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Montana Fish and Game Commission

State of Montana

BIENNIAL REPORT

of the

FISH AND GAME COMMISSON

for

May 1, 1948 — April 30, 1950

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MONTANA FISH AND GAME DEPARTMENT

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To the Honorable John W. Bonner,
Governor of Montana

Dear Governor Bonner:

The following is the Biennial Report of the Montana Fish and Game Commission for the period May 1, 1948 through April 30, 1950.

Respectfully submitted,

MONTANA STATE FISH & GAME COMMISSION

A. C. GRANDE,
THOMAS R. MORGAN,
ELMER JOHNSON, Chairman
EDWARD M. BOYES,
WM. CARPENTER,
R. H. LAMBETH,
State Fish and Game Warden.

FOREWORD

The wildlife resources of Montana belong to all the people who must have an equal opportunity to share in its benefits. Wildlife under the administration of the Fish and Game Department has gradually increased since the department first began functioning in 1901. Administration policies have changed throughout those years because of the ever increasing number of sportsmen. The never ending search for more knowledge of wildlife, its environment and its wisest and most beneficial use for our citizens must lead the way for perpetuating this renewable resource. Long range planning designed from the best information obtainable and from proven management practices coupled with failures in the past form a solid background for attaining this objective.

This report of the Montana Fish and Game Commission reviews the operation and progress of wildlife administration for the past two years.

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ADMINISTRATION

It has long been recognized that the title to wildlife shall be vested in the people of the state and that wildlife and outdoor recreation are inseparable, and that it is a necessary part of any over-all recreation program for the general welfare of our citizens.

To carry out a program of conservation, protection and propagation of wildlife for such a purpose, the Montana Fish and Game Commission was created. The Commission is the ruling body under which the department operates in accordance with the powers and duties prescribed by the legislature. All operations of the department function through the office of the State Fish and Game Warden who is the executive officer of the commission.

Seasons and bag limits set by the Commission are determined primarily from the best information available from field surveys conducted by department personnel and from sound recommendations of sportsmen. This flexible authority to set seasons and bag limits, open or close areas is a very necessary one for wildlife management. Wildlife has gradually increased to become a stable resource of great economic value to all the people under administration of the Fish and Game Commission and the Fish and Game Department, prior to the Commission's organization as a five-man board in 1921.

Administrative duties have expanded from a strictly law enforcement job in 1901, when the first state game department was organized, to an all inclusive program of conservation which now includes law enforcement, big game management, game bird management, propagation of game birds, fish propagation, game research, fisheries research, game range acquisition and a public information and education program.

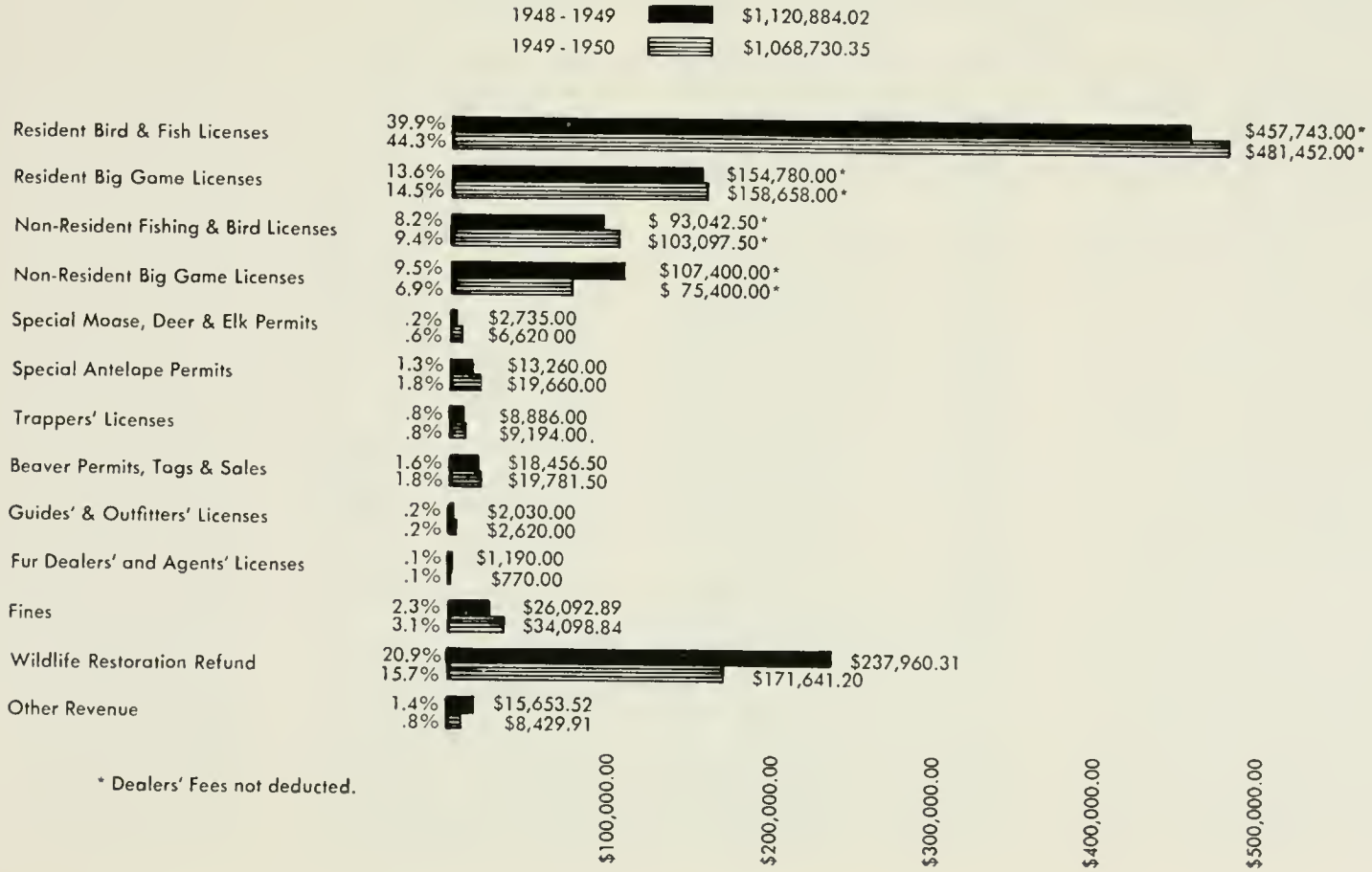
The powers and duties of the commission which are vested in that body by the legislature are designed for management of game animals, game birds, game fish and fur-bearing animals on a sustained yield basis.

Finances: The State Fish and Game Fund is a special fund set apart from the general fund and is exclusively made available to the Commission for administration of the Fish and Game Department. The Commission approves the annual operating budget based upon the estimated income from license sales, federal aid, fines and confiscation sales. Because the department operates almost entirely on funds derived from the sale of hunting and fishing licenses, operations of the department are geared to annual license sales. It is interesting to note that for the past 45 years or more in the history of the administration of the Fish and Game Department, the general public has contributed no state general funds towards maintenance of wildlife in Montana, although the commercial benefits generated by hunters and fishermen have been realized by business and the public in general. Those who buy hunting and fishing licenses have fur-

STATE OF MONTANA

FISH AND GAME DEPARTMENT

Comporison of dollar revenue for fiscal periods May 1, 1948 to April 30, 1949 and May 1, 1949 to April 30, 1950.

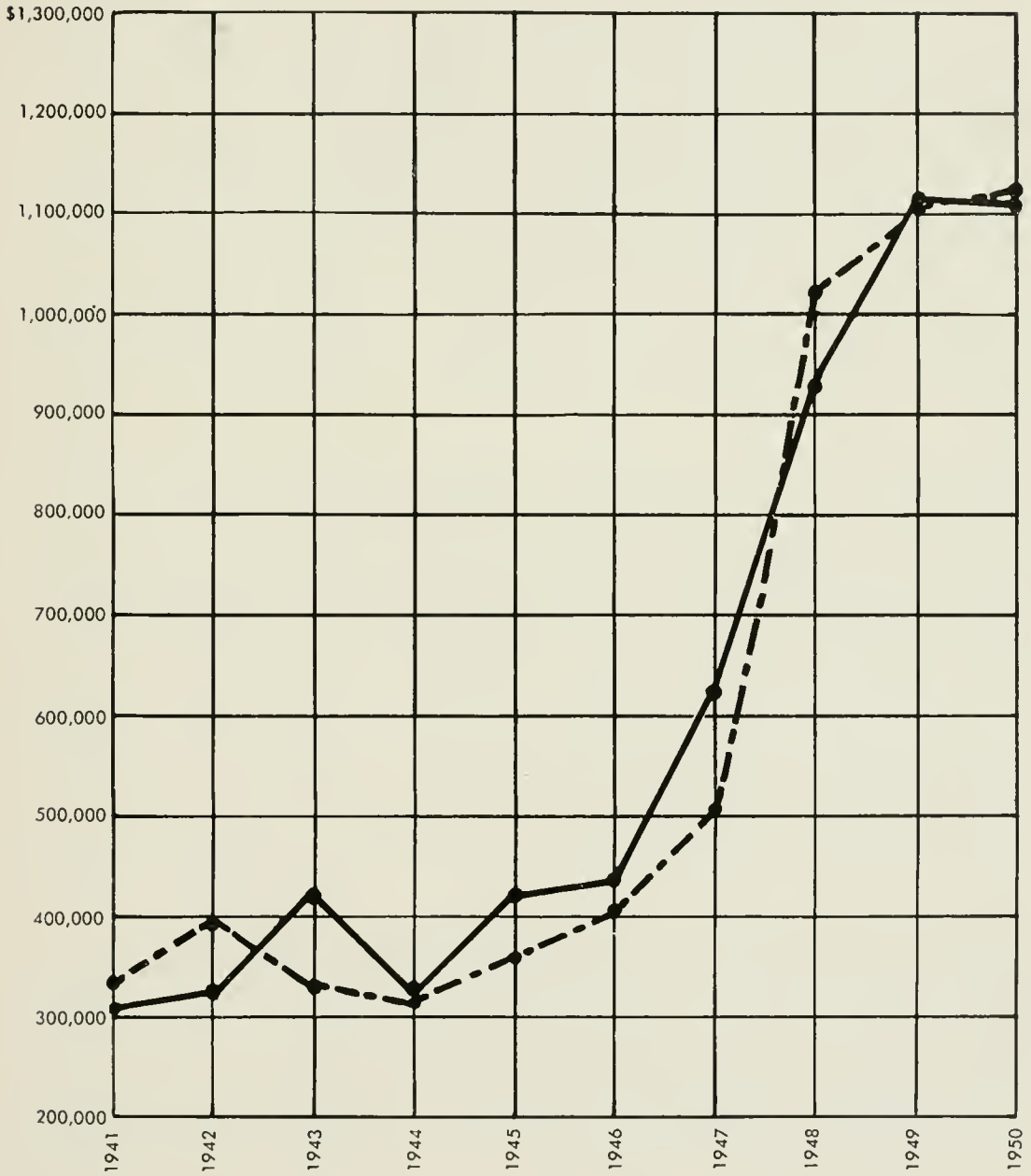


* Dealers' Fees not deducted.

STATE OF MONTANA

FISH AND GAME DEPARTMENT

Comparison of income and disbursements from May 1, 1941 through April 30, 1950



nished the funds and the many individual land owners who have harbored wildlife on their properties have been footing the bill, together with public land administrative agencies.

Total assets of the department in buildings at fish hatcheries, game farms, patrol cabins, winter game range land holdings, and all other equipment amount to approximately $1,452,000.00.

LAW ENFORCEMENT

Enforcement of the State Fish and Game laws and orders, rules and regulations of the Commission are delegated to 45 district deputy game wardens. Of this number, five wardens are appointed as district warden supervisors with each having a designated number of district wardens under his supervision. This system coordinates the work of the district wardens and has resulted in greater efficiency and better service to the public. The district warden force is the medium through which the general public has greatest contact with the department. It is closer to the public which it serves through daily contacts than all other personnel of the department. Law enforcement is by no means the only duty assigned to wardens although other assignments of work are secondary to enforcement.

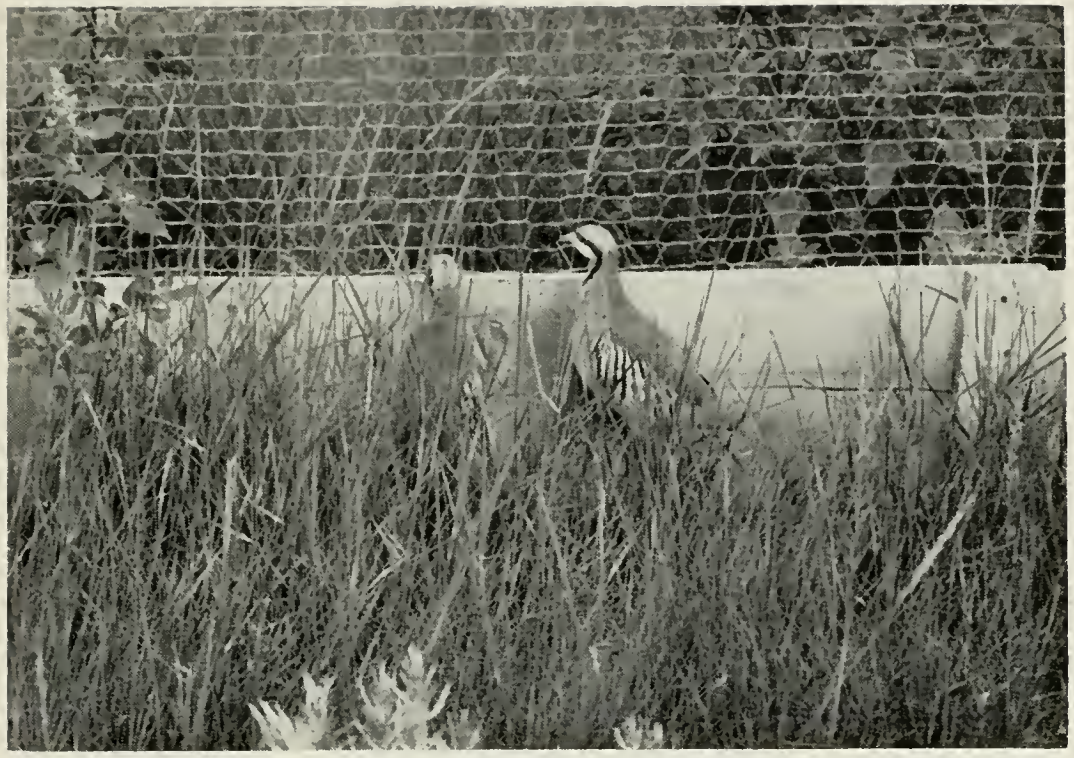
During the past two years a total of 1,485 arrests were made for fish and game violations. One person out of each 247 who purchased a hunting or fishing license was apprehended for a violation of the fish and game laws or orders, rules and regulations of the Commission. Fines imposed as a penalty for violation of the fish and game laws for the same period totalled approximately $59,940. An average fine of slightly over $40.00 was imposed by the courts for each violation. Revocation of the licenses to hunt or fish for a period of one year were made in a number of cases in addition to the fine. Several jail sentences were also given in flagrant game violation cases.

With less than one deputy game warden per county, the department needs greater assistance from sportsmen to curtail violations, both by the voluntary practice of policing themselves and reporting the actions of those who violate the law to proper officials. The moral code by which each sportsman limits himself in taking wildlife is a greater barrier to violating than the legal code. Many sportsmen are yet reluctant to give information concerning violations of fish and game laws of which they have knowledge due to the prevalent attitude that to give such information is "squealing." The department is trying to break down this attitude by driving home the fact that those who violate are taking unfair advantage of those who obey the rules of the game. Poaching is stealing, and should not be treated in any other light.

New problems of law enforcement are developing with the alarming increase of the four-wheel drive and cleat track vehicles which are gaining access into rough terrain or remote areas normally considered as areas which could be hunted only on foot or horseback. The district warden force is ever on the alert to report general wildlife conditions and undue circumstances which require that additional restrictions and protective measures be adopted to give adequate protection to wildlife.

The goal of law enforcement is to enforce laws and regulations designed to conserve wildlife and enforce the bounds within which each sportsman must stay in taking wildlife.

The annual limitation of expenses of deputy game wardens set by law at $750.00 per year for carrying out his official duties is insufficient, and such limitations should be removed and replaced by commission authority to determine the limits of such necessary expense.



Chukar Partridge

GAME FARMS

The activity at all three State Game Farms located in Billings, Fort Peck and Warm Springs was confined to the raising of Ringneck Pheasants during the past two years. Production at these game farms as a unit has been stabilized at approximately thirty thousand pheasants per year.

There has been considerable discussion as to the value of farm raised pheasants for release. However, in a state like Montana where a great portion of its pheasant range is on the fringe of what is considered a suitable habitat and the weather cycle periodically takes a heavy toll, continued operation of game farms for restocking purposes seems to have been justified. Pheasants have been raised and released annually in Montana by the Fish and Game Department since 1930. Prior to that time the Game Department had purchased pheasants from commercial breeders. Some pheasants were introduced in Montana by individuals and sportsmen's groups before the turn of the century.

At the Billings Game Farm approximately 100 chukar partridge are now being held as brood stock with the intention of making another attempt to introduce these game birds in Montana in the near future.

FUR BEARERS

Of all the wildlife resources of the state, only the fur-bearing animals such as beaver, muskrat, mink, marten, otter, fox and raccoon and fur bearers classed as predatory animals provide a direct cash crop. This resource supports a valuable fur trade industry in the state. A total of 2,843 trapping licenses were issued during the past two years. An open season on muskrat, mink, fox, otter and raccoon was declared in 1948 and 49. Except for the otter, an open season was declared on the same fur bearers during the 1949-50 season. The closed season on marten was continued during the past two years. It was determined that the marten population was large enough to declare an open season, but due to the low market value of this fine fur it was decided to keep the season closed until a better price per pelt could be realized by trappers.

BEAVER. Montana continues to be one of the largest beaver producers in the United States. Under present beaver management where permits are issued, a sustained yield of between eight and ten thousand pelts are taken each year. Beaver now inhabit every major drainage throughout the state. Due to the below average price received for beaver pets during the past few years, trappers have not taken the annual increase on this fur bearer. Complaints of damage and requtses for the department to remove nuisance beaver have been so numerous that our warden force and state trapper were pressed to take care of the beaver damage complaints. In this two-year period, 2,323 permits to trap beaver were issued—an average of almost eight were caught on each permit.

MUSKRAT. A spring trapping season on muskrats has been continued for the past several years for the reason that muskrat skins taken when the hide is prime are more valuable. Due to the difference in climatic conditions between the higher mountainous section and plains areas, it has been difficult to set a muskrat season favorable for all trappers to obtain a maximum catch. Special trapping permits have been provided on the larger irrigation districts where examinations by wardens have shown that damage to the irrigation system was caused by muskrats.

MINK. Wild mink pelts were in good demand during the past two seasons. The mink has withstood heavy trapping in some areas year after year which indicates that its breeding potential has not been harmed.

OTTER. Except in a few drainages, otter are not too numerous. Periodically an open season has been declared so that some value from this fur bearer can be realized by trappers.

RACCOON. The raccoon has become a problem in the lower reaches of the Yellowstone drainage. Damages to poultry, pheasants and agricultural crops have been attributed to raccoons. Because of the prevailing low market value received for its pelt, few trappers are interested in trapping this fur bearer.

FOX. Few fox are found in Montana. Its value as a fur bearer in this state is small.

PUBLIC INFORMATION

The primary mission of the Fish and Game Department's public information section is to keep before the public of the state those facts and figures relating to the management and conditions of fish and game in Montana. It is constantly striving to reach more and more persons through the various media; newspapers, magazines, radio, and personal correspondence and contact.

A theme being concentrated upon now, and in the future, is the fact that each and every person has a direct interest in the well being and good management of the fish and game resources in Montana. Utilization of every source available is a partial answer to the problem of making the public aware of its interest, and the public information section has taken advantage of these outlets.

Films, the themes of which deal with fish, game, and conservation, have been purchased and are now on deposit in the state film library, available to any group in the state interested in showing them. Lists of these films have been sent to all outdoor associations, schools, and clubs so that a selection of available films could be made. This has proved highly succesful and has eased the job of answering inquiries, both for the Fish and Game Department and for the state film library.

Weekly news releases, issued from the department's Helena offices, have averaged over five pages of copy per week. These go to every newspaper and radio station in the state, and to the major sports magazines and fish and game departments for other states.

Daily news releases are issued from the department for publication in all daily nwspapers in the state. They are written from information gathered by department personnel by members of the Public Information Section.

Requests have been received for a radio program of from five to fifteen minutes in length, written by section personnel. It is hoped that these requests can be granted in the near future.

An inter-department publication, Bear Facts and Fish Tales, is issued once a month to all members of the department. This deals strictly with department affairs and is not for general consumption.

Emphasis has been placed on the issuance from the department of more pictures to local newspapers for publication. So far, all pictures of department personnel and the work they are doing have been well received, and a great deal of space was allocated to them. Cartoons have also been sent out and published, dealing with various phases of conservation work.

ELK PLANTING PROGRAM

In order to help bring the number of elk in the Northern Yellowstone herd in line with available figures, a controlled reduction of elk within Yellowstone Park was conducted by the Park Service during the winter of 1949-50. During the course of this operation there was considerable interest on the part of sportsmen and other agencies and individuals to trap and transplant as many of these elk as possible.

Before transplanting could be done it was necessary to get agreements signed by landowners and to have consent of administrators of public lands involved. Much of this preliminary work was done by department personnel and the department also participated in the transplanting operations.

A fine spirit of conservation was exhibited by sportsmen and individuals all of whom donated time and money to hire trucks for transplanting elk. Sportsmen from Powell, Granite and Mineral counties arranged for trucks for restocking elk areas in those counties. A rancher from Custer sent his own trucks to the Park and hauled the elk to the Pine Ridge area located in Big Horn and Yellowstone counties.

The Park Service normally charges $5 per head of elk trapped as the actual cost of trapping. This fee was waived during this operation because the Fish and Game Department supplied the hay used to bait the traps.

Below is a list of the areas and the numbers of elk transplanted this season:

Bull	Cow	Calf	Total	Area
1	1	24	26	Superior (Mineral County)
1	12	12	25	Pine Ridge (Yel. & Big Horn Counties)
2	20	25	47	Horseshoe Hills (No. Gallatin County)
12	90	110	212	Garnet Range (Powell & Granite Cos.)
16	123	171	310	TOTAL

COMMENT ON HUNTER-RANCHER RELATIONS

America is one of the few countries in the world which provides public hunting and fishing. Almost one-third of the state is public domain lands on which all persons may hunt, trap and fish according to regulations. However, a great portion of the game birds, antelope, deer and fish are taken annually on private lands—with the tolerance of the owners thereof. Each succeeding hunting and fishing season adds to the number of private holdings posted to "no hunting or trespassing." Many landowners have expressed themselves as preferring to suffer game damage rather than allow uncontrolled hunting on their properties.

A much greater effort on the part of sportsmen to give due

consideration of the rights of the owner of the land on which he hunts and better observance of the rules of the game will help towards better understanding. While it would be difficult to enforce a regulation providing a safety zone around all building and fields in which livestock are kept, a self-imposed observance of firing at game only at a safe distance from such buildings or fields will be accepted by property owners as a good indication of better cooperation by sportsmen.

GAME DAMAGE

During the past two years, the department spent $21,856.00 on game damage complaints. The money was spent for elk herders, fence builders, fencing materials and purchase of hay for compensation of damage in severe cases. This figure is the amount expended on only a very small percentage of game damage complaints filed with the department. The department is financially unable to provide elk herders, fencing or pay claims for hay consumed for all complaints on a state-wide basis.

ANTELOPE DAMAGE

Increases in the number of antelope in some areas where agricultural crops are grown has resulted in many complaints of crop damage attributed to the antelope. Alfalfa seed crops have received severe damage in a few areas. The department has tried to give relief to the farmers by hazing the antelope to break up concentration by every means possible. Generally such measures are effective for temporary periods of time only, and a reduction in population in such areas is the only solution to reoccurrence of excessive crop damage. Special antelope seasons have been provided to obtain this objective.

DEER DAMAGE

Deer damage complaints are received annually from several deer ranges where winter range for deer is lacking and the deer are forced to winter on private lands. Haystack damage in some cases has been too heavy for any individual rancher to sustain and in such cases the department has built fences or furnished material for fencing around haystacks. Department sponsored fencing has been resorted to only in hardship cases where action is necessary to prevent complete destruction of a badly needed hay supply. Deer repellents which have recently been placed on the market were tried out with varying degrees of success when used on fruit trees and shrubs, but the use of such repellents was unsuccesful in keeping deer away from haystacks. A controlled season on antlerless deer has been our best tool for managing deer herds in areas where damage has occurred.

ELK DAMAGE

During the critical portion of the winter during time of deep or crusted snow, elk are forced down onto private lands in search of food. Haystacks are invaded and in some cases completely eaten or trampled. The department has sponsored the building of elk-proof panel fences in the critical areas, and has encouraged ranchers to build their own panels or to bale their hay, if possible. Baling of hay in some areas has almost solved the elk damage problem to haystacks. Elk herders were employed where no other methods could be used to curtail severe damages. Special elk seasons have been declared to give relief in some areas where hunting pressure has proven to be effective in keeping elk away from haystacks.

PREDATOR CONTROL

Direct participation by department employees in predator control was very limited during the biennium. The Commission has continued to confine its predator control activity to the furnishing of funds to the predator control division of the Federal Fish and Wildlife Service and to the paying of bounty claims on bob cats, mountain lions and magpies.

During the two-year period, approximately $68,916.00 was made available to the Federal Fish and Wildlife Predator Control division for salaries and expenses of hunters and trappers. In addition, approximately $8,300.00 was paid out in bounties on bob cats and mountain lions and assistance to sportsmen's organizations for paying magpie bounty claims.

The increase in the number of deer and antelope available to hunters which heretofore may have fallen to predation indicates that the funds allocated for predator control have been well spent.

WILDLIFE RESTORATION PROGRAM

INTRODUCTION

With this biennium, ten years of wildlife restoration work has been completed in Montana. The program has been high-lighted by the development of habitat for waterfowl, game birds and big game; the acquisition of badly needed big game winter range; the restocking of depleted wildlife areas with live-trapped animals and birds, and investigative work which has led toward more intensive management of the state's valuable wildlife resource.

This work which has become an important phase of the state's fish and game program, is financed by funds made available through an excise tax on sporting arms and ammunition. Previous to the establishment of legislation known as the Pittman-Robertson Act, money from this excise tax flowed into the general fund of the United States treasury. However, since that time the money has been definitely earmarked for use by the various states in wildlife restoration projects.. The amount alloted each state is determined by the state's area and number of licenses sold. Because of its size, Montana ranks ninth in the proportion of money received. This money is available on much the same basis as the Federal Aid to Highway Program. The state pays 25 per cent of the cost of the projects while the remainder comes from the arms and ammunition fund. Projects are

Antelope Trapping

prepared, administered and carried out by state personnel. The Fish and Wildlife Service, acting for the federal government, determines only that projects are sound and of value to wildlife. All property and equipment acquired under this program belongs to the state.

The various projects undertaken during the biennium are briefly described under the following headings:

WILDLIFE DEVELOPMENT AND ACQUISITION

Big Game Trapping and Transplanting

Within the past ten years large numbers of various species of big game have been trapped and transplanted. The objective of this work has been to obtain seed stock from areas where game was abundant and move them into desirable new ranges either to stimulate small existing herds or to establish new ones. Most of the work during this period was limited to the moving of antelope, mule deer, white-tailed deer, mountain goat and mountain sheep.

In a continuation of this program the past two years, 1,420 antelope were moved onto new ranges. There were also 208 mule deer, 115 white-tailed deer, and 41 mountain goats transplanted. Excellent results have been obtained in the establishment of these animals in desirable areas.

Sun River Game Range Development

The Sun River winter elk range (approximately 18,000 acres) which was acquired three years ago, has been fenced during the past biennium. This fence is of the stock type which allows free access to elk but prevents use by livestock. Interior fences have been removed. The area thus developed has solved an extremely difficult big game problem which previously existed in the Sun River area. It is now possible for approximately 3,000 elk to winter there without conflict with other land uses.

Blackfoot-Clearwater Acquisition and Development

Game range amounting to approximately 11,000 acres has been purchased by the state within the past two years. In addition, slightly over 40,000 acres of adjoining range has been leased for wildlife purposes. This unit strategically located at the junction of the Clearwater and Blackfoot Rivers, is being developed for the restoration and maintenance of big game.

Some portions of this range have become seriously depleted by heavy use in the past. Forest development by protection, reseeding and plantings is an important part of the restoration program on these lands.

Judith River Big Game Range Acquisition and Development

The state acquired 760 acres of land last year, which, added to the previous purchase in this area, brings this winter game range to 2,290 acres. The area is of extreme importance to both the elk and the deer.

Fencing and reseeding have been the types of development undertaken in order that forage will be provided for big game in the area during the winter months.

LEASES OF BIG GAME WINTER RANGE

Leases on approximately 120,000 acres of game range located within the Fish Creek-Thompson River and lower Blackfoot areas were again renewed during the past biennium. These areas are providing badly needed winter forage for important numbers of elk and deer.

MAINTENANCE OF WILDLIFE AREAS

Big Horn Sheep Transplanting Site, Missouri River Badlands

The Maintenance of Reservoirs

Thirty-seven reservoirs located in the eastern portion of the state have been developed for waterfowl purposes. The developmnt work has consisted of fencing the upper end of these reservoirs to protect them from trampling by livestock. It has also consisted of the planting of various types of food and cover for waterfowl. In all cases, sufficient water gaps have been maintained for livestock use.

This program has now been transferred onto a maintenance basis. The fences were maintained during the past two years with some necessary replacements as needed.

Game Salting

Big game salting has been an important activity for many years. During the past ten years, it has been carried on by the state as a

restoration project. Approximately one-third of the salt is now distributed in the more remote back country game ranges by the use of an airplane. In this way it has been possible to get the salt out in the early spring when it is most needed by the game.

WILDLIFE INVESTIGATION

Wildlife management has become increasingly complex. With rapid increases in the number of hunters and with problems of multiple land use it is necessary to manage wildlife with as much factual information as possible.

Having a staff of trained personnel, the Restoration Division has been assigned the job of obtaining necessary information for game restocking, land acquisition and game management.

In order that the big game inventory may be kept current, the state has been divided into several logical units.

Western Montana

Western Montana has been further divided into important big game herd units. Among these are the Bitterroot, Fish Creek, Thompson River, Swan Valley, Flathead and Blackfoot-Clearwater. A check of the numbers and distribution of big game in these areas has been carried out with the personnel available. As with all other big game ranges, observations have also been made regarding the condition of the forage upon which the animals depend. Every effort has been made to maintain as many game animals as possible in balance with the available winter food supply.

Southwestern Montana

A number of important big game ranges are included within this unit. Annual checks on numbers, distribution and range conditions have been carried out during the past several years. Areas of primary importance include the ranges of the Northern Yellowstone Elk Herd and also the game ranges within the Gallatin, Madison, Ruby, Blacktail and Big Hole drainages.

In addition to elk, it has been necessary to obtain information on deer and moose and the effect of hunting on these big game species. Particularly important problems regarding an inter-relationship or drift between the various elk herds in this unit are being checked as they appear to have an important bearing on the management of the individual groups.

Lincoln County

The relationship of big game and timber management presents a particularly important problem in northwestern Montana. Until recently very little was known regarding the effect of deer use on the establishment and development of young trees, particularly conifers. As both wildlife and timber are vitally important resources in this area, it is essential that all possible information regarding the effect of one on the other be known and used in their proper man-

agement. This program is being worked out on a cooperative basis with the Forest Service and local logging interests.

Eastern Montana

Eastern Montana presented outstanding opportunities for the restoration and development of big game. Such species as antelope, mule deer and white-tailed deer have increased during the past several years under careful management. This has allowed a continuously increasing hunter take.

The re-establishment of the bighorns in the breaks of the Fort Peck Game Range area has been an outstanding attempt to restore this species on range once occupied by the now extinct Audubon's bighorn sheep.

This desirable increase in big game numbers and distribution has naturally brought about various problems. It is particularly important, therefore, that accurate information be kept current. A department-owned airplane has been of great value in obtaining this necessary information on the widely scattered ranges.

GAME RANGE INVESTIGATION AND DEVELOPMENT

The dependence of big game upon available winter range has long been known. Little information, however, has yet been obtained regarding accurate information on the amounts of forage necessary for various numbers of big game. Also, a great deal of information is yet needed regarding the actual manipulation or management of the forage resources so vigorous plant growth may be maintained and still support reasonable numbers of game animals.

In order that the necessary information will be made available, a cooperative project has been set up between the Fish and Game Department and the Forest Service. The most intensive work in regard to this problem is now being carried out on the Gallatin elk range. It is expected, however, that the findings will be applied on a state-wide basis.

Checking Stations

It is necessary to have a reasonably accurate check on the numbers of game animals taken by hunters in order that herds may be properly managed. It has been found that carefully located checking stations within and adjacent to hunting areas furnish much of this needed information. In addition to the actual numbers taken, other important information is obtained, such as the age of the various animals taken as well as other information which aids in the determination of the thrift and productiveness of the various game herds.

UPLAND GAME BIRDS

As with the big game, it has been necessary to conduct investigative work each year to obtain current information on numbers and distribution of important species. Considerable emphasis has been placed upon the pheasant, due to its importance as a hunting bird.

WATERFOWL

During the past several years Montana has been able to make a very substantial contribution to the fund of information necessary to the management of waterfowl. The various states within the important flyways have pooled their information in order that accurate information would be available for management purposes on a flyway basis. As Montana lies within both the Pacific and Central Flyways, the Commission has cooperated closely with the states represented in both. The following information is being obtained in Montana:

Winter Duck Banding Operations

First, a careful inventory of the waterfowl breeding grounds to determine the annual production of waterfowl within the boundaries of the state; possible ways of improving these breeding ground conditions are being studied as a basis for a waterfowl development program.

Close observations in regard to the hunter distribution and take are important features of the present management plan. Voluntary checking stations have aided a great deal in this work.

During the past several winters Montana's Fish and Game personnel have been able to carry out through the Restoration program a banding project which has compared favorably with any in the nation. The returns from this work are forming a very important background to the knowledge of migrations of waterfowl throughout the various flyways.

This information indicated that Montana's pheasant population followed the nation-wide trend of a decided decline following the high numbers of '39 and '40 to a decided low in 1946. A slow upward climb has been observed since that time although a moderate setback in this upward trend was noticed during the spring of 1950 due apparently to adverse weather conditions.

In addition to the information regarding state-wide trends in numbers, definite information is being obtained regarding the adaptability of game farm-raised birds to wild conditions and also in obtaining information regarding better ways of acclimating these birds to their new environment.

Practical methods of improving pheasant habitat are being carried out on an experimental basis with the hope of expanding this program if found to be effective and feasible. Work on native species is being carried out principally in the nature of spot checks to gain comparative information from year to year regarding the numbers of the various species of grouse. This information is of particular importance as a basis for the setting of the annual hunting regulations.

FISHERIES DIVISION

Montana Grayling

MANAGEMENT

Montana is famous for its trout fishing and in the past ten years the number of non-resident fishing licenses has increased over 300 per cent. Everyone that enjoys trout fishing enjoys Montana. The Fish and Game Department's main effort in fish culture is to establish management practices that will somewhat keep up with the population trends and the demand for this wholesome recreation.

The species of trout that are found in Montana are the following: The native blackspotted trout, the dolly varden (bull trout), rainbow trout, Lock Leven trout, eastern brook trout and mackinaw trout. There are a few lakes in the state that are also stocked with California golden trout.

Today, Montana has the largest population of grayling of any state in the union. The grayling has all but disappeared in the United States and every effort is being made to provide sanctuaries for these fish and management practices are being arranged for the protection of grayling during spawning. New sanctuaries are made by introducing them in high altitude inaccessible lakes. Further studies will be conducted regarding the grayling management in Montana.

Two of the principal sport fishes in the State of Montana are the silver salmon and the sockeye salmon. The sockeye salmon is being used more and more extensively in lakes for which they are suited. After three years stocking, they provide very good fishing and seem to maintain their own population. The silver salmon, to date, with what information we have, does not sustain itself in impounded waters but must be introduced each year. Wherever

salmon have been introduced, they have provided very good fishing. During 1950, Georgetown Lake was a very good example of the use of silver salmon in the management of an impounded lake. On the opening day the silver salmon contributed over 50 per cent of the total catch. The silver salmon population is entirely dependent on artificial rearing and stocking methods perfected over several years of management practice.

Other game fishes that are found in the state are the following: Large mouth black bass, small mouth black bass, bluegill sun fish, and crappie, the great northern pike, the wall-eyed pike, the sauger or sand pike.

The warm water fish and the pike are grouped together under one management plan. This is done because of the adaptability of these species to impounded water. In proper management of impounded waters there must be a proper ratio of forage fish to cannibal fish to insure fishing success and returns.

Stockmen and ranchers have constructed many ponds in Montana and their many uses have been recognized by different organizations dealing with land management. Fishery resources in these impounded waters are incidental to the major uses. The prime use that will be made of them is for stock watering; however, the introduction of fish has provided fishing to many areas in Montana that previously had very little fishing available. This has served a dual purpose. It has provided fishing for new areas and indirectly has relieved some of the trout fishing on the streams and lakes in Montana. In cooperation with the U. S. Soil Conservation Service, the U. S. Fish and Wildlife Service, the Montana State College, and the Montana Fish and Game Department, experiments in management are being carried on and from these experiments, a recommended fisheries management policy will be submitted for use, geared to the climatic conditions and water use in the state.

SPAWNING

The principal sources of trout and grayling eggs in the State of Montana have been from wild stock with traps installed at Georgetown Lake, Ashley Lake, Lake Ronan, the South Fork of the Madison River, at West Yellowstone and Harrison Reservoir at Harrison, Montana.

During the biennium the biggest take out of any individual water was from Georgetown Lake. The traps at Georgetown produced the following numbers of eggs of different species:

Rainbow Trout	2,737,768
Eastern Brook Trout	943,721
Native Trout	4,678,314

Grayling—Almost ten million eggs were available but only 3,664,386 were taken.

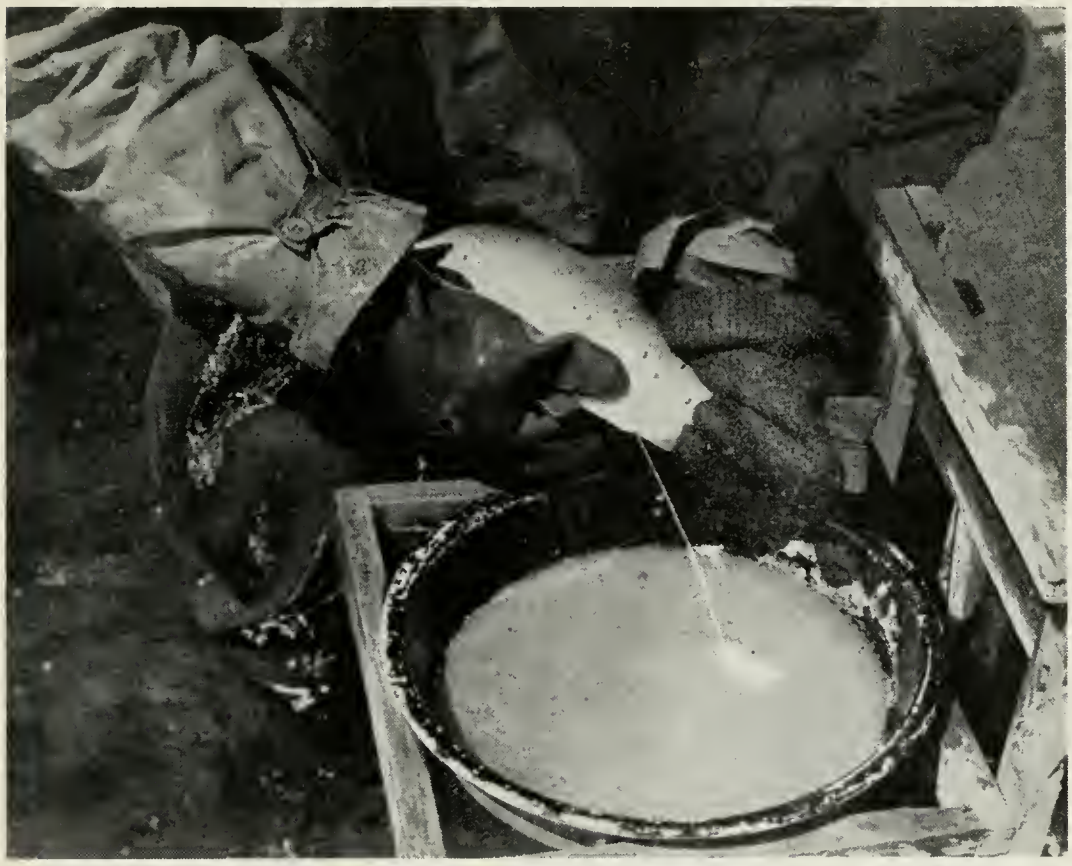
The South Fork of the Madison is the only Loch Leven egg

source in the state. It furnishes the state with all the Loch Leven eggs that are needed. During the biennium, 3,632,656 eggs were taken.

Willow Creek Station at Harrison, Montana, did not provide as many eggs as it has in the past. Only 4,378,972 rainbow eggs were taken. This lake formerly was closed to fishing. Opening a portion of the lake to fishing apparently has a direct effect on the number of eggs taken at the trap.

Ashley Lake provided the state with 983,680 native trout eggs and Lake Ronan furnished 270,336 rainbow eggs, during the year 1949.

Under the management of the Libby hatchery, during the biennium, traps were installed on Prospect Creek, Vermillion Creek, and Bull River for trapping dolly varden trout and provided eggs



Fertilizing Native Trout Eggs

to rear dolly varden trout for the Flathead Lake area. Approximately 600,000 dolly varden trout eggs were taken from the Thompson Falls area. This is a program designed to again re-establish the dolly varden population and spawn runs in the tributary streams of Flathead Lake.

The only source developed for the taking of sockeye salmon is Flathead Lake and it has provided annually about three and one-half million sockeye salmon eggs for use in Flathead Lake and other waters of the state.

TABLE I.

FISH EGGS TAKEN DURING THE BIENNIUM

May 1, 1948 to April 30, 1949

Station	Rainbow	Brook	Bull Trout	Sockeye	Loch Leven	Native	Grayling
Arlee Spawning Station	2,009,360						
Ashley Lake Station						1,271,424	
Georgetown Lake Station	2,448,448					2,095,764	1,936,386
Lake Ronan	99,008						
Libby Spawning Station		3,034,624					
Somers Spawning Station				2,044,416			
South Fork-Madison Station					659,714		
Station Creek Station				1,546,048			
Willow Creek Station	2,766,708						

May 1, 1949, to April 30, 1950

Arlee Spawning Station	2,866,302						
Ashley Lake Station						983,680	
Georgetown Lake Station	289,320	943,721				2,582,550	1,728,000
Lake Ronan	270,336						
Libby Spawning Station		319,074	601,656				
Somers Spawning Station				2,128,896			
South Fork-Madison Station					2,972,942		
Station Creek Station				1,529,088			
Willow Creek Station	1,602,264						
TOTALS	12,351,746	4,297,419	601,656	7,248,448	3,632,656	6,933,418	3,664,386

The McNeil Hatchery at Malta, Montana, is primarily a wall-eyed pike hatchery, and spawn taking operations are ever increasing. During the past year about six million wall-eyed pike eggs were taken, hatched and distributed to waters within the state.

DISTRIBUTION

Several years ago the State of Montana was divided into hatchery districts and these districts were served by hatcheries located within the boundaries. This, in fisheries management in Montana, was a very intelligent move. In keeping each hatchery to a district it eliminated over-lapping of plantings between different hatcheries.

During the biennium some of the planting recommendations were revised, and from information available species were changed so that we would stock with the prevalent species of fish in the water, thereby using the species that is best suited to the individual stream.

Two new distribution units were constructed and recognition was given this equipment in the "Progressive Fish Culturist," published by the U. S. Fish and Wildlife Service. The system used for the tanks is known as a Lafevre aerating system and the tanks are insulated and carry an auxiliary circulation pump in case the other system should fail for some mechanical reason. These tanks have been very successful in the transporting of trout. In one instance, 700 pounds of fish were hauled without any visible signs of distress.

Table II shows the numbers and size of fish distributed from the hatcheries operated by the State of Montana and cooperative unit at Miles City.

It is the aim of the department to manage each hatchery to serve its particular district to the best advantage. In some cases the cost of the hatchery is way in excess of the pounds of fish distributed, however, in the management of Montana waters, spawn taking operations and the resulting work that is carried on in connection with getting the supply of eggs for the state is not equally distributed among the hatcheries. Therefore, hatcheries such as Anaconda, Arlee, Big Timber, Libby and Somers supply the eggs for the entire state.

In the management of the sockeye salmon, the Polson and Somers hatcheries are the only sources for this specie of fish, however, these eggs are distributed to different hatcheries and different locations within the state.

The walleye pike distribution report will show large numbers of eggs and fish, however, the fish are mostly distributed as fry.

On heavily fished waters the larger size trout that are planted show a better percentage of return to the fisherman's creel. In virgin ponds and lakes, plantings are more successful with smaller fish with less cost of distribution and the survival return is much higher than small fish planted in big streams containing the larger cannibalistic resident population.

IMPROVEMENTS

During the biennium, the following improvements were made at the various hatchery installations.

Storage facilities for fish foods were installed at the Big Timber, Great Falls, Hamilton and Emigrant hatcheries.

Also, the Fish and Game Department recognized the need of a trout hatchery to serve the southeastern part of the state, principally that part south of Billings. They purchased a site known as the Bluewater Springs located nine miles from Fromberg, Montana. Ten rearing units (10'x100'), a two-stall garage, a food storage unit and a dwelling house for the foreman in charge were constructed. The first year the station was operated, exceptional growth was made by the fish reared there. In ten months time, the fish averaged five and one-half inches each. This unit now is tied in and operated in conjunction with the Big Timber hatchery, as they both serve the same district.

At the Arlee hatchery, ten new race-way type ponds were constructed, (10'x100'), and are now in operation.

Five (10'x100') cement tanks were constructed at Libby and are now in operation.

THE FISH BIOLOGY SECTION

The Fish Biology Section is the technical branch of the Fishery Division. Its function is to conduct experiments and gather information on problems of and related to the sport fishery, and on the basis of these findings, to develop and test new fish management measures.

During the biennium, work has been in progress on thirteen different projects in addition to a variety of emergency or "trouble-shooting" investigations.

Stream Census Technique

AGE AND GROWTH OF FISHES

Through the examination of thousands of fish scales, tables showing the average sizes of game fishes of Montana at various ages are being constructed to provide a sound basis for evaluating growth of fishes in individual waters and areas of the state. Complete or partial evaluation has been made during the past biennium of fifteen streams and twenty-one lakes in addition to numerous stock water reservoirs. Studies made in south-central Montana have been used by the management section in revising the hatchery-trout planting programs for the Fromberg and Big Timber hatchery districts.

The scale reading is done at the division's laboratory at the Montana State College where one permanent laboratory technician and part-time student help are engaged.

Studies are also in progress on the fluctuation in condition of fishes. To aid in this study, alinement charts to facilitate calculating condition factor, a figure that indicates robustness, were constructed and a report[1] published.

FEEDING HABITS OF FISHES

No intensive efforts have been made yet on feeding habits of fishes. To date findings from studies conducted in other states and reported in the literature have been used in management. One study has been completed of stomach analysis of brown trout, rainbow trout, and Utah chubs from Hebgen Lake. Another is in progress on the dolly varden trout as will be mentioned under a later section.

CREEL CENSUS

The creel census program as outlined in the **Biennial Report, 1946-1947 and 1947-1948** was continued and expanded this biennium. The general creel census taken by the deputy game wardens while on regular patrol constituted the bulk of the catch data.

Those regularly engaged in guiding or outfitting fishermen are in an excellent position to furnish the Department with creel census of those fishing under their supervision. Response of these guides and outfitters improved markedly during the biennium. Nine reported during 1948 and forty-eight sent in catch records in 1949. The boat house operators on Hebgen Lake have been most cooperative in this endeavor. In 1948 they reported 1,050 fishermen who fished 4,362 hours and caught 2,837 trout and four grayling at a rate of 0.65 game fish per hour. In 1949 they reported 4,008 fishermen who fished 16,753 hours and caught 9,043 trout and five grayling at a rate of 0.54 game fish per hour.

While records obtained from individual fishermen will always be very inadequate, they will be of great value in supplying information on angling trends and species composition of the catch for certain waters. Response from this source also improved during this biennium. Pocket-sized booklets, "Fishermen's Logs," were prepared for distribution to cooperative sportsmen. These are mailed to persons requesting them and become their own, personal permanent records. The department asks for the temporary return of the logs to Helena at the end of the fishing season for transcription of the records. They are then returned to the fishermen for the next season.

During 1947 and 1948, 408 logs were distributed. By the end of 1948, there was response from 40 per cent of the log holders. Of the 336 logs out in 1949, response was received from 72 per cent.

During this biennium a report[2] was prepared and published, summarizing the creel census findings to date. Table I from this report is reproduced herein to demonstrate the practical value of creel census. It will be noted that the case of the eastern brook trout is most spectacular. There were 56 streams in the census where eastern brook trout constituted more than 50 per cent of the catch; and yet in 27 of these streams, no eastern brook were planted in 1946, 1947, or 1948. Considering these 27 streams, 19 of them received plantings

[1]Phenicie, Charles K., and Clinton, G. Bishop. 1950. Condition Factor Alinement Charts. Prog. Fish. Cult., Vol. 12, No 3: 163-164

[2]1950. Why Creel Census? Montana Fish and Game Commission Bulletin No. 4.

of other trout. Of the entire 56 streams where eastern brook trout made up more than 50 per cent of the catch, 16 of them had one or more species of fish released where these species constituted less than five per cent of the catch.

This table demonstrates that the species of fish planted from hatcheries do not always correspond to the species appearing most often in the catch and that many streams, particularly those in which eastern brook trout are dominant, are receiving little benefit from hatchery releases. Creel census will, thus, enable the Fish and Game Department—

(1) to discontinue planting species of fish that do not appear materially or do not appear at all in the catch,
(2) to plant the species of fish that will give the anglers the greatest return,
(3) to prohibit the introduction of new species of fish that prior knowledge shows are incompatible with resident fish,
(4) to maintain a constant check on the quality of fishing in individual waters, and
(5) to check the effectiveness of old and new management measures.

TABLE 1.

SUMMARY FIGURES FOR 1948-1949 STATE-WIDE CREEL CENSUS

	Species Constituting Over 50 per cent of Catch			
	Rainbow	Cut-throat	Eastern Brook	Brown
(1) Number of streams in census where species made up over 50 per cent of catch.	60	30	56	5
(2) Number of streams in (1) not planted to dominant species.	11	13	27	2
(3) Number of streams in (2) planted with other species of trout.	5	4	19	1
(4) Number of streams in (1) planted with species of trout besides the dominant species.	24	11	29	4
(5) Number of streams in (1) planted with dominant species only.	30	10	19	—
(6) Number of streams in (1) either where both rainbow and cutthroat were planted or where one was planted where the other was dominant.	12	9	8	—
(7) Number of streams in (1) where a species planted constituted less than 5 per cent of the catch.	13	1	16	—

Note: Plantings refer only to years 1946, 1947, and 1948.

FORT PECK RESERVOIR PROJECT

A one season investigation was conducted on Fort Peck Reservoir by the department in cooperation with the Missouri River Basin Studies of the Fish and Wildlife Service. A report[3] of the investigation was prepared and published.

It was established from the investigation that the three most abundant species of fish, excluding carp from the consideration, in that portion of the reservoir adjacent to the dam, in order of their abundance, were goldeye, yellow perch, and sauger. Carp, too, are abundant, but no comparative figures for this species were obtained. The depth distribution of the three above mentioned species was determined for the summer of 1948 in the area adjacent to the dam. Goldeye were most abundant from zero to four feet, sauger from ten to fourteen feet, and perch from fifteen to nineteen feet.

It is indicated from this investigation and from the creel counts of the Missouri River Basin Studies that returns to the creel per plant of hatchery reared trout and kokanee (landlocked sockeye salmon) are low, that the plants cannot be justified on the basis of the return. It was also indicated that, in lieu of plants of rainbow trout, brown trout, and kokanee, lake trout, a lake spawning fish, should be planted. Two well made plants of fish at least eight inches long should be made. Two plants should be sufficient to demonstrate whether or not this fish can establish itself through natural propagation.

STOCK-WATER RESERVOIR PROJECT

Throughout the state, and particularly in that portion of the state east of the continental divide, there are thousands of small ponds, reservoirs whose primary purpose is in providing water for livestock. Many of these can provide suitable habitat for trout or warm water fishes and have been stocked with these. The sportsmen of a large area of the state depend upon these reservoirs as their primary source of fishing recreation. These waters have offered a definite problem in management, particularly because of complete or partial fish kills, stunted fish populations, and fish balances undesirable from the sportsmen's viewpoint.

In order to develop management measures for these stock-water reservoirs, the Montana Fish and Game Commission is participating in a cooperative stock-water reservoir project with the Zoology and Entomology Department of the Montana State College and the Montana State Extension Service. This project began May 1, 1949 and will be concluded April 30, 1951.

The project is designed to determine what physical and chemical features in a stock-water reservoir make it most suitable for fish. When the fundamental knowledge concerning suitable habitat is available, ponds with optimum features will be chosen, and experiments will be conducted on these to establish fish management measures.

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[3] 1950. Progress Report of the Fort Peck Reservoir Fishery Survey. Montana Fish and Game Commission Bulletin No. 3.

PRICKLY PEAR CREEK PROJECT

The Prickly Pear Creek Project was begun in the summer of 1949. It is to be a detailed study of the fish populations of this creek near Wolf Creek, Montana. That portion of the creek from the Missouri River to Sieben was designated as the study area. Six 600-foot sections were selected at random for sampling. A census of each section was made during 1949 four times with an electric shocker in an effort to collect all of the fish from each section. The trout, whitefish, suckers, and carp were caught, weighed, measured, tagged, and released unharmed back into the section. Scale samples were also taken. Records were made of all fish caught that had been tagged on previous shockings.

This program after a few more seasons, will show us how to approach other streams. Our knowledge of trout streams is low as is our knowledge of the behaviors of the fish themselves. Until some of these problems are answered, we will be lacking the basic information needed for proper management. The Prickly Pear project should enable us:

1. To establish the size sample needed to measure the abundance of trout and the fluctuation of abundance in medium-sized streams.
2. To learn the size of the Prickly Pear Creek trout population along with its length, weight, age, and species composition.
3. To learn the size sample needed in streams to measure adequately the growth rate of fishes and to measure the mortality rates, both of which are extremely important in fishery management.
4. To study the angler's catch as it relates to the estimated size and composition of the trout population.
5. To measure the movement or dispersion of trout.
6. To study under conditions that can be controlled, the relation between trout and the other stream fishes, such as Cottus, ling, suckers, whitefish, and carp.
7. To study under conditions that can be controlled, the relations between the various species of trout.
8. To establish the reality of sucker migration and to measure its magnitude and direction.
9. To study the survival of hatchery-reared trout in a stream where the size of the wild population can be estimated and controlled.
10. To find and study the portions of the stream where trout are most numerous.
11. To learn the types of stream improvement that may be used in Montana waters.
12. To test the effectiveness of stream improvement.

The importance of environment to maximum production has already been demonstrated. During the 1949 season, an average of 13.5 pounds of trout per 150 feet of stream was removed with the electric shocker from sections with one or more medium sized pools. On the other hand, only an average of 3.4 pounds of trout per 150 feet of stream was resident in those sections with 100 per cent riffles or small pools and riffles. Approximately three-quarters of this stream is in the low production category. Experiments are underway to determine the feasibility of increasing production by artificial stream improvement.

COOPERATIVE PROJECTS

The Fish Biology Section has profited by cooperative relations with the Montana State University, the Montana State College, and other organizations in the state concerned with fisheries work. The Montana State College has furnished this department office and laboratory space, has granted the department staff access to libraries and biological collections, has granted loans of specialized equipment, and has made its staff members available for consultation on biological, chemical, and mathematical problems. We gratefully acknowledge these benefits.

ROUGH FISH CONTROL

The policy of the State of Montana is to manage their waters for sport fishing, however, on several occasions an attempt has been made to control the rough fish populations in some waters. During the biennium, rough fish work in the Clearwater Lakes area and the Thompson Falls, Clarks Fork area were pointed toward the cutting down of the population of suckers and squawfish. By installing traps where the suckers and squawfish migrate, many tons have been taken and the resulting fish were utilized as fish food at the Anaconda and Arlee hatcheries. The past season, temperatures were taken at the racks to determine at what temperature the suckers and squawfish move. This will enable the department to know when to install the traps and put them in operation to catch the peak run of the rough fish. Several lakes were seined in an endeavor to curtail the sucker population and make more room and better habitat for the game fish.

STATEMENT OF INCOME
May 1, 1948 — April 30, 1949

Hunting and Fishing Licenses and Shipping Permits:

Resident Bird and Fish	152,581	@	$ 3.00	$457,743.00	
Resident Big Game	77,390	@	2.00	154,780.00	
Tourist Fishing	20,135	@	2.50	50,337.50	
Non-Resident Fishing	3,863	@	10.00	38,630.00	
Non-Resident Bird	163	@	25.00	4,075.00	
Non-Resident Big Game	1,074	@	100.00	107,400.00	
Shipping Permits	4,507	@	.60	2,704.20	
Special Antelope Permits	2,652	@	5.00	13,260.00	
Special Moose Permits	80	@	25.00	2,000.00	
Special Elk Licenses	270	@	1.00	270.00	
Special Deer Licenses	93	@	5.00	465.00	
				$831,664.70	
Less Dealers' Fees				25,514.00	
Net Income from Sale of 1948 Licenses					$ 806,150.70
Plus 1947 Accounts Paid During Above Period					7,170.30
Total Income from Hunting and Fishing License Sales					$ 813,321.00

Licenses and Permits Other Than Above:

Beaver Tags	8,946	@	$ .50	$ 4,473.00	
General Trappers' Licenses	827	@	10.00	8,270.00	
Land Owner Trappers' Licenses	616	@	1.00	616.00	
Beaver Trapping Permits				13,830.00	
Guides' Licenses	203	@	10.00	2,030.00	
Resident Fur Dealers' Licenses	69	@	10.00	690.00	
Fur Dealer Agents' Licenses	30	@	10.00	300.00	
Non-Resident Fur Dealers' Licenses	4	@	50.00	200.00	
Certificates of Identification	708	@	.50	354.00	
Minnow Seining Permits	11	@	10.00	110.00	
Taxidermist Licenses	11	@	15.00	165.00	
Alien Gun Permit	1	@	25.00	25.00	$ 31,063.00

Miscellaneous Revenue:

Fines	$ 26,092.89	
Confiscations—Sale of Fish and Meats	5,355.11	
Sale of Elk Study	1.00	
Refunds	125.11	
Other Revenue	2,197.47	
Sale of State Trapped and Confiscated Furs	4,616.63	
Royalty on Beaver Sold	7.50	
Additional Beaver Granted on Regular Permits	146.00	$ 38,541.71
		$ 882,925.71
Wildlife Restoration Income by Federal Reimbursement		237,960.31
Less Special Refund of Beaver Tag Overdeposit, April, 1948		2.00
TOTAL INCOME TO DEPARTMENT DURING ABOVE PERIOD		$1,120,884.02

STATEMENT OF INCOME
May 1, 1949 — April 30, 1950

Hunting and Fishing Licenses and Shipping Permits:

Resident Bird and Fish	160,484	@	$ 3.00	$481,452.00	
Resident Big Game	79,329	@	2.00	158,658.00	
Tourist Fishing	23,423	@	2.50	58,557.50	
Non-Resident Fishing	3,994	@	10.00	39,940.00	
Non-Resident Bird	184	@	25.00	4,600.00	
Non-Resident Big Game	754	@	100.00	75,400.00	
Shipping Permits	4,289	@	.60	2,573.40	
Special Moose Permits	82	@	25.00	2,050.00	
Special Antelope Permits	3,932	@	5.00	19,660.00	
Special Elk Licenses	185	@	1.00	185.00	
Special Deer Licenses	877	@	5.00	4,385.00	
				$847,460.90	
Less Dealers Fees				26,746.20	
Net Income from Sale of 1949 Licenses					$ 820,714.70
Plus 1948 Accounts Paid During Above Period					4,053.10
Total Income from Hunting and Fishing License Sales					$ 824,767.80

Licenses and Permits Other Than Above:

General Trappers' Licenses	816	@	$ 10.00	$ 8,610.00	
Land Owner Trappers' Licenses	584	@	1.00	584.00	
Beaver Tags	9,006	@	.50	4,503.00	
Beaver Permits	1,191			15,203.00	
Guides' Licenses	118	@	5.00	590.00	
Resident Fur Dealers' Licenses	48	@	10.00	480.00	
Taxidermist Licenses	9	@	15.00	135.00	
Certificates of Identification	713	@	.50	356.50	
Fur Dealer Agents' Licenses	14	@	10.00	140.00	
Non-Resident Fur Dealers' Licenses	3	@	50.00	150.00	
Minnow Seining Permits	16	@	10.00	160.00	
Alien Gun Permit	1	@	25.00	25.00	
Outfitters' Licenses	203	@	10.00	2,030.00	$ 32,966.50

Miscellaneous Revenue:

Fines	$ 34,098.84	
Sale of Confiscated Fish and Meats	3,811.51	
Other Revenue	553.50	
Sale of Confiscated Hides and Furs	812.50	
Royalty on Beaver Sold	10.50	
Extra Beaver Granted on Regular Permits	65.00	
Sale of Elk Study	3.00	$ 39,354.85
		$ 897,098.15
Wildlife Restoration Income by Federal Reimbursement		171,641.20
TOTAL INCOME TO DEPARTMENT DURING ABOVE PERIOD		$1,068,730.35

RECAPITULATION OF DISBURSEMENTS
May 1, 1948 — April 30, 1949

COMMISSIONERS		$ 4,037.06
ADMINISTRATION		91,365.36
PUBLIC RELATIONS		8,566.70
PREDATOR CONTROL		41,134.77
MOIESE EXPERIMENTAL FARM		8,379.99
MISCELLANEOUS ACCOUNTS:		
Game Damage—Salaries and Expense	$ 14,752.91	
Shop and Warehouses	499.72	
Licenses and Permits	12,598.20	
Refunds	322.00	
Feed and Sale (For Game Animals)	233.35	
Fairs and Expositions	256.66	
Surveys, Plans, Assessments, Water Use, Lease of Land	83.40	
Checking Stations—Salaries and Expense	3,868.05	
Insurance—Automobiles, Buildings and Equipment	6,749.69	
TOTAL MISCELLANEOUS ACCOUNTS		$ 39,363.98
ENFORCEMENT		195,639.40
FISHERIES DIVISION:		
Hatcheries: General	$ 398.06	
Anaconda	22,611.34	
Arlee	63,226.61	
Big Timber	14,795.45	
Bluewater Springs	33,990.20	
Creston (Federal)	10,816.91	
Emigrant	32,648.72	
Ennis (Federal)	10,384.88	
Great Falls	17,934.50	
Hamilton	10,436.38	
Lewistown	27,468.47	
Libby	13,171.14	
McNeil	5,248.53	
Miles City (Federal)	2,554.03	
Polson	4,781.27	
Somers	10,907.19	
Total Hatcheries	$281,373.68	
Spawning Stations	4,218.86	
Other Field Projects	22,291.77	
Research	23,362.85	
TOTAL FISHERIES DIVISION		$ 331,247.16
GAME FARMS: Billings	$ 19,405.44	
Fort Peck	18,946.35	
Warm Springs	23,971.35	
TOTAL GAME FARMS		$ 62,323.14
WILDLIFE RESTORATION		335,078.11
STATE PURCHASING AGENT		621.76
TOTAL EXPENDITURE DURING FISCAL YEAR		$1,117,757.43

RECAPITULATION OF DISBURSEMENTS
May 1, 1949 — April 30, 1950

COMMISSIONERS			$ 6,058.97
ADMINISTRATION			81,136.62
PUBLIC RELATIONS			8,594.40
PREDATOR CONTROL			36,080.52
MOIESE EXPERIMENTAL STATION			447.77
MISCELLANEOUS ACCOUNTS:			
Game Damage—Salaries and Expense		$ 7,103.87	
Shop and Warehouse		5,920.08	
Licenses and Permits		4,366.99	
Refunds		141.90	
Feed and Salt (For Game Animals)		1,633.29	
Fairs and Expositions		655.01	
Surveys, Plans, Assessment, Water Use, Lease of Land		526.33	
Checking Stations—Salaries and Expense		7,135.57	
Insurance—Automobiles, Buildings and Equipment		1,090.23	
TOTAL MISCELLANEOUS ACCOUNTS			$ 28,573.27
ENFORCEMENT			212,650.11
FISHERIES DIVISION:			
Hatcheries: General	$ 4,673.23		
Anaconda	33,264.12		
Arlee	68,848.72		
Big Timber	23,214.70		
Bluewater Springs	52,968.38		
Creston (Federal)	5,961.61		
Emigrant	16,165.68		
Ennis (Federal)	5,709.65		
Great Falls	24,871.36		
Hamilton	9,945.36		
Lewistown	28,380.80		
Libby	28,446.14		
McNeil	6,042.88		
Miles City (Federal)	3,486.55		
Polson	4,360.92		
Somers	11,136.52		
Total Hatcheries		$327,476.62	
Spawning Stations		2,775.51	
Other Field Projects		8,831.61	
Research		31,193.38	
TOTAL FISHERIES DIVISION			$ 370,277.12
GAME FARMS: Billings		$ 16,659.47	
Fort Peck		19,966.76	
Warm Springs		29,551.41	
TOTAL GAME FARMS			$ 66,177.64
WILDLIFE RESTORATION			322,133.24
WAREHOUSE STORES ACCOUNT			3,204.92
STATE PURCHASING DEPARTMENT			380.00
TOTAL EXPENDITURES DURING FISCAL YEAR			$1,135,714.58

DETAIL OF EXPENDITURES
For Fiscal Years Ending April 30, 1949 and April 30, 1950

	1949	1950
COMMISSIONERS		
Per Diem and Expense	$ 4,037.06	$ 6,058.97
ADMINISTRATION		
Operation	$ 82,851.00	$ 79,053.56
Capital Expenditures	7,494.11	1,097.23
Repairs and Replacements	1,020.25	985.83
TOTAL	$ 91,365.36	$ 81,136.62
PUBLIC RELATIONS		
Operation	$ 7,404.90	$ 7,735.28
Capital Expenditures	1,043.56	$ 795.13
Repairs and Replacements	118.24	63.99
TOTAL	$ 8,566.70	$ 8,594.40
PREDATOR CONTROL		
Aid to Federal Control Program	$ 37,176.30	$ 31,740.11
Bounties Paid	3,958.47	4,340.41
TOTAL	$ 41,134.77	$ 36,080.52
MOIESE EXPERIMENTAL FARM		
Operation		$ 236.34
Capital Expenditure		122.38
Repairs and Replacement		89.05
TOTAL	$ 8,379.99	$ 447.77
MISCELLANEOUS ACCOUNTS		
Game Damage—Salaries and Expense	$ 14,752.91	$ 7,103.87
Shop and Warehouse	499.72	5,920.08
Printing Licenses and Permits	12,598.20	4,366.99
Refunds	322.00	141.90
Feed and Salt (For Game Animals	233.35	1,633.29
Fairs and Expositions	256.66	655.01
Surveys, Plans, Assessments, Water Use, Lease of Lands	83.40	526.33
Checking Stations	3,868.05	7,135.57
Insurance—Automobiles, Buildings, Equipment	6,749.69	1,090.23
TOTAL	$ 39,363.98	$ 28,573.27
ENFORCEMENT		
Operation	$ 187,093.30	$ 205,273.07
Capital Expenditure	7,799.11	5,682.60
Repairs and Replacement	746.99	1,694.44
TOTAL	$ 195,639.40	$ 212,650.11
FISHERIES—General		
Operation	$ 398.06	$ 3,760.19
Capital Expenditure		864.58
Repairs and Replacements		48.46
TOTAL	$ 398.06	$ 4,673.23
HATCHERY—Anaconda		
Operation	$ 19,510.48	$ 28,628.79
Capital Expenditure	1,484.47	3,050.37
Repairs and Replacement	1,616.39	1,584.96
TOTAL	$ 22,611.34	$ 33,264.12
HATCHERY—Arlee		
Operation	$ 21,008.78	$ 18,647.23
Capital Expenditure	35,525.60	48,298.37
Repairs and Replacement	6,692.23	1,903.12
TOTAL	$ 63,226.61	$ 68,848.72
HATCHERY—Big Timber		
Operation	$ 12,006.14	$ 12,383.44
Capital Expenditure	423.39	9,830.43
Repairs and Replacement	2,365.92	1,000.83
TOTAL	$ 14,795.45	$ 23,214.70

DETAIL OF EXPENDITURES (Continued)

	1949	1950
HATCHERY—Bluewater Springs		
Operation	$ 215.00	$ 9,424.95
Capital Expenditure	33,775.20	43,083.74
Repairs and Replacement		459.69
TOTAL	$ 33,990.20	$ 52,968.38
HATCHERY—Creston (Federal)		
Operation	$ 10,380.80	$ 5,961.61
Repairs and Replacement	436.11	
TOTAL	$ 10,816.91	$ 5,961.61
HATCHERY—Emigrant		
Operation	$ 11,212.01	$ 10,857.97
Capital Expenditure	17,477.64	4,821.84
Repairs and Replacement	3,959.07	485.87
TOTAL	$ 32,648.72	$ 16,165.68
HATCHERY—Ennis (Federal)		
Operation	$ 9,837.10	$ 5,576.04
Capital Expenditure	115.75	
Repairs and Replacement	432.03	133.61
TOTAL	$ 10,384.88	$ 5,709.65
HATCHERY—Great Falls		
Operation	$ 16,222.91	$ 17,469.73
Capital Expenditure	224.51	5,487.79
Repairs and Replacement	1,487.08	1,913.84
TOTAL	$ 17,934.50	$ 24,871.36
HATCHERY—Hamilton		
Operation	$ 8,712.63	$ 9,173.36
Capital Expenditure	1,385.57	81.17
Repairs and Replacement	338.18	690.83
TOTAL	$ 10,436.38	$ 9,945.36
HATCHERY—Lewistown		
Operation	$ 21,585.37	$ 27,026.96
Capital Expenditure	4,735.45	397.95
Repairs and Replacement	1,147.65	955.89
TOTAL	$ 27,468.47	$ 28,380.80
HATCHERY—Libby		
Operation	$ 12,621.66	$ 13,902.04
Capital Expenditure	69.50	13,926.03
Repairs and Replacement	479.98	618.07
TOTAL	$ 13,171.14	$ 28,446.14
HATCHERY—McNeil		
Operation	$ 4,433.05	$ 5,230.50
Capital Expenditure	638.11	566.60
Repairs and Replacement	177.37	245.78
TOTAL	$ 5,248.53	$ 6,042.88
HATCHERY—Miles City (Federal)		
Operation	$ 2,554.03	$ 3,486.55
TOTAL	$ 2,554.03	$ 3,486.55
HATCHERY—Polson		
Operation	$ 3,709.29	$ 4,036.79
Capital Expenditure	119.00	200.70
Repairs and Replacement	952.98	123.43
TOTAL	$ 4,781.27	$ 4,360.92
HATCHERY—Somers		
Operation	$ 9,780.90	$ 10,567.56
Capital Expenditure	121.59	367.65
Repairs and Replacement	1,004.70	201.31
TOTAL	$ 10,907.19	$ 11,136.52

DETAIL OF EXPENDITURES (Continued)

	1949	1950
SPAWNING STATIONS		
Operation	$ 3,472.48	$ 2,468.50
Capital Expenditure	119.46	124.30
Repairs and Replacement	626.92	182.71
TOTAL	$ 4,218.86	$ 2,775.51
OTHER FIELD PROJECTS		
Operation	$ 12,193.17	$ 7,058.96
Capital Expenditure	7,656.95	921.86
Repairs and Replacement	2,441.65	850.79
TOTAL	$ 22,291.77	$ 8,831.61
FISHERIES RESEARCH		
Operation	$ 20,106.43	$ 24,846.56
Capital Expenditure	1,903.79	6,179.64
Repairs and Replacement	1,352.63	167.18
TOTAL	$ 23,362.85	$ 31,193.38
GAME FARM—Billings		
Operation	$ 15,986.69	$ 16,196.44
Capital Expenditure	994.70	98.84
Repairs and Replacement	2,424.05	364.19
TOTAL	$ 19,405.44	$ 16,659.47
GAME FARM—Fort Peck		
Operation	$ 14,515.57	$ 18,005.03
Capital Expenditure	3,767.28	878.40
Repairs and Replacement	663.50	1,083.33
TOTAL	$ 18,946.35	$ 19,966.76
GAME FARM—Warm Springs		
Operation	$ 20,753.81	$ 22,878.74
Capital Expenditure	128.82	4,862.59
Repairs and Replacement	3,088.72	1,810.08
TOTAL	$ 23,971.35	$ 29,551.41
WILDLIFE RESTORATION DIVISION		
Operation		$ 177,530.93
Capital Expenditure		134,754.62
Repairs and Replacement		9,847.69
TOTAL	$ 335,078.11	$ 322,133.24
WAREHOUSE STORES		$ 3,204.92
MONTANA STATE PURCHASING DEPARTMENT	$ 621.76	$ 380.00
TOTAL EXPENDITURES	$1,117,757.43	$1,135,714.58

RECAPITULATION OF FUNDS
May 1, 1948 to April 30, 1949
and
May 1, 1949 to April 30, 1950
(Funds 131 and 104-11 Combined)

Balance Forward April 30, 1948		$ 280,213.43
Income May 1, 1948—April 30, 1949		1,120,884.02
Funds Available During 1948-49 Period	$1,401,097.45	
Disbursements During 1948-49 Period	1,113,722.43	
Balance April 30, 1949		$ 287,375.02
Income May 1, 1949—April 30, 1950		1,068,730.35
Funds Available During 1949-50 Period	$1,356,105.37	
Disbursements During 1949-50 Period	1,135,714.58	
Balance April 30, 1950		$ 220,390.79

1948 LICENSE SALES BY COUNTIES
May 1, 1948 to April 30, 1949

County	Resident Bird and Fish	Resident Big Game	Tourist Fishing	Non-Resident Fishing	Non-Resident Bird	Non-Resident Big Game	Totals
Beaverhead	2,882	1,647	2,277	196	2	51	7,055
Big Horn	1,779	658	99	61	1	5	2,603
Blaine	1,099	458	23		1		1,581
Broadwater	1,050	764	49	10	4	1	1,878
Carbon	2,809	1,275	252	47		7	4,390
Carter	183	171	2				356
Cascade	13,094	5,713	370	60	5	56	19,298
Chouteau	1,523	683	18	2		1	2,227
Custer	1,990	889	19	5	1	8	2,912
Daniels	462	113	6				581
Dawson	1,538	289	34	8	1	3	1,873
Deer Lodge	3,488	1,660	282	31	3	1	5,465
Fallon	587	267	1		1		856
Fergus	4,801	3,588	244	62	1	11	8,707
Flathead	11,689	7,007	1,426	306	1	70	20,499
Gallatin	7,225	3,799	5,418	877	12	113	17,444
Garfield	353	222	10	3			588
Glacier	1,997	659	130	23		19	2,828
Golden Valley	389	260	20	3			672
Granite	1,081	704	102	23		6	1,916
Hill	3,074	749	48	10	2	14	3,897
Jefferson	1,069	712	77	11		1	1,870
Judith Basin	973	725	69	8		2	1,777
Lake	4,240	1,722	886	165	22	12	7,047
Lewis and Clark	7,284	4,475	437	121	1	176	12,494
Liberty	298	104	3	1			406
Lincoln	3,270	2,225	1,060	150	1	8	6,714
Madison	2,210	1,377	1,157	144	1	45	4,934
McCone	403	75	8				486
Meagher	1,017	737	102	22		2	1,880
Mineral	1,077	812	615	533	13	6	3,056
Missoula	10,182	5,649	1,007	230	18	92	17,178
Musselshell	1,563	973	107	2		7	2,652
Park	4,527	3,018	530	104		117	8,296
Petroleum	275	180	2				457
Phillips	1,177	601	14	2	5	4	1,803
Pondera	2,120	775	77	16	2	4	2,994
Powder River	390	280	8				678
Powell	1,825	1,264	100	30		36	3,255
Prairie	239	78	4	1			322
Ravalli	4,343	2,651	578	84	3	52	7,711
Richland	1,504	318	22	6	20	2	1,872
Roosevelt	1,754	321	63	3	2	4	2,147
Rosebud	864	604	12	4			1,484
Sanders	2,603	1,793	645	128	8	24	5,201
Sheridan	938	235	5	1	9		1,188
Silver Bow	9,924	4,153	424	71	4	20	14,596
Stillwater	1,931	1,093	144	29		5	3,202
Sweet Grass	1,406	1,021	180	50		10	2,667
Teton	1,836	927	73	31	1	32	2,900
Toole	1,388	415	17	8		4	1,833
Treasure	240	163	4				407
Valley	2,882	569	296	42	4	7	3,800
Wheatland	1,412	1,009	106	32	3	16	2,578
Wibaux	270	75	10	11			366
Yellowstone	12,054	4,685	463	96	11	20	17,329
Totals	152,581	77,390	20,135	3,863	163	1,074	255,206

1949 LICENSE SALES BY COUNTIES
May 1, 1949 to April 30, 1950

County	Resident Bird and Fish	Resident Big Game	Tourist Fishing	Non-Resident Fishing	Non-Resident Bird	Non-Resident Big Game	Totals
Beaverhead	2,963	1,635	2,811	251	5	38	7,703
Big Horn	1,675	599	112	45	2		2,433
Blaine	1,052	379	22	2	2		1,457
Broadwater	1,029	679	66	3	3		1,780
Carbon	2,821	1,210	294	67			4,392
Carter	297	235	4				536
Cascade	14,882	6,208	443	69	7	42	21,651
Chouteau	1,667	780	41	3	1		2,492
Custer	2,373	1,194	38	3	1	4	3,613
Daniels	494	136	6				636
Dawson	1,749	819	42	10	2		2,622
Deer Lodge	3,681	1,555	338	27			5,601
Fallon	587	318	7			1	913
Fergus	5,079	3,843	275	39		9	9,245
Flathead	12,415	7,020	1,588	302	12	52	21,389
Gallatin	7,623	3,962	5,991	949	13	96	18,634
Garfield	426	248	20	5			699
Glacier	2,181	614	169	27	5	17	3,013
Golden Valley	402	290	27	5			724
Granite	1,056	663	121	19		3	1,862
Hill	3,075	670	45	10	3	2	3,805
Jefferson	1,173	778	80	5			2,036
Judith Basin	1,037	687	24	9		2	1,759
Lake	4,209	1,679	1,017	126	18	4	7,053
Lewis and Clark	7,609	4,466	480	136	2	125	12,818
Liberty	340	71	2				413
Lincoln	3,290	2,133	1,289	185	2	6	6,905
Madison	2,217	1,340	1,382	136	5	25	5,105
McCone	486	143	26				655
Meagher	992	742	125	10	1	9	1,879
Mineral	971	671	662	532	10	21	2,867
Missoula	10,406	5,629	976	223	27	67	17,328
Musselshell	1,630	898	97	17		1	2,643
Park	4,424	2,819	726	103		82	8,154
Petroleum	288	187					475
Phillips	1,150	493	15	1	2		1,661
Pondera	2,321	769	103	12	2	11	3,218
Powder River	482	349	5	2		1	839
Powell	1,874	1,206	167	34		12	3,293
Prairie	280	117	10				407
Ravalli	4,213	2,566	743	87	6	27	7,642
Richland	1,657	818	12	9	10	12	2,518
Roosevelt	2,073	623	101	6	1	1	2,805
Rosebud	1,004	634	12	2			1,652
Sanders	2,674	1,665	797	126	10	13	5,285
Sheridan	1,030	252	6	3	5		1,296
Silver Bow	10,505	4,303	463	83	3	10	15,367
Stillwater	1,946	1,195	210	49		6	3,406
Sweet Grass	1,336	963	172	51		6	2,528
Teton	2,138	1,028	99	20	4	18	3,307
Toole	1,679	425	33	8			2,145
Treasure	220	164	3				387
Valley	3,082	677	466	32	5	2	4,264
Wheatland	1,430	1,011	133	21	1	5	2,601
Wibaux	276	143	21	9			449
Yellowstone	12,515	4,628	506	121	14	24	17,808
Special Moose							82
Special Antelope							3,932
Special Elk							185
Special Deer							877
Totals	160,484	79,329	23,423	3,994	184	754	273,244

FISH AND GAME LAW VIOLATIONS
By Counties

	May 1, 1948 to April 30, 1949	May 1, 1949 to April 30, 1950
Beaverhead	30	23
Big Horn	15	19
Blaine	8	
Broadwater		16
Carbon	10	32
Carter	4	4
Cascade	31	43
Chouteau	3	5
Custer	4	17
Daniels		
Dawson		
Deer Lodge	38	29
Fallon		
Fergus	15	11
Flathead	68	66
Gallatin	51	42
Garfield	1	
Glacier	10	7
Golden Valley	1	
Granite	9	7
Hill	2	10
Jefferson	15	13
Judith Basin	2	4
Lake	12	12
Lewis and Clark	22	29
Liberty		
Lincoln	27	34
Madison	21	42
McCone	1	
Meagher	12	9
Mineral	6	42
Missoula	20	24
Musselshell	1	4
Park	30	28
Petroleum		4
Phillips	4	5
Pondera	48	20
Powder River	4	1
Powell	6	10
Prairie		
Ravalli	28	27
Richland	1	1
Roosevelt		
Rosebud	2	5
Sanders	29	33
Sheridan	5	5
Silver Bow	1	7
Stillwater	6	54
Sweet Grass	4	2
Teton	17	2
Toole	3	3
Treasure	4	
Valley	5	26
Wheatland	4	4
Wibaux	1	3
Yellowstone	36	24
TOTALS	677	808

FISH AND GAME LAW VIOLATIONS

Violation	May 1, 1948 to April 30, 1949	May 1, 1949 to April 30, 1950
Fishing in closed waters	30	80
Fishing without license	100	113
Fishing during closed season	15	20
Fishing with set lines	20	24
Fishing with more than one hook, line and pole	13	15
Fishing before or after hours	12	17
Possession of too many small fish under 7 inches	12	15
Over limit of game fish	60	59
Possession or use of seine, spear, dynamite, snagging outfit or cowbells	12	24
Attempting to catch spawning fish with hand net	1	
Fishing with minnows	1	2
Possession or use of salmon eggs	13	11
Pollution of streams	1	
Baiting fish holes		2
False affidavit to secure resident license	32	38
Possession of illegal beaver hides		5
Attempting to illegally trap beaver	1	2
Shooting and destroying beaver without permit	5	2
Trapping during closed season	3	7
Trapping without license	3	9
Shipping furs without a permit	2	4
Trapping in a muskrat house		2
Possession of illegal furs	6	5
Violation of Migratory Bird Act	39	14
Possession of pheasant hen	5	6
Possession of or hunting of game birds during closed season	35	60
Over limit of game birds	1	4
Shooting from highway or auto	19	32
Hunting before or after hours	29	22
Killing more than one elk or deer	4	4
Hunting or possession of game animals during closed season	28	39
Hunting without a license	10	12
Transfer of license	3	4
Refusing to exhibit license	1	2
Bribing an officer	1	2
Spotlight hunting	1	6
Possession of illegal game	38	37
Hunting in closed area	30	23
Killing doe deer or fawn deer	21	14
Killing or possession of grizzly bear in closed area or season	2	5
Shipping game without permit	3	10
Hunting on posted property without owners consent	3	2
Shipping more than legal limit	1	1
Destroying sex of deer	1	2
Transfer of big game tag	11	1
Failure to tag deer or elk	24	26
Shooting elk before hours	7	
Wasting game meat	8	5
Killing female bear with cubs or cub bears	2	2
Hunting big game without wearing red on clothing	4	1
Guiding without license	1	6
Guide allowing violation in party		1
Alien in possession of a firearm	1	
Buying and selling of game meat	2	7
Flipping cigarettes from car		2
TOTALS	677	808

TABLE 2.

FISH PLANTED FROM SOMERS HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Black Spotted	62,900	Yr.
	410,000	1½
	9,600	2
	160,372	2½
	10,240	3
	48,860	4
	1,541	12
Rainbw	303,140	1½
Brook	87,000	2½
Sockeye Salmon	2,658,081	Fry

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Spotted	375,000	1½
	56,696	2
	25,000	3
	12,360	4
Rainbow	156,720	1½
	91,680	2½
Brook	70,000	2
Sockeye Salmon	1,332,809	Fry
	238,131	1½

FISH PLANTED FROM EMIGRANT HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Black Spotted	202,600	Fry
	65,000	Ad Fry
	87,430	3½
Rainbow	150,000	Ad Fry
	25,550	1½
	45,000	3
Brook	145,000	1½
	73,800	2
	22,706	4
Loch Leven	90,000	1½

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Spotted	358,000	1
	20,034	2½
	40,068	3
Rainbow	206,29..	1½
	16,100	2
	46,900	3
Brook	68,000	2
Loch Leven	11,532	3

TABLE 2 (Continued)

FISH PLANTED FROM LIBBY HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Black Spottted	400,000	1½
	60,000	3
	21,000	4½
Rainbow	50,000	Fng.
	10,000	2
	9,000	2½
	2,000	4
	5,500	5
	4,000	5½
	2,000	6
Brook	144,000	1½
	18,400	4
	7,000	5
	1,750	Adult

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Spotted	75,000	Ad. F.
	73,000	1¼
	125,424	1½
	50,000	Adult
Rainbow	256,500	Fry
	50,000	Ad. Fry
Brook	31,500	Ad. Fry
	20,000	1½
	20,000	3
	14,000	5
	1,600	Adult
Salmon	24,000	2
	44,000	2½

FISH PLANTED FROM POLSON HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Black Spotted	96,000	F.
	231,200	1½
Rainbow	4,400	1½
Salmon	1,410,000	F.

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Spotted	250,890	1
Rainbow	251,640	7
Salmon	1,344,000	F.

TABLE 2 (Continued)

FISH PLANTED FROM LEWISTOWN HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Black Spotted	44,627	1
	4,120	4
	4,950	5
Rainbow	3,200	1
	154,719	2
	30,500	3
	60,240	4
	1,500	4½
	84,708	5
	6,000	6
	436	A.
Brook	3,880	2
	4,700	3
	8,100	½
	31,768	4
	2,640	5
Loch Leven	1,264	1½
	205,030	2
	49,875	3
	21,900	4

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Spotted	83,520	1
	7,740	5
	1,320	6
	2,710	7
Rainbow	145,556	2
	4,080	4
	32,712	5
	155,815	6
	15,083	7
Brook	120,889	2½
	16,860	3
	20,116	4
Loch Leven	285,220	1½
	16,642	2
	19,018	3
	16,804	4

TABLE 2 (Continued)

FISH PLANTED FROM GREAT FALLS HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Black Spotted	197,800	1½
	45,900	4
	45,000	1
	48,000	1½
	36,000	2
	28,150	4
	46,660	5
	46,960	5½
Brook	128,250	2½
	7,500	3
	23,500	4
	22,950	4½
Loch Leven	104,800	1½
	40,500	2
	13,000	5

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Spotted	188,100	1½
Rainbow	97,800	1
	43,500	1½
	44,300	3
	40,560	4
	99,580	4½
	103,800	5
	20,100	5½
	5,870	6
Brook	76,325	2½
	68,775	3
	6,000	3½
	39,000	4
Loch Leven	66,000	1½
	16,000	2

FISH PLANTED FROM BLUEWATER HATCHERY

January 1, 1950 to April 30, 1950

Species	Number	Size
Black Spotted	12,650	5
Rainbow	5,076	4
	47,501	4½
	3,016	5
	17,632	5½
Loch Leven	17,745	F.

TABLE 2 (Continued)

FISH PLANTED FROM ARLEE HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Rainbow	387,320	F.
	37,934	1½
	99,000	4½
	35,520	5 and 6
	33,999	A.
Brook	46,960	6 and 7
	4,790	7 and 8
	1,160	A.

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Spotted	125,000	1
	491,960	1½
Rainbow	82,892	2
	8,072	2½
	11,340	3
	63,072	3½
	29,770	4
	1,470	5
	4,000	¾
Brook	12,745	A.
	25,820	4
	3,700	5
	2,300	6

FISH PLANTED FROM McNEIL HATCHERY

May 1, 1948 to September 30, 1948

Species	Number	Size
Walleye Pike	1,135,000	Fry
Large Mouth Bass	1,500	9
	450	10
	175	12

FISH PLANTED FROM MILES CITY HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Walleye Pike	150,000	?
Black Bass	380	Yr.
	101,232	Fng.
Bluegills	98,199	Fng.
Bullheads	131,213	Fng.
Crappie	350	Yr.

TABLE 2 (Continued)

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Bass	4,461	4
	1,225	3
	1,200	5
	340	7
Bluegills	7,512	2
	1,782	3
Bullheads	464	4
	210	1

FISH PLANTED FROM BIG TIMBER HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Black Spotted	38,016	E. E.
	254,000	1½
Rainbow	61,056	E. E.
	6,000	1
	405,552	1¼
	87,840	1½
	87,220	2
	104,980	2½
	78,400	2¼
	1,950	Y.
Brook	6,000	1
	13,500	1½
	1,380	4½
	680	6½
Locvh Leven	4,068	1
	139,000	1½
	76,000	2
	67,200	1¾
	253,950	1¼

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Spotted	56,672	E. E.
	149,260	1½
Rainbow	85,680	E. E.
	167,188	1½
	84,422	2
Brook	18,250	1
	167,000	1¼
Loch Leven	376,630	F.
	43,200	1
	44,800	1¼
	39,050	3
	33,440	5

TABLE 2 (Continued)

FISH PLANTED FROM HAMILTON HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Black Spotted	25,382	Eggs
	33,200	F.
	316,098	1½
	10,200	3
	5,920	4
Rainbow	33,600	1½
	20,780	3
	24,334	3½
	20,866	4
	75	A.
Grayling	205,824	Eggs
Silver Salmon	38,150	2
Loch Leven	695,837	F.
Sockeye Salmon	18,892	F.

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Spotted	30,000	Eggs
	428,175	1½
	5,800	3½
Rainbow	18,424	3½
	2,700	3

FISH PLANTED FROM ANACONDA HATCHERY

May 1, 1948 to April 30, 1949

Species	Number	Size
Black Spotted	137,200	1
	103,880	1½
	272,140	Ad. Fry
	6,040	6
Rainbow	56,400	1½
	29,960	2
	30,160	3
	12,908	4
	7,328	6
	1,000	6½
	41,760	Ad. Fry
Grayling	2,378,000	Fry
	21,600	6
	365,000	?
Brook	64,625	2½
	1,640	4
	5,424	5
	2,100	6
	2,400	½
	1,950	7
Silver Salmon	70,085	3
Loch Leven	358,700	Ad. Fry
	100,800	2
	17,628	5
Walleye Pike	80,000	3

TABLE 2 (Continued)

May 1, 1949 to April 30, 1950

Species	Number	Size
Black Spotted	432,892	1
	43,008	4½
	20,108	5
	26,736	5½
	1,970	6
Rainbow	325,280	1
	12,000	2½
	114,616	3
	64,935	4
	12,608	4½
	29,920	5
	22,918	5½
	5,376	6
	4,368	6½
	9,235	7
	1,042	8
Grayling	1,636,000	Fry
	1,016	6
Brook	22,830	1½
	2,726	7
	274	8
Salmon	25,114	3
Loch Leven	48,300	1