure.

FEDERAL AID ALLOTMENTS FOR 1944-48



The above chart shows federal aid receipts over a five-year period.

Waterfowl

Duck and goose hunting in Florida is not the important sport that it is in some of the states to the north. Only a comparatively small percentage of the tremendous amount of water area in Florida is good waterfowl habitat. The Lake Okeechobee marsh is the outstanding waterfowl habitat in the state.

Waterfowl hunting in Florida is dependent largely upon the continental waterfowl population and, as it now stands, there is little that Florida can do to increase waterfowl other than supply good wintering areas. Florida is unique among states, however, in that it possesses one excellent game duck, the Florida Duck or Florida Mallard, that breeds in the state and remains in the state throughout the year. If a suitable method for increasing this duck can be found it offers excellent possibilities for supplying duck hunting to the Florida sportsman.

One Federal Aid project was begun in 1948 to inventory and classify waterfowl habitats and populations within the state. This was done with the specific idea of discovering means of improving waterfowl habitat and thereby possibly increasing the size of the wintering waterfowl population. Another specific objective of this project is the investigation of possible means for increasing the Florida Duck.

Mourning Dove

As with waterfowl the Mourning Dove is classified as a migratory bird and comes under the jurisdiction of federal game agencies. It is most important as a game bird in the corn and peanut farming areas of the state. The dove population throughout the country has steadily decreased during recent years. Because of this decrease, and because of the yearly controversy concerning dove seasons and the general lack of knowledge of dove movements and life history, a coordinated study of the mourning dove is being planned for the southeastern states. Florida's participation in this study was approved by the Game and Fresh Water Fish Commission but as yet a qualified man to direct the work in Florida has not been found. One of the specific objectives of this study is the acquisition of knowledge concerning movements of the dove for use as a background for a more equitable and satisfactory arrangement of dove hunting seasons.

Squirrel

Of the two species of squirrel listed as game animals in Florida the cat or grey squirrel far outclasses the fox squirrel in numbers, popularity, and quality as a game animal. Fox squirrels are generally shot incidentally by persons hunting other game.

There appears to be very little that can be done at this stage to benefit squirrels in Florida other than to properly regulate their hunting.

The Federal Aid Program

For the past two years much of the financial load of Florida's wildlife management program has been carried by the United States government under a federal aid program.

In 1937 the Federal Aid in Wildlife Restoration Act, commonly called the Pittman-Robertson Act, was approved by Congress. This bill provided that funds realized from an excise tax on sporting arms and ammunition be apportioned to the states for use in wildlife restoration work, according to their area and their annual sale of hunting licenses. The state must match each three dollars of federal money received with one dollar of state money.

This money is to be spent by the state either on research, development, land acquisition or maintenance of projects, with a small percentage of the total fund set aside for administration. All expenditures must be approved by the U. S. Fish and Wildlife Service, the trustee of the federal aid fund.

Inasmuch as personnel as well as projects must be approved by the Fish and Wildlife Service, the bill was designed particularly to act as a stimulus to state game departments for beginning a progressive wildlife research and management program under the direction of scientifically trained men.

Due to a modification of the act, which permitted the entire years' revenue to be apportioned to the states, Florida's federal aid allotment was increased from \$31,285.61 in 1946 to \$111,340.94 in 1947 to \$148,949.46 in 1948.

Here are some of the projects undertaken under federal aid funds.

Charlotte County Quail Investigation

In January of 1946 a trained biologist was employed to study quail on the Charlotte County Game Management Area. The study was designed specifically to develop methods for increasing quail on the Charlotte County Area and generally to develop methods compatible with cattle raising for increasing quail in South Florida flatwoods.

Charlotte County research has been directed along several major lines of investigation: food habits of Charlotte County quail; weather, shooting pressure, and other factors influencing the quail population in Charlotte County; the sex and age composition of the Charlotte County quail populations; the effect of burning, grazing and 'disking' on vegetation and the quail population; and experimental quail food plantings.

To date no plant has been found, with the possible exception of one or two native species, whose planting as quail food appears to be a practicable quail management procedure in South Florida Flatwoods. The best method of increasing quail food in Charlotte

County appears to be the stimulation of native quail foods by the proper use of fire, grazing and disking. Judicious burning is definitely beneficial to quail and indications are that winter grazing will also improve quail habitat in flatwoods areas.

Disking has been shown to greatly increase quail food plants on ungrazed areas the first year following disking. On areas not protected from grazing cattle seek out disked places and destroy most of the quail food plants. The planned management of quail on the Charlotte County area revolves primarily around winter grazing, controlled burning and removal of cattle during the quail food growing season.



Newly released deer browse in a protected area.

During the spring and summer of 1948 an experiment with artificial feeding of wild quail was conducted. Results of this study appear to justify an enlargement of the experiment to investigate the possibility that artificial feeding by means of automatic feeders may be the most effective means of increasing quail food on the Charlotte County Area.

Since the beginning of the Charlotte County study, analysis has been made of the crop contents of more than 1,600 quail. Most of these birds were obtained from hunting lodges in Charlotte County. In addition, 5,924 quail have been examined for sex and age. Information resulting from the latter study is extremely useful in evaluating breeding success as correlated with weather, hunting pressure, and other factors. The results of the three year Charlotte County Quail Investigation will be published in 1949.

Charlotte County Quail Project

This project is designed to put into effect management practices developed through the Charlotte County investigation project. The primary activities of the project have been controlled burning, disking, quail food planting, and maintenance of roads, bridges and other installations on the Charlotte County Game Management Area. Two equipment sheds have been constructed from lumber salvaged from old Army installations on the Area. More than \$600 has been realized from the sale of scrap metal, mostly bomb cases left on the Area by the Army.

In the spring of 1947, 2,083 quail were trapped from the Charlotte County Area for restocking other parts of the State.

Grazing rights on the Area are leased to the Babcock Florida Company at the rate of 10¢ an acre.

Coordination Project

The Coordination Project is designed to serve as a medium for liaison between the U. S. Fish and Wildlife Service and the Game and Fresh Water Fish Commission and to furnish immediate supervision of federal aid projects. One particular responsibility of the coordinator is the preparation of plans and reports for all federal aid projects.

Florida Deer and Turkey Survey

Florida with its 22,000,000 acres of forest lands, large uninhabited areas, and mild climate, offers unusual opportunities for production of deer and turkey. It is doubtful that any other southern state has the amount of deer and turkey habitat that is found in Florida. This is due, to a large extent, to the generally good distribution of different types of cover over the state. Almost every area of pine flatwoods is broken up by cypress ponds, cabbage and oak hammocks, or heavily forested stream bottoms. Almost every area of rolling sand hills is broken by lakes surrounded with cypress, bayheads, or oak hammocks. Many of the prairie lands of south central Florida have occasional cabbage palm or oak hammocks. In the cypress swamps of the Everglades there are ridges of slight elevation where grow pines, palmetto, oaks, and tropical broad-leaved trees. Even some of the sawgrass marshlands of extreme south Florida are dotted with frequent islands of bay, myrtle, holly and fern that offer some haven for deer.

In spite of the wealth of good deer and turkey habitat, populations of these species in Florida are low largely because of uncontrolled and indiscriminate persecution by man.

The state-wide deer and turkey survey, completed June 1948, revealed an estimated deer population of 32,466 in 63 counties. Only four counties do not have deer. There are 10 counties with a population of 1,000 or more; 13 counties with from 500 to 999; 7 counties

County	Arrests	Convictions	Acquittals	Pending
Hardee	7	5	2	.....
Hendry	27	26	1	.....
Hernando	35	29	5	1
Highlands	15	15	.....	.....
Hillsborough	7	7	.....	.....
Holmes	4	3	.....	1
Indian River	4	4	.....	.....
Jackson	82	64	15	3
Jefferson	23	6	10	7
Lafayette	18	16	2	.....
Lake	47	45	2	.....
Lee	14	14	.....	.....
Leon	23	22	.....	1
Levy	18	15	2	1
Liberty	10	10	.....	.....
Madison	15	13	2	.....
Manatee				
Marion	30	29	1	.....
Martin	10	9	1	.....
Monroe				
Nassau	4	4	.....	.....
Okaloosa	43	23	14	6
Okeechobee	5	3	2	.....
Orange	23	19	3	1
Osceola	1	1	.....	.....
Palm Beach	10	9	1	.....
Pasco	26	26	.....	.....
Pinellas	9	9	.....	.....
Polk	107	96	10	1
Putnam	3	3	.....	.....
St. Johns	58	55	3	.....
St. Lucie				
Santa Rosa	23	23	.....	.....
Sarasota	26	25	1	.....
Seminole	12	11	1	.....
Sumter	8	8	.....	.....
Suwannee	21	9	12	.....
Taylor	13	12	.....	1
Union				
Volusia	19	19	.....	.....
Wakulla	40	33	2	5
Walton	36	29	6	1
Washington	33	31	2	1
Total	1270	1095	140	35

RE STOCKING

Until just recently, the Commission's program of restocking has been mainly with quail and fresh water fish. Some experiments were carried on with wild guineas purchased from Cuba, and some chukars were purchased and liberated in Florida in an effort to propagate them here. These efforts met with little or no success. Since Florida is one of the few remaining states where the pure strain of the bronze wild turkey is still found, the Commission feels that any effort to restock with turkeys brought into Florida might result in the loss of this pure strain. For this reason it was considered better to give proper protection to those turkeys remaining in the State rather than import them. A strict observation of the season and bag limit on turkey should take care of the situation. Following the killing of deer by the State Live Stock Sanitary Board in connection with tick eradication work, it became necessary for the Commission to broaden its restocking program to include deer.

GAME SANCTUARIES, REFUGES, RESERVATIONS

Under the rules and regulations promulgated by the Commission the following definitions have been given to areas closed by order of the Commission:

Sanctuary—An area within which hunting, fishing and trapping is prohibited for an indefinite period of time.

Refuge—An area within which hunting, and/or fishing, and/or trapping is prohibited for an indefinite period of time.

Reservation—An area within which hunting, and/or fishing, and/or trapping is prohibited for a term of years set by the Commission.

One of the Fish Ponds at Holt Hatchery.



time and effort in improving food and cover conditions for them; instead habitats were destroyed and converted into cropland for the production of cash crops. Also until recently the presence or absence of quail has been of little interest to agencies cooperating with and advising the farmer. Therefore, lack of interest has largely been the result of education in a conservative, balanced system of land use. Under present practices of wise land use, emphasis is placed upon the importance of wildlife as a product of the land that should be conserved and managed. On almost every farm the Soil Conservation Service classified a portion of the land as wildlife land and recommends that it be developed as such.

With management progressing along such sound lines and the Game and Fresh Water Fish Commission furnishing planting material for the development of farm game lands, conditions will surely improve. Although interest is still at a low level on the average farm, the picture brightens every year. More landowners, especially those who derive some recreation from hunting, are inquiring as to how they can improve their lands for quail. In 1949 the Commission expects to distribute 1,000,000 bicolor seedlings, ten times the number distributed this year.

Palm Beach County Land Acquisition

In 1947 the Game and Fresh Water Fish Commission received option on 50,000 acres of land in Palm Beach County at \$5.00 per acre. Its purchase is to be extended over a period of five years. In 1947, \$58,304.40 of the Federal Aid Fund was allocated to land purchase under the Palm Beach County land acquisition project.

The entire 50,000 acre tract is being fenced and will be managed primarily for the production of turkey, deer, and quail for public shooting.

Gulf Hammock Deer and Turkey Survey

The present project, begun in February, 1948, is designed to furnish information for management of deer and turkey on the Gulf Hammock Game Management Area. Emphasis is being placed on studies of deer and turkey habitat, particularly with regard to the effects of lumbering and other activities of man on vegetation, and the consequent effect on deer and turkey. Also emphasized in the project are counts of deer and turkey and studies of phases of their behavior and life history essential to a well organized management program. Information is being gathered relative to the history of the area to serve as background for determining future management practices.

The Gulf Hammock tract is predominantly calcareous hammock, which makes up about 60% of the total area. Marsh comprises about 20%, flatwoods 10% and cultivated or abandoned fields about 1% of the area. The remainder is made up of ponds, cypress swamps, cutover lands, and more or less indeterminate mixtures of the different types.

DEER AND TURKEY POPULATION BY COUNTIES

COUNTY	DEER	TURKEY	COUNTY	DEER	TURKEY
Alachua	25	30	Lee	575	190
Baker	750	50	Leon	630	807
Bay	20	100	Levy	1,340	1,800
Bradford	10	0	Liberty	600	400
Brevard	390	690	Madison	0	5
Broward	350	0	Manatee	13	25
Calhoun	50	300	Marion	3,440	380
Charlotte	370	300	Martin	100	30
Citrus	770	720	Monroe	1,000	50
Clay	110	12	Nassau	1,050	200
Collier	1,450	700	Okaloosa	4,700	125
Columbia	1,000	0	Okeechobee	130	450
Dade	550	265	Orange	650	2,200
DeSoto	25	60	Osceola	880	1,530
Dixie	2,000	1,500	Palm Beach	122	60
Duval	250	775	Pasco	140	350
Escambia	50	200	Pinellas	0	0
Flagler	500	400	Polk	210	640
Franklin	100	20	Putnam	190	200
Gadsden	150	100	St. Johns	450	900
Gilchrist	50	30	St. Lucie	150	200
Glades	40	1,680	Santa Rosa	800	280
Gulf	75	125	Sarasota	23	22
Hamilton	50	3	Seminole	590	745
Hardee	30	26	Sumter	105	1,840
Hendry	250	300	Suwannee	0	0
Hernando	140	50	Taylor	1,035	625
Highlands	175	305	Union	21	14
Hillsborough	15	335	Volusia	190	235
Holmes	0	68	Wakulla	250	150
Indian River	110	280	Walton	2,000	275
Jackson	30	172	Washington	2	303
Jefferson	510	975			
Lafayette	624	175			
Lake	210	12			
			TOTAL	32,613	25,779

☆ Hillsborough
 ☆ Holmes
 ☆ Indian River



A wild turkey going to roost in North Florida. A census last year revealed that the state contains 35,000 turkeys.

The economy of the region was in the past, and is at the present, based largely upon logging and lumbering operations. Due to the rocky nature of the soil and to poor drainage, farming has been of little importance. Free ranging cattle and hogs have played, and continue to play, an important part in the economy of the inhabitants. In the past considerable dependence has been placed upon the game of the region both for sale and for food. Two market hunters in the 1880's accounted for over 1100 deer in a period of nine months.

Studies completed to date indicate that overhunting is the factor at present limiting the deer population. Hunting is also of importance to the turkey population but there is one habitat deficiency, insufficient open grass areas, that may outweigh hunting pressure. With these facts in mind the management program for Gulf Hammock will revolve around protection of both deer and turkey from excessive hunting and the establishment of grassy clearings for turkey.



An osprey flies to its nest on the scenic, cypress-studded Wakulla River.



TOP—Thousands of kids line a lake bank, awaiting the start of the Orlando Fishathon.

BOTTOM — Bass fishing on the famous Dead Lakes of Northeast Florida.





Cane-pole fishing against a striking backdrop of gum and bay trees along the St. Marks River.



Closeup of two baby
water turkeys in their
nest.

A shaded, cypress-lined waterway through Dead Lakes.



Palm Beach County Fencing

This project was designed to fence the land purchased under the Palm Beach County Land Acquisition Project.

Advertisements for bids on the fence construction were published and a contract let to the low bidder, Mr. D. W. Rowell of Indiantown, Florida. The contract price for the fence construction, including cutting of posts, is \$199.00 per mile. The total estimated cost of thirty two miles of fence is \$11,793.76. Work was begun on the fencing project in the summer of 1948 and to date posts are set for more than 20 miles of the fence.

Florida Waterfowl Survey

This project is designed as an inventory of waterfowl habitat and populations throughout the state. Information resulting from it will serve as a background for a constructive waterfowl man-

A flock of coots on a lake in the St. Marks Refuge.



agement program. Among its particular aims are the development of techniques for waterfowl habitat improvement and investigation of possible methods for increasing the Florida Duck.

The bulk of the work has been concerned with waterfowl habitat investigations, with particular emphasis on food plant distribution and abundance. In the investigations, which have been conducted on about 90 areas, water quality tests are made, the type of substratum, physical characters of the shore, and the amount of water level fluctuation are noted. Submerged and emergent vegetation is recorded as to species, relative abundance, and, where possible, limiting factors. The knowledge of plant succession, growth requirements, and limiting factors to be derived from the accumulation of such data is necessary to any sound waterfowl management program. This is especially true in the South, where waterfowl management is very largely habitat management, *i.e.* water and plant manipulations.

Throughout the work so far, it has been apparent that over the state as a whole good food plants are not abundant. This seems to be the most widespread limiting factor of the various waterfowl areas. Another limiting factor in some cases is the density of the vegetation. In some places it is so thick that it is of very little value to ducks. On the other hand, there are several large areas in the state which are quite good. In them the numbers of wintering waterfowl will be dependent on the continental population rather than on local conditions. In this connection it must be remembered that the continental population this fall and winter (1948) is expected to be

This wildlife border of lespedeza provides food and cover for quail.



low again, about equal to that of last year. The state's two resident species, the wood duck and the Florida Duck, seem to have had a reasonably good breeding season. Even so, the total population of the Florida Duck, as determined by an airplane inventory, is smaller than was hoped. The State population is figured at 18,000 to 20,000 birds. At present its range is not great, and continued drainage of marshes will further restrict it. Maintenance of proper habitat is essential if this bird is to remain an important game species.

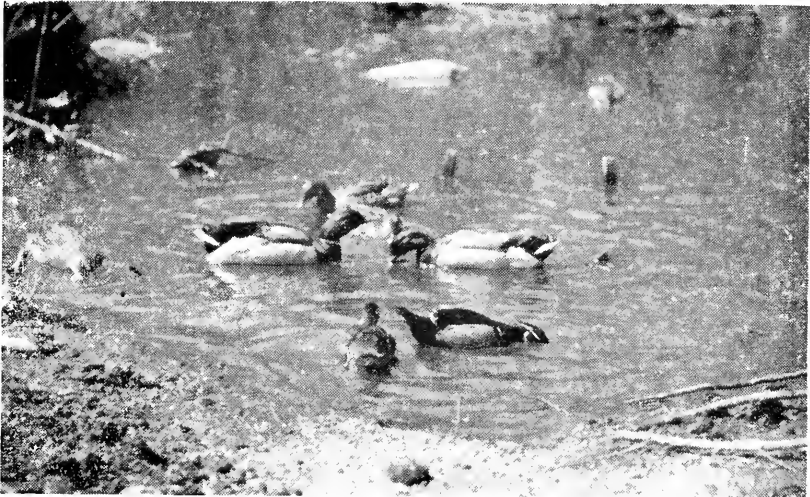
With the management techniques now at hand, those areas in the state most susceptible of development are the brackish marshes on both coasts, such as those on Merritt's Island. Impoundments in this type make good duck areas. Similar techniques could be employed on parts of certain rivers such as the Myakka and the Guano, and in parts of the lower Everglades. In addition, most inland water areas where the levels can be controlled have possibilities.

Gulf Hammock Fencing Project

The Game and Fresh Water Fish Commission and the Robinson Land & Lumber Company of Alabama have worked out an agreement whereby control of the wildlife on approximately 110,000 acres in the Gulf Hammock region will be turned over to the Commission for 25 years for management for public hunting. In exchange the Commission has agreed to fence the area and to furnish six permanent wildlife officers to patrol it and assist in the protection of the property against trespassers, timber theft, and general abuse.

The Gulf Hammock Fencing Project is designed to handle the cost of the fencing operation. An advertisement for bidders on this fencing job was published. All bids received were so high that it was decided to construct the fence with labor employed by the Commission

Mallards and wood ducks at play on Lake Apopka.



rather than to let a contract for its construction. The estimated cost of the forty five miles of fence needed is \$19,842.68. Work was begun on this fence in the summer of 1948.

Deer and Turkey Restoration

Upon the completion of the Florida Deer and Turkey Survey the leader of the survey was appointed leader of the present project. This project is designed to administer and develop the several deer and turkey restoration areas scattered over the state. An important part of the project is the trapping of native wild turkey and deer for restocking purposes. The provisions of the Pittman-Robertson Act require that deer and turkey trapped or purchased with Federal Aid funds be released only on lands that will be protected from hunting for at least five years. With this in mind, deer and turkey handled under the present project will be released only on specified management areas.

Areas set aside for restocking include the Apalachicola National Forest, the Hardee County Game Management Area and the Palm Beach County Game Management Area.

It is believed that 200 deer a year for the next five years will restock all desirable ranges. The restoration of turkey will take longer. Probably 200 turkeys a year for the next eight years will be required for the turkey restocking program.

The acreage seriously needing restocking with either deer or turkey is relatively small—approximately 2,480,000 acres of turkey range and 2,712,000 acres of deer range.



FISH
MANAGEMENT
DIVISION



JOHN F. DEQUINE
Chief Fisheries Biologist

FISH MANAGEMENT DIVISION

Chief Fisheries Biologist
Asst. Chief Fisheries Biologist

FISH CULTURE SECTION

Maintenance Engineer

Blackwater
Fish Hatchery

Winter Haven
Fish Hatchery

Wewahitchka
Fish Hatchery

Fairs, Exhibits, "Fishathons"
Fish Propagation,
and Distribution,
Fish Rescue, etc.

FISHERIES INVESTIGATION SECTION

Lake Okeechobee
Fisheries Survey

St. John's River
Fisheries Survey

Rough Fish
Control Studies

Fish Population Studies
Fisheries Biology
Fish Tagging
Rough Fish Control, etc.

ORGANIZATIONAL CHART OF THE FISH MANAGEMENT DIVISION

FISH MANAGEMENT

THE Fish Management Department was set up late in 1946 for the purpose of making a scientific analysis of Florida's fresh-water fishes, with the aim of producing better sport fishing and making maximum utilization of our fish resources. The department has expanded during the two years of operation until it includes the activities of twenty-six employees. Operations are under way in many phases of fish management.

The various divisions and the organization plan is shown in the figure on the opposite page. For a complete report on the activities of the Fish Management Department, it is necessary to describe these by the individual project names. For convenience all of the hatches are grouped together.

Fish Culture and Distribution

The table on page 55 shows the production and distribution of fish for the calendar years, and the distribution of fish by counties.

In addition to fish cultural activities, the personnel and equipment of the fish hatcheries have been active in other projects. Among these are the exhibition of live fish in aquarium displays at various county fairs, the state fair and other events. The locations of these displays put on in 1947-48 are listed below:

1947

Tampa State Fair
Orange County Fair
Lake County Sportsmen's Exposition, Eustis
Convention of Outdoor Writers of America at St. Petersburg
Pensacola Interstate Fair
Leon County Fair, Tallahassee

1948

Tampa State Fair
Orange County Fair, Orlando
Lake County Sportsmen's Exposition, Eustis
Jackson County Fair, Marianna
Pensacola Interstate Fair
Leon County Fair, Tallahassee
Gadsden County Fair, Quincy
Bay County Fair, Panama City
Northeast Florida State Fair, Jacksonville

Another activity which has demanded personnel and equipment has been the various "Fishathons." These have been held in St. Petersburg, Tampa, Orlando and Miami. Plans are in the making for expansion of this activity during the coming year, as well as for the establishment of permanent fishing lakes for children.

St. John's River Fisheries Survey

In June 1947, a survey of the St. Johns River was initiated with the following aims—to determine:

1. Standing fish population, and inter-relationship between species.
2. Potential annual yield of food and game fishes to determine amounts which can be taken without damage to seed stock.
3. Effect of various types of fishing gear on game and food fishes, with emphasis on determining proper equipment for use by commercial fishermen to harvest the annual crop of food fishes and control rough fish.
4. Formulation of enforceable regulations benefiting spawning conditions and habitat for both game and food fishes.
5. Accurate records of catches by sports fishermen.

Although this project has been under way for over a year, it is not expected that it will be completed for several years. It is hoped, however, that tentative recommendations can be made for the management for this body of water by June, 1949. Extensive studies of the effect of wire traps, pound nets and shad and herring seines used under certain conditions determined that these types of fishing gear could be used by commercial fishermen to harvest catfish, rough fish and shad and herring with little or no damage to the game fishes. These operations are at present being conducted under a permit system. The results of these studies are summarized elsewhere.

Seven seining crews are operating between Volusia Bar and Jacksonville removing rough fish and making studies of the total fish populations of the St. Johns River. Each commercial fishing crew is accompanied by a fisheries technician or biologist in the employ of this Commission. It is expected that the survey will determine the proper place of commercial fishing activities in this body of water so that these activities may continue to control rough fish. A number of fish have been tagged in this area, but additional time is necessary to obtain results from the tagging.

Lake Okeechobee Fisheries Survey

Some preliminary work was done in Lake Okeechobee during 1947, but it was not until August, 1948, that this project got under way. The objectives of this survey are similar to those outlined for the St. Johns River. Seven commercial fishing crews, each

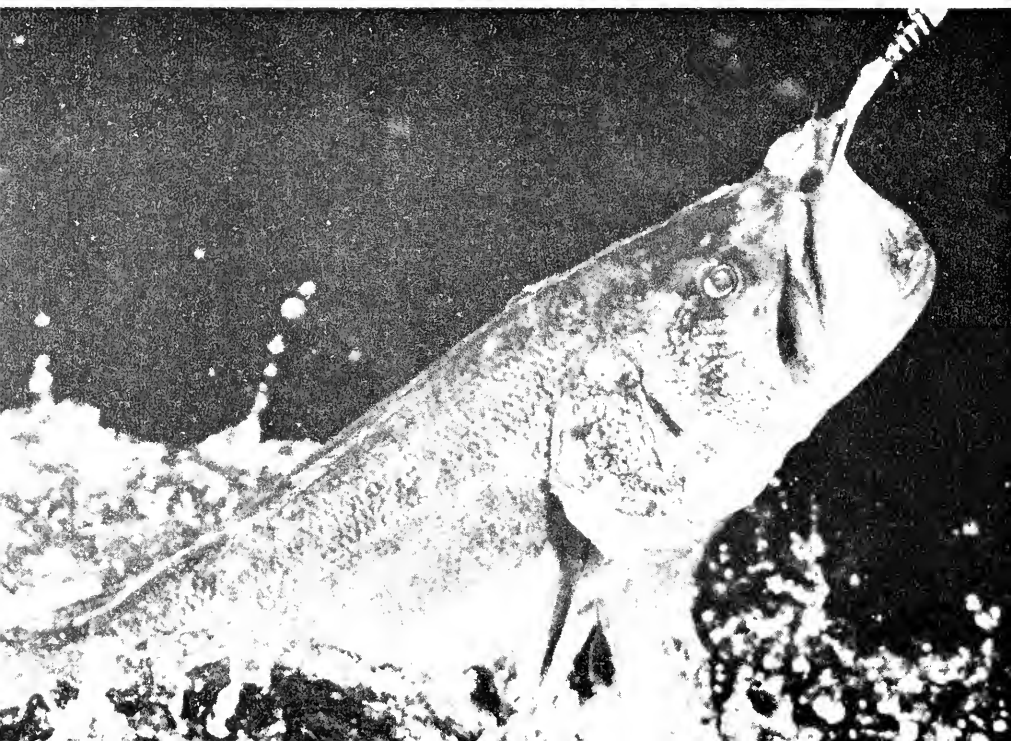


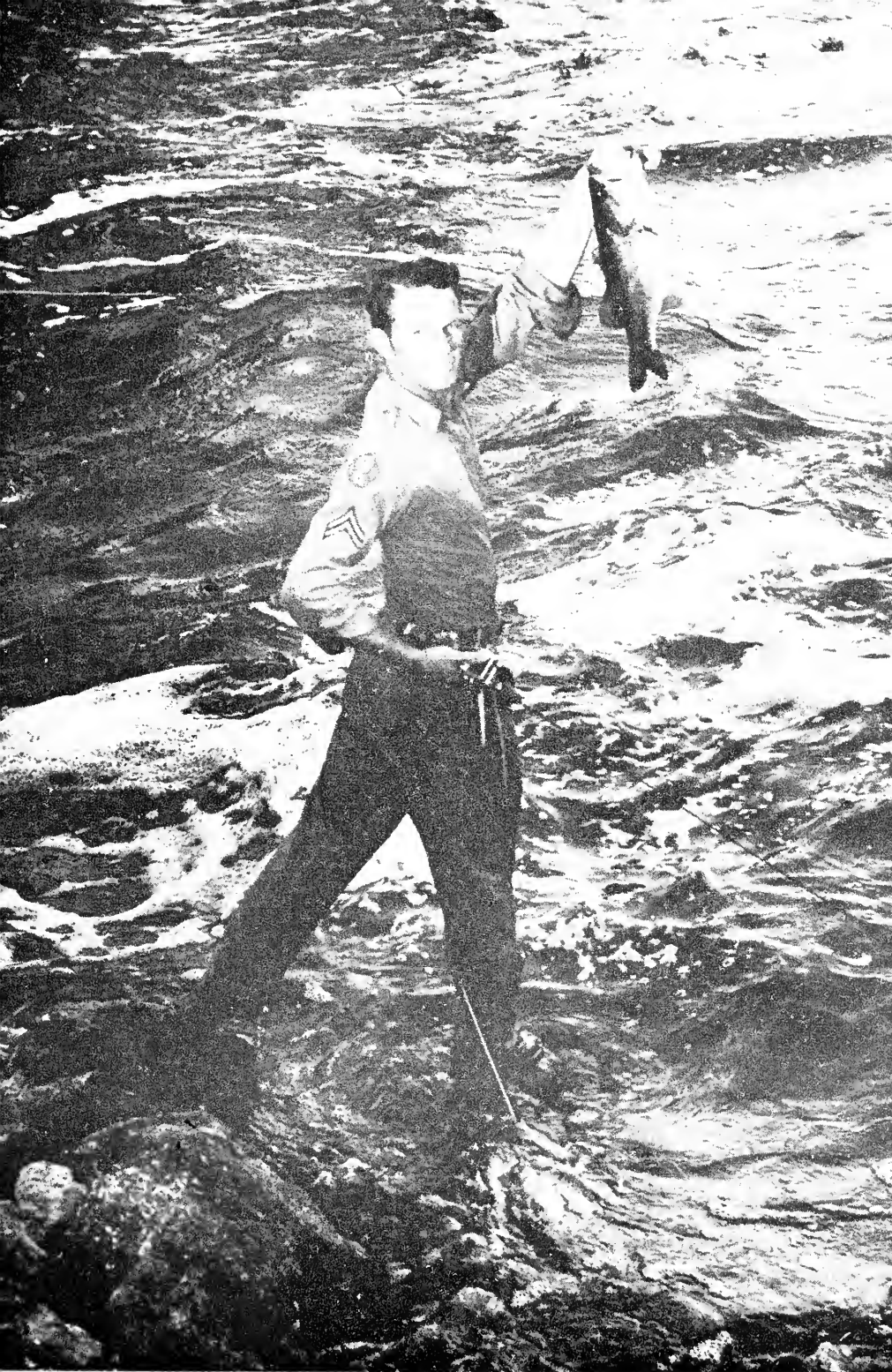
The end of a perfect day for these two boys and their dog.



TOP—Fishing for bream on the banks of the beautiful Ochlockonee River.

BOTTOM—One of Florida's big bass bites off more than he can chew.



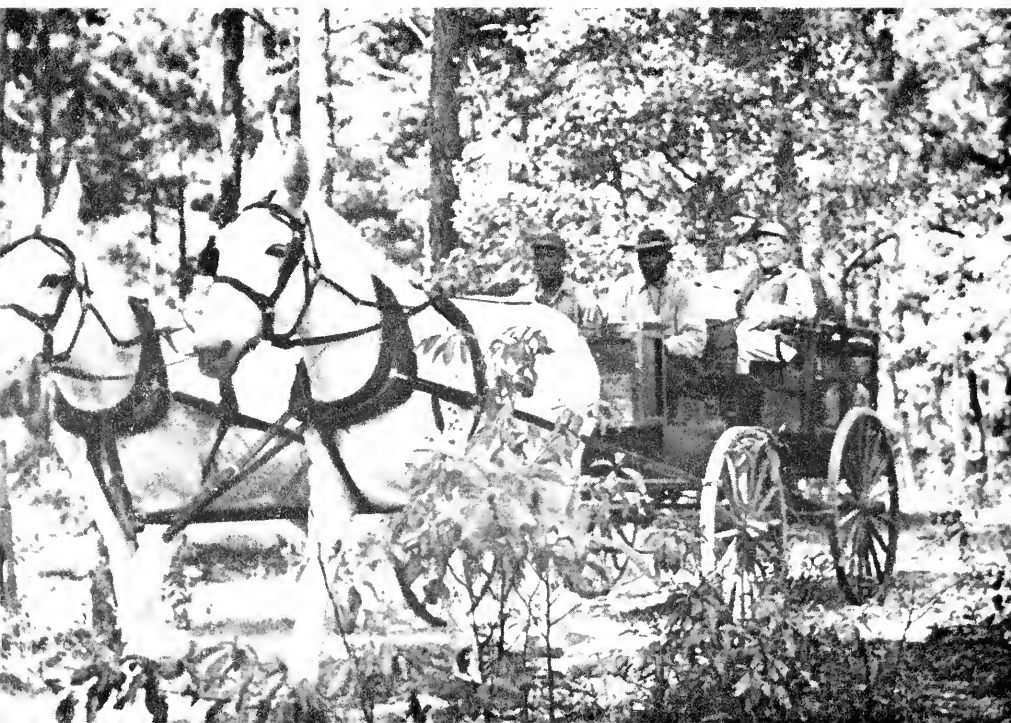


This big, bronze beauty was hooked along the shores of Lake Okechobee, great-grandpappy of Florida lakes.



A typical South Florida bobwhite. The quail is Florida's foremost game bird.

Hunting plantation style in the Old South atmosphere of North Florida.



accompanied by a fisheries technician or biologist are now operating in Lake Okeechobee for the purpose of gathering information on the fish population and controlling rough fish. Preliminary studies have shown that wire traps and pound nets are used under certain conditions do not have a harmful effect upon the game fish population. These are now being used under a permit system. A large scale fish tagging program is expected to start early in 1949.

Rough Fish Control Studies

A complete unit has recently been set up and is now operating under this title. It has long been desirable to find the effect of competition from so-called rough fish on the game fish populations in many of our waters. The aims of this work are many fold:

1. To remove as many undesirable rough fish from our waters as possible.
2. To make food habit studies of both rough fish and game fish to determine their place in the fish population.
3. To make comparative studies of fish populations in different bodies of water to determine relative amounts of various species present and to apply corrective measures if possible.
4. To obtain accurate data on life history, age and growth, reproduction and other biological activities of our native fishes.

It is expected that this work will expand in the future and will eventually cover most of the larger fishing waters in the state. Lakes in which preliminary work has been done so far include:

Name of Waters	County	Name of Waters	County
Lake Beauclair	Lake	Newnan's Lake	Alachua
Lake Dora	Lake	Lake Tohopekaliga	Osceola
Lake Eustis	Lake	Lake Apopka	Lake and Orange
Lake Harris	Lake	Lake Istokpoga	Highlands
Lake Griffin	Lake		

Miscellaneous Biological Activities

A. TAGGING:

Over 3500 game fish and a number of catfish have been tagged in different waters throughout the state. These fish have been tagged in most cases on the upper left jaw with a Monel metal tag. Each fish is weighed and measured and each tag has a different number. Fishermen have been requested to return tags from all tagged fish caught in order that we may learn more of the migration, growth and abundance of our game fishes. Posters have been placed in conspicuous locations around the waters in which tagged fish have been released. Waters in which

tagged fish have been released are: Lake Dora, Lake Eustis, Lake Beauclair, Lake Griffin, Dead Lakes, Oklawaha River, Lake George, Lake Apopka, Lake Maggiore in Pinellas County, Lake Silver in Polk County.

Early results from our fish tagging indicate that only a small percentage of the available adult fish population is being taken by the sport fishermen. No definite conclusions have been arrived at from these studies up to the present time.

B. INDIVIDUAL LAKE STUDIES:

In addition to the lakes mentioned above, a number of smaller lakes have been surveyed and recommendations made for management. These lakes are too numerous to list here, but include several in Duval, Orange, Lake, Polk, Pinellas, Alachua, Leon, Citrus, Sarasota and other counties:

C. COOPERATION WITH FEDERAL AGENCIES:

The Fish Management Department has also participated in a number of activities with various agencies of the Federal Government. Close cooperation has been had with the Soil Conservation Service in the management of smaller lakes and ponds. The Department also has worked with representatives of the U. S. Fish and Wildlife Service in making fish and wildlife surveys for the south Florida water control program, the Jim Woodruff Dam and others.

D. POLLUTION INVESTIGATIONS:

The Department has made a number of investigations of pollution reports in various parts of the state and has cooperated with other state agencies on several pollution studies. In several cases it has been possible to minimize pollution of streams through the cooperation of the offender. Studies are at present under way to determine how pollution may be avoided from the pulp and paper industries and the phosphate mining industry.

E. WEED CONTROL:

Control of hyacinths is a necessary part of fish management in Florida. The department's activities in this field have been limited (with a few local exceptions) to testing the toxicity of several types of chemical hyacinth killers, and advising clubs and other organizations on this work. The butyl ester of 2,4 Dichlorophenoxyacetic acid (2-4D) was found to have no apparent effect on bass, bream and catfish in amounts sufficient to kill hyacinths. (Fig. No. 10) It is recommended, however, that spraying be limited to fall and winter in order to avoid oxygen depletion of the waters brought about by the rapid decomposition of the hyacinths in warm weather.

DISTRIBUTION OF FISH BY COUNTIES

District	Winter Haven	Blackwater	Wewahitchka	Welaka	Totals
1st	207,500				207,500
2nd	42,000	802,500			844,500
3rd		2,993,500	280,600	40,000	3,314,100
4th	31,000				31,000
5th	261,500				261,500
TOTALS	542,000	3,796,000	280,600	40,000	4,658,600

1948 SEASON

District	Winter Haven	Blackwater	Wewahitchka	Totals
1st	204,000			204,000
2nd	56,500	182,000		238,500
3rd		3,987,200	136,300	4,123,500
4th	8,000			8,000
5th	124,900	20,000		144,900
TOTALS	393,400	4,189,200	136,300	4,718,900

	1946	1947	1948
Total No. Fish Distributed	4,508,975	4,658,600	4,718,900
Total No. of Waters Stocked	129	194	171

FISH DISTRIBUTION BY HATCHERY AND COUNTY

	1947		1948	
	Bass	Bream	Bass	Bream
Alachua				25,000
Baker				
Bay		115,000		373,000
Bradford	11,000	100,000	6,000	
Brevard	8,000			
Broward	8,000		4,000	4,000
Calhoun			1,000	16,000
Charlotte				
Citrus	41,500		20,000	
Clay	13,000		29,000	35,000
Collier	15,000			
Columbia	10,000	90,000		18,000
Dade				
DeSoto		6,000		
Dixie				
Duval		125,000	12,000	28,000
Escambia		462,000	800	1,353,000
Flagler				
Gadsden		355,000		169,200
Gilchrist				
Glades				
Gulf	50,000	200,000*		100,000
Hamilton				
Hardee				
Hendry				
Hernando				
Highlands	11,000		44,000	
Hillsborough	45,000		36,000	
Holmes		220,000	500	
Indian River				

FISH DISTRIBUTION BY HATCHERY AND COUNTY

	Bass	Bream	Bass	Bream
Jackson	20,000	694,000	.....	410,500
Jefferson	.....	220,000	75,000	232,000
Lafayette	8,000	.....	.....	.....
Lake	31,500	.....	2,000	.....
Lee	.....	.....	.....	.....
Leon	.....	30,600	.....	110,000
Levy	.....	70,000	.....	40,000
Liberty	.....	.....	.....	.....
Madison	.....	118,000	8,000	.....
Manatee	16,000	.....	.....	.....
Marion	33,500	32,000	17,000	.....
Martin	.....	.....	.....	.....
Monroe	.....	.....	.....	.....
Nassau	.....	70,000	.....	.....
Okaloosa	.....	146,000	.....	430,000
Okeechobee	.....	.....	.....	.....
Orange	30,000	.....	20,000	.....
Osceola	12,000	.....	7,600	.....
Palm Beach	8,000	.....	.....	.....
Pasco	14,500	6,000	5,000	.....
Pinellas	13,000	.....	.....	.....
Polk	89,000	7,000	85,500	33,500
Putnam	.....	.....	16,000	20,000
St. Johns	26,500	.....	.....	.....
St. Lucie	.....	.....	.....	.....
Santa Rosa	15,000	580,000	.....	574,000
Sarasota	.....	.....	.....	.....
Seminole	21,500	.....	3,000	.....
Sumter	22,000	.....	23,000	.....
Suwannee	.....	121,000	.....	.....
Taylor	.....	40,000	.....	18,000
Union	.....	.....	1,500	18,000
Volusia	3,000	.....	16,300	.....
Wakulla	.....	.....	.....	.....
Walton	5,000	180,000	1,000	.....
Washington	.....	.....	.....	252,500
TOTAL	587,000	4,071,600	434,000	4,244,700

*Some crappie included with bream.

Results of Initial Fisheries Investigations

A. CLOSED SEASONS

Since the fall of 1946, the regulations concerning the taking of fresh water game fish by sport fishermen have been under analysis. In January, 1948, recommendations were made to the Commission that a closed season on fresh water fish was unnecessary in Florida, for the following reasons:

1. Research in Florida and other southern states has proven that it is not necessary that all adult fish spawn in order to insure reproduction. A single pair of bass reproduce enough young to adequately stock 60-600 acres of water. A pair of bluegills or shellcrackers spawn enough to supply 10-170 acres. Ponds and lakes subjected to extremely heaving fishing pressure during "spawning seasons" have continued to produce huge crops of young fish over many years.
2. Tagging studies in Florida and other southern states show that the sport fisherman is catching only from 3 to 25% of the available game fish populations. The remaining 75 to 97% apparently die without ever being taken by a fisherman.
3. In order to be effective, a "closed season" in Florida would have to cover at least 5 months of the year. Bass spawned almost continuously at the Winter Haven Hatchery during the period from December, 1946 to May 1947. Other observations have noted mature roe in female bass and spawning activities almost every month of the year, with the possible exceptions of late July and August. Bluegills and shellcrackers spawned continuously in western Florida from April to October in hatchery ponds and in lakes open to fishing. Bass and bream have spawned successfully in Florida lakes during open seasons in the past and there is no reason to believe that they will not continue to do so in the future.
4. Further experiments have shown that even heavy hook and line fishing cannot damage a fish population, although it may make poor fishing temporarily.
5. It has been found that a body of water will only produce a definite **weight** of fish of given species, in much the same way that a pasture will support a definite **weight** of livestock. Removal of certain **numbers** of fish allows the remaining individuals to grow faster, as growth of our warm water game fishes is dependent upon the amount of food available.

On the basis of this evidence, the Commission eliminated the closed season in all but 10 counties in western Florida. In October 1948, after further evidence was at hand, the closed season

was abandoned, except for Dead Lakes in Gulf and Calhoun Counties, Lake Wimico in Gulf County and Merritt's Pond and Ochessie Pond in Jackson County.

B. SIZE LIMITS:

Another regulation restricting success of sports fishermen was the 12-inch size limit on black bass. This too was subjected to careful analysis and found unnecessary as a conservation measure in Florida. No biologically sound reasons were found for its continuance, and a number of sound facts indicated its removal. These reasons were:

1. The results of the tagging studies mentioned above, showing that only a small percentage of the available game fish were being caught.
2. Experiments conducted at the Alabama Agricultural Experiment Station found that from 75-95% of bass and bream hooked deeply enough to draw blood died within two weeks after being carefully released.
3. A number of ponds and lakes in Florida were found to be overcrowded with bass; i.e., having so many individual bass that the available food supply would not allow any to reach "legal" size, and the restriction kept fishermen from relieving the overcrowded condition.
4. It is not necessary for bass in Florida to reach a length of 12 inches before spawning. One-year-old bass 8-10 inches long spawned successfully in hatchery ponds this year. Biologists in Alabama found that bass would spawn there at one year if they weighed 6 ounces or over.
5. Evidence gathered from preliminary studies of our fish populations indicates that competition for food, and not reproduction, is the chief limiting factor affecting our game fishes.
6. There appears to be a new race of black bass, closely related to the smallmouth in a number of north Florida streams which do not reach a large size, and although reports have indicated a maximum size of 3 pounds for this bass, the average size is about 10-11 inches.

C. EFFECTS OF COMMERCIAL FISHING

The effects of various types of commercial fishing gear on game fish populations have been studied. This work has been carried on in Lake Okeechobee, Lake George and the St. Johns River, Lake Istokpoga and a few other waters.

The studies completed to date are those made in the St. Johns River during February, March and April, 1948, on wire traps, pound nets, and short haul seines used during the shad and herring runs. The results of these studies are summarized here.



Fish for fairs and exhibits are furnished by the Fish Management Division.

WIRE CATFISH TRAPS

One series of 50 wire catfish traps was used for a total of 1,930 trap days (one trap in water for 24 hours constitutes one trap day). This is equivalent to keeping one trap under observation for over 5 years. This series of traps was baited with herring and other rough fish, as is done in normal trapping operations. The results were as follows:

Total catfish taken	5,225 lbs.
Total game fish.....	359 lbs. or 6.4% of all fish
Average catfish per trap day	2.7 lbs.
Average game fish per trap day	0.18 lbs.
Average No. game fish per trap day.....	1.6 fish

During the trapping experiment, three small bream were found dead. Game fish taken included Bluegill, Shellcracker, Redbreast, and Crappie. No bass were taken. In view of the evidence that less than 7% of the catch, amounting to 1.6 game fish was taken from each trap each day, and the extremely low mortality of the game fish, it is not felt that the use of wire catfish traps baited with herring and rough fish is detrimental to the supply of game fish in the St. Johns River.

Another series of wire traps was baited with cut bluegill and crappie for 52 trap days to determine whether this bait would effectively catch catfish. The results are as follows:

Total catfish taken	2.55 lbs.
Total game fish taken	6.86 lbs.
Average catfish per trap day	0.05 lbs.
Average game fish per trap day	0.13 lbs.
Average No. game fish per trap day	0.36 fish



These hatchery-raised fingerlings are being collected for release in an under-populated lake or stream.

Comparison of the catches of the two series of traps proves definitely that wire traps baited with cut bluegill and crappie are not effective in catching catfish or game fish. The commercial fisherman, like the sport fisherman, must use the best possible bait for a successful catch. The opinion (expressed by many sportsmen) that trap fishermen use game fish to bait their traps does not appear to be valid in the face of the evidence given above, which shows that the rough fish bait produces more than 50 times as much catfish as does game fish bait.

POUND NETS

A series of five pound nets was used for a total of 88 net days, baited with herring and rough fish.

Total catfish taken	4,688 lbs.
Total game fish taken	276 lbs. or 6.9% of all fish
Average catfish per net day	53.27 lbs.
Average game fish per net day	3.13 lbs.
Average No. Game fish per net day	6.48 fish

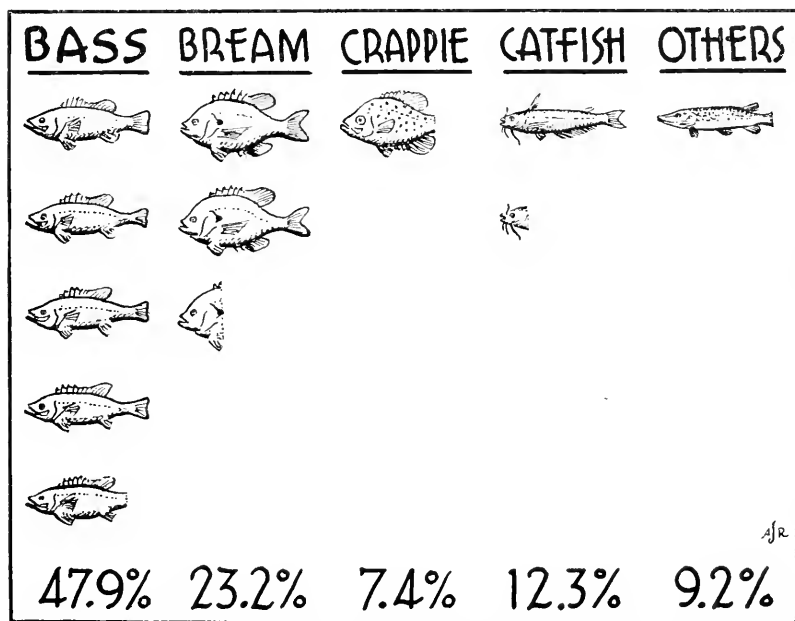
All game fish, including one black bass were returned to the water alive. Again the game fish amounted to less than 7% of the catch, and it was demonstrated that all game fish could be released alive. On this evidence, it is not considered that the use of pound nets is detrimental to the supply of game fish in the St. Johns River.

SHAD AND HERRING SEINE OPERATIONS

Seventeen shad and herring seine hauls were observed and the catch recorded as follows:

	Total Catch	Percent of Total
Non-game fish (includes white shad, herring, catfish, gizzard shad and garfish)	1,601 lbs.	95.0%
Game fish (includes bluegill, red breast, shellcracker and crappie)	84 lbs.	5.0%

As these seine hauls are made in swift waters not usually inhabited by game fish, the low catch of game fish was to be expected. No bass were taken in these operations. As all game fish can easily be returned alive, it is not felt that shad and herring seine hauls as now operated will be detrimental to the supply of game fish in the St. Johns River.



The above chart shows the percentage breakdown of fish taken by Florida's fresh water anglers.

Sports Fishing Catch Records

At the end of the fiscal years 1946-47 and 1947-48, questionnaires were distributed to license-buying fishermen, requesting that they report their catch for that year. Returns were received from almost every county in the state. The catch records given here are based on these returns.

FISH CAUGHT BY LICENSED FISHERMEN

Species	Year ending June 30, 1947	Year ending June 30, 1948
Bass	11,240,928	22,226,629
Bream	6,516,669	7,584,149
Crappie	1,498,948	4,117,311
Catfish	3,970,749	2,913,369
Other	3,005,124	2,985,700
	26,232,418	39,737,158
No. of fishing trips	3,970,054	5,042,987

AVERAGE LICENSED FISHERMAN'S CATCH

Species	Year ending June 30, 1947	Year ending June 30, 1948
Bass	79.8	78.1
Bream	41.4	35.4
Crappie	8.9	14.8
Catfish	28.7	13.0
Others	20.5	10.5
	179.3	151.8
No. of Trips	23.8	22.6

While these figures may not be statistically accurate, it is believed that they give a fairly reliable representation of the catch by licensed fishermen. They do indicate that the number of fishermen is increasing steadily, and that the average individual fisherman fared better in 1947 than he did in 1948, while the total catch of all fishermen increased in 1948.

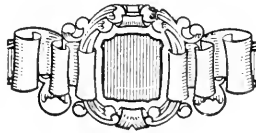
Unfortunately, no method has yet been found to estimate the number of unlicensed fishermen nor their catch for the year. If this data could be obtained the total catch would undoubtedly be greatly increased, possibly doubled.

SCIENTIFIC PUBLICATIONS

Several papers have been published contributing to knowledge of the scientific management of fresh-water fish in Florida. Some of these are available in mimeographed form, and are listed below.

1. **A Preliminary Report on catches by Wire Traps, Pound Nets, and Shad and Herring Haul Seines in the St. Johns River (Condensed).**
2. **Florida's Fresh-Water Fisheries Problems and Program.** Presented at the meeting of the American Fisheries Society at Atlantic City, N. J., September 14, 1948.
3. **Preliminary Studies on Adult Fish Populations in Some Large Florida Lakes.** Presented at the second annual Southeastern Fisheries and Wildlife Conference at Lexington, Kentucky, Nov. 2, 1948.

LAW ENFORCEMENT DIVISION



JOHN SWIFT... *Chief, First District*

LESTER MIKELL *Chief, Second District*

FRANCIS VILLAR *Chief, Third District*

CURTIS WRIGHT..... *Chief, Fourth District*

C. J. FINLEY *Chief, Fifth District*

LAW ENFORCEMENT

PERHAPS the most important branch of the Game and Fresh Water Fish Commission is the law enforcement division. The men of this division are charged with upholding game and fish laws in all of Florida's 67 counties. It is their duty to guard 39,000,000 acres of woods and waters. Even with the present record size of the division, each wildlife officer is responsible for an average of 170,000 acres. Taking into consideration the difficult terrain that makes up Florida, it is easy to see the mammoth task faced by the commission's officers. The commission has made a great deal of progress in all fields, but some of its most notable steps have been taken in the field of law enforcement. In January 1947, the commission employed 171 officers. Today it employs 228 plus 2 special investigators. Two years ago these men operated with very meager equipment. All used their own cars, many of which were in bad state of repair. There was a shortage of boats, a shortage of marsh buggies, and virtually none of the equipment which was on hand was in tip-top condition. Today these men operate with a total of 124 state-owned jeeps or jeep trucks, 160 outboard motor boats, 150 horse and boat trailers, 4 air-propelled boats, 9 power boats and 2 airplanes.

The caliber of the men has improved along with the size of the force. The deadwood has, in most instances, been weeded out of the ranks. Many men, it was found, were not qualified to perform the duties of a wildlife officer. Many had received their jobs solely through political patronage and made no effort to earn the salaries they received. Such men were discharged. They were replaced by younger men who not only knew the woods but possessed the intelligence and integrity necessary to do a good enforcement job. To attract such men, salaries have been raised. In January 1947, the average salary for wildlife officers was \$123.00 a month. Today it is \$166.00.

Operating Budget

This expansion, of course, has entailed a considerably increased budget. During the current fiscal year, more than 57 per cent of the commission's total operating budget will be devoted to law enforcement. In dollars and cents the amount will total \$846,911.00. This is apportioned to the various districts for salaries, maintenance, and the acquisition of equipment. Below is a breakdown of the current budget by districts:



A "flying warden" poses beside his plane. The Commission now operates two observation planes in the Okeechobee-Glades area. Ultimately it plans to have a plane operating in each district.

ENFORCEMENT BUDGET BY DISTRICTS

DISTRICT	NUMBER OF OFFICERS	OPERATING BUDGET
First	50	\$169,862.62
Second	55	\$175,000.00
Third	51	\$196,609.37
Fourth	26	\$134,189.05
Fifth	46	\$171,250.00
TOTAL	228	\$846,911.04

Administration and Personnel

The law enforcement division is under the direct supervision of the commission director. Each district, in turn, is supervised by a chief wildlife officer and an assistant. These men work closely with the director and the district commissioner. A tentative plan for the future has been outlined whereby a rank system will be instituted. The proposed system, which it is hoped will be put into effect within the next year, would provide in addition to district chiefs such sub-ranks as captains, lieutenants and sergeants, each having direct supervision over a given number of men.

In past years, wildlife officers carried no mark of distinction other than a badge. In 1947, however, the commission supplied each man on the force with two attractive dress uniforms complete with insignia. Men still work in the field without uniforms. However, they are required to be properly uniformed when appearing in court or taking part in any other public meeting. The acquisition of uniforms has not only added dignity to the enforcement branch but has been a very noticeable morale booster for the men themselves.

Arrests and Convictions

As the size of the force increased and its efficiency improved, arrests and convictions of game law violations mounted. During the past two years a total of 5,357 persons were apprehended for game and fish law violations. Of these some 91 per cent were convicted in court. The remainder were either acquitted or their cases nolle prossed. This conviction record is slightly above average of other southern states. However, it is lower than in many of the northern states where unified conservation programs have been in effect for years.

Fishing violations accounted for the greatest number of arrests. About 68 per cent of all cases dealt with non-observance of fresh water fishing rules. Slightly over 30 per cent were for infraction of game laws. The remaining arrests were made for miscellaneous offenses. Fishing without a license was the greatest single offense; 1,994 persons were arrested for failure to have fresh water fishing licenses. Hunting without a license accounted for 323 arrests. Taking game during the closed season was responsible for 221 cases. Other oft-committed offenses were possession of undersize fish (a rule that has now been abolished), exceeding the bag limit on fish, fishing in closed season, fishing with nets, fishing with too many poles, hunting during the closed season, shooting from state roads, hunting on closed days, and possession of a gun and dog in a closed area. Below is a list of the offenses and the number of arrests for each:

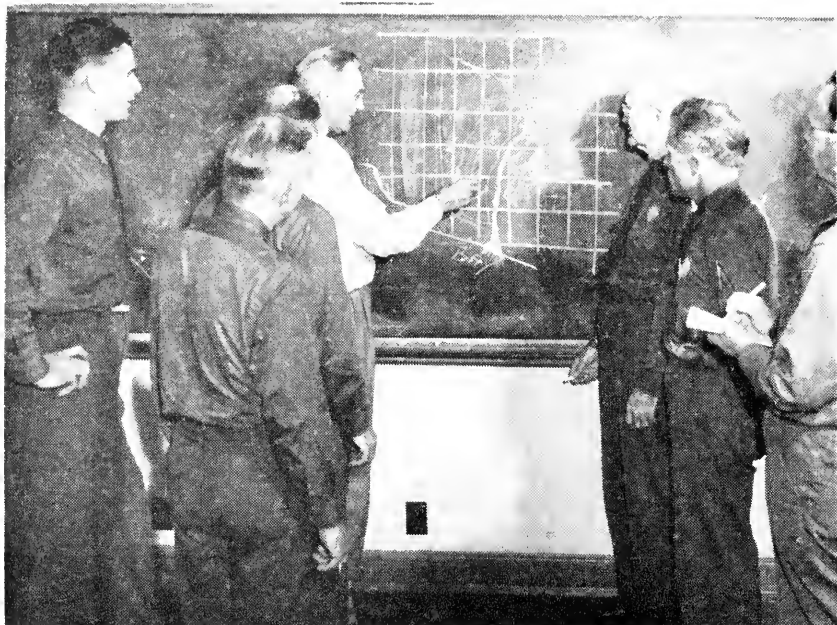
GAME AND FISH LAW VIOLATIONS

Fishing without a license	1994
Possession of undersized fish	614
Exceeding bag limit on fish	331
Hunting without a license	323
Taking game closed season	221
Hunting closed season	172
Hunting closed day	153
Fishing with cast nets & possession of seines	145
Shooting from and across Road No. 26, 25, 84, 41, 94, 27	131
Fishing with too many poles	123
Fishing closed season	120
Possession of gun and dog, closed area	111
Hunting unplugged gun	104
Fishing with traps and baskets	92
Hunting closed area	88
Hunting with light	85
Gigging fish	55
Shooting fish	50
Attempting to take and taking doe deer	44
Taking dove in baited area	36
Fishing closed waters	31
Attempting to take non-game birds	30
Selling game fish	28
Fishing closed area	27
Taking deer closed season	23
Possession alligator hides closed season	22
Shooting ducks, marsh hens, from motor boat	21
Exceeding bag limit on marsh hens, coots, quail, squirrel, and ducks	21

Possession of fur bearing animals closed season	21
Dynamiting fish	13
Fishing with goldfish and bream for bait	11
Taking undersize alligators	11
Fishing with more than 25 hooks on trotline	9
Taking alligators closed season	9
Trapping closed season	8
Hunting after sunset	7
Molesting game	7
Trapping without a license	5
Offering to sell fresh water fish	4
Fishing commercially without a license	4
Securing license under false pretense	4
Trapping quail	4
Transporting fish	3
Renting boats without a license	3
Possession alligator closed area	3
Selling bait without a license	2
Attempting to take fish with light	2
Placing lime in water to kill fish	2
Taking turkey hens	2
Shipping game out of state	2
Removing sex identification of deer	2
Failing check deer before leaving Ocala National Forest	2
Entering forest without a permit	2
Sale of undersized alligator hides	1
Selling hides and furs without a license	1
Trapping closed area	1
Killing pheasants	1
Guiding without a license	1
Hunting improper license	1
Fire hunting	1
Shooting quail on ground	1
Carrying rifle without a permit	1
Possession of gun in boat	1
Buying fresh water fish	1
Lending fishing license	1
Attempting to buy bass	1
Transferring and altering license	1
Fishing for bass with trotline	1
Resisting arrest	1
Total	5357

Equipment

Perhaps the most important single step in improving the efficiency of the law enforcement division was the acquisition of superior equipment. In the past many officers were forced to operate boats which could not compare with speed boats employed by violators. All used their own automobiles, which in many instances were not equipped to travel on rough woods trails. There were not enough swamp buggies to patrol the Glades. In fact, in the more remote regions of the State there was no method of performing efficient patrol duty. To correct this situation, the commission last year purchased two observation planes. The patrol aircraft are stationed at Plant City and Ft. Pierce. They do daily duty over the impenetrable marshlands which



Wildlife Officers receive instructions at this year's Gainesville school. The commission hopes to instigate a regular six-week training school for its wardens.

cover that section of the state. To facilitate the enforcement problem even further, a statewide communications network is now underway. Sites for 25 automatic and manual relay stations have been established throughout the state. Jeeps, airplanes, and marsh buggies will be equipped with these two-way radios. With this set-up, airborne wildlife officers who spot suspicious activities from the air will be able to radio information to ground vehicles in 100-mile area. This should go a long way toward correcting what has long been a rugged enforcement situation.

School for Wardens

In addition to their routine enforcement duties, wildlife officers are also encouraged to attend sportsmen's club meetings and deliver short talks to student and civic groups. The officer force is regarded as the commission's frontier of public relations. To better equip the men for all their duties, regular annual schools for wardens have been instituted. In 1947 two 3-day schools were held in Tallahassee and Orlando. In 1948 a 6-day short course for the officers was held at the University of Florida. The instructors at the session included college professors, wildlife specialists, public relations specialists and well-known law enforcement officers. The course included

such subjects as necessary qualifications for wildlife officers, legal powers of the officers, court room demeanor, wildlife management, arrest procedure, preparation of cases, fish management problems, public relations and other important phases of game warden work. At the end of the course, the men were given written examinations on the subject matter. The grade average on the tests was in the low 90's and nearly 25 per cent received perfect scores.

Even more elaborate plans are being made for this year's school. Under present plans the course will be lengthened and given to smaller groups. It is hoped that instructors in many phases will be supplied by the University of Florida and its general extension service.

Wildlife officers are on duty 24 hours a day, 7 days a week. The only "days off" they actually receive are two weeks annual vacation. The men actually average 10 to 18 working hours a day. They are required to submit an arrest, a conviction and a general activities report to the commission once a week.

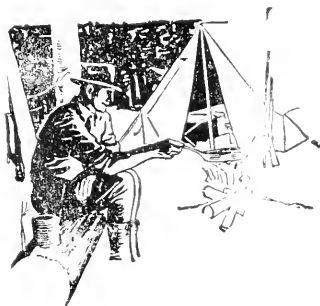
As of December 31, 1948, Florida claimed the largest conservation enforcement staff in the South. With newer and more streamlined plans, improved equipment, and higher salaries, it is hoped that the staff may also soon become the most efficient.

ARREST REPORT FOR BIENNIUM

	Total Arrests	Convictions	Acquittals	Pending
Alachua	93	80	11	2
Baker	30	25	5	..
Bay	32	31	1	..
Bradford	20	20	..	..
Brevard	61	58	3	..
Broward	294	283	8	3
Calhoun	82	50	23	9
Charlotte	41	31	9	1
Citrus	56	55	..	1
Clay	35	18	14	3
Collier	62	55	7	..
Columbia	28	24	4	..
Dade	123	116	6	1
DeSoto	43	22	21	..
Dixie	87	66	16	..
Duval	151	116	23	12
Escambia	49	48	1	..
Flagler	51	49	2	..
Franklin	53	52	1	..
Gadsden	62	58	1	3
Gilchrist	24	22	2	..
Glades	81	65	11	5
Gulf	132	103	24	5
Hamilton	22	21	1	..
Hardee	34	29	3	2
Hendry	58	48	10	..
Hernando	70	68	2	10
Highlands	72	53	9	10
Hillsborough	120	114	3	3
Holmes	46	41	4	1

ARREST REPORT FOR BIENNIUM

Indian River	4	4	.....	.....
Jackson	145	126	18	1
Jefferson	29	25	4	.....
Lafayette	43	35	1	7
Lake	97	86	7	4
Lee	100	82	17	1
Leon	96	75	16	5
Levy	77	70	7	.....
Liberty	286	270	13	3
Madison	34	29	3	2
Manatee	33	30	2	1
Marion	99	90	9	.....
Martin	39	37	2	.....
Monroe	18	17	1	.....
Nassau	289	282	5	2
Okaloosa	80	74	5	1
Okeechobee	19	15	4	.....
Orange	71	66	5	.....
Osceola	30	24	4	2
Palm Beach	68	58	9	1
Pasco	88	79	9	.....
Pinellas	71	71	.....	.....
Polk	298	274	23	1
Putnam	23	21	1	1
St. Johns	200	193	7	.....
St. Lucie	20	20	.....	.....
Santa Rosa	141	135	6	.....
Sarasota	59	59	.....	.....
Seminole	57	55	.....	2
Suwannee	67	67	.....	.....
Taylor	53	52	.....	1
Union	95	73	22	.....
Volusia	13	13	.....	.....
Wakula	181	175	5	1
Walton	77	72	5	.....
Washington	56	47	6	3
	94	82	12	.....
TOTAL	5357	4804	453	100



INFORMATION AND EDUCATION DIVISION



WILLIAM W. WEEKS

Director, Information-Education

INFORMATION—EDUCATION

THE primary function of the Division of Information and Education is to enlighten the people of Florida to the crying need for wildlife conservation. It has been said that no law or program can survive without the understanding and cooperation of the people. This is particularly true in the administration of a conservation program. The benefits of conservation are somewhat intangible; consequently, the people are prone to take the matter lightly. The problem of correcting this general attitude rests largely on this division.

The division has two lesser functions, but they are more or less by-products of our main objective. One of these lesser functions is to keep the citizens of the state informed on the activities of their wildlife agency. The other is to foster as much out-of-state interest in our outdoor resources as possible with our limited information set-up.

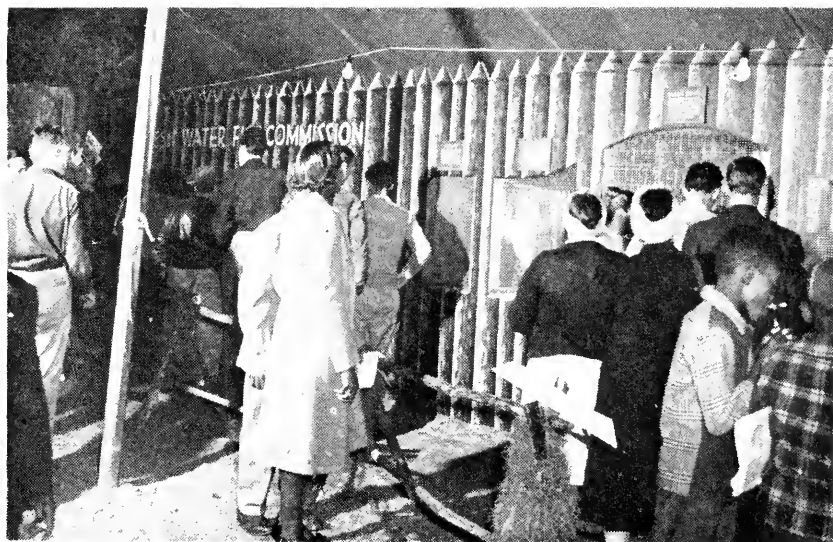
At present the division has seven employees—four of whom are permanent and three temporary. This is exclusive of the administrator of public relations whose objectives fit under the division's program but who is administratively separate. The four permanent employees in the division are: Director—who supervises the overall program, including press releases, preparation of literature, publication of the magazine, visual education, production of movies, booking of lecturers and staging of exhibitions and special conservation promotion events.

Assistant director—serves as a general deputy to the director, plus the handling of writing assignments on press releases and publications.

Photographer—takes pictures of wildlife and commission activities for press distribution and use in our own publication. Secretary and circulation manager—handles the secretarial duties of the office and serves as circulation clerk for our monthly magazine.

On temporary status are a lecturer and exhibitionist who makes conservation speeches before clubs, classrooms and civic organizations throughout the state; a movie cameraman who is doing the photography for a movie now in production; and a typist who serves as a circulation assistant during the heavy winter influx of subscription requests for the commission magazine.

The division itself was created in May, 1947. Prior to that time, the commission had employed one man who edited its house organ and



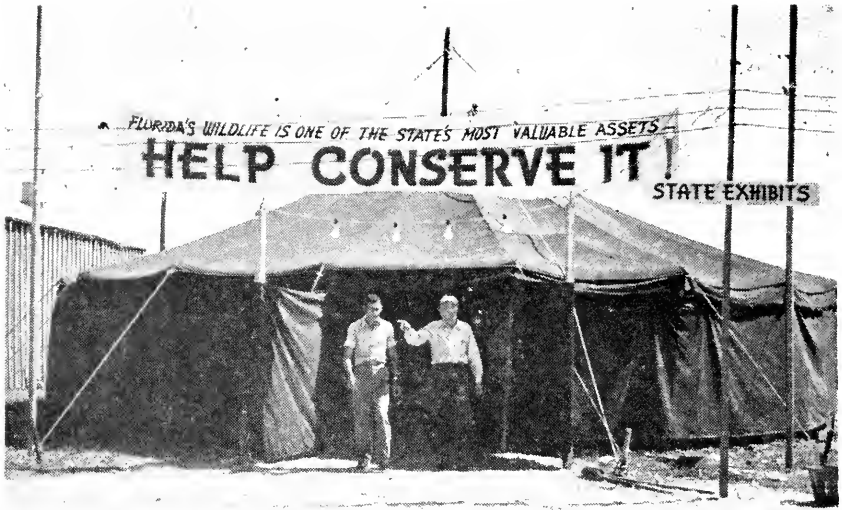
A crowd views the commission's new 50-foot portable exhibit. More than 1,500,000 persons viewed its fair displays during the 1948 season.

did some publicity work. During the fiscal year of 1947-48 the new division was given an operating budget of \$39,000. The figure was raised to \$53,000 for the fiscal year of 1948-49.

This represents slightly over 3.5 percent of the total operating budget, a proportion that is a little above the average for most southern states. However, it compares rather poorly with the seven to twelve percent share allotted for information and education by many northern conservation agencies. Under the present budget, some \$20,000 will go for the publication of our new magazine, *FLORIDA WILDLIFE*, which is distributed without charge. The remainder will be spent on the building and maintenance of film libraries, preparation of game and fish literature, dissemination of press and radio material, salaries and travel expenses.

Information and Publicity

Public information is probably the most important single item in selling the people on the needs for conservation. Obviously the best media for the dissemination of such information is through newspapers and radio. In the 20 months since the inception of the Information and Education Division, 217 press releases have been prepared and distributed. By actual clipping return, these releases resulted in 16,400 stories in 157 daily and weekly newspapers in Florida. The returned clippings of news stories on the state's conservation activities would fill 75 editions of an average-sized newspaper.



Entrance to the Game and Fresh Water Fish Commission exhibit at last year's Pensacola Fair.

The state's conservation program and its hunting and fishing resources have also received considerable national publicity. Numerous feature stories and pictures have gone out on the wires of the Associated Press and the United Press, and, in addition, feature stories and pictures of Florida's hunting and fishing have appeared in such national magazines as SPORTS AFIELD, OUTDOOR LIFE, FIELD AND STREAM, OUTDOORS, HUNTING & FISHING MAGAZINE, THE OUTDOORSMAN and OUTDOOR SPORTSMAN.

Commission Magazine

When the Division of Information and Education was set up, the commission published a small-sized monthly organ called FLORIDA GAME AND FISH. It had a circulation of slightly over 1,400. This publication was dropped and a new monthly magazine, FLORIDA WILDLIFE, was launched when the division was established. The new publication was a regular sized magazine employing the use of color to add to its attractiveness. The magazine was completely redesigned and its editorial content revamped. The circulation of FLORIDA WILDLIFE is now more than 13,000 and is growing at the rate of nearly 1,000 a month. The magazine is distributed free of charge, but circulation is restricted as much as possible to those interested in wildlife conservation and the outdoors. Between 30 and 40 percent of the division's time and money now goes into the production of this magazine. The prime objective of the publication is to put across new and valuable conservation ideas and promote, generally, the wise use of our wildlife resources.

Movies

The commission now has a 16mm film library containing 16 titles, with as many as seven prints of some films. These are distributed on a loan basis to sportsmen clubs, classrooms, civic group, youth organizations and out-of-state audiences.

Commission movies have been shown to 790 audiences totaling 94,800 people during the past 20 months. Of these, 31,000 were classroom students.

The commission now has in production a movie of its own with a conservation theme designed specifically for Florida audiences. It will be released sometime in the spring.

Lectures on Conservation

The commission now has two lecturers, including Dr. I. N. Kennedy, Administrator of Public Relations, who devotes their full time to this important phase. In addition, other members of the commission personnel including the director and department heads are on call for appearances before clubs and organizations.

During the biennium, commission speakers have appeared before a total of 327 different groups. These included 133 schools, 114 civic organizations, 57 sportsmen clubs and 23 miscellaneous clubs. The total audience was estimated at well over 40,000.

Packaging the commission's monthly magazine, FLORIDA WILDLIFE. The magazine goes to more than 13,000 subscribers in and out of state.



Literature

The Information and Education section has filled more than 38,000 requests for literature since it was set up. Thousands of additional requests had to be turned down because we were unable to supply the demand.

The division prepared eight new pieces of literature during this period and now has two more in the production stage. These booklets and brochures cover various subjects on game and fish and their management.

Exhibits

One of the most expanded functions of the Information and Education Division is the staging of wildlife exhibits at fairs and other special events. During 1947-48 the commission supplied 14 fairs throughout the state with live exhibits. These exhibits were viewed by an estimated 1,500,000 people.

This year a new portable game and fish exhibit was designed and built to cut down cost and simplify transportation and assembly. The new exhibit was on display at seven county and regional fairs during the fall of 1948. It is already scheduled for 23 fairs and exhibitions during the next calendar year.

The fish for these exhibits are supplied by the Fish Management Department, and the wild native animals are usually furnished by wardens of the law enforcement branch.

Special Promotion

Several special events designed to promote interest in wildlife and the outdoors have been inaugurated by the division. Last year one entire day was set aside at the Florida State Fair as Wildlife Conservation Day. The commission in cooperation with the Florida Forest Service and fishing tackle and firearm manufacturers produced a special one-hour show in front of the fair grandstand to draw attention to the day. More than 11,000 people witnessed the show, and the idea was received with favor by both the fair officials and newspapers.

Perhaps the most successful promotion was the so-called "Fishathons" which the commission staged in four of Florida's major cities. These were handled on a cooperative basis with newspapers and conservation clubs in St. Petersburg, Tampa, Orlando and Miami. The Fishathons were simply giant fishing parties for kids in which the Game Commission stocked lakes with thousands of adult fish; then furnished poles, lines and bait for the youthful anglers. Prizes for catches were supplies by the newspapers and local business men. The commission and its co-sponsors entertained over 20,000 boys and girls during the four Fishathons.

ACCOUNTING DIVISION

BART PEADEN, JR., *Auditor*

THE Accounting Division is the bookkeeping division of the Game and Fresh Water Fish Commission. It is made up of an auditor and three employees. It is their duty to keep an accurate track of more than \$1,000,000 a year in receipts and disbursements. In addition, the Accounting Division is responsible for the printing and distribution of all licenses. It issues all commercial licenses and handles more than \$800,000 each year in license fees. The Division must also keep individual county records of all arrests and collect costs of same from each county. It audits and places in line for payment all just bills for equipment and labor. It acts as the payroll clerk for the nearly 300 employees of the Commission. At regular monthly intervals the auditor prepares a finance statement with disbursements broken down by departments and by districts.

The Division is responsible also for the preparation of regular and special budgets and all requests for purchase approvals. In its files are kept records of all equipment used by field forces and all supplies for the field men are mailed through the Accounting Division.

Receipts Increase

With the tremendous increase of receipts and disbursements over the past five years, more and more work, of course, has been piled on this Division. For instance, during the fiscal year of 1944-45 the Commission took in slightly under \$372,000. In 1945-46 this was stepped up to \$569,085. The receipts increased in 1946-47 to \$833,297. During the last fiscal year the Commission, for the first time in its history, collected slightly over a million dollars. This year, on the basis of receipts for the first 5 months, the estimated income will reach more than \$1,300,000. In other words, in a period of 5 years the revenue derived from the sale of hunting and fishing licenses, the collection of court costs and other sources has increased nearly a million dollars. During this fiscal year disbursements will run slightly over a million-and-a-half dollars, which is more than the anticipated income. Financially, however, the Commission's position is still very secure. On the basis of estimated income and estimated expenditure for this year the department will have a reserve balance of nearly \$400,000 at the beginning of the next fiscal year. The following pages contain a complete statement of Commission receipts and expenditures for the calendar years 1947-48.

GAME & FRESH WATER FISH COMMISSION
FINANCIAL STATEMENT FOR BIENNIIUM JANUARY 1, 1947 TO DECEMBER 31, 1948

	JANUARY 1 TO DECEMBER 31, 1947		JANUARY 1 TO DECEMBER 31, 1948	
	Item Total	Source Total	Total	Item Total
Available Balance, January 1.....			\$ 699,650.25	
Warrants Cancelled and Restored to Balance.....				\$ 649,327.44
				1,010.84
RECEIPTS, BY SOURCE				
Sale of Sporting Licenses				
Fishing.....	\$395,128.75			\$530,400.00
Hunting.....	381,480.50			409,833.75
Trapping.....	3,343.00			2,894.00
Alien Hunting.....	100.00			100.00
U.S. Permits.....	9,673.73	\$789,731.98		9,335.56
				\$952,563.31
Sale of Commercial Licenses				
Resident Commercial Fish Dealer.....	\$ 7,075.00			\$ 11,595.00
Resident Commercial Boat.....	1,092.70			1,934.20
Non-Resident Fish Dealer.....	100.00			50.00
Non-Resident Boat.....				10.00
Wholesale Fish Dealer.....	1,400.00			2,300.00
Boat for Hire.....	7,093.00			9,071.60
Game Farm.....	190.00			155.00
Guide.....	220.00			260.00
Wholesale Fur Dealers and Agents.....	840.00			1,160.00
Local Fur Dealers or Buyers.....	70.00	18,080.70		1,70.00
				26,605.20

Other Sources

Court Costs Collected.....	20,982.82			
Miscellaneous Receipts.....	3,949.17			
Sale of Confiscated Materials.....	30.35			
Sale of Old Equipment.....	1,238.50			
Previous Years Licenses Collected.....	2,884.00			
Pittman-Robertson.....	6,883.34			
Refunds.....	10.50			
Sale of Rough Fish.....				
Rent from Dark Room.....				
	35,978.68			
		\$	843,791.36	
		\$	1,543,441.61	
	151,239.06			
		\$		1,130,407.57
		\$		1,780,745.85

Total Receipts

FINANCIAL STATEMENT—Continued

	JANUARY 1 TO DECEMBER 31, 1947		JANUARY 1 TO DECEMBER 31, 1948			
	Item Amount	Sub-Dept. Total	Department Total	Item Amount	Sub-Dept. Total	Department Total
DISBURSEMENTS BY DEPARTMENT AND PURPOSE						
Administration						
Salaries.....	\$ 15,997.91			\$ 19,619.90		
Travel.....	5,266.90			7,191.82		
Office Supplies.....	1,500.00			1,907.34		
Telephone and Telegraph.....	2,357.04			3,045.53		
Postage and Shipping.....	3,885.35			4,220.13		
Printing.....	11,684.64			13,581.13		
Heat, Water and Lights.....	525.00			335.56		
Equipment Purchased.....	3,766.71			3,979.60		
Maintenance of Equipment.....				27.90		
Gas, Oil, and Lubricants.....				61.60		
Miscellaneous.....	4,170.96			8,731.84		
Rent.....	300.00			279.84		
Taxes.....	2,232.39		\$ 51,486.90	1,091.09		\$ 64,072.68
Fiscal and Accounting (Auditing)						
Salaries.....	8,702.00			10,263.07		
Office Supplies.....	545.50			268.38		
Equipment Purchased.....	279.27			491.90		
Miscellaneous Expense.....	115.27		9,642.04	78.25		11,101.60

Law Enforcement

Salaries.....	283,881.15
Travel.....	232,755.62
Telephone and Telegraph.....	1,027.54
Equipment Purchased.....	93,202.93
Maintenance of Equipment.....	3,935.62
Gas, Oil, and Lubricants.....	659.19
Miscellaneous Expense.....	19,434.10
Insurance.....	4,570.68
Rewards Paid.....	1,032.40

640,499.23

378,283.84
211,717.28
1,683.72
171,852.40
15,529.87
41,747.36
9,796.27
11,936.58
230.00

842,797.32

Fishery Department**Fish Management Administration**

Salaries.....	5,206.61
Travel.....	3,154.48
Office Supplies.....	
Equipment Purchased.....	2,071.19
Maintenance of Equipment.....	
Gas, Oil, and Lubricants.....	
Miscellaneous.....	631.71
Insurance.....	

11,063.99

7,277.46
3,153.90
31.45
2,631.08
165.82
509.96
991.64
142.22

14,903.53

Blackwater Hatchery

Salaries.....	4,961.33
Travel.....	
Telephone and Telegraph.....	
Equipment Purchased.....	3,652.20
Maintenance of Equipment.....	
Gas, Oil, and Lubricants.....	775.71
Miscellaneous.....	1,172.47
Insurance.....	

10,561.71

4,740.21
73.50
7.06
1,493.50
1,171.23
1,082.96
125.50

8,693.96

FINANCIAL STATEMENT—Continued

	JANUARY 1 TO DECEMBER 31, 1947			JANUARY 1 TO DECEMBER 31, 1948		
	Item Amount	Sub-Dept. Total	Department Total	Item Amount	Sub-Dept. Total	Department Total
DISBURSEMENTS BY DEPARTMENT AND PURPOSE						
Fishery Department (Continued)						
Wewahitchka Hatchery						
Salaries.....	24.00			18.00		
Heat, Water, and Light.....				12.00		
Equipment Purchased.....	105.00			321.54		
Maintenance of Equipment.....	172.38			287.55		
Miscellaneous.....	268.73	570.11		370.85	1,009.94	
Winter Haven Hatchery						
Salaries.....	6,573.32			7,744.25		
Travel.....	507.03			569.59		
Heat, Water, and Light.....				70.32		
Equipment Purchased.....	3,159.49			2,173.07		
Maintenance of Equipment.....				279.27		
Gas, Oil, and Lubricants.....	1,583.27			1,334.91		
Miscellaneous.....	1,548.36			764.43		
Insurance.....		13,371.47		163.55	13,099.39	
Rough Fish Control Studies						
Salaries.....				1,233.35		
Travel.....				192.98		
Equipment.....				950.00		

Maintenance.....			264.50	
Gas, Oil, and Lubricants.....			28.43	
Miscellaneous.....			1,253.42	
Insurance.....			112.50	4,035.19
Maintenance Engineer				
Salaries.....	\$	610.50	2,348.87	
Travel.....		532.50	2,017.19	
Telephone and Telegraph.....			45.08	
Equipment Purchased.....		36.51	1,447.69	
Maintenance of Equipment.....			62.89	
Gas, Oil, and Lubricants.....			285.25	
Miscellaneous.....			55.66	
Insurance.....			122.99	6,385.62
Lake Okeechobee Survey				
Salaries.....			8,020.42	
Travel.....			2,082.59	
Equipment Purchased.....			4,773.89	
Maintenance of Equipment.....			64.30	
Gas, Oil, and Lubricants.....			275.72	
Miscellaneous.....			272.84	
Insurance.....			240.27	15,730.03
St. Johns River Survey				
Salaries.....		1,650.00	9,370.41	
Travel.....		506.18	1,233.50	
Equipment Purchased.....		1,180.82	4,231.42	
Maintenance of Equipment.....			106.40	
Gas, Oil, and Lubricants.....			392.74	
Miscellaneous.....			1,306.45	
Insurance.....			232.50	16,873.42

FINANCIAL STATEMENT—Continued

	JANUARY 1 TO DECEMBER 31, 1947		JANUARY 1 TO DECEMBER 31, 1948			
	Item Amount	Sub-Dept. Total	Department Total	Item Amount	Sub-Dept. Total	Department Total
DISBURSEMENTS BY DEPARTMENT AND PURPOSE						
Fishery Department (Continued)						
Statewide Survey						
Tagging Experiment	10.00			316.62		
Equipment				1,275.20		
Miscellaneous		10.00	40,093.59	57.93	1,649.75	82,380.83
Department of Education and Information						
Salaries	7,822.53			15,354.98		
Travel	1,648.05			3,784.18		
Office Supplies				105.40		
Postage and Shipping	969.40			91.97		
Printing	5,316.06			19,172.86		
Equipment Purchased	4,668.55			3,479.62		
Maintenance of Equipment				283.69		
Gas, Oil, and Lubricants				831.30		
Miscellaneous	693.31			971.93		
Insurance				128.79		
Promotional	3,653.94		24,771.84	5,187.45		49,392.17
Public Relations						
Salaries	3,743.87			4,858.34		
Travel	1,922.10		5,665.97	3,684.66		8,543.00

Legal and Investigation

Salaries	5,875.00
Travel	6,260.22
Telephone and Telegraph Equipment Purchased	
Maintenance of Equipment Gas, Oil, and Lubricants	109.17
Miscellaneous	
Insurance	
Special Attorney Fees	4,963.30

***Pittman-Robertson Projects**

Salaries	11,581.64
Travel	5,179.29
Office Supplies	
Telephone and Telegraph Postage and Shipping Costs	
Equipment Purchased	
Maintenance of Equipment Gas, Oil, and Lubricants	
Miscellaneous	
Rent	
Insurance	
Land Purchased and Leased Revolving Fund	840.00
Project Operational Costs	13,082.96

Quail Restocking Program

Salaries	
Travel	
Equipment Purchased	
Miscellaneous Expense	
Insurance	

9,670.90
7,706.11
153.28
3,520.72
487.00
631.76
350.89
104.68
10,036.33
32,681.67

17,207.69

19,197.53
6,530.97
50.80
18.39
141.76
672.49
697.28
1,311.86
10,813.27
160.00
416.84
128,477.93
500.00
11,075.77
180,064.89

180,064.89

745.15
871.95
1,594.35
173.21
49.74

3,434.40

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☆

☆

FINANCIAL STATEMENT—Continued

	JANUARY 1 TO DECEMBER 31, 1947		JANUARY 1 TO DECEMBER 31, 1948			
	Item Amount	Sub-Dept. Total	Department Total	Item Amount	Sub-Dept. Total	Department Total
DISBURSEMENTS BY DEPARTMENT AND PURPOSE						
Restocking						
Deer Stock Purchased.....				16,770.00		
Pheasant Stock Purchased.....				262.50		
Quail Stock Purchased.....	65,191.73		72,218.10	325.00		17,557.50
Turkey Stock Purchased.....	7,026.37			200.00		
Hyacinth Control	1,560.00		1,500.00			
Legislative Relief Act						
H. B. Dinkins Relief.....	344.92		44.92			
**Ocala National Forest						
Salaries.....				9,837.10		
Travel.....				1,232.50		
Miscellaneous.....				58.00		11,127.60
Total Disbursements			\$ 894,114.17			\$ 1,203,153.66
Cash Account						
Balance, State Treasury, December 31.....	\$655,191.31					
Cash due from County Judges (1947)	17.30					2482,439.94
Cash due from unpaid Check.....	5.00					

Reserve for Hendry County Deer Restocking.....	\$ 4,575.00		\$ 4,575.00
Funds for Replacement of Levy County Deer.....	810.00		50.00
Cancelled Warrants.....	501.17		47.20
Refund Payable for Overpayment on Licenses.....			70.00
Credit due County Judges (1948).....			105.55
Available Balance, December 31.....	\$ 649,327.44		\$ 477,582.19
	\$ 1,543,441.61		\$ 1,780,745.85

* All Expenditures under the Account "Pittman-Robertson" are reimbursable from the Federal Government by the amount of 75% of disbursements.

** The disbursements shown under "Ocala National Forest" during 1948 covers disbursements made for 1947 expenses as follows: Salaries \$4,250.00, and Travel \$1,232.50, a total of \$5,482.50. Travel and other minor expenses incurred in December, 1948, will be paid in January, 1949.

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BIENNIAL REPORT
Florida
GAME
& FRESH WATER FISH
COMMISSION



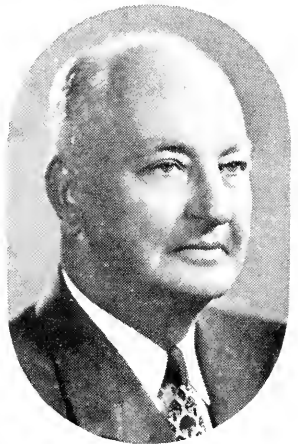
BIENNIUM ENDING DECEMBER 31, 1950



LOUIS G. MORRIS
Commissioner



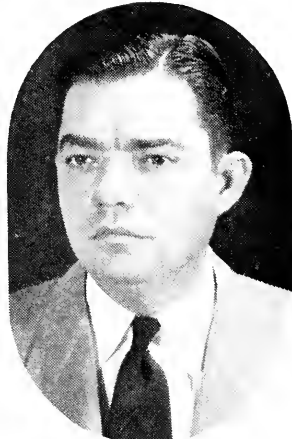
CECIL M. WEBB
Chairman



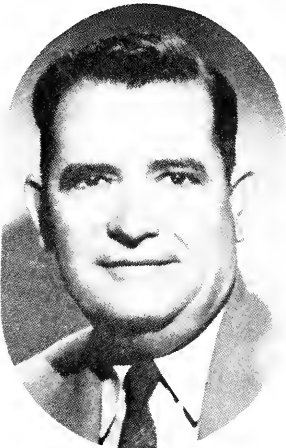
D. C. JONES
Commissioner



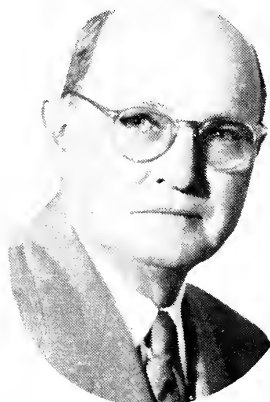
COLEMAN NEWMAN
Commission Director



BEN McLAUHLIN
Ass't Director



M. C. LEWIS
Commissioner



MILLER V. JOINER
Commissioner



COLEMAN NEWMAN
DIRECTOR

Game and Fresh Water Fish Commission

TALLAHASSEE, FLORIDA

31 December 1950

COMMISSION MEMBERS

CECIL M. WEBB, CHAIRMAN
TAMPA, FIRST DISTRICT
MILLER V. JOINER, JACKSONVILLE
SECOND DISTRICT
LOUIS G. MORRIS, MONTICELLO
THIRD DISTRICT
D. C. JONES, NAPLES
FOURTH DISTRICT
M. C. LEWIS, ORLANDO
FIFTH DISTRICT
JOHN O. JACKSON, JACKSONVILLE
ATTORNEY

Honorable Fuller Warren
Governor of Florida
State Capitol
Tallahassee, Florida

Dear Governor Warren:

Herewith is submitted the biennial report of the State Game and
Fresh Water Fish Commission for the period ending December 31, 1950.

Through this letter and report we wish to express to you, to members
of the State Legislature, and to the Public, appreciation for the
interest and vision which make possible continued achievement in
the conservation of Florida's fish and wildlife.

Respectfully submitted,

Cecil M. Webb, Chairman

CMW/ak

The People of the State of Florida

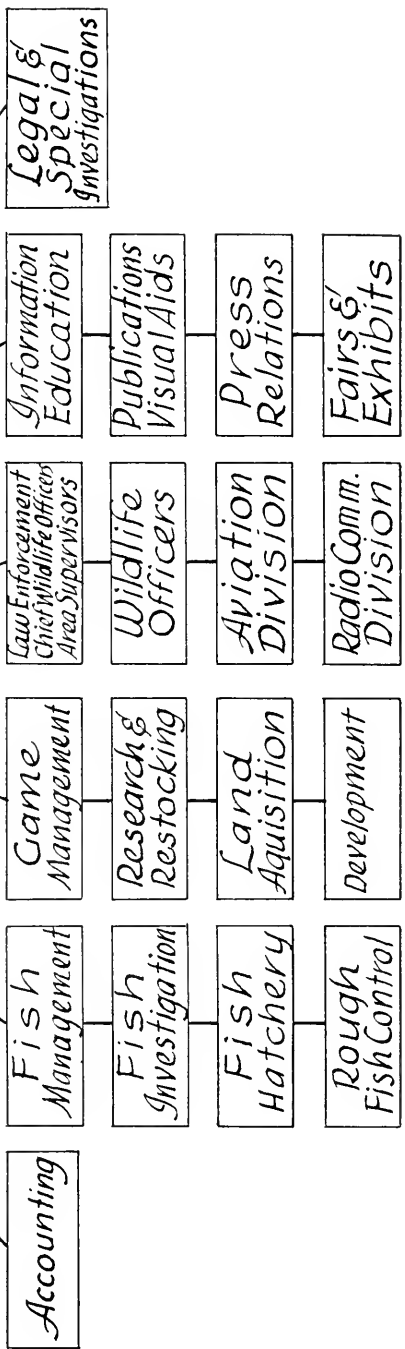
Governor

Game & Fresh Water Fish Commissior
FIVE MEMBERS

Director

Assistant Director

General Administration



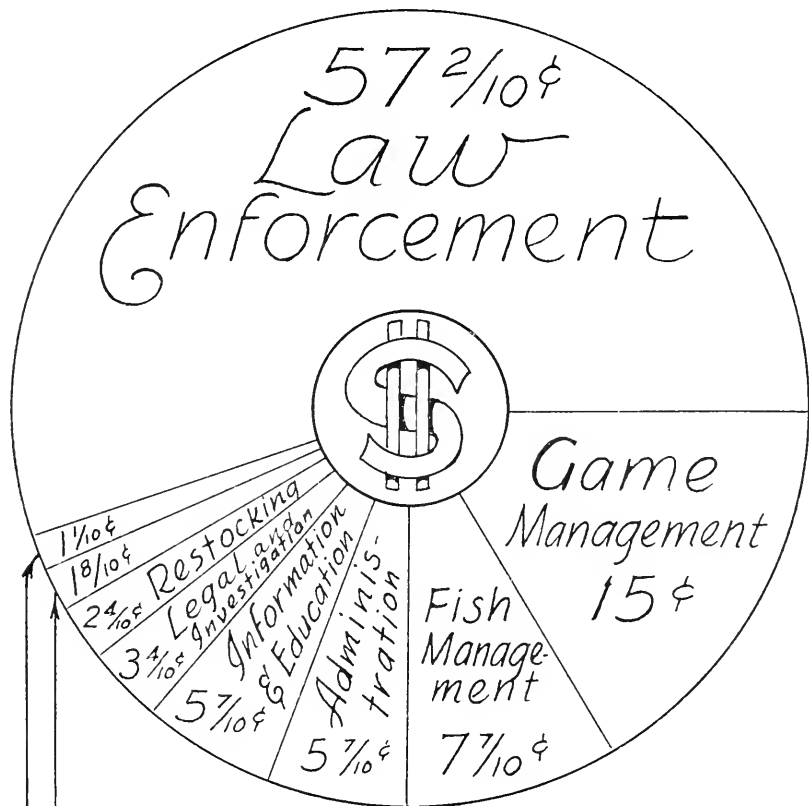
The
COMMISSION'S
REPORT



COLEMAN NEWMAN
Director

BEN McLAUHLIN
Assistant Director

HOW FLORIDA'S Conservation Dollar IS SPENT



Law Enforcement
School

Accounting

GENERAL ACTIVITIES

DURING 1949-50, the Game and Fresh Water Fish Commission made definite progress in all phases of conservation work. In general, the Commission has devoted its time to a continued expansion of activities and a streamlining of its methods of procedure.

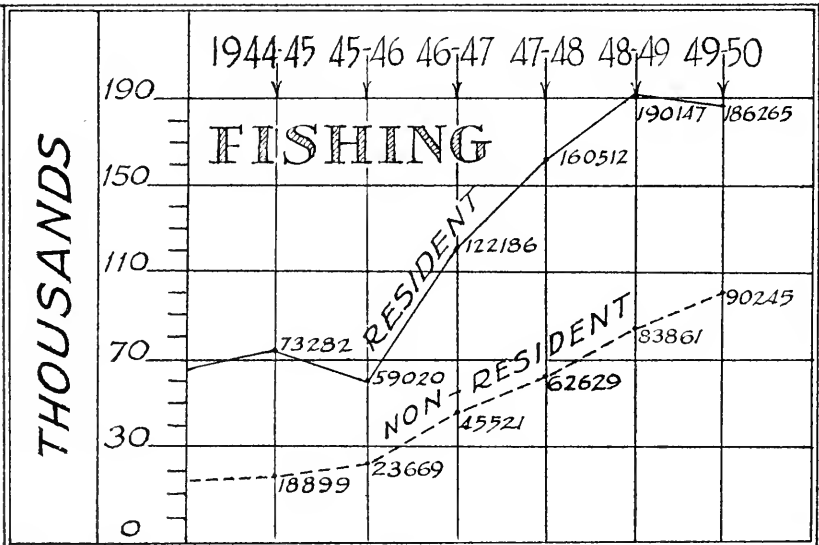
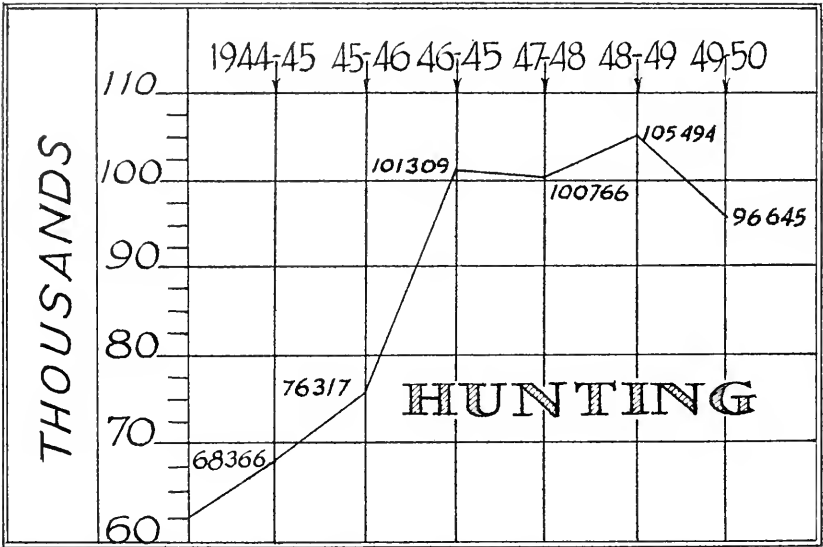
Purchase of permanent quarters for the Tallahassee office of the Commission was probably one of the outstanding improvements of the biennium. With its own building, located at 307 East Lafayette Street, Tallahassee, the Commission has been able to consolidate its office activities, with a resulting increase in efficiency.

The Tallahassee office building, incidentally, was named the "Ben C. Morgan Building" in honor of the late Ben C. Morgan, Director, who passed away in March, 1949, while in performance of his duties. The death of Morgan, who was credited with being an enthusiastic, capable and tireless worker for conservation in all of its many phases, was received with shock and sadness by conservationists and sportsmen throughout the state.

Coleman Newman, assistant director under Morgan, succeeded Morgan in the position of director.

In game management, the biennium was marked by continued progress, including the purchase of lands opened to public hunting, and acquisition of public hunting rights to private lands. The Game Management Division has also devoted its energies to making surveys, investigations and inventories of wildlife in the state. This work, of course, was in addition to the normal management work of the biennium, which included such varied activities as the trapping of quail (7,500 in 1949 and 8,500 in 1950), for release in over-shot areas; the purchase out-of-state and release in Florida of 639 Wisconsin deer and 144 Texas deer, and the trapping and release in underpopulated areas of 224 wild turkeys.

In the Fish Management Division, outstanding work was done in undertaking the initial phase of a survey of the St. Johns River and Lake Okeechobee fisheries. This survey is still in progress and initial reports have been ade. Since January, 1950, the Division has also made a special effort to obtain complete records of all fresh water fish taken by commercial fishermen, as required by the Statutes of Florida. Data received is believed to be more than 90 percent complete.

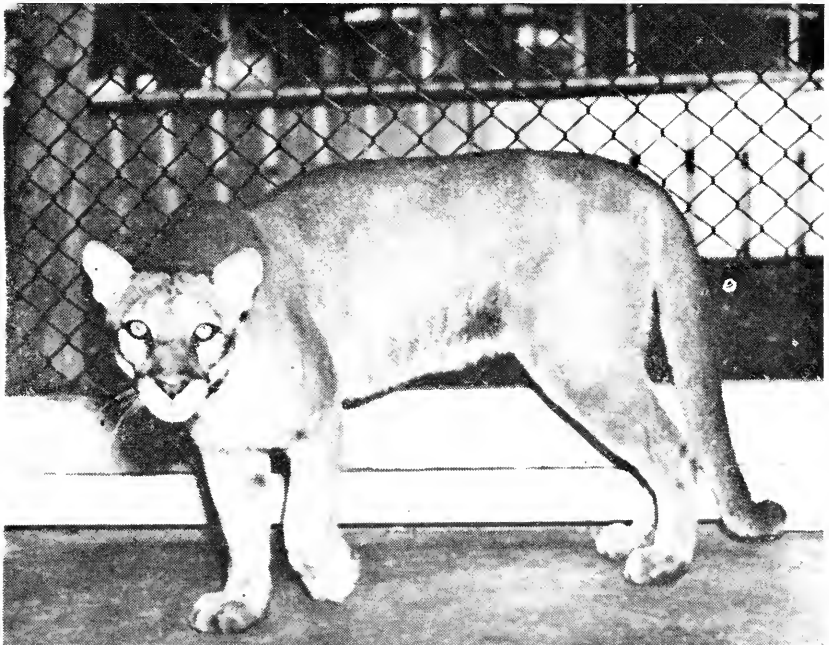


Outstanding progress has been achieved in law enforcement work, with a number of important policy changes being adopted. The Law Enforcement Division now operates under the direct supervision of the Commission's Assistant Director, and each of the five conservation districts is supervised by a Chief Wildlife Officer. Each district is divided into areas, under the jurisdiction of Area Supervisors.

The Law Enforcement Division has also streamlined its force of personnel, and is now employing fewer wildlife officers than formerly, but is now using a more efficient type of manpower acquired through a higher scale of salaries. The Division has also acquired new uniforms for all of its enforcement officers, as well as additional equipment including four airplanes (one seaplane, one amphibian, and two land planes) for use in observation work, as well as additional vehicles such as Jeeps, swamp buggies and air boats.

Outstanding in progress in law-enforcement work was the acquisition of a wildlife officers training school in Williston. Eight classes of 20 wildlife officers have attended the school to date, receiving a rigid 28-day curriculum of practical training.

Panther and black bear, Florida's two big game animals, were placed on the protected game list in 1950.



In public information and education work, the Commission has seen a rapid growth in the importance and duties of its Information and Education Division, resulting increase in general public interest in the problems of wildlife conservation. Information and Education took a long step forward by inaugurating its wild animal and bird zoo at the Florida Boy's Industrial School in Marianna. The Division also made several vital changes in its monthly magazine, FLORIDA WILDLIFE, by accepting advertising for the first time and also putting the magazine on a \$1.00 annual subscription basis, in order to help defray the costs of publication.

Information and Education has also had to enlarge and increase all of its services, including public speaking, newspaper releases, fair exhibits, special promotions such as the Fishathons for children, and film library.

LICENSE SALES BY COUNTIES—1948-49

	1948-1949 FISHING		1948-49 HUNTING	
	Resident	Non-Resident	Resident	Non-Resident
Alachua.....	6,557	1,251	3,664	16
Baker.....	915	14	686	9
Bay.....	6,407	1,435	1,674	15
Bradford.....	1,240	160	630	6
Brevard.....	1,253	967	1,379	29
Broward.....	4,691	1,110	942	6
Calhoun.....	1,682	6,324	896	37
Charlotte.....	317	146	294	55
Citrus.....	2,733	4,662	1,152	138
Clay.....	1,756	259	857	8
Collier.....	202	54	402	8
Columbia.....	1,523	281	1,248	13
Dade.....	8,107	458	3,974	12
De Soto.....	1,178	117	709	7
Dixie.....	289	261	922	8
Duval.....	20,168	701	6,508	27
Escambia.....	5,983	254	4,652	14
Flagler.....	159	60	376	1
Franklin.....	481	1,028	431	26
Gadsden.....	2,707	3,013	2,412	15
Gilchrist.....	624	52	718	1
Glades.....	767	475	177	3
Gulf.....	1,573	2,925	810	25
Hamilton.....	273	654	606	24
Hardee.....	1,556	84	908	.....
Hendry.....	2,239	946	734	17
Hernando.....	1,252	221	1,161	6
Highlands.....	2,858	1,258	616	9
Hillsborough.....	18,158	625	5,745	22
Holmes.....	1,342	2,694	924	22
Indian River.....	675	177	456	9
Jackson.....	1,516	1,257	2,090	19
Jefferson.....	538	988	740	191
Lafayette.....	570	52	561	5

The Commission has also made vital changes in its Communications Section, originally set up in late 1948 as a part of the Law Enforcement Division, by giving it its own budget and operating framework. In a short time, Communications has grown into a full-fledged unit, operating sixty two-way radios, and ten portable pack-set radios. Besides installing this equipment in Commission vehicles, Communications has also devoted much of its time to an entire modification of all its field radios.

In the line of special projects, the Commission achieved a closed season on alligators for the first time, acting on recommendations of its eight-member board of advisers. Another project was the preliminary work necessary for the proposed establishment of a refuge for the famous miniature Key Deer which are rapidly nearing extinction.

LICENSE SALES BY COU TIES—1948-49—Continued

	1948-1949 FISHING		1948-1949 HUNTING	
	Resident	Non-Resident	Resident	Non-Resident
Lake.....	4,296	5,541	2,176	47
Lee.....	1,456	450	973	21
Leon.....	4,797	5,065	4,611	274
Levy.....	834	106	1,993	15
Liberty.....	616	424	633	11
Madison.....	784	297	758	30
Manatee.....	2,101	311	1,017	11
Marion.....	5,008	6,644	4,158	94
Martin.....	664	430	329	22
Monroe.....	18	.....	64	.....
Nassau.....	398	211	1,397	11
Okaloosa.....	1,432	974	2,503	43
Okeechobee.....	1,554	1,150	351	11
Orange.....	13,311	3,923	2,980	33
Osceola.....	1,435	974	870	9
Palm Beach.....	4,894	802	1,938	19
Pasco.....	2,169	348	1,177	8
Pinellas.....	5,703	774	1,662	20
Polk.....	13,043	2,671	5,304	13
Putnam.....	1,904	1,672	1,969	11
St. Johns.....	853	172	2,047	9
St. Lucie.....	1,027	299	635	3
Santa Rosa.....	1,027	235	2,195	10
Sarasota.....	1,586	361	826	8
Seminole.....	3,200	845	1,167	22
Sumter.....	2,498	1,011	1,264	21
Suwannee.....	1,589	120	1,255	19
Taylor.....	841	846	1,603	25
Union.....	343	27	315	.....
Volusia.....	4,649	1,783	3,801	22
Wakulla.....	1,256	2,551	1,004	142
Walton.....	604	1,397	1,510	31
Washington.....	1,968	6,484	955	13
Grand Total.....	190,147	83,861	105,494	1,831

The commission also hopes to continue and expand its scientific research program. Within a period of five years it is hoped that careful study can be made of virtually every fresh water body in the state in an effort to improve sports fishing. More and more study will be devoted to quail, dove and waterfowl. From these studies will come the solution to our wildlife problem.

A vastly more expanded conservation education program will be activated. More work will be done in the schools in an effort to train the sportsmen of tomorrow in the ways of conservation. Text books will be prepared and visual educational facilities will be explored to the fullest. All this will cost money; perhaps a great deal of money. However, every modern sportsman knows that the dollars spent for conservation today are buying a priceless heritage for the generations to come.

LICENSE SALES BY COUNTIES—1949-50

	1949-50 FISHING		1949-50 HUNTING	
	Resident	Non-Resident	Resident	Non-Resident
Alachua.....	6,654	1,831	3,389	18
Baker.....	794	15	655	4
Bay.....	6,843	1,351	1,461	24
Bradford.....	1,218	137	586	6
Brevard.....	1,359	887	1,302	42
Broward.....	4,536	1,217	1,007	7
Calhoun.....	2,035	6,503	848	19
Charlotte.....	233	70	303	53
Citrus.....	4,093	5,118	1,146	135
Clay.....	2,532	391	829	9
Collier.....	175	76	468	5
Columbia.....	1,851	323	1,154	15
Dade.....	6,479	364	3,822	11
De Soto.....	1,008	70	613	6
Dixie.....	273	483	681	10
Duval.....	19,735	589	5,890	26
Escambia.....	6,921	275	4,613	9
Flagler.....	145	55	390	3
Franklin.....	472	962	398	36
Gadsden.....	3,005	3,086	2,152	17
Gilchrist.....	743	120	573	7
Glades.....	636	386	151	9
Gulf.....	1,907	3,188	797	24
Hamilton.....	275	660	483	15
Hardee.....	1,537	86	872	3
Henry.....	1,808	785	694	8
Hernando.....	2,733	269	947	9
Highlands.....	2,768	1,253	682	12
Hillsborough.....	7,521	322	5,552	8
Holmes.....	1,558	3,026	931	24
Indian River.....	596	161	417	10
Jackson.....	1,987	1,930	1,990	18
Jefferson.....	489	1,042	571	165
Lafayette.....	442	62	420	3

In summary, the Game and Fresh Water Fish Commission has progressed in many fields during the biennium, and has accomplished the formation and adoption of many new methods of procedure in its conservation work. Much of the progress made during the two-year period has been immediately visible, while other long-range improvements will not be evident for some time.

LICENSE SALES BY COUNTIES—1949-50—Continued

	1949-50 FISHING		1949-50 HUNTING	
	Resident	Non-Resident	Resident	Non-Resident
Lake.....	4,382	6,169	2,006	45
Lee.....	1,298	357	1,003	14
Leon.....	4,406	6,127	3,383	292
Levy.....	1,159	274	1,769	8
Liberty.....	716	977	530	11
Madison.....	812	435	614	33
Manatee.....	2,191	241	914	7
Marion.....	4,871	6,804	3,653	79
Martin.....	562	346	299	18
Monroe.....	12	.....	59	.....
Nassau.....	406	169	1,170	5
Okaloosa.....	1,723	941	2,596	51
Okeechobee.....	1,498	1,001	362	13
Orange.....	12,600	3,893	2,686	21
Osceola.....	1,418	936	743	6
Palm Beach.....	3,889	689	1,895	20
Pasco.....	3,537	371	1,075	7
Pinellas.....	6,697	759	1,519	12
Polk.....	15,157	3,752	4,955	17
Putnam.....	1,837	1,768	1,826	14
St. Johns.....	877	210	1,902	3
St. Lucie.....	880	261	550	4
Santa Rosa.....	1,130	191	1,916	9
Sarasota.....	1,599	291	751	9
Seminole.....	3,178	738	1,058	15
Sumter.....	3,228	1,021	1,081	13
Suwannee.....	1,640	243	1,105	6
Taylor.....	882	1,255	1,414	16
Union.....	336	17	233	.....
Volusia.....	4,223	1,826	3,496	28
Wakulla.....	1,182	2,655	942	183
Walton.....	747	2,172	1,466	24
Washington.....	1,921	6,283	856	18
Grand Total.....	186,265	90,245	96,645	1,771

GAME MANAGEMENT DIVISION



O. EARLE FRYE, JR.
Chief Wildlife Biologist

EDWARD B. CHAMBERLAIN, JR.
Asst. Chief Wildlife Biologist

GAME MANAGEMENT

THE past two years were marked by continued progress in wildlife management. Three major factors combined to bring this about: (1) The Constitutional Amendment of 1942, which enabled the Game and Fresh Water Fish Commission to proceed in wildlife restoration with a minimum of political interference. (2) The demand backed by sportsmen for sound wildlife management practices to procure better hunting on the ever decreasing hunting territory for the ever increasing army of hunters. (3) Pittman-Robertson appropriations which have continued to make funds available for a constructive research, development, and land acquisition program.

This period has witnessed further employment of men trained in the science of wildlife management; a greater emphasis on sound wildlife management practices as determined by the research program; a continuation of a well balanced research program designed to diagnose the basic causes of game shortages and to work out methods of remedying such shortages; and a tremendous increase in the amount of land acquired for the development of public hunting areas. Accompanying these activities has been further minimization of such popular but generally unproductive so-called conservation measures as haphazard restocking and predator control.

There is a gradual, almost reluctant, acceptance of a realistic viewpoint toward wildlife management; a realization that wildlife management is not simply restocking with game, employment of additional game wardens, or setting of hunting seasons, but instead is a tremendous complexity of biological, human, and economic relationships.

Florida has definitely passed through the "save what we have left", politically run phase of wildlife management and is headed toward a progressive program which will result in an increased harvestable surplus of game for the Florida sportsman.

The most important game birds and mammals of Florida are the bobwhite quail, the white-tailed deer, the wild turkey, the several breeds of wild ducks and geese, the mourning dove and the grey squirrel. These animals will be taken up individually later in this report with brief remarks as to the steps that have been taken toward their management. Following the discussion of individual species will be a brief report of Pittman-Robertson activities.

Acquisition of Land for Public Hunting

Particularly outstanding among game management activities during the past two years have been those activities designed to furnish hunting to the general public either through the purchase of land or the acquisition of hunting rights on private land.

The lands at present either belonging to the Commission or under a game management agreement between the Commission and private or Federal owners are approximately 918,000 acres open to controlled public hunting, 841,000 acres open to uncontrolled public hunting, and 899,000 acres in breeding grounds.

Most pressing is the need for adequate protection and establishment of controlled hunts on the 841,000 acres now open to uncontrolled public hunting and at present not supporting a fraction of the game of which they are capable. In addition, certain portions

Adequate game management funds are needed to furnish hunting acreage for the 'little' hunter.



of the 899,000 acres of Commission managed lands now in breeding grounds can be opened to public hunting when adequate game management funds are available to produce a surplus of game on such areas and protect it against overshooting.

Besides the above lands now available for management, the Commission has unlimited opportunities of acquiring, through co-operative agreements, public hunting rights on private lands. Under the terms of such agreements, the Commission, by furnishing wildlife officers and such services as fencing or fence maintenance, offers the landowner assistance in protecting and managing his property, plus the public good will that accompanies the knowledge that he is contributing his land for public hunting. The Commission, during the past two years, has entered agreements with private landowners which permit the operation of controlled public hunts on three areas totalling approximately 350,000 acres. Such agreements are usually made by assigning wildlife officers (salary and expenses approximately \$4,000.00 per man per year) to the property at a rate of one man per 20 to 50 thousand acres and furnishing fencing and fence maintenance proportionate to the amount and quality of the acreage involved.

Outright monetary lease of hunting rights is inadvisable because the Commission cannot hope to compete with wealthy individuals on a purely financial basis. Also such a lease payment on one tract of land would more or less morally obligate the Commission to the impossible financial burden of paying similar lease fees on the vast areas of private lands now open but rapidly being closed to public hunting.

Land purchases for public hunting under existing high costs of land are usually impractical except in a few cases where sub-marginal lands of value principally for wildlife can be acquired at low cost.

Lands now available to the commission for public hunting use through agreement or ownership occur in Santa Rosa, Walton, Okaloosa, Bay, Gulf, Calhoun, Liberty, Wakulla, Leon, Baker, Columbia, Taylor, Dixie, Lafayette, Lake, Levy, Citrus, Hernando, Pasco, Sumter, Charlotte, Palm Beach, Marion, Highlands, Polk, Manatee, and Sarasota Counties.

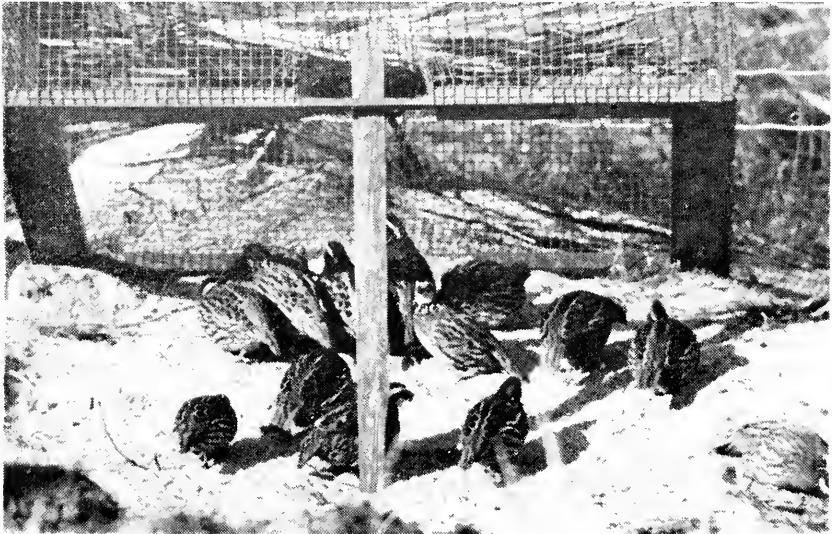
SUMMARY OF GAME MANAGEMENT ACTIVITIES BY SPECIES

Quail

There are three primary clear cut factors that have been operating to reduce quail in Florida in recent years. These are: (1) Increased mechanized "clean" farming. The first farming operations in Florida with their small fields, rail fences, and general crops resulted in the production of ideal quail habitat. With the advent of mechanized equipment fields were enlarged, fence rows cleaned out, and large acreages planted to one cash crop such as cotton, and quail decreased. (2) The growing of dense stands of unburned slash pine for pulpwood in north and west Florida. The paper mills in Florida have caused a demand for enormous quantities of young pine for pulpwood. This has resulted in the growth, largely through fire protection, of dense stands of slash pine and a heavy understory of wiregrass and other vegetation that combine to produce very poor quail habitat. (3) The disking of tremendous acreages of formerly good quail territory in south Florida for improved pasture. Here the removal of palmetto cover has resulted in complete elimination of quail from such areas. Quail must have cover to survive.

Unfortunately for quail, these practices are all of great importance to the economy of the state and cannot therefore be sacri-

Wildlife officers trapped and relocated to public hunting areas 16,000 of Florida's number one game bird.



ficed for the welfare of quail. On the other hand, there are minor modifications of all three practices that can result in substantial benefits to quail if sufficient inducement can be found to influence the landowner to apply the remedial measures.

The importance of overhunting of quail has been greatly over-emphasized. Because of the distribution of areas such as dense woodlands, swamps, or citrus groves where the birds are comparatively safe from the hunter, and the fact that quail hunting becomes no longer worthwhile long before all breeding stock is eliminated from a large area, quail have rarely been reduced to such an extent that they cannot build up to the carrying capacity of the land within two normal years. The problem of quail management in the state is clearly, then, one of increasing the carrying capacity of the land through habitat improvement.

On the other hand, it may be that in certain areas, such as the open flatwoods of south Florida where birds are particularly vulnerable to overshooting, quail are reduced every year below the normal breeding population of the area. Under such conditions careful restocking with wild quail is believed to be worthwhile.

Following this thought a state wide quail trapping program was organized and put into effect in the spring of 1949. Under this program 7,500 birds were trapped in 1949 and 8,500 in 1950. These birds were trapped by wildlife officers and interested private individuals and as a general rule were released on territory open to public hunting. In a few cases private individuals trapped birds from their own land to be released at other places on their own land. Such trapping was done at the expense of the individual and under the direct supervision of a wildlife officer.

Birds released on public hunting lands were trapped from breeding grounds, urban areas and similar tracts where they cannot be shot and were presumably "going to waste." The trapping program is being directed by a trained biologist. All birds are banded and careful records are kept of the success of the project to determine if the results justify the expenditure of funds in trapping and moving quail.

In addition to the quail restocking efforts three Pittman-Robertson projects dealing specifically with quail were carried out or were started during the past two years. These projects are discussed in the portion of this report dealing with Pittman-Robertson activities.

Deer

The situation with regard to deer is entirely different from that outlined for quail. Whereas the primary factor that can increase quail in Florida is habitat improvement, the primary deer management need is protection against overhunting. There is a tremendous amount of satisfactory deer habitat in Florida that is now underpopulated. On such areas deer can be increased tremendously, simply by protection against overhunting and judicious restocking.

One important illegal hunting practice that has helped decimate the Florida deer population has been that of "jacklighting" deer at night. In using this method the hunter blinds the deer with a bright light and is able to approach within easy gunshot range. A ruling by the Game and Fresh Water Fish Commission making illegal the possession of a light and a gun at night for the obvious purpose of molesting game has gone a long way toward stamping out this completely unsportsmanlike practice.

The deer population in Florida has shown a definite increase in the past few years due to three major factors: (1) Better enforcement of game laws; (2) The posting of large tracts of land by cattlemen and other private interests. (3) The general movement of homesteaders from rural areas, particularly in the ranching areas of south Florida.

The Florida deer population suffered a tremendous blow during the deer slaughtering tick eradication campaign of 1939 to 1944. During this period an official total of 9,478 deer were slaughtered in Orange, Osceola, Glades, Highlands, Hendry and Collier Counties. Since 1942 Florida has made extensive efforts to replace these deer.

During the past two years 639 Wisconsin deer and 144 Texas deer were purchased and released in the state for restocking purposes. All of the Texas deer and 482 of the Wisconsin deer were purchased with game commission funds. The remaining 157 deer were purchased by the Livestock Sanitary Board in line with its obligation to replace the deer slaughtered during the tick eradication campaign. Since 1948 all deer released in the state have been ear tagged with metal tags as an aid to tracing the survival in Florida of imported deer.

No attempt is made to divide deer equally among different counties. The Commission favors the much more effective policy

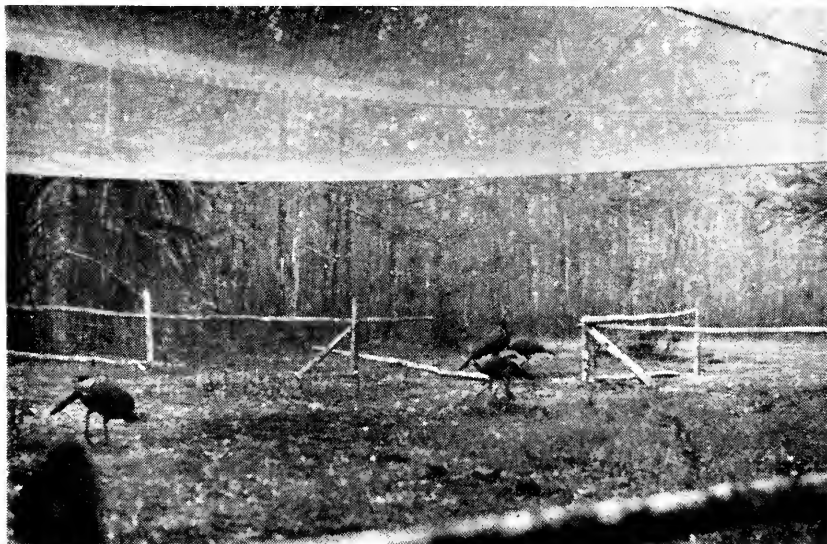
of placing deer in counties with good deer habitat and low population rather than one of arbitrarily dividing the animals available. Particular emphasis in the deer restocking program is placed on large blocks of good deer habitat such as the Hardee, Manatee, Sarasota county area that had been closed to the taking of deer. During the past two years, five Pittman-Robertson projects devoted either to deer or to deer and turkey have been active in Florida.

Turkey

As with deer, the immediate problems of turkey management in Florida are protection from man and the restocking of key areas. The Florida deer and turkey survey that was completed in 1948 indicates that Florida has more turkey and probably more good turkey habitat than any state except Texas. At the same time it has shown that much of the turkey habitat is underpopulated.

Florida has underway a long range turkey restoration program under the direction of a trained wildlife specialist. The basis of this program is the establishment of key turkey restoration and management areas over the state. Most of the areas discussed under the land acquisition section have been acquired as a part

During the past two years 224 wild turkeys have been trapped and released in understocked areas of the state.



of the deer and turkey restoration program. Where necessary such areas will be restocked with wild trapped native Florida turkeys. Arrangements have been made to trap turkeys on land in Glades County belonging to the Lykes Brothers Corporation and on land in Polk county belonging to William Candler. During the past two years a total of 224 turkeys have been trapped for release in understocked areas in the state. As with deer restocking, emphasis is being placed on releasing turkey in areas of suitable habitat with a low turkey population rather than in attempting to distribute turkeys equally over the state.

During the period covered by this report the Commission purchased 525 half wild turkeys which were liberated in several counties of the Fifth District. The Commission is aware of the fact that the half wild turkey is a poor substitute for the native wild trapped bird for restocking purposes, but felt that in the absence of a

The commission purchased, out of state, 783 white tail deer for restocking many underpopulated areas.



readily available stock of wild birds this action might be justified. In other states extensive studies on the survival of half wild turkey have been conducted, and it has been found that only under the most careful protection from overhunting have these birds been able to survive. Many of the claims of success made by advocates of the use of domestic turkeys in Florida seem to be without foundation. It appears that most of the increase in turkeys on areas restocked with tame birds can be attributed to the remaining wild stock that was given an opportunity to increase as a result of the protection from overhunting that accompanied the restocking efforts. There is no doubt that semi-domestic turkeys can be raised under semi-domestic conditions but the end result is a half wild barnyard fowl that has lost much of its beauty and sporting value and is unable to cope with heavy hunting pressure.

Four of the five Pittman-Robertson projects mentioned in the discussion of deer deal also with turkey. As a general rule factors influencing one species are important to the other.

Waterfowl

Though duck and goose hunting in Florida may not be quite so important as it is in some of the states to the north, it is still popular enough to attract some 20,000 to 22,000 hunters per year. This represents an increase of 100% since 1943-44. During the 1949-50 season, Florida had more waterfowl than any other Atlantic Flyway state, and in the Southeast ranked behind Louisiana and Arkansas only in number of hunters and second only to Louisiana in total kill. All this despite the fact that only a comparatively small percentage of the tremendous amount of water and marsh area in Florida is good waterfowl habitat. The Lake Okeechobee marshes, Kissimmee River and upper St. Johns river marshes, Merritt's Island, Indian and Banana Rivers, the west coast marshes from the Aucilla River south to the Chassahowitzka River, and a few interior lakes in north Florida are the state's outstanding waterfowl areas.

Waterfowl hunting in Florida is dependent largely upon the status of the continental waterfowl population, and as it now stands, there is little that Florida can do to increase waterfowl other than supply good wintering areas. This, however, is most important and deserving of considerable time, attention, and money. There is a definite need for developed, managed waterfowl areas, both as refuges and public shooting grounds.

Also, Florida is unique among the states in that it possesses an excellent game duck, the Florida duck or Florida mallard, that breeds and remains in the state throughout the year. If a suitable method for increasing the number of this species can be found, it offers good possibilities for supplying duck hunting to the Florida sportsmen.

One Pittman-Robertson project was begun in 1948 to inventory and classify waterfowl habitats and population within the state. The habitat investigations have now been largely completed, and have yielded valuable information on the type, location, and quality of Florida's waterfowl habitat. From this, specific and definite means for improving this habitat, enlarging its carrying capacity, and increasing the state population, have been worked out. Population inventories and collection of kill data are annual, continuing jobs. From these data are derived information used in the important work of setting the yearly hunting regulations. Study of the ecology and management of the Florida duck is, similarly, a continuing job which offers the possibility of good returns.

Mourning Dove

As with waterfowl the Mourning Dove is classified as a migratory bird and comes under the jurisdiction of federal game agencies. It is most important as a game bird in the corn and peanut farming areas of the state. Because of the decrease in dove populations in recent years and because of the annual controversy concerning dove seasons and the general lack of knowledge of dove movements and life history, a coordinated study of the mourning dove is under way in the southeastern states. Florida has participated in this study since the summer of 1949. During this period a total of 2,897 doves have been banded in the State. In addition a great deal of information has been gathered relative to dove life history, local movements within the state, and factors effecting dove abundance. Particularly outstanding among the the results of this study has been a clarification of the mystery of the source and destination of the migrating birds that appear in great numbers on the upper west coast and in the Dade, Broward and Monroe County area in September and October.

Information resulting from the cooperative study in the southeastern states should go a long way toward settling the always controversial questions dealing with the setting of dove seasons and regulations of dove hunting. The dove study has been conducted as a part of the Pittman-Robertson program.

Squirrel

Of the two species of squirrel listed as game animals in Florida the cat or grey squirrel far outclasses the fox squirrel in numbers, popularity, and quality as a game animal. Fox squirrels are generally shot incidentally by persons hunting other game.

One squirrel research project was begun in September 1949 and completed in September 1950. This study was conducted under a cooperative agreement with the University of Florida and has resulted in the accumulation of a great amount of information about the hitherto little known Florida Grey Squirrel. Details of this study are presented in the discussion of the Gulf Hammock Wildlife Investigation.

Pheasant

For the past two years the Commission has contributed \$500.00 per year to a pheasant propagation project sponsored by the Hardee County Sportsman's Association.

The Commission recognizes the very slim possibility of pheasants becoming established as a game bird in Florida but felt that the project was worth while as an experiment under the particular conditions presented by Hardee County. The program has been well and conscientiously conducted and should determine conclusively whether or not pheasants are adaptable to Florida conditions. Quite possibly the greatest value of the pheasant propagation program has been its influence in bringing about a conservation mindedness in Hardee County responsible to a great degree for the success of the deer and turkey restoration program in effect in that county.

THE PITTMAN-ROBERTSON PROGRAM

For the past two years much of the financial load of Florida's wildlife management program has been carried by the United States government under the provisions of the Federal Aid in Wildlife Restoration Act—commonly called the Pittman-Robertson Act. This Act, approved by Congress in 1937, provided that funds realized from an excise tax on sporting arms and ammunition be apportioned to the states for use in wildlife restoration work, according to their area and their annual sale of hunting licenses. The state must match each three dollars of federal money received with one dollar of state money.

This money is to be spent by the state either on research, development, land acquisition or maintenance of projects, with a small percentage of the total fund set aside for administration. All expenditures must be approved by the U. S. Fish and Wildlife Service, the trustees of the Pittman-Robertson fund.

Inasmuch as personnel as well as projects must be approved by the Fish and Wildlife Service, the bill was designed particularly to act as a stimulus to state game departments for beginning a progressive wildlife research and management program under the direction of scientifically trained men.

The Florida program continues to emphasize land acquisition, and to delay development activities until a firm foundation, based on research and sound information, has been laid. In accordance with this general policy are the relative expenditures for research and development for the years of 1949-50 and 1950-51, as presented in Table 1. During 1949-50, 24.7% of the obligated Pittman-Robertson expenditure was for research and 34.2% was for development; during 1950-51, 16.8% is obligated to be spent for research and 40.7% for development. The percentage of money spent for land acquisition will vary from year to year, dependent upon specific opportunities for land acquisition that may arise from time to time. Funds for land acquisition can be taken from the Florida reserve of Pittman-Robertson money.

During the past two years seven trained men and two untrained men were employed for Pittman-Robertson projects. Three of the trained men have Masters' degrees and four have Bachelors' degrees in wildlife management or biology. Two graduate students of the University of Florida were given research fellowships and employed on a temporary basis to do research work needed by the Commission. Both men plan to use their research to satisfy thesis requirements for the Master of Science degree. Consistent with the general policy in effect, no new personnel are employed until there is a definite and easily demonstrated need for them.

Florida's Pittman-Robertson allotment has decreased from the high of \$148,949.46 in 1948 to \$140,905.64 in 1949 to \$121,214.92 in 1950. This is due to a decrease in receipts from the Federal excise tax on sporting arms and ammunition. Following is a discussion of those projects active during the two-year period covered by this report.

Charlotte County Game Management Area

In 1941, purchase of a 62,000 acre tract of land in Charlotte County was begun. Acquisition activities on this project have been continued during the past two years. These activities include purchase of outside holdings, clearing of titles of lands purchased prior to the present biennium and obtaining Federal reimbursement for state funds spent in the acquisition of Charlotte County lands. The Game and Fresh Water Fish Commission now owns most of the land enclosed within the original purchase boundary.

Charlotte County Quail Investigations

The Charlotte County Quail Investigation was designed specifically to develop methods of increasing quail on the Charlotte County Area and generally to develop methods compatible with cattle raising for increasing quail in south Florida's flatwoods.

This study has been continued during the present biennium on a greatly reduced scale. At present emphasis is being placed on obtaining data about year to year quail population fluctuations, as correlated with food and weather conditions. Also, extensive experiments with the artificial feeder system are being carried out.

Charlotte County research has been directed along several major lines of investigation: food habits of quail; weather, shooting pressure, and other factors influencing the quail population; the sex and age composition of quail population; the effect of burning, grazing and disking on vegetation and the quail population; experimental quail food planting; and use of automatic quail feeders.

To date no plant has been found, with the possible exception of one or two native species, whose planting as quail food appears to be a practicable quail management procedure in south Florida flatwoods. The best method of increasing quail food in Charlotte County, other than outright feeding, appears to be the stimulation of native quail foods by the proper use of fire, grazing and disking. Judicious burning is definitely beneficial to quail and indications are that winter grazing will also improve quail habitat in flatwoods areas.

Disking has been shown to greatly increase quail food plants on ungrazed areas the first year following disking. On areas not protected from grazing cattle seek out disked places and destroy most of the quail food plants. The planned management of quail on the Charlotte County area revolves primarily around winter grazing, controlled burning, removal of cattle during the quail food growing season and artificial feeding.

Since the spring and summer of 1948 experiments with artificial feeding of wild quail have been conducted. In the spring of 1950 these experiments were enlarged to include three areas of approximately 5,000 acres each in Charlotte, Highlands and Pasco Counties. Records are being kept of the success of the feeding methods in increasing quail. Results of the studies to date indicate that quail can definitely be increased by the use of artificial feeders but the technique has yet to be perfected to such a degree that quail can be produced by this method at a cost that the average hunter can afford to pay.

Since the beginning of the Charlotte County study, analysis has been made of the crop contents of more than 2,500 quail. Most of these birds were obtained from hunting lodges in Charlotte County. In addition, more than 9,000 quail have been examined for sex and age. Information resulting from the latter study is extremely useful in evaluating breeding success as correlated with weather, hunting pressure, and other factors. The results of the first four years of the Charlotte County Quail Investigation will be published in 1951.

Charlotte County Quail Project

This project is designed to put in effect management practices developed through the Charlotte County Quail Investigation. Primary activities of the project have been control burning, disking, quail food planting, and maintenance of roads, bridges, and other installations on the Charlotte County Wildlife Management Area. During the biennium covered by this report, approximately 15 acres were disked and sown to a sod forming grass or quail food and approximately 10 miles of 24-foot fire lanes were similarly prepared. A new grazing lease was signed with the Babcock Florida Company whereby cattle are to be grazed on three of the four approximately 15,000-acre pastures during only the months of October through May. An annual rental of 8 cents per acre is paid on such land. Year round grazing is being permitted on one pasture as a check on the effectiveness of eliminating summer grazing. During the past two years the Babcock Company has constructed fences on the area that will be useful to quail management as well as cattle operations. This company has also contributed seed and fertilizer for grass planting on some of the disked strips. Further plans are being worked out with this company whereby the company and the Commission will share the expense

of land improvement activities that will benefit both quail and cattle.

A controlled public quail hunt was conducted on the Charlotte County area during the 1950-51 hunting season. Permits for the hunt cost \$5.00 per day. After a slow start, due apparently to lack of information about the hunt in spite of good newspaper and radio coverage, the hunt proved highly successful. The 312 hunters purchasing permits bagged 2,278 birds which, with 178 known crippled, amounted approximately to the 2,500 birds slated to be harvested. All hunters reported satisfaction with the hunt.

The Charlotte County hunt was conducted for two principal reasons: To permit the hunter to harvest the unusually good crop of quail produced in 1950 and to determine if the average Florida hunter is willing to pay a reasonable cost for quail hunting. The heavy expense necessary for intensive quail management on Commission lands is justifiable only if the comparatively few hunters benefiting from such activities bear a large portion of their cost.

Coordination Project

The Coordination Project is designed to serve as a medium for liaison between the U. S. Fish and Wildlife Service and the Game and Fresh Water Fish Commission and to furnish immediate supervision of Pittman-Robertson projects. One particular responsibility of the coordinator is the preparation of plans and reports for all projects.

Florida Deer and Turkey Survey

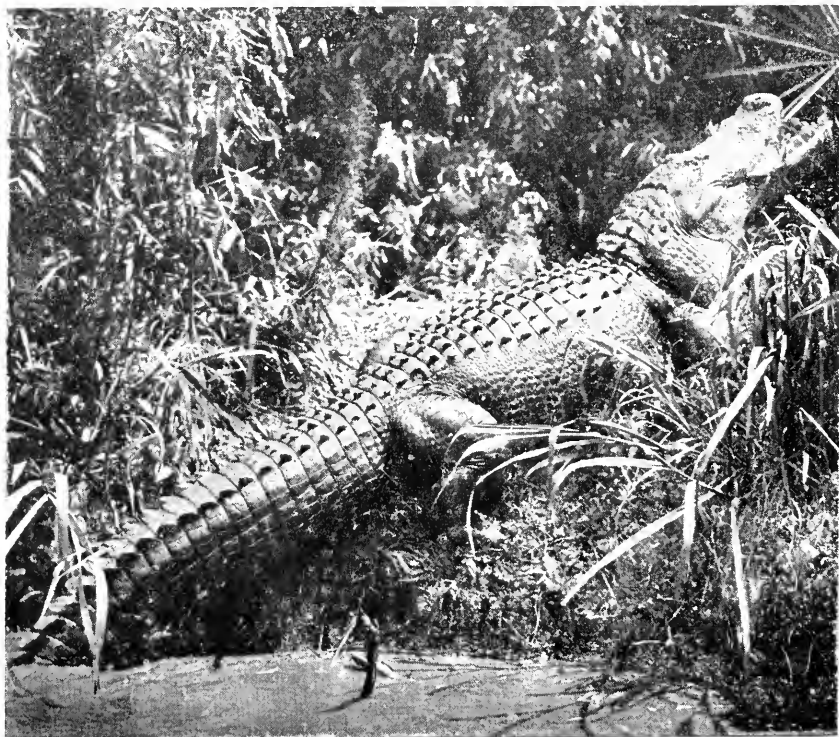
Florida with its 22,000,000 acres of forest lands, large uninhabited areas, and mild climate, offers unusual opportunities for production of deer and turkey. It is doubtful that any other southern state has the amount of deer and turkey habitat that is found in Florida. This is due, to a large extent, to the generally good distribution of different types of cover over the state. Almost every area of pine flatwoods is broken up by cypress ponds, cabbage and oak hammocks, or heavily forested stream bottoms. Almost every area of rolling sand hills is broken by lakes surrounded with cypress, bayheads, or oak hammocks. Many of the prairie lands of south central Florida have occasional cabbage palm or oak hammocks. In the cypress swamps of the Everglades there are ridges of slight elevation where grow pines, palmetto, oaks, and tropical broad-leaved trees. Even some of the sawgrass marshlands of extreme south Florida are dotted with frequent islands of bay, myrtle, holly and fern that offer some haven for deer.

The state-wide deer and turkey survey, completed in 1948, revealed an estimated deer population of 32,466 in 63 counties. Only four counties did not have deer. There are 10 counties with a population of 1,000 or more; 13 counties with from 500 to 999; 7 counties with from 250 to 499; 16 counties have from 100 to 249; and 17 counties have from 1 to 99. There are no forest areas of 100,000 acres or more that do not have a remnant of a deer herd. The counties without deer are devoted to agriculture and are divided into small rural ownerships.

The turkey population in the spring of 1948 was estimated to be 26,854. There were 7 counties with a population of 1,000 or more; 9 counties with 500 to 999; 16 counties with 250 to 499; 12 counties with 100 to 249; 18 counties with 1 to 99; and 5 without a population.

The deer and turkey range has been divided into two classifications—"good" and "habitable". "Good" habitat is that type of range that will support a desirable population for the entire year. "Habitable" habitat is that type of range that maintains only a

Gators, too, will be able to stage a comeback. Closed season now protects them.



very small population throughout all season. In this classification will fall areas that support a desirable amount of game for only short periods of time and then, due to a decrease in food or cover, or both, this population is forced to move elsewhere.

Florida has 14,209,000 acres of good deer range and 9,436,200 acres designated as habitable; 14,309,000 acres of good turkey habitat and 8,727,400 acres designated as habitable. Very little of the total forest game habitat in the state is desirable for only one of the two species.

The results of the Florida deer and turkey survey were published in 1950 in Technical Bulletin No. 1. This survey is being used as a basis for the statewide deer and turkey restoration program.

Farm Game Habitat Restoration

This project was begun in June 1947. Its specific objective is the improvement of agricultural land for quail, primarily through the planting of field borders to quail foods and the encouragement of the use of such plants as Florida beggarweed for cover crops and soil builders. During the 1949-50 biennium the following wildlife planting materials were provided free of cost to landowners in north Florida who were interested in farm game habitat improvements: bicolor lespedeza—748,000 seedlings, thunbergii lespedeza—234,000 seedlings, common lespedeza—1,878 pounds of seed, Florida beggarweed—700 pounds of seed, partridge pea—123 pounds of seed, multiflora rose—31,000 seedlings. Most of this material was distributed through a cooperative arrangement with the United States Soil Conservation Service. Success from plantings of these species was in proportion to the care and attention they received from the landowner.

The bush lespedezas, bicolor and thunbergii, are well adapted for food plantings on the better soils of north Florida provided they are planted, fertilized and maintained properly. Thunbergii appears to be much more adaptable and plans are to abandon the use of bicolor in favor of thunbergii as soon as sufficient supplies of thunbergii are available.

In the spring of 1949, a 5,500-acre quail management area was established in Jackson County for the purpose of determining the value of bicolor in increasing quail on a large tract of average farm land. One-hundred-seven bicolor plantings were made on this area in 1949. Many failed due to drought and had to be planted again in 1950. The 1950 plantings were generally successful.

The use of multiflora rose for fencing and game cover purposes is relatively new to Florida—the first planting having been made in the spring of 1949. Although its adaptability to Florida conditions is still uncertain, it appears to be suitable for fencing purposes on the better soils of north Florida if planted properly and fertilized heavily. After from four to six years this plant forms a dense tangle of thorny vegetation forming excellent wildlife cover and serving as an impenetrable stock fence that needs no repair or upkeep. It is very successful in northern states and is much in demand by farmers.

Through the cooperation of the Florida Agricultural Experiment Station and the Florida Forest Service the Commission is now able to produce much of its planting stock in Florida at a much lower rate than that for which such materials are obtainable from other states or private sources.

Palm Beach County Land Acquisition

In 1947 the Game and Fresh Water Fish Commission acquired an option to purchase approximately 50,000 acres of land in Palm Beach County at \$5.00 per acre. The purchase of this land was to be extended over a period of five years. During the biennium covered by this report 20,479 acres of this area were acquired with Pittman-Robertson funds. The total area to which the Commission now holds title is 45,353 acres, leaving 7,780 acres to be purchased next year.

Gulf Hammock Deer and Turkey Survey

This project was begun in February, 1948, and was completed in February, 1949. The results of the survey are being prepared for publication. Information from this study forms the basis for the present Gulf Hammock wildlife management program.

Palm Beach County Fencing

Between June, 1948 and March, 1949, a four-strand barbed wire fence was constructed around the Palm Beach County Wildlife Management Area, the total cost for constructing the 32.8 miles of fence was \$11,492.09. The cost includes constructing, painting, and hanging nine board gates. Bids for the construction of the fence were solicited and the contract was awarded to Mr. D. W. Rowell of Indiantown. Mr. Rowell's work was highly satisfactory and resulted in the construction of an excellent fence.

Florida Waterfowl Survey

This project is designed as an investigation of waterfowl habitats and populations throughout the state. Information resulting from it will serve as a background for a constructive waterfowl management program. Among its particular aims are the development of techniques for waterfowl habitat improvement and investigation of possible methods for increasing the population of the Florida duck.

The bulk of the work has been concerned with waterfowl habitat investigations, with particular emphasis on food plant distribution and abundance. In these investigations, which have been conducted on over 200 different areas, water quality tests are made, the type of substratum, physical characters of the shore, and amount of water level fluctuation are noted. Submerged and emergent vegetation is recorded as to species, relative abundance and, where possible, limiting factors. The knowledge of plant succession, growth requirements, and limiting factors to be derived from the accumulation of such data is necessary to any sound waterfowl management program. This is especially true in the south, where waterfowl management is very largely habitat management, i.e. water and plant manipulation. As a result of this work, more is now known of Florida's waterfowl habitats than ever before. Sound management techniques have been developed, and the water quality tolerances and preferences of 63 common aquatic plants have been determined. This latter represents pioneer work of its type in the southeast.

Throughout the work so far, it has been apparent that over the state as a whole good food plants are not abundant. This seems to be the most widespread factor limiting the value of the various waterfowl areas. On the other hand, there are several large areas in the state which are quite good. In them the number of wintering waterfowl will be dependent on the continental population as well as on local conditions. Unfortunately, the general trend has been toward diminishing waterfowl habitat. Certain developments for agriculture, pasture, navigation, and flood control programs have been, or promise to be, extremely detrimental to waterfowl. For example, if certain proposed navigation projects in the vicinity of Merritt's Island are carried out, that area, which now carries at times better than a quarter million birds, will be so reduced in value within eight to ten years as to be of negligible importance to waterfowl. Similarly, plans for the development of the St. Johns

and Kissimmee valleys could result in a marked decrease in waterfowl values. On the other hand, plans for the construction of impoundment areas in the Everglades should noticeably improve the waterfowl habitat there.

Because of the general decrease in waterfowl habitat, it becomes more and more important that the Commission should control, develop and manage some good waterfowl areas. Special attention has been devoted to locating suitable areas, and management plans for several have been drawn up. Techniques for development and maintenance of good habitat conditions on refuges and public shooting areas have been worked out.

In addition to the work on habitats, considerable time has been spent on population and kill data investigations. Monthly inventories, flown over important sample areas, yielded valuable information on population fluctuations, trends and movements. Collection of kill data gave information on species composition, average daily bag, total kill, and crippling loss. All this information is vitally important in formulating hunting regulations. It shows too, that waterfowl hunting in Florida compares very favorably with that of any state in the southeast. For the 1949-50 season, the average daily bag of ducks was 2.65 birds, or 3.06 if cripples are included. The average daily bag of coots was 2.14 birds, and of geese 0.07 birds. The average season bag was 16.7 ducks and 13.5 coots, with the average hunter being afield 6.3 times. Ring-necked duck made up 27.8% of the kill, pintails 15.7% and scaup 11.7%. The remaining 44.8% was composed of 14 species, with teal, widgeon, mallard and Florida duck being the more important. Few states can show more successful hunting than this.

The monthly inventories have shown that waterfowl populations wintering in Florida have held up quite well in contrast to the downward continental trend of the last two years. They have also demonstrated that the hunting season generally coincides with the period of greatest waterfowl abundance.

The status of the state's two resident species, the wood duck and the Florida duck, has been quite good during the past two years. Airplane inventories have revealed that the Florida duck, though smaller in total number than was hoped, has had a gratifying increase each year since 1948. From a total of 18,000 to 20,000 birds at that time, the population has risen to between 25,000 and 27,000 birds in the early fall of 1950. Maintenance of proper and sufficient habitat is essential if this bird is to remain

an important game species. Within its range this bird is heavily hunted and yields a harvest out of proportion to its total number.

Future activities of this project will consist of a continuance of the population, kill data, and Florida duck studies. In addition, more attention than heretofore will be devoted to the location, development, and management of waterfowl areas both as refuges and public shooting grounds.

Gulf Hammock Fencing Project

Between August, 1948, and December, 1949, sixty and one-half miles of four-strand barbed wire fence was constructed around the boundaries of the Gulf Hammock Wildlife Management Area. The total cost, including materials, of this fence was \$31,987.21, or \$528.71 per mile.

Before beginning construction of the fence, bids were solicited and resulted in bids of \$1,1552.00, \$960.00, \$591.00, \$300.00, and \$268.80 per mile, not including the cost of materials (\$243.35 per mile). None of the bids was acceptable and a decision was made to construct the fence by force account. The man employed to supervise the work proved completely unsatisfactory, so bids again were solicited and resulted in bids of \$550.00 and \$460.00 per mile, and the proposition made by the Panama City Construction Company to build an experimental five miles of fence for the cost of construction plus 10%. It was felt that the resulting figure would be of value to the Commission in considering possible bids and in determining the actual cost of fencing in Gulf Hammock.

The cost of constructing this five miles of fence averaged \$509.14 per mile. With this figure in mind and in consideration of indications of inefficient utilization of labor, believed due to the fact that the construction company was not financially bound to do good work, a new agreement was worked out with the Panama City Construction Company to construct an additional 11 miles of fence with a guarantee that the construction of the fence would not cost more than \$400.00 per mile. Under the terms of this agreement the construction company was paid \$100.00 per mile to supervise the construction of the fence. This supervision included the employment and management of labor, and the establishment by survey of the property line on which the fence was to be constructed. Upon completion of this 11 miles, another agreement covering the remainder of the fence originally planned was signed by the Panama City Construction Company, reducing the supervision cost from \$100.00 to \$90.00 per mile.

All negotiation finally resulted in the construction of the 53½ miles of fence built by the Panama City Construction Company at a total cost of construction of \$16,473.50, or \$307.91 per mile. This represents a saving of \$152.09 per mile under the lowest possibly acceptable bid of \$460.00, and resulted in the construction of a good fence.

Following the completion of this fence, an agreement was worked out with several small landowners whereby an additional 3,000 acres was included in the fenced management area. The 7 miles of fence bounding this property was constructed by the landowners with material furnished by the Commission.

The fencing picture in Gulf Hammock was complicated by the fact that, apparently, no one was able to judge satisfactorily the cost of fencing under the unusual conditions peculiar to the area. This conclusion is supported by the tremendous variation in bids submitted by contractors presumably familiar with fence construction. The principal obstacles to fencing in the Hammock are the almost impenetrable mud swamps and the rocky nature of the terrain. Limestone is so near the surface in much of the Hammock that post holes must be dug with pneumatic drills, dynamite, or other special tools.

Florida Deer and Turkey Restoration

Under this project is the greater part of the state's deer and turkey restoration program, including acquisition of land for deer and turkey management and trapping and restocking of these species. Most of the lands acquired during the past two years for public hunting have been acquired as a part of the activities of the project.

Particularly outstanding has been the excellent success experienced with turkey restocking in Hardee County—the only restocking area for which detailed accurate information is as yet available. Thirty turkey hens and nine gobblers trapped from the Fisheating Creek Wildlife Management Area were released in Hardee County in the fall of 1949. By the fall of 1950 the original stock had increased to more than 130 birds.

Outstanding among the land acquisition activities of this project during the past biennium has been the acquisition of public hunting rights on approximately 160,000 acres in Lafayette, Dixie and Taylor Counties belonging to P. C. Crapps & Sons and Consolidated

Naval Stores. This area was open to controlled public hunting in the fall of 1950.

Other important land activities include the acquisition of game management rights on the approximately 107,000-acre Avon Park Bombing Range; acquisition of hunting rights on 8,600 acres in Highlands County, acquisition of hunting rights on a 75,000-acre area in Gulf, Bay and Calhoun Counties belonging to the St. Joe and International Paper Companies under agreements for cooperative wildlife management; and cooperative wildlife agreements involving deer and turkey restocking with owners of approximately 300,000 acres in Hardee, Manatee and Sarasota Counties. The project leader and other Pittman-Robertson personnel worked closely with Commissioners and local Wildlife officers throughout negotiations leading to successful completion of land agreements. Much of the success of the land acquisition program has been due to the excellent cooperation and able assistance of wildlife officers.

Mourning Dove Study

This project is designed to gather information about the mourning dove that will lead to a better dove management program and a more equitable division of dove hunting seasons. One qualified biologist is employed for the dove investigations. His duties include employment of trappers for the approximately 20 banding stations maintained over the state, trapping and banding doves at concentration points of importance, developing, putting into effect and supervising a dove census conducted by wildlife officers, rural mail carriers, and game management personnel, and general coordination of all dove investigational activities.

As a rule the banding stations are operated by school boys recommended by the wildlife officers in the counties in which the stations are located. The boys are generally paid \$20.00 per month to trap and band doves coming to the station. Wildlife officers accidentally trapping doves in the quail trapping program also assist in the dove banding program.

When the Southeastern Dove Study is completed the findings will be submitted to the United States Fish and Wildlife Service as a guide for regulating dove hunting and for supplying more of this important game bird for the hunter.

Palm Beach County Game Investigation

The Palm Beach County Game Investigation was begun in the summer of 1949. It is designed to furnish information that will lead to higher production of game on the 53,000-acre Palm Beach County Wildlife Management Area. Among the specific objectives of this project are the preparation of a cover map of the entire area, studies of the effect of burning, grazing and weather on game populations, evaluation of the area as deer, turkey and quail habitat and, most important, the development of methods of improving the area for these three game species. The leader of this project is also assistant leader of the deer and turkey restoration project and spends approximately half of his time on turkey trapping and restoration activities in south Florida.

Farm Quail Food Investigation

This study was conducted between October 1949 and December 1950 at the University Conservation Reserve at Welaka, under a cooperative agreement between the Commission and the University of Florida. A portion of the expense is borne by each agency. The specific purpose of this study is to determine the palatability and nutritional value to quail of seed produced by plants useful to the farmer for erosion control, cover crops, soil builders, pasture, and so forth. Information that has resulted from this study will be of tremendous practical value to the Commission in advising farmers and other land owners interested in improving conditions for quail.

Gulf Hammock Wildlife Investigation

This project was begun in October, 1949, and was designed to serve as a vehicle for financing a long term investigation project accompanying wildlife management developments on the Gulf Hammock Wildlife Management Area. Among its duties are included the determination of the abundance of deer and turkey on the area, making recommendations for hunting or control of hunting of these species, investigating annual game food conditions, and keeping records of annual game kill and hunter reaction. Since this project was begun, excellent information has been obtained relative to these subjects.

One very important phase of the research conducted on this project to date was the investigation of the grey squirrel. This study was conducted by a graduate student of the University of

Florida, under a cooperative agreement between the Commission and the University, and was continued for one year. During the one year of this squirrel study it appears quite likely that more useable management data relative to the grey squirrel has been accumulated than ever before. Of particular importance is an excellent diagnosis of the reasons for the apparent migration of squirrels just prior to the 1949-1950 hunting season, and their re-appearance shortly after the first of January. Apparently, there was no disappearance of squirrels at all. They were present throughout the hunting season, but, due to the shortage of acorns and other mast, were not active in food gathering activities, and were thus not observed or killed by the hunters. Squirrel hunting success is as directly correlated with abundance of acorns as it is with abundance of squirrels.

Gulf Hammock Wildlife Development

Among the activities on this project are fence, road, and bridge maintenance and construction, and the preparation of turkey food plots. This project was begun in October of 1949. Sites have been selected for 15 of the 20 proposed turkey food clearings; eight of the food plots have been cleared with a bulldozer, fenced and planted; most of the 60 miles of fence damaged by the hurricane of September, 1950, has been repaired; more than 50 miles of the road has been cleared of fallen trees that resulted from the hurricane; and all of the developments and installations of the Gulf Hammock Wildlife Management Area have been maintained in good order.

One trained wildlife biologist is employed as leader of this project. He is assisted by one Forestry graduate from the University of Florida, and one untrained local man. All project personnel are available for assistance with law enforcement work, under an arrangement whereby time spent on law enforcement work is made up by other wildlife officers assisting with development work. This arrangement is necessary because of the fact that, under the terms of the Pittman-Robertson Act, funds allocated to states cannot be used for law enforcement.

The operation of this project and the annual Gulf Hammock hunt proceeded in a very satisfactory manner in spite of considerable antagonism in the beginning from minor elements of the population of Levy County, and indications are that sadly depleted deer and turkey populations again can be restored to their former abundance.

Eglin Field Deer Investigation

The Eglin Field Deer Investigation is designed principally to determine the status of the Eglin Field deer herd in relation to the carrying capacity of the range and to supply recommendations for the most satisfactory management of the herd. An important aspect of the study will be investigations of the effect on deer of the screw worm.

It appears highly possible that the immediate and future condition of the deer herd, particularly on bombing ranges or similar danger areas where hunting cannot be permitted, would be greatly improved if a portion of the deer were removed—perhaps by trapping for restocking other areas in the state. With this thought in mind permission has been granted by the Air Force authorities for the Commission to trap 150 deer in 1951 for restocking purposes.

Work was begun on this project on July 1, 1950. The project leader spends half his time on deer research and half his time on deer trapping as assistant leader of the deer and turkey restoration project.

Collier County Land Acquisition

Approximately 300,000 acres in northeastern Collier County are being considered for purchase by the Game and Fresh Water Fish Commission for development as a wildlife management area, provided that satisfactory arrangements for the purchase of these lands can be worked out with the landowners. If this area is purchased, it will be maintained in its present state as a wilderness hunting area.

Proposed management plans for the area revolve around more adequate protection of existing game stocks, so that the presently reduced deer, turkey, bear, and alligator populations can be restored to their former abundance.

Guano River Land Acquisition

A tract of approximately 5,000 acres in St. Johns County, including approximately 1,400 acres of salt water marsh, is being considered for purchase as a public duck hunting area. Negotiations are under way with the owners of this land for its purchase or lease. If this area is acquired, a dike will be constructed across the marsh and water control structures will be built which will permit fresh water to be retained on the marsh and will, conse-

quently, greatly improve the marsh as waterfowl habitat. A portion of this area will be set aside as a public hunting ground, and a portion as a waterfowl refuge.

Steinhatchee Wildlife Management Area Fencing and Development

This project was begun in November, 1950. Among its principal activities are the construction of 33½ miles of fence on the Steinhatchee Wildlife Management Area, the construction of four checking station buildings for conducting the Steinhatchee Hunt, the maintenance of an additional 66 miles of existing fence, and conducting game habitat improvement activities.

One trained wildlife manager and one untrained local man are employed on this project. Besides their actual development activities, they are responsible for information relative to game populations, annual game kill, and for recommendations for conducting the annual hunt. As with the Gulf Hammock project these men are available for law enforcement work.

Florida Wildlife and Game Kill Inventory

There is an acute need in modern wildlife management for accurate information concerning game populations and hunter activities. Information available at the present time in the State of Florida is meager, and, at best, unreliable. The present study is designed to determine the method or methods of inventory most applicable to the state, and to set up a permanent system of annual inventory of game populations, game kill, hunter sentiment regarding controversial issues, and hunter activities. Preliminary work on this project was begun in November 1950.

Table 1. **PLANNED EXPENDITURE OF FEDERAL AID FUNDS
During the Fiscal Years of 1948-49, 1949-50, and 1950-51**

	1948-49 ¹		1949-50		1950-51	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Coordination.....	\$ 6,380.00	3.6	\$ 12,196.50	7.6	\$ 13,798.40	6.4
Surveys and Investigations.....	19,182.70	10.9	39,466.39	24.7	36,393.02	16.8
Development ²	69,957.43	39.9	54,592.39	34.2	87,808.50	40.7
and Acquisition.....	79,994.96	45.6	53,572.90	33.5	78,000.00	36.1
Total.....	\$ 175,515.09		\$ 159,828.18		\$ 215,999.92	

¹ The figures for 1948-49 and 1949-50 are approved project totals and very nearly approach the actual expenditures. The figures for 1950-51 are approved project totals plus estimated costs of new projects contemplated.

² \$43,452.20 of 1948-49 Development Fund was for fence construction on lands purchased or leased.

FISH MANAGEMENT DIVISION

JOHN F. DEQUINE, Chief

C. E. HALL, JR., Assistant Chief

FISH MANAGEMENT AREAS

AREA A

Counties: Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Liberty, Okaloosa, Santa Rosa, Wakulla, Walton, Washington

Supervisor: F. G. Banks, Wewahitchka

Projects:
Area Fish Management Assistance
Wewahitchka Fish Management Station
Sam L. Britt, Supt.
Blackwater Fish Management Station
Sam L. Britt, Supt.
Willie Carr, Custodian

AREA B

Counties: Alachua, Baker, Bradford, Citrus, Dixie, Gilchrist, Hamilton, Lafayette, Levy, Madison, Marion (half), Sumter, Suwannee, Taylor, Union

Supervisor: No supervisor at present

Projects:
Area Fish Management Assistance for counties W. of Suwannee River temporarily provided by Area A Supervisor; for counties E. of Suwannee River by Area C Supervisor

AREA C

Counties: Clay, Duval, Flagler, Lake, Marion (half), Nassau, Orange, Putnam, St. Johns, Seminole, Volusia

Supervisor: Barry O. Freeman, Welaka

Technicians:
Melvin T. Huish
Delbert L. Taber
George Hotel

Projects:
Area Fish Management Assistance
St. Johns River Fish Management Station
Rough Fish Control

AREA D

Counties: Brevard, Charlotte, De Soto, Hardee, Hernando, Hillsborough, Manatee, Osceola, Pasco, Pinellas, Polk, Sarasota.

Supervisor: E. T. Heinen, Lakeland.

Technicians: Harold L. Moody; William Ray Holley.

Projects:
Area Fish Management Assistance
Rough Fish Control Units
Winter Haven Fish Management Station
R. G. Garrett, Supt.
J. T. Cauley, Truck Driver
Francis Weston, Laborer

AREA E

Counties: Broward, Collier, Dade, Glades, Hendry, Highlands, Indian River, Lee, Martin, Monroe, Okechobee, Palm Beach, St. Lucie

Supervisor: Don R. Lacthly, Okechobee

Technicians:
William R. McLane
Harry M. Frish

Projects:
Area Fish Management Assistance
Okechobee Fish Management Station
Rough Fish Control

FISH MANAGEMENT DIVISION



JOHN F. DEQUINE
Chief Fisheries Biologist

CHARLES HALL
Assistant Chief Fisheries Biologist

FISH MANAGEMENT

JOHN F. DEQUINE

THE Fish Management Division is charged with the responsibility of carrying out the Commission's policies pertaining to the management of fish and fisheries and other resources of Florida's fresh waters. Its objectives are two-fold: (1) to find and apply practical methods of improving the sport fisherman's catch, with particular emphasis on the black bass, and (2) to find methods of utilizing Florida's fresh water resources on a sustained yield basis for the maximum benefit of all of the State. Both of these aims are long-range in scope and will require many years of technical effort and a broad program of public education before they can be realized.

In the face of Florida's expanding resident and tourist population, and the increase in the interest in fishing for recreation, fishery stocks over the last few years have been under greater angling pressure than ever before. While Florida's fresh water fishing is excellent compared to that found elsewhere, and no permanent damage to fish population is anticipated from recreational fishing, the harvestable surplus of easily caught fish must not only be maintained but increased. The increased interest in fishing for pleasure has been emphasized by the recent jump in the number of fishing camps established and other services provided for the angler. It now comprises a sizeable industry directly or indirectly affecting the livelihoods of thousands of citizens. Surveys by interested organizations have placed the value of business generated by Florida's fresh water sport fishing at from 100 to 250 million dollars per year. Those charged with the administration of an industry of this scope cannot afford to sit back and take a *laissez-faire* attitude, but must supply considerable thought and effort to increasing production. Fortunately, Florida's Commission

is cognizant of this fact and supports an aggressive program combining research, experimentation and practical management of its fisheries, based on the same principles which have resulted in increased yields of agricultural and forest products in recent years.

In general, the activities of the Fish Management Division are separated into four categories:

1. Technical assistance on fish management problems to individuals, groups and organizations.
2. Fish culture and distribution.
3. Rough fish control and fish population surveys.
4. Specific experimental projects and fisheries surveys.

Superimposed upon these activities is the program of educating the interested public in fish conservation and management, which is accomplished through public appearances by trained and experienced fishery technicians, educational articles in popular publications, and entertainment of interested groups in areas in which work is being conducted.

As 7.7 percent of the Commission revenue was expended during the biennium on this entire fish management program, results and data obtained are presented in considerable detail in this report.

Technical Fish Management Assistance

The recently initiated program providing technical assistance and advice on fish management problems is carried out under a program whereby the entire state is divided into five Fish Management Areas, each of which is in the charge of an experienced fisheries biologist, having the title of Fish Management Area Supervisor who has direct charge of all Fish Management activities in his area. Members of the technical staff are well-trained and experienced, and all of them enjoy good standing in such professional societies as the American Fisheries Society, the American Society of Ichthyologists and Herpetologists, the North American Wildlife Society, the Florida Academy of Sciences and others. Scientific reports have been published in national journals on Florida's fresh water fisheries, and a number of other reports have been written for the Commission's use. A complete listing of these reports is found at the end of this section. The establishment of a technical fisheries library at the Tallahassee office enables fishery workers to keep up with developments in other areas of the country and of the world.

Table 1.
DISTRIBUTION OF FINGERLING FISH BY COUNTY

	1949		1950	
	Bass	Bream	Bass	Bream
Alachua.....	13,000			
Baker.....				
Bay.....	1,500	19,000		134,500
Bradford.....			28,000	
Brevard.....			24,000	
Broward.....				
Calhoun.....		14,850	4,000	57,500
Charlotte.....				
Citrus.....	36,000	14,000	62,060	
Clay.....	44,000	4,000	7,000	
Collier.....				
Columbia.....	5,000			
Dade.....				
De Soto.....				
Dixie.....				
Duval.....	18,500		5,550	
Escambia.....	2,000	28,150	5,250	92,650
Flagler.....				
Franklin.....	1,500	9,000	2,000	31,000
Gadsden.....	1,650	19,500	1,250	59,500
Gilchrist.....				
Glades.....				
Gulf.....	500	263,500		205,998
Hamilton.....				
Hardee.....				
Hendry.....				
Hernando.....			12,000	
Highlands.....	22,000			
Hillsborough.....	42,850	1,600	30,000	
Holmes.....		34,000	450	73,000
Indian River.....				
Jackson.....	3,000	34,450		66,500
Jefferson.....	1,544	18,000		60,000
Lafayette.....				18,000
Lake.....	74,260		34,500	
Lee.....				
Leon.....	1,710	23,000	6,050	55,500
Levy.....			10,000	
Liberty.....	1,500			5,000
Madison.....				
Manatee.....	17,000			
Marion.....	11,700		15,000	
Martin.....	1,000			
Monroe.....				
Nassau.....			9,400	
Okaloosa.....	1,000	28,375	3,900	109,700
Okeechobee.....				
Orange.....	42,500		42,000	
Osceola.....	10,500			
Palm Beach.....	7,000			
Pasco.....	9,840		5,100	
Pinellas.....			106	
Polk.....	75,450	25,000	67,700	

Table 1.—Continued
DISTRIBUTION OF FINGERLING FISH BY COUNTY

	1949		1950	
	Bass	Bream	Bass	Bream
Putnam.....	27,500	4,000	25,160	.....
St. Johns.....	.....	.....	.....	.....
St. Lucie.....	.....	.....	.....	.....
Santa Rosa.....	2,000	32,600	4,050	135,540
Sarasota.....	6,000	.....	12	.....
Seminole.....	37,000	.....	24,500	.....
Sumter.....	9,000	.....	12,000	50,000
Suwannee.....	.....	36,000	.....	59,000
Taylor.....	.....	2,000	.....	.....
Union.....	.....	.....	.....	.....
Volusia.....	10,000	.....	24,000	.....
Wakulla.....	1,500	18,000	.....	28,400
Walton.....	1,250	18,000	2,620	57,500
Washington.....	1,250	40,050	2,500	142,000
Totals.....	542,004	687,075	470,158	1,441,288

The areas involved, the headquarters for each area, the organization, personnel and projects are listed in the organization chart, Figure 1. Supervisors and their assistants are available to all individuals, groups and organizations who desire assistance and advice in any phases of fresh water fishery problems including the inspection and improvement of fishing waters, fish stocking, bait minnow culture, fish rescue, water hyacinth and other aquatic weed control, fish mortality and pollution, fish identification, rough fish control, fish tagging and others.

This program of providing public assistance and advice on these matters was initiated at the demand for these public services which has arisen in recent years, as a result of the education of the public to the fact that waters can be managed under the direction of trained and experienced experts to provide better fishing, and to help solve other problems requiring the services of a biologist. Since its inception in late 1950, the program has met with considerable success. Assistance has been given to more than eighty groups and individuals on the intensive management of small ponds or lakes for fishing. A number of persons have been advised on the best methods of raising bait minnows, and several groups have been provided assistance in carrying out control of water hyacinths. Notable among the latter was the supervision and planning of the eradication of the water hyacinths from Lake

Talquin, a large impoundment near Tallahassee, which is gradually being rehabilitated after being almost choked out by this pest plant. It should be emphasized that the Commission does not at present have the funds to provide active control of water hyacinths but can supply technical assistance to groups who wish to undertake control themselves. A number of instances of fish mortality were investigated, and where possible, recommendations made concerning ways to avoid future such happenings. Several ponds and lakes throughout the state which were renovated or reclaimed by the Division in cooperation with local organizations are now producing good fishing. Among these are Lake Wire in Lakeland and Lake Ella in Tallahassee which have been set aside for children's fishing lakes. Several other waters have been renovated, stocked, and will be ready for fishing sometime during 1951.

Fish Culture and Distribution

Fingerling fish for stocking purposes are produced at the Commission's hatcheries located at the Blackwater Fish Management Station near Holt, the Wewahitchka Fish Management Station at Wewahitchka, and the Winter Haven Fish Management Station at Eagle Lake, and are distributed over the whole state. In addition, numbers of fish are often obtained from the hatchery of the U. S. Fish and Wildlife Service at Welaka, with which a cooperative agreement is in effect. Most of the fish are released in public waters on application from sportsmen's groups, civic organizations, and interested individuals. Recently, however, a program has been originated under which recently constructed or renovated private waters may receive an initial stocking, and waters which have been analyzed and recommended for stocking by a fishery technician of the Fish Management Division, the U. S. Soil Conservation Service, or the U. S. Fish and Wildlife Service may receive fish. This departure from previous policy (which limited stocking to public waters) is based on the Commission's objective of providing fishing for an increased number of fishermen. It is felt that encouragement of the management of small bodies of water by private individuals and groups will not only provide better fishing for them but will reduce pressure on public waters.

Blackwater Fish Management Station

The Blackwater Fish Management Station is located in the Blackwater Forest between Holt and Munson, in Santa Rosa County. The hatchery and surrounding area (including a large

deer corral) is under a 19-year lease from the Florida Forest Service, which in turn has leased the area from the U. S. Department of Agriculture, which holds the title to it, the facilities having been constructed in the late 1930's by the Resettlement Administration, a Federal agency. An impoundment of approximately thirty acres supplies water by gravity to the six 1.75-acre ponds, which in turn drain into a tributary of the Blackwater River. The productive pond area of 10.5 acres is stocked with brood bluegills and shellcrackers in the winter and fertilized and managed until about June. At this time the ponds are partly drawn down and the first crop of fingerlings removed by seine. Brood fish are then returned, fertilizing resumed, and by September or October the second crop of young bream is ready for distribution. During the last two years, fry largemouth bass have been obtained from the U. S. Fish and Wildlife Service and reared to fingerling size in two of the ponds at Blackwater. This program of raising bass also at this hatchery has met with widespread approval in western Florida and will be continued.

Buildings and equipment include two residences, one garage and storage barn, and one set of concrete holding pools, plus a Jeep, a mower, and other necessary tools and nets. During this biennium an accurate system of counting fish produced at this hatchery was installed for the first time, whereas rough estimates only had been used to measure production in past years. Comparison of past and present production records at this station give the impression of higher yield in previous years, but it is believed that these higher figures are due solely to over-estimation, as the number of truckloads of fish and waters stocked has steadily increased.

Data on fish stocked from the Blackwater Fish Management Station may be found in Tables 1 and 2.

Costs of operating this Station during the biennium were \$12,-978.57, \$9,041.83 of which was expended for salaries and labor. One custodian is stationed here to maintain and look after the station property, and local labor and personnel from other Fish Management projects assist in the removal of fish.

Wewahitchka Fish Management Station

The Wewahitchka Fish Management Station is located in Gulf County just northeast of Wewahitchka, adjacent to the famed Dead Lakes, into which most of the production of this hatchery goes. The productive area of this hatchery is one pond of approximately

four acres which was re-graded and renovated in early 1950 at a cost of \$1,988.86. In addition to this work, two concrete catch basins were constructed by Commission personnel with materials provided by the Dead Lakes Sportsmen's Association, increasing the facility of removing the fish. An additional pond of approximately three acres is present, but due to the difficulty in managing water levels and lack of funds for renovation, this pond is not used at present. Attempts are made to produce two crops of bream annually at this station, but as the draw-down of the major pond depends upon the water level in the adjacent Dead Lakes, it is often impossible to harvest more than one crop of fish, the bottom of the pond being considerably below high water levels in the Dead Lakes.

Buildings and equipment at this station include two residences, one barn and miscellaneous storage buildings, one pickup truck, and the Commission's large distribution truck which distributes all of the west Florida fish. Also located at this station is the Fish Management Supervisor for Area "A" and the Superintendent of both the Blackwater and Wewahitchka Fish Management Stations.

Data on fish stocked from the Wewahitchka Fish Management Station may be found in Tables 1 and 2.

Costs of operating this station and related projects during the biennium, including the construction costs mentioned above, were \$15,621.39, \$5,892.00 of which was for salaries and labor.

Winter Haven Fish Management Station

The Winter Haven Fish Management Station is located about two miles southeast of the town of Eagle Lake in Polk County. The productive water area of this station consists of one lake of approximately 50 acres which receives its water supply from an adjacent drainage canal. Bass only are raised at this station, between 1500 and 2000 brood bass being placed in the lake each winter. The fingerling bass are caught by seine, usually from February through July, after which the lake is drained, allowed to dry out thoroughly and then prepared for the following season. Principal problems of fish production at this station include the pollution of the water supply by a local citrus processing plant, an inadequate volume of water, and a heavy growth of weeds which requires constant maintenance to control. Hurricane winds in 1949 necessitated the almost complete rebuilding of one storage house.

Buildings and equipment at this station include the Superin-

Table 2.
DISTRIBUTION OF FISH BY HATCHERY

HATCHERY	1949			1950		
	Bass	Bream	Truckloads of Fish	Bass	Bream	Truckloads of Fish
Winter Haven.....	457,054		93	438,088		63
Blackwater.....	9,000	425,075	31	31,370	1,062,790	27
Wewahitchka.....	150	262,000	5		378,498	2
Welaka.....	75,800		2	700		1
			1949			1950
Total Number of Waters Stocked.....			299			326

tendent's residence, one storage barn and garage, a battery of four concrete holding pools, and partial use of a small canal for holding brood fish. A distribution truck, power mower, and other necessary equipment and nets are stored here. This station also acts as the headquarters for the Rough Fish Control projects and is the location for the preparation and repair of equipment used on these projects.

Data on fish stocked from the Winter Haven Fish Management Station may be found in Tables 1 and 2.

Costs of operating this station during the biennium were \$23,-632.23, \$16,180.09 of which were for salaries and labor. A Superintendent, a truck driver and one laborer make up the complement of this station's personnel.

Live Fish Exhibits

Another activity handled by personnel of all the Fish Management Stations is the staging of live fish exhibits at various County and State Fairs and other occasions. This activity has increased tremendously during this biennium and entails considerable expense and effort. Seventeen such exhibits were made during 1949 and twenty-one in 1950. This compares with six made in 1947 and nine made in 1948.

Fish for these exhibits are generally obtained by seines and nets in the wild during the fair season and transported to the Fish Management Stations where they are held until needed. Lake Okeechobee, Lake George, Lake Apopka and the large lakes in the Kissimmee Valley have all contributed fish for these exhibits.

As the mortality of these fish is extremely high, it is necessary to use a new lot of fish for each exhibit. Attempts to reduce the high mortality rate by chemical treatment have so far been unsuccessful. Between 75 and 100 adult bass, bream and other mixed species are required for each exhibit, with the exception of the Tampa State Fair, which sometimes requires as many as 1,000.

Rough Fish Control Operations and Fish Population Surveys

The rough fish control operations constitute one of the most interesting phases of the Fish Management Division's work. These operations are designed principally to remove large numbers of undesirable rough fish from many of the more popular fishing waters, where it is felt that such removal will aid in producing better fishing. The operations are carefully studied with complete records kept on each catch, and constitute a major portion of the basic inventory of fishery stocks which is badly needed for future management.

The Division now has two completely equipped seining crews engaged in this work. Each crew is equipped with approximately 800 to 1,000 yards of seine, a truck, and the necessary power launches and small boats, and is under the constant supervision and direction of a Fish Management Technician. Fishermen are recruited from local citizens who operate the equipment and receive as compensation $\frac{3}{4}$ of the proceeds from the sale of catfish and other rough fish. One-fourth of the proceeds is returned to the Commission to help defray costs of operating, maintaining and supervising the equipment and activities. As is the case with such seining in other waters, all game fish are returned immediately from the net, a number of them weighed and measured, and an accurate count kept of all fish by the supervising technician. All catfish, gar, gizzard shad, suckers, and other rough species are removed from the waters and sold to licensed fish dealers, or in the case of gar and gizzard shad, to fertilizer or other rendering companies.

While lack of funds has prevented a complete study of the effects of this rough fish removal on fishing in all of the waters studied, it has been possible to denote some beneficial effects from this work already. Several lakes have shown an increase in the percentage of game fish found following such operations and growth of fish has been bettered. As all lakes vary considerably

in content and composition, it is necessary to discuss each lake individually and to interpret the data obtained on the fish populations for each one. Rough fish control operations are usually performed in lakes where use of a haul seine is practicable and at the request of sportsmen's clubs, chambers of commerce, and other civic organizations. Numbers of interested sportsmen regularly visit the operations, and are invariably astounded at the amounts of fish contained in most of the waters. While most of this work has been performed during this biennium, some data are included on work done in the previous biennium, as these have not previously been published. Areas of waters were obtained by planimeter from county and city maps, and U. S. Coast and Geodetic Survey charts.

LAKE APOPKA

Lake Apopka, Florida's fourth largest fresh-water lake, has received considerable attention in the matter of rough fish control and other experimental work. Seining operations under Division supervision have been conducted during three separate periods, October-December 1947, July and August 1948, and December 1949 through March 1950. In addition to surveys of the fish population and control of rough fish, an intensive study of tagged black bass was conducted, and experimental gill nets reported on in Table 19 have been operated. Results of the tagging studies were compiled in a special scientific report referred to at the end of this section.

Initial work in 1947 indicated an average fish population somewhat heavy on the rough side, as the latter composed almost 65 percent of the total weight. However, a phenomenal change took place in the population during the next two years, which started soon after the elimination of hyacinths from Lake Apopka by the Apopka Sportsmen's Association. While the average haul took approximately 900 pounds in 1947, by July 1948 it had jumped to 2,400 pounds and then to almost 9,000 pounds in the winter of 1949-50, indicating a huge increase in the total fish population of Lake Apopka. The composition also changed considerably, the game fish populations increasing, according to the studies, from 35 percent in 1947 to 57 percent in 1948 and to 70 percent in 1949-50.

This drastic change in Lake Apopka was attributed to several factors. First, and probably most important, was the increase in basic fertility of Lake Apopka, which was attributed to the decay and decomposition of the water hyacinths and other aquatic vege-

Table 3.

**COMPOSITION OF ADULT FISH POPULATIONS AND OTHER DATA AS
DETERMINED BY HAUL SEINE SURVEY FOR THREE SEPARATE
PERIODS IN LAKE APOPKA**

Name of Waters.....	Lake Apopka					
County.....	Lake and Orange					
Approximate area.....	49.2 sq.mi.—31,488 acres					
Ave. depth surveyed (ft.)	5-14		3.5-12		5-13	
Bottom type.....	Mud and sand		Mud and Sand		Sand and mud	
Date of Survey.....	Oct.-Dec. '47		July-Aug. '48		Dec. '49-Mar. '50	
Length of seine (yds.).....	1,000		1,500		800-900	
Minimum mesh (stretched)	3½ inches		3 inches		3 inches	
Species Composition	Pounds Taken	Percent-age	Pounds Taken	Percent-age	Pounds Taken	Percent-age
Largemouth Bass.....	2,404	5.9	3,498	11.2	13,772	5.7
Black Crappie.....	1,652	4.0	4,123	13.2	49,361	20.4
Bluegill.....	2,517	6.1	4,277	13.7	62,336	25.7
Shelleracker.....	3,737	9.1	5,711	18.3	49,637	20.5
Redbreast.....					45	
Miscellaneous Sunfish.....	4,257	10.4	18	0.1	13	
Chain Pickerel.....			7		168	0.1
Channel Catfish.....						
White Catfish.....			241	0.7	2,648	1.1
Speckled Bullhead.....	903	2.2	5,629	18.1	22,149	9.1
Yellow Bullhead.....			4		32	
Longnose Gar.....	7,141	17.4	3,943	13.0	11,789	4.9
Other Gar.....	45	0.1	582	2.0	425	0.2
Mudfish.....	98	0.2	135	0.4	1,173	0.5
Gizzard Shad.....	8,209	20.0	1,773	5.7	25,767	10.6
Chub Sucker.....	10,105	24.6	1,081	3.5	2,173	0.9
Golden Shiner.....			49	0.1	830	0.3
Total Fish Taken.....	41,068	100	31,071	100	242,318	100
Number of Hauls.....	46		13		27	
Ave. Pounds per Haul.....	892		2,390		8,975	
Pounds Taken per Acre.....	1.3		1.0		7.7	
Pounds Rough Fish						
Removed.....	26,501		13,437		66,986	
Pounds Rough Fish						
Removed per Acre.....	0.8		0.4		2.1	

tation killed in 1948. The increase in plankton and algae during this period converted Lake Apopka from a clear to a cloudy lake, the clouding caused by minute microscopic plants and animals which form the basic food for all fish. Other contributing factors were the low rainfalls and water levels in Lake Apopka, which did not allow sufficient normal dilution to nullify the effects of the accumulated deposits of other organic discharges from citrus processing plants and sewage disposal units in the area, and to two

extremely warm winters which were apparently not cool enough to inhibit the growth of these organisms.

Sport fishing success in Lake Apopka also followed an unusual cycle during this period. It went from fair in 1947 to extremely poor during most of 1948 and 1949, recovering early in 1950 and producing record catches of crappie, shellcracker, and black bass, a condition which has existed throughout 1950. While it is impossible to predict the behavior of fish populations with absolute certainty, observations indicate that the population of Lake Apopka reached an all-time high during 1950 and may gradually level off and provide good fishing for several more years, although perhaps not the phenomenal success that has been enjoyed during 1950. Amounts of fish handled and composition of the populations by species is reported on for the three separate study periods in Table 3. While no claims are made at present that the operation of the rough fish control unit had any significant effect on the subsequent changes in Lake Apopka's fish population, it is quite evident that the seining operations that occurred at least had no harmful effect.

LAKE PARKER

Lake Parker, a 2,082 acre lake located in the City of Lakeland in Polk County, has also received considerable attention from the rough fish control unit. Control operations were requested by the Polk County Sportsmen's Association and took place during seven months in 1949 and 1950. A total of 254,610 pounds of rough fish were removed from Lake Parker during the 7 months period, but no **significant** changes could be denoted in either the composition nor the quantity of fish handled during the entire period. However, a number of sports fishermen reported better catches following the control operations, and the average sizes of some species, particularly the speckled bullhead, were considerably larger at the end of the period. It is quite possible that the thinning which took place during the 1949 removal of some 63,300 pounds, or 30 pounds of catfish to the acre was responsible for the increased growth rate by this species. Dominant among the game fish of Lake Parker is the black crappie, constituting the major piscivorous (or fish-eating) species to be found. In the presence of this high crappie population, bass made up only a small part, a condition noted in other lakes examined. Game fish make up an average of about 34 percent of the total weight of adult fish to be found. Unless control of the huge crappie population is desired by local sports-

men, the chances that Lake Parker will ever become a good bass fishing lake are remote. Annual operations are planned for this lake, however, to keep track of the changing populations and to determine whether further control work is effective. Complete data on monthly composition of adult fish populations as determined by haul seine surveys may be found in Table 4.

LAKE THONOTOSASSA

Lake Thonotosassa, a 768 acre lake located in Hillsborough County, was the site of a short period of operations in March and April 1950. Lake Thonotosassa was formerly noted as an excellent fishing lake, particularly for black crappie, and was used extensively by citizens of Tampa, Plant City, and other nearby communities. In about 1947 water hyacinths almost completely covered this lake and the first step in its rehabilitation was taken when local interests accomplished the elimination of the hyacinths. However, fishing remained poor following this elimination, and several organizations, notably the Thonotosassa Chamber of Commerce and the East Hillsborough Sportsmen's Association, requested that attention be paid to the lake.

The survey revealed several outstanding conditions in Lake Thonotosassa. First, only 6 percent of the total weight of fish taken during the operation was in game fish, by far the largest part of the population being composed of catfish, gar and other rough fish. The very few bass taken were all relatively large bass, averaging about 4 pounds in weight, a condition indicative of an unbalanced bass population. Average sizes of crappie were small, indicating that growth was stunted. Large channel catfish, making up almost 60 percent of the population, were dominant, followed by the speckled bullhead (16 percent) and garfish (15 percent). Checks with small-mesh seines indicated that natural reproduction by bass was non-existent. Apparently game fish populations were being crowded out and preyed upon to such extent by rough fishes that the restoration of good fishing without interference by man could be accomplished only over a very long period, if ever.

A total of 4,251 pounds of rough fish, or 5.5 pounds per acre, were removed. In May, 1950, some 14,000 largemouth bass fingerlings, or approximately 20 per acre were stocked in Thonotosassa in an attempt to re-establish the population of bass in this lake. Further survey work will be done in the spring of 1951 to see whether this stocking and control has been effective, and to remove addi-

Table 4.
MONTHLY COMPOSITION OF ADULT FISH POPULATIONS AND OTHER DATA AS
DETERMINED BY HAUL SEINE SURVEY IN LAKE PARKER

Name of Waters..... County..... Approximate Area.....	8-9 Sand and Mud Sept., 1949 1100 3 inches		6-9-5 Sand and Mud October, 1949 1100 3 inches		6-8 Sand and Mud April, 1950 800 3 inches		5-7 Sand and Mud May, 1950 750 3 inches		6-7 Sand and Mud June, 1950 720 3 inches		5-7 Sand and Mud July, 1950 720-800 3 inches		6-7 Sand and Mud August, 1950 800 3 inches		Totals Sept., 1949- August, 1950	
	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age
Average Depth Surveyed (feet).....																
Bottom Type.....																
Date of Survey.....																
Length of Seine (yards).....																
Minimum Mesh (stretched).....																
Species Composition																
Largemouth Bass.....	194	0.3	393	0.4	175	0.4	406	0.6	55	0.1	316	0.8	128	0.3	1,070	0.4
Black Crappie.....	13,125	17.8	13,590	16.1	12,071	30.4	15,505	23.2	3,905	9.8	6,150	13.1	6,070	17.6	70,416	18.2
Bluegill.....	9,425	12.8	18,355	21.6	5,346	13.4	10,820	16.1	5,006	14.9	5,375	11.5	3,650	8.8	58,277	15.1
Shadcracker.....	34	0.1	222	0.3	561	1.4	79	0.1	138	0.3	283	0.6	83	0.2	1,400	0.4
Redbreast.....																
Miscellaneous Sunfish Chain Pickerel.....			2		3		8		2		8		29		52	
Channel Catfish.....			2		1,015	2.6	1,378	2.1	503	1.3	207	0.4	158	0.5	5,910	1.5
White Catfish.....	851	1.2	1,798	2.1	7,960	20.0	21,418	31.9	13,530	34.2	17,439	37.3	13,605	39.3	131,624	34.8
Speckled Bullhead.....	32,094	43.6	28,558	33.7			15		6		24		46	0.1		
Yellow Bullhead.....																
Longnose Gar.....																
Other Gar.....	324	0.4	293	0.3			49		5		589	1.2	3		1,029	0.4
Mudfish.....			431	0.6	901	2.3	1,145	1.7	141	0.4	254	0.5	246	0.7	3,300	0.7
Cizzard Shad.....	17,100	23.2	21,315	25.1	11,320	28.5	16,310	21.3	15,450	39.0	16,255	34.6	11,183	32.4	108,913	28.3
Chain Sucker.....			1				4				2		8		14	
Golden Shiner.....			77	0.1	5		4		2		14				102	
Miscellaneous Fresh Water Species																
Total fish taken.....	73,595	100	81,795	100	39,753	100	67,137	100	39,646	100	46,800	100	34,009	100	388,425	10.0
Number of hauls.....	12		19		8		17		10		13		9		88	
Average pounds per haul.....	6,133		4,463		4,969		3,949		3,965		3,607		3,813		4,391	
Pounds taken per acre.....	35.3		41		19		32		23		25		17		186	
Pounds rough fish removed.....	50,817		52,233		21,597		40,319		24,637		31,758		25,249		251,610	
Pounds rough fish removed per acre.....																

Lake Parker
Polk County
2,082 acres

tional rough fish. The outcome of these contemplated studies is being watched with considerable interest, as the effect of this control and stocking program will be the first recorded thoroughly in an instance of this type. Complete data on the composition of adult fish populations as determined by haul seine surveys may be found in Table 5.

Table 5.
COMPOSITION OF ADULT FISH POPULATIONS AND OTHER DATA AS DETERMINED BY HAUL SEINE SURVEYS IN THREE FLORIDA LAKES

Name of Waters.....	Lake		Johns Lake		Lake Louisa	
County.....	Thonotosassa Hillsborough		Orange		Lake	
Approximate Area.....	768 acres		2,714 acres		3,200 acres	
Average Depth Surveyed (ft.)	4.5-8		8-12		7-8	
Bottom Type.....	Hard Sand		Sand and Mud		Hard Sand	
Date of Survey.....	Mar. 27-Apr. 7, 1950		Nov.-Dec., 1950		Jan.-Feb., 1950	
Length of Seine (yards).....	800		835		860	
Minimum Mesh (stretched)...	3 inches		3 inches		3 inches	
Species Composition	Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage
Largemouth.....	84	1.9	1,655	3.1	112	2.2
Black Crappie.....	135	3.0	1,377	2.6	263	5.3
Bluegill.....	40	0.9	5,297	9.9	599	11.8
Shelleracker.....	10	0.2	64	0.1	2	.....
Redbreast.....	.....	.....	.....	.....	.....	.....
Miscellaneous Sunfish.....	2	.....	7	.....	3	.....
Chain Pickerel.....	.....	.....	17	.....	.....	.....
Channel Catfish.....	2,645	58.5	30,606	57.0	3,216	63.3
White Catfish.....	2	.....	2,681	5.0	721	14.2
Speckled Bullhead.....	708	15.7	235	0.4	.....	.....
Yellow Bullhead.....	17	0.3	46	0.1	4	.....
Longnose Gar.....	610	13.5	1,858	3.5	53	1.0
Other Gar.....	43	1.0	443	0.8	88	1.7
Mudfish.....	53	1.2	4	.....	23	0.5
Gizzard Shad.....	11	0.2	9,324	17.4	3	.....
Chub Sucker.....	144	3.2	61	0.1	5	.....
Golden Shiner.....	18	0.4	30	.....	.....	.....
Total fish taken.....	4,522	100	53,705	100	5,092	100
Number of hauls.....	6	.....	25	.....	8	.....
Average pounds per haul.....	754	.....	2,148	.....	637	.....
Pounds taken per acre.....	5.9	.....	19.8	.....	1.6	.....
Pounds rough fish removed.....	4,251	.....	45,288	.....	4,113	.....
Pounds rough fish removed per acre.....	5.5	.....	16.7	.....	1.3	.....

LAKE KISSIMMEE

Lake Kissimmee is a lake of approximately 53.4 square miles in southern Osceola County and is Florida's third largest fresh-water lake. Control operations were conducted in Lake Kissimmee from March to August in 1949 and between August and November 1950. A number of factors combined to interfere with the success of seining operations in these waters, chief of which was the weather, a period of drought occurring in the 1949 operations and the hurricane season in the 1950 operations. Although the monthly fluctuations in abundance of various species coincide generally with those denoted in Lake Okeechobee and Lake George, it is impossible to draw conclusions on this activity of the fish population, as the work was not constant and was interrupted by the factors mentioned. In general, game fish populations were relatively high, averaging about 50 percent during the two periods, and all game fish appeared to be in good condition. A healthy population of black bass was found with sufficient numbers of all sizes present, particularly during the 1950 studies. Crappie was the dominant game fish, while gizzard shad comprised the largest single species of the rough fish. Monthly compositions of adult fish populations as determined by haul seine surveys may be found in Table 6.

LAKE TOHOPEKALIGA

Lake Tohopekaliga, a 30.6 square mile lake located adjacent to the city of Kissimmee in Osceola County, received the attentions of the rough fish control unit in November and December, 1948. The studies indicated a fairly good standing population, an average haul of almost 800 pounds being taken. Game fish comprised over 60 percent of the total population, this segment being dominated by the crappie (48 percent). The dominant rough fish was the channel catfish, followed by the gizzard shad. Growth of crappie in this lake was slower than normal, two and three year old fish measuring only 8 to 11 inches in total length. This slow growth is believed to be due to over-crowding, although apparently the over-crowding was not so serious as to cause an unbalanced condition. Most bass taken were small but appeared to be in good condition. Data on the composition of adult fish populations as determined by haul seine survey for Lake Tohopekaliga can be found in Table 7.

Table 6.
MONTHLY COMPOSITION OF ADULT FISH POPULATIONS AND OTHER DATA AS
DETERMINED BY HAUL SEINE SURVEY IN LAKE KISSIMMEE

Name of Waters County.....		Lake Kissimmee Osceola County		34,203 acres—53.1 sq.mi.		4-5-8 Sand Nov. 1950 3 inches		4-8 Sand and Mud October, 1950 3 inches		3-9 Sand and Mud Sept. 1950 3 inches		4-4 Sand and Mud August, 1950 3 inches		7-5-9 Sand July, 1949 3 inches		7-8 Sand and Mud June, 1949 3 inches		6-6 Sand and Mud May, 1949 3 inches		5-10 Sand and Mud April, 1949 3 inches		TOTALS			
Species	Composition	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age		
Largemouth Bass		1,460	4.1	1,165	3.8	1,605	3.7	928	6.8	2,405	9.6	1,319	6.6	93	5.5	10,380	5.1								
Black Crappie		16,315	44.7	7,300	21.4	17,225	38.1	810	5.9	1,073	4.3	1,965	10.0	340	20.3	52,838	27.5								
Bucgill		1,010	2.8	2,050	6.8	6,825	15.1	662	4.8	2,251	9.0	1,604	8.0	28	1.7	17,145	8.4								
Shad		4,385	12.3	3,675	12.3	2,750	6.1	2,022	14.7	2,908	11.6	2,274	11.4	148	8.8	22,102	10.9								
Redbreast		2				2																			
Miscellaneous Sunfish		108	0.3	85	0.3	137	0.3	46	0.3	67	0.3	17	0.1	1	0.2	6	0.3								
Chain Pickerel		3,461	9.5	2,061	6.9	2,671	5.9	338	2.5	2,259	9.1	4,252	21.4	45	2.7	18,054	8.9								
Channel Catfish		1,957	5.4	1,720	5.7	845	1.9	441	3.2	1,841	7.4	1,092	5.5	10	0.6	8,937	4.4								
White Catfish		539	1.4	682	2.3	1,062	2.3	1,707	12.5	1,664	6.7	957	4.9	6	0.4	7,740	3.8								
Speckled Bullhead		3		1		5		11		38	0.2	4				63									
Yellow Bullhead																									
Longnose Gar		399	1.1	265	1.0	460	1.0	501	3.7	405	1.6	381	1.9	44	2.6	2,618	1.3								
Other Gar		82	0.2	365	1.3	1,045	2.3	2,202	16.1	2,723	10.9	507	2.5			7,683	3.7								
Mudfish		4,735	12.9	8,300	27.6	6,450	14.2	4,883	35.5	910	3.6	3,277	16.4	947	56.5	29,037	14.7								
Gizzard Shad		1,010	2.8	1,435	4.8	2,475	5.5	1,280	4.1	3,465	25.3	6,364	25.5	9	0.5	18,200	9.0								
Chub Stucker		900	2.5	850	2.8	1,650	3.6	85	0.6	56	0.2	6		3	0.2	3,900	1.7								
Golden Shiner																									
Total fish taken		36,496	100	30,014	100	45,247	100	13,701	100	24,961	100	19,938	100	1,677	100	203,370	100								
Number of hauls		16		11		11		9		13		17		3		96									
Average pounds per haul		2,281		2,728		4,115		1,522		1,908		1,246		559		2,118									
Pounds taken per acre		1.1		0.9		1.3		0.4		0.7		0.6		1		5.9									
Pounds Rough fish removed		13,086		15,739		16,663		9,233		16,200		12,728		1,064		97,282									
Pounds rough fish removed per acre.....																2.8									

¹ Includes 2 hauls March 29 and 31, 1949.

² Includes 1 haul August 4, 1949.

³ Insignificant.

LAKE CYPRESS

Rough fish control operations took place in Lake Cypress in December 1948 and January and February of 1949. Lake Cypress is another of the Kissimmee chain located in Osceola County with an approximate area of 6.4 square miles. A good standing population was found, the average pounds of fish taken per haul amounting to 1,600. Sixty-eight percent of the total population was composed of desirable game fishes with the crappie dominating (40 percent). Channel catfish was the dominant rough fish (13 percent), but it was encouraging to note that rough fishes were in the minority. Lake Cypress had the best population of bass by compari-

Table 7.
COMPOSITION OF ADULT FISH POPULATIONS AND OTHER DATA AS DETERMINED BY HAUL SEINE SURVEYS IN FOUR OSCEOLA COUNTY LAKES

Name of Waters County.....	Lake Tohopekaliga Osceola		East Lake Tohopekaliga Osceola		Lake Hatchineha Osceola		Lake Cypress Osceola	
	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age
Approximate area	19,533 acres		12,774 acres		9,216 acres		4,096 acres	
Average Depth Surveyed (feet)	7-13		6-8		5.5-11		6.5-10.5	
Bottom Type.....	Sand and Mud		Sand and Mud		Sand and Mud		Sand and Mud	
Date of Survey.....	1948		1949		1949		1948-49	
Length of Seine (yards)	8 Nov.-16 Dec.		15 Aug.-2 Sept.		14 Feb.-18 Mar.		8 Nov.-11 Feb.	
Minimum Mesh (stretched).....	900		1100		900		900	
	3 inches		3 inches		3 inches		3 inches	
Species Composition								
Largemouth Bass.....	693	3.2	750	5.8	2,003	5.2	3,731	7.3
Black Crappie.....	10,745	47.6	5,600	43.5	9,686	25.1	20,375	39.8
Bluegill.....	1,023	4.3	1,435	11.5	6,513	16.9	7,298	14.3
Shelleracker.....	1,956	9.3	240	1.9	3,956	10.3	3,417	6.7
Redbreast.....								
Miscellaneous Sunfish.....					17			
Chain Pickerel.....	4							
Channel Catfish.....	2,655	14.3	1,012	7.8	3,989	10.3	6,814	13.3
White Catfish.....	1,493	6.3	88	0.7	3,783	9.8	3,820	7.5
Speckled Bullhead.....	269	1.0	27	0.2	975	2.5	1,014	2.0
Yellow Bullhead.....					3		15	
Longnose Gar.....			158	1.2				
Other Gar.....	209	1.2	30	0.2	444	1.1	2,200	4.3
Mudfish.....	9		4		453	1.2	177	0.3
Gizzard Shad.....	2,302	12.8	3,200	24.8	3,170	8.2	2,039	4.0
Chub Sucker.....	3		313	2.4	3,152	1.2	229	0.4
Golden Shiner.....	2				451		68	0.1
Total fish taken.....	21,363	100	12,858	100	38,565	100	51,209	100
Number of hauls.....	27		11		19		32	
Average pounds per haul.....	791		1,169		2,031		1,600	
Pounds taken per acre.....	1.1		1.0		4.2		12.5	
Pounds rough fish removed.....	6,942		4,833		16,420		16,388	
Pounds rough fish removed per acre.....	0.4		0.4		1.8		4.0	

son of the lakes studied in the Kissimmee chain, an abundance of all sizes being present and in good condition. Long term rough fish control programs in Lake Cypress did not seem justified under present conditions, although continuous checks should be made. The composition of the adult fish population as determined by haul seine surveys may be found in Table 7.

LAKE HATCHINEHA

Lake Hatchineha, another member of the Kissimmee chain in Osceola County with a surface area of approximately 14.4 square miles, received attention during February and March of 1949. The survey indicated that this was also an excellent lake for game fish, as they comprised almost 58 percent of all fish taken. Again crappie were dominant (25 percent) and high populations of bluegill (17 percent) and shellcracker (10 percent) were also noted. The three species of catfish made up the dominant segment of the rough fish population (23 percent), the gizzard shad approximating 8 percent. The bass population was good, a wide range of sizes being present, and all game fish appeared to be in good condition. Extensive rough fish control operations did not seem justified, although annual checks should be made. Complete data on adult fish populations as determined by haul seine surveys may be found in Table 7.

EAST LAKE TOHOPEKALIGA

East Lake Tohopekaliga, located between Kissimmee and St. Cloud in Osceola County, received attention in August and September of 1949. East Lake appeared to have a good standing population as the average haul made was almost 1,200 pounds of fish. Game fish comprised approximately 62 percent of the adult population, with the crappie dominating (44 percent). Gizzard shad (25 percent) was the major rough species found, followed by channel catfish (8 percent). A desirable bass population was found, composing almost 6 percent of the total weight, individual fish averaging slightly over 2 pounds each. Due to the short duration of operations, no immediate effects were noticed, nor can be expected. Extensive rough fish control operations in East Lake Tohopekaliga at this time did not seem justified in view of the demand for the use of the units in lakes more heavily populated with rough fish. Complete data on the composition of adult fish populations as determined by haul seine survey may be found in Table 7.

Table 8.
COMPOSITION OF ADULT FISH POPULATIONS AND OTHER DATA AS DETERMINED
BY HAUL SEINE SURVEY IN EIGHT POLK COUNTY LAKES

Name of Waters County..... Approximate Area	Lake Hartridge Polk County 384 Acres			Lake Howard Polk County 512 Acres			Lake Hollingsworth Polk County 366 acres			Lake Bonny Polk 378 acres			Lake Shupp Polk 250 acres			Lake Deeson Polk 183 acres			Lake May Polk 38 acres			L. Weohyakapka Polk 7,622 acres			
	Per- cent- age	Pounds Taken	Per- cent- age	Per- cent- age	Pounds Taken	Per- cent- age	Per- cent- age	Pounds Taken	Per- cent- age	Per- cent- age	Pounds Taken	Per- cent- age	Per- cent- age	Pounds Taken	Per- cent- age	Per- cent- age	Pounds Taken	Per- cent- age	Per- cent- age	Pounds Taken	Per- cent- age	Per- cent- age	Pounds Taken	Per- cent- age	
Average Depth Sur- veyed (feet).....	7.5-10	3 inches	9.5-12	3 inches	8.5-10.5	3 inches	5.5-7.5	3 inches	7.5-8	3 inches	8-9	3 inches	11	3 inches	10	3 inches	6	3 inches	6	3 inches	1-10	3 inches	1-10	3 inches	3 inches
Bottom Type.....	Sand and Mud		Mud and Sand		Sand and Mud		Mud and Sand		Sand		Sand and Mud		Sand and Mud		Sand		Mud		Mud		Hard Sand		Hard Sand		Hard Sand
Date of Survey.....	Nov.-Dec. 1949		Dec. 6-20, 1930		Nov.-Dec. 1949		Nov. 15-18, 1941		June 22-24, 1950		Dec. 6-22, 1950		Nov. 8-14, 1941		May 15-16, 1950		Dec. 14-18, 1950		Dec. 14-18, 1950		Jan. 21-28, 1948		Jan. 21-28, 1948		Jan. 21-28, 1948
Length of Seine (yards) Minimum Mesh (stretched).....	760		735		760		760		720		735		760		750		735		735		830		830		830
Species Composition																									
Largemouth Bass.....	251	2.7	219	3.9	1,918	5.1	11	0.1	20	0.1	1,085	10.4	859	17.1	79	6.4	305	3.0	180	13.2	180	13.2	180	13.2	
Black Crappie.....	575	5.9	507	9.2	4,440	11.8	23	0.2	315	0.7	1,775	16.6	150	3.0	8	0.6	1,242	12.1	119	10.3	119	10.3	119	10.3	
Bluegill.....	370	3.9	214	3.9	6,160	16.1	9		1,075	2.4	1,580	14.7	1,500	30.1	8	0.6	603	5.9	101	7.5	101	7.5	101	7.5	
Shelleracker.....	90	0.9	13	0.2	2,245	6.1			70	0.2	835	8.1	300	6.0	8	0.6	29	0.3	119	11.0	119	11.0	119	11.0	
Redbreast.....																									
Miscellaneous Sunfish																									
Chain Pickerel.....	6,344	66.1	1,682	30.5	12,853	34.2	232	1.4	1,370	9.6	71	0.7	270	5.4			858	8.3	372	27.5					
White Catfish.....	615	6.4	100	1.8	1,222	3.3					580	5.5	6	0.1			35	0.3							
Speckled Bullhead.....	10	0.1	7	0.1	177	0.5																			
Yellow Bullhead.....																									
Longnose Gar.....																									
Other Gar.....	4	0.1	23	0.4	59	0.2					80	0.5	53	0.3											
Mudfish.....	6	0.1	15	0.1	9	0.1					90	0.8	9	0.2											
Gizzard Shad.....	1,310	13.7	2,730	19.5	8,150	21.7	16,650	98.0	38,837	83.0	4,625	13.2	1,840	36.1	1,150	92.4	600	5.8	600	5.8	600	5.8	600	5.8	
Chub Sucker.....	17	0.2	20	0.5	128	0.3					18	0.1	25	0.5			6	0.2	25	0.2					
Golden Shiner.....	2		2		142	0.4					83	0.6													
Total fish taken.....	9,592	100	5,226	100	37,559	100	16,987	100	45,127	100	10,707	100	14,987	100	1,245	100	10,303	100	858	100	1,355	100	1,355	100	
Number of hauls.....	4		6		9		4		6		4		1		2		3		3		11		11		11
Average pounds per haul.....	2,398		921		4,173		4,247		7,521		2,687		14,987		622		5,151		352		123		123		123
Pounds taken per acre.....	25		14.4		73.4		46.4		123		28		20		7		271		25		.18		.18		.18
Pounds rough fish re- moved.....	8,306		4,373		22,740		16,944		43,647		5,402		2,187		1,150		8,124		600		785		785		785
Pounds rough fish re- moved per acre.....	21.6		11		44		46.3		119		11		8.7		6		213		372		.10		.10		.10

LAKE DEESON

Lake Deeson, a small lake of approximately 183 acres located in the city of Lakeland in Polk County, was surveyed in May 1950. Because of its small size, it was possible to completely cover Lake Deeson with two hauls of the control seine and it is felt that a representative sample of the adult fish population was obtained. Lake Deeson had an extremely low population of game fish, not quite 8 percent, but was heavily populated by gizzard shad. Bluegill and shellcracker together amounted to only slightly over 1 percent of the total, the shad comprising over 92 percent. Checks with a small-mesh seine indicated that there had been some slight reproduction in bass but no recently spawned bream were found. Additional control efforts are necessary to restore good fishing in Lake Deeson. It is anticipated that further operations will occur in the spring of 1951. Complete data on composition of adult fish populations as determined by haul seine surveys may be found in Table 8.

LAKE HOLLINGSWORTH

Lake Hollingsworth, another City of Lakeland lake of approximately 366 acres, was surveyed in November of 1949 and June of 1950. As this is another relatively small lake, it is felt that survey operations obtained a fairly representative sample of the adult fish populations. During the 1949 operations game fish were found to be almost non-existent, comprising less than 1 percent of the total population, 98 percent being composed of gizzard shad. Only two largemouth bass were taken, each weighing over 5 pounds, obviously an undesirable situation. After removing almost 17,000 pounds of rough fish, or 46.3 pounds per acre, it was decided to return at a later date to Lake Hollingsworth to see whether that removal had been sufficient to enable game fishes to increase in production. On the return of the crew to this lake in June 1950, it was found that game fish stocks had increased slightly, but that the increase was insignificant. Gizzard shad had decreased somewhat to 86 percent but an increase was noted in the population of catfish. No reproduction was found in bass or bluegill, although the relief occasioned by the removal of gizzard shad in 1949 had apparently been sufficient to allow them to spawn heavily, as young shad were extremely abundant. Almost 44,000 pounds of rough fish, or 119.3 pounds per acre, were removed during the second period, and future operations will be conducted to determine whether this additional removal will result in increased game

fish production and successful reproduction by the few bass and bream found. Complete data on composition of adult fish populations for the two study periods may be found in Table 8.

LAKE BONNY

Lake Bonny, another small lake located in the City of Lakeland in Polk County, was checked during November, 1949. A fairly good population of game fish (50 percent) was found and the game fish were in fairly good condition. Bass were comparatively plentiful and a number of all sizes was found. Gizzard shad composed 43 percent of the rough fish taken. Future operations are planned for Lake Bonny. Complete listing of the adult populations as determined by haul seine survey may be found in Table 8.

LAKE HARTRIDGE

Lake Hartridge, a 384 acre lake located in the City of Winter Haven received attention in November and December of 1949 and November and December of 1950. The 1949 operations indicated a fairly low population of game fish (14 percent). Catfish were the major species (73 percent), while gizzard shad were also numerous (14 percent). Eight thousand, three hundred six pounds of rough fish, or 21.6 pounds per acre were removed in 1949. A slight increase in game fish to 17 percent was found in 1950, along with considerable decrease of catfish (30 percent). However, a considerable increase in the volume of gizzard shad was found. No definite conclusions can be made from this work, but future operations are planned. A complete listing of the composition of adult fish populations as determined by haul seine survey may be found in Table 8.

LAKE HOWARD

Lake Howard, a popular fishing lake in the City of Winter Haven of approximately 512 acres in area, received attention in November and December of 1949 and in December of 1950. The 1949 operations indicated a fish population composed of 40 percent game fish, dominated by bluegill (16 percent). Catfish (38 percent) were the dominant rough fish, followed by gizzard shad (22 percent). A healthy bass population containing many large individuals was noted. The 1950 operations indicated a game fish population of approximately 53 percent, a catfish population which remained about the same (39 percent) and a decline in the gizzard shad to 6 percent.

Lake Howard had received previous attention from rough fish control operations. In about 1945 it was seined and many tons of gizzard shad and catfish removed. At that time no successful natural reproduction of bass was reported in Lake Howard. However, within two years after the early first removal of quantities of rough fish, natural reproduction of bass was noted, presumably due to the relief brought about by the removal of the gizzard shad. Although records are not available for the early seining period, it is believed that Lake Howard has shown steady improvement since seining operations started. Future work will determine this more definitely. Composition of adult fish populations as determined by haul seine survey for the two separate periods may be found in Table 8.

LAKE WEOHYAKAPKA (WALK-IN-THE-WATER)

Survey operations were conducted in Lake Weohyakapka, a 7,629 acre lake in Polk County, in January 1948. Although a fairly good proportion of game fish was found (42 percent), with the bass dominating (13.2 percent), the total productivity was found to be low, the average haul taking only 123 pounds of all fish. Channel catfish were the major rough fish (27.5 percent), followed by gizzard shad (20.3 percent) and gar (9.7 percent). Due to the low take of rough fish (0.1 pounds per acre), it is not felt that operations were effective in controlling rough fish. Future operations are planned for Lake Weohyakapka. Complete data obtained during this survey is recorded in Table 8.

LAKE SHIPP

Lake Shipp, a 250 acre lake in the City of Lakeland was surveyed once in December 1950. It was possible only to spend one day in this lake and the high game fish population indicated by the one haul made appeared to make extensive rough fish control unnecessary. However, Lake Shipp will be checked again in future years to watch for any changes in its population structure. Complete data on the fish taken by haul seine in Lake Shipp may be found in Table 8.

LAKE MAY

Lake May, a 38 acre lake in the City of Winter Haven was seined in December 1950. As Lake May is also a small lake easily covered by seine it is felt that a representative sample of the adult fish population was obtained. A low population of game fish (21 percent) was found, dominated by the black crappie. Gizzard shad (64 percent) was the dominant rough fish. It will be interesting to see

whether the removal of 8,124 pounds of rough fish, or 213 pounds per acre, will result in an improved status of the game fish, although the free movement of fish possible through connection with Lake Howard and other lakes may complicate findings during future operations. Complete data on composition of adult fish populations as determined by haul seine survey may be found in Table 8.

LAKE LOUISA

Lake Louisa is a 3,200 acre lake located near Clermont in Lake County. Operations were conducted in this lake in January and February of 1950. Extreme difficulty was encountered in operating the seine in Lake Louisa because a considerable area of the lake was too deep to net successfully with the gear used. The work done, however, indicated a fair standing population of fish. Game fish comprised only about 20 percent of the total weight of fish taken while catfish accounted for almost 78 percent. Additional rough fish control operations are needed in Lake Louisa, but it is doubtful whether seining of this lake would be economical. Other methods of reducing the catfish population, such as wire traps or pound nets are suggested as a means of accomplishing this. If local sportsmen are favorable to the suggestion, it is felt that this can be accomplished in cooperation with local commercial fishermen. A complete listing of the adult fish population as determined by haul seine surveys may be found in Table 5.

JOHNS LAKE

Johns Lake is a popular fishing lake located near Winter Garden in Orange County with a surface area of approximately 2,714 acres. Water hyacinths had interfered with fishing success in Johns Lake until their eradication by local interests in late 1949. The survey unit operated in this lake in November and December of 1950 and was able to obtain what is felt to be a fairly representative sample of the adult fish population. Johns Lake was found to be low in game fish (16 percent) while catfish made up almost 63 percent of the total. Gizzard shad were also plentiful (17 percent). Only large bass were taken and although these were in fairly good condition, the absence of any small bass corresponding to fingerlings and one-year old fish suggests that natural reproduction had been unsuccessful during the last two years. Johns Lake needs considerable attention before it can be restored as a good fishing lake. Heavy stocking with bass fingerlings is planned for early 1951 to be followed by further control operations. Complete data on composition

of adult fish populations as determined by haul seine survey may be found in Table 5.

LAKE COUNTY

In addition to the work performed in Lake County by the State operated control units, some rough fish control operations were conducted in five large Lake County lakes (Beauclair, Dora, Eustis, Harris, and Griffin) in 1948 and as the results of them were not previously reported on, they are included here. The work in these lakes was done by commercial fishing crews working under contract, the major purpose of the operations being to capture black bass used in the tagging experiment. As only a relatively few hauls were made in each of these lakes and the populations of game fish seemed very high, it is possible only to draw general conclusions from the work conducted, as representative samples of the adult fish populations were obtained only from Lake Harris. Comparatively speaking, however, Lakes Beauclair, Eustis and Harris appeared highest in productivity, while Lakes Dora and Griffin were fair. Plans should be made, however, for occasional control work to be done in all of these lakes and to keep check on the changes in the status of the game fishes. Complete data obtained during these surveys is recorded in Table 9.

REX BEACH LAKE

A brief survey was made by the Rough Fish Control Unit in Rex Beach Lake, a 2,995 acre lake located in the City of Sebring in Highlands County at the request of local officials and sportsmen's organizations. Rex Beach Lake was found to be in exceptionally good balance, there being successful reproduction and a desirable variety of sizes in all game fishes. It did not appear to be supporting a significantly high population of rough fish as only a few pounds of chub sucker (6.5 percent) were taken in the three hauls made. However, a low standing population of fish was indicated by the average haul of only 209 pounds. This condition can be improved only by increasing the basic productivity of Rex Beach Lake by fertilization. Extensive rough fish control operation did not appear justified at this time. Complete data obtained during the operations may be found in Table 10.

LAKE JOSEPHINE

Lake Josephine, a 1,280 acre lake located south of Sebring, also received attention. Operations were considerably handicapped by the presence of water hyacinths, but it is felt that a fairly reliable picture of the adult population was obtained. Further control work

Table 9.
COMPOSITION OF ADULT FISH POPULATIONS AND OTHER DATA AS DETERMINED
BY HAUL SEINE SURVEYS IN FIVE LAKES IN LAKE COUNTY

Name of Waters County.....	Lake Beauclair		Lake Dora		Lake Dora		Lake Eustis		Lake Eustis		Lake Harris		Lake Griffin		Lake Griffin	
	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age
Approximate Area (acres).....	1408	1408	4608	4608	7,232	7,232	8,111	8,111	17,984	17,984	10-11	10-11	9,320	9,320	13-14	13-14
Average Depth Surveyed (feet).....	11-12	9-11	10-15	10-15	8-15	8-15	8-11	8-11	7-14	7-14	10-11	10-11	13-14	13-14	13-14	13-14
Bottom Type.....	Hard Sand	Hard Sand	Mud and Sand	Mud and Sand	Mud and Sand	Mud and Sand	Mud and Sand	Mud and Sand	Mud and Sand	Mud and Sand	Sand and Mud	Sand and Mud	Mud and Sand	Mud and Sand	Mud and Sand	Mud and Sand
Date of Survey.....	Jan.-Mar. 1948	Aug. 1948	Jan.-Feb. 1948	Jan.-Feb. 1948	Jan.-Mar. 1948	Jan.-Mar. 1948	Aug. 1948	Aug. 1948	Jan.-Mar. 1948	Jan.-Mar. 1948	Aug. 1948	Aug. 1948	Feb.-May 1948	Feb.-May 1948	Feb.-May 1948	Aug.-Sept. 1948
Length of Seines (yards).....	1000	1500	1000	1000	1000	1000	1500	1500	1000	1000	1500	1500	1000	1000	1500	1500
Minimum Mesh (stretched).....	2 1/2 inches	3 inches	2 1/2 inches	2 1/2 inches	2 1/2 inches	2 1/2 inches	3 inches	3 inches	2 1/2 inches	2 1/2 inches	3 inches	3 inches	2 1/2 inches	2 1/2 inches	3 inches	3 inches
Species Composition																
Largemouth Bass.....	1,028	6.0	2,240	7.3	1,011	1.2	541	3.1	6,553	3.2	219	8.1	202	5.2	230	10.3
Black Crappie.....	1,625	9.5	2,875	9.4	2,430	2.8	337	1.7	18,455	9.5	95	3.5	580	15.0	175	7.8
Bluegill.....	2,400	14.1	6,625	21.6	50,105	58.0	5,404	30.5	38,315	19.1	25	0.9	1,677	43.4	660	29.5
Shiner.....	4,300	25.2	18,000	58.6	21,000	24.3	7,834	44.6	91,000	45.5	380	14.1	1,000	25.9	265	11.8
Redbreast.....					25	0.1	119	0.7			5	0.2				
Miscellaneous Sunfish.....																
Chain Pickerel.....																
White Catfish.....	1	174	1.0	5	93	4.2	105	0.6	112,193	6.1	78	2.9	1	1.8	3	0.1
Speckled Bullhead.....																
Yellow Bullhead.....	2	3,160	18.6	421	1,048	12.3	2,680	4.2	215,018	7.5	789	29.3	259	6.7	265	11.8
Longnose Gar.....					1						6	0.2	12	0.3	50	2.2
Other Gar.....											3	0.1	3	0.1	3	0.1
Mudfish.....																
Gizzard Shad.....	4,308	25.3	215	0.7	107	2.8	2,076	11.7	16,935	8.5	1,094	40.7	35	0.9	552	24.6
Chub-Sucker.....																
Golden Shiner.....																
Miscellaneous Freshwater Species.....																
Predatory Turtles.....																
Non-Predatory Turtles.....	1,528		425		770				240		39		60		20	
Total fish taken.....	17,039	100	30,721	100	86,202	100	17,711	100	199,449	100	2,691	100	3,865	100	2,242	100
Number of hauls.....	4		2		10		5		27		2		4		2	
Average pounds per haul.....	4,235		15,361		8,620		3,543		7,357		1,346		918		1,121	
Pounds taken per acre.....	12.1		10.8		11.9		11.1		11.1		0.2		0.1		0.1	
Pounds of rough fish removed.....	7,686		1,208		11,631		3,419		44,526		1,967		406		912	
Pounds of rough fish removed per acre.....	5.5		0.3		1.5		0.5		2.5		0.1		0.1		1	

1 All catfish grouped with most abundant species.
2 All garfish grouped with most abundant species.
3 Insufficient figure.

is indicated for Lake Josephine, but should follow complete eradication of the water hyacinths. Basic productivity is fairly good as indicated by the average haul of 644 pounds, and the condition of game fishes was good. Complete data obtained during this survey is recorded in Table 10.

LAKE ALICE

Lake Alice, a lake of approximately 20 acres located in Wewa-hitchka in Gulf County, was seined in May 1950 at the request of local sportsmen, who felt that rough fish control was needed. Game fish composed 47 percent of the total taken, while rough fish, principally chub suckers, made up 53 percent. It is hoped that the re-

Table 10.
COMPOSITION OF ADULT FISH POPULATIONS AND OTHER DATA AS DETERMINED BY HAUL SEINE SURVEYS IN TWO HIGHLANDS COUNTY LAKES

Name of Waters	Rex Beach Lake Highlands		Lake Josephine Highlands	
	Pounds Taken	Per- cent- age	Pounds Taken	Per- cent- age
County				
Approximate Area	2,995 acres		1,280 acres	
Average Depth Surveyed (feet)	7-13		6-10	
Bottom Type	Sand and Mud		Mud and Sand	
Date of Survey	Nov. 21-28, 1950		Nov. 26-29, 1950	
Length of Seine (yards)	735		735	
Minimum Mesh (stretched)	3 inches		3 inches	
Species Composition				
Largemouth Bass	219	34.9	125	4.8
Black Crappie			983	38.2
Bluegill	234	37.3	246	9.6
Shelleracker	133	21.3	5	
Redbreast				
Miscellaneous Sunfish			1	
Chain Pickerel				
Channel Catfish			413	16.0
White Catfish			5	0.2
Speckled Bullhead				
Yellow Bullhead				
Longnose Gar				
Other Gar			20	0.8
Mudfish			27	1.1
Gizzard Shad			707	27.5
Chub Sucker	41	6.5	42	1.6
Golden Shiner			1	
Total fish taken	627	100	2,575	100
Number of hauls	3		4	
Average pounds per haul	209		644	
Pounds taken per acre	i		2	
Pounds rough fish removed	41		1,215	
Pounds rough fish removed per acre	i		1	

i-Insignificant.

Table 11.

SPECIES COMPOSITION OF ADULT FISH POPULATION AND OTHER DATA AS DETERMINED BY HAUL SEINE SURVEY IN LAKE ALICE GULF COUNTY, FLORIDA

County.....	Gulf	
Approximate Area.....	20 acres	
Date.....	May 24-25, 1950	
Average Depth.....	8 feet	
Bottom.....	Sand and mud	
Length of Seine.....	300 yards	
Minimum Mesh.....	2½ inches	
Species Composition	Pounds	Percentage
Largemouth Bass.....	44	6.9
Black Crappie.....	179	28.2
Bluegill.....	43	6.6
Shelleracker.....	34	5.4
Channel Catfish.....	53	8.4
Speckled Bullhead.....	11	1.7
Chub Sucker.....	272	42.8
Total fish taken.....	636	100
Number of hauls.....	7	
Average pounds per haul.....	91	
Average pounds per acre.....	31.8	
Total rough fish taken.....	336	
Average pounds rough fish per acre.....	16.8	

removal of 336 pounds of rough fish, or 16.8 pounds per acre, will improve sport fishing. A complete record of fish taken may be found in Table 11.

LAKE ELLA

Lake Ella, a 10.5 acre lake located in the City of Tallahassee, was placed under management at the request of civic organizations and the City of Tallahassee in the spring of 1949. The preliminary analysis indicated that the heavy population of rough fishes was interfering with best production of bass and bream. In April, Lake Ella was first seined and 1,116 pounds of fish were removed, the game fish being released in open waters of Leon County. Following this seining, the remainder of the fish were poisoned and 10,500 fingerling bream were added in May followed by 1,050 fingerling bass in July and the lake was closed to fishing. In June, 1950, an additional 1,050 bass fingerlings were added after an analysis revealed that the population tended toward over-crowding by bream.

On July 7, 1950, Lake Ella was opened to fishing to children under 15 years of age. A contest sponsored by the local organizations was

conducted and more than 500 children participated. Almost every child caught some fish, approximately 200 pounds being taken in all. The catch revealed, however, that the poisoning job had not been 100 percent complete, as warmouth and speckled bullhead were taken, neither of which had been stocked following the poisoning.

LAKE WIRE

Lake Wire, a 25 acre lake in the City of Lakeland, was placed under management in early 1949 at the request of the City Commission. Lake Wire presented a double problem in that an overpopulation of bream was present and the entire lake was choked by an aquatic weed known as *Elodea*. In cooperation with the City Recreation Department, the first step in the management of Lake Wire was the eradication of the heavy weed growth by an application of sodium arsenite. Decay of the dense growth resulted in the almost complete eradication of the fish population brought about by the depletion of the dissolved oxygen supply. The remainder of the fish were poisoned in June, the lake was restocked with bass and bream, and a program of fertilization was undertaken by local interests. On June 3, 1950, Lake Wire was opened to children under 15 years of age and a contest sponsored by local organizations was conducted. A number of bass were taken, the largest weighing several ounces over two pounds.

BLUE POND

At the request of Washington County civic organizations, Blue Pond, located near Chipley, was placed under management in early 1950. As attempts to seine Blue Pond were unsuccessful, poison was applied to eliminate the fish population. A total of approximately 955 pounds of fish were removed and examination indicated that growth of game fish was poor, principally due to over-crowding. One-year-old bass averaged only 7 inches in length and weighed 5 ounces. Two-year old bass averaged only 11 inches and weighed only 10 to 12 ounces. Almost 450 bass less than 12½ inches long were recovered, and only 9 over that size were taken. The few crappie taken were also stunted. Blue Pond was restocked in the summer of 1950 and a program of fertilization started. It is planned that fishing will be opened to the public on July 1, 1951.

LAKE TALQUIN

Lake Talquin is an artificial lake of approximately 11,500 acres formed by the impoundment of the Ochlocknee River in Leon and Gadsden Counties by the Florida Power Corporation in the 1920's. In recent years the lake had become choked with water hyacinths and local fishermen requested assistance in their control. An aerial survey by the Fish Management Division in early 1950 indicated there were approximately 3,000 acres of hyacinths. The Talquin Hyacinth Eradication Association, a group of interested residents of Leon and Gadsden County, was then formed, and a goal of \$10,000 set in a fund drive. This goal was reached in the fall of 1950, and the project started. Initial plots were sprayed by airplane and techniques worked out by Division personnel and the contracting operator of the spraying planes.

These initial experiments determined that effective control could be obtained with an application of 1.5 pounds of the acid equivalent Dichloro-diphenyl-oxyacetic acid in two gallons of No. 2 diesel fuel per acre. The entire area of hyacinths was then sprayed by air at this rate between October 24 and November 16, 1950. Within a few days after the initial application the plants withered, turned brown, and close examination revealed that almost 90 percent of the mature plants were killed. Inspection in late December revealed that the greater part of the floating plants had sunk or were decaying. It is planned that the operations will be repeated in 1951 to control any plants not killed in the initial application, as well as seedlings sprouted since that time.

Fisheries Surveys and Experimental Projects

Fisheries surveys have been conducted on several of Florida's larger bodies of fresh water and are designed principally to obtain basic information of the fish and fisheries of the waters involved. As mentioned previously, the management of the fisheries to obtain best sport fishing and maximum utilization of those resources depends upon having a volume of adequate information concerning present fish populations, their inter-relationships and the effect of known factors upon their production, as well as detailed data on the life history and specific habits of each species involved. It is also necessary to know what effect interference by man has upon these fish populations, and how best man can manipulate the factors involved in order to result in the desired objectives.

As in the management of a large business, it is necessary to have complete data on inventory and to keep account of the changes in those basic stocks and the amount of the production that is being used for best management. Florida, over the past several years, has been pioneering in this field, and has attracted national attention because of its aggressive attack on the many problems involved in the management of its fresh-water fish. As in the case of modern agriculture and forestry, perpetual inventory must be taken to determine the status of the supplies, and continual research must be conducted to determine how best those supplies can be increased and made available for use by the State. It is known that the production of fish in a given area of water, as the production of agricultural crops from a given area of land, is limited. It is further known that Florida anglers are using only a small percentage of the available fish produced in most of its larger waters, and the research program is designed not only to find methods of increasing the total productivity of our waters, but also of the species which are desired by the angler.

It has been determined by careful research and experimentation that the productivity of fresh waters is more or less stable and can be measured in pounds per surface acre. It is also known that all fish in that given acre of water are dependent upon that same basic food supply and are in severe competition with one another. For instance, crappie (speckled perch) and garfish use the same types of food which are eaten by the black bass, and as a result the presence of the former species in considerable numbers has been found to reduce the capacity of those waters to produce and support bass. Where the black bass is the major fish desired by the angler, as results of surveys have shown, it is necessary to find methods of reducing the competing species in order that black bass production will be enhanced.

The Fish Management Division is attempting to work out the numbers and amounts and rates of removal of competing species which will result in greatest increase and catch of bass, and at the same time make best available use of those species removed to make room for increased bass production. Results of the individual surveys are discussed below by the areas concerned.

St. Johns River and Lake Okeechobee Fisheries Surveys

Detailed studies of the fish and fisheries of the St. Johns River with particular emphasis in the Lake George area and of Lake Okeechobee were initiated in 1948. Much valuable data on the fish of those areas have been gathered and many of the basic statistics concerning the dynamics and inter-relationships of the adult fish populations have been compiled. The studies were undertaken principally to try to solve some of the problems involved in the commercial taking of certain species of fresh-water fish found there, and to determine what methods could be used by the commercial fishermen which would not harm the interests of the recreational fisherman, but might possibly enhance his chances for better catches. Several detailed reports on the findings of this survey have been made and recommendations for management based upon those findings have been submitted to the Commission.

Major among these reports were "Report on Fisheries Investigations for the Year Ending June 30, 1949" and "A Report on Fisheries Investigations of the St. Johns River and Lake Okeechobee, 1948-50, With Recommendations For Management", which combined the results of findings on both bodies of water. The major findings of these surveys are briefly that the abundance of the fish populations fluctuated considerably from season to season and during the year, these fluctuations being attributed to "natural" factors rather than by the direct interference by man. It could not be determined during the two-year intensive study that commercial fishing operations were instrumental in causing any of the changes in the fish populations, although by the same token no harm to recreational fishing in those waters could be attributed to commercial fishing operations. It was further found that the life span of the game fishes in those waters was relatively short and growth rates extremely rapid. Natural mortality rates were found to be high and use of available standing fish supplies by anglers was found to be negligible. No evidence was found that total productivity of the waters of black bass had decreased, although it was determined that the yield of this species was being scattered among a greatly increased army of recreational anglers. It was concluded that the available production of bream and crappie in the Lake George and Lake Okeechobee areas was largely being wasted and lost through natural mortality, representing a huge economic loss to the state.

MONTHLY COMPOSITION OF ADULT FISH POPULATIONS AND OTHER DATA AS DETERMINED BY HAUL SEINE SURVEYS IN LAKE GEORGE, JULY, 1948, THROUGH DECEMBER, 1950

Name of Waters	Lake George									
County	Putnam, Marion, Volusia, Lake									
Approximate Area	73.5 sq. mi.—47,059 acres									
Average Depth Surveyed	3-12 feet									
Bottom Type	Sand and mud									
Date of Survey	July, 1948		August, 1948		September, 1948		October, 1948		Nov., 1948	
Length of Seine	1200-1600 yds.									
Minimum Mesh (stretched)	3 inches									
Species Composition	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age
Largemouth Bass	1,688	19.1	3,083	9.2	9,070	4.7	13,233	3.3	7,549	2.7
Black Crappie	324	3.6	1,341	4.0	25,760	13.0	59,237	14.7	49,065	17.3
Bluegill	1,195	13.5	3,928	11.7	14,940	7.5	16,798	4.2	10,853	3.8
Shelleracker	945	10.7	2,580	7.7	14,954	7.5	12,939	3.2	6,975	2.5
Redbreast	90	1.0	45	0.1	301	0.2	186	0.1	241	0.1
Miscellaneous Sunfish			2		11		77		3	
Chain Pickerel					8		6			
Channel Catfish	1,918	21.6	8,167	24.4	51,172	25.8	89,733	22.3	61,349	21.6
White Catfish	1,199	13.5	6,154	18.3	41,724	21.0	88,857	22.1	74,890	26.4
Speckled Bullhead	247	2.8	481	1.4	4,217	2.1	8,585	2.1	8,333	2.9
Yellow Bullhead					1		1			
Longnose Gar	257	2.9	343	1.0	797	0.4	315	0.1	135	
Other Gar	6	0.1	19	0.1	23		171		86	
Mudfish							3			
Gizzard Shad	918	10.4	6,390	19.0	31,404	15.8	71,664	17.8	59,642	21.0
Chub Sucker	19	0.2	5		6		3			
Golden Shiner	12	0.1	77	0.2	95	0.1	44		150	0.1
Misc. Fresh Water Species					3		24		8	
American Shad							21		214	0.1
Other Clupeids			1,000	2.9	2,941	1.5	36,395	9.0	3,680	1.3
Mullet	14	0.2	12		777	0.4	3,929	1.1	451	0.2
Misc. Salt Water Species	28	0.3			74		236	0.1	144	
Total fish taken	8,860	100	33,627	100	198,278	100	402,457	100	283,708	100
Number of hauls	13		19		60		97		81	
Average pounds per haul	681		1,770		3,304		4,149		3,502	
Pounds taken per acre										
Pounds rough fish removed	4,618		22,648		133,234		299,981		209,082	
Pounds rough fish removed per acre										

MONTHLY COMPOSITION OF ADULT FISH POPULATIONS AND OTHER DATA AS DETERMINED BY HAUL SEINE SURVEYS IN LAKE OKEECHOBEE, JULY, 1948, THROUGH DECEMBER, 1950

Name of Waters	Lake Okeechobee									
County	Okeechobee, Glades, Hendry, Palm Beach									
Approximate Area	703 sq. mi.—450,357 acres									
Average Depth Surveyed	3-12 feet									
Bottom Type	Sand and mud									
Date of Survey	July, 1948		August, 1948		Sept., 1948		October, 1948		Nov., 1948	
Length of Seine	1200-1600 yds.									
Minimum Mesh (stretched)	2 1/4 inches									
Species Composition	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age
Largemouth Bass	13,215	22.1	15,323	14.5	25,044	13.1	17,178	8.4	16,294	8.1
Black Crappie	1,084	1.8	2,719	2.6	12,323	6.4	47,750	23.5	52,013	25.8
Bluegill	14,192	23.7	12,495	11.9	17,286	9.0	13,990	6.9	4,178	2.1
Shelleracker	16,988	28.4	27,352	26.0	33,149	17.3	15,931	7.8	17,975	8.9
Redbreast										
Miscellaneous Sunfish										
Chain Pickerel	13		114	0.1	41		13		14	
Channel Catfish	6,304	10.5	17,918	17.0	37,293	19.6	50,070	24.6	55,775	27.7
White Catfish	4,570	7.6	625	0.6	4,593	2.4	32,037	15.7	9,425	4.7
Speckled Bullhead	1,589	2.7	9,788	9.3	21,070	11.0	513	0.3	1,216	0.6
Yellow Bullhead	2								149	0.1
Longnose Gar			6		47		122	0.1	9	
Other Gar	260	0.4	1,285	1.2	4,031	2.1	6,791	3.3	5,496	2.7
Mudfish	63	0.1	409	0.4	432	0.2	169	0.1	59	
Gizzard Shad	1,020	1.7	12,992	12.3	12,308	6.4	17,627	8.7	38,419	19.1
Chub Sucker	560	0.9	4,325	4.1	23,534	12.3	35			
Golden Shiner			2		10		13		11	
Misc. Fresh Water Species										
American Shad										
Other Clupeids										
Mullet			21		43		420	0.2	72	
Misc. Salt Water Species	47	0.1			342	0.2	983	0.4	399	0.2
Total fish taken	59,907	100	105,374	100	191,546	100	203,632	100	201,504	100
Number of hauls	15		33		72		64		89	
Average pounds per haul	3,994		3,193		2,660		3,182		2,264	
Pounds taken per acre										
Pounds rough fish removed	14,415		47,371		103,703		108,780		111,030	
Pounds rough fish removed per acre										

Table 12 (Continued)

Dec., 1948		January, 1949		February, 1949		March, 1949		April, 1949		May, 1949		June, 1949	
Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age
4,012	2.4	5,620	2.5	7,241	5.1	9,186	6.1	7,523	9.6	11,471	10.4	2,819	4.9
38,659	23.2	44,380	20.1	26,207	18.6	27,276	18.1	10,406	13.4	10,409	9.5	5,217	9.1
7,969	4.8	20,045	9.1	20,119	14.2	22,712	15.1	8,146	10.4	11,604	10.6	3,944	6.9
9,568	5.7	13,423	6.1	5,687	4.0	7,935	5.2	7,250	9.3	6,751	6.1	2,525	4.4
101	0.1	98	0.1	305	0.2	353	0.2	77	0.1	91	0.1	443	0.8
3	.....	5	.....	4	.....	6	.....	1	.....	.....	.....	2	.....
26,206	15.7	32,616	14.8	21,592	15.2	18,256	12.1	12,423	15.9	25,383	23.2	19,939	34.9
34,816	20.9	44,541	20.2	36,047	25.5	30,135	19.9	13,762	17.6	25,889	23.6	8,202	14.4
8,568	5.1	11,241	5.1	9,993	7.0	7,097	4.7	2,486	3.2	1,180	1.1	944	1.7
2	.....	33	.....	80	0.1	229	0.2	331	0.4	229	0.2	148	0.3
16	.....	20	.....	48	.....	38	.....	54	0.1	40	.....	9	.....
8	.....	21	.....	9	.....	28	.....	4	.....	9	.....	6	.....
35,277	21.2	39,619	17.9	12,929	9.1	25,901	17.2	14,047	18.1	15,558	14.2	12,032	21.1
3	.....	4	.....	2	.....	3	.....	1	.....	2	.....	.....	.....
102	0.1	84	0.1	34	.....	55	.....	32	.....	33	.....	23	.....
5	.....	14	.....	34	.....	46	.....	27	.....	5	.....	.....	.....
491	0.3	2,316	1.0	904	0.6	659	0.4	687	0.9	28	.....	.....	.....
10	.....	6,035	2.7	122	0.1	322	0.2	281	0.4	920	0.8	567	1.0
65	.....	10	.....	59	.....	51	.....	52	0.1	153	0.1	89	0.2
816	0.5	644	.....	488	0.3	1,019	0.6	435	0.5	136	0.1	186	0.4
166,697	100	220,776	100	141,913	100	151,309	100	78,025	100	109,891	100	57,095	100
61	.....	74	.....	67	.....	84	.....	66	.....	93	.....	48	.....
2,732	.....	2,983	.....	2,118	.....	1,801	.....	1,182	.....	1,181	.....	1,189	.....
106,385	.....	137,205	.....	82,341	.....	83,839	.....	44,622	.....	69,565	.....	42,145	.....

Table 13 (Continued)

December, 1948		January, 1949		February, 1949		March, 1949		April, 1949		May, 1949		June, 1949	
Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age
14,798	7.8	7,161	5.5	24,735	6.4	29,897	7.3	22,516	7.2	38,877	18.2	17,756	8.1
42,166	22.3	38,372	29.3	96,212	25.0	74,467	18.1	35,098	11.3	10,554	4.9	5,719	2.6
4,958	2.6	2,793	2.1	20,903	5.4	51,574	12.6	59,696	19.2	44,674	20.9	48,502	22.1
16,416	8.7	6,712	5.1	29,191	7.6	28,696	7.0	38,446	12.5	18,460	8.7	26,585	12.1
1	.....	.....	.....	2	.....	14	.....	14	.....	1	.....	1	.....
2	.....	5	.....	26	.....	91	.....	170	0.1	165	0.1	66	.....
31,115	16.4	25,043	19.1	53,960	14.0	53,463	13.0	21,193	6.8	13,788	6.5	31,205	14.3
16,581	8.8	20,106	15.4	26,381	6.9	43,125	10.5	17,278	5.6	5,958	2.8	6,814	3.1
1,325	0.7	258	0.2	9,389	2.5	23,900	5.8	39,519	12.7	37,159	18.3	34,281	15.7
50	.....	112	0.1	23	.....	441	.....	70	.....	.....	.....	120	0.1
5,479	2.9	4,078	3.1	12,817	3.3	17,488	4.3	11,595	3.7	5,127	2.4	4,247	1.9
55	.....	129	0.1	2,042	0.5	10,794	2.7	7,761	2.5	8,914	4.2	4,595	2.1
55,706	29.4	25,925	19.8	108,346	28.1	69,732	17.2	42,552	13.7	11,816	5.5	16,629	7.6
608	0.3	2	.....	903	0.2	5,923	1.4	14,351	4.6	15,175	7.1	22,592	10.3
8	.....	13	.....	124	0.1	11	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	6	.....	.....	.....	.....	.....
37	0.1	3	.....	14	.....	41	.....	22	.....	41	.....	6	.....
65	.....	218	0.2	29	.....	63	.....	217	0.1	793	0.4	18	.....
189,370	100	130,931	100	385,697	100	409,736	100	310,804	100	213,502	100	219,136	100
69	.....	43	.....	98	.....	105	.....	78	.....	53	.....	48	.....
2,744	.....	3,045	.....	3,930	.....	3,902	.....	3,985	.....	4,028	.....	4,565	.....
111,029	.....	75,888	.....	214,028	.....	225,003	.....	154,564	.....	100,771	.....	120,507	.....

Table 12 (Continued)

TOTAL		July, 1949		August, 1949		Sept., 1949		October, 1949		Nov., 1949		December, 1949	
Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age
82,495	4.5	8,049	2.2	8,715	2.6	18,428	6.0	17,820	7.4	9,143	3.0	12,158	6.3
298,221	16.1	23,397	6.3	52,378	15.8	54,518	17.7	57,316	23.9	120,569	40.3	68,900	35.4
142,253	7.7	26,640	7.1	44,151	13.3	52,090	16.9	26,565	11.1	26,592	8.9	19,017	9.8
91,532	4.9	23,923	6.4	23,050	6.9	18,581	6.0	13,912	5.8	18,338	6.1	12,446	6.5
2,331	0.1	104		164	0.1	764	0.2	1,048	0.4	245	0.1	137	0.1
114				1		1				3		3	
25													
368,754	19.9	91,904	24.8	75,832	22.9	62,328	20.3	35,965	15.3	41,823	14.0	30,164	15.5
406,216	21.9	112,177	30.2	57,913	17.4	39,501	12.8	12,505	5.2	33,205	11.1	29,638	15.2
63,372	3.4	7,923	2.1	5,118	1.5	1,830	0.6	1,600	0.7	2,045	0.7	3,011	1.5
9		4								2		1	
2,899	0.2	166		761	0.2	2,089	0.7	340	0.1	559	0.2	86	0.1
530		10		86		101		266	0.1	71		9	
88								9		25		45	
325,881	17.7	52,824	14.2	50,030	15.1	52,773	17.2	52,751	22.0	40,290	13.4	14,973	7.7
48		8				8				6		1	
741		68		67		136		149	0.1	176	0.1	46	
166		11		3		3		19		14		38	
5,320	0.3							6		446	0.1	719	0.4
52,273	2.8	24,028	6.5	13,310	4.1	3,501	1.1	15,736	6.5	5,376	1.8	2,687	1.4
5,662	0.3	385	0.1	164	0.1	805	0.3	675	0.3	361	0.1	60	
4,206	0.2	504	0.1	330	0.1	419	0.1	2,669	1.1	495	0.1	408	0.1
1,852,636		372,215	100	332,079	100	307,876	100	239,351	100	299,784	100	194,547	100
763		189		124		145		148		119		88	
2,428		4,182		2,678		2,123		1,617		2,519		2,210	
39.4													
1,235,665		290,102		203,614		163,494		122,690		124,804		81,886	
2.63													

Table 13 (Continued)

TOTAL		July, 1949		August, 1949		Sept., 1949		October, 1949		Nov., 1949		Dec., 1949	
Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age
242,794	9.3	10,660	5.8	16,201	11.8	10,462	8.4	9,138	5.5	6,782	3.8	3,541	3.0
418,477	15.9	10,674	5.9	11,903	8.7	20,485	16.4	44,715	26.8	61,227	34.6	38,414	32.3
205,231	11.3	21,821	12.0	9,982	7.3	3,548	2.8	2,775	1.7	8,977	5.1	2,053	1.7
276,195	10.5	12,819	7.1	10,220	7.5	5,174	4.2	6,225	3.7	6,121	3.5	1,484	1.2
33													
720				5									
397,127	15.2	35,678	19.6	26,855	19.6	43,560	35.0	56,468	33.8	45,616	25.8	27,873	23.5
187,493	7.2	6,731	3.7			7,357	5.9	11,684	7.0	9,793	5.5	13,973	11.8
182,037	6.9	69,016	38.0	45,182	32.9	7,687	6.2	571	0.3	2,050	1.2	584	0.5
174													
1,000		29		50		70	0.1	16		20			
78,694	3.0	3,029	1.7	3,930	2.9	5,856	4.7	7,553	4.5	8,633	4.9	7,578	6.4
35,422	1.4	1,763	1.0	2,384	1.7	604	0.5	340	0.2	359	0.2	425	0.4
413,072	15.8	4,087	2.3	6,062	4.4	19,356	15.5	27,490	16.5	27,361	15.4	22,738	19.1
88,008	3.4	5,394	2.9	4,396	3.2	284	0.2						
192				6				62					
6													
720				13		3		7		21		3	
3,174	0.1	24		32		194	0.1	7		58		78	0.1
2620,539	100	181,725	100	137,221	100	124,700	100	167,051	100	177,018	100	118,744	100
767		55		92		75		95		60		45	
3,416		3,304		1,491		1,663		1,758		2,950		2,639	
5.8													
1,387,089		125,751		88,910		85,031		104,198		93,911		73,252	

Table 12 (Continued)

Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage
13,020	6.9	8,293	12.3	10,106	12.4	6,261	14.0	18,034	14.2	6,321	8.4	136,348	5.8
55,643	29.7	11,641	17.4	16,316	19.3	8,232	18.5	12,394	9.7	5,732	7.6	487,036	20.9
25,885	13.8	11,737	17.5	16,162	19.3	14,551	32.6	21,554	17.0	5,942	7.9	296,886	12.5
14,512	7.7	4,369	6.5	5,286	6.3	2,918	6.5	4,964	3.9	2,481	3.3	144,786	6.2
161	0.1	106	0.1	235	0.3	68	0.2	166	0.1	217	0.3	3,415	0.1
3		4		3		3		5		9		15	
18,096	9.7	8,551	12.7	11,725	14.0	3,307	7.4	12,997	10.2	7,358	10.1	400,440	17.2
14,297	7.6	7,477	11.1	7,739	9.2	3,630	8.1	23,036	18.2	9,928	13.1	331,046	15.1
3,506	1.9	1,621	2.4	1,318	1.6	287	0.6	845	0.7	602	0.9	29,766	1.3
1		1		2		3		5		13		13	
113	0.1	19		120	0.1	63	0.1	586	0.5	285	0.4	5,187	0.2
77		28		35		30	0.1	40		38		791	
18		7		6		5		14		5		134	
36,713	19.6	9,605	14.4	9,585	11.4	4,399	9.8	31,839	25.1	35,840	47.4	391,712	16.7
2		1		2		33		33		4		61	
41		283	0.4	63	0.1	30	0.1	15		42		1,146	0.1
71		6		37		4						176	
1,927	0.9	243	0.4	604	0.7	287	0.6	29				3,961	0.2
1,492	0.8	448	0.7	504	0.6	11				3		67,046	2.9
75		108	0.2	33		58	0.1	258	0.2	149	0.2	3,131	0.1
2,544	1.2	2,629	3.9	4,017	4.7	561	1.2	381	0.2	320	0.4	15,277	0.7
187,897	100	67,267	100	83,898	100	44,738	100	127,157	100	75,563	100	2,332,372	
110		46		48		31		84		77		1,109	
1,708		1,462		1,747		1,443		1,513		1,007		2,103	
												49.6	
78,673		31,116		35,788		12,705		70,045		54,870		1,269,877	
												26.9	

Table 13 (Continued)

January, 1950		February, 1950		March, 1950		April, 1950		May, 1950		June, 1950		TOTAL	
Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage	Pounds Taken	Percentage
6,292	5.1	4,651	6.1	7,393	8.8	6,934	10.6	2,556	8.6	3,290	6.5	87,900	6.5
30,948	24.9	17,680	23.4	16,583	19.8	9,244	14.1	2,312	7.9	5,506	10.9	269,691	20.2
1,104	0.9	1,673	2.2	3,675	4.4	4,812	7.4	3,237	11.1	4,979	9.8	68,636	5.1
1,559	1.3	972	1.3	1,781	2.1	1,747	2.7	1,193	4.1	3,820	7.5	53,115	4.0
				4		2		15		6		32	
35,446	28.5	24,094	31.7	18,450	22.0	1,404	2.1	345	1.2	88	0.2	315,877	23.6
8,477	6.8	4,227	5.6	3,345	4.0	1,325	2.0	4,151	14.2	1,532	3.0	72,595	5.4
9,240	7.4	9,375	12.3	15,383	18.5	25,234	38.5	11,761	40.3	23,412	46.3	219,495	16.5
12		11		95	0.1	52	0.1			3		358	0.1
6,627	5.3	3,937	5.2	4,858	5.8	5,123	7.8	1,266	4.4	651	1.3	59,041	4.4
1,061	0.9	1,779	2.3	2,261	2.7	2,013	3.1	998	3.4	2,512	5.0	16,559	1.2
23,435	18.9	7,493	9.9	9,496	11.3	6,887	10.5	996	3.4	3,765	7.4	159,166	11.9
		5		457	0.5	571	0.9	355	1.2	1,072	2.1	12,596	0.9
		35		1		66	0.1			4		112	0.1
				1		2						3	
						3		2				67	
12		3				103	0.1	23	0.1			563	0.1
11		33											
124,224	100	75,968	100	83,786	100	65,521	100	29,208	100	50,640	100	1,335,866	100
62		55		70		52		25		33		719	
2,004		1,381		1,197		1,260		1,168		1,535		1,857	
												3.0	
84,321		50,992		54,350		42,782		19,895		33,039		856,432	
												1.9	

Table 12 (Continued)

July, 1950		August, 1950		Sept., 1950		October, 1950		Nov., 1950		Dec., 1950		TOTAL	
Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age
3,101	2.6	10,300	3.5	1,437	2.7	1,579	2.7	3,592	6.6	1,230	5.3	21,239	3.5
3,158	2.6	11,824	4.0	3,359	6.4	7,584	12.8	7,300	13.3	6,088	26.3	39,313	6.5
5,946	4.9	28,266	9.6	3,310	6.3	3,828	6.5	10,707	19.6	4,327	18.8	56,384	9.4
3,797	3.2	10,896	3.7	3,405	6.4	1,967	3.3	1,972	3.6	1,056	4.6	23,033	3.8
33		33		30		10		54	0.1	4		164	
14										1		15	
34,178	28.4	108,938	37.1	13,050	24.7	6,219	10.5	6,749	12.3	2,042	8.8	171,176	28.5
26,404	22.1	61,063	20.8	15,861	30.0	25,584	43.4	1,809	3.3	1,629	7.0	132,350	21.9
8,332	6.9	9,075	3.1	136	0.3	172	0.3	307	0.6	155	0.7	18,177	3.0
6		6										12	
168	0.1	160	0.1	132	0.3	108	0.2	57	0.1	6		631	0.1
201	0.2	17		8		4		5				235	
								9				9	
33,549	27.9	52,153	17.8	11,937	22.6	11,555	19.6	21,230	38.8	6,138	26.5	136,562	22.6
2		2		4				2				10	
106	0.1	97		4		2		18		14	0.1	241	
		14										14	
3		57		15		6		466	0.9	271	1.2	818	0.1
987	0.8	189	0.1	31		117	0.2	276	0.5	47	0.2	1,647	0.3
266	0.2	396	0.2	153	0.3	293	0.5	137	0.3	137	0.5	1,382	0.3
120,251	100	293,486	100	52,872	100	59,028	100	54,690	100	23,145	100	603,482	100
36		100		50		32		29		10		257	
3,340		2,935		1,057		1,845		1,886		2,314		2,348	
												12.8	
104,202		232,167		41,331		44,000		31,065		10,439		463,264	
												9.8	

Table 13 (Continued)

July, 1950		August, 1950		Sept., 1950		October, 1950		Nov., 1950		December, 1950		TOTAL	
Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age	Pounds Taken	Per-cent-age
3,377	8.5	9,190	12.5	4,772	14.4	8,972	19.7	3,219	12.7	1,369	10.1	30,899	13.4
2,442	6.2	2,404	3.3	1,103	3.3	1,427	3.1	7,691	30.4	3,406	23.2	18,473	8.0
1,895	4.8	14,054	19.1	2,290	7.0	7,266	15.9	2,183	9.4	302	2.2	28,190	12.2
1,949	4.9	11,624	15.8	2,757	8.3	8,371	18.4	1,183	4.7	46	0.3	25,930	11.2
				3								3	
4		9										13	
40		2,266	3.1	3,276	9.9	5,186	11.4	2,249	9.0	1,350	10.0	14,367	6.2
13		732	1.0	4,034	12.1	5,389	11.8	4,282	16.9	2,092	15.5	16,512	7.2
21,246	53.7	23,904	32.5	10,940	33.1	3,422	7.6	575	2.3	1,687	12.5	61,834	26.8
						15		62				77	
610	1.5	718	1.0	465	1.4	1,166	2.6	1,747	6.9	538	4.0	5,244	2.3
1,352	3.4	1,179	1.6	867	2.6	706	1.5	274	1.1	384	2.8	4,762	2.1
5,601	14.6	1,833	2.5	741	2.2	2,339	5.1	1,205	4.8	2,345	17.4	14,064	6.1
951	2.4	5,227	7.1	1,790	5.4	1,067	2.3	123	0.5	1		9,159	4.0
21		96	0.1	3		39	0.1	197	0.7	2		358	0.1
68		342	0.4	99	0.3	230	0.5	178	0.6	4		921	0.4
39,569	100	73,638	100	33,110	100	45,595	100	25,368	100	13,526	100	230,856	100
35		53		31		44		17		12		192	
1,131		1,389		1,068		1,036		1,492		1,127		1,202	
												.5	
29,902		36,357		22,185		19,559		10,892		8,403		127,298	
												.3	

Regulations were suggested for the taking of this huge crop by private industry under a system of controlled fishing by haul seines, pound nets, hoop nets and wire traps in order to allow utilization of this huge, now wasted resource. The need for continual inventory and check on the fish populations was also emphasized in order to safeguard the fish population from depletion or over-utilization. Statistics on the monthly trends in composition of adult fish populations as determined by haul seines in the Lake George and Lake Okeechobee areas may be found in Tables 12 and 13. It should be pointed out that while the data listed in the first 12 months of survey reflect total catch by haul seine, the remaining data represent only a sample, varying from approximately 30 to 80 percent of the total catch, as a reduction in supervising manpower during the periods covered by the latter tables prevented checking every haul made. Data obtained from Crescent Lake, covered by the Lake George survey may be found in Table 14.

Incidental to other duties, it has been possible to obtain some data on the catch by sport fishermen on several important fishing waters. These data, referred to as "Creel Census" records are used primarily to determine the quality of fishing afforded by the waters in question, and to indicate whether fishing is improving over a period of years. It has not been possible to devote as much time as desired to this important phase of the measurement of fishing success, but those results which have been obtained are presented.

In addition to the numbers and weights of fish caught, information is usually gathered on the number of hours of fishing, the percentage of effort expended on each species, and in some cases a count of the total fishermen in the area.

Some data are available by months back to early 1948 in the Lake George area, and to 1949 in Lake Okeechobee, and are reported in Tables 15, 16, and 17. Opening day records have been obtained for several of the west Florida waters which have retained the two months closed season, and are reported in Table 18.

Fishing Gear Catch Studies

In order to determine the effect of certain commercial fishing devices upon fish populations and to obtain information on the best type of gear which could be used to harvest catfish and other species, a number of studies of individual types of fishing devices

in various waters have been conducted. Results of some of these studies were reported in the Biennial Report for 1947-48, but many more have been carried out since then and are reported here.

Gear catch studies are conducted by Commission personnel in cooperation with local commercial fishermen. These local fishermen are instructed in keeping daily records of their catches and are visited at intervals during the experimental period. Fishermen chosen for this type of work are those having a reputation of integrity and trustworthiness, plus the willingness and ability to keep accurate records. The large majority of them have shown considerable interest in keeping accurate records and in the outcome of the studies. However, the data from a few fishermen who failed to live up to expectations were disregarded and not used in compiling information in these studies. Types of bait used, exact location of devices, depth of water, and other important information is kept, along with the catch.

WIRE TRAPS

Wire traps for taking catfish are used in a number of the larger fresh waters of Florida under special permit from the Commission. Legal traps are of cylindrical construction of ordinary chicken wire with a mesh of either 1" or 1¼". One or two funnels may be located in one end of the trap only, and the length may not exceed 7 feet or the diameter 32 inches. Traps must be baited continuously and visited not less than once each 48 hours, and all must be marked by stakes or floats with a tag denoting ownership attached to each trap. Traps are not permitted in waters less than 4 feet in depth. In general, catch of these baited wire traps is less than 7 percent by weight of game fish and very little mortality is incurred in releasing these fish. In view of this low catch of game fish, it is thought that the operation of baited wire traps has no detrimental effect on game fish populations and is probably of some assistance in helping to remove a large volume of rough fish and making possible the utilization of these rough fish, which would otherwise not be taken. Studies have been carried out in Lakes Istokpoga, Okeechobee, Hatchineha, Lake Wilmington, and others, four of which are reported in Table 19.

POUND NETS

The limited use of pound nets has been permitted in the Lake George area of the St. Johns River, Lake Okeechobee, Lake Istokpoga, and Doctor's Lake. Pound nets of the type approved for use

Table 14.

**COMPOSITION OF ADULT FISH POPULATION AND OTHER DATA AS
DETERMINED BY HAND SEINE SURVEY IN CRESCENT LAKE**

Name of Waters.....	Lake Crescent	
County.....	Putnam	
Approximate Area.....	16,742 acres	
Average Depth Surveyed.....	6-10 feet	
Bottom Type.....	Sand	
Date of Survey.....	April 1950	
Length of Seine.....	1500 yards	
Minimum Mesh (stretched).....	3 inches	
Species Composition	Pounds Taken	Percent- age
Largemouth Bass.....	1,408	12.7
Black Crappie.....	608	5.5
Bluegill.....	2,588	23.4
Shelleracker.....	449	4.1
Redbreast.....	26	0.2
Miscellaneous Sunfish.....		
Chain Pickerel.....		
Channel Catfish.....	1,734	15.7
White Catfish.....	1,585	14.3
Speckled Bullhead.....	348	3.2
Yellow Bullhead.....		
Longnose Gar.....	664	6.0
Other Gar.....	197	1.8
Gizzard Shad.....	20	0.2
Chub Sucker.....	1,050	9.5
Golden Shiner.....		
Mullet.....	23	0.1
Miscellaneous Salt Water Species.....	361	3.3
Total Fish Taken.....	11,061	100
Number of hauls.....	12	
Average pounds per haul.....	922	
Pounds taken per acre.....	i	
Pounds rough fish removed.....	5,982	
Pounds rough fish removed per acre.....	i	

i-Insignificant figure.

consist of a square box or impoundment constructed of mesh webbing and attached to poles or pilings driven into the bottom. The entrance to this impounded section is a "V" shaped or funnel arrangement of webbing, also stretched on poles, known as the heart. A pound net may be used with or without a wing or lead, which is a straight piece of webbing strung on stationery piling. The fish, during their normal movement, are either intercepted by the wing and led into the heart whence they find their way into the pound, or are attracted through the funnel shaped opening by bait. They are held in the pound until the operator releases the

Table 15.
MONTHLY SUMMARIES OF CREEL CENSUS DATA FROM ST. JOHNS RIVER (LAKE GEORGE AREA) 1 1948-1950

Month	Number of Persons Checked	Total Hours of Fishing	BLACK BASIS			BLACK CRAPPIE			BREAM			OTHERS ²		
			Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended
February, 1948	123	964.5	62	.07	91.1	10	1.0	1.0	102	1.34	7.9	13	.01	Inc.
March, 1948	80	538.0 ³	36	.09	75.9				417	3.29	21.1	15	.03	Inc.
April, 1948	246	1,603.5	400	.31	78.9				536	1.59	21.1	8	1	Inc.
May, 1948	21	67.0	41	.67	100.0									
December, 1948	4	5.7	6	1.04	100.0									
February, 1949	44	236.1	5	.02	95.3									
March, 1949	24	66.5	3	.01	57.9				61	2.17	42.1	5	.01	Inc.
April, 1949	12	34.0	1	.03	100.0									
January, 1950	9	66.0	14	.66	100.0									
February, 1950	92	584.2	81	.15	93.3				17	.38	6.7	9	1	Inc.
March, 1950	74	394.0	62	.16	95.7				2	.40	1.8	6	.01	Inc.
April, 1950	104	665.0	102	.17	91.8				151	2.79	8.2	21	.03	Inc.
May, 1950	101	705.0	76	.11	92.4				36	.68	7.6	11	.01	Inc.
June, 1950	70	266.0	35	.13	96.7				3	.33	3.3	2	.01	Inc.
July, 1950	42	255.0	32	.13	95.3				28	2.33	4.7			
September, 1950 ⁴	12	49.0	11	.22	100.0									
November, 1950	188	871.0	133	.16	95.4				4	.24	1.9	14	.01	Inc.
December, 1950	166	1,089.0	173	.17	96.4				37	.97	3.6	34	.03	Inc.

¹ Compiled by Barry O. Freeman, Fish Management Supervisor.

² Includes cutfish, pickerel, and an occasional gar or mudfish.

³ Hours of fishing not available on 20 people who did not catch anything. Average hours for others used for total.

⁴ One day only.

i insignificant.

Inc. incidental.

Table 16.
MONTHLY SUMMARIES OF CREEL CENSUS DATA FROM LAKE OKEECHOBEE¹ 1949-1950

Month	Number of Persons Checked	Total Hours of Fishing	BLACK BASS			BLACK CRAPPIE			BREAM			OTHERS ²							
			Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended					
															Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended
August, 1949	21	91.0	59	0.80	78.7			57	2.8	21.3									
October, 1949	14	10.5	21	0.51	100.0														
November, 1949	21	69.5	28	0.40	100.0														
December, 1949	25	96.7	57	0.71	82.9	9	.91	9	.80	4.6	2	.80		2.7					
January, 1950	29	132.2	129	0.91	100.0														
February, 1950	16	59.0	15	0.25	100.0														
March, 1950	4	14.5	6	0.41	100.0														
May, 1950	12	43.5	15	0.43	79.3														
September, 1950	9	17.5	15	0.85	100.0														
October, 1950	53	292.0	71	0.28	93.3								22	2.1	5.2	10	3.3		1.5

¹ Compiled by Don R. Luethy, Fish Management Supervisor.

² Includes catfish, pickerel, and an occasional gar or mudfish.

Table 17.
MONTHLY SUMMARIES OF CREEL CENSUS DATA FROM KISSIMMEE RIVER (OKEECHOBEE AREA)¹, 1949-50

Month	Number of Persons Checked	Total Hours of Fishing	BLACK BASS			BLACK CRAPPIE			BREAM			OTHERS ²		
			Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended	Number Taken	Number per Hour	Percent of Effort Expended
December, 1949	53	193.0	8	0.16	6.5	271	1.63	89.5	7	1.7	2.0	4	1.60	2.0
January, 1950	90	361.0	4	0.10	2.8	342	1.10	94.4	14	1.47	2.0	11	3.14	.8
February, 1950	104	374.5	15	0.39	10.5	280	.86	87.8	7	1.00	1.6	4	2.01	1.4
March, 1950	108	345.0	3	0.66	.6	252	1.04	81.3	39	1.18	9.9	16	.94	5.2
April, 1950	124	397.2	8	0.45	4.4	527	1.55	85.5	20	1.12	6.5	12	.83	3.6

¹ Compiled by Don R. Luethy, Fish Management Supervisor.

² Includes catfish, pickerel, and an occasional gar or mudfish.

Table 18.
OPENING DAY CREEL CENSUS DATA FROM THREE WEST FLORIDA WATERS 1948-1950

Location	Date	Fish men Checked	Total Number Fishermen	Total Number Fish Caught	Total Pounds Fish Caught	Average Number Fish per Person	Average Pounds Fish per Person
Ochesssee Pond	June 1, 1949	43	840	10,993	4,786	13.09	5.70
	June 1, 1950	131	851	4,633	1,276	5.44	1.49
Blue Springs (Jackson County)	June 1, 1949	103	400	3,850	1,839	9.64	3.47
	June 1, 1950	66	451	4,736	1,173	10.50	2.60
Dead Lakes	June 1, 1948	44	1500	14,535	5,445	9.69	3.63
	June 1, 1949	170	1962	21,190	9,028	10.80	4.60
	June 1, 1950	86	1880	17,296	7,332	9.30	3.90

bottom corners of the net and concentrates them into one corner where he removes them by dip-net. Catfish and other rough fish are placed in the operator's boat, while game fish are thrown back into the waters unharmed. Catches of game fish by pound net are also low, and as all can be returned immediately unharmed, the pound net is not considered detrimental to game fish populations. A complete listing of catches and other data surrounding pound net operations in Lake Istokpoga and the St. Johns River may be found in Table 20.

HOOP NETS

Some studies have also been made of the use of hoop nets in certain areas of the St. Johns River. A hoop net is a cylindrical trapping device made of mesh webbing stretched over large hoops, usually of wooden construction, with one or more mesh throats in the mouth or down-stream end. The maximum diameter permitted is 6 feet with minimum mesh allowed, 3 inches stretched. As in the case of traps, all hoop nets must have the owner's name upon them. Data gathered from hoop net catches in the St. Johns River is presented in Table 21.

SHAD AND HERRING SEINES

Short haul seines are fished seasonally in certain parts of the St. Johns River and Crescent Lake for the purpose of catching the migrating American shad and herring, or alewives. These nets are fished exclusively for shad and herring, although they do incidentally catch a few catfish and other fresh-water species. The maximum length permitted is 600 yards with a minimum mesh of 2 inches stretched. These devices are traditionally fished on specific locations or haul grounds which have been prepared by clearing or filling in with shell by the operator holding the permit, and in general, very few game fish are taken in the areas where most of the fishing by this gear is done. However, it will be noted in Table 22 that studies made on shad and herring seines in certain portions of Lake George took a high percentage of game fish. For this reason, all permits for this gear were discontinued following these studies in Lake George and are now concentrated in the St. Johns River north of Lake George and in certain locations in Crescent Lake. Complete data on catches by this gear may be found in Table 22.

GILL AND TRAMMEL NETS

Both gill and trammel nets are permitted in certain areas of the St. Johns River for the primary purpose of taking mullet. Gill and

Table 19.

**COMPOSITION OF CATCH BY EXPERIMENTAL WIRE TRAPS
IN SEVERAL FLORIDA WATERS**

Name of Waters County Date of Survey	Lake Okeechobee December, 1948- May, 1949		Lake Wilmington Indian River January- June, 1950		Lake Hatchineha Osceola February 14- March 2, 1949		Lake Istokpoga Highlands March, 1949- July, 1950	
	Pounds	Per- centage	Pounds	Per- centage	Pounds	Per- centage	Pounds	Per- centage
Largemouth Bass			2		8	2.3	126	0.1
Black Crappie			2		4	1.1	123	0.1
Bluegill	2		5,622	8.5	12	3.4	7,022	4.0
Shelleracker			2		1	0.3	247	0.1
Redbreast							150	0.1
Miscellaneous Sunfish							16	
Channel Catfish	2,722	66.1	22,538	34.2	202	57.2	147,088	81.5
White Catfish	1,393	33.8	31,243	47.5	114	32.3	23,324	12.9
Speckled Bullhead			4,772	7.3			58	
Yellow Bullhead			88	0.1	2	0.6	16	
Longnose Gar			185	0.3			763	0.4
Other Gar			110	0.2			84	
Mudfish			298	0.5			45	
Gizzard Shad			881	1.3	10	2.8	1,143	0.6
Chub Sucker			52	0.1			29	
Golden Shiner			17				271	0.2
Total fish taken	4,117	100	65,812	100	353	100	180,505	100
Number trap days	1,279		3,295		230		29,473	
Average pounds per trap day	3.2		20		1.6		6.1	
Pounds rough fish	1,115		60,184		328		172,821	

trammel nets are long, fine-threaded nets, having floats and leads similar to those of a seine, but which depend upon entangling or "gilling" rather than surrounding the fish. Maximum allowable lengths are 300 yards for gill nets, 200 yards for trammel nets, and minimum mesh is 3 inches stretched. The gill net is one of the most selective types of fishing net, and can be used only in specific areas and with such mesh sizes that minimize the take of other than commercial species. For instance, catches by gill nets in the St. Johns River near Green Cove Springs showed a catch of less than 4 percent by weight of game fish, whereas similar netting operations in Lake Apopka yielded as high as 20 percent of game fish. The status of the fish population and catch of game fish determines to a great extent whether or not this type of gear may be permitted in a specific area. Data obtained from gill and trammel net catches may be found in Table 23.

Table 20.

**COMPOSITION OF CATCH BY EXPERIMENTAL POUND NETS
IN TWO FLORIDA WATERS**

Name of Waters..... County..... Date of Survey.....	Lake Istokpoga Highlands July-December, 1948		St. Johns River Putnam April-June, 1949	
	Pounds	Per- centage	Pounds	Per- centage
Largemouth Bass.....			47	1.0
Black Crappie.....	18		360	7.9
Bluegill.....	23	0.1	45	1.0
Shelleracker.....	1		8	0.2
Redbreast.....	6		2	
Miscellaneous Sunfish.....	27	0.1	1	
Channel Catfish.....	27,906	78.6	1,926	42.3
White Catfish.....	7,428	20.9	1,516	33.2
Speckled Bullhead.....			229	5.0
Yellow Bullhead.....			1	
Longnose Gar.....	21	0.1	83	1.8
Other Gar.....	81	0.2	4	0.1
Mudfish.....	5		4	0.1
Gizzard Shad.....			139	3.0
Chub Sucker.....			3	0.1
Golden Shiner.....			1	
American Shad.....			4	0.1
Mullet.....			148	3.2
Miscellaneous Salt Water Species.....			43	1.0
Total Fish Taken.....	35,516	100	4,564	100
Number of Net Days.....	101		90	
Average pounds per net day.....	351		51	
Pounds of rough fish taken.....	35,441	99.8	4,101	89.9

Table 21.

**COMPOSITION OF CATCH BY EXPERIMENTAL HOOP NETS IN THE
ST. JOHNS RIVER DURING AUGUST-OCTOBER, 1948**

	Pounds	Percentage
Largemouth Bass.....	87	0.4
Black Crappie.....	262	1.1
Bluegill.....	4	
Redbreast.....	33	0.1
Miscellaneous Sunfish.....	12	0.1
Channel Catfish.....	8,602	35.4
White Catfish.....	12,703	52.3
Speckled Bullhead.....	2,584	10.6
Total fish taken.....	24,287	100
Number of net days.....	3,422	
Average pounds per net day.....	7	
Pounds rough fish taken.....	23,889	98.3

Table 22.

**COMPOSITION OF CATCH BY EXPERIMENTAL SHAD AND HERRING
SEINES IN LAKE GEORGE AND ST. JOHNS RIVER
DURING FEBRUARY, 1949**

Name of Waters..... County.....	Lake George Lake and Volusia		St. Johns River Putnam	
	Pounds	Per- centage	Pounds	Per- centage
Largemouth Bass.....	1,172	39.6	15	0.4
Black Crappie.....	165	5.6	20	0.5
Bluegill.....	855	28.8	8	0.2
Shelleracker.....	75	2.5		
Redbreast.....	20	0.7	5	0.1
Miscellaneous Sunfish.....			2	
Chain Pickerel.....	6	0.2		
Channel Catfish.....	529	17.8	74	2.0
White Catfish.....	8	0.3	14	0.4
Speckled Bullhead.....	99	3.3	1	
Longnose Gar.....			40	1.1
Other Gar.....	9	0.3	3	0.1
Gizzard Shad.....	1		47	1.3
Chub Sucker.....			1	
Golden Shiner.....	6	0.2		
Hickory Shad.....			8	0.2
American Shad.....			1,289	34.5
Herring (Alewives).....			2,205	58.9
Mullet.....			3	0.1
Miscellaneous Salt Water Species.....	22	0.7	6	0.2
Total fish taken.....	2,967		3,741	
Number of hauls.....	4		18	
Average pounds per haul.....	741		208	
Total pounds rough fish taken.....	674	23.6	3,691	98.8

HAUL SEINES

Haul seines are at present permitted in certain parts of the St. Johns River and in Lake Okeechobee for the purpose of taking catfish and other rough fish. The haul seine is a long piece of mesh webbing having floats at the top and leads on the bottom, enabling it to stand perpendicular in the water. It is usually laid out of a boat and towed in a circle to encircle the fish of a given area. Upon bringing the circle of the net into a continuously smaller area, the fish are finally concentrated into a pocket or bag, from which they are removed. Under present restrictions, all game fish are released immediately upon being taken, while catfish, gars, gizzard shad, suckers, and other rough fish are retained by the fishermen. Mortality of game fish taken in haul seines is generally small, and it is felt that the benefit derived from the removal of the catfish and rough fish more than offsets any small loss in game fish taken by this

Table 23.
COMPOSITION OF CATCH BY EXPERIMENTAL GILL AND TRAMMEL
NETS IN SEVERAL FLORIDA WATERS

Name of Waters...	St. Johns River				Lake Apopka (Orange County)			
	Clay County May and June, 1949				Near E.L. Apopka December, 1949- January, 1950		Near Oakland January 16-31, 1950	
Type of Gear.....	Gill Net		Trammel Net		Gill Net		Gill Net	
Length of Net.....	250 yards		250 yards		200 yards		200 yards	
Minimum Mesh (stretched)...	3¼ inches		3 inches		5 inches		5 inches	
Species Composition	Pounds	Per-centage	Pounds	Per-centage	Pounds	Per-centage	Pounds	Per-centage
Largemouth Bass.....	8	0.3	24	1.4	1,234	16.9	45	1.1
Black Crappie.....	11	0.4	11	0.7	172	2.3	22	0.5
Bluegill.....	103	3.9	35	2.1	31	0.4	3	
Chain Pickerel.....	1							
Miscellaneous Sunfish.....	1		1					
Mullet.....	1,491	56.2	736	43.9				
Channel Catfish.....	688	26.0	647	38.6				
Longnose Gar.....	103	3.9	14	0.8	61	0.8	1,152	27.2
Other Gar.....	25	0.9	4	0.2				
Mudfish.....	1				1,852	25.3	206	4.9
Gizzard Shad.....	85	3.2	152	9.1	3,753	51.3	2,765	65.4
Chub Sucker.....	14	0.5	9	0.5				
Golden Shiner.....	4	0.2	19	1.1				
Miscellaneous Fresh Water Species.....					204	2.8	37	0.9
Miscellaneous Salt Water Species.....	116	4.5	27	1.6				
Total fish taken.....	2,651	100	1,679	100	7,307	100	4,230	100
Total runs made.....	60		24		24		6	
Average pounds per run.....	44		70		304		705	
Total pounds rough fish.....	2,527		1,608		5,870		4,160	

Table 24.
COMPOSITION OF CATCH BY EXPERIMENTAL SLAT BASKETS IN THE
SUWANNEE RIVER, IN DIXIE COUNTY, APRIL-JUNE, 1950

	Pounds	Percentage
Largemouth Bass.....	7	0.9
Bluegill.....	1	0.1
Redbreast.....	2	0.2
Warmouth.....	1	0.1
Channel Catfish.....	717	91.5
White Catfish.....	43	5.5
Speckled Bullhead.....	13	1.7
Total fish taken.....	784	100
Number trap days.....	1,185	
Average pounds per trap day.....	0.66	
Total pounds rough fish.....	773	98.7

Table 25.
MONTHLY POUNDAGES¹ OF CATFISH REPORTED² BY LICENSED
WHOLESALE FRESH WATER FISH DEALERS FOR 1950

January.....	1,086,197
February.....	979,644
March.....	1,021,547
April.....	886,906
May.....	824,271
June.....	691,562
July.....	685,459
August.....	1,162,977
September.....	813,841
October.....	855,864
November.....	1,316,424
December.....	1,327,106
Total.....	11,651,798

¹ All poundages reported as dressed weights were converted to rough weights by multiplying x 2.

² Includes the southern channel catfish, the white catfish, the speckled bullhead, and the yellow bullhead.

method. The haul seine contributes a major part of the catfish taken from the particular waters in which it is permitted each year and enables harvesting of great numbers of these species which could not otherwise be taken. Fish Management Division personnel supervise the overall fishing activities of the haul seine operations and gather information daily on the composition of the catch taken by this gear. This information assists in determining the status of the adult fish populations of the waters involved and is a source of supply of fish used in calculating growth and age, and in obtaining other valuable information. Maximum length now permitted on haul seines is 1600 yards with a minimum mesh of 3 inches stretched. Haul seines may be fished only on Monday through Friday between the hours of 3 AM and 5 PM. A four-months closed season on the operation of haul seines is in effect on both Lake George and Lake Okeechobee. Data on the monthly composition of the catch by haul seines may be found in Tables 12 and 13.

SLAT BASKETS

Studies of the catch by wooden slat baskets were also made during this biennium in several Florida waters, including the Suwannee River, the Escambia River, and Yellow River. The slat basket is a cylindrical trap composed of wooden slats about 6 feet in length and is not over 20 inches in diameter. The downstream end or mouth has one or more funnels or throats also constructed of wooden slats into which the fish enters but cannot escape. Minimum

distance between slats at the head or upstream end must be 1½ inches to permit the escape of small fish. Experimental data on the catch by these devices indicate that the wooden slat basket is almost wholly specific for catfish, as other fish very seldom enter it. As a result, it is felt that this is one of the most effective means of taking catfish from suitable waters without interfering with the game fish populations. Data gathered on catch by wooden slat baskets is listed in Table 24.

Wholesale Fresh Water Fish Dealers Reports

Since January 1950 a special effort has been made to obtain complete records of all fresh water fish taken by commercial fishermen, as required by Section 372.68 of the Statutes of Florida. Excellent cooperation was received from most of the dealers, resulting in data believed to be more than 90 percent complete. The total catfish taken, as reported by the dealers, is listed by month in Table 25.

Special Reports and Publications

A number of special reports and publications have been issued covering certain phases of fisheries investigations and management, and are listed below. Some of these may be obtained from the office in Tallahassee.

Management of Florida's Fresh Water Fisheries, by John F. Dequine. Reprinted from Vol. 78 of the Transactions of the American Fisheries Society, 1950.

*Results of Some Tagging Studies of the Florida Largemouth Bass *Microp-terus Salmoides Floridanus* (LeSueur)*, by John F. Dequine and Charles E. Hall, Jr. Reprinted from Vol. 79 of the Transactions of the American Fisheries Society, 1950.

Is the Florida Smallmouth a Fable? by John F. Dequine. Reprinted from the September 1949 Florida Wildlife (also under the title "Identifying the Florida Basses").

The Lowdown on Balance, by John F. Dequine. Reprinted from Florida Wildlife, May 1950.

Results of Rough Fish Control Operations in Lake Apopka during December 1949 and January 1950. Mimeographed report, dated 14 February 1950.

**Recommendations for Management of Commercial Fishing Activities in Certain Waters of Florida*. Mimeographed report, dated 17 January 1950.

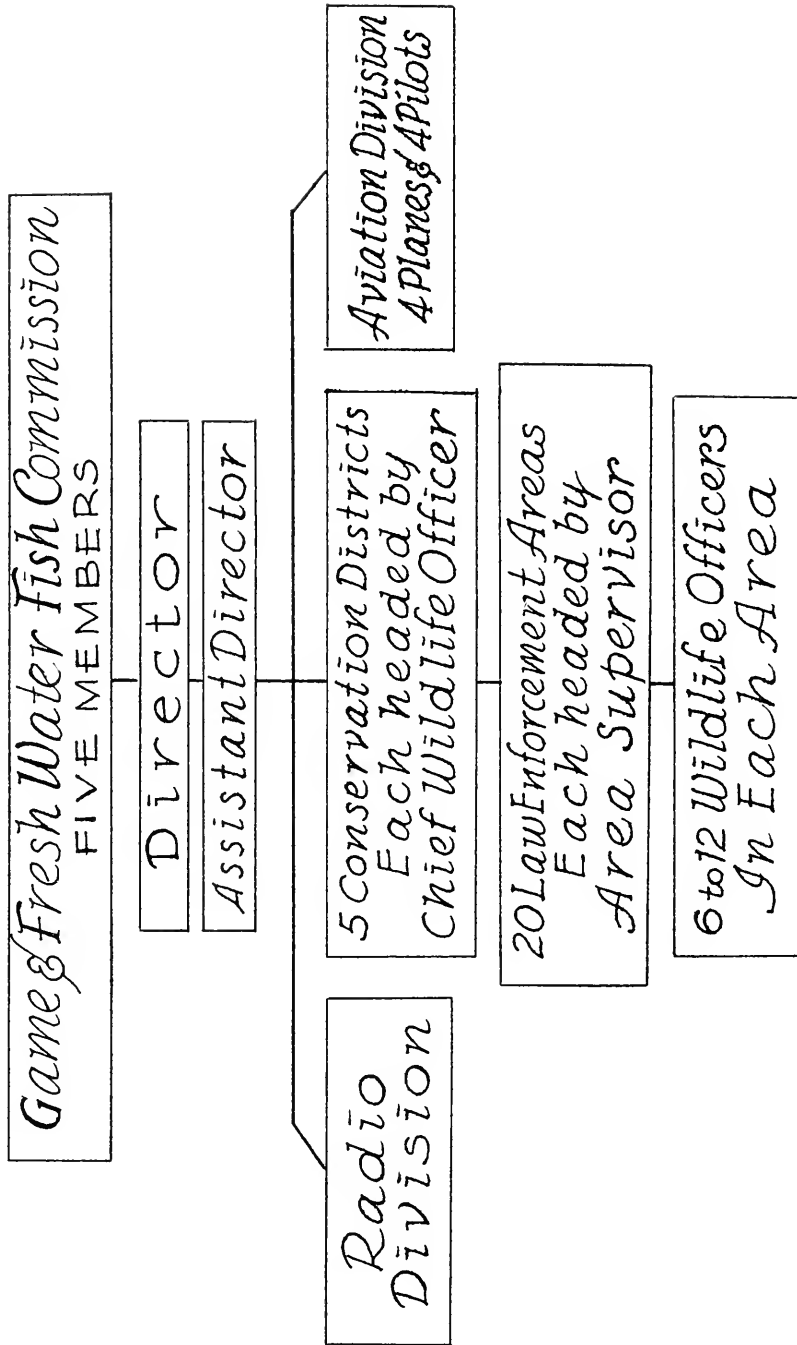
**Report on Fisheries Investigation Projects for the Year Ending June 30, 1949*. Mimeographed report, dated 19 July 1949.

**Rough Fish Control Operations in Lake Thonotosassa*. Mimeographed report, dated 15 May 1950.

**A Report on Fisheries Investigations of the St. Johns River and Lake Okeechobee, 1948-50, With Recommendations for Management*. Mimeographed report, dated 18 August 1950.

*Supply limited

LAW ENFORCEMENT ORGANIZATION CHART



LAW ENFORCEMENT DIVISION



BEN McLAUHLIN
Ass't Director

JOHN SWIFT.....*Chief, First District*
LESTER MIKELL...*Chief, Second District*
FRANCIS VILLAR.....*Chief, Third District*
CURTIS WRIGHT...*Chief, Fourth District*
WALDO PRIEST.....*Chief, Fifth District*

LAW ENFORCEMENT

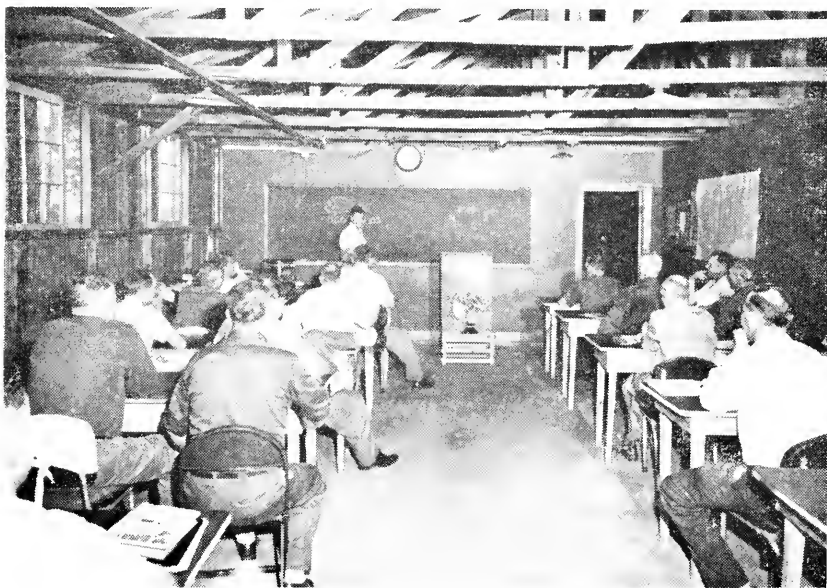
Florida's Wildlife Officers have the gigantic task of enforcing the game and fish laws and assisting in game and fish management on 39,000,000 acres of land and water. Few of us realize that Florida is the second largest state east of the Mississippi River, that we have the longest coast line in the entire nation, that we possess 30,000 named fresh water lakes, and that we are rated as second in the United States in woodland area. These facts show the tremendous responsibility facing our Wildlife Officers. Each Wildlife Officer in Florida is responsible for the game and fish on almost one-quarter million acres.

During the past two years a number of important policy changes have been made by the Commission in the Law Enforcement Division. This Division is under the direct supervision of the Commission's Assistant Director. Each of the five conservation districts is supervised by a Chief Wildlife Officer. Each district is subdivided into four law enforcement areas, headed by an Area Supervisor. The Area Supervisor and the Wildlife Officers under his jurisdiction are directly responsible for law enforcement activities in their territory.

To qualify as a Wildlife Officer, an individual must possess certain qualifications. First, he must be between the ages of 21 and 45 years at the time of employment. Second, he must be a high school graduate, or better. Third, he must be able to pass a rigid physical examination, and fourth, he must be a person of good character and good standing in the community in which he resides. Meeting the above minimum requirements, the prospective officer is then carefully screened and examined. If found to be fully qualified, he is then eligible for employment. All eligible applicants are given competitive examinations. Vacancies are filled by those making the highest score. Realizing the lack of professional training in game and fish management activities, and in law en-

forcement work, of the average person eligible for employment as a Wildlife Officer, the Commission established a training school for all its officers. The idea of creating a Wildlife Officers School was undoubtedly one of the foremost steps taken by the Game and Fresh Water Fish Commission in recent years. The Commission has been a firm believer that periodic education is a prime essential for an aggressive and efficient wildlife conservation department. The actual establishment of this school in July 1949 marks a milestone in a program that has been envisioned for some time. Florida is one of the few states in the nation that can boast of a

More than 200 Wildlife officers have attended the Commission's school. Future Wildlife officers receive extensive training here.



credible, educational program for both its new and old Wildlife Officers. The school as now established, is located at the old Montbrook Air Base, three miles west of the City of Williston. This abandoned air base, with its spacious grounds, splendid facilities and central location, afforded the ideal essentials of a state wildlife conservation school. The site is under a ten-year renewable

lease as a gift to the Commission from the City of Williston. The purpose of the school is to prepare new officers for their job and to keep our law enforcement body abreast of the rapid advancements in conservation. Wildlife conservation principles and techniques, like those of other organizations, change and improve through the years. The personnel of any organization will become stagnant if they are not currently presented with the latest available information concerning their work. The school also serves to rectify common errors frequently made by officers and to correct them on common misconceptions of law and related subjects.

The functions and program of the Wildlife Officers School ran as follows: Eight classes of 20 wildlife officers have attended the school to date; the school is not operated during the period from October through February because of the tremendous pressure brought about by the hunting season. A rigid 28-day curriculum was presented that was highly condensed; nothing being offered that was not essential or practical. The material presented during this month of training is almost equivalent to a semester's work in the average college. The school day commences at 6 A.M. and continues until 10 P.M. The material presented can best be classified in three categories: Lectures, demonstrations and field trips. Under the lectures, the following courses are given: The Constitution of Florida, Interpretation of the Wildlife Code, Commitment and Imprisonment, Subpoenas, Searches, Seizures, Forfeitures, Map Reading, Predator Mammals and Birds, Game Foods, First Aid, Fish Management, Game Management, Federal Court Procedure and many other subjects. Demonstrations included 2-way radio work, self defense training, construction of feeding and trapping devices, and other subjects. Field trips included studies in the Ocala National Forest, Marineland Studios, Silver

ENFORCEMENT BUDGET BY DISTRICTS

DISTRICT	NUMBER OF OFFICERS	OPERATING BUDGET
First	33	\$142,500.00
Second	37	142,500.00
Third	36	142,500.00
Fourth	29	108,000.00
Fifth	35	140,500.00
	<hr style="width: 10%; margin: 0 auto;"/>	
Total	170	\$676,000.00

Springs, and Giest Wildlife farms. The Commission feels that the results of this professional improvement program in the Wildlife Officers School have been highly satisfactory and will show decided benefits to Florida's game and fish in the future years to come.

A statewide uniform salary and expense schedule has now been established. All Wildlife Officers are paid \$2400. per year for the first year's work. At the end of one year, if their services have been satisfactory, they are given a 5% increase and each year thereafter a 2% increase until they reach the maximum pay of \$2820. per year. Assistant Chiefs receive a salary of \$3,000. per year with the same annual percentage increases in salary until a maximum pay of \$3600. per year. Chief Wildlife Officers are paid \$4200. per year. Expense allowances are granted in conformity to State law, which provides an allowance of \$7.50 per 24-hour period when the officer is away from home, or his official headquarters, and \$2.00 per 24-hour period when he is on camp duty. Wildlife Officers cannot perform a superior job unless they are properly equipped. Much emphasis has been placed on the problem of properly equipping all officers. It was found that a saving of approximately \$700. per year could be effected by having officers travel in state-owned vehicles rather than personally owned vehicles where mileage was paid. Now all officers travel in state owned vehicles. By acquiring good boats and motors, swamp buggies, airboats, airplanes and other specialized equipment Florida's Wildlife Officers can now successfully cope with wildlife law enforcement problems.

During the past two years we have added 1 amphibian and 1 seaplane to our aviation department. We now have aircraft based in Districts 1, 2, 4 and 5. Land planes are in Districts 1 and 4; the amphibian in District 5, and the seaplane in District 2. The

**ARREST REPORT FOR BIENNIUM
1949-50**

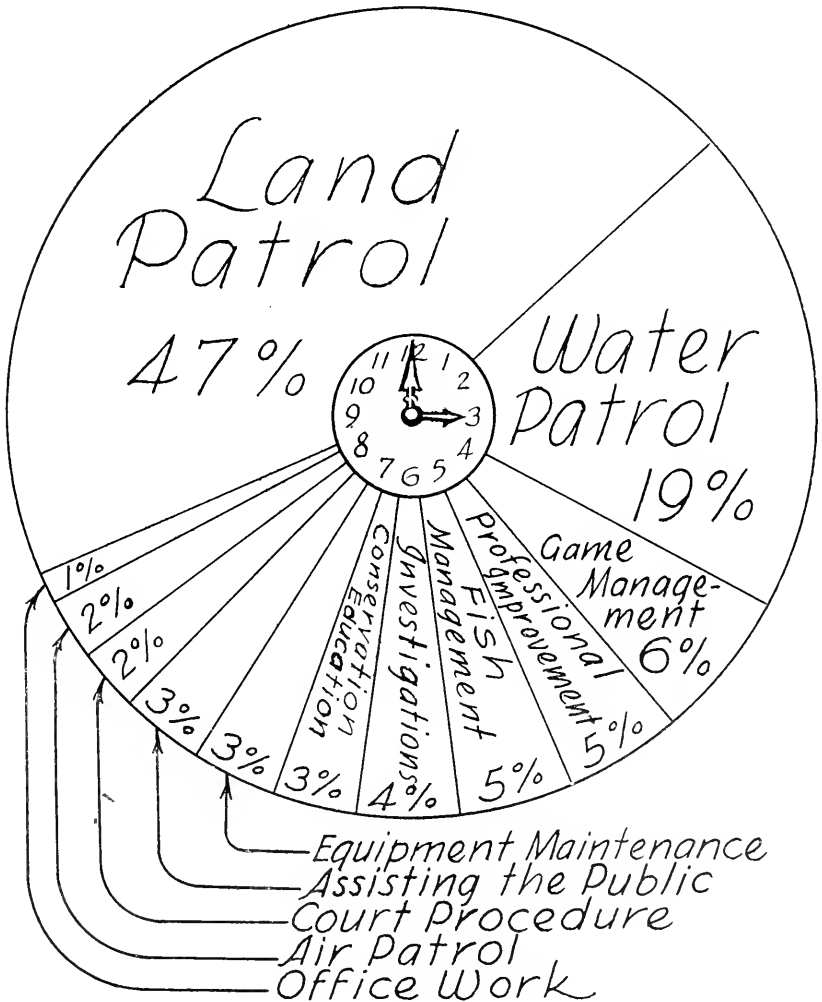
	Arrests	Convictions	Acquittals	Pending
District One	851	765	72	14
District Two	889	782	87	20
District Three	1,041	919	73	49
District Four	367	330	22	15
District Five	729	677	39	13
Totals	3,877	3,473	293	111

planes are used in our more heavily wooded areas to patrol for hunters, check on wildlife, and assist the ground vehicles by directing them to possible violators, the shortest and best way, thus saving time and equipment. They are also used as radio stations. All of our aircraft are equipped with 2-way radios that have a range of about 125 miles which makes it possible to send messages from one district to another. Our seaplane and amphibian are used in the same way, but are also used in checking boat licenses, fishing and water fowl hunters. They likewise are used in search and rescue work and in various game and fish management activities, including counts and population studies. It is anticipated that when sufficient funds are available these planes will be equipped with spraying devices and will be used to help control the hyacinth menace in Florida. All planes are kept in the best of condition and all flying Wildlife Officers are CAA licensed pilots. This makes for dependable and safe operations at all times. The tremendous visibility and huge area coverage afforded by the use of airplanes not only has brought about a greater efficiency in law enforcement, but has resulted in a great savings in operating expenses. The Aviation Section is headed by a Chief Pilot who is in charge of the entire statewide aviation program.

Commission equipment includes many special types. This air boat takes officers through swamps, marsh and glades.



How the Average
 FLORIDA
 WILDLIFE OFFICER
 Distributes His Time



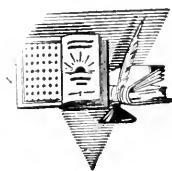
Along with the Commission policy of raising personnel standards and qualifications, it is likewise a policy of the Commission to improve the personal appearance of the officers. A standard uniform has been adopted and is now being worn by all Wildlife Officers. The present uniform consists of a trooper hat, black neck tie, khaki shirt, trousers, and jacket, and black shoes or boots. The new uniform was adopted upon the recommendation of a committee of Wildlife Officers who felt that a washable khaki was more practical, more economical to purchase and keep clean. Each officer now possesses 7 sets of uniforms so that a freshly laundered uniform may be worn each day of the week. The cost of uniforms is borne by each officer.

The Law Enforcement Division is required to perform many functions other than enforcing the game and fish laws. Wildlife Officers are now serving as game and fish management agents, educators, and public servants, rather than just "game wardens." The chart on page 101 will best illustrate how Florida's Wildlife Officers spend their time.

Two-way radio has increased the officers' range of operations. Portable pack sets as well as mobile units in planes and jeeps are standard equipment.



INFORMATION AND EDUCATION DIVISION



CHARLES H. ANDERSON
Director, Information-Education

INFORMATION—EDUCATION

AN amazing growing public interest in the problems of wildlife conservation during the last two years resulted in tripling the importance and duties of the Information and Education division. During this biennial period, literally thousands of requests for conservation information and educational programs were received from public schools, youth organizations, women's clubs, sportsmen's associations, churches and civic organizations. These requests sought qualified speakers, up to date movies as well as an avalanche of educational and informative literature. In a measure, we succeeded in meeting most of the requests.

Numerous department heads were "drafted" to speak before the organizations. Wildlife officers were given short courses in public speaking as well as the operation of motion picture equipment. As a result, many of the officers themselves assisted greatly in keeping the public informed of the state's program designed to protect and improve our wildlife heritage.

The division of information and education itself has operated with but four regular and one part-time employees. Namely, they include the director, assistant director, a writer, a secretary and a combination mimeograph operator and stockroom clerk.

Throughout the two-year period, hundreds of newspaper releases have been turned out to the two major news services as well as all of Florida's daily and weekly newspapers. Our clipping service consistently disclosed that the service has maintained a high standard of success. Doubtlessly a major portion of this success resulted from the fact that the department has been kept under the guidance of qualified and experienced newspapermen. Under their direction no effort has ever been made to release "run-of-the-mine" publicity stories. Instead, each press release

was required to contain up to the minute and important news before it was sent out. This system likely has resulted in the department's high percentage of readers.

Throughout the period an evident growing national interest in Florida's hunting and fishing resulted in scores of requests from widely separated out-of-state newspapers, national magazines and professional writers seeking pictures, data and finished stories covering the two subjects. As a result, Florida has received invaluable publicity that doubtlessly resulted in the arrival of hundreds of out-of-state visitors and countless others who decided to remain as permanent residents.

Information and Education maintains close contact with all organized sportsman groups. I and E furnishes films, speakers and other entertainment.



Florida Wildlife Magazine

FLORIDA WILDLIFE, the State Game and Fresh Water Fish Commission's monthly hunting, fishing and outdoor publication, has registered an amazing growth since its inception in June, 1947. Until September 1949 the magazine was mailed free of charge to subscribers. At that time the list of subscribers was approaching the 18,000 mark, which imposed a financial burden the Commission felt it no longer could bear. As a result, the magazine was placed on a \$1.00 annual subscription basis, and the list of subscribers dropped to approximately 5,000. Since then, through promotion and natural growth the subscription list nears 25,000. In

an effort to place the publication on a self-sustaining basis, select advertising was first accepted in the September 1950 issue and the magazine was enlarged from 24 pages to 48. FLORIDA WILDLIFE today has subscribers in every state in the Union as well as 28 foreign countries. Increased circulation and enlarged publication made it necessary to augment the staff handling circulation, advertising, and mailing. The staff today includes a circulation clerk, two advertising salesmen, a graphotype operator and a file clerk. Based on the normal influx of new subscriptions now being received, it is anticipated that the magazine eventually will reach 50,000.

Boys Industrial School Zoo

The division of Information and Education took a long step forward in the field of wildlife education in 1950 when it assumed an active and important part in placing a wild animal and bird zoo at the Florida Boys' Industrial School, Marianna. After many months of careful planning with the school officials, the zoo installations were constructed exclusively by school students and the cages were full stocked by qualified game commission wildlife officers working under the direction of the division of informa-

Boys' school zoo serves two-fold purpose. Rehabilitation projects for boys, animals for Commission's fair exhibit.



tion and education. Today the zoo is recognized as one of the finest in the entire state and is maintained exclusively by honor students of the school. Formal opening of the zoo, during the summer of 1950, attracted statewide publicity and the attendance of high state officials and civic leaders from many sections of the state. In addition to its educational value to the youngsters at the school, the zoo has served as a "wildlife bank" for the Game Commission's fair exhibit. During the fall and spring months when the Commission's exhibit is on display at fairs and expositions in north, northwest, central and south Florida, all animals and birds used for that purpose are "borrowed" from the Marianna zoo.

Fair Exhibits

During this two year period the Game and Fresh Water Fish Commission has very definitely entered the show business. In 1949 its 50 foot wildlife exhibit was booked at 24 fairs and expositions in various sections of the state. Increased demands for a similar exhibit in 1950 necessitated the construction of a second unit. Indications are that our exhibits will be viewed at more than 30 fairs this year by over 3,000,000 persons.

A new 50 foot exhibit was designed for use in 1950. It is a replica of two circus wagons and a steam calliope containing 10 cages of animals and birds and a 20 foot game fish aquaria. The animals and birds, a fair sampling of Florida's wildlife, attract great interest from natives and visitors alike wherever they are shown. The second unit, taking a space of but 10 feet, offers an opportunity to compare alligators and crocodiles.

The commission's game and fish exhibit was viewed by more than 3,000,000 people in 1950.



Special Promotions

Fishing parties for youngsters ranging from three to 15 years of age probably have constituted the most noteworthy promotion of the division of information and education during the period covered by this report. One-day fishing parties for youths have been conducted at St. Petersburg, Orlando, Tallahassee, Panama City, and Lakeland, and the Commission has offered assistance in promoting similar parties in many other Florida cities. Prizes awarded to scores of youthful anglers at these parties are donated by local merchants. The Game Commission supplies hundreds of poles and lines to children who have none. In addition they provide thousands of fishing worms for bait. A staff of wildlife officers lend a helping hand and devote their energy to looking after the safety of the youngsters.

As an example of the success of these parties and the interest they have attracted, more than 5,000 youths attended this year's annual fishing party at Orlando. The affairs have become so popular that it has become utterly impossible to fulfill requests for similar fishathons that have been received from many other towns and cities throughout the state.

* * * * *

Kids' Fishathons provide fishing for as many as 5,000 children in one day. Prizes are offered as well as lessons in conservation.



During recent years the Florida State Fair officials at Tampa have designated one entire day of the fair as Conservation Day, and the division of information has made an effort each year to supply an outstanding attraction on that day. During the 1950 Florida State Fair thousands of people were attracted to a reptile lecture and a rattlesnake milking demonstration offered through the courtesy of Ross Allen of the Ross Allen Reptile Institute at Silver Springs. During the last two years, at this same fair, the Game Commission in addition to its extensive wildlife and fish exhibit has operated a permanent motion picture theatre inside the fish and game building. The Little Theatre has a seating capacity of 250 and operates continuously from early morning until late at night during the annual 10-day stay there. Wildlife films relating to Florida thrill the audiences.

Motion Picture Films

The division of information and education's film library has been considerably enlarged during the last two years. Despite the enlargement, demands for films by schools, clubs and other organizations have far exceeded the supply. Two additional color films designed to run 20 minutes each are now near completion and will be available soon.

At present the departments film library consists of sixteen short subjects on hunting and fishing. In most instances three copies of each title are in the library. The University of Florida has on permanent loan a thirty minute feature, distributed by this department, titled 'Our Heritage' for use in their Wildlife Conservation program.

During the 1949-50 period films booked through the Tallahassee office were distributed as follows:

Times shown	Florida Showings	Out of State	Total Audience
2016	1200	816	536,256

These figures do not include several hundred other shows presented by a number of qualified Wildlife Officers in their public relations duties, to schools and civic groups.

Also, in addition to the above figures, a selection of six films have been shown at the Commission's own Wildlife Theatre at the Florida State Fair, Tampa, for a total of twenty days to an estimated audience of 28,000.

Although the field of television has not been explored by the department a number of requests have been received. Several

of our films have been used on T. V. with outlets in the northern states.

Requests for literature covering Florida's wildlife have doubled in the past two years. During that period thousands of pamphlets, booklets and brochures have been distributed free of charge to interested groups and individuals in Florida as well as throughout the nation. A new pretentious book, covering Florida's fresh water fish and fishing and containing the names of all fresh water fish camps, will soon be completed. Another book describing poisonous reptiles, how to avoid them, and what to do in case of snake bite is nearing completion.

COMMUNICATIONS DIVISION



J. RHETT McMILLIAN
Director of Communications

COMMUNICATIONS DIVISION

THE Communications Section was set up in late 1948 as a part of the Law Enforcement Division. In the fiscal year of 1950 the Division was given its own budget of \$18,560 and an operating framework.

At the present time the Division is composed of the Director and one engineer. One high school student is employed on part time basis under the Diversified Cooperative Training program, as assistant in the repair laboratory.

In the short time of its existence the Communications Division has grown into a full fledged unit of the Game Commission. Begun in 1948 as an experiment to assist the wildlife officer, the Division has earned itself a permanent position as a direct aid to the Law Enforcement Division.

The Division now has sixty two-way radios and ten portable pack sets in operation over the State. Before the end of the fiscal year the total number of radios in operation will number one hundred, giving each District approximately twenty two-way radio units each. These radios are installed in jeeps, trucks, airplanes, swamp buggies, hydroplanes and amphibians. The severe service demanded of such delicate equipment was a problem which required almost a year to successfully solve. Today, the Commission's radio program is well on its way to become one of the finest of its type in the nation.

The addition of the radio-equipped vehicles and airplanes has greatly extended the operating range of the wildlife officer. The radio-equipped officer can accomplish more work quicker than before; numerous arrests of violators and saving in wear and tear and time has resulted in the use of radio.

The function of the Communication Division is to install and maintain the two-way radios in the wildlife officer's vehicle. A well equipped repair laboratory is maintained in the field from which service and installation trips are made to the various law enforcement districts. At this laboratory are kept all the detailed reports and inspections required by the Federal Communications Commission which has direct authority over the operation of the radio system.

The largest project of the period, beside the installation of equipment, has been the entire modification of all radios in the field as required by the FCC and our own observations of best operation in the rugged type of service offered by conservation work. This change was made entirely in our own laboratory and by our own personnel.

With adequate ground and air communications the wildlife officer now patrols larger and more remote areas.



ACCOUNTING DIVISION

JOEL McKINNON
Administrative Ass't.

With the tremendous increase in receipts and disbursements over the past five years, more and more work has fallen on this Division.

For instance, during the fiscal year of 1946-47, the Commission took in \$833,297.62. In 1947-48 this was increased to \$1,024,616.59 which, in the one year period showed an increase of \$191,318.97. During the fiscal year 1948-49 the Commission collected \$1,124,927.79 showing another increase of \$100,311.20. In the past fiscal year 1949-50, the Commission collected \$1,226,204.06, thus showing an average increase over a three-year period, of over \$100,000 per year. On the basis of receipts for the first six months of the fiscal year 1950-51 the estimated income will reach more than \$1,300,000. Therefore, along with the expansion of the Game Commission, we have been increasing our revenue from the sale of hunting and fishing licenses, the collection of court costs, the sale of Magazine subscriptions, and magazine advertising. The following pages contain a complete statement of Commission receipts and expenditures for the fiscal years 1948-49 and 1949-50. We have also prepared a financial statement for the first six months of this fiscal year 1950-51 in order to bring this report up to date since we prepare these statements on a fiscal year rather than a calendar year.

GAME & FRESH WATER FISH COMMISSION
FINANCIAL STATEMENT JULY 1, 1948, thru JUNE 30, 1949

	Item Total	Source Total	Total
Available Cash Balance, July 1.....			\$ 530,339.33
RECEIPTS BY SOURCE			
Sale of Sporting License			
Fishing.....	\$568,107.00		
Hunting.....	427,644.50		
Trapping.....	2,544.00		
Alien Hunting Permits.....	50.00		
U.S. Forest Permits.....	9,096.10	1,007,441.60	
Gulf Hammock Permits.....			
Sale of Commercial License			
Retail Fish Dealer.....	\$ 11,840.00		
Commercial Boat.....	1,914.20		
Wholesale Fish Dealer.....	1,750.00		
Boat for Hire.....	9,414.00		
Game Farm.....	180.00		
Wholesale Fur Dealers and Agents.....	1,010.00		
Local Fur Dealers and Buyers.....	90.00		
Non-Resident Retail Fish Dealer.....	50.00		
Non-Resident Commercial Boat.....	10.00		
Guide License.....	260.00	26,518.20	
Other Sources			
Court Costs Collected.....	20,401.20		
Miscellaneous.....	5,684.57		
Confiscated Materials Sold.....	936.27		
Previous Year's License Collected.....	5,035.00		
Rent on Dark Room.....	240.00		
Sale of Rough Fish.....	3,260.31		
Sale of Old Equipment.....	906.25		
Refunds.....	536.38		
Pittman-Robertson.....	53,968.01	90,967.09	
Total Receipts			\$1,124,927.79
DISBURSEMENTS BY DEPARTMENT AND PURPOSE			
Administration			
Salaries.....	\$ 22,333.60		
Travel.....	7,834.56		
Office Expense.....	2,482.17		
Telephone and Telegraph.....	4,613.86		
Postage and Shipping.....	7,286.19		
Printing.....	14,743.52		
Heat, Water, and Lights.....	176.29		
Equipment.....	6,162.66		
Maintenance of Equipment.....	209.58		
Gas, Oil, and Lubricants.....	593.07		
*Miscellaneous.....	4,706.73		
Rent.....	4,148.76		
Insurance.....	451.52		
Taxes on Land.....		\$ 75,742.51	
Auditing			
Salaries.....	12,198.05		
Office Expense.....	250.42		
Equipment.....	488.75		
Miscellaneous.....	52.00	12,989.22	

FINANCIAL STATEMENT (Continued)
JULY 1, 1948, thru JUNE 30, 1949

	Item Total	Source Total	Total
Law Enforcement			
Salaries	443,127.51		
Travel	199,516.12		
Telephone and Telegraph	2,014.31		
Equipment	176,052.65		
Maintenance of Equipment	33,414.16		
Gas, Oil, and Lubricants	62,510.96		
Miscellaneous	20,652.44		
Rent (District No. 3)	25.00		
Insurance	14,970.66		
Rewards	150.00	952,733.81	
Fish Management			
Salaries	9,624.96		
Travel	3,641.76		
Office Expense	125.30		
Equipment	4,360.20		
Maintenance of Equipment	346.99		
Gas, Oil, and Lubricants	999.01		
Miscellaneous	916.74		
Insurance	417.64	20,432.60	
Blackwater Hatchery:			
Salaries	4,844.33		
Travel	355.02		
Telephone and Telegraph	10.39		
Equipment	150.00		
Maintenance of Equipment	931.07		
Gas, Oil, and Lubricants	1,218.26		
Miscellaneous	652.31		
Insurance	179.24		
Dam Construction		8,340.62	
Wawahitchka Hatchery			
Salaries			
Heat, Water and Lights	23.80		
Equipment	321.54		
Maintenance of Equipment	25.83		
Miscellaneous	34.90	406.07	
Winter Haven Hatchery			
Salaries	8,119.25		
Travel	664.38		
Heat, Water, and Lights	156.05		
Equipment	225.00		
Maintenance of Equipment	1,121.85		
Gas, Oil, and Lubricants	1,231.08		
Miscellaneous	852.25		
Insurance	249.92	12,619.78	
Rough Fish Control			
Salaries	5,208.36		
Travel	1,471.14		
Equipment	1,397.29		
Maintenance of Equipment	579.88		

FINANCIAL STATEMENT (Continued)
JULY 1, 1948, thru JUNE 30, 1949

	Item Total	Source Total	Total
Gas, Oil, and Lubricants.....	354.76		
Miscellaneous.....	2,307.97		
Insurance.....	169.19	11,488.59	
Maintenance Engineer			
Salaries.....	2,203.87		
Travel.....	1,936.55		
Telephone and Telegraph.....	74.15		
Equipment.....	12.60		
Maintenance of Equipment.....	118.03		
Gas, Oil, and Lubricants.....	822.83		
Miscellaneous.....	33.80		
Insurance.....	149.96	5,351.79	
Lake Okeechobee Survey			
Salaries.....	17,809.46		
Travel.....	5,069.34		
Telephone and Telegraph.....	7.25		
Equipment Purchased.....	4,975.66		
Maintenance of Equipment.....	656.89		
Gas, Oil, and Lubricants.....	917.38		
Miscellaneous.....	509.92		
Insurance.....	406.99	30,352.89	
Fish Distribution			
Salaries.....	600.00		
Travel.....	445.50		
Equipment.....	4,857.57		
Maintenance.....	585.18		
Gas, Oil, and Lubricants.....	102.27		
Miscellaneous.....	112.26		
Insurance.....	.19	6,702.97	
St. Johns River Survey			
Salaries.....	20,754.16		
Travel.....	2,318.30		
Equipment.....	4,413.85		
Maintenance.....	294.53		
Gas, Oil, and Lubricants.....	1,093.43		
Miscellaneous.....	654.71		
Insurance.....	447.61	29,976.59	125,671.90
Department of Information and Education			
Salaries.....	18,376.53		
Travel.....	5,607.84		
Office Supplies.....	279.96		
Postage and Shipping.....	543.49		
Printing.....	23,996.38		
Equipment.....	431.66		
Maintenance of Equipment.....	591.62		
Gas, Oil, and Lubricants.....	1,454.72		
Miscellaneous.....	1,445.30		
Insurance.....	337.73		
Promotional.....	5,159.44		58,224.67

FINANCIAL STATEMENT (Continued)

JULY 1, 1948, thru JUNE 30, 1949

	Item Total	Source Total	Total
Public Relations			
Salaries.....	6,089.04		
Travel.....	4,382.25		10,471.29
Legal and Investigation			
Salaries.....	12,782.26		
Travel.....	11,015.06		
Telephone and Telegraph.....	223.73		
Equipment.....	296.50		
Maintenance of Equipment.....	865.50		
Gas, Oil, and Lubricants.....	1,576.55		
Miscellaneous.....	247.94		
Insurance.....	255.81		
Special Attorney Fees.....	4,859.32		32,122.67
Pittman-Robertson:			
Salaries.....	20,901.49		
Travel.....	6,849.63		
Office Supplies.....	79.20		
Telephone and Telegraph.....	67.06		
Postage and Shipping.....	577.90		
Equipment.....	2,371.31		
Maintenance of Equipment.....	1,216.41		
Gas, Oil, and Lubricants.....	2,762.39		
Miscellaneous.....	51,042.54		
Rent.....	160.00		
Insurance.....	708.59		
Land Purchased and Leased.....	69,874.80		
Revolving Fund.....	500.00		
Taxes on Land.....	1,178.48		158,289.79
Quail Restocking—Project No. 1			
Salaries.....	2,421.76		
Travel.....	1,265.74		
Equipment.....	2,276.35		
Maintenance of Equipment.....	36.67		
Gas, Oil, and Lubricants.....	259.42		
Miscellaneous.....	1,570.33		
Insurance.....	80.84		7,911.11
Restocking—General			
Bears.....	75.00		
Deer.....	21,550.00		
Pheasant.....	262.50		
Quail.....	325.00		
Quail Trapped.....	1,637.75		23,850.25
Turkey.....			
Ocala National Forest			
Salaries.....	5,587.10		
Travel.....	840.03		
Telephone and Telegraph.....	24.30		
Miscellaneous.....	58.00		6,509.43

FINANCIAL STATEMENT (Continued)
JULY 1, 1948, thru JUNE 30, 1949

	Item Total	Source Total	Total
Legislative Relief Act (Griffins)	2,500.00		2,500.00
Total Disbursements			\$1,467,016.65
Less			
Reserved for Hendry County Deer Fund		4,575.00	
Dixie County Deer Fund		90.00	
Cancelled Warrants		47.20	
Available Balance June 30			188,250.47
			\$1,655,267.12

**STATEMENT OF CASH RECEIPTS, DISBURSEMENTS, AND BALANCES
FOR THE FISCAL YEAR ENDED JUNE 30, 1950**

Beginning Cash Balance July 1, 1949.....		\$190,388.61
RECEIPTS		
License Sold by County Judges.....	\$978,800.25	
License Sold by State Office.....	30,865.60	
Revenue from Other Agencies.....	191,684.97	
Other Revenue.....	24,853.24	
Total Revenues—Schedule A.....	\$1,226,204.06	
Cancelled Warrants.....	9.00	
Revolving Fund (Gulf Hammock).....	500.00	
Accounts Receivable from City of Tallahassee.....	2,524.06	
Judges Account.....	90.75	
Total Cash Receipts.....		1,229,327.87
Total Available.....		\$1,419,716.48
DISBURSEMENTS		
Salaries and Wages.....	\$ 605,776.80	
Professional Fees and Consulting Services.....	2,213.40	
Other Contractual Services.....	9,806.86	
Repairs to Equipment.....	29,445.87	
Parts and Fittings.....	17,401.28	
Automotive Equipment.....	16,923.70	
Other Expenses (Materials, Supplies, etc.).....	488,060.65	
Total Expenditures Schedule B.....	\$1,169,628.56	
Purchase Deer Dixie County.....	90.00	
Total Disbursements.....		1,169,718.56
Ending Balance, June 30, 1950.....		\$249,997.92

**STATEMENT OF CASH RECEIPTS, DISBURSEMENTS, AND BALANCES
FOR THE PERIOD ENDING DECEMBER 31, 1950**

Beginning Cash Balance July 1, 1950.....		\$249,997.92
RECEIPTS		
License Sold by County Judges.....	\$611,498.75	
License Sold by State Office.....	25,853.20	
Revenue from Other Agencies.....	18,072.43	
Other Revenue.....	31,043.23	
	<hr/>	
Total Revenue—Schedule A.....	\$686,467.61	
Cancelled Warrants.....	52.00	
Dixie County Deer Fund.....	50.00	
	<hr/>	
Total Cash Receipts.....		686,569.61
Total Available.....		<hr/> \$936,567.53
DISBURSEMENTS		
Salaries and Wages.....	\$339,439.39	
Professional Fees and Consulting Services.....	277.75	
Other Contractual Services.....	2,116.80	
Repairs to Equipment.....	27,674.45	
Parts and Fittings.....	15,473.65	
Automotive Equipment.....	34,346.76	
Other Expenses (Materials, Supplies, etc.).....	279,422.78	
	<hr/>	
Total Expenditures—Schedule B.....	\$698,751.58	
Judges Account.....	159.50	
Adjustment Account.....	274.04	
	<hr/>	
Total Disbursements.....		\$699,185.12
Ending Cash Balance December 31, 1950.....		<hr/> \$237,382.41

GAME & FRESH WATER FISH COMMISSION

	JULY 1, 1949, TO JUNE 30, 1950			JULY 1, 1950, TO DECEMBER 31, 1950		
	Item Total	Source Total	Total	Item Total	Source Total	Total
SCHEDULE "A"						
RECEIPTS BY SOURCE						
Sale of Sporting Licenses						
Fishing.....	\$578,186.00			\$351,977.00		
Hunting.....	396,862.00			259,249.75		
Trapping.....	1,047.00			272.00		
Alien Hunting Permits.....	100.00					
U.S. Forest Permits.....	8,675.87					
Gulf Hammock Permits.....	3,120.00			2,045.00		
Apalachicola Bear Hunt.....				200.00		
Osceola Bear Hunt.....				200.00		
Charlotte County Permits.....				40.00		
Avon Park Permits.....	440.00	988,430.87		235.00	614,218.75	
Sale of Commercial License						
Retail Fish Dealer.....	13,335.00			10,380.00		
Wholesale Fish Dealer.....	2,250.00			1,750.00		
Commercial Boat.....	1,967.60			1,652.20		
Non-Resident Commercial Boat.....	40.00					
Non-Resident Fish Dealer.....	300.00					
Boat for Hire.....	10,993.00			100.00		
Guide.....	250.00			10,836.00		
Game Farm.....	260.00			360.00		
Wholesale Fur Dealer.....	1,310.00			275.00		
Local Fur Dealer.....	60.00	30,765.60		460.00		
Other Sources						
Court Costs Collected.....	14,723.89			40.00	25,853.20	
Miscellaneous.....	6,255.48			5,411.22		
				6,060.84		

Previous Years License Collected.....	2,705.25	3,446.75
Sale of Magazine Advertising.....	12,585.30	3,827.20
Sale of Magazine Subscriptions.....	47.89	9,029.75
Sale of Magazine Single Copies.....	880.70	72.14
Sale of Old Equipment.....	83.18	221.50
Refunds.....	60.00	63.82
Rent on Dark Room.....	4,883.89	169.00
Charlotte County Grazing Lease	164,725.21	2,741.01
Sale of Rough Fish.....	57.50	15,352.43
Pittman-Robertson.....		
Sale of Confiscated Materials.....		
Total Receipts.....	\$207,007.59	\$ 46,395.66
	\$ 1,226,204.06	\$ 686,467.61

SCHEDULE "B"

	JULY 1, 1949, TO JUNE 30, 1950		JULY 1, 1950, TO DECEMBER 31, 1950	
	Item Total	Source Total	Item Total	Source Total
DISBURSEMENTS BY DEPARTMENTS				
Administration				
Salaries.....	18,364.21		13,323.72	
Professional Fees and Services.....	208.25		50.00	
Repairs to Equipment.....	143.34		259.72	
Repairs to Buildings.....			1,587.00	
Printing and Binding.....	9,268.48		8,416.05	
Publication of Notices.....	589.70		443.60	
Heat, Gas, Light, Power, Water.....	99.75		613.85	
Postage.....	4,475.04		4,259.28	
Telephone and Telegraph.....	9,857.45		5,282.97	
Freight and Express.....	976.36		552.69	
Travel—Employees.....	2,840.17		1,536.24	
Travel—Other than Employees.....	3,185.99			
Storage.....			37.75	
Clean, Paint, and Waste Remodeling.....			200.00	
Other Contractual Services.....	72.15		58.50	

FINANCIAL STATEMENT—Continued

	JULY 1, 1959, TO JUNE 30, 1950		JULY 1, 1950, TO DECEMBER 31, 1950	
	Item Total	Source Total	Item Total	Source Total
DISBURSEMENTS BY DEPARTMENTS (Continued)				
Administration (Continued)				
Parts and Fittings.....	145.28		191.31	
Lumber and Wood Products.....			33.28	
Other Building Materials.....	49.26		19.50	
Fiber and Textile Products.....			3.06	
Stationery and Office Supplies.....	2,302.19		1,727.64	
Gas, Oil, and Lubricants.....	959.37		638.02	
Fuel.....			13.35	
Hand Tools and Minor Equipment.....	184.67		19.85	
Cleaning and Laundry Supplies.....	135.00		199.47	
Household Supplies.....	32.19		12.10	
Rental of Buildings, Offices, and Land.....	5,621.94		1,929.00	
Rental of Equipment.....	9.00		2.50	
Insurance—Buildings and Equipment.....	69.89		67.43	
Insurance—Liability and Compensation.....	278.75		81.36	
Official Bonds.....	17.12		28.94	
Registrations, Dues, etc.....	97.90		218.69	
Office Furniture and Equipment.....	446.10		50.00	
Household and Laundry Equipment.....			225.00	
Other Equipment.....	135.00		36.00	
Buildings and Fixed Equipment.....	6,500.00		40,226.71	
Other Rentals.....	1.00			
Laundry Service.....	1.65			
		67,067.20		
Fiscal Branch:				
Salaries.....	13,207.58		7,112.50	
				82,344.61

Repairs to Equipment	38.50		
Printing and Binding	143.75		
Travel—Employees	73.12		
Stationery and Office Supplies	99.37		
Insurance—Liability & Compensation	26.27		
Official Bonds			
Office Furniture and Equipment	249.82		
Law Enforcement			
Salaries	\$403,537.07		
Repairs to Equipment	22,493.56		
Printing and Binding	519.70		
Telephone and Telegraph	83.52		
Travel—Employees	125,139.10		
Storage	227.89		
Clean, Paint, and Waste Removal	122.00		
Other Contractual Services	889.75		
Parts and Fittings	12,705.98		
Lumber and Wood Products	288.70		
Other Building Materials	536.77		
Fiber and Textile Products	126.02		
Chemical and Laboratory Supplies	101.20		
Gas, Oil, and Lubricants	67,938.65		
Forage and Animal Supplies	1,511.79		
Hand Tools and Minor Equipment	682.72		
Clothing	1.08		
Other Supplies	2.05		
Insurance—Buildings and Equipment	7,232.88		
Insurance—Liability & Compensation	4,082.51		
Official Bonds	377.02		
Registrations, Dues, etc	558.25		
Automotive Equipment	5,617.67		
Other Equipment	9,747.85		
Building and Mechanical Supplies	80.84		
Rewards for Apprehension of Law Violators	140.00		

	18.90
	26.18
	43.65
	19.29
	213.88
	7,464.10

13,829.41

	\$237,150.15
	23,894.73
	149.90
	362.84
	26,790.34
	154.15
	221.50
	501.50
	13,731.90
	441.05
	941.90
	14.12
	35,430.61
	764.51
	1,087.04
	70.55
	57.53
	10,499.22
	1,457.12
	998.41
	471.25
	26,690.02
	17,153.39
	16.55

FINANCIAL STATEMENT—Continued

	JULY 1, 1949, TO JUNE 30, 1950		JULY 1, 1950, TO DECEMBER 31, 1950	
	Item Total	Source Total	Item Total	Source Total
DISBURSEMENTS BY DEPARTMENTS (Continued)				
Law Enforcement (Continued)				
Information and Evidence of Law Violation.....			91.71	
Cleaning and Laundry Supplies.....	11.75		58.66	
Food Products.....	407.31		2,220.36	
Rental of Buildings, Offices, Land.....	99.00		127.50	
Household Supplies.....	10.75		217.54	
Office Furniture and Equipment.....	133.13		475.00	
Livestock not Intended for Slaughter.....	2,366.00		1,746.00	
Rental of Equipment.....	204.50		66.50	
Other Rentals.....	1.00			
Heat, Light, Power, and Mechanical Equipment.....	125.00			
Laundry Services.....			285.02	
Stationery and Office Supplies.....			270.75	
Photography and Blue Printing.....			10.50	
Freight and Express.....			154.19	
Professional Fees and Services.....			210.00	
Heat, Lights, Gas, etc.....			152.44	
Travel—Other than Employees.....			15.00	
Fuel.....			87.41	
		668,136.61		405,271.97
Fish Management Division:				
Salaries.....	10,986.25		5,987.17	
Repairs to Equipment.....	195.00		97.10	
Printing and Binding.....	71.50		56.85	

Freight and Express.....	1,935.88	678.74
Travel—Employees.....	1.00	5.50
Storage.....	38.33	2.50
Other Contractual Services.....	183.07	24.96
Parts and Fittings.....		7.35
Lumber and Wood Products.....		90
Other Building Materials.....	168.60	
Fiber and Textile Products.....	74.34	25.40
Stationery and Office Supplies.....	126.45	5.55
Chemical and Laboratory Supplies.....	907.36	481.90
Gas, Oil, and Lubricants.....	54.83	12.40
Hand Tools and Minor Equipment.....		2.75
Building and Mechanical Supplies.....	60	
Other Supplies.....	106.59	135.72
Insurance—Building and Equipment.....	107.21	41.41
Insurance—Liability & Compensation.....	5.70	14.47
Official Bonds.....	9.00	4.50
Registration, Dues, etc.....		
Engineering and Scientific Equipment.....		
Other Equipment.....		
Agriculture, Horticulture, and Park.....		
Supplies.....	368.00	
Clothing.....	14.57	
Office Furniture and Equipment.....	100.40	
Books.....	7.50	
	15,462.18	7,585.17
Blackwater F/M Station		
Salaries.....	4,616.00	2,402.33
Repairs to Equipment.....	148.23	28.30
Heat, Gas, Lights, etc.....	7.55	13.06
Telephone and Telegraph.....		
Freight and Express.....		
Travel—Employees.....	143.50	51.55
Clean, Paint, and Waste Removal.....		
Parts and Fittings.....	21.91	24.35
Lumber and Wood Products.....		

FINANCIAL STATEMENT—Continued

	JULY 1, 1949, TO JUNE 30, 1950		JULY 1, 1950, TO DECEMBER 31, 1950	
	Item Total	Source Total	Item Total	Source Total
DISBURSEMENTS BY DEPARTMENTS (Continued)				
Blackwater F/M Station (Cont)				
Other Building Materials.....	47.93		16.87	
Fiber and Textile Products.....	9.15		119.96	
Other Materials.....				
Gas, Oil and Lubricants.....	228.73		161.11	
Agriculture, Horticulture, and Park Supplies.....	421.21		309.15	
Hand Tools and Minor Equipment Building and Mechanical Supplies.....	27.90			
Other Supplies.....				
Rental of Equipment.....				
Insurance—Building and Equipment.....	43.48		53.39	
Insurance—Liability & Compensation.....	43.64		15.96	
Official Bonds.....	3.80		9.65	
Registration, Dues, etc.....	2.25	5,765.28	4.50	3,210.18
Wewahitchka F/M Station				
Salaries.....			1,207.50	
Repairs to Equipment.....	6.10		233.08	
Heat, Gas, Lights, etc.....	21.92		11.88	
Travel—Employees.....			425.98	
Clean, Paint, and Waste Removal.....				
Parts and Fittings.....	2.70		89.03	
Lumber and Wood Products.....	4.24			
Other Building Materials.....	30.72			
Fiber and Textile Products.....				

Gas, Oil, and Lubricants			741.58
Agriculture, Horticulture, and Park Supplies			
Hand Tools and Minor Equipment	35.05		41.90
Building and Mechanical Supplies	6.15		.45
Clothing			5.00
Other Supplies			
Insurance—Building and Equipment			147.50
Insurance—Liability & Compensation			8.18
Official Bonds			4.83
Registrations, Dues, etc.			4.50
Other Contractual Services	1,988.96	2,095.84	
Winter Haven F/M Station			2,921.41
Salaries			3,964.84
Repairs to Equipment	8,225.25		113.81
Heat, Gas, Lights, etc.	264.30		39.95
Telephone and Telegraph	80.43		34.27
Freight and Express	93.46		12.30
Travel—Employees	360.47		129.88
Clean, Paint, and Waste Removal			
Other Contractual Services	20.00		36.66
Parts and Fittings	120.34		32.03
Lumber and Wood Products	20.72		
Structural Metals			
Lands	75.00		
Cleaning and Laundry Supplies	.50		7.55
Other Building Materials	148.98		806.12
Fiber and Textile Products	26.52		241.00
Chemical and Laboratory Supplies	47.50		375.14
Gas, Oil, and Lubricants	1,674.68		
Agriculture, Horticulture, and Park Supplies			
Hand Tools and Minor Equipment	125.20		26.40
Building and Mechanical Supplies			
Other Supplies			4.00

FINANCIAL STATEMENT—Continued

	JULY 1, 1959, TO JUNE 30, 1950		JULY 1, 1950, TO DECEMBER 31, 1950	
	Item Total	Source Total	Item Total	Source Total
DISBURSEMENTS BY DEPARTMENTS (Continued)				
Winter Haven F/M Station (Cont.)				
Insurance—Buildings and Equipment	43.48		64.33	
Insurance—Liability & Compensation	78.27		27.88	
Official Bonds	7.61		19.29	
Registrations, Dues, etc.	138.10		2.25	
Other Equipment				
Clothing	23.91	10,974.72		5,937.70
Rough Fish Control				
Salaries	3,570.55		3,985.00	
Repairs to Equipment	174.03		207.28	
Heat, Gas, Lights, etc.			7.90	
Freight and Express				
Travel—Employees	640.01		505.74	
Cleaning, Paint, and Waste Removal				
Other Contractual Services	20.00		245.05	
Parts and Fittings	111.72		43.95	
Lumber and Wood Products	5.15		26.02	
Other Building Materials	36.87		175.30	
Fiber and Textile Products	525.36			
Other Materials				
Chemical and Laboratory Supplies				
Gas, Oil, and Lubricants	682.82		507.45	
Building and Mechanical Supplies				
Clothing	62.45			
Household Supplies				

Other Supplies.....	20.95	53.50
Insurance—Building and Equipment.....	121.29	183.33
Insurance—Liability & Compensation.....	34.43	21.01
Official Bonds.....	1.90	9.65
Registrations, Dues, etc.....	2.25	2.25
Household and Laundry Equipment.....	60.75	
Office Furniture and Equipment.....	70.00	19.95
Heat, Light, and Power Equipment.....	52.05	75.00
Other Equipment.....	71.67	33.84
Hand Tools and Minor Equipment.....		
Food Products.....		6,502.22
Okechobee F/M Station		
Salaries.....	14,490.26	\$ 5,950.97
Repairs to Equipment.....	795.20	515.41
Freight and Express.....		4.52
Travel—Employees.....	1,956.01	992.37
Clean, Paint, and Waste Removal.....		
Parts and Fittings.....	170.19	87.01
Lumber and Wood Products.....	35.44	6.48
Other Building Materials.....	68.41	48.07
Fiber and Textile Products.....	16.30	101.38
Stationery and Office Supplies.....		
Chemicals and Laboratory Supplies.....	57.33	4.19
Gas, Oil, and Lubricants.....	1,800.70	688.84
Forage and Animal Supplies.....		
Hand Tools and Minor Equipment.....	169.34	22.60
Building and Mechanical Supplies.....	1.50	61.26
Other Supplies.....	1.53	7.45
Rental of Equipment.....		
Insurance—Building and Equipment.....	214.66	9.47
Insurance—Liability & Compensation.....	158.66	202.17
Official Bonds.....	13.32	41.57
Registration, Dues, etc.....	8.60	24.12
Office Furniture and Equipment.....	25.00	5.50
Engineering and Scientific Equipment.....		
	6,314.23	

FINANCIAL STATEMENT—Continued

	JULY 1, 1949, TO JUNE 30, 1950		JULY 1, 1950, TO DECEMBER 31, 1950	
	Item Total	Source Total	Item Total	Source Total
	Total		Total	
DISBURSEMENTS BY DEPARTMENTS (Continued)				
Okeechobee F M Station (Cont.)				
Automotive Equipment	205.80		650.00	
Other Equipment	10.00			
Other Contractual Services	3.13			
Cleaning and Laundry Supplies	9.30			
Clothing				
Lands	1,200.00	21,407.68		9,123.38
Maintenance Engineer				
Salaries and Wages	1,875.00			
Repairs to Equipment	138.89			
Travel—Employees	809.87			
Parts and Fittings	90.24			
Masonry and Road Materials	70			
Other Building Materials	5.06			
Gas, Oil, and Lubricants	717.41			
Hand Tools and Minor Equipment	65.39			
Clothing	10.75			
Other Supplies	2.05			
Insurance—Buildings and Equipment	37.27			
Insurance—Liability & Compensation	22.86			
Official Bonds	1.90			
Registrations, Dues, etc	2.25			
Other Equipment		3,869.64		

Fish Distribution

Salaries and Wages.....	1,759.50
Repairs to Equipment.....	223.57
Travel—Employees.....	593.04
Parts and Fittings.....	28.98
Other Building Materials.....	4.05
Gas, Oil, and Lubricants.....	1,199.04
Hand Tools and Minor Equipment.....	3.95
Other Supplies.....	8.98
Insurance—Buildings and Equipment.....	62.11
Insurance—Liability and Compensation.....	18.74
Official Bonds.....	1.90
Registrations, Dues, etc.....	2.25
Other Equipment.....	
	3,906.11

St. Johns F/M Station

Salaries.....	7,756.00
Repairs to Equipment.....	145.45
Postage.....	32
Freight and Express.....	
Travel—Employees.....	675.98
Cleaning, Paint, and Waste Removal.....	
Parts and Fittings.....	82.27
Lumber and Wood Products.....	7.20
Other Building Materials.....	
Fiber and Textile Products.....	6.05
Stationery and Office Supplies.....	7.75
Chemical and Laboratory Supplies.....	28.67
Gas, Oil, and Lubricants.....	522.01
Fuel.....	
Agricultural, Horticultural, and Park Supplies.....	
Hand Tools and Minor Equipment.....	18.36
Building and Mechanical Supplies.....	
Clothing.....	1.20
Other Supplies.....	

FINANCIAL STATEMENT—Continued

	JULY 1, 1949, to JUNE 30, 1950		JULY 1, 1950, to DECEMBER 1, 1950	
	Item Total	Source Total	Item Total	Source Total
DISBURSEMENTS BY DEPARTMENTS (Continued)				
St. Johns F/M Station (Cont.)				
Insurance—Building and Equipment	202.98		355.35	
Insurance—Liability & Compensation	130.28		53.32	
Official Bonds	7.61		28.94	
Registrations, Dues, etc.	4.50		2.25	
Household and Laundry Equipment				
Telephone and Telegraph	3.95			
Travel—Other than Employees	146.40			
Other Contractual Services	18.50			
Other Equipment	357.26	20,831.10		9,694.12
District A Supervisor				
Salaries			520.00	
Travel—Employees			95.17	
Heat, Light, and Mechanical Equipment			65.00	
				680.17
				45,954.35
INFORMATION AND EDUCATION				
Administration				
Salaries	24,068.81		7,943.34	
Repairs to Equipment	397.11		45.58	
Printing and Binding	165.85		374.18	
Photographing and Blue Printing	9.00		4.00	
Postage	230.00		10.00	
Travel—Employees	6,442.04		858.67	
				90,626.78

Storage.....	12.00	6.00
Information and Credit Service.....	330.00	241.10
Parts and Fittings.....	166.28	82.59
Stationery and Office Supplies.....	1,595.47	575.18
Gas, Oil, and Lubricants.....	1,311.16	238.12
Insurance—Building and Equipment.....	97.83	48.11
Insurance—Liability & Compensation.....	246.05	51.14
Official Bonds.....	15.22	28.94
Registrations, Dues, etc.....	39.00	2.25
Travel—Other than Employees.....	38.40	
Other Building Materials.....	.45	
Hand Tools and Minor Equipment.....	44.18	
Office Furniture and Equipment.....	4,035.05	
Educational Equipment.....	329.00	
		10,509.20

Magazine Publication

Salaries.....		5,606.72
Repairs to Equipment.....		280.86
Printing and Binding.....	19,043.55	19,374.85
Photographing and Blue Printing.....	22.00	447.33
Postage.....	300.00	981.19
Freight and Express.....		13.94
Travel—Employees.....		1,762.04
Cleaning, Paint, and Waste Removal.....		10.00
Other Contractual Services.....	528.50	533.60
Parts and Fittings.....		37.94
Fiber and Textile Products.....		15.75
Other Materials.....		375.00
Stationery and Office Supplies.....	278.34	582.94
Gas, Oil, and Lubricants.....		581.26
Hand Tools and Minor Equipment.....		8.45
Rental of Equipment.....		
Insurance—Building and Equipment.....		52.74
Insurance—Liability & Compensation.....		21.19
Official Bonds.....		9.65
Awards, Gratuities, etc.....		
	39,572.90	

FINANCIAL STATEMENT—Continued

	JULY 1, 1949, TO JUNE 30, 1950		JULY 1, 1950, TO DECEMBER 31, 1950	
	Item Total	Source Total	Item Total	Source Total
INFORMATION AND EDUCATION (Continued)				
Magazine Publication (Cont.)				
Registrations, Dues, etc.			4.50	
Office Furniture and Equipment		20,172.43	25.20	
Other Equipment			25.20	30,750.35
Photography			1,899.96	
Salaries			187.44	
Repairs to Equipment			15.44	
Photographing and Blue Printing			869.62	
Travel—Employees				
Other Contractual Services			19.12	
Parts and Fittings			544.50	
Stationery and Office Supplies			403.96	
Gas, Oil, and Lubricants			25.80	
Hand Tools and Minor Equipment				
Educational Supplies			121.13	
Insurance—Buildings and Equipment			12.00	
Insurance—Liability & Compensation			4.83	
Official Bonds			5.50	
Registrations, Dues, etc.				
Engineering and Scientific Equipment			947.00	
Automotive Equipment			384.69	5,440.99
Other Equipment				
Promotional				
Repairs to Equipment	320.17			

Printing and Binding.....	3,131.59		
Photographing and Blue Printing.....	21.00		
Freight and Express.....			
Travel—Employees.....	683.00		
Cleaning, Painting, and Waste Removal.....	347.50		
Other Contractual Services.....	27.50		
Parts and Fittings.....	116.77		
Lumber and Wood Products.....	70.01		
Other Building Materials.....	124.58		
Fiber and Textile Products.....	2.57		
Other Materials.....			
Stationery and Office Supplies.....	216.45		
Other Materials.....			
Forge and Animal Supplies.....	518.71		
Hand Tools and Minor Equipment.....	587.50		
Food Products.....	18.00		
Educational Supplies.....	478.77		
Household Supplies.....	5.00		
Other Supplies.....	504.51		
Other Equipment.....	420.00	7,563.63	
Fairs			
Repairs to Equipment.....			520.95
Printing and Binding.....			27.26
Freight and Express.....			60.00
Travel—Employees.....			504.75
Cleaning, Painting, and Waste Removal.....			358.00
Other Contractual Services.....			145.20
Parts and Fittings.....			122.49
Lumber and Wood Products.....			187.05
Other Building Materials.....			52.40
Fiber and Textile Products.....			16.58

FINANCIAL STATEMENT—Continued

	JULY 1, 1959, TO JUNE 30, 1950		JULY 1, 1950, TO DECEMBER 31, 1950	
	Item Total	Source Total	Item Total	Source Total
INFORMATION AND EDUCATION (Continued)				
Fairs (Continued)				
Other Materials.....			8.46	
Gas, Oil, and Lubrication.....			120.42	
Forage and Animal Supplies.....			372.57	
Hand Tools and Minor Equipment.....			61.97	
Household Supplies.....			4.50	
Other Supplies.....			276.23	
Insurance—Buildings and Equipment.....			12.48	
Other Equipment.....			35.00	2,886.31
				49,586.85
Law Enforcement School				
Salaries and Wages.....	7,166.47			
Professional Fees and Consulting Service.....	1,603.15			
Repairs to Equipment.....	128.03			
Printing and Binding.....				
Heat, Water, and Lights.....	149.75			
Postage.....	1.49			
Telephone and Telegraph.....	92.14			
Travel—Employees.....	2,680.17			
Travel—Other than Employees.....	619.57			
Cleaning and Waste Removal.....	28.00			
Laundry Services.....	77.57			
Other Contractual Services.....	33.25			
Parts and Fittings.....	107.56			
Lumber and Wood Products.....	6.66			

Other Building Materials.....	55.72
Stationery and Office Supplies.....	167.35
Gas, Oil, and Lubricants.....	659.37
Fuel.....	172.90
Hand Tools and Minor Equipment.....	80.70
Clothing.....	54.65
Cleaning and Laundry Supplies.....	176.95
Food Products.....	5,151.26
Educational Supplies.....	61.90
Household Supplies.....	929.57
Rental of Equipment.....	10.00
Insurance—Buildings and Equipment.....	43.48
Insurance—Liability & Compensation.....	51.06
Official Bonds.....	1.90
Requisitions, Dues, etc.....	2.25
Household, Laundry, and Equipment.....	833.64
Office Furniture and Equipment.....	27.76
Other Supplies.....	56.90
Legal and Investigation	
Salaries and Wages.....	16,483.76
Professional Fees and Consulting Services.....	
Repairs to Equipment.....	1,141.97
Photographing and Blue Printing.....	13.50
Travel—Employees.....	10,288.19
Storage.....	61.65
Cleaning, Painting, and Waste Removal.....	306.00
Other Contractual Services.....	674.00
Parts and Fittings.....	1,268.93
Other Building Materials.....	1.15
Gas, Oil, and Lubrication.....	2,732.17
Forage, Stable, and Animal Supplies.....	30.35
Hand Tools and Minor Equipment.....	404.17
Clothing.....	43.84

21,231.17

FINANCIAL STATEMENT—Continued

JULY 1, 1949, TO JUNE 30, 1950 JULY 1, 1950, TO DECEMBER 31, 1950

	Item Total	Source Total	Total	Item Total	Source Total	Total
INFORMATION AND EDUCATION (Continued)						
Legal and Investigation (Cont.)						
Other Supplies	16 68					
Rental of Equipment . . .	1 00					
Other Rental	45					
Insurance—Buildings and Equipment .	120 31					
Insurance—Liability & Compensation	164 86					
Official Bonds	11 41					
Registrations, Dues, etc.	47 00					
Information and Evidence of Law Violation	211 20					
Office Furniture and Equipment	67 57					
Automotive Equipment . . .	5,215 90		40,212 76			
Other Equipment	906 70					
GAME MANAGEMENT DIVISION						
Pittman-Robertson						
Salaries	40,878 80			24,764 92		
Professional Fees and Services	402 60			17 75		
Repairs to Equipment	1,881 42			1,060 15		
Printing and Binding	1,431 91			583 25		
Postage	40 69			2 70		
Photographing and Blue Printing . . .	2 00					
Telephone and Telegraph	19 17			2 54		
Freight and Express	237 01			7 31		
Travel—Employees	7,982 27			3,723 63		

Cleaning, Painting, and Waste Removal.....	150.00
Other Contractual Services.....	4,000.92
Parts and Fittings.....	519.24
Masonry and Road Materials.....	1,836.07
Lumber and Wood Products.....	2,588.10
Other Building Materials.....	2.68
Fiber and Textile Products.....	
Other Materials.....	
Stationery and Office Supplies.....	113.86
Chemical and Laboratory Supplies.....	43.53
Medical, Surgical, and Dental Supplies.....	2.50
Gas, Oil, and Lubrication.....	4,797.61
Agricultural, Horticultural, and Park Supplies.....	4,881.56
Forage and Animal Supplies.....	1,255.96
Hand Tools and Minor Equipment.....	1,464.29
Building and Mechanical Supplies.....	2.95
Clothing.....	12.50
Cleaning and Laundry Services.....	9.94
Food Products.....	
Household Supplies.....	
Other Supplies.....	53.35
Rental of Equipment.....	421.83
Insurance—Building and Equipment.....	437.93
Insurance—Liability & Compensation.....	446.08
Official Bonds.....	62.80
Registrations, Dues, etc.....	120.45
Taxes and Assessments.....	40.39
Household and Laundry Equipment.....	350.70
Office Furniture and Equipment.....	341.64
Automotive Equipment.....	6,060.13
Agricultural, Horticultural and Park Equipment.....	3,810.41
Other Equipment.....	223.00

	48.00
	845.00
	607.13
	1.30
	394.35
	416.65
	.25
	1.29
	269.07
	26.83
	5.50
	2,731.98
	150.55
	1,156.17
	195.70
	1.25
	7.50
	3.00
	114.61
	56.35
	175.50
	709.93
	148.20
	72.35
	53.72
	186.10
	6,059.74
	135.00
	536.53

FINANCIAL STATEMENT—Continued

	JULY 1, 1949, TO JUNE 30, 1950		JULY 1, 1950, TO DECEMBER 1, 1950	
	Item Total	Source Total	Total	Item Total
GAME MANAGEMENT DIVISION (Continued)				
Pittman-Robertsot (Continued)				
Lands.....	51,374.80			51,022.50
Travel other than Employees.....	24.00			
Rental of Office Buildings and Land.....	1,710.85			
Books.....	26.00			
Livestock not for Slaughter.....	5,532.75			
Building and Fixed Equipment.....	3,201.82		148,795.91	
				96,294.30
State Quail Project No. 1				
Salaries.....	3,740.00			1,800.00
Repairs to Equipment.....	280.42			43.29
Travel—Employees.....	828.79			481.25
Other Contractual Services.....	1,126.00			30.50
Parts and Fittings.....	51.69			34.84
Other Building Materials.....	225.98			54.43
Fiber and Textile Products.....	2.90			2.45
Gas, Oil, and Lubrication.....	373.90			204.75
Forage and Animal Supplies.....	455.33			66.21
Rental of Building, Offices, and Land.....	43.48			120.00
Insurance—Building and Equipment.....	36.70			55.45
Insurance—Liability & Compensation.....	1.90			11.43
Official Bonds.....	4.50			4.83
Registration, Dues, etc.....	28.71			2.25
Printing and Binding.....	1.15			
Freight and Express.....	15.59			
Lumber and Wood Products.....				

Hand Tools and Minor Equipment	1,962.50			
Other Supplies . . . . .	.50			
Restocking			9,180.04	2,911.68
Salaries	1,226.16			
Repairs to Equipment	313.92			
Travel—Employees	1,044.69			
Other Contractual Services	34.00			
Parts and Fittings	146.63			
Gas, Oil, and Lubrication	628.73			
Forage and Animal Supplies	66.52			
Hand Tools and Minor Equipment	62.10			
Insurance—Liability & Compensation	5.48			
Other Equipment	486.90			
Animals not for Slaughter	14,994.20		19,009.33	
Ocala National Forest				
Salaries and Wages	6,245.16			
Travel—Employees	1,955.00			
Storage	8.67		8,208.83	
Avon Park Hunt				
Salaries	560.00			280.00
Repairs to Equipment				30.00
Printing and Binding	111.50			15.83
Insurance—Liability & Compensation . . . . .	.48		671.98	
Gulf Hammock Hunt				
Salaries and Wages	3,802.25			5,839.26
Printing and Binding	410.95			.24.00
Travel—Employees	43.57			227.00
Other Contractual Services	325.00			
Parts and Fittings	6.20			57.00
Lumber and Wood Products	100.36			207.43
Other Building Materials	57.26			
Stationery and Office Supplies	22.25			

FINANCIAL STATEMENT—Continued

	JULY 1, 1949, TO JUNE 30, 1950		JULY 1, 1950, TO DECEMBER 31, 1950	
	Item Total	Source Total	Item Total	Source Total
GAME MANAGEMENT DIVISION (Continued)				
Gulf Hammock Hunt (Continued)				
Hand Tools and Minor Equipment	5.25		6.00	
Rental of Buildings, Offices, and Land	22.50			
Rental of Equipment	100.00			
Insurance—Liability & Compensation	24.34		9.63	
Repairs to Equipment			22.40	
Gas, Oil and Lubrication			235.67	
Registration, Dues, etc.			24.20	
				6,652.59
Steinhatchee Hunt:				
Salaries			1,945.00	
				1,945.00
Communications Division				
Salaries and Wages	5,032.00			
Repairs to Equipment	187.46			
Other Fixed Asset Repairs	20.00			
Printing and Binding	6.50			
Telephone and Telegraph	99.51			
Freight and Express	155.61			
Travel—Employees	559.31			
Parts and Fittings	1,321.74			
Other Building Materials . . . . .	.95			
Fiber and Textile Products	60			
Gas, Oil, and Lubrication	365.96			
Other Supplies	4.83			
Hand Tools and Minor Equipment	55.17			

Rental of Buildings.....	320.00			
Insurance—Equipment.....	43.48			
Insurance—Liability & Compensation.....	15.48			
Official Bonds.....	3.80			
Registrations, Dues, etc.....	2.25			
Other Equipment.....	2,175.00			
		10,399.65		
			\$ 1,169,628.56	
				\$ 698,751.58

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