Twenty-Fourth Biennial Report

of the

FISH and GAME DEPARTMENT

of the

STATE OF IDAHO

July 1, 1950 to June 30, 1952

State of Idaho
Department of Fish and Game
IDAHO FISH AND GAME COMMISSION
Boise, Idaho

Honorable Len H. Jordan
Governor of Idaho
State House
Boise, Idaho

Sir:

Transmitted herewith for your consideration is the twenty-fourth biennial report of the activities of the Idaho Fish and Game Department.

This report covers the period July 1, 1950 through June 30, 1952, with certain data for the last six months of 1952.

Respectfully submitted,

O. W. McConnell, Chairman
R. G. Cole, Secretary
W. George Moody
J. Paul Thoman
John B. Dahlstrom

Attest:
T. B. Murray, Director

WILDLIFE POLICY

The wildlife policy of the State of Idaho has been established under the Fish and Game Commission Initiative Act of 1938, as follows:

"All wildlife, including all wild animals, wild birds, and fish within the State of Idaho, is hereby declared to be the property of the State of Idaho. It shall be preserved, protected, perpetuated and managed. It shall only be captured or taken at such times or places, under such conditions, or by such means, or in such manner, as will preserve, protect, and prepetuate such wildlife, and provide for the citizens of this State, and as by law permitted to others, continued supplies of such wildlife for hunting, fishing and trapping.

"It shall be the authority, power and duty of said Commission to carry out the policy of the State in accordance with this Act."

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PERSONNEL

THE COMMISSION

John Dahlstrom	Pocatello
R. G. Cole	Boise
Paul Thoman	Twin Falls
George Moody	Calder
O. W. McConnell	Grangeville

THE DEPARTMENT

T. B. MURRAY, Director

James C. Simpson	Fish Culturist
Vernon B. Rich	Federal Aid Coordinator
P. J. McDermott	Big Game Supervisor
Marshall C. Edson	Public Relations Officer
Philip D. Shea, Jr.	Assistant Public Relations Officer
Michael Throckmorton	Education Officer
Ivol Sies	Improvement Supervisor
Robert J. Hofmann	Engineer
T. D. Biladeau	Big Game Biologist
Robert L. Salter	Game Bird Supervisor
R. E. Hoffman	Chief Clerk
Betty Tucker	Principal Secretary
Fay Whitson	Principal Clerk
Anne Mastro	Principal Clerk
Claude W. Clapsaddle	Accounting Clerk
Louise Snodgrass	Secretary
Veryl M. Beauclair	Secretary
Elva J. Blood	Secretary
Bernice Howell	Secretary
Theresa Brozovich	Clerk Typist
Marion L. Petersen	Clerk Typist
Darlene Yates	Stenographer
Wilma Post	Stenographer
Edris Williams	Senior Clerk
Owen S. Hermanson	Accounting Clerk

CONSERVATION OFFICERS

District No. 1

Frank Keough, Coeur d'Alene	District Supervisor
John S. Costello	Coeur d'Alene
Paul Flinn	Bonners Ferry
Lester Gissel	Sandpoint
Albert F. Lyle	Priest River
Cecil Sanford	St. Maries
John P. Smith	Spirit Lake
George F. Staudt	Kellogg

District No. 2

Harry V. Palmer, Lewiston ---------- District Supervisor
Hale Ebling ---------- Deary
Chas. W. Gallaher ---------- Grangeville
Ray J. Kernan ---------- Lewiston
Glen Richardson ---------- Kooskia
Keith S. Rudd ---------- Nezperce
J. M. Wilkins ---------- Orofino

District No. 3

W. R. Horning, Nampa ---------- District Supervisor
Wm. Lee Black ---------- Mountain Home
Gene deReus ---------- New Plymouth
J. B. F. Dillon ---------- Weiser
William H. Dorris ---------- Kimberly
Melvin R. Francis ---------- Riggins
Donald Grimes ---------- Cascade
Donald McPherson ---------- Horseshoe Bend
Dana L. Messenger ---------- Boise
John W. Smith ---------- Boise
Edwin Z. Stuart ---------- Glenns Ferry
Philip Swanstrum ---------- Boise
Dale Tanner ---------- Homedale
Derrel G. Wright ---------- Council

District No. 4

Hawley Hill, Jerome ---------- District Supervisor
Joe A. Bross ---------- Arco
Alonzo Brown ---------- Wendell
Arnold Coleman ---------- Dubois
Grover C. Davis ---------- Filer
LaVarr Jacklin ---------- Challis
Dale R. Jensen ---------- Stanley
Edward A. Linck ---------- Salmon
Martin Luther ---------- Fairfield
Claude I. Matthews ---------- Shoshone
T. J. Mizer ---------- Hailey
Joel C. Reynolds ---------- Rupert
E. B. Scholes ---------- Albion
Boyd Thietten ---------- Mackay
Alva E. Weinrich ---------- Hailey

District No. 5

Wendell Twitchell, Pocatello ---------- District Supervisor
Melvin Barrus ---------- Blackfoot
O. R. Christenson ---------- Idaho Falls
Fred M. Clark ---------- Lava Hot Springs
Murvle E. Crook ---------- Driggs
L. Dean Davis ---------- Preston
Stanley Fredericksen ---------- Montpelier

Wm. R. Jennings ---------- American Falls
Norman Jockumsen ---------- St. Anthony
E. L. Keppner ---------- Malad
Stanley Larson ---------- Sugar City
Alvin Misseldine ---------- Ashton
Henry M. Reeves ---------- Montpelier
Lance L. Townley ---------- Irwin

FISHERIES PERSONNEL

James C. Simpson ---------- Fish Culturist
Forrest Hauck, Biologist ---------- Boise
Leon Murphy, Biologist ---------- Grangeville
Don Andriano, Assistant Fisheries Biologist ---------- Pocatello
Robert B. Irving, Assistant Fisheries Biologist ---------- Gooding
Paul W. Jeppson, Assistant Fisheries Biologist ---------- Sagle

STATE FISH HATCHERY ---------- AMERICAN FALLS
B. D. Ainsworth ---------- Superintendent
Martin Albrethson

STATE FISH HATCHERY ---------- ASHTON
Harvey Albrethson ---------- Superintendent

STATE FISH HATCHERY ---------- COEUR d'ALENE
Edward Langworthy ---------- Foreman

STATE FISH HATCHERY ---------- EAGLE
Frank Gaver ---------- Superintendent
Clarence Bess

STATE FISH HATCHERY ---------- HAGERMAN
Elwood Grimes ---------- Superintendent
Charles Sherwood

STATE FISH HATCHERY ---------- GRANGEVILLE
Fred Keppner ---------- Superintendent

HALE FISH HATCHERY ---------- MULLAN
Walter Bethke ---------- Superintendent

HAYSPUR HATCHERY ---------- GANNETT
L. W. Gaver ---------- Superintendent
Hark L. Misseldine

HENRYS LAKE HATCHERY ---------- MACKS INN
L. T. Hunt ---------- Superintendent

STATE FISH HATCHERY ---------- MACKAY
John M. Coleman ---------- Superintendent
Thomas L. Pritchett

STATE FISH HATCHERY ---------- SANDPOINT
J. E. Clark ---------- Superintendent

STATE FISH HATCHERY ---------- TWIN FALLS
E. O. Bailey ---------- Superintendent
GRACE FISH HATCHERY ---------- GRACE
Norman C. Floyd ---------- Superintendent
Maurice Harding
WARM RIVER HATCHERY ---------- ASHTON
Burt Bowlden ---------- Superintendent

UPLAND GAME BIRD PERSONNEL

Robert L. Salter ---------- Game Bird Supervisor
Charles Blake, Assistant Bird Biologist ---------- Jerome
Charles D. Haynes, Assistant Bird Biologist ---------- Jerome
Alvard R. Kiler, Assistant Bird Biologist ---------- Boise
Elwood Bizeau, Assistant Bird Biologist ---------- Idaho Falls
William Gnemi, Game Farm Superintendent ---------- Jerome
Hugh Harper, Game Farm Superintendent ---------- Lapwai
Homer Stever, Game Farm Assistant ---------- Post Falls
Charles M. Wyman, Game Farm Assistant ---------- Jerome
Wells D. Starley, Game Farm Assistant ---------- Lapwai

BIG GAME BIOLOGISTS

W. M. Shaw ---------- Boise
Stewart M. Brandborg ---------- Salmon
Robert L. Casebeer ---------- Boise
A. Errol Nielson ---------- Rigby
W. Leslie Pengelly ---------- Coeur d'Alene
Dwight R. Smith ---------- Wendell
Roger Williams ---------- Boise

REFUGE PERSONNEL

Orrin F. Blattner, Refuge Manager ---------- Terreton
H. E. Cherry, Refuge Manager ---------- Hagerman
Dave W. Sharpe, Refuge Manager ---------- Naples
Richard Wilson, Refuge Manager ---------- St. Anthony
Guy E. Harris, Assistant Refuge Manager ---------- Boise
Deral J. Haycock, Assistant Refuge Manager ---------- Hagerman
Don C. Lindholm, Assistant Refuge Manager ---------- Bayview
James R. McFadden, Under Refuge Manager ---------- St. Anthony

SPECIAL EMPLOYMENT PERSONNEL

D. W. McRae ---------- Boise
Everett Brown ---------- Boise
Frank E. Lanham ---------- Bayview
Glenn Jensen ---------- Boise

ADMINISTRATION

The Idaho Fish and Game Department operates under a commission form of government. This constitutes a five man board, appointed by the Governor of the State, to determine policies, make such orders, rules and regulations necessary to carry out the intent and purposes of the laws pertaining to wild animals, birds and fish.

Commissioners are appointed for terms of six years. One commissioner is appointed to represent each of the five districts of the state. These districts include the following counties:

District No. 1— Boundary, Bonner, Benewah, Shoshone and Kootenai.

District No. 2— Latah, Clearwater, Nez Perce, Lewis and Idaho.

District No. 3— Ada, Adams, Boise, Canyon, Elmore, Gem, Owyhee, Payette, Valley and Washington.

District No. 4— Camas, Gooding, Twin Falls, Cassia, Jerome, Blaine, Lincoln, Butte, Minidoka, Lemhi and Custer.

Disrtict No. 5—Clark, Fremont, Madison, Teton, Jefferson, Bonneville, Bingham, Bannock, Power, Oneida, Caribou, Franklin and Bear Lake.

MEMBERS OF THE COMMISSION

Members of the commission during the biennium were:

George Moody, Calder, District No. 1.

Oliver W. McConnell, Grangeville, District No. 2.

R. G. Cole, Boise, District No. 3.

Paul Thoman, Twin Falls, District No. 4.

John Dahlstrom, Pocatello, District No. 5.

COMMISSION MEETINGS

Fishing season, bag limits and regulations are ordered during the January meetings each year. Big game regulations and hunting areas are established during the April session, and bird hunting seasons and limits are provided for in the July meeting. A fourth regular quarterly meeting is held in October of each year.

Several special sessions were held during the biennium regarding migratory waterfowl regulations, extended game seasons and meetings with the State Wildlife Federation.

GENERAL ADMINISTRATION

The director of the Fish and Game Department is appointed by the Commission and has charge of all phases of department operations. The Fish Culturist is also appointed directly by the Commission and supervises all fisheries activities.

Regular certified employees of the department are appointed from the civil service register of the Idaho Merit System.

IMPROVEMENT DIVISION

NEW CONSTRUCTION AND IMPROVEMENTS

The following construction and maintenance work has been done by the Fish and Game Department during the biennial period. Several projects are either now under construction or to be started in 1953, and will be included in the next biennial report.

FISH HATCHERIES

AMERICAN FALLS

Subdividing and replacement of deteriorated walls in the larger outside ponds was completed.

The new residence was completed.

The new steel supply line and intake structure in the supply pond are completed and in service.

Earth raceways providing for 16 ponds, each 100' long, with four ponds to each raceway for a total of 1600 feet, with the necessary intake structures, divisions, and tail race structure, have recently been completed. Final grading will be done after settlement of the soil has taken place. Because of the nature of the soil and the fill that was necessary, the raceways will probably not be placed in operation until sometime next spring or summer, depending upon what happens in the way of settlement and sloughing of the banks during the winter period.

All buildings at the station were painted.

ASHTON

A 50-ton hay storage shed was built and filled with hay at the Ashton Hatchery for the storage of emergency feed in the upper Snake River country.

All buildings at the station were painted.

BELLEVUE FISH SCREEN

A revolving fish screen was installed at Bellevue in the Richfield Canal and has been in operation during the biennium.

BOYD CREEK

The Boyd Creek Hatchery building and ponds were demolished and removed with the more valuable items being salvaged.

CLARK FORK

An oil furnace has been installed in the Superintendent's dwelling, which to date has not been adequately heated.

COEUR d'ALENE

A two-car storage garage was built by hatchery personnel.

A 20-ton cold storage room was built using 100 per cent Farragut material. Part of the hatchery building floor space is used to accommodate the room.

Workmen remove forms from new concrete rearing ponds at the Eagle Hatchery. Two new wells were also placed in operation at this hatchery during the biennium.

A large hammer mill was installed to grind trash fish that are purchased from commercial fishermen. The fish, after processing, are placed in the storage room until such time as a capacity load for the van is accumulated. The fish are then hauled to other hatcheries throughout the state to be used as fish food.

Acquisition of a plot of land on Wolf Lodge Creek is in the process of completion. If and when the acquisition is complete, planning will commence on the building of suitable ponds to be used for redistribution purposes.

COFFEE POT FISH TRAP

The trap structure was maintained by the replacing of the cat-walks planks and the rebuilding of the traps. The extreme snow and water conditions during the past spring had caused some damage to the traps and the walk.

The spawning house was repaired, some damage having been caused by heavy snows.

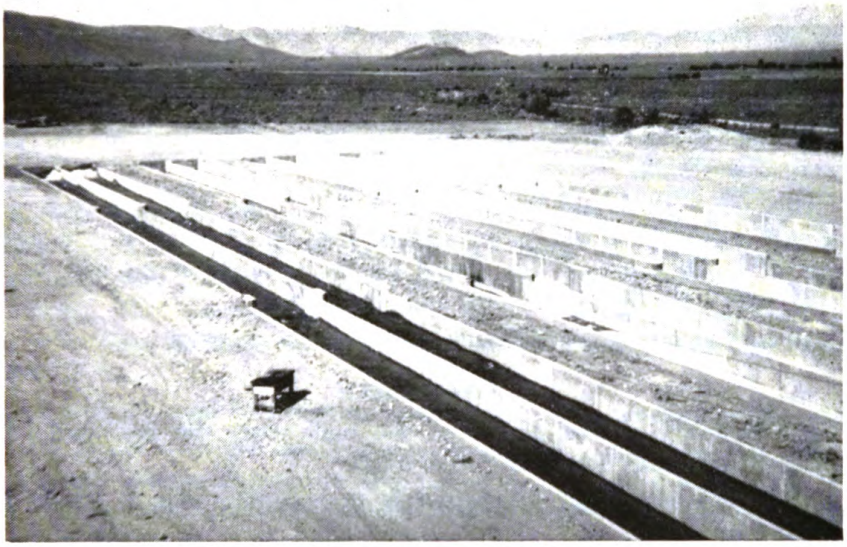
DRIGGS SPORTSMEN'S REARING POND

The Department assisted the Driggs sportsmen in planning and provided $300.00 worth of material for a rearing pond from which fish are released directly into the Teton River.

EAGLE

The second of two new artesian wells was completed and a yield of 650 gallons per minute was obtained from it, making a total of 1000 to 1100 gallons per minute yield from the two new wells.

The wells were coupled into a main supply line consisting of 600 feet



Birds-eye view shows battery of eight new concrete raceways completed in 1951, and now in operation at Mackay Hatchery. Battery includes 3,200 lineal feet of concrete plus new pipelines and drains.

of 12-inch steel pipe and 600 feet of 20-inch steel pipe together with necessary control towers and valves to supply two more new concrete raceways 12 feet by 166 feet each. The raceways have separate cleanout drains installed to bypass all waste from contaminating other ponds in which the water is re-used.

A bass pond was constructed approximately three-fourths acres in size with a maximum depth of three feet.

The facilities listed above are all complete and in operation, and the whole has been backfilled and landscaped.

Provisions were made in the pipe line installation for the accommodation of two more 12 foot by 166 foot concrete raceways if sufficient water is delivered from the new wells or pending the drilling of one more artesian well. The new pond system, after the building of the contemplated two, would consist of five 12 foot 166 foot raceways of which three are presently in operation.

The station buildings were painted except for the roofs. Some maintenance on the two dwellings was necessary.

ELK RIVER DAM

Another 400' long log boom was placed across the backwater for added protection to the dam against floating debris.

Floating logs, deadheads and other material that might endanger the dam or plug the spillway were removed from the backwater.

No attempt was made to remove all logs, only those which might cause trouble were removed.

GRACE

Name was changed by Fisheries Division from Whiskey Creek Hatchery to Grace Hatchery for aesthetic reasons.

The entire grounds were graded and landscaped. Lawns, shrubbery and trees were planted.

A small storage house for racks and equipment used in the pond operation was built.

All interior roads and driveways and three miles of access road were graveled with crushed rock in cooperation with the County. Two thousand yards of crushed gravel was placed on the grounds at no cost to the Department other than for hauling and placement.

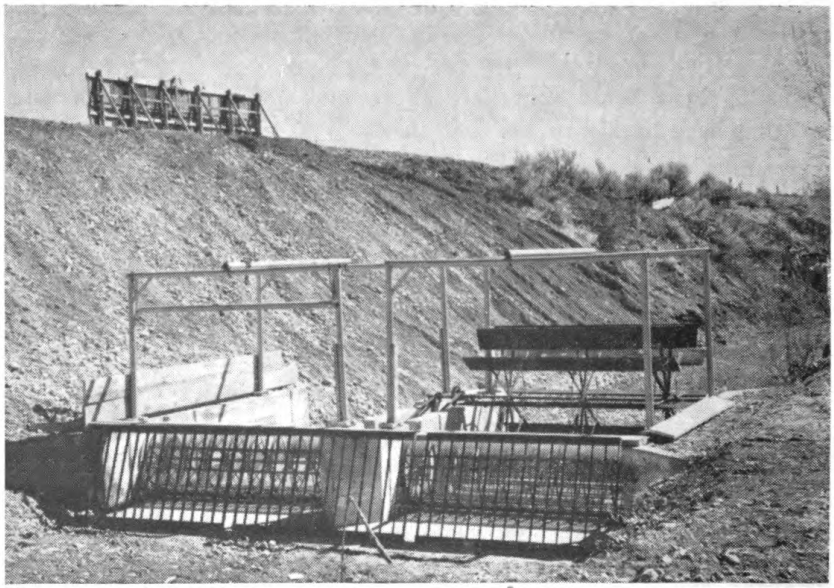
All buildings were painted and maintained as necessary.

HAGERMAN

A new bridge of steel and wood was built across the Brailsford Ditch to accommodate the heavy fish truck traffic.

A new approach road, approximately three-eighths mile in length, was built and graveled.

A new crossing was built on Riley Creek for the above road. It was constructed of concrete and steel in such a way that Riley Creek was dammed and a lake created above the road. The water was raised high enough, to a maximum depth of 12 feet, that all lawn irrigation for the fisheries headquarters is supplied from the lake through pipe lines. Water is backed up in Riley Creek for a distance of three-fourths mile. Looking into the future, any additional earth raceway development would be sup-



Fish screen constructed and placed in operation in the Base Line Canal near Bellevue.

plied with water from the Riley Creek Lake and the supply for all of the earth ponds could come from the same source at some future time.

Considerable irrigation ditch rebuilding was done under Pittman-Robertson project. In connection with this work it was found that irrigation water could be supplied to the area of use, easier by a series of impoundments than by ditching. Consequently, this developed into a Pittman-Robertson project in which a series of four lakes, having a total area of 14.7 acres and covering property which was formerly of no value, were formed in natural depressions by water diverted from Bickel Springs. The water supply runs from one lake to the next and finally into Riley Creek. The lakes have been planted with trout and are being used by large numbers of ducks. The maximum water depth is 13 feet in lake number one. The other three lakes are not as deep and should provide waterfowl resting areas.

All bass pond outlet structures were rebuilt or maintained as necessary.

The refuge manager dwelling was remodeled to the extent of making a basement apartment for extra help out of that part of the basement that had been planned for such use but never completed. Landscaping and planting of lawn was completed under this same project, and a stoker was installed in the coal furnace in the dwelling.

A set of covered-top bird pens for chukar partridges was completed. It consists of nine pens 75 feet by 200 feet.

The Riley Creek crossing and backwater created a drainage problem in one of the dwelling yards at Hagerman. The placement of drainage tile took care of the situation.

Two remaining lawn areas were graded and landscaped.

The old double garage was moved and located to serve two of the dwellings.

Tucker Springs Creek has been diverted and will be utilized in three large shallow water areas totaling approximately 90 acres.

Fresh water will run through the three ponds, each succeeding pond being one foot lower than the one above. The maximum depth of the water in these areas is such that 100 per cent of the areas will be ideal for waterfowl and marsh life. The impoundments are 50 per cent complete and it is hoped that the dikes will be in place by the first of the year.

HAYSPUR

Concrete control towers, which had deteriorated, were rebuilt. Pipe line gates on the main hatchery supply line were removed, overhauled and replaced.

The spring house walls were raised four feet, the house re-roofed and the structure made vermin proof.

A wooden bridge on the entrance road was replaced with a steel culvert.

All buildings were maintained and painted.

HENRYS LAKE HATCHERY

The dwelling that was purchased with the Dr. Reese property was remodeled. It was placed on a concrete foundation, sealed and insulated. Some of the electrical wiring remains to be done in the spring.

MACKAY

Eight concrete raceways, subdivided to make thirty-two 7 foot by 100 foot concrete ponds, together with necessary dams, supply lines and drains were completed under contract.

Screens and racks for the ponds were built at the Boise warehouse, and the ponds have been in operation during the past season. Grading and graveling of all surfaces and roadways surrounding and within the new raceway system had been completed after settlement of the ground had taken place.

The foundation and septic tank for the new dwelling were built this fall with the balance of the construction to be completed in the spring of 1953.

McCALL

Repairs were made to the water supply lines for the outside concrete raceways.

SANDPOINT

Plans have been completed for the construction of a new hatchery building at the Sandpoint Hatchery to provide more efficient utilization of the available water supply.

An all steel building, 40 x 60, is now in the process of delivery. The arrangement in the hatchery will be similar to that used at Hagerman and will consist of an office, storeroom, lavatory and vat room containing 5 batteries of 4 concrete vats to each battery. The existing outside concrete pond system has deteriorated to the point of being useless and it will later be revamped and remodeled to suit the over-all plan.

Work will soon commence on the demolition of the old facilities to be followed immediately by the erection of the new building.

An oil furnace has been installed in the Superintendent's dwelling which to date has had none.

TWIN FALLS

All electrical wiring in the hatchery building was taken out and building rewired with waterproof conduit. The dwelling was maintained by refinishing one bedroom, bath and kitchen. All buildings were painted completely.

Miscellaneous Construction and Maintenance

CAREY LAKE

Under the P. R. project involving the building of one-half mile of ditch, the rebuilding of one-half mile of ditch, and the placement of two 8'x 16' bridges, one 8'x 6' bridge and seven drops were completed.

All structures are permanently built of concrete and the ditch is built

to transport available water from the river to the lake during the winter and early spring.

Some fencing remains to be done pending completion of a property line survey.

DEARY CONSERVATION OFFICER'S DWELLING

The dwelling and garage were painted and metal roofs damaged by wind were repaired.

FARRAGUT REFUGE

Under P. R. two miles of the perimeter fence was relocated so that all the property owned by the department would be enclosed.

The interior fence, consisting of two miles of netting and barbed wire on steel posts, was constructed across the property in such a way as to segregate the management area from the area to be open to public use.

A 6'x22' cattle guard and turnstile were installed at the main gate in the perimeter fence at Bayview across the access road to the public ground on the lakeshore.

All above work has been done in accordance with the original plan of management for whitetail deer within the area.

Salvage of material from buildings owned by the department has gone forward slowly, and only as material was required for other projects. Material from Farragut is transferred throughout the state and is being used where ever possible in constructing other department facilities.

Workman lines up crew to prepare holes for dynamite to blast channels in a refuge marsh.

JEROME GAME FARM

Work was completed on the conservation officers' warehouse for District Four.

LAPWAI GAME FARM

Fish holding distribution ponds were enlarged and made more efficient by the addition of concrete floors and walls.

A quonset-type conservation officers' warehouse, serving the conservation officers of District Two, was completed and is in use.

It was found necessary to rebuild the sewage disposal system at the Superintendent's dwelling. The conservation officers' quonset hut storage was cleaned and painted.

LOWMAN CONSERVATION OFFICER'S HEADQUARTERS

The dwelling and garage and other outbuildings were painted and maintained as necessary.

NORTH IDAHO BIRD REFUGE

Irrigation pipe line laterals and sprinkling heads were installed so that the entire bird pen set-up is under irrigation by sprinkler system.

One new metal grain storage bin was added for the storage of feed and other grain and grass seed.

NORTH LAKE REFUGE

Under P. R. projects work was completed widening and strengthening two and one-half to three miles of irrigation canal and laterals. At present the grading and building of two and one-half miles of road to facilitate access, and operation of the refuge property, is under way and it is hoped that the grading may be completed this fall.

A great deal of development remains to be done at this refuge to fully develop the property and it is expected that development and drilling of wells may get under way soon.

POCATELLO CONSERVATION OFFICERS' WAREHOUSE

A building 24'x 44' was completed and placed in operation as a District 5 warehouse at Pocatello.

The grounds were fenced and the entrance roads graveled.

POWELL CONSERVATION OFFICER'S CABIN

A log siding, 22 foot by 36 foot three-room conservation officers' cabin was built near the Powell Ranger Station on the Lochsa River.

SAND CREEK REFUGE

Under the P. R. projects the Blue Creek dam was completed and is in operation, and the backwaters have been planted with fish. The dwelling, garage, bunkhouse and the water supply system are all completed and in use.

The elk trap was demolished and moved to a new location.

Grading and landscaping was done around the buildings with plantings to be made in the spring. One mile of entrance road was graded and built, one new cattle guard on a back road was installed and the main road cattle guard was moved to the new location and widened.

One-half mile of fence was relocated and all of the old buildings were demolished.

INFORMATION AND EDUCATION

A factual knowledge of wildlife conservation principles and their application for our citizens of the future, and information regarding fish and game operations and management of today, form the most important phase of operations in this division. Recognizing the need for these services, the Fish and Game Commission has enlarged the scope of this work during the past biennium.

Operations of this division include work with Idaho school children in the schools and through youth groups and clubs. It calls for preparation and release of information through newspapers, magazines, radio and correspondence. Booklets, pamphlets and moving picture films are prepared and made available for free distribution, and personal contact is made with civic clubs, sportsmen's clubs, churches and any group who may request talks by division personnel.

Other duties associated with this division include publication of legal notices, printing of regulations on fishing and hunting seasons and areas, and production of pamphlets and maps to inform the public regarding specific hunting areas.

INFORMATION

Approximately 900 news articles were prepared and released to wire services, newspapers, radio stations and outdoor writers during the two year period covered by this biennium. Requests for specialized and detailed information were answered during this period. These included such items as furnishing pictures for illustrating articles and answering written and oral requests for detailed information on hunting or fishing areas, packer or guide service, accommodations, types of equipment recommended and all related subjects.

Included in this portion of the division operations are appearances by members of the division at meetings held by civic groups, clubs, granges, or any organization who may make requests for speaking engagements. Such activities usually also include the showing of films on wildlife resources, fishing and hunting or department operations. Approximately 300 such appearances were made by division personnel during the two year period. Many department personnel appeared at several hundred meetings throughout the State during this period to provide information at the local level.

Posters, pamphlets and written material on firearms safety and information directed toward preventing hunters from becoming lost, are also obtained, and released throughout the state.

PUBLICATIONS

The IDAHO WILDLIFE REVIEW, official publication of the State Fish and Game Commission, is issued bi-monthly. The magazine is mailed free of charge to any resident of the State who requests it, with a charge of fifty cents yearly to non-residents. At present we are printing 12,000 copies each issue. Normal size is 16 pages, with one 20-page issue released during the biennium.

Publishing costs have increased with the last contract, and will be reflected in the 1951-1953 biennium. Total printing, engraving, mailing and photography cost for the period covered by this report was $9,930.00 for an average of approximately seven cents per copy.

A six-inch by nine-inch booklet, containing information and illustrations of Idaho upland game birds, was prepared during the period. Ten thousand copies were printed and are being distributed to schools, and to individuals upon request.

Sufficient copies of a publication titled YOUR GAME DEPARTMENT which outlines department functions, division operations and listing Idaho wildlife, remain on hand to fill our requirements for another season.

The information contained in the upland game bird booklet is being printed with each issue of the IDAHO WILDLIFE REVIEW, and reprints have been made available for use in classroom work.

Plans call for yearly revision of the booklet dealing with mountain lakes of Idaho so that this publication will eventually contain maps and information on trails and fishing conditions, on the majority of the primitive lakes of the state.

FILMS

The division has continued with planned sound and color moving picture production during the biennial period. Two basic information films, each running ten minutes, and dealing with game management problems, were completed in 1951. Four sound and color films of the same length have been produced since that time, making a total of seven such films produced by the department. Plans call for filming and producing three films of the basic information or topical type, each year. All films produced by the department are cleared for use in television release, and will be made available to Idaho stations for public service programs.

The fish and game department film library has been expanded by the purchase of several films during the biennium. These deal with such subjects as firearms safety and training, wildlife on the forests, fly tying and fishing, management work with migratory waterfowl and soil conservation materials.

The film library now contains a total of 28 different subjects with several copies on hand for a portion of the material. This makes a total of 40 reels available for distribution.

Records compiled on film showings made by department personnel, and those distributed by mail, show that over 75,000 persons saw one or more of the films during the period covered by this report.

CONSERVATION EDUCATION

The educational program of the fish and game department is designed to supplement the school program in providing Idaho youth with an understanding of our fish and game resource. The dependence of this resource on proper use of the basic natural resources, soil, water and vegetative cover must be recognized. Behind this concept is the broader one of the dependence of our citizens on those basic resources, and the dangers of unwise use. Conservation education must be the responsibility of the public schools.

Although the educational program of the department aims to present the fundamentals of the management of our wildlife resources, it is felt that the study will provide the opening wedge to the understanding of the basic natural resources. Conservation should become a part of the broad general education of all Idaho youth.

The Public Program—

Film showings and appearances by personnel of the public relations division and the field force have been a regular part of the educational offerings provided by the fish and game department for many years. Information on the department's activities and its management program has also been made available as a regular part of the department's public relations work with sportsmen's organizations and the general public. During the biennium the addition of new films of basic information type has greatly increased the effectiveness of the information and publicity provided.

Several of the new titles added to the film library in the period deal with fish and game problems in Idaho, and were filmed and narrated by department personnel. Advantages derived from use of such material are obvious. Sportsmen's clubs and other adult organizations draw heavily on these offerings.

The School and Youth Organization Program—

Duties of the education officer of the public relations division are directed primarily toward the schools. His work is planned to aid in the development of the schools' conservation program throughout the state. Scouting, 4-H club, FFA programs and similar youth organizations draw upon the time of the education officer during the summer months.

During the school year the officer schedules trips into all corners of the state, with films and other visual aids. In direct contact with science classes or with an entire student body in assembly, the subject of general conservation is presented by well chosen film material and discussion. By arranging schedules in advance with school administrators, two or more neighboring schools may be visited on a given day. Whenever it can be arranged, the local conservation officer is invited to be present. In this way the students are given the opportunity to meet the department representatives and ask questions about fish and game matters. On these visits game department bulletins are delivered for classroom use on wildlife study units.

A variation on the above approach is to set up a film circuit involving a number of schools. Under the plan a series of wildlife and other films then are circulated to the schools on a weekly basis, while department bulletins are mailed to the respective schools. Materials thus scheduled permit advance planning by the teachers involved, and this method of using films is preferred in some cases. Department films are suitable for both high school and elementary use.

This year preparation was begun on a traveling exhibit of mounted specimens of game birds, skins, and related exhibit material. This exhibit will be shown in schools and summer camps in the next few months. Birds will be carried in plexiglass cases prepared by the division.

The summer camp contacts with youth stress bird, mammal and plant identification, general nature study, and conservation concepts. As part of this summer program films and traveling exhibits are featured to help teach about wildlife resources. Visits of department field men are a planned addition to these camps; releases of fish to waters adjacent to the camp, or a discussion of a live beaver by the department field men add interest and instructional value.

School Poster Contests—

The information and education work of the department includes joint sponsorship with the Idaho Wildlife Federation of the annual wildlife conservation poster contests in which school students participate statewide. During the biennium much value was derived by students who submitted posters calling attention to the need for conservation of forests, soil, waters and wildlife. Information and publicity on these contests is issued through the department's public relations office, which also handles details of final judging.

The Conservation Workshop for Teachers—

Working cooperatively with other conservation agencies in the state, the department is assisting in a scholarship program for teachers enrolling in conservation workshops at teacher-training centers in Idaho.

Purpose of the workshop is to expand the effectiveness of conservation education by providing such training for Idaho teachers. It is recognized that the 4,000 teachers in Idaho hold the key to conservation education. This program has grown during the biennium. Approximately 60 teachers have been enrolled.

Scholarships—

To stimulate workshop enrollment, over $3,000 in scholarships has been conferred on interested Idaho teachers by sportsmen's clubs, the National Wildlife Federation, private industry, soil conservation districts, and the State Parent-Teacher Association. The department has assumed responsibility for collection of scholarship funds by publicizing the plan, circularizing potential donors with follow-up correspondence and supplying information to teachers. The education officer schedules appearances at the summer workshop sessions.

BIG GAME DIVISION

In our efforts to provide the maximum annual harvest of big game on a sustained yield basis, emphasis has been placed on maintaining optimum numbers of game on the various ranges in relation to their food supply. It is a difficult task to maintain the proper number of species of game animals on the various ranges with the varied factors affecting them, but the increased and maintained production of big game depends upon the effectiveness of this work.

Since the factors affecting the numbers and species of game which a unit of land will support are never stable, additional and continued checking of conditions is necessary in order to ascertain what practices and measures are desirable for highest production. Weather and accessibility are probably the two most important factors influencing harvest during a season. Some herds are so accessible that general hunts would deplete their numbers, while in other inaccessible areas inadequate harvest has resulted in range deterioration with a resulting decline in herd numbers.

Conservation officers have, and will continue to furnish much of the data obtained by the department in managing our game. In an effort to increase the supply of game for such a large hunter demand, it has been deemed advisable to employ biologists to assist in obtaining necessary facts. In this endeavor the entire state has been divided into management units, each containing an important game herd and its range. It is anticipated that by compiling the census, harvest, range utilization and other management data for each unit, the problems of management for the game herds within the state can be more efficiently treated. It is believed that only by obtaining the proper balance of big game species and numbers with other land uses are maximum sustained returns possible.

The continued rapid increase in big game tag sales is an indicator of the demand for this resource. The increase in game tags sold is as follows:

	1950	1951
Deer Tags - - - - - - - -	**89,178**	**99,553**
Elk Tags - - - - - - - -	**33,855**	**43,198**

With an increase of about 12 per cent in deer tag sales and 28 per cent in elk tag sales in 1951 over those of 1950, it will be almost impossible to maintain the hunters' present chance for success under the most extensive and productive management. In 1951, hunters had a 33 per cent success ratio for deer and 17 per cent success ratio for elk, based on the total kill against tag sales.

DEER

The harvest of deer by districts for the 1950 and 1951 seasons is as follows:

	1950	1951
District 1	1,532	2,233
District 2	2,269	2,815
District 3	5,627	10,378
District 4	7,992	9,561
District 5	5,158	8,631
	22,578	33,250

A population of 20,550 whitetailed deer and 120,000 mule deer is the estimated winter population for Idaho. A recorded kill of 3,786 whitetailed deer was listed for 1951. The number of deer killed during the latter half of the biennium shows a large increase of 10,672, or 47 per cent over the 1950 harvest. By keeping the proper balance of game to the available winter forage, it is anticipated that approximately this take can be maintained or even slightly increased. As an example of adequate harvest, we refer you to the Cassia Division of the Minidoka National Forest deer herd: 1947 harvest, 1,259; 1948 harvest, 1,364; 1950 harvest, 3,641; 1951 harvest, 4,123, or 16 per cent and 12 per cent of the total harvest of deer for the entire state for the latter two years respectively. On the other hand, it should not be construed that all big game ranges in the state possess this productive potential.

ELK

For the past biennium the following tabulations show the elk kill by districts:

	1950	1951
District 1	649	769
District 2	2,840	3,550
District 3	1,679	1,763
District 4	1,430	1,004
District 5	567	406
	7,165	7,492

Elk are next to deer in numbers with their present winter population estimated at 43,600. The largest herds are in the Clearwater river drainage. In the Lochsa and Selway river watersheds their numbers appear to have passed their peak with timber replacing much of the extensive browse which followed the 1910 and 1919 fires. However, they are still extending their range in northern Idaho. Population increases are noted in portions of central and southeastern Idaho with the remainder of the state as a whole remaining fairly static. The 1951 harvest of 17 per cent is within the annual increment of a healthy elk herd.

A portion of an elk herd are shown resting on the Pocatello Game Preserve winter range. Elk were introduced into the area in 1916.

BEAR

The season remained closed during 1950 and 1951 for the taking of grizzly bear. They are not plentiful in any section of the state and are very scarce over most of the big game range. Their estimated total number is 38.

In all counties north of the main Salmon river, except Lemhi county, the black bear has been protected from year round hunting during the past biennium with seasons open from September 1 to November 15, and September 1 to November 30, respectively. For the remainder of the state the season has been open to year round hunting. The conflict of bear with other land uses is one factor in determining this season.

The total kill of black bear in the state during this period is not known. From checking station records and comparison with the 1948-1950 biennial report, it is approximately 500 for each year. Their present number is estimated at 6,470.

MOUNTAIN GOAT

An open season from September 15 to September 25 was held in Boundary county during 1950. Eight goats were harvested. The season remained closed during 1951. There has been little change in the over-all population of goats during 1950 and 1951 with the present population estimated at 3,570.

The Federal Aid project to obtain facts for improved management of this species was continued. To date the study has been concentrated in the Selkirk Range of northern Idaho and the Salmon river watershed.

BIGHORN SHEEP

Hunting of bighorn sheep was prohibited during the biennium. Their present range and numbers are greatly restricted from former years with the Salmon river watershed containing practically all of the 2,500 animals estimated in the state.

The Federal Aid project was continued during 1950 and 1951 in an effort to determine the factors restricting their numbers and distribution. It is the endeavor of the project personnel to obtain data which will permit the maintenance of optimum numbers of sheep on ranges suitable with sustained annual harvests. Failure of the lambs to survive to yearling age is the most noted factor limiting their increase. Over portions of the Salmon river watershed their numbers appear to be as plentiful as they have been during the past 15 or 20 years.

PRONGHORN ANTELOPE

The sport and harvest of antelope continues to increase. In 1948, there were 420 killed, increasing to 539 in 1950, and 1,349 in 1951. During the latter season two areas in Owyhee county were opened to hunting. A total of 123 antelope was bagged by the 146 hunters participating in the Owyhee hunt. The hunts are conducted on a special permit basis as general hunts would deplete their numbers and not accomplish the desired removal from various ranges. A high success ratio was made by participants, being 81 per cent in 1950 and 85.4 per cent in 1951.

A total population of 13,447 is listed for Idaho. The increased harvest is not depleting their numbers. They have extended their range in recent years. Control of predators has also increased percentage of survival. Some of the areas have reached the maximum numbers that can be maintained in relation to other land uses. A biennial census of their numbers has been the basis for determining the desired take. By maintaining the herd numbers at a level the units of range will support and harvesting the annual increment, a harvest at or exceeding 1,500 animals is anticipated annually.

In an effort to increase the range and numbers of antelope, a trapping and transplanting program was initiated under a Federal Aid project. Numbers trapped and transplanted are included in this report.

MOOSE

Moose numbers are listed at 1,317 for the state. In portions of Fremont and Clark counties, 50 permits were issued in 1950 for the taking of mature animals of either sex, and the hunters obtained a 100 per cent kill. In 1951, one of the three units was closed because of the heavy illegal moose kill during the general elk season. Thirty permits were issued for mature moose of either sex and 28 were killed. Only one hunter participating failed to bag his game. The rugged animals do not seek cover as elk do when hunted and are one of the easiest big game animals to shoot, necessitating a special hunt to limit the take and maintain adequate breeding stock.

The taking of mature moose of either sex is permitted because their population in this portion of their range in eastern Idaho is at the maximum numbers it will continue to support. One difficult part of management of this game species has been the heavy loss sustained when general elk hunts are held in the range they inhabit. Moose numbers have increased since the special hunts were initiated in 1946. The winter census in 1950 listed 708 and 1,080 were counted in 1952 with the latter census including a part of Clark County west of U. S. Highway 91. Smaller numbers of moose are found scattered throughout the heavy forested areas of the state.

BUFFALO

One lone bull believed to come from Yellowstone Park has wintered for the past few years in the Fall Creek watershed of Fremont County. Buffalo is the only native big game animal to disappear from Idaho ranges. Due to its range habitat the probability of the buffalo's returning to any importance as a big game animal is very dark indeed.

CARIBOU

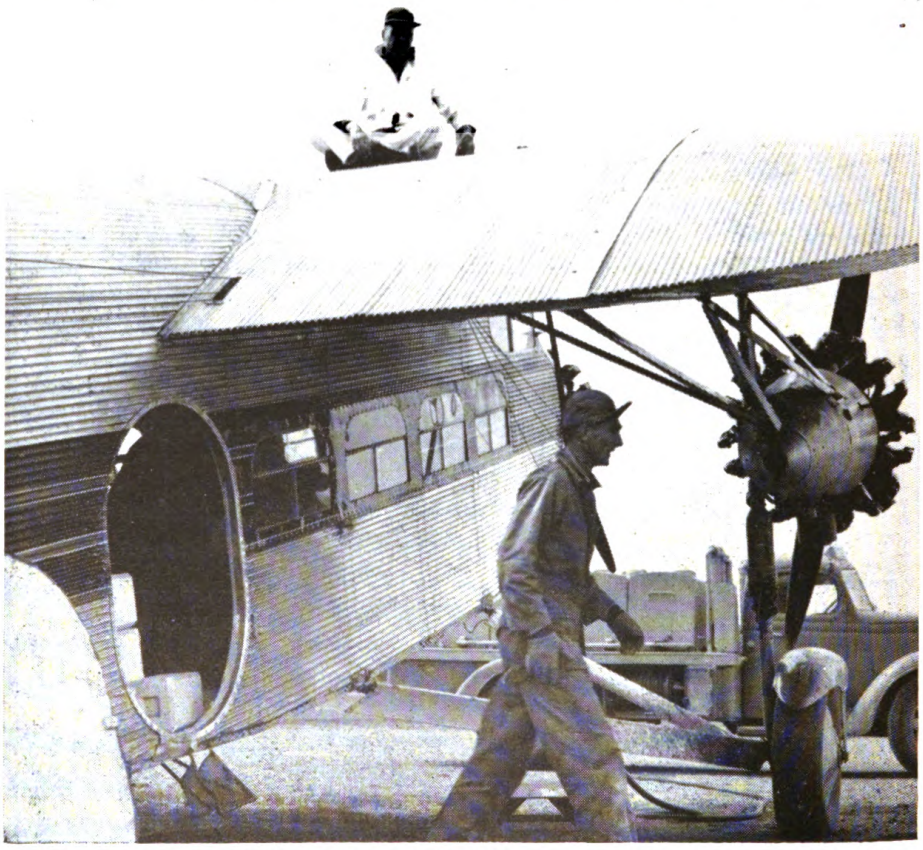
No season has been held for the taking of woodland caribou in Idaho for many years. They are almost non-existent within the boundary of the state with an estimated number of 24 inhabiting restricted timbered areas adjacent to the Canadian border.

SALTING

Approximately 200 tons of block salt were distributed during 1950. A total of 102 tons was dropped from aircraft at a transportation cost of $4,625.88. Federal Aid authorized the placement of 62 tons by air, while the state's distribution was 40 tons. Through the cooperation of the Forest Service, dude ranches and individual packers, an additional 98 tons were distributed by pack string in 1950.

The total 1951 salting program for the state amounted to 164 tons of 50-pound blocks of salt placed on game ranges at a cost of $12,707.29. Conservation officers and the Forest Service placed 18.9 tons of salt with the remaining 145.1 tons placed by aircraft under Federal Aid at a cost of $11,743.67 of the total salting program.

All of the aerial salting was financed under Federal Aid. The salt was dropped on various selected sections of the big game ranges throughout the state between February 25 and May 16, 1952. Cost per pound varied



Airplanes are used to distribute salt for big game use in remote Idaho areas.

Elk are trapped and tagged at Sand Creek Ranch in eastern Idaho to determine migration routes.

from $.017 to $.023, amounting to $5,933.46 for aerial placement. Services were secured through publicly advertised bids to aircraft operators.

From the Canadian border south to and including the St. Joe river watershed, 54,000 pounds were dropped. Within the Clearwater river drainage and north of the main Salmon river, except Lemhi county, 131,800 pounds were dropped. In the remaining drainage of the Salmon, Payette, Boise and Wood river watersheds there were 82,400 pounds dropped. The remaining 22,000 pounds were placed principally in the Snake river, Blackfoot river and Bear river watersheds.

TRAPPING AND TRANSPLANTING

Thirty-three mule deer were trapped on the South Fork of the Payette river near Garden Valley Ranger Station feed grounds in 1950. Twenty-two of these animals were transplanted in the main river watershed near Gardena, a more suitable winter range, while eleven mature bucks were released at the trapping site. Ninety-seven deer wre trapped from the feed grounds near Ketchum. Three of the tagged deer were released at the site and ninety-four were transplanted near Magic Reservoir.

In 1951, under a Federal Aid program, a total of nine elk, 57 deer and 369 antelope were trapped. Under a cooperative program with Utah, Nevada and Idaho, 57 deer were tagged and released in an effort to gather information regarding the migration habits of the Minidoka National Forest deer herd.

The 369 antelope were trapped in the Crooked Creek and Birch Creek areas and after tagging were released at the following sites:

Point Springs in Cassia county	37
North of Lake Walcott in Minidoka county	35
Gifford Springs in Blaine county	49
Cedar Creek in Twin Falls county	89
Brown's Creek in Owyhee county	51
Tagged and released at site	103
Transportation loss	5
	369

To determine the drift and migration of antelope, 20 were tagged and released in the Crooked Creek drainage and 83 in the Birch Creek watershed. The trapping and transplanting was financed under a Federal Aid project.

Near Birch creek in Clark county, 120 antelope were trapped, tagged and released.

There were 14 whitetailed deer trapped and tagged at Farragut Refuge and released along the Teton river in Fremont county near Newdale during January, 1952. Two deer were tagged and released at the trapping site.

Eighty-six mule deer were tagged and released at the feed grounds near Featherville, on the South Fork of the Boise river. On the feed grounds near Ketchum, 167 mule deer were trapped and tagged with 159 being transplanted in the desert north of Shoshone.

Two elk were trapped, tagged and released while trapping deer near Ketchum.

Trapping operations were unsuccessful in the Middle Fork of the Salmon river and at the Sand Creek Refuge in Fremont county.

Our trapping, tagging and transplanting program is designed to obtain additional information regarding game drifts and movements as well as establishing new herds in suitable habitat.

SUPPLEMENTARY FEEDING

Due to a very mild winter during 1950-1951, very little supplementary feeding was necessary. Feeding was conducted at Warm Springs creek near Ketchum and along the South Fork of the Boise river near Featherville, amounting to approximately $7,000.00.

During the 1951-1952 winter, the deep snow covered much of the browse and restricted the mobility of game over portions of various ranges in southern Idaho. The South Fork of the Boise river and the Big Wood river ranges were the center of the heaviest snow.

In District No. 1, feeding of game was helpful in reducing winter loss by keeping game off the railroad tracks.

Between Featherville and Jumbo creek on the South Fork of the Boise river, an estimated 1,800 deer and 100 elk were fed from January 25 to April 3. On May 12 and 13, a check of the game loss at the feed

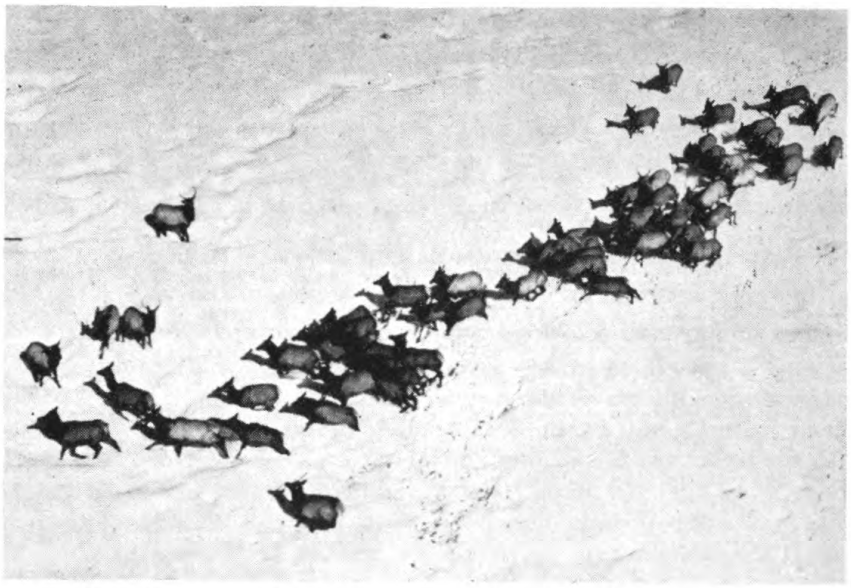
lots was made by four conservation officers. There were 239 young, 97 adult and one unclassified dead deer found for a total of 337. The elk loss consisted of 20 young, 12 adults and two unclassified, for a total of 34. Only the areas adjacent to the feed lots were covered and is not necessarily a true figure for the total loss. Where the feeding was conducted there was a 19 per cent loss in the deer and a 34 per cent loss in the elk.

In Bear Lake county where the natural browse is in a depleted condition, 186 deer were fed for a period of two months, a total of four and one-half tons of hay and 2,500 pounds of protein cubes. The spring census upon termination of the feeding showed 109 live deer and 77 dead for a loss of 41 per cent.

In the upper reaches of the South Fork of the Boise river, four feeding stations were operated from January 10 to March 29, in which 24½ tons of hay and 6,500 pounds of cubes were fed to 319 elk. The known loss of elk at the time feeding was terminated was 34, or 11 per cent loss. From feeding conducted to date, it is very evident that the poorer condition the winter range is in, the heavier the loss of game sustained when supplemental feeding is done.

Along the South Fork of the Payette river a heavy loss of deer and elk took place. The snow conditions were not as severe as in the South Fork of the Boise river and Big Wood river areas. The winter elk and deer loss east of Garden Valley store on the north side of the South Fork up to 13 miles above Lowman counted by the checking crew between March 28 and April 1 were 566 deer and 99 elk. The estimated deer population in 1949 for the Payette area was 5,000. For the South Fork of the Payette river the 1952 census trend areas show a marked increase of 14 per cent over 1951 and 41 per cent over the 1950 count. The loss based on a population figure of 5,000 would be 11 per cent, which is considerably less than the loss figures for the Featherville and Montpelier areas where their range is also in poor condition and supplemental feeding was conducted. However, it was not the plan of the department to withhold feed from the Payette deer and elk herd to save money or work involved in Feeding was not conducted in the South Fork area because it was felt scattered herds foraging for themselves suffer fewer losses than those drawn to feed lots.

This is not the first heavy loss along the South Fork during a severe winter, another having occurred during the 1931-1932 winter. There were 2,700 deer counted on the feed lots. Estimates of the number varied from 5,000 to 8,000. An extremely heavy loss followed in the spring. The State Game Department paid for burying 1,800 dead deer along the road from Garden Valley to the Deadwood river. Again during the 1942-1943 winter, hay and concentrates were fed to the deer herd estimated at 9,500, and



Aerial census of elk forms another function of Game Division activities.

500 elk, but 2,000 deer and 200 elk died. Checks at the feed lots indicated a 20 per cent loss there. Supplemental feeding was conducted during the severe winters of 1946 with a heavy winter loss in the spring. The data to date indicates that the solution to winter losses of game and an increased sustained yield is in maintaining game numbers within their range forage production. Winter feeding of game appears to be a temporary emergency measure and not a solution to winter starvation losses.

During the 1951-1952 winter the following amounts of feed were fed by districts, including costs:

District	*Hay*	*Cost*	*Lbs. Cubes*	*Cost*	*Salaries and Transportation*	*Total Cost*
1	10 tons	$ 450.00	3,200	$167.36	$ 49.22 sno-cat	$ 666.58
2	----	----	----	----	----	----
3	86,450 lbs.	1,944.00	14,600	763.58	4,894.14	5,601.72
4	131 tons	5,886.25	17,400*	913.27	4,894.09	11,693.61
5	25½ tons	1,149.00	4,100	246.00	649.04	2,044.04
*100 *lbs. barley included*					Total cost of Feeding	$20,005.95

All storage barns throughout the state are stocked with hay and stock cubes at the present time in the event emergency feeding is necessary during a critical period.

RANGE DEVELOPMENT

A habitat improvement program for work on big game ranges was approved as a Federal Aid project on August 31, 1950, for a two-year period. This program is yet in the experimental stage and we are attempting to find a method by which range lands can be successfully and economically revegetated. In the fall of 1950, approximately 1,000 acres in the Middle Fork of the Salmon River area were planted with bitterbrush and balsam-root seeds. No emergence was noted from balsam-root seed, and very little emergence was noted from the bitterbrush seed. A very small percentage of the latter was known to survive through the first summer.

Seeding of chokecherry and service berry was also done on a trial basis but with little success. Approximately 28,000 willow cuttings and 10,000 southernwood cuttings were planted. Survival was apparent in early spring, but mortality ran high during the hot dry summer months. Bitterbrush seeding was carried out again in the fall of 1951 on approximately 1,500 acres in the same area of the Middle Fork of the Salmon river. Disturbance by rodents was extremely high in the placement of seed for both years and survival of the planting of seeds is expected to be low because of this disturbance.

During 1950, approximately 140 acres of abandoned range lands in the South Fork of the Boise river drainage were drilled to a mixture of bitterbrush, balsamroot, tall and intermediate wheat grasses and ladak alfalfa. Fair stands of the wheat grasses came up. A fair emergence of bitterbrush was noted but a high mortality was apparent due to competition from invading annual weeds.

Approximately 400 acres on the Mores Creek refuge were planted with 25,000 bitterbrush seedlings in the fall of 1951. Survival rate on this planting is expected to be favorable.

We have experimented with the transplanting or seeding of some 60 browse species within the Middle Fork of the Salmon river, South Fork of the Payette river and the Boise river drainages during the past biennium. It is our firm belief that feasible and economical methods will be arrived at for revegetating critical big game ranges. It is anticipated that the rehabilitation programs will be expanded as proved methods become available.

GAME BIRD DIVISION

In 1949, Federal Aid Project 96-R entitled, "Statewide Survey of Game Birds," was begun. Under this project, four biologists stationed in various areas of the state began gathering information on the game bird resources of Idaho. Primary objectives of the survey are to:

1. Determine past and present range of the game bird species
2. Establish breeding population trends
3. Determine production
4. Collect harvest data

Work has continued on this project during the biennium. It is anticipated that the program and techniques being developed will serve as the basis for sound management plans for all the game birds of Idaho.

PHEASANTS

Pheasant populations during the biennium have been relatively high in most areas of the state. A substantial carryover from 1950 and a successful hatching season in the spring of 1951 combined to produce an adequate number of birds for the 1951 hunting season. Field checks showed a good population remained after the season.

The deep snows during the winter of 1951-52 caused some loss but in no area was it excessive. An above-average hatching season during 1952 resulted in a high fall population. Unfortunately, the dry fall prevented as high a hunter harvest of this population as could have been taken. Most hunters reported an abundance of birds in the field but experienced difficulty in bagging them.

As a result of sex ratio counts taken by conservation officers and biologists during the winters of 1949-51, it was determined that there were more cock pheasants remaining in the field after hunting than were needed for adequate reproduction the next spring. In an effort to utilize these surplus birds, the bag limit in 1952 was raised to three cocks on a statewide basis. Counts will be continued during the 1952-53 winter season to see if the desired results were obtained.

SAGE GROUSE

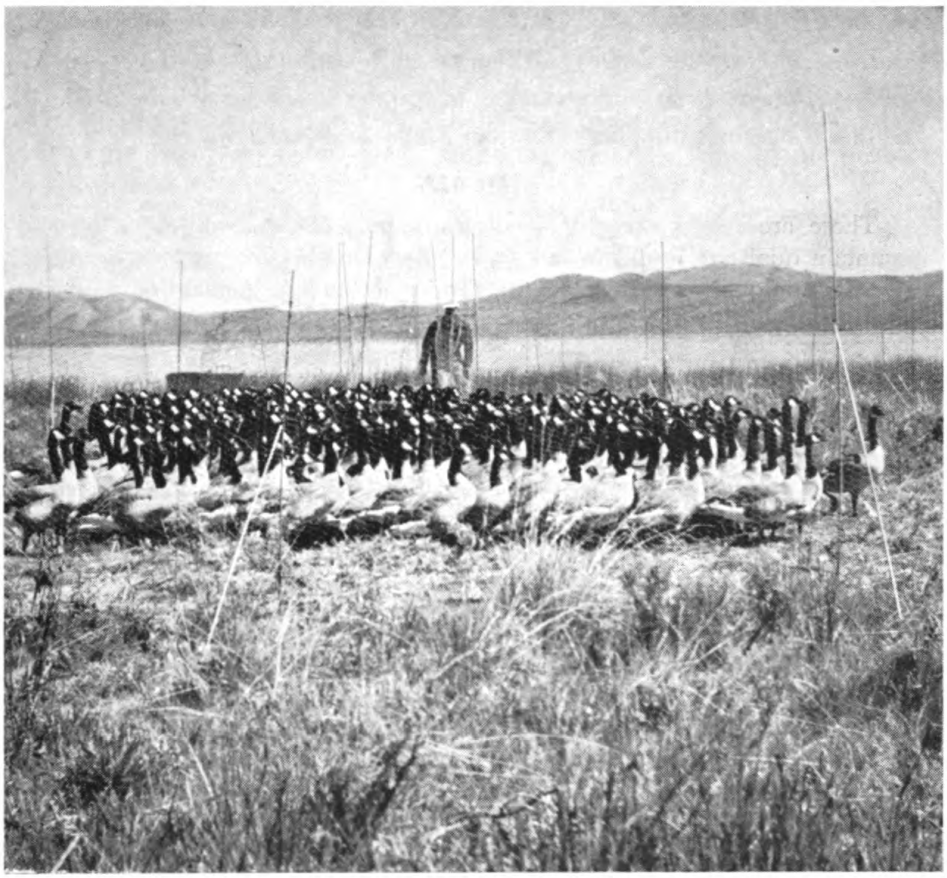
Some concern was shown in 1951 for our sage grouse populations since there had been an open season in many areas of the state for the preceding three years. Because of this, the 1951 season was open in 27 counties for one day only with a bag and possession limit of two birds. Hunter bag checks taken during the season indicated that hunters in some areas did not have nearly the success attained in the 1949 and 1950 seasons. It was concluded that hunting pressure during the three previous seasons had reduced certain populations below the level at which they should best be maintained.

In view of the above, and coupled with discouraging reports of breeding ground surveys ,it was deemed advisable not to have an open season on sage grouse in 1952. It was felt that although the sage grouse populations in general appeared in good shape, that certain local populations should be given a short rest. Past experience had shown that it wasn't feasible to close many small areas where bird populations were low. This merely increased hunting pressure in other areas with the possibility of overshooting the birds there.

It is hoped that breeding ground and brood surveys next year will be encouraging enough to allow a sage grouse season in 1953.

FOREST GROUSE

There are three species of forest grouse in Idaho—blue grouse, ruffed grouse and Franklin's grouse. Populations o fthese species during the biennium have been relatively high. In 1951, thirty-five counties or portions thereof were open to the hunting of these species for a season of from one



Canada geese are trapped and banded at Blackfoot Reservoir as part of statewide waterfowl survey.

to fourteen days with a bag and possession limit of two grouse. In 1952, twenty-one counties or portions thereof were open to the hunting of forest grouse with seasons of from four and one-half to fifteen and one-half days, with bag and possession limit of three grouse. Research being carried on by the Idaho Cooperative Wildlife Research Unit indicates that Idaho hunters are not utilizing ruffed grouse populations to the extent that they could. In view of this, the grouse seasons have been lengthened and larger bag limits allowed during the biennium than for a number of years. There is no indication that this practice has been detrimental to our populations. They appear to be as high or higher than they were prior to the longer seasons. In some areas of the state these birds are harvested quite eagerly but in other areas there is very little interest shown in the forest grouse seasons.

SHARP-TAIL GROUSE

Only scattered flocks of the sharp-tail grouse remain in Idaho. Overgrazing, indiscriminate range burning and large-scale dry-farming operations have eliminated it from much of its former range. Probably the greatest numbers in the state today are found in the Junipers area north of St. Anthony in Fremont County. Although it is doubtful that the sharp-tail will ever again be an important game bird, every effort will be made to see that it does not disappear from our range lands entirely.

QUAIL

There are four species of quail in Idaho. The bobwhite, valley and mountain quail are found in fair to excellent numbers in various localities. The Gamble quail is located only in the Lemhi valley. A planting made by local sportsmen in the 1920's has maintained itself throughout the years and is occupying habitat normally utilized by valley quail in similar locations.

Quail season has been held concurrently with pheasant season during the biennium. The majority of hunters take quail only incidentally while out primarily for pheasants. Most quail populations are underharvested but greater hunter interest is shown each year.

HUNGARIAN PARTRIDGE

Hungarian partridge populations were at a low ebb following the severe winter of 1948-49. Each year since then they have shown a progressive increase in numbers. More Huns were reported during the fall of 1952 than for several years. In those areas where hunting is allowed, Hungarian partridge seasons are held concurrently with pheasant seasons. Hungarian partridge are in about the same category as quail. There are not many people who hunt either species primarily. Probably the greatest numbers of Huns are shot by hunters who take the birds while pheasant hunting. It does seem, however, that more interest is shown in partridge hunting each year. Many of the areas having Huns can stand more hunting pressure and it is hoped that people will begin utilizing this resource.

CHUKAR PARTRIDGE

Plantings of the Chukar partridge were continued during the biennium. In 1951, a total of 1,200 birds was released at various sites in Elmore county. Plantings were continued in 1952 with the release of 1,135 birds in Twin Falls, Cassia and Gooding counties. The planting program for Chukars was strengthened during the biennium with the erection of a holding pen at the Hagerman refuge. With this new facility, it is possible to retain a maximum of 3,000 birds over winter so that they may be released the following spring. The Jerome game farm does all the rearing of Chukars. A measure of success as shown by broods observed on the area is indicated for several of the plantings made in 1951 and 1952. In some of the areas a healthy increase was noted in the birds for the two years. It is hoped that these increases will continue. The program calls for raising and releasing approximately 2,500 Chukars a year for the next few years in order to determine definitely whether or not this species has a future as a game bird in Idaho. If the new plantings will establish themselves as well as the population on Squaw Butte in Gem county then hunters are due for a new game bird species in not too many years.

MOURNING DOVE

In 1951, all counties of the state but 10 had a mourning dove season which ran from September 1-15. In 1952, all counties but 13 had a season extending from September 1-15. Bag and possession limit for both years was 10 birds.

The mourning dove nests throughout the state and it is felt that more doves are reared annually in Idaho than are taken during the hunting season. By federal law it is not possible to open the season prior to September 1 and it is an exceptional year in which the birds remain in any numbers during the entire course of the season. The first storm in the fall sends the majority of the doves on their way south.

The mourning dove has never been a very important game bird in Idaho. It does seem, however, that more interest is shown each year as hunters become acquainted with the sport of trying to bag these elusive targets.

WATERFOWL

A statewide survey of the waterfowl in Idaho which was begun in 1949 under Federal Aid Project 84-R was continued during the biennium. The primary purposes of the study are to determine wintering populations, breeding populations, production, harvest data and to trace movements by banding. Since the project was started, approximately 18,000 waterfowl have been banded in the state. Many interesting recoveries have been made of these bands and a better picture obtained of inter- and intra-state movements of these migratory birds. Certain data on longevity, rate of return of the various species and sex and age kill differential also have been gathered.

The 1951 season as established by the U. S. Fish and Wildlife Service was for 60 days. Due to an increase in production during the 1952 breeding season, the hunting period was lengthened to 70 days in 1952. As is always the case in waterfowl hunting, the weather played the most important role in determining the hunter's success during each season. Most areas of the state enjoyed fair to good shooting in 1951. The late, dry fall served to reduce the kill in 1952 and most hunters felt that they did not gain the benefits anticipated with the longer season.

HABITAT IMPROVEMENT

The lack of suitable winter food and cover is felt to be one of the limiting factors on game bird populations in Idaho. In an effort to partially compensate for the loss of game bird cover brought about by current clean-farming operations, the department has been doing habitat improvement work in suitable areas since 1948. In the early stages of the program, the department solicited cooperators, drew up a planting plan, furnished the necessary trees and shrubs and assisted in the actual planting whenever possible. Due to lack of department personnel, it was then necessary for the cooperator to assume the care, cultivation and irrigation of the plantings. There were instances where this system worked fine and some worthwhile plantings were established. In a number of cases, however, the cooperators neglected to do the upkeep chores necessary to make the plots a success and the plantings failed.

Habitat Improvement personnel operate a tree planter which facilitates rapid planting of browse and cover shrubs for wildlife.

A dramatic example of habitat improvement is shown in this picture of experimental windbreak plantings.

In order to minimize loss of planting stock, the department this year assumed more responsibility for planting and caring for habitat plots. We now prepare the ground, plant the trees, fence the plot and cultivate the planting for the first two or three years. In order to do this, it was necessary to employ three full-time habitat improvement foremen and purchase the necessary farming equipment for them to use. In 1952, these men and their crews planted approximately 100 acres of land with 75,000 plants of 13 species of trees and shrubs. The plantings made this year will in a few years be of direct benefit to game bird populations and will also serve as demonstration areas illustrating what can be accomplished with proper care.

YOUTH CHICK PROGRAM

In 1950 and 1951 the department furnished day-old pheasant chicks to interested cooperators sponsored by the FFA, 4-H, Boy Scouts and sportsmen groups or similar organizations. When the pheasants were 8-10 weeks old, the department picked up and released the birds and paid $1.00 to the youngster for each one received. The results of this program showing number of birds issued and numbers brought back are given in the accompanying table. The Lapwai game farm supplied chicks for distribution in Districts One and Two and the Jerome game farm furnished those for Districts Three, Four and Five.

Due to a limited budget, it was not possible for the department to offer such a program in 1952. The only day-old chicks issued this year went to sportsmen organizations who assumed all responsibility for the program.

YOUTH CHICK PROGRAM

District	Year	Birds Received	Purchased Back	Percentage
One	1950	4,614	2,707	59%
	1951	4,389	3,396	77%
Two	1950	1,384	805	58%
	1951	650	458	70%
Three	1950	1,819	1,275	71%
	1951	1,526	1,210	79%
Four	1950	925	487	53%
	1951	404	335	83%
Five	1950	3,840	2,149	56%
	1951	2,675	1,963	73%
Totals	1950	12,582	7,423	59%
Totals	1951	9,644	7,362	76%

GAME FARMS

Artificial propagation of game birds was continued at the game farms at Lapwai and Jerome. In addition to these hatcheries, holding pens at Coeur d'Alene, Eagle and Hagerman were utilized. Pheasant releases are of three types. As soon as weather permits in the spring, pheasants which have been held over winter at the game farms or in the holding pens at Eagle or Coeur d'Alene are liberated. These releases are made prior to the nesting season so that the birds may nest and rear their young naturally. As soon as the number of eggs necessary for hatching at the farms is gathered, the stock utilized to lay these eggs is liberated. Often times these birds will also nest in the wild and add to the fall population. The greatest numbers of birds released are those hatched and reared at the farm and put in the wild at 10-12 weeks of age.

In the spring of 1952, a request was received from sportsmen in Alberta, Canada, asking that we donate any pheasant eggs we had over and above those needed for production at the game farms. They were attempting to build up their pheasant stock which had been seriously reduced by a blizzard in the spring of 1951. Arrangements were made to do this and the Lapwai and Jerome farms each contributed 5,000 eggs.

In addition to its yearly quota of pheasants, the Jerome farm has been producing Chukar partridge for release during the biennium. Chukars are kept over winter in the holding pens at Hagerman and released in the spring prior to the nesting season.

The production of the game farms for the biennium is shown in the accompanying tables.

PHEASANT PRODUCTION RECORD

JEROME GAME FARM PLANTING RECORD

COUNTY	*Spring Release*	*Brood Stock*	*Summer Release*	TOTAL	*Spring Release*	*Brood Stock*	*Summer Release*	TOTAL
District No. 3			**1951**				**1952**	
Ada	320		1,100	1,420	312		487	799
Adams			675	675			300	300
Boise			400	400	102			102
Canyon			200	200	175			175
Elmore		200	700	900	239		300	539
Gem			600	600	167		200	367
Owyhee		200	800	1,000	352		198	550
Payette							200	200
Washington			325	325	300		309	609
	320	400	4,800	5,520	1,647		1,994	3,641
District No. 4								
Butte		400	800	1,200		400	300	700
Camas								
Cassia	75		600	675	225		300	525
Custer		200	300	500		144	100	244
Gooding			565	565			200	200
Jerome	90	120	600	810	155		200	355
Lemhi		200	300	500		140	100	240
Lincoln			500	500			200	200
Minidoka	75		600	675	150		300	450
Twin Falls	93	155	575	823	227		300	527
	333	1,075	4,840	6,248	757	684	2,000	3,441
District No. 5								
Bannock			400	400			250	250
Bingham	60		900	960		352	600	952
Bonneville		125	500	625			200	200
Caribou	270		500	770	408		215	623
Franklin			800	800		272	250	522
Fremont			150	150		250	100	350
Jefferson		275	500	775		150	500	650
Madison		400	350	750	253	200	150	603
Oneida			800	800		204	150	354
Power							100	100
	330	800	4,900	6,030	661	1,428	2,515	4,604

PHEASANT PRODUCTION RECORD

LAPWAI GAME FARM PLANTING RECORD

COUNTY	*Spring Release*	*Brood Stock*	*Summer Release*	TOTAL	*Spring Release*	*Brood Stock*	*Summer Release*	TOTAL
District No. One–	1951				1952			
Benewah	300		1983	2283	312	204	1650	2166
Bonner	305		1050	1355	140	24	550	714
Boundary	800		2181	2981	673	242	1575	2490
Kootenai	952		2161	3113	695	204	1625	2524
	2357		7375	9732	1820	674	5400	7894
District No. Two–								
Clearwater	200	175	785	1160	245	84	609	938
Idaho	309	372	1700	2381	487	168	1225	1880
Latah	500	216	1714	2430	485	167	1200	1852
Lewis	224	256	1000	1480	258	234	600	1092
Nez Perce	226	220	1728	2174	491	16	1210	1717
	1459	1239	6927	9625	1966	669	4844	7479

JEROME INCUBATION REPORT

	1951		1952	
Pheasant		%		%
Eggs Set	43,128		25,088	
Infertile	3,805	8.8	2,832	11.3
Dead Shell	6,133	14.2	4,120	16.4
Broken	238	0.5	169	0.7
Culls	763	1.8	347	1.4
Hatch	32,189	74.6	17,620	70.2

	1951		1952	
Chukars		%		%
Eggs Set	1,824		5,103	
Infertile	237	13.0	814	16.0
Dead Shell	103	5.6	400	7.8
Broken	13	0.7	119	2.3
Culls	22	1.2	28	0.5
Hatch	1,449	79.4	3,742	73.3

CHUKAR PARTRIDGE PRODUCTION

	1951			1952	
	Spring	Brood-stock		Spring	Brood-stock
Elmore	1,012	188	Twin Falls	200	150
			Cassia	396	
			Gooding		314
			Owyhee	75	

LAPWAI INCUBATION REPORT

	1951		1952	
Eggs Set	36,274	%	22,874	%
Infertile	3,101	8.6	1,751	7.7
Dead Shell	5,038	13.9	2,277	9.9
Broken	199	0.5	143	0.6
Culls	140	0.4	48	0.2
Hatch	27,796	76.6	18,655	81.6

COOPERATIVE WILDLIFE RESEARCH UNIT

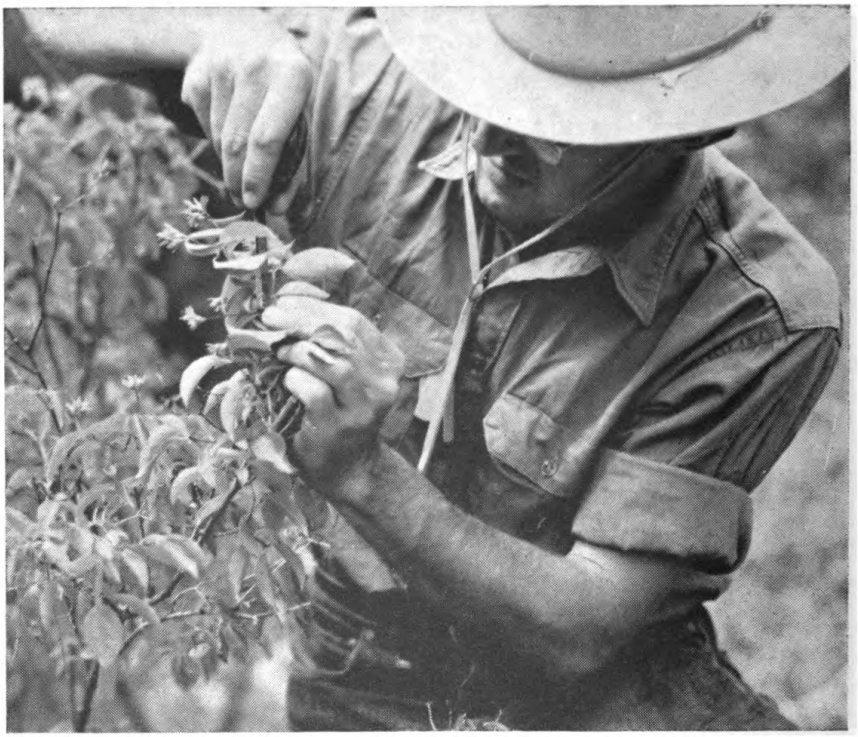
The Idaho Cooperative Wildlife Research Unit is supported by the Fish and Game Department, the University of Idaho, the United States Fish and Wildlife Service, and the Wildlife Management Institute.

As the research arm for the Fish and Game Department, the Unit conducts research into fish and game problems, the results of which are useful to the Department in wildlife management.

The responsibility of the Unit covers three phases: research, training in wildlife management, and extension or dissemination of the research findings to the people of the State.

During the biennium, the following projects were completed:

1. The Life History and Ecology of the Mountain Goat in Idaho and Montana.
2. Factors Affecting Waterfowl Production in Grays Lake, Idaho.
3. Factors Affecting Pheasant Production on the Irrigated Lands in Southern Idaho.
4. The Life History and Ecology of the Bighorn Sheep in Idaho.



A graduate student of the Idaho Cooperative Wildlife Research Unit at the University of Idaho surveys browse use in Selway area.

5. The Ecology and Management of the Ruffed Grouse on Cut-over White Pine Lands in Northern Idaho.
6. Browse Utilization Studies on the Pocatello Winter Big Game Range, and
7. A Preliminary Study of the Upper Selway River Big Game Winter Range with Special Reference to Browse Utilization.

The scope of work covered by the Wildlife Research Unit has increased during the biennium through the addition of a fishery biologist, Virgil S. Pratt, to the staff.

The addition of separate undergraduate curricula in both wildlife and fisheries has further expanded the opportunities for training men in the fields of wildlife management and fishery management.

Currently, the Wildlife Research Unit is engaged in investigations on white-tailed deer in northern Idaho and mule deer on the Minidoka National Forest. Projects are now active on blue grouse, sage grouse and a continuing study on ruffed grouse. Fishery investigations include those on Lake Pend Oreille and the Clearwater River at Lewiston.

During the biennium, seven men completed the requirements for the master's degree, four working on big game, two on waterfowl, and one on upland game birds. One project on upland game birds by one of the staff was completed during the same period.

Unit projects include research studies of populations of game and fur bearing animals. Here student weighs young muskrats at Grays Lake.

FISHERIES DIVISION

FISH SCREENS

A mechanical rotary drum-type fish screen was installed in the Base Line Canal in the vicinity of Bellevue during 1950. The screen, patterned after the Oregon fish screen, was constructed by the Oregon Game Department. The cost of the installation was $4,638.24. Mechanically, the screen is very efficient. The canal below the screen has been checked on several occasions to determine if there was a loss of fish below the screen and very few have been found. Due to the extreme fluctuation of the volume of water in the canal, there is occasionally more water than the screen is capable of handling. On such occasions it has been noticed that the water level of the canal reaches nearly to the top of the screen and, as a result, a few fish have passed over it.

In view of the costs of installation and annual maintenance and upkeep, it is questionable whether the Department should recommend further installations where the screen is installed primarily to prevent the entrance of resident game fish into the canals. The problem existing on diversions from streams where anadromous fish have spawned is quite different and, no doubt, screening of such diversions would be justifiable. Considerably more work needs to be done to determine the extent of the loss of game fish in the various irrigation diversions throughout the irrigable sections of the State before it is recommended that the Department enter into a full-scale screening program. Such work will go forward as time and personnel permit.

FISH SALVAGE

The salvage of fish from irrigation canals has been an annual activity of the Department during the past several years. The principal canals from which fish have been salvaged have been the Richfield Canal, located in Blaine and Lincoln counties, and the canals below Lake Lowell in Canyon county. Salvage of fish from several other canals has been done when the need arose. The Department has just recently been able to purchase suitable portable generators to be used as shocking equipment for the salvage of fish. In view of the purchase of this equipment, it is planned that fish salvage work will be extended to many other sections of the State where fish losses occur in irrigation canals.

FISH DISEASES

Diseases of fish at the various State fish hatcheries during the biennium have been held at a minimum. One very perplexing though not serious disease has been experienced at all of the hatcheries in southeastern and eastern Idaho. This disease, commonly called "red throat," is caused by a bacteria carried in the blood stream. The disease is called red throat because of an irritated appearance of the membranes of the mouth and opercular areas. We have been able to hold the disease in check through the use of sulfa drugs, principally sulfamethazine.

The symptoms of the disease vary with the several stations affected. Rainbow appear to be more acutely affected than are cutthroat, brown and brook trouts.

In wild fish, the rainbow trout of Magic Reservoir exhibited a rather heavy infestation of an external parasite commonly known as "parasitic copepods." It is doubtful that the infestation was severe enough to cause any appreciable decline of the physical condition of the fish in the reservoir. It is highly questionable that the parasite caused any death losses among the fish.

FISH ERADICATION

Fish eradication projects have been held to a minimum throughout the biennium. Only three bodies of water treated to eradicate the fish populations, which were composed chiefly of non-game species. These waters were: Paul Pond in Minidoka county, Buttermilk Slough in Washington county and Twin Lakes reservoir in Franklin county. Through circumstances beyond the control of the department, Paul Pond and Buttermilk Slough both became reinfested with carp during the spring following treatment. The cost of treatment of each of these waters was nominal. Since it is impossible to prevent reentry of carp into these waters, further treatment is not contemplated. Twin Lakes reservoir was treated on October 23, 1952. At the time of treatment it had a surface area of 330 acres and a volume of 3,000 acre feet.

It is anticipated that lake rehabilitation through the eradication of undesirable or stunted populations of fish will be increased in tempo during the coming biennium.

FISH COUNTS OVER LEWISTON POWER DAM

The counting of steelhead and salmon over the Lewiston Power Dam has continued as an activity of the department throughout the biennium. The actual counts have far exceeded the anticipated population of steelhead which use the Clearwater River as a spawning stream. The number of salmon returning to the Clearwater River has not been as high as hoped for but, nevertheless, it is encouraging that the department's efforts toward the reestablishment of the spring chinook salmon runs in the Clearwater River are paying dividends. Nineteen fifty-one represented the fourth year since the first planting of chinook salmon was made in the Clearwater River.

It is expected that counting operations will continue for another two-year period in order for the Department to gain sufficient information on the runs of anadromous fishes using the Clearwater River. The gathering of such information is deemed advisable in view of the anticipated construction of dams on the lower Snake River and an increase in the number of dams projected for the Columbia River.

TABLE 1

Fish Counts—Lewiston Fish Ladders, 1951-52

(November 1, 1950 — October 31, 1952)

MONTH	Year	Steelhead	Chinook Salmon	Whitefish	Smallmouth Bass
November	'50	43		1	
	'51	52		2	
December	'50	58			
	'51	14			
January	'51	1			
	'52	0			
February	'51	5			
	'52	7			
March	'51	279		4	1
	'52	413		2	
April	'51	1,981		11	
	'52	3,244		1	
May	'51	1,289		3	
	'52	1,229		2	
June	'51	121	15	3	1
	'52	350	7	4	28
July	'51	58	12	18	11
	'52	15	7	3	34
August	'51	0	8		
	'52	5			
September	'51	160		2	16
	'52*	9			
October	'51	810		28	7
	'52*	318	1	16	1
TOTALS	'51	4,805	35	70	36
	'52	5,656	15	30	63
TOTAL, Biennium		10,461	50	100	99

** No counts made of fish over ladders from September 15 through October 7, 1952.*

SALMON AND STEELHEAD

The escapement of salmon and steelhead to Idaho waters has been considerably above normal during 1950 and 1951. There are several possible reasons for the increase in the number of fish returning to Idaho:

(1) The abolition of spearing and snagging of salmon on the spawning grounds,

(2) Closure of the headwater streams during spawning season, and,

(3) An increased number of closures on commercial fishing in the lower Columbia River.

The major problem facing the fisheries people at this time in the per-

petuation of the salmon and steelhead movements into the State is the return to the ocean of the small fish over or through the numerous dams now constructed or contemplated for construction on the Columbia and Snake Rivers. The Army Engineers, the major sponsoring agency, is cognizant of the problem and is presently making funds available for research on methods and ways of directing movements of the small seaward migrants. It is hoped that sufficient time and money will be available in future years to give very serious study to this problem in order that the results may be predicted. Salmon and steelhead are of inestimable value to Idaho sports fishermen.

It is interesting to note that in 1952 anglers began catching steelhead from the Salmon River below Riggins and from the Clearwater River below Kooskia. Fishermen in the past have failed to take advantage of this resource in these waters. In fact, the take of steelhead from the Clearwater River has reached such numbers that serious consideration should be given toward protecting a sufficient number of brood stock to insure the perpetuation of the run.

Chinook Salmon spawn are taken annually on the upper Salmon river drainage.

FISH TAGGING STUDIES

One of the very useful tools of fisheries management is the tagging and releasing of fish and the gathering of information upon their recovery. Several new studies have been initiated and some of the studies started in the previous biennium have been continued. Reports of the individual studies, on file in the Fish and Game Department offices, indicate that the survival of hatchery legal-size fish varies with each water and the fishing intensity on that particular body of water.

MACKINAW TROUT

During the spring of 1952, fishermen started catching mackinaw trout from Priest Lake. A search through the planting records failed to reveal a release of mackinaw in Priest Lake during the years from 1913 to 1951. Information from residents of Priest River indicated that mackinaw were planted in Priest Lake in 1922 or 1923. It is noted from production records that some mackinaw eggs were hatched at the Sandpoint Hatchery in 1925. Whether or not some of these fish may have been planted in Priest Lake and not recorded is a matter of conjecture. Another possible means for the introduction of this species into Priest Lake is that they could have been requisitioned by an individual sportsman through the former U. S. Bureau of Fisheries and no report made to the Idaho Fish and Game Department.

It is interesting to note that for a period of over 20 years few, if any, mackinaw were taken. Yet in 1952, when fishermen discovered the presence of the fish in the lake and began fishing for them in earnest, approximately 334 fish with a poundage of 8,508 were harvested. The largest individual fish taken was slightly in excess of 42 pounds. Although this species has become an extremely popular game fish in Priest Lake principally because of the size attained, the reservoir of fish in the lake will have to be maintained through natural reproduction since eggs of mackinaw trout are no longer available for purchase. Proper restrictions should be imposed governing the taking of mackinaw trout from Priest Lake in order that the perpetuation of the species will be assured.

DINGELL-JOHNSON PROGRAM

Funds under the Dingell-Johnson program became available to the State of Idaho on July 1, 1951. During the period for which funds have been available the following projects have been instituted:

1. Biological and economic fisheries resources of Pend Oreille Lake prior to construction of Albeni Falls and Cabinet Gorge Dams.

2. Utilization of Idaho waters by spring chinook salmon.

3. Extending the range of California golden trout in Idaho to the following lakes: Hunt Creek Lake in Boundary county; Big Browns and P. S. Lakes in Elmore county; Everly Lake in Boise county; Swet and White Sand Lakes in Idaho county; Lower Enos, Ann's, Rock and North Lakes in Valley county, and Lake Fork Lake in Lemhi county.

4. Creel census of Little Salmon River to determine survival of hatchery fish reared to legal size.

5. Effects of hydroelectrical development on the fisheries resources of Snake River.

6. Caldwell fish management area: acquisition of some gravel pits for public fishing.

AIR TRANSPORTATION OF EGGS AND FISH

During the biennium the department has tested the use of the airplane in transportation of fish eggs from the spawning stations at Ashton and Henrys Lake to the various hatcheries through the State and in the planting of fish in high mountain lakes. The principal advantage of using air transportation for eggs is that the eggs can be transported with a minimum of loss. The planting of fish in high mountain lakes has proved not only successful but is an economical and quick means of transportation. A Cessna Model 170 airplane has been used for this work.

Refrigerated boxes of fragile fish eggs are transported by air from spawning stations to hatcheries.

FISH FEED

One of the major problems facing the Fisheries Division at the beginning of the new biennium is the procurement of fish feed in such volume to satisfy the requirements of the hatcheries of the State. For the past several years horsemeat has been the major item of feed. However, the reduction of the number of horses available on farms and ranches and the competition for the available supply have forced the price of the product beyond the point where it is economically feasible to use horsemeat for fish feed. As a result, the department is forced to try to secure other sources of fish feed. We are presently experimenting with the processing of trash fish, namely carp, tench, chubs and suckers, which are available in several bodies of water throughout the State. Also, we are experimenting to determine the value of salmon viscera and other salt water fish by-products as fish food items. It is going to be necessary for fisheries people throughout Western United States to find new sources of fish feed and to improve diets for fish if the production of hatchery fish is not to be curtailed. Annually, the Fish and Game Department is conducting many experiments on fish feed with the hope that curtailment of production will not become necessary.

Trash fish are taken to reduce competition with game fish and provide supplemental fish food at hatcheries.

WARM RIVER HATCHERY

During the spring of 1952, the U. S. Forest Service granted the Idaho Fish and Game Department a special use permit to operate the Warm River Fish Hatchery in Fremont county. The fish hatchery, built on Forest Service lands and constructed with Civilian Conservation Corps and Works Progress Administration funds, has been operated intermittently since its construction by the U. S. Fish and Wildlife Service.

The hatchery has the disadvantage of being located several miles distant from the highway thus making transportation to and from the station in wintertime an impossibility except through the use of snow transportation equipment. The cost of purchase and operation of such equipment is believed to be too expensive at this time to warrant full-time operation of the station. However, it is recommended that the Department continue to operate the station during the summer months and to continue to exercise the special use permit in order that the department will have available an abundant supply of water for fish rearing purposes if a greater production of legal-size fish becomes necessary.

Lapwai holding ponds receive truck load of game fish from hatchery in preparation for area distribution.

TABLE 2

FISH SALVAGED AND PLANTED, 1951-52

(November 1, 1950 — October 31, 1952)

STATION	Year	Trout	L.M. Bass	Crappie	Bullheads	Sunfish	Perch	TOTAL
American Falls	'51						9,400	9,400
	'52							
Eagle	'51		20,299	34,307	10,094		28,408	93,108
	'52		51,569	44,400	2,000		96,880	194,849
Grace	'51		1,550				50	1,600
	'52	870						870
Grangeville	'51		766	57		177		1,000
	'52	302						302
Hayspur	'51	1,747						1,747
	'52	7,481	6,000					13,481
Sandpoint	'51							
	'52	16	678					694
Twin Falls	'51							
	'52						9,000	9,000
TOTAL	'51	1,747	22,615	34,364	10,094	177	37,858	106,855
	'52	8,669	58,247	44,400	2,000		105,880	219,196
Total for Biennium		10,416	80,862	78,764	12,094	177	143,738	326,051

TABLE 3
FISH PLANTINGS IN IDAHO BY OTHER AGENCIES
1951-1952

STATION	Year	RAINBOW Number	RAINBOW Pounds	CUTTHROAT Number	CUTTHROAT Pounds	E. BROOK Number	E. BROOK Pounds	TOTAL Number	TOTAL Pounds
U. S. Hagerman ____	'51	667,604	26,979					667,604	26,979
	'52	533,849	22,605			4,789	550	538,638	23,155
U. S. Warm River __	'51	6,294	1,137	746,360	976			752,654	2,113
Western Wyoming __	'51			80,112	142			80,112	142
	'52			42,900	18	1,000	10	43,900	28
TOTALS _____	'51	673,898	28,116	826,472	1,118			1,500,370	29,234
	'52	533,849	22,605	42,900	18	5,789	560	582,538	23,183
Total, Biennium ____	'	1,207,747	50,721	869,372	1,136	5,789	560	2,082,908	52,417

TABLE 4

EGGS TAKEN BY STATE, 1951-52

(November 1, 1950 — October 31, 1952)

STATION	Year	Species	Number Green Eggs	% Eye-Up	TOTAL Eyed Eggs
American Falls	'51	Rainbow	3,231,930	92	2,973,390
	'52	Rainbow	3,712,000	93	3,390,085
	'51	Ger. Brown	28,188	85	23,960
	'52	Ger. Brown	10,368	87	9,020
Bellas Lake	'52	Cal. Golden	39,762	85.1	33,830
Clark Fork	'51	Kamloops	975,360	78	760,780
	'52	Kamloops	672,448	82	551,400
Coffee Pot	'51	Rainbow	3,763,056	86	3,275,708
	'52	Rainbow	3,374,976	93	3,145,240
Elk Creek	'51	Chinook	132,860	30	39,000
	'52	Chinook	98,654	64	63,316
Hayspur	'51	Rainbow	918,024	82	752,800
	'52	Rainbow	666,432	82	546,490
Henrys Lake	'51	Cutthroat	12,907,800	93	12,077,360
	'52*	Cutthroat	7,243,404	85	6,175,318
Mackay	'51	Rainbow	236,544	96	227,000
Mullan	'51	Rainbow	684,560	86	590,721
	'52	Rainbow	516,296	75	387,220
Pend Oreille	'51	Kokanee	2,527,470	98	2,476,900
	'52	Kokanee	1,697,100	99	1,680,120
St. Charles Creek	'51	Cutthroat	20,080	87	17,470
	'52	Cutthroat	144,480	85	122,886
	'52	Rainbow	67,570	83	55,470
Williams Lake	'51	Rainbow	1,878,146	92	1,807,778
	'52	Rainbow	940,612	90	846,550
Wolf Lodge	'51	Cutthroat	1,668,800	75	1,251,600
TOTAL	'51		28,972,818	(Av.) 90.7	26,274,467
	'52		19,184,102	(Av.) 88.6	17,006,945
Total, biennium			48,156,920		43,281,412

*The reduction in the number of cutthroat eggs taken in 1952 over 1951 was occasioned by the loss of fish during the late winter months in a small tributary of Henrys Lake commonly known as Pittsburg Creek. The warm water of Pittsburg Creek melted ice and snow from a small area near the mouth of the stream. As a result, spawning fish, migrating to Hatchery Creek where they are normally trapped for spawning, were attracted to the open area. Approximately 3,000 fish perished due to an insufficient amount of oxygen and to exposure.

TABLE 5

STATE EGGS EXCHANGED WITH OTHER AGENCIES

(November 1, 1950 — October 31, 1952)

Species	*Year*	*Number*
Rainbow	'51	203,520
	'52	
Cutthroat	'51	1,629,432
	'52	
Kokanee	'51	975,000
	'52	1,006,538
Total	'51	2,807,952
	'52	1,006,538
TOTAL for Biennium		3,814,490

TABLE 6

FISH FOOD, 1951-52

(November 1, 1950 — October 31, 1952)

	Year	*Pounds*	*Cost*
Liver	'51	128,759	$ 15,454.91
	'52	112,749	13,728.14
Spleen	'51	32,891	1,649.85
	'52	36,639	1,870.89
Horsemeat	'51	444,516	29,351.62
	'52	260,189	19,213.34
Fish and Fish Viscera	'51	196,265	8,234.74
	'52	287,867	13,890.18
Meal and Meal Products (Pellets)	'51	175,862	11,307.07
	'52	168,957	12,074.53
Miscellaneous (Bone, Lungs, Lips, Cheeks, Blood, Brains, Offal, etc.)	'51	223,746	10,507.17
	'52	186,038	7,917.66
Total, 1951		1,202,039	$ 76,505.36
Total, 1952		1,052,439	68,694.74
TOTAL for Biennium		2,254,478	$145,200.10

TABLE 7

ROUGH FISH REMOVAL—SEINING PERMITS*
In Pounds

(November 1, 1950 — October 31, 1952)

SPECIES	1951	1952	TOTAL
Carp	368,571	307,155	675,726
Suckers	269,728	310,671	580,399
Chub	18,895		18,895
Tench	72,821	77,906	150,727
Unidentified	70,674	56,362	127,036
TOTALS	800,689	752,094	1,552,783

*Includes rough fish taken in department-sponsored programs.

TABLE 8

EGGS RECEIVED BY PURCHASE OR EXCHANGE FROM OTHER AGENCIES

(November 1, 1950 — October 31, 1952)

Species	*Year*	*Number*
Rainbow	'51	1,535,347
	'52	1,463,683
Cutthroat	'51	300,048
	'52	
Eastern Brook	'51	2,384,695
	'52	1,898,774
German Brown	'51	311,784
	'52	298,462
Total	'51	4,531,874
	'52	3,660,919
TOTAL for Biennium		8,192,793

TABLE 9

IDAHO FISH PLANTINGS

BY SPECIES, SIZE — ALL AGENCIES*—1951-1952

SPECIES	Year	NUMBERS OF EACH SPECIES PLANTED, BY SIZE 1 to 3-inch	3 to 6-inch	6 to 18-inch	TOTAL	POUNDS
Rainbow	'51	3,571,289	1,941,596	1,019,460	6,532,345	233,438
	'52	3,586,786	1,808,384	980,768	6,375,938	206,497.17
Cutthroat	'51	10,015,046	226,931	136,312	10,378,289	21,649
	'52	5,053,106	149,555	28,000	5,230,661	8,631.3
Eastern Brook	'51	312,208	422,537	30,896	765,641	11,942
	'52	312,111	473,792	77,958	863,861	25,715
German Brown	'51	46,222	36,489	24,374	107,085	5,238
	'52	39,578	50,843	49,957	140,378	10,201
Kamloops	'51	552,300	12,137	400	564,837	2,114
	'52	541,676	47,160	806	589,642	4,702
Dolly Varden	'51					
	'52			9,720	9,720	1,269
Goldens	'51					
	'52	31,564			31,564	10.2
Kokanee	'51	1,356,790			1,356,790	408
	'52	632,550			632,550	277.5
Chinook	'51	89,420			89,420	124
	'52	25,175			25,175	47.5
Small Mouth Bass	'51		3,990		3,990	57
	'52	4,000	4,905		8,905	104
Large Mouth Bass	'51	12,600			12,600	90
	'52	117,740	11,744	61	129,545	574.75
Totals	'51	15,955,875	2,643,680	1,211,442	19,810,997	275,060
	'52	10,344,286	2,546,383	1,147,270	14,037,939	258,029.42
TOTAL, Biennium		26,300,161	5,190,063	2,358,712	33,848,936	533,089.42

* Excludes all salvaged fish, tabulation of which appears in another table.

TABLE 10

HATCHERY PRODUCTION, 1951-52

(November 1, 1950 — October 31, 1952)

STATION	YEAR	RAINBOW 8 No.	RAINBOW 8 Lbs.	CUTTHROAT No.	CUTTHROAT Lbs.	EASTERN BROOK No.	EASTERN BROOK Lbs.	BROWN No.	BROWN Lbs.
	1951	543,346	34,361	243,833	3,631	77,531	1,383	58,718	3,078
American Falls[1]	1952	645,782	26,095	171,710	975	34,154	512	53,275	4,697
	1951	800,105	12,974	916,050	653	97,300	900		
Ashton[2]	1952	739,033	14,960	156,075	80	95,886	1,224		
	1951	844,178	8,790	609,360	805	191,456	2,501		
Clark Fork[3]	1952	550,711	10,524	497,100	1,067	71,690	3,050		
	1951			1,001,920	313				
Coeur d'Alene	1952			325,248	88				
	1951	677,979	9,554.5	248,050	215.75	34,140	243	30,875	95
Eagle[4]	1952	559,636	10,531.5	320,204	197.5	50,222	646	57,713	1,391
(Whiskey Creek)	1951	507,158	22,741	818,062	6,820	136,655	2,665		
Grace	1952	363,707	21,763	476,129	4,155	107,110	4,031		
	1951			465,130	180				
Grangeville	1952	33,724	41	425,040	168				
	1951	719,250	98,554	600,502	5,416	26,400	1,040	17,492	2,065
Hagerman	1952	459,044	55,729.5	368,950	264.5	28,704	5,980	29,390	4,113
	1951	533,042	17,340.5	550,155	1,825	161,607	1,551		
Hayspur[5]	1952	513,413	24,890	296,400	145	157,038	2,151		
	1951			2,160,000	772				
Henrys Lake	1952	8,000	3	602,000	201				
	1951	253,139	6,943	406,612	283	30,396	296.25		
Mackay	1952	290,907	10,769.5	280,300	594.5	25,812	1,558		
	1951	533,800	250	512,400	235	129,052	451		
McCall[6]	1952	511,900	218	229,500	112	153,800	1,205		
	1951	507,721	1,370	449,532	291				
Mullan	1952	390,442	2,133	227,460	169				
	1951	499,887	504	941,332	310	236,560	665		
Sandpoint[7]	1952	819,108	1,249	445,905	107.5	250,098	2,371		
	1951	690,290	5,499			44,250	1,975		
Twin Falls	1952	560,493	14,232.5			67,037	3,540		
	1951								
Warm River	1952	105,388	244	521,958	387		436 [9]		
	1951	7,109,895	218,831	9,922,938	21,749.75	1,165,347	13,670.25	107,085	5,238
TOTALS	1952	6,606,288	193,493	5,343,979	8,711	1,041,551	26,704	140,378	10,201
Total, Biennium		13,716,183	412,374	15,266,917	30,460.75	2,206,898	40,374.25	247,463	15,439

1. Includes 52,728 (338 lbs.) rainbow transferred to Hagerman, 1951.
2. Includes 91,400 (260 lbs.) rainbow transferred to Grace, 1952.
3. Includes 172,800 (30 lbs.) EBT, 257,000 (103 lbs.) rainbow transferred to Sandpoint, 1951.
4. Includes 24,000 (124 lbs.) largemouth bass transferred to Hagerman, 1951.
5. Includes 76,473 (293 lbs.) EBT transferred to Hagerman, 1951.
6. Includes 250,000 (100 lbs.) rainbow transferred to Hagerman and 22,500 (220 lbs.) dolly varden transferred to Clark Fork, 1951; and 62,300 EBT (35 lbs.) transferred to Hagerman, 1952.

TABLE 10

HATCHERY PRODUCTION, 1951-52

(November 1, 1950 — October 31, 1952)

DOLLY VARDEN		GOLDENS		KOKANEE		CHINOOK		WARM-WATER SPECIES		TOTALS	
No.	*Lbs.*	*No.*	*Lbs.*	*No.*	*Lbs.*	*No.*	*Lbs.*	*No.*	*Lbs.*	*No.*	*Lbs.*
										923,528	42,453
										904,921	32,279
										1,813,455	14,527
										990,994	16,264
				595,296	171					2,240,290	12,267
9,720	1,269			240,000	48					1,369,221	15,958
										1,001,920	313
										325,248	88
										991,044	10,108.25
		7,500	3.75	91,500	61			120,034	509.5	1,206,809	13,390.25
										1,461,875	32,226
										946,946	29,949
										465,130	180
										513,764	209
								18,847	242	1,382,491	107,317
								18,422	171.25	904,510	66,258.25
										1,244,804	20,716.5
				90,000	90					1,056,851	27,276
										2,160,000	772
										610,000	204
										690,147	7,522.25
		3,564	1.2							600,583	12,923.2
22,500	220			116,850	38	19,500	32			1,334,102	1,226
		20,500	5.25	146,050	46					1,061,750	1,586.25
						69,920	92			1,027,173	1,753
						25,175	47.5			643,077	2,349.5
				576,900	179					2,254,679	1,658
										1,515,111	3,727.5
				67,744	20					802,284	7,494
				65,000	32.5					692,530	17,865
										627,346	1,067
22,500	220			1,356,790	408	89,420	124	18,847	242	19,792,822	260,533
9,720	1,269	31,564	10.2	632,550	277.5	25,175	47.5	138,456	680.75	13,969,661	241,393.95
32,220	1 489	31,564	10.2	1,989,340	685.5	114,595	171.5	157,303	922.75	33,762,483	501,926.95

7. Includes transfers to Clark Fork as follows: 140,560 (633 lbs.) EBT; 102,200 (115 lbs.) rainbow in 1951; and 102,000 (300 lbs.) EBT; 102,600 (180 lbs.) rainbow in 1952.

8. Rainbow production figures include kamloops rainbow trout as follows: Clark Fork, 1951 - 439,300 (1,878 lbs.); 1952 - 526,606 (4,290 lbs.); Sandpoint, 1951 - 125,537 (236 lbs.); 1952 - 63,036 (412 lbs.)

9. Increase in weight of EBT transferred from Ashton and held and planted by Warm River.

WILDLIFE RESTORATION DIVISION

WILDLIFE RESTORATION PROJECTS

The Federal Aid in Wildlife Restoration Act provides that the federal government will finance seventy-five percent of approved wildlife improvement projects. Under this act the national congress appropriates annually funds received from revenue derived from a 11 percent excise tax on sporting arms and ammunition. The Idaho legislature passed an enabling act authorizing the fish and game department to participate in this program on March 4, 1939.

TYPES OF SUITABLE PROJECTS

The basic requirements are that all projects shall be substantial in character and design. Depending upon objectives, they embrace activities in five groups as follows:

1. LAND PURCHASED—Purchase of lands for the rehabilitation of wildlife.

2. LAND DEVELOPMENT—To make areas more suitable for wild mammals and birds, by environmental improvement with food and cover plantings, water impoundment and stabilization, release of game birds or mammals where seed stock is needed, and other activities necessary to accomplish this purpose.

3. INVESTIGATIONS AND SURVEYS—Research to solve pressing wildlife management problems that involve unknown factors in management, feeding habits, and the relationships of the various species to each other and to livestock and farming operations. These studies must be confined to procurement of factual information designed to improve the administration of the wildlife resources of the state.

4. COORDINATION—The coordination of projects necessary to efficient management affecting wildlife resources.

5. MAINTENANCE—To effect the upkeep and repair of structures and related restoration developments completed under Federal Aid projects.

WILDLIFE RESTORATION FUNDS RECEIVED

One-half the federal funds available to the states for wildlife restoration projects is allocated in the ratio that the area of each state bears to the total area of all the states; the remainder is allocated in the ratio of the state's paid hunting licenses to the total number of paid hunting license holders in all the states. No state shall receive less than one-half of one percent, nor more than five percent of the total amount apportioned to all the states. Since 1939 when the Idaho legislature passed the Act enabling participation $1,373,686.29 in federal apportionments has been allocated to the State of Idaho.

The following financial report is for the period July 1, 1950 to June 30, 1952:

Unobligated balance of Federal funds, July 1, 1950	$ 28,573.47
Apportionment Fiscal Year, 1951	178,217.90
Apportionment, Fiscal Year, 1952	346,423.05
Funds returned to unobligated balance from completed projects	124,158.38
Total Federal money available to finance approved projects for period July 1, 1950 to June 30, 1952	$677,372.80

WILDLIFE RESTORATION PROJECTS INITIATED DURING BIENNIUM

Name of Projects	Estimated Cost	% of Total Money Obligated
Coordination Projects	$ 34,113.82	7.44%
Maintenance Projects	83,148.80	18.15%
Land Acquisition Projects	22,359.95	4.88%
Research Projects	158,590.16	34.61%
Development Projects	160,006.72	34.92%
Totals	$458,219.45	100.00%

Unobligated balance of Federal funds as of June 30, 1952 ---- $219,915.35

FISH RESTORATION AND MANAGEMENT PROJECTS

Federal Act passed on August 9, 1950, provides that the federal funds obtained from 10% excise tax on fishing rods, creels, reels and artificial lures, baits and flies be made available to participating states on the following basis: 40% in the ratio that the area of each state, including coastal and Great Lakes waters, bear to the total area of all the states; and 60% in ratio that the number of persons holding paid licenses to fish for sport or recreation in each state bears to the number of licensed fishermen in all the United States.

These funds available to the State Fish and Game Department are used to finance approved fish restoration and management projects in exactly the same manner as for the Wildlife Restoration projects.

The following financial report is for the period September 17, 1951 to June 30, 1952.

Apportionment Fiscal Year, 1952	$44,639.48
Funds returned to unobligated balance from completed projects	0.00
Total Federal money available to finance approved projects for period September 17, 1951 to June 30, 1952	$44,639.48

FISH RESTORATION AND MANAGEMENT PROJECTS INITIATED DURING BIENNIUM

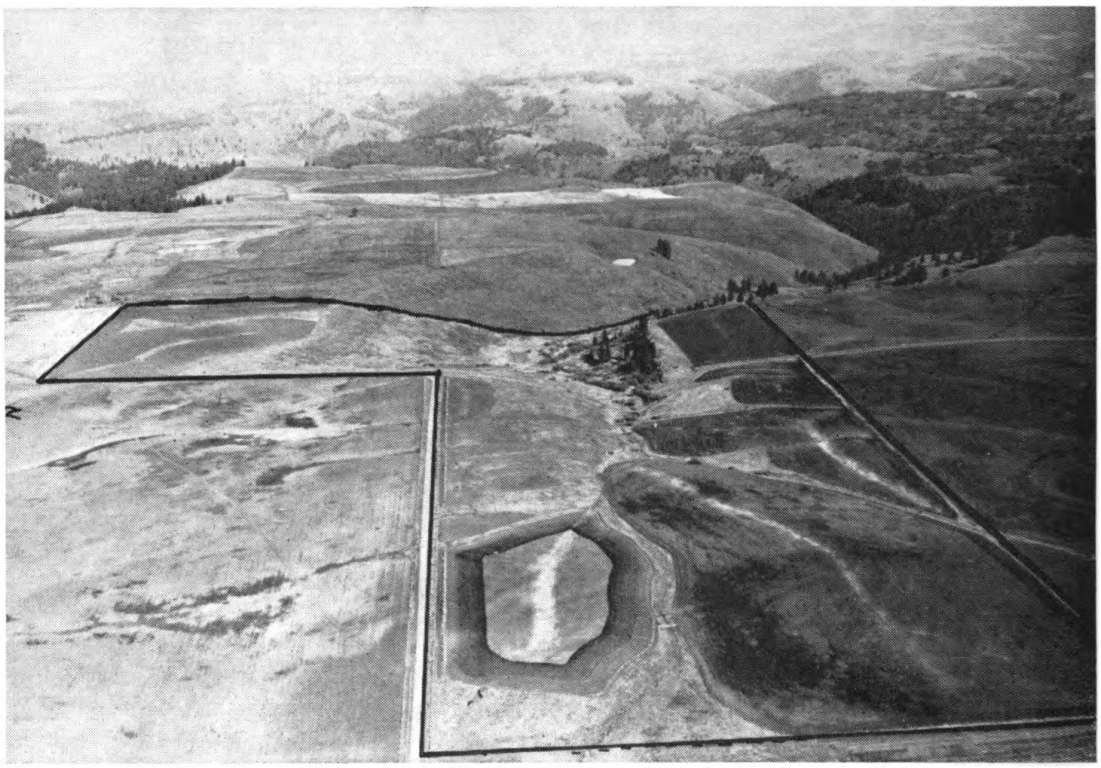
Name of Projects	Estimated Cost	% of Total Money Obligated
Coordination Projects	$ 2,202.75	5.64%
Land Acquisition Projects	1,893.75	4.84%
Research Projects	28,467.75	72.83%
Development Projects	6,525.00	16.69%
	$39,089.25	100.00%

Unobligated balance of Federal funds as of June 30, 1952———$5,550.23

A brief resume of work carried on under approved Fish and Wildlife Restoration projects follows:

PROJECT 40-C, Fish and Wildlife Management Coordination—

Provides for administration, office help, supplies and equipment necessary for the initiation and supervision of current projects. Many proposed projects must be evaluated by coordination personnel involving extensive field work before final consideration by the commission is in order. Acceptable



Refuge development work as carried on at the Grangeville Bird Refuge is an important part of the Federal Aid to Wildlife Restoration Act.

projects require careful planning and budgeting and also quarterly progress reports must be submitted to the U. S. Fish and Wildlife Service during the active period of each project.

Withdrawal from entry requests are being submitted for United States Unappropriated lands which are associated with existing or potential wildlife management areas to retain these lands in public ownership.

LAND ACQUISITION

Where big game animals are forced down from their vast summer ranges to utilize narrow margins of range during severe winter periods, it may be necessary to retire domestic use from these critical areas in order to perpetuate existing game herds.

Often it is necessary to acquire land adjacent to existing state owned wildlife management areas in order to round out the perimeter to include desirable food and water supplies or to safeguard the wildlife values of these areas.

With efficient and high-powered heavy duty equipment available and the United States Government paying subsidy on the clearing of woodlots and the draining of marsh areas, wildlife habitat in our state has been depleted at a much faster rate than it is possible to restore through purchase or development by the fish and game department.

We will endeavor to acquire critical and key areas of our big game winter ranges and to round out other established waterfowl and upland game bird management areas to make administrative units of them.

SURVEYS AND INVESTIGATIONS

PROJECT 84-R, Idaho Management Study of Migratory Waterfowl—

Through this project, Robert L. Salter, with M. S. degree in game management, Oregon State College, is progressively assembling management information on waterfowl within this state. Work centers around studies on:

(1) Production—waterfowl produced in Idaho.
(2) Harvest—numbers killed during season.
(3) Banding—migration routes, longevity, etc.
(4) Population data—numbers using areas at various times of the year.

All information collected under this project is correlated with other cooperating states of the Pacific Flyway which are collecting similar information.

PROJECT 85-R, Idaho Game Population Census and Range Study—

The entire state has been segregated into 39 management units which were designed to include natural geographical areas containing the summer and winter range of individual herds. Size of each unit was also based on conservation officer districts to permit one person to keep complete records of the status for each unit. Duplicate folders were made permitting the field personnel and office to have permanent records for each unit including herd composition, census, range trends, harvest, predation, losses and other data.

The known critical or over-utilized range was plotted on unit maps which are to be kept current. Areas with under optimum game use were

noted. Where game numbers and harvest figures were known, they were included as far as time would permit. Units requiring additional data for management were noted. In continuing Project 85-R, investigations and studies will be conducted to secure needed data for the management of the various game herds. Since the project was first initiated in 1948, census and other data has been obtained for nearly all species of game over the various ranges throughout the state.

We now have four big game area biologists who are assigned to cover designated divisions of the state and will devote their full time to determining range conditions, utilization of key forage species on big game winter ranges, and improving management plans, adjusting harvest to balance game numbers with available forage on winter range areas and to recommend development, acquisition and investigative projects deemed necessary for improved management of wildlife resources within our state.

PROJECT 90-R, Coeur d'Alene Deer Management Study—

A study was initiated in Coeur d'Alene area to determine, if possible. the factors retarding production of white tailed deer and to set up improved management plans for this species. The first phase of this study has been completed. The project is now focused on this species utilizing the foot hill and valley floor ranges.

PROJECT 96-R, Statewide Game Bird Survey and Investigations—

Four project biologists are collecting management information for all game bird species in Idaho. Numerous permanent transects have been established over the state whereby population trend counts are made to indicate breeding populations of each individual species. Later brood studies are made to determine nesting success and survival. With this information available, sound management recommendations as to bag limit, length of season, etc., can be made for commission consideration.

During the harvest season, field checks are made to determine the approximate hunter's take. The age and physical conditions of the birds harvested is also recorded.

PROJECT 97-R, Selway Wilderness Game Management Study—

Roger J. McCormack, with M. S. degree in Wildlife Management, has been investigating the various factors effecting the game population in the upper Selway River watershed. Numbers, herd composition, productivity, extent and condition of the range, migration, climatic conditions, salting distribution and the total numbers of game harvested are included in the scope of the study.

In this humid area, heavy browse growth has replaced the timbered areas lost to forest fires and has provided an abundance of food for elk and their numbers increased rapidly. Portions of the range now show overutilization. The investigation here will give basic data as to the optimum

numbers of elk and other game to maintain in the area. Experimental plantings of various browse species and grasses in addition to limited experimental burning are being conducted in an effort to permit improvement of the winter range. From this study data will be gained to provide more efficient management of the big game resource.

Cooperating agencies in this study include the U. S. Forest Service, Idaho Cooperative Wildlife Research Unit, the U. S. Microbiological Laboratory, U. S. Forest and Range Experimental Station, Region No. 1, and other interested agencies and persons.

The Project Leader has been called into the U. S. Navy, but we are continuing many phases of the project, trapping, ear tagging, browse utilization checks, salting, experimental planting, seeding, game census, etc.

PROJECT 98-R, Management Study of the Rocky Mountain Goat—

This study was approved in October, 1950, to determine the productivity and factors limiting their increase, to bring figures on the mountain goat population and distribution throughout the state more completely up to date and to arrive at a more productive method of management. Potential goat habitat will be investigated and methods for transplanting recommended.

Stewart M. Brandborg, with M. S. degree in Wildlife Management at University of Idaho, is project leader conducting the field investigations.

Federal Aid Projects include development at Grays Lake where experimental work is being conducted to improve the area for wildlife.

The initial studies have been completed for the Selkirk Range in Northern Idaho with present study concentrated in the Clearwater and Salmon River watersheds.

The method of conducting the study is through field observations and investigation of the individual goat herds. A low survival of the kids to yearling age is the most important factor retarding their increase noted to date. Probable causes for this condition including predation, climatic and range conditions, competition, life history and methods of management are being studied.

As a check to this study also, we are conducting special and limited hunts on specific herds to see the effect of harvest of these herds.

PROJECT 99-R, Management Study of Rocky Mountain Bighorn Sheep:

Dwight R. Smith, with M. S. degree in Game Management, University of Idaho, is conducting a study in an effort to secure current data as to the status of the mountain sheep in Idaho and improved methods for the management of this species. The study will treat their past and present population and distribution, productivity, range trends, competition, predation, and other phases of their life history. As mountain sheep have not maintained their numbers, methods for increasing their population are desired. It is the object of the study to determine the limiting factors which are retarding their increase and to formulate plans of management to minimize these factors.

The study is being conducted at present in the Main Salmon and Middle Fork of the Salmon River watersheds.

Field observations and study of the individual sheep herds and range is the method used.

As a check also to this study we are conducting special and limited hunts on specific herds to see the effect of harvest of these herds.

PROJECT 106-R, Dingle Swamp Wildlife Management Study—

Dingle Swamp Wildlife Management Area is one of the better marsh areas within this state and has high potentials for production of migratory birds and aquatic fur-bearing animals.

In effecting storage of Bear River water into Bear Lake for irrigation and power purpose, the fluctuation of water levels has been very detrimental to wildlife utilizing this area.

Recent manipulation of water levels has held these losses to a minimum. We are endeavoring through this study to evaluate the present wildlife use and loss of this area and to recommend management plans for the marsh which will, as far as it is economically possible to do so, maintain water levels advantageous to wildlife.

MAINTENANCE PROJECTS

During the biennium we have had eight active maintenance projects costing $83,148.80, or 18.15% of total Federal Aid expenditures.

These projects are designed annually to improve wildlife management areas acquired by gift or purchase through use of Federal Aid funds, and provide for annual repair and maintenance of fences, dikes, roads, bridges, irrigation systems, painting and repair of building improvements, planting and harvest of annual crops, etc.

DEVELOPMENT PROJECTS

PROJECT 36-D, Hagerman Refuge Development—

Much of the Hagerman marsh is unproductive for fish or waterfowl inasmuch as it consists of merely supersaturated ground which supports dense and closed stands of vegetative growth.

We are, through this project, constructing two major dikes through the marsh areas to control available water which is diverted from Tucker Springs to form water impoundments, and thereby greatly increase fish production and nesting habitat for waterfowl.

The impounded areas will be open to public fishing after the waterfowl nesting season.

Also, in the lava waste area of the refuge, we have by limited diking created four lakes totaling 14 acres. The previously unused spring water from hatchery lake has been diverted through these lakes. From these lake impoundments, water was obtained for irrigation of the food and cover plantings placed in the area.

PROJECT 55-D, North Lake Wildlife Management Area Development—

Present driven wells will be tested to determine water flow and one additional well will be driven to obtain sufficient water for irrigation of grain planted for wildlife use, and to maintain desirable nesting ponds.

A new right of way will be graded and fenced to provide administrative and public access to this and adjacent areas.

Approximately 40 acres of land will be leveled to facilitate irrigation of wildlife feeds.

PROJECT 60-D, Boundary County Development—

Much of this marsh area is unproductive for waterfowl inasmuch as the waterlogged ground supports only a dense stand of vegetation. Through the use of ditching powder, we have cut drain ditches thus creating open water areas and at the same time effecting drainage of land to provide margins suitable for nesting birds.

Also, we will control willow which are reaching out to occupy desirable marsh areas.

The boundary fence will be completed to enclose state lands associated with this wildlife management area.

PROJECT 75-D, Statewide Trapping and Transplanting—

Our statewide trapping project provides for the trapping of game animals

from areas where concentrations occur and releasing them in suitable unstocked ranges ,on which predators have been controlled to insure take of transplanted animals or to increase established herd nucleus. It also provides for emergency movement of animals from feed lot concentrations to areas within the drainage where available natural feeds occur.

The following is a summary of 1951-1952 work:

(1) Through project funds, 1,110 coyotes and 98 bobcats were killed. Work was supervised by U. S. Fish and Wildlife Service, Predatory Animal and Rodent Control Division.

(2) Fourteen white-tailed deer were trapped at Farragut Wildlife Management Area and transplanted within the Teton River drainage.

(3) A total of 159 mule deer were trapped at Warm Springs, Ketchum vicinity and moved to southern exposures of Timmerman Hill where snow depths were much reduced and natural feeds available.

(4) In Blaine, Cassia, Twin Falls and Owyhee Counties, 258 antelope were transplanted. In addition, 103 animals were tagged and released at trap site to furnish migrational information.

PROJECT 80-D, Game Bird Habitat Improvement—

Inasmuch as wildlife is a product of the land, it is necessary to provide a habitat which will produce both food and cover for the desired species. With clean cultivation presently practiced, it is necessary in some areas, to restore strategic located food and cover patches if a harvestable population of upland game birds can be expected. In many instances this food and cover can be provided and at the same time improve and beautify the farmers' land through installation of windbreaks, utilizing trees and shrubs which will produce food and cover. On many farms living Multiflora rose fences have been planted at no cost to the farmer except that he provide the necessary care to insure reasonable survival of improvement planting. In connection with Project 96-R, four biologists are in the field explaining our farm-game program and strategically locating development and planting projects which will offer greatest benefit to upland game birds within this state.

Three full time crews are working under Project 80-D planting, irrigating, cultivating and fencing improvement plantings.

PROJECT 88-D, Range Development—

Throughout the state we have many ranges which have been depleted through over-use of domestic stock, big game animals, fire ,insect infestations, etc. We are attempting, through this project and in cooperation with the U. S. Forest and Range Experiment Station to find successful and economical methods by which depleted ranges can be revegetated. We have herein experimented with the transplanting or seeding of some 60 browse species within the Middle Fork of the Salmon River and South Fork of the Payette and Boise River drainages.

Under the fifth segment of Project 88-D we have constructed a drift fence to eliminate the trespass of domestic stock from forest range onto reseeded lands of this department.

PROJECT 89-D, Sand Creek Wildlife Management Area Development—

The fish and game department acquired some 4,700 acres of land in Fremont County primarily to retire domestic stock from critical big game winter ranges. We have constructed a boundary fence around this area, have rebuilt and enlarged Blue Creek Reservoir which furnishes irrigation water for the production of wildlife feeds. We have built a refuge residence house and combination garage and bunk house necessary for administration and operation of the area.

Moose, elk and deer cross over and occupy this key area going to and from adjacent desert winter ranges.

We have also constructed a deer trap to ear tag elk to determine migrational extent and pattern of this herd.

PROJECT 102-D, Valley County Wildlife Management Area Fence—

As a result of construction of Cascade Dam, an impoundment having 35,821 acres at elevation 4,845 (high water) will be created. A margin of land between the high water line and the U. S. National Forest boundary was acquired as a wildlife management area. This area will be protected against grazing during the migratory bird nesting season and an adequate portion of better land will be planted to cereal grain for use of migratory waterfowl.

Through this project a fence was constructed to enclose the acquired lands against trespass grazing during the nesting season.

PROJECT 103-D, Farragut Wildlife Management Area Development—

Approximately 3,949 acres of federal land (originally U. S. Naval training base at Farragut) was turned over to the Idaho Fish and Game Department as a wildlife management area.

The existing six-foot cyclone boundary fence was repaired and new fence extended to enclose the entire area; we also constructed an interior fence to exclude the recreational area (a segment of the shore line of Pend Oreille Lake) from the wildlife production area. We are also progressively clearing and planting the areas from which building improvements have been removed.

PROJECT 104-D, Carey Lake Wildlife Management Area Development—

Carey Lake is one of our small but heavily used waterfowl production areas. The only source of water supply for this lake is return flow from irrigation. We, therefore, desire to top this lake with as much water as possible from available flood in Little Wood River prior to the irrigation season. This project provides for enlarging existing canals and construction of a new canal to deliver the above-mentioned water.

A new fence will be erected to protect nesting birds against domestic grazing during the nesting season on that portion of the lake shore margin which is presently controlled by this department.

PROJECT 105-D, Emergency Wildlife Feeding—

The severe winter of 1951-1952 left with us a cumulative layer of snow which in many areas of the state reduced the available wildlife feed to a point it was necessary to supplement natural feeds in an effort to hold wild-

life losses to a minimum. Through Federal Aid Project 105-D, approximately 16.77 tons of stock cubes, 172.86 tons of hay and 11.46 tons of grain were fed to wildlife throughout the state.

PROJECT 107-D, Grays Lake Wildlife Management Area—

In an effort to improve the wildlife productive power of Grays Lake marsh, we are doing limited experimental work by cutting open water channels through the dense vegetative cover (Bulrush *Scirpus acutus* and Cattail *Typha latifolia*) which occupies a large per cent of the surface area within the meandered lines of the lake. Thus the marsh will be improved for muskrats as well as for migratory waterfowl.

DINGELL-JOHNSON PROJECTS

PROJECT 1-R, Utilization of Idaho Waters by Spring Chinook Salmon—

In connection with this project an evaluation of the spring chinook salmon spawning in Idaho streams is desirable in order to evaluate the effects of (1) downstream dam building, (2) downstream commercial fishing regulations, and (3) upstream sport fishing regulations. The salmon sport fishery in Idaho has an annual value in excess of $300,000 based on total expenditures of the sport fishermen.

The salmon which are able to escape sport and commercial fishermen and surmount the various downstream dams from the nucleus of the brood stock for the salmon which will return four years later. This lower-river dam construction threatens the survival of this sport fishery in Idaho.

The findings of this survey will be used in formulating future regulations for the chinook salmon fishery, and along with creel census survey findings, help establish the value of the salmon resources in Idaho. Should this resource be lost due to downstream dam construction, information collected through this project can be used as an index for restitution of losses sustained.

PROJECT 3-R, Biological and Economic Survey of Fisher Resources in Lake Pend Oreille—

Lake Pend Oreille, with 111 miles of shore line, has been one of Idaho's heaviest producers of game fish, and since the middle 1930's has persistently held up under sport fishing as well as commercial fishing for Kokanee or Blueback Salmon, *Oncorhynchus nerka kennerlyi*. Other game fish in order of their importance are listed as follows: (a) Cutthroat Trout, *Salmo clarki;* (b) Dolly Varden, *Salvelinus malma spectabilis;* (c) Kamloops, *Salmo gairdneri kamloops*; (d) Eastern Brook Trout, *Salvelinus frontinalis.*

However, on the Clark Fork River, which is one of the principal spawning areas for all game fish species, the Washington Water Power Company is presently constructing the Cabinet Gorge Dam having a head of 99 feet which will prevent further upstream migration of fish above this point and will seriously reduce spawning areas. This dam is located approximately 6.2 miles upstream from the mouth of the Clark Fork River. The extreme fluctuation of water below this dam will be detrimental to spawning fish.

The Albeni Falls Dam, now under construction by the U. S. Army Corps of Engineers, is located on the Pend Oreille River which is the only outlet to Pend Oreille Lake. This dam will hold water levels at a maximum until late fall and winter. The water will then be released for downstream power development.

The Kokanee Salmon are known to use the gravelly shore line of this lake for spawning. The lowering of the water levels for production of power will, during the following spawning period, undoubtedly influence production of this species as well as other species using the vegetative margins for food, cover and spawning.

If this investigative study reveals that the economic and biologic values of this lake have been damaged through the construction of these dams then the Idaho Fish and Game Department will have a basis for requesting restitution from the constructing agencies to assist in maintaining the resources.

There is a defininte need for the collection of additional information to be used in setting up comprehensive long range management plans for this body of water. We need to determine the major spawning areas of game fish within the lake and associated streams; we need to determine if commercial fishing of Kokanee Salmon result in a harvest greater than is desired and to determine the effect construction of the above mentioned dams will have upon the fishery resources of this area.

PROJECT 4-D, Mirror Lake Fisheries Development—

Mirror Lake in the vicinity of Sandpoint, Idaho, has a surface acreage of 94.95 acres with an average depth of 21 feet. According to early residents this lake used to be a heavy producer of cutthroat trout. However, it has been polluted with trash fish thus greatly reducing the value of this lake as a sport fishery. Through this project, all fish will be eradicated and the lake restocked with rainbow or cutthroat trout. This work will not be done, however, until public access to this lake has been assured.

PROJECT 6-D, Extending the Range of the California Golden Trout In Idaho—

Brilliantly colored California golden trout have been planted in many of our high mountain lakes. These fish are attracting considerable fishing pressure on those isolated lakes. Fishermen are not willing to pack so far for other species of fish. We have taken spawn from California golden trout from Bellas Lake, eyed them and grown them to fingerlings. Eleven isolated high mountain lakes have been stocked with approximately 3,000 golden trout each. These lakes will soon carry their proportionate share of the fishing pressure.

PROJECT 7-R, A Random Creel Census of the Little Salmon River—

This stream has been stocked heavily with legal-size fish the past few years. The entire section of the stream to be studied is accessible from Highway 95, the principal highway connecting north and south Idaho. Consequently the fishing pressure is heavy. This section of the Little Salmon River has, through the desire of the fishing public for early trout fishing, been opened to fishing from April 15 to October 31, an additional 50 days prior to the general season on other waters.

The purpose of this study will be primarily to determine by means of a voluntary random creel census, (1) whether or not this section of the Little Salmon River can support an extended early season without damage to the resident brood stock in fuutre years, and (2) the ratio of planted fish to resident fish taken during the present open season.

Further, the purpose of this study will be to set up future management plans for harvest of fish in the streams.

PROJECT 8-R, The Effect of Hydroelectric Developments on the Fishery Resources of Snake River—

The Snake River of Southern Idaho has supported a sport fishery for many years. This river has been especially important due to the dearth of other fishery waters in the area.

The Idaho Power Company constructed six hydroelectric installations in this area. The names and dates of construction are as follows: Upper Salmon Falls, 1931; Lower Salmon Falls, 1907; Swan Falls, 1901 (heightened, 1949); Bliss, 1949; and C. J. Strike, 1952.

The first two plants supply steady power and thus the outlet waterflow is comparatively even. However, the Bliss installation supplies power on a demand basis and thus the outlet waterflow has a very high fluctuation. The C. J. Strike plant will operate similarly to the Bliss plant.

Since the Bliss power plant began operation, the trout sport fishery has reportedly declined in spite of increased stocking.

The purpose of this study is to survey the present trout fishery by measuring, both the fish populations and their harvest by the angler and to investigate the aquatic fauna, flora and their environment.

Management techniques applicable to cold-water fisheries problems of this type are noticeably absent in the literature.

Analysis of the collected data will enable the application of proper management to these waters and form a basis of management for similar problems on other waters.

PROJECT F-2-L, Caldwell Fish Management Area—

Purchase of 78 acres for development of spiney ray public fishing area.

PROJECT F-9-D, Development of Caldwell Gravel Ponds—

Under this development project we will provide public fishing for warm water fish and supply brood stock for transplanting purposes, through development of the Caldwell Gravel ponds.

FUR DIVISION

Prior to 1951, trapper's licenses were issued April 1 and expired March 31 of the ensuing year. By legislative action, the period covered by the license was altered to coincide with the calendar year. To effect this change-over, it was necessary to issue the 1951 licenses for a 9-month period only—April 1 through December 31—thus enabling the 1952 license to commence on January 1.

Open seasons over the entire state are during the winter and early spring months, beginning in November and ending in April. The summary of furs taken based on trapper's reports includes the entire 1950-1951 season, but because of the change in period covered by the licenses, will include only the 1951 portion of the 1951-1952 trapping season.

Of the 1,259 trappers who purchased licenses for the 1950-1951 season, 933 submitted reports. In 1951, 1,393 licenses were sold with 1,062 trappers reporting their catch. The following summary is a calculated total for each species based on information contained in the percentage of reports received.

1950-1951

SPECIES	*Number*	*Av. Price Rec'd. per Pelt*	*Estimated Total Value*
Fox	21	$ 1.62	$ 34.02
Marten	1,526	18.35	28,002.10
Mink	Closed		
Muskrat	192,555	1.30	250,321.50
Otter	128	9.34	1,207.04
Raccoon	229	1.53	350.37
Total	194,459		$279,915.03

1951 (April through December)

SPECIES	*Number*	*Av. Price Rec'd. per Pelt*	*Estimated Total Value*
Fox	None reported		
Marten	Closed		
Mink	4,920	$15.80	$ 77,883.60
Muskrat	162,913	1.17	190,608.21
Otter	38	14.67	557.46
Raccoon	207	1.23	254.61
Total	168,078		$269,303.88

In addition to the fur-bearing animals, other species such as weasel, bobcat, lynx, cougar, badger and rabbit are often trapped or shot and the skins sold. Although not classed as fur-bearers and consequently not listed on trapper's reports, their pelts are sold as fur and represent a financial return to the trapper or hunter. As such, they should be considered in any evaluation of the economic value of Idaho's fur resource.

BEAVER PROGRAM

The system of beaver caretaker-trapper allotments begun in 1945 was continued through the biennium. This plan which assigns each Class "B" trapper to a definite area is designed to include enough beaver that the annual surplus and animals in undesirable locations which can be pelted, will pay the trapper to devote most of his time throughout the year to his allotment. The prevailing low price of beaver pelts during the biennium has made it difficult to obtain and hold good trappers in many cases.

Trapping is done by either the owner of the property on which the beaver are located under a Class "A" permit, or by Class "B" caretaker trappers assigned to individual allotments throughout the state. Should a landowner within any allotment wish to trap beaver on his property, his rights at all times have precedence over the Class "B" trapper. Upon recommendation of the local conservation officer and approval by the Commission, the Director issues a Class "A" permit for the removal of the recommended number of beaver.

Caretaker or Class "B" trappers are selected from a list of applicants for each specific allotment. Vacant allotments are advertised according to law and the best qualified trapper is appointed. The number of beaver to be pelted each year from an allotment is determined by the local conservation officer or the district supervisor and submitted to the Commission for approval.

During the summer beaver causing damage to private property or agricultural lands are livetrapped and transplanted in more remote areas where the population is lower than the carrying capacity. The caretaker-trapper is also responsible for removing beaver dams in such complaint areas, and for patrolling his allotment and protecting the beaver throughout the year.

Both the Class "A" and Class "B" trappers send the pelts to the Fish and Game Department where they are inspected, tagged and shipped to one of several fur auctions held throughout the year in various parts of the United States and sold to the highest bidder. After the selling cost is deducted, the trappers receive 75% of the value of the pelts and the remaining 25% goes into Fish and Game Department funds.

During the past two years it has been necessary to assign additional trappers in certain areas of the state where beaver were causing damage to private property. In these areas population increases of beaver were due to lack of adequate removal during this period of low pelt value. These men were carried on a salary basis and all pelts were turned over to the state. Additional trappers may have to be employed in critical areas to clean out or reduce populations to a low level so that damage to private and public property may be prevented. It is planned to maintain the carrying capacity of the streams in non-agricultural lands and reduce severely the populations in irrigated sections of the state.

During the 1950-1951 season, there were 116 Class "A" landowner permits issued. There were 97 issued during the 1951-1952 season. During both years of the biennium, 63 of the 69 beaver caretaker allotments were trapped by Class "B" trappers.

NUMBER OF BEAVER PELTED AND VALUE OF PELTS SOLD

SEASON	*Class "A" Trappers*	*Class "B" Trappers*	*Salaried Trappers*	*Conservation Officers*	TOTAL	*Receipts from Sale of Pelts*
1950-1951	654	8,883	66	10	9,613	$181,765.21
1951-1952	398	7,188	106	2	7,694	94,464.00
Total	1,052	16,071	172	12	17,307	$276,229.21

DISTRIBUTION OF RECEIPTS FROM SALE OF BEAVER PELTS

	1950-1951	1951-1952
Total Receipts	$181,765.21	$94,464.00
Trapper's Share (75%)	135,468.62	67,790.93
State's Share (25%)	46,296.59*	24,673.07*

* State receives full value of pelts taken by salaried trappers and conservation officers.

Trappers who wished to retain certain individual beaver skins for their own use placed a bid on these skins. If their bid equalled or exceeded the highest price offered at the fur auction, the pelts were returned to them and they paid the state 25% of the amount of their bid. State income from this source was $32.50 (8 pelts) during 1950-1951, and $216.25 (51 pelts) during 1951-1952.

SALE OF OTHER FURS

Confiscated pelts, those illegally or accidentally taken, or furs otherwise turned over to the state for disposal were sold with the beaver hides. Included herein are muskrats trapped at Hagerman Refuge, where they were damaging canals, ponds and ditches.

Species	1950-1951		1951-1952	
	Number	Value	Number	Value
Muskrats	239	$394.52	449	$495.52
Mink	45	688.32	13	100.56
Raccoon	2	1.92	2	1.44
Otter	31	397.44	8	83.52
Marten	3	48.96		
Total	320	$1,531.16	472	$681.04

LIVETRAPPING AND TRANSPLANTING

Beaver damaging private property or agricultural developments during the summer months when the fur is not prime are livetrapped by the caretaker trappers and moved to more remote areas, usually within the same allotment. During the 1950-1951 season 306 animals were transplanted, and during the summer of 1952 approximately 450 were thus handled.

The only other transplanting activity carried out during the biennium occurred in 1950 when 196 muskrats were livetrapped at Hagerman Refuge and released at Grays Lake in Caribou and Bonneville counties.

PREDATOR CONTROL DIVISION

Predator control measures were continued under the cooperative agreement between state, district and county predatory animal boards, livestock associations and federal agencies. Encouraging annual increases in antelope and sagegrouse populations were noted in areas where coyotes were properly controlled.

A total of $67,457.67 was expended for predator control during the biennium. Bounty was paid on 109 cougar at the rate of $50.00 per animal for a total cost of $5,450.00.

Bounty on magpie was discontinued as of May 1, 1950, and control work was carried on by conservation officers and temporary employees. The cost of the magpie control program was $1,601.37.

Additional predator control was carried on under a Federal Aid project in areas where antelope had been transplanted, to insure survival of transplants and isolated herds.

Predator control measures include use of an airplane to locate and kill coyotes in desert regions.

FINANCIAL REPORT

Fish and Game Department disbursements showed a slight decrease compared to the previous biennium. Total funds expended amounted to $2,796,885.86 compared to $2,882,856.30 for a decrease of approximately $86,000.00. The decrease in expenditures was mainly accounted for by curtailment of new construction.

The Fish and Game Fund required $2,123,443.00 for regular activities of the department in game management, fish and game bird production and planting, and law enforcement. The Director's Predatory Animal Fund No. 60 utilized $67,457.67. Of this amount $5,450.00 was paid out for bounties on 109 cougar; $1,601.37 was expended directly for magpie control and the balance for general control on all types of predators. The Wildlife Restoration Projects (Pittman-Robertson) Fund No. 61 for land purchases of winter game range, game management studies, and habitat improvement for all types of wildlife directly connected with game animals and game birds utilized $406,991.11; and $7,834.68 was expended from the Fish Restoration Project's Fund (Dingell-Johnson) No. 65. This is another Federal Aid project which was put into effect the latter half of the biennium. The program is just getting under way and expenditures have been light up to the present time. However, they will increase as new projects are formulated and approved.

RECEIPTS

Receipts for the biennium amounted to $2,804,896.12 showing an increase over the receipts for the last previous biennium in an amount of $255,179.54, an all time high for Fish and Game Department income. Sales of licenses, tags and permits brought in $2,081,833.90 — refunds from Federal Aid projects contributed $319,373.87 — miscellaneous sales brought in $91.79 and sale of predator furs added $42.00.

LICENSE SALES

Sales of resident and non-resident fishing and hunting licenses reached an all-time high during the biennium. Resident combination licenses led all classes with a total number of 245,491 issued—an increase of 1,162 over the previous biennium. Resident hunting licenses showed an increase of 9,202; resident fishing permits jumped 8,781; non-resident combination hunting and fishing licenses moved up 528 during the period, to a total of 3,486.

Non-residents contributed heavily to department revenues in numbers of fishing licenses purchased as they boosted season license sales to 23,981. Tourist class five-day fishing permits increased 10,862 over the 1948-1950 biennium with 69,691 issued.

Big game hunters swelled the ranks as they purchased 188,731 deer tags and 77,053 elk tags during the two-year period. Deer tag sales jumped approximately 17,000 above the last biennium while elk tags moved up 21,125 for the same period.

FINES

Fish and Game Department revenues were increased by $48,480.22 as a result of fines and confiscations during the biennium. Conservation officers reported 1988 arrests for game law violations during the period.

Legislation providing that one-half of all monies received from fines in fish and game law violation cases be retained in the county in which the case was held, was placed in effect on May 11, 1951. Previous to that time the entire amount of such fines was remitted to the fish and game board.

IDAHO DEPARTMENT OF FISH AND GAME — DETAIL OF CASH RECEIPTS

FISH AND GAME FUND NO. 6	7-1-50 through 6-30-51 Number	7-1-50 through 6-30-51 Amount	7-1-50 through 6-30-51 Number	7-1-50 through 6-30-51 Amount	TWO-YEAR TOTAL Number	TWO-YEAR TOTAL Amount
Resident Hunting and Fishing	120,634	$ 343,806.90	124,857	$ 355,842.45	245,491	$ 699,649.35
Resident Hunting	44,443	84,441.70	46,268	87,909.20	90,711	172,350.90
Resident Fishing	43,219	82,116.10	43,719	83,066.10	86,938	165,182.20
Non-Resident Hunting and Fishing	1,193	56,667.50	2,293	108,917.50	3,486	165,585.00
Non-Resident Fishing	10,729	101,925.50	13,252	125,894.00	23,981	227,819.50
Non-Resident 5-Day Fishing	32,031	91,288.35	37,660	107,331.00	69,691	198,619.35
Non-Resident Bird	704	13,376.00	709	13,471.00	1,413	26,847.00
Alien Fishing	6	142.50	2	47.50	8	190.00
Non-Resident Gun	19	36.10	18	34.20	37	70.30
Resident Trapper	1,349	6,407.75	1,443	6,854.25	2,792	13,262.00
Non-Resident Trapper	8	570.00	7	498.75	15	1,068.75
Non-Resident Trophy License	332	7,885.00	564	13,395.00	896	21,280.00
Guide Licenses	12	60.00	88	440.00	100	500.00
Outfitters License	37	185.00	155	775.00	192	960.00
Shipping Permits	768	307.20	1,462	584.80	2,230	892.00
Resident Fur Buyer	75	375.00	65	325.00	140	700.00
Non-Resident Fur Buyer	4	80.00	1	20.00	5	100.00
Taxidermist	9	90.00	15	150.00	24	240.00
Private Pond Permit	37	370.00	34	340.00	71	710.00
Bird Farm Permits			14	140.00	14	140.00
Whitefish and Blueback Salmon	84	840.00	201	2,010.00	285	2,850.00
Commissions (Office Sales)		590.90		793.30		1,384.20
Receipts in Lieu of Licenses Sold				222.30		222.30
Deer Tags	89,078	84,624.10	99,653	94,670.35	188,731	179,294.45
Elk Tags	33,836	64,288.40	43,217	82,112.30	77,053	146,400.70
Moose Tags	50	475.00	30	285.00	80	760.00
Antelope Tags	687	652.65	1,635	1,553.25	2,322	2,205.90
Goat Tags	38	361.00			38	361.00
Deer Permits			11,577	34,731.00	11,577	34,731.00
Elk Permits			2,376	11,880.00	2,376	11,880.00
Moose Permits			30	600.00	30	600.00

Antelope Permits			1,635	4,905.00	1,635	4,905.00
Archery Deer Permits			31	31.00	31	31.00
Archery Elk Permits			21	42.00	21	42.00
Total Licenses, Tags, Etc.	379,382	941,962.65	433,032	1,139,871.25	812,414	2,081,833.90
Fines	1,026	30,042.45	962	17,639.47	1,988	47,681.92
Confiscations	6	55.25	43	743.05	49	798.30
Rentals				17,351.43		17,351.43
Beaver Skins (State Share)	9,418	45,747.08	6,243	19,762.56	15,661	65,509.64
Royalty non-game fish		4,561.77		2,913.75		7,475.52
Refunds		3,812.47		6,670.67		10,483.14
Miscellaneous Sales		25,442.47		37,637.62		63,080.09
Total Fund No. 6	389,832	$1,051,624.14	440,280	$1,242,589.80	830,112	$2,294,213.94
WILDLIFE RESTORATION FUND No. 61						
Federal Refunds		201,727.89		117,645.98		319,373.87
Miscellaneous Sales		51.79		40.00		91.79
GAME DIRECTORS' PREDATORY ANIMAL FUND No. 60						
Miscellaneous Fur Sales				42.00		42.00
BEAVER SUSPENSE FUND No. 149						
Beaver Skins (Trappers' Share)		134,930.93		56,243.59		191,174.52
TOTAL RECEIPTS ALL FUNDS	389,832	$1,388,334.75	440,280	$1,416,561.37	830,112	$2,804,896.12

IDAHO DEPARTMENT OF FISH AND GAME — OPERATION IN FUNDS

FUNDS	Balance 7-1-50	Receipts Cash	Receipts Transfer	Disbursements Cash	Disbursements Transfer	Balance 6-30-52
Fish and Game	$421,048.17	$2,294,478.82	$	$2,123,707.88	$171,000.00	$420,819.11
Predatory Animal	22,598.73	64.69	56,000.00	67,480.36		11,183.06
Wildlife Restoration	37,241.86	319,468.66	90,000.00	406,994.11		39,716.41
Fish Restoration			25,000.00	7,834.68		17,165.32
Beaver Suspense	255.78	191,174.52		191,159.40		270.90
Revolving Fund	1,000.00					1,000.00
	$482,144.54	$2,805,186.69	$171,000.00	$2,797,176.43	$171,000.00	$490,154.80

RECONCILIATION

State Auditor's Balance 6-30-52 ..... $ 490,154.80
Fish and Game Department Balance ..... $ 490,154.80

BIENNIAL REPORT

IDAHO DEPARTMENT OF FISH AND GAME

DETAIL OF DISBURSEMENTS

FISH AND GAME FUND NO. 6	1950-51	1951-52	Total
Salaries and Wages	$ 419,275.53	$ 445,369.97	$ 864,645.50
Travel	34,511.23	33,205.35	67,716.58
Operating Expense	367,690.18	290,314.68	658,004.86
Capital Outlay	303,281.76	217,210.79	520,492.55
Refunds	155.68	259.30	414.98
Special Audit Fees	963.50	1,250.00	2,213.50
Soc. Security (State Share)	2,845.08	7,374.83	10,219.91
Less Cancelled Warrants	−16.46	−248.42	−264.88
Total Fund No. 6	$1,128,706.50	$ 994,736.50	$2,123,443.00

FISH AND GAME DIRECTOR'S PREDATORY ANIMAL FUND NO. 60	1950-51	1951-52	Total
Salaries and Wages	28,031.38	16,836.51	44,867.89
Travel	3,388.25	1,206.36	4,534.61
Operating Expense	6,331.39	4,517.55	10,848.94
Cougar Bounties	2,000.00	3,450.00	5,450.00
Magpie Control	593.37	1,008.00	1,601.37
Soc. Security (State Share)	60.63	116.92	177.55
Less Cancelled Warrants	−3.30	−19.39	−22.69
Total Fund No. 60	$ 40,341.72	$ 27,115.95	$ 67,457.67

WILDLIFE RESTORATION FUND NO. 61	1950-51	1951-52	Total
Salaries and Wages	$ 74,908.64	$ 99,069.55	$ 173,978.19
Travel	12,431.02	13,570.38	26,001.40
Operating Expense	42,940.10	60,978.95	103,919.05
Capital Outlay	32,014.66	69,599.07	101,613.73
Soc. Security (State Share)	348.45	1,133.29	1,481.74
Less Cancelled Warrants		−3.00	−3.00
Total Fund No. 61	$ 162,642.87	$ 244,348.24	$ 406,991.11

FISH RESTORATION FUND NO. 65	1950-51	1951-52	Total
Salaries		3,127.64	3,127.64
Travel		606.99	606.99
Operating Expense		1,575.01	1,575.01
Capital Outlay		2,520.00	2,520.00
Soc. Security (State Share)		5.04	5.04
Total Fund No. 65		$ 7,834.68	$ 7,834.68

BEAVER SUSPENSE FUND NO. 149			
Claims Paid to Trappers	134,172.05	56,987.35	191,159.40
TOTAL Disbursements	$1,465,863.14	$1,331,022.72	$2,796,885.86