May 1, 1958

# BIENNIAL REPORT

April 30, 1960

# MONTANA
# Fish and Game Commission

# BIENNIAL REPORT

of the

# MONTANA FISH AND GAME COMMISSION

## May 1, 1958 - April 30, 1960

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# FOREWORD

Many lives have been spent and volumes recorded by persons searching out secrets of the intricate relationships between living creatures and the earth. With each new secret uncovered comes the realization that even more lie hidden. As each new fragment of information is pieced together, we realize also that there is a pattern in the world about us. No one force or animal acts independently without affecting or being affected by others.

The understanding of these natural phenomena not only influences our present welfare, but may well decide the future existence of civilizations. History has pointed to those that have collapsed due to a lack of understanding.

Because of the complex unity of animals, plants, soils, and waters, it is impossible to manage wildlife without becoming involved in the affairs of other resources. It is impossible for any one person to gain in a lifetime a mastery of all resource information. Further, the ability to manage nature's products is not inherent, but comes only after years of study and experience. This points out the critical need for well trained men to direct and control the use of such a valuable heritage.

It is common knowledge that the proper use and control of resources involves in a great part the management of people. Any program that does not have public support is doomed to eventual failure. Sentiment, prejudice, and desires for personal gains are human traits that must be understood and overcome. Consequently, an intensive and well rounded program of public information and education is a must in Fish and Game activities.

The Montana Fish and Game Department is staffed with well trained and dedicated employees. An honest appraisal of the Department's achievements, compared to those with similar goals, will show that Montana ranks among the top in scientific management of game and fish. It is our intent, with the help of every person in the Department and interested sportsmen, to hold this position and at the same time to recognize and cooperate with other natural resource interests.

This report presents very briefly the Department's activities over the last biennium.

W. J. EVERIN

*Director, Montana Fish & Game Department*

To the Honorable J. Hugo Aronson
Governor of Montana

Dear Governor Aronson:

We herewith submit the Biennial Report of the Montana Fish and Game Commission for the period of May 1, 1958 to April 30, 1960.

This report summarizes the operations of the Fish and Game Department for the past two years with particular emphasis on income and expenditures. This is in compliance with Montana law.

The job of maintaining good hunting and fishing in this state is becoming more difficult each year. Population increases, changes in land and water use practices and constantly increasing demands for recreation complicate the problem.

Successful maintenance of this resource would be impossible without the help and cooperation of the Governor's office, the legislature and other Montana citizens.

We hope this report will be helpful to you, to members of the legislature and to all who have an interest in this state and its wildlife wealth.

Respectfully submitted,

H. W. Black, Chairman, Polson
John T. Hanson Sr., Vice Chairman, Malta
E. J. Skibby, Member, Lewistown
R. D. Shipley, Member, Miles City
William T. Sweet, Butte, Deceased
E. G. Leipheimer Jr., Member, Butte
W. J. Everin, Secretary

# ADMINISTRATION

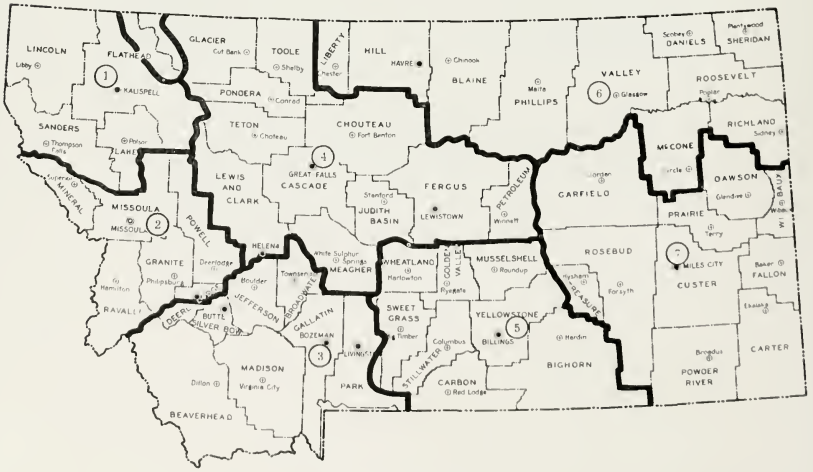
Montana's Fish and Game Department has grown from a handful of wardens in 1902 to a complex and widely distributed organization. This growth is not surprising in the light of our expanding population, modern transportation, the compounded pressure on natural resources, and on increased need for recreation.

In a department whose responsibilities and income have risen from near oblivion to a near 2½ million dollar annual concern, the job of administration has not only been expanded, but because of the magnitude of operations, must be exacting to withstand the most critical scrutiny of the public and of higher administrative officials.

Accurate records of both income and moneys spent must be maintained and accounted for. Considering the great diversity of fish and game interests and projects, this in itself is no mean task. Detailed inventories of properties and procurements must be maintained and innumerable records of operations must be kept in good order. Advantage has been taken of electronic business machines to insure accuracy and speed of handling statistical materials as well as other facets of administration.

Unlike most state agencies, the Fish and Game Department does not derive its moneys from the state's general tax fund, but rather is dependent upon its own resources for finances. Under this system the persons who benefit directly from the wildlife resource pay for its management. Under this system also, the state benefits in that they are able to participate in federal aid funds. Should it become necessary for the Fish and Game to be budgeted through the general fund, federal aid which amounts to an appreciable amount of money would be lost and would go to other states.

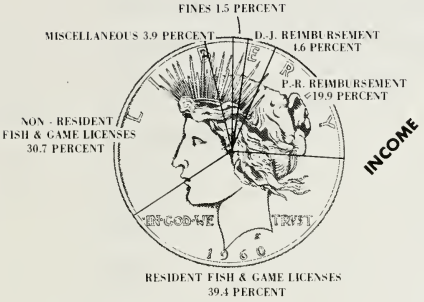
**FISH AND GAME ADMINISTRATIVE DISTRICTS**

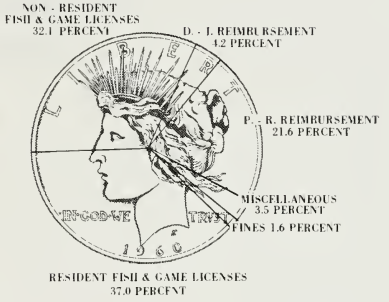


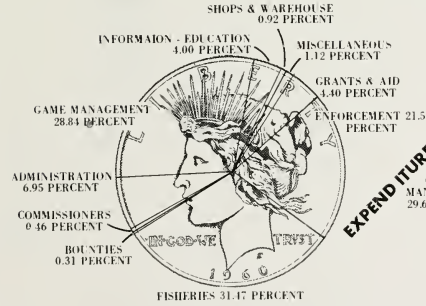
# INCOME AND EXPENDITURES

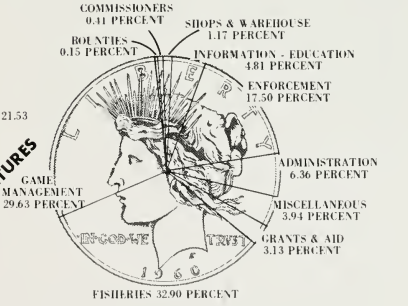
## May 1, 1958—April 30, 1960

**fiscal year 1958** **fiscal year 1959**

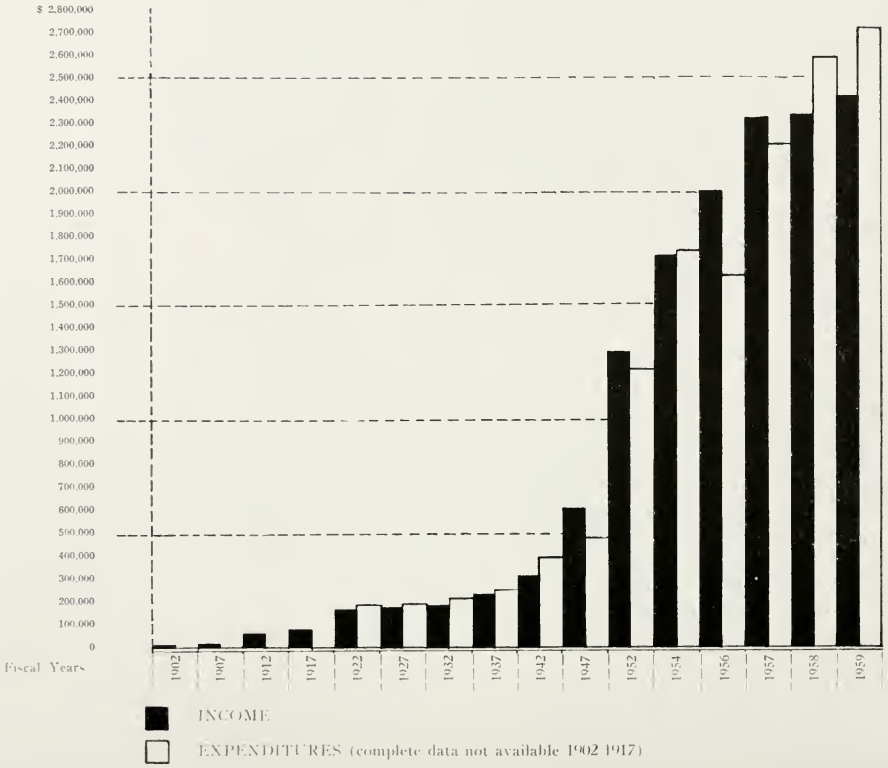


## COMPARISON OF INCOME AND DISBURSEMENTS
## (1902 Through April 30, 1960)



# RECOMMENDED LEGISLATION

### Special Non-Resident Deer and Antelope Licenses

There is a need to exert greater hunting pressure than provided by resident hunters in certain areas of the State. Since 1955 the Legislature has granted the Commission authority to issue special $20.00 Deer and special $20.00 Antelope Licenses for two-year periods.

The following numbers of licenses have been issued each year:

| | *1955* | *1956* | *1957* | *1958* | *1959* |
|---|---|---|---|---|---|
| Non-Resident Deer Licenses | 2623 | 6445 | 5038 | 7533 | 9291 |
| Non-Resident Antelope Licenses | 3495 | 5033 | 2895 | 0 | 1237 |

Because there is yet a need for providing greater hunting pressure in certain areas of the State, it is recommended that the Legislature grant authority to the Commission to continue the issuance of special Non-Resident Deer and Antelope Licenses.

### Migratory Waterfowl Refuge Lands

There is an urgent need to preserve a relatively small acreage of wet lands in Montana for migratory waterfowl habitat. Public ownership of certain wet land areas would assure use of such lands for waterfowl propagation. The funds received by the Federal Government from sale of Duck Stamps are earmarked for acquisition of such lands. However, before any wet lands may be purchased in the State by the Federal Government, an enabling act authorizing the purchase must be passed by the Legislature. It is therefore recommended that the Legislature pass an enabling act authorizing the Federal Government to acquire wet lands in Montana for migratory waterfowl refuge purposes.

### Hunter Safety—Wearing Red On Clothing

Section 26-302 of the Fish and Game Laws requires that every person who hunts big game animals shall wear a cap or hat, shirt, jacket, coat or sweater of bright red color. Safety studies regarding hunting accidents have indicated that red is not the most distinguishable color to all people. Bright orange and yellow have been found to be more discernible colors. It is therefore recommended that Section 26-302 be amended to include the colors of Red, Orange or Yellow, to be worn singly, or any combination of such colors may be worn.

### Add Mourning Dove to Migratory Game Bird List

The Migratory Bird Regulations annually provide an open season on mourning doves in those states desiring such a season. Montana raises great numbers of mourning doves each year. The doves migrate south in late summer or early fall.

In order to provide an open season on mourning doves in Montana, it is recommended that Section 26-201 of the Fish and Game Laws be amended to include mourning doves on the migratory game bird list.

### Amendments to Motor Boat Registering and Water Safety Law

After two years of administering the Boat Registration and Water Safety Law, a number of provisions of the act have been found to need clarification or amendment to make them more workable. Some of the recommended changes are as follows:

a. The statute should clearly state that the money received for sale of Boat Certificate of numbers should be deposited to the credit of the Fish and Game Fund. Any fine money collected from violators which have been apprehended by Fish and Game officials should also be deposited to the Fish and Game Fund.

b. It is recommended that the life preserver equipment requirement be amended to exclude the requirements for passenger-carrying boats which meet the standards required by the Coast Guard and which have been inspected and awarded a document showing approval by the Coast Guard.

c. It is recommended that the provisions concerning fire extinguishers be amended so that exactly the same provisions as required by the Coast Guard be followed.

### Ex-Officio Wardens

Section 26-114 should be amended to authorize the Fish and Game Director to appoint field personnel employed by the Department primarily for other than law enforcement work, as Ex-Officio Fish and Game Wardens. Such personnel, because of their assignments, are in the field of activity where violations occur. Although such field personnel now report such violations to regularly appointed enforcement officers, an ex-officio status would in many cases expedite prosecution of violators apprehended.

# LAW ENFORCEMENT

Jim Jordan is pictured here in the regulation warden uniform. (Photo by B. J. Rose.)

During the past biennium there has been an increased work load in Fish and Game law enforcement. This increase is partly due to new laws that have extended the duties of State Game Wardens into fields with which they were not formerly concerned and partly due to increased use of fish and wildlife resources.

By law, it is the duty of State Game Wardens to strictly enforce Fish and Game laws of Montana and the orders, rules and regulations of the State Fish and Game Commission. As a part of this duty they must see that all those who hunt and fish or take game or fur-bearing animals, game birds or fish, have proper licenses. This phase is extremely important in assuring the Department an adequate operating income.

It is their duty at all times to assist in the protection, conservation and propagation of fish, game and fur-bearing animals, game and non-game birds, and to assist in the planting, distributing, feeding and caring for fish, game and fur-bearing animals, and game and non-game birds; it is their duty when ordered by the State Fish and Game Commission, to assist in the destruction of predatory animals, birds, and rodents; it is their duty to do and perform *all other duties prescribed from time to time by the State Fish and Game Commission.*

To fulfill these requirements, it is necessary for the division to change over the years in order to meet changing demands brought about by increased use of wildlife resources and the resulting complexity of Fish and Game management. Today, the Warden has many additional duties prescribed by the State Fish and Game Commission, and only about 30% of his time is spent in direct Fish and Game law enforcement activities.

He spends 15% of his time in administrative duties such as rotuine inspection of license dealers, game and fur farms, fish ponds, outfitters, fur dealers, locker plants, and also routine maintenance of buildings and equipment.

Twenty-five per cent of his time is directed to Fish and Game management activities such as game and fur damage control, trapping and transplanting, game-bag and creel census, fish planting, stream and lake surveys, predator control, checking stations, game and game-bird census.

Public information and education activities involve thirty per cent of the State Game Warden's time. This activity has become increasingly important during recent years. More intense game management has demanded greater and greater public understanding, and the warden is a field representative whose constant public contact can be extremely effective in promoting a better understanding.

In addition to this, youth training in hunter safety and adult training in boat safety and hunter safety also consumes the warden's time. State Game Wardens are also an important part of the civil defense organization of the state and cooperate closely with other state enforcement and fire-fighting agencies.

During the biennium, the warden force has been maintained at an average of fifty State Game Wardens and seven District Warden Supervisors. An effort has been made to improve the effectiveness of this field force by selecting better qualified individuals and by conducting formal in-service training programs for new employees. Two-way radios in properly maintained vehicles have helped make this field force more effective.

Listed on page 9 are comparative Fish and Game law violation information for this biennium. These data are only concerned with the law enforcement phase of the State Game Warden's activities.

## FISH AND GAME VIOLATIONS

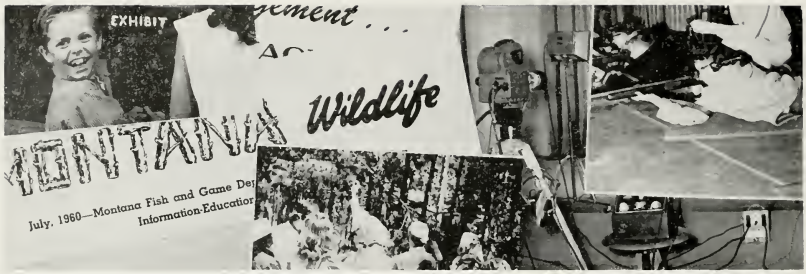
| | May 1, 1958 through April 30, 1959 | May 1, 1959 through April 30, 1960 |
|---|---|---|
| Big Game | 363 | 496 |
| Game Birds and Migratory Waterfowl | 164 | 144 |
| Fish | 438 | 478 |
| Fur Bearers | 34 | 19 |
| Water Safety | 64 | 185 |
| Shooting Safety | 54 | 66 |
| Miscellaneous | 229 | 177 |
| TOTALS | 1346 | 1565 |

## FISH AND GAME VIOLATIONS
### By Warden Supervisor District

| | May 1, 1958 through April 30, 1959 | May 1, 1959 through April 30, 1960 |
|---|---|---|
| District No. 1 | 167 | 156 |
| District No. 2 | 254 | 308 |
| District No. 3 | 315 | 364 |
| District No. 4 | 248 | 362 |
| District No. 5 | 191 | 159 |
| District No. 6 | 106 | 97 |
| District No. 7 | 65 | 119 |
| TOTALS | 1346 | 1565 |

## FISH AND GAME FINES
### By Type of Violation

| | May 1, 1958 through April 30, 1959 | May 1, 1959 through April 30, 1960 |
|---|---|---|
| Big Game | $ 14,123.00 | $ 17,840.15 |
| Game Birds and Migratory Waterfowl | 3,828.50 | 3,067.50 |
| Fish | 8,045.00 | 10,239.00 |
| Fur Bearers | 1,090.00 | 400.00 |
| Water Safety | 387.56 | 1,815.00 |
| Shooting Safety | 1,242.50 | 1,030.00 |
| Miscellaneous | 5,238.50 | 4,456.60 |
| TOTALS | $ 33,955.00 | $ 38,848.25 |




# INFORMATION & EDUCATION

The importance of fish and wildlife can not be minimized. The Fish and Game Department manages a resource that both furnishes clean, healthy recreation for thousands of outdoorsmen and provides income for other thousands. Service stations, sports dealers, cafes, guides and outfitters, and countless others depend on fish and wildlife for a portion or all of their annual income. Consequently, a great many people are keenly interested in the welfare of this resource.

With so many interests involved it is inevitable that there should be conflict. Unfortunately, many conflicts result from a lack of understanding or misinformation. It is imperitive, then, that the Department continue an intensive information and education program. This need has been felt so strongly that a specialized division with field representatives is maintained.

Information and Education personnel work through all media of communications. Direct correspondence, bulletins, newspaper, radio, television, and magazines afford an outlet for information. Direct work is done through civic groups, sports organizations, youth groups, schools, other resource agencies and interested organizations. Following is a brief description of major Information and Education activities:

### Information Services

The days when hunting and fishing regulations could be posted on telephone poles and trees went out with the model T. Modern management and the outdoor public demand rapid and widespread news coverage. In order to get this coverage, the Information-Education Division prepares and distributes two news releases each week. In addition, important events of urgent nature are given immediate release. News materials are sent to all newspapers, radio stations, television stations, and wire services in Montana. Feature articles of both state-wide and local interest are prepared as projects arise. The Department has been most fortunate in the amiable cooperation given by all news media.

Television stations throughout Montana have generously given free time to the Department. Programs of both news and educational nature are presented from television stations in Butte, Missoula, Great Falls, and Billings. Programs from Williston, North Dakota, are beamed into northeast Montana where little television coverage is otherwise available.

Information bulletins covering a wide field of interests have been prepared and are very useful in providing information. These are used primarily to answer inquiries that would otherwise necessitate bulky and time-consuming correspondence. One such bulletin, "Montana Camping, Picnic, and Fishing Access Areas," was prepared in cooperation with the Montana Highway Advertising Division. Both state and federal resource agencies have been very helpful by willingly providing information for bulletin use.

The periodical "Montana Wildlife" continues to be a popular pamphlet. It is distributed free of charge to schools, sports clubs, and individuals upon request. The purpose of the bulletin is to acquaint the sporting public with Department projects and to instill a better understanding of management practices and philosophies.

A library, primarily of technical literature, is maintained in the Information - Education offices for use by Department personnel.

**District Representative**

Local operations of the Montana Fish and Game Department are based upon seven administrative districts. Information and Education representatives have been assigned to four of these districts. The four areas are Missoula, Great Falls, Billings, and Glasgow.

District operations for the Information and Education program have facilitated a more complete and well rounded program. Local television and radio shows give special attention to current management operations and problems. Newspaper contacts are based upon events in the immediate vicinity. This ties the Information and Education program to the problem affecting the surrounding public.

In addition to radio, television, and newspapers, there are numerous public contacts made through sportsmen's clubs, civic clubs, schools, and camps.

A district or local program of information and education will assure the proper distribution of information to the Montana public. During the past, the Department has received criticism due to inavailability of information. This increased activity in the field of information and education should maintain a high level of understanding of the Department's program of Fish and Game Management.

**A youth group getting in-the-field instruction by I & E personnel.** (Photo by Tom Smith.)

**Audio-Visual Education**

Ever since the advent of motion picture film, be it either for educational purposes or strictly entertainment, its impact upon the public cannot be denied. It had long been noted by the Fish and Game Department that meetings conducted by sportsmen's clubs or other organizations were decidedly better attended when there was promise of a film-showing.

Before sound film, its success depended to a large extent upon the oratorical powers of the accompanying narrator. On occasions the local projectionist had of necessity to improvise; consequently, the subject matter was not always of the same version.

The addition of sound on film actually helped the projectionist in that he did not have to be familiar with the subject matter. The film itself carried its own message each time it was shown and always the same—no deletions or omissions—and complemented with appropriate background effects.

Television opened up new horizons by broadening the area covered and contacting a more diversified audience. Largely because of television and its potentialities, the Fish and Game Department through its I & E Division decided to take full advantage of this new medium.

After much judicial care and planning, the necessary components were purchased and housed in a building remodeled to suit the requirements of the new program. All the technical aspects, such as duplicating, adding sound track, background effects, etc., are under the supervision of the department's movie and photographic section. All scripts are approved and released by the I & E Division.

The objectives are to take full advantage of all older and historically valuable film and to enhance their value by adding sound as

well as duplicating or making several copies. All new programs will likewise be edited and released with sound.

It is hoped that this will render a more personal interest and a better understanding of the department's problems, policies and hopes for the future.

### Hunter Safety

During the 1957 session of the Legislature, the firearms safety training law was enacted. It called for instruction of Montana's teenage hunters in the safe handling of firearms. The responsibility for this program was placed on the Montana Fish and Game Department.

Organizational work was accomplished the first year, and the actual training of youngsters began in March of 1958. The instruction covered safe handling of firearms, game laws, survival training and hunting tips and techniques for novice hunters. The course was enthusiastically received by volunteer instructors and students alike. With the assistance of the National Rifle Association, Montana's methods, techniques, and training material were set up and later were imitated by several other states.

As of the end of May, 1960, there have been 1866 instructors certified, of which approximately 950 are effectives; that is, they have taught a course of instruction to at least one class of youngsters. These instructors have made a monumental teaching accomplishment, having taught more than 20,000 students in firearms safety since the beginning of the program out of a total of 118,000 big game hunters in the State.

The results obtained from the safety training program were spectacular. For instance, in 1959 only one trained youngster was responsible for a hunting death, whereas in previous years teenagers have been responsible for an average of 8 or 9 fatalities a year and an undetermined number of injuries.

In recognition of these outstanding results, the International Association of Game, Fish, and Conservation Commissioners awarded a plaque to the Montana Fish and Game Department. The competition was entered into by 40 states and provinces, with Montana being runner-up to New York.

The Water and Hunter Safety Section of the Information and Education Division has been compiling information and reports on all firearms accidents in the State with a view toward educating the hunting public in the prevention of tragic firearms deaths. Education in this field has been highly productive and the cost per student has been nominal.

Throughout the future years, the Montana Fish and Game Department feels that the safety program and the educational methods are the most important tools to combat firearms and hunting accidents.

### Water Safety

Since 1959, boating and water recreational activities have shown a tremendous increase in Montana's waters. Recognizing this fact, the 1959 session of the Legislature enacted statutes concerning boat licensing, rules of the road, and general water safety. This program was enthusiastically endorsed by boat operators throughout the State.

The responsibility for this program was placed on the Montana Fish and Game Department's Water and Hunter Safety Section of the Information and Education Division. The law was enacted in March of 1959 and by July boat licensing began on a large scale. A public education program was undertaken by the Information and Education Division to inform Montana's boaters of the new law's requirements.

Over 7,000 boats have been licensed since the law went into effect. This classification includes only boats of more than ten horsepower.

In 1959, ten separate boating accidents caused ten deaths, with an undetermined number of accidents. It is expected that a safety training program will reduce this appalling number and provide safety in Montana's growing water recreation activity.

### Youth Education

Considerable demands were made upon the Department to furnish fish and game instruction for youth groups. Boy Scouts camps, 4-H camps, and public schools were well supplied with lectures and instruction on Montana's wildlife resource.

Particular emphasis is placed upon the inter-relationship of animals to soil, water, and plants.

**Adult Education**

During this biennium the Department sponsored the wildlife extensions' forums for adults through the MSU and MSC. In addition to this, Department representatives met with sportsmen clubs to explain management programs and regulations.

**Trapper Education**

The Montana Fish and Game Department, in order to assist persons having damage caused by fur-bearing and predatory animals, initiated the Extension Trapper Instructor program on a pilot basis in the Hi-Line area.

**A group of Boy Scouts receives field training in trap-setting techniques. Many groups such as this one received instruction in trapping methods.** (Photo by Max Stone.)

Research and investigations state that when predatory animals prey upon livestock and poultry, it is due to the work of one or a few individuals. When these are removed, damage usually stops until others develop the habit. The logical person to control livestock and poultry losses is the farmer or rancher. This type of control is quick, effective, selective, and economical. Money is not wasted in killing off those predatory animals not causing livestock or poultry losses.

It is the duty of the Trapper Instructor to meet with groups and individuals who request this assistance, and give talks on predator-prey relationships, show movies and slides, hand out literature on trapping and make demonstrations of trap settings. Often a set is made on a farm or ranch to take an animal causing damage. A farmer or rancher is then qualified to make sets by himself in the future should the need arise.

An influx of red fox and other lesser nuisance animals caused considerable apprehension on the part of sportsmen, farmers, and ranchers. The reaction was to press the Fish and Game Department for a bounty system. Much of the effort of the Trapper Instructor was directed toward demonstrating the ineffectiveness of a bounty system. In July of 1959, the bounty was removed from the bobcats, and the red fox was removed from the fur-bearer list and left unclassified. This latter move was very helpful in dealing with the red fox problem. Certainly the removal of the bounty on the bobcat was a step in the right direction and in keeping with sound game management concepts.

Not all requests for assistance came as a result of carnivore activity. Beaver damage control required considerable time. Extended and no-limit beaver seasons greatly assisted in reducing beaver damage complaints.

Due to the proximity of wild animal rabies in North Dakota, particularly red fox and skunks, some time was devoted to educational programs to inform the public about rabies and its control.

Several methods of furnishing information were used. Television programs, radio programs, newspaper articles, meetings with groups (sportsmen's clubs, civic organizations, 4-H Clubs, FFA groups, Boy Scouts, elementary and secondary schools), forums, county fair exhibits, and newsletters. In addition, the following publications were distributed at meetings and mailed to persons requesting them: *"The Red Foxes of Michigan"*, the Michigan Department of Conservation; *"Predator Control, How and Why"*, the Missouri Conservation Commission; *"A New Approach to Predator Management in Montana"*, *"Magpie Ups and Downs"*, *"You Should Know About Rabies"* and *"From Traps to Pocketbook"*, all published by the Montana Fish and Game Department.

By teaching people to help themselves, the Trapper Instructor approach to predator damage control places the responsibility upon the Montana citizen. Certainly, by helping the farmer and rancher to help themselves, the Fish and Game Department is helping to maintain the integrity of the individual and at the same time keeping pace with modern wildlife management principles.

A summary of meetings, newspaper articles, radio and TV programs, forums and other contacts is given in the following table.

### Wildlife Exhibit

Each summer the Department's display of native wildlife is scheduled at fourteen state and county fairs. The exhibit has proved to be one of the popular displays at the fairs. Here is an opportunity for Montanans to gain an appreciation and understanding of wildlife. Conflicting fair dates restrict the expansion of the exhibit.

## SUMMARY OF MEETINGS, TV, RADIO PROGRAMS, DEMONSTRATIONS AND FAIRS ATTENDED

| Type of Meeting | No. of Meetings | Attendance | Talks Given | Films Shown | Demonstrations |
|---|---|---|---|---|---|
| 4-H Clubs | 14 | 266 | 13 | 14 | 5 |
| Boy Scouts | 4 | 140 | 4 | 4 | 1 |
| Sportsmen's Groups | 22 | 1,300 | 15 | 12 | 1 |
| Schools and School Groups | 11 | 512 | 9 | 5 | 0 |
| Men's Clubs-Civic Organizations | 6 | 194 | 6 | 5 | 0 |
| Personal Contacts | 54 | 87 | 0 | 0 | 53 |
| F&W Meetings | 3 | 124 | 3 | 0 | 0 |
| Other Meetings | 8 | 296 | 7 | 6 | 0 |
| TOTALS | 122 | 2,919 | 57 | 46 | 60 |

| | |
|---|---|
| Television Programs | 9 |
| Radio Programs | 18 |
| Newspaper Articles | 47 |
| Department Meetings | 29 |

| County Fairs Attended | Days in Attendance |
|---|---|
| Daniels County, Scobey | 2 |
| Phillips County, Dodson | 2 |
| Hill County, Havre | 7 |
| Richland County, Sidney | 6 |
| Valley County, Glasgow | 6 |
| Blaine County, Chinook | 3 |
| TOTAL DAYS IN ATTENDANCE | 26 |

## WILDLIFE EDUCATION EXTENSION PROGRAM

### Adult Education

The Fish and Game Department financed a program of adult education in cooperation with Montana State University and Montana State College.

Under terms of a memorandum of understanding between these institutions, a series of educational lectures on wildlife and resource management is presented to the public.

As stated in the original agreement, the purpose of this program is to: "develop a better understanding of advanced management of the natural resource base to the end that a more favorable environment for wildlife species may be attained and maintained."

This program which developed at Montana State University in 1949 was adopted by the Montana Wildlife Federation in 1952. Since the goal of this series is to further the objectives of good wildlife management, the Fish and Game Commission agreed, in 1954, to underwrite the cost of conducting the work. Originally, $7,500 was deposited with the treasurer of each school. With the current increase in operation the program now amounts to $19,000 annually.

Wildlife Extensionists operating from the two university units present forum lectures to groups in many sections of the state.

### Location of Forum Towns

1958-1960: Butte, Ennis, Sheridan, Lincoln, Billings, Huntley, Forsyth, Glendive, Bull Lake, Libby, Eureka, Kalispell, Seeley Lake, Baker, Wibaux, Belt, Fort Benton, Great Falls, Whitehall and Manhattan.

The forum series was presented to 7,370 interested Montanans.

### Public High School Lectures

Lectures were presented to 500 students.

### Teacher Conservation Workshops

Teacher workshops with a total of 1,433 teachers present were conducted during the biennium.

### 4-H Camps

Classes were presented to 842 4-H'ers.

### Civic and Sportsmen Groups

Numerous wildlife management talks were given to civic and sportsmen clubs. An estimated 2,470 people were contacted. In addition to this, many meetings of statewide and national importance were attended.

Wildlife Extensionists traveled over 100,000 miles during the past biennium.

# GAME MANAGEMENT

Maximum opportunity to hunt game birds and animals in a sporting manner under pleasing circumstances is foremost among the objectives of game management. Only by applying scientific fact-finding to the basic questions of game management can this objective be met year after year. Fact-finding must supply answers to questions on at least three important items to accurately guide hunting season recommendations.

**Habitat.** Game birds and animals must have a place to live—an adequate habitat. For example, the only way healthy, productive big game herds can be maintained is by keeping their numbers in balance with range food supplies. Surveys wich measure the amount of use and the trend toward improvement or deterioration on vital winter ranges provide the facts in this case.

**Population Trends.** Surveys which determine the relative abundance of bird population on spring breeding grounds and surveys which determine the proportion of young game birds and animals in the population are examples of population surveys.

**Harvest.** Checking stations and mail questionnaires supply answers on the number of game birds and animals harvested, hunter success and many other facts about hunting on a statewide, district and hunting area basis. Compilation and analysis of this vast quantity of information requires the use of higher mathematics and electronic business machines.

There are two important reasons why the Montana Fish and Game Department constantly digs for facts and depends so heavily upon facts to resolve questions.

First, experience no matter how rich and varied is not sufficient if it is not kept up to date by thorough analysis of new problems. Today's problems differ in detail from the similar problems on which experience was acquired.

Second, if game management is really the process of getting sportsmen, landowners, Federal Agencies and Department personnel, each with their own opinions, needs and enthusiasms to work together, there can be no more effective arbiter of differing opinions than THE FACTS.

Results of the game management program can be measured in the quality and quantity of hunting enjoyed by Montana's big game

hunters and bird hunters. The great quantity of outdoor recreation provided by Montana hunting seasons can best be illustrated by the fact that hunters could legally be afield after some type of feathered or furred game from early September through February in both years of the biennium. Dyed-in-the-wool hunters extol the intangible benefits of recreational hunting. Even more evident are the tangible products—the great harvests of birds and game animals shown in the accompanying table (figure 0). Montana is right at the top as a hunter's paradise. This has not always been the case.

Progressive game management has greatly increased hunting opportunity in the last decade in the face of increased numbers of hunters. In 1948, 189,000 pheasants and 24,700 sharptailed grouse were harvested. In 1958, ten years later—210,000 pheasants, 77,000 Hungarian partridges, 59,600 prairie grouse and 72,600 mountain grouse were harvested. In addition, two game birds—turkey and chukar partridges—have been introduced and now provide recreational hunting.

Big Game hunting has not only held up during the last decade but has actually improved to the point where Montana hunters now enjoy the best big game hunting in the United States. The total big game harvests of 140,000 animals in 1958-59 and 150,000 in 1959-60 are unsurpassed by those of any other state. Again, this has not always been true. In 1948, 29,800 deer, 9,600 elk, 50 moose, 2,800 antelope and 40 mountain goats were taken —a total of only 42,000 animals. Compare this to the 120,300 deer, 15,300 elk, 410 moose, 15,700 antelope, 240 goats, 65 bighorn sheep, 1,480 black bear and 60 grizzlies taken by hunters in Montana in 1959.

Increased quantity has not been at the cost of quality. The early hunting seasons in Montana's unequalled back country furnish some of the finest recreational hunting in the Nation. In addition, more and more Montana big game trophies are taking over top spots in the Boone and Crockett Club annual competition. A bull elk killed in Madison County in 1958 received the coveted Sagamore Hill Award and ranks as the finest elk ever taken by a hunter.

It is reasonable to question whether such superb sport can be sustained indefinitely. Are we perhaps living in a "Golden Age" of recreational hunting which must inevitably fade? We believe that total game harvests can be stabilized at or above the levels now enjoyed by Montana hunters. We must expect, however, to divide this abundance among an ever increasing number of hunters. A sound policy of progressive game management, guided by scientific fact-finding and supported by an informed and progressive citizenry will assure that Montana hunters will enjoy maximum hunting opportunity for a long time to come.

**Estimated Game Harvest**
**Determined through Mail Surveys**

**Big Game**

| | 1958-1959 | 1959-1960 |
|---|---|---|
| Deer | | |
| White-tailed | 28,200 | 26,300 |
| Mule | 84,900 | 94,000 |
| Elk | 12,200 | 15,000 |
| Antelope | 14,000 | 15,500 |
| Moose | 470 | 400 |
| Mountain Goat | 460 | 240 |
| Bighorn Sheep | 65 | 65 |
| Bear | | |
| Black | 1,100 | 1,400 |
| Grizzly | 35 | 60 |

**Furbearers**

| | 1958-1959 | 1959-1960 |
|---|---|---|
| Mink | 6,300 | 6,400 |
| Muskrat | 28,000 | 28,000 |
| Beaver | 12,600* | 18,700 |
| Weasel | 800 | 1,000 |
| Bobcat | 1,200 | 1,900 |
| Skunk | 2,200 | 2,400 |
| Coyote | 160 | 240 |
| Raccoon | 510 | 1,000 |
| Badger | 110 | 220 |
| Fox | 123 | 290 |
| Canada Lynx | 32 | 40 |

| | | |
|---|---|---|
| Wolverine | 0 | 6 |
| Marten | 275* | 480 |
| Otter | 40 | 45 |

**Upland Game Birds**

| | 1958-1959 | 1959-1960 |
|---|---|---|
| Chinese Pheasants | 210,000 | 174,900 |
| Hungarian Partridges | 77,000 | 41,900 |
| Prairie Grouse | 59,600 | 58,800 |
| Mountain Grouse | 72,600 | 74,500 |
| Turkey | 100 | 375 |
| Chukar Partridges | No Season | 200 |

**Waterfowl**

| | 1958-1959 | 1959-1960 |
|---|---|---|
| Ducks | 238,000 | 120,000 |
| Geese | 8,800 | 5,900 |

*Determined from Pelt Tagging Records

## GAME MANAGEMENT DIVISION PROJECTS

The Montana Fish and Game Commission has divided the state into seven administrative districts. These districts are considered as management areas and personnel working under the above projects are assigned to each district to obtain the information necessary for progressive game management. The boundaries and headquarter locations of each district are shown on page 4. Facts regarding the over-all welfare of game animals, game birds, and fur animals are gathered on each district. Recommendations for hunting seasons are made on a district basis. The main program consists of the following: 1—Determination the distribution, characteristics, and trends of the game populations; 2—Determinations the forage utilization and trend in range conditions; 3—Determination the extent and characteristics of the game harvest; 4—Determine the management implications of the life history and ecological studies and bag limits that are compatible with the known facts for each species to be harvested.

In carrying out this program, personnel of the Management Division work closely with members of other divisions of the Department and personnel of the Forest Service, Bureau of Land Management, and other cooperating agencies and sportsmen's groups.

Game research and management activities conducted during the biennium were financed largely by Federal Aid to Wildlife Restoration (Pittman-Robertson Act) apportionments. Under this Act the State is reimbursed for 75 percent of the cost of approved projects. Projects supported by state and Federal Aid monies during the biennium are described briefly.

### District Wildlife Investigations Projects

W-71-R-4 & 5 Wildlife Investigations, District 1 (Northwest)

W-72-R-4 & 5 Wildlife Investigations, District 2 (West Central)

W-73-R-4 & 5 Wildlife Investigations, District 3 (Southwest)

W-74-R-4 & 5 Wildlife Investigations, District 4 (North Central)

W-75-R-4 & 5 Wildlife Investigations, District 5 (South Central)

W-76-R-4 & 5 Wildlife Investigations, District 6 (Northeast

W-77-R-4 & 5 Wildlife Investigations, District 7 (Southeast)

## COORDINATION PROJECT

### W-3-C-18 & 19—Wildlife Management Coordination

This project provides for the general direction and supervision of the wildlife restoration program, consisting of 43 separate projects. This includes the responsibility of all fiscal matters, as well as providing office and field supervision and assistance to the over-all Wildlife Restoration and Management program. The Chief of Game Management is assigned the responsibility for carrying out the over-all program. The necessary assistance is provided by establishing the statewide positions of Big Game Manager and Small Game Manager. They are directly responsible for the work conducted in these two broad fields. The work on the projects throughout the state is carried on by management and research biologists under the supervision of the District Game Managers. The Game Management Division is a staff and line type organization.

## STATEWIDE INVESTIGATIONS PROJECTS

### W-37-R-10 and 11—State Range Research Project

The purpose of this project is to develop standardized methods for Department personnel to gather range information. Determination of big game food habits and range relationships are also a phase of this project. The range program is tied in very closely with the management personnel on the various department administrative districts throughout the state. It also provides the link between the department range program and the range program of the U. S. Forest Service and the U. S. Bureau of Land Management.

### W-49-R-8 and 9—Fur Resource Management Predator and Bear Surveys and Investigations

Through this project, factual information is being obtained regarding production, economic distribution, population status, and certain other aspects of the ecology of fur-bearing animals in Montana. This information is extremely important in the development of a biologically sound management program for these animals. Recommendations for trapping regulations are submitted to this project by district personnel. A study has been made regarding predatory animals and their relationship to game and livestock. Also, a study is being conducted in regard to black bear in Montana. This work will fill an important need for the development of an adequate management program for this class of big game. Information gathered to date will make an important contribution to the adoption of open seasons, bag limits, as well as policies and recommendations for legislation having to do with black bear management.

### W-91-R-2—Upland Game Bird Research

Personnel assigned to this project develop management techniques for use by district personnel. Standardization and testing of methods to be used in gathering facts for management is important to the continued progressive management of game birds. Special life history studies are being conducted on sage grouse, sharp-tailed grouse, and blue grouse. The results of these studies will provide better management and provide an improved recreation for sportsmen.

Special studies are being conducted on species of upland game birds. (Photo by B. J. Rose.)

## WINTER GAME RANGE DEVELOPMENT

The primary objectives of winter game range development are to restrict elk to definite wintering areas where they will not compete with livestock operations and to provide a stable forage base for elk herds so the maximum number of harvestable elk may be produced year after year.

During the biennium, operations on these areas were designed to maintain existing features and to further develop and enhance the areas as winter game ranges. Construction and maintenance of fences and buildings, patrol, and herding of elk were routine activities. Forage production and utilization plots have been established and measured to determine range condition and the amount of use by game. Several of the game ranges continue to increase in popularity for fishing, picnicing and camping as well as hunting.

Major construction during the report period consisted of a residence and small patrol cabin on the Sun River Game Range and many sections of boundary fence on several of the other game ranges.

W-27-D-12 & 13 Sun River Game Range Development—near Augusta

W-33-D-10 & 11 Blackfoot-Clearwater Winter Game Range Development—near Ovando

W-43-D- 7 & 8 Judith River Winter Game Development—near Utica

W-62-D- 6 & 7 Gallatin Winter Game Range Development—near Gallatin Gateway

W-84-D- 2 & 3 Bowser Lake Winter Game Range Development—near Kalispell

W-90-D- 1 & 2 Madison Winter Game Range Development—near Cameron

W-92-D- 1 Haymaker Winter Game Range Development—near Twodot

## WATERFOWL AND UPLAND GAME DEVELOPMENT

### W-56-D-6 & 7—Freezeout Lake Waterfowl Development Area

This area is located thirty-five miles from Great Falls, between the cities of Fairfield and Choteau. Headquarters facilities were greatly improved during the period by the construction of a combination storage shop and office building at the headquarters site. Administrative and access roads were constructed on the project. These roads were graded and graveled to facilitate year-round use. Additional dikes were built which added about 500 acres of water impoundments. Grain crops were produced in the state-owned strip around the east edge of the project. These were left in the field to attract waterfowl. Excellent public hunting was provided over most of the area. A small portion of the project was closed to protect a captive goose flock being used to establish wild goose nesting in the area.

### W-80-D-4 & 5—Ninepipe Game Management Area

Located in the Flathead Valley near Ronan, Montana, this area provides public bird shooting around the Ninepipe Federal Refuge. It has been developed specifically for public use and as such provides considerable recreation. The land is share-cropped to provide food for waterfowl and upland game birds. Necessary maintenance work is carried on throughout the year.

### W-61-D-8 & 9—Milk River Game Management Areas

This development project is located near Nelson Reservoir at Malta. The objective of this work was ot improve waterfowl breeding, nesting feeding and hunting conditions. Existing dams, dikes and levees were improved. New water impounding areas have been constructed. One area so constructed had 40 nesting geese and also kept up to 500 geese in the area during the hunting season.

## SERVICE PROJECTS

### W-5-D-17 & 18—General Wildlife Restocking Project

The purpose of this project has been to trap and transplant mountain goats, bighorn sheep, wild turkeys and fisher. During the two-year reporting period, substantial numbers of mountain goats were trapped in both the Deep Creek area west of Choteau, and from the Pioneer Range west of Melrose. A release was made in the Pine Creek section of the Bear Tooth Range. Additional goat plants were made during the period in the Hilgard Range on the east side of the Madison Valley. An attempt is being made to establish these animals throughout a large area of Montana characterized by alpine and sub-alpine habitat. The mountain sheep introductions during the reporting period were made in the Big Belt Range in the vicinity of Sheep Creek and Stickney Creeks, south and west of Cascade. Bighorns were also placed in the holding pasture at the southwest edge of the Fort Peck Game Range. It is anticipated that increases from this group will be liberated into the Missouri Breaks.

Fisher, a fur animal, were obtained from Canada in cooperation with the U. S. Forest Service. These were released in the Pinkham Creek area in Lincoln county and also in the Swan Valley. An additional plant was made in the Rock Creek area east of Missoula. In addition to being a valuable fur animal, the fisher is known to prey on porcupines, a forest pest.

Additional plants of wild Merriam's turkey were completed during the reporting period. These plants were made in Sanders county near Plains, the Gates of the Mountains area in Lewis and Clark county and in several other portions of the state.

### W-58-D-4 & 5—Statewide Maintenance

Waterfowl and upland game bird habitat areas have been developed on 32 reservoirs in eastern Montana. The annual maintenance work consisted principally of the repair of fences to protect portions of these reservoirs from excessive livestock use. This limited fencing of the upper end provided excellent nesting, feeding and resting areas for waterfowl and upland game birds. In all of these areas, sufficient watering space was provided for livestock.

### W-81-D-3 & 4—Maintenance of Federal Aid Lands (Payment in Lieu of Taxes)

Through this project payment in lieu of taxes on all game range and waterfowl development areas is made. This lieu of tax payment was authorized by the Montana state legislature by R. C. M. 1953, Section 26-133. These Department lands are assessed by the county so that the payments are comparable to that paid by private landholders in these areas. During the two years reporting, the annual payment to the counties of location amounted to approximately $17,000.00 per year.

### W-83-R-2 & 3—Wildlife Investigations Laboratory

One of the most important phases of the work conducted at the Laboratory has been in the determination of wildlife food habits. This project is headquartered at the State College in Bozeman and provides practical training for a number of wildlife management students. In addition to its obvious importance in management, food habits information also aids with the interpretation of other information such as range surveys, hunting season manipulation, sex and age ratios and winter mortality. Certain other information, such as age ratio information on the mink harvest, can be obtained only through use of this facility. The Laboratory personnel also conduct research on the problem of standardization of techniques to be used in certain areas of game management.

### Game Bird Farms

Ring-necked pheasant production continued at both the Fort Peck and Warm Springs bird farms. The Billings bird farm, which at the beginning of the biennium was operated only on a seasonal basis, was entirely discontinued. The brooder houses were sold and removed from the property and the pheasant pens were completely dismantled. The remaining buildings and facilities are being used by district Fish and Game Department personnel in conjunction with the district headquarters building which was erected on the bird farm property.

**Ring-necked Pheasant Production**

| | Billings | Fort Peck | Warm Springs | Total |
|---|---|---|---|---|
| 1953-1959 | 6,109 | 12,162 | 13,132 | 31,403 |
| 1959-1960 | | 12,760 | 11,979 | 24,739 |

## MONTANA COOPERATIVE WILDLIFE RESEARCH UNIT

The Montana Cooperative Wildlife Research Unit was established at Montana State University on February 8, 1958. It is operated through a coordinating committee with representatives from the State Fish and Game Department, State University and U. S. Fish and Wildlife Service.

Objectives, as established, are:

1. To provide technical and professional training on various levels in wildlife management, teaching, research, demonstration and administration.
2. To investigate and correlate the production, utilization, management and restoration of desirable populations of wildlife compatible with good land use.
3. To demonstrate research findings through extension and practical management of game and fur-bearing animals and of other desirable species of wildlife, and encourage wildlife restoration through programs with schools, youth clubs and adult groups.
4. To make available to land-owners and operators, sportsmen, conservation officials, extension workers, teachers and others, the facts, methods and new findings discovered through research, and through literature suited to local and state conditions.
5. To disseminate research findings through the publications of reports, bulletins, circulars, and journal and magazine articles. These to include scientific, semi-popular and popular materials at all levels.

### Research Projects*

| | Status |
|---|---|
| 1. Mule Deer Population and Winter Range Studies in Western Montana | Completed |
| 2. Seasonal Condition of Mule Deer | Continuing |
| 3. Mule Deer Winter Forage Relations Study | Continuing |
| 4. Aging of Fisher and Analysis of Reproductive Systems | Continuing |
| 5. Population Study of Canada Geese in the Flathead Valley | Continuing |
| 6. Experiments with the Plastic Jesse-Knot Marker | Completed |
| 7. An Ecological and Psysiological Study of the Pine Marten | Completed |
| 8. Motion Pictures of Unit Activities | Continuing |
| 9. A Physiological and Anatomical Study of Bighorn Sheep | Continuing |
| 10. A Study of Lungworm Infection in Bighorn Sheep | Completed |
| 11. Quantitative Aspects of Raptor Predation | Continuing |
| 12. Big Game Harvest Analysis | New |
| 13. Study of Alpine Ecology in the Northern Rocky Mountains | Continuing |
| 14. Bighorn Sheep Population Study | New |
| 15. An Ecological Study of the Grizzly Bear | New |
| 16. Ecology of the Feeding Behavior of Black Bear in Northwestern Montana | New |
| 17. Effect of Magpie Control on Magpie Population and Reproduction | New |
| 18. Summer Range Ecology of Rattlesnake Creek Mule Deer in the Spruce-Fir Zone | Completed |
| 19. A Study of Moose in the Rock Creek Drainage | Completed |

*Completed projects have been reported on in journals or theses, and in addition, segments of some continuing projects have been published.

# FISHERIES

Montana is a trout state—some of the finest trout waters in the country lie within her borders. However, the popular concept that there are twenty to thirty thousand miles of "well stocked streams" in Montana is dangerously misleading in that it has given rise to a false sense of security and has fostered public complacency in conservation of stream fisheries. A stream classification and appraisal prepared during the biennium clearly emphasizes that Montana fishing streams are limited in both quantity and quality.

The Montana Stream Fishery Classification was prepared by a committee of representatives from the U. S. Bureau of Sport Fisheries and Wildlife, Montana State College, and the Montana Fish and Game Department. It presents an inventory and appraisal of Montana's fishing streams. Equally important, it can serve as a guide to all other water-use interests.

A total of 436 streams or parts of streams, totaling 8,923 stream miles were placed in four classifications. These classes were defined as:

1. Streams of national as well as state-wide value;
2. Streams of state-wide value;
3. Streams of value to large districts of the state;
4. Streams of value to smaller districts such as counties.

All remaining streams including those not yet classified as well as those of restricted local value were placed in class five. Only 410 miles of stream were in class one, and only 1.072 miles were in class two.

Sport fishing is by far the nation's leading outdoor recreation in terms of days and money spent. Some quarter of a million anglers fish in Montana each year. Obviously, the fisheries division faces a tremendous challenge in providing and maintaining the best in recreational fishing.

## GENERAL FISHERIES MANAGEMENT

General fisheries management covers all aspects of fisheries outside of fish propagation in hatcheries. It is concerned with fish losses, including those caused by the damage or destruction of fish habitat; with the proper use of hatchery fish; with stream and lake improvement and rough fish eradication; with fishermen access; with the creation of new fishing waters, and with investigation of management problems. This is the work of the fishery biologist. Much of it is supported with federal aid funds. Some of the more detailed studies are made in cooperation with the Zoology and Entomology Department of Montana State College.

The following is a summary of work accomplished during the biennium.

## DISTRICT PROJECTS

### Northwest Fisheries District

During the biennium 12 streams, 42 lakes and 18 ponds were surveyed in the Northwest Montana Fisheries District. The purpose of these studies is to determine the chemical, physical, and biological qualities of our better sport fishing waters. These surveys are the basis for management recommendations and rehabilitation projects. They also provide the basis for amending the hatchery planting program to make better use of hatchery fish. Species presently used in managing the northwest district waters are cutthroat, rainbow, eastern brook, golden trout, and largemouth bass.

The Flathead River and its tributary streams above Flathead Lake are providing good to excellent cutthroat trout fishing. In order to maintain and properly manage cutthroat trout, a study on this species was undertaken. The study is designed to gain information on the extent of cutthroat trout spawning areas, the time of spawning, the distance traveled, and the numbers of young fish returning to Flathead Lake. The numbers of young returning to the lake indicate spawning success. One summer of the survey work has been done.

The relationship of yellow perch to cutthroat trout has been studied in Middle Thompson and Lower Thompson lakes in order to determine any weak link in the life cycle of perch. The cost of complete perch removal from the lakes would be prohibitive at the present. During the study it was found that perch fry could be effectively killed with toxicant while in schools along the shore. Accordingly, the entire shoreline of lower Thompson Lake was treated with a fish toxicant from 1954 through 1957 when the perch fry were congregated in large schools. Middle Thompson Lake, a control, was not treated. According to observations and gill net sets made during the biennium, there are definitely fewer yellow perch in Lower Thompson Lake than in Middle Thompson Lake.

Smith Lake, a small experimental production pond near Whitefish, Montana has been studied since 1951. Yearly, cutthroat trout fry have been planted during summer and then the following spring the pond has been drained and the fish captured. Fish production and numbers as well as the percentage of planted fish that survived in ponds has been computed. During 1958 both fry and yearling cutthroat were planted in the pond.

These studies have aided fisheries personnel in establishing the desired number of trout to be planted in lakes. Studies have also been made on survival of fish planted in one spot compared to those spread over the lake with a planting boat. Smith Lake will continue as a valuable experimental pond in determining means for best utilizing hatchery fish.

Milnor Lake near Troy, Montana was chemically treated in August 1959 to remove carp and pumpkinseed sunfish. This lake was treated with 0.1 PPM of "Toxaphene". When the toxicant has dissipated, the lake will be planted with trout.

Loon Lake near Ferndale, was treated with emulsifiable rotenone in October 1959 to remove suckers and squawfish. This lake will be stocked with Ashley Lake Cutthroat during the summer of 1960.

Turtle Lake near Polson, was treated with toxicant in October 1959 to remove yellow perch and pumpkinseed sunfish. It will be stocked with west slope cutthroat trout during the summer of 1960.

### Western Fisheries District

General survey work, which provides the basic information for future fish management, was carried out on 53 mountain lakes and 38 streams in the western fisheries district during the biennium. These surveys were concerned with the job of cataloging waters of the area and determining their value to the overall fishery of the district. Information regarding the physical, chemical and biological characteristics of these waters and data on their fish numbers were collected.

As a direct result of basic survey work two barren areas have been stocked and several mountain lakes where planting is necessary to provide fishable waters have been located and added to the planting program. Other lakes either capable of maintaining fish through natural reproduction and those not worthy of managing for a fishery have been

described and recorded. Fishing has been opened on most lakes within the district on a year-round basis. Lake rehabilitation was undertaken in two areas.

During the summer of 1958 and the winter of 1958-59 a detailed creel census was conducted on Georgetown Lake. The purpose of the study was to get good estimates of total fish taken and the fishing effort exerted on this popular lake. This census will be repeated at two-year intervals for at least six years. Resulting information will provide the basis for maintaining the highest quality fishing possible in Georgetown Lake. Estimates from the first year's study showed that 25,000 fishermen caught 47,000 game fish during the summer season. During the winter season 18,000 anglers took an additional 70,000 game fish. By weight, these fish totaled 41 tons, or almost thirty pounds of game fish per acre from this productive mountain lake.

**Bob Averett, pollution control biologist, sets up field equipment while working on a water problem.**
(Photo by Tom Smith.)

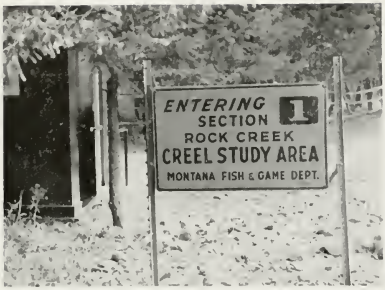
Two major pollution problems confronted the western fisheries district during the past biennium. Both were on the Clark Fork River —one in 1958 from about 10 to 60 miles west of Missoula, and the other in early 1960 from the river's headwaters to an as yet unknown distance downstream. Immediate investigation of both problems in cooperation with pollution control authorities led to the immediate discovery of pollution sources and their subsequent abatement. Follow-up studies on the 1958 problem, associated with the pollution control project, have provided estimates that game fish were removed from 25 miles of the Clark Fork. An appraisal of recovery was also established. A similar investigation of the 1960 problem area is scheduled.

During early summer of 1959 the U. S. Forest Service sprayed DDT for control of spruce budworms in portions of the east and west forks of the Bitterroot River and their tributaries. In order to determine the effects of this program upon aquatic life in the area, a fishery study was conducted coincident with the spray program. Insect and fish mortalities that occurred during the spray job were investigated and the spray operation was closely observed both from the ground and the air. A report on this study is being prepared.

A major, long-range rehabilitation project on the Clearwater lakes was started during the biennium. From September 10 to November 11, 1958, the upper Clearwater drainage (Rainy, Summit and Clearwater Lakes and their connecting streams) were treated with fish toxicants. Two hundred and twenty-four surface acres of lake water and nine miles of stream were treated. The purpose of the job was to improve trout fishing by removing suckers, squawfish, chubs and yellow perch and restocking the waters with cutthroat trout.

The entire Clearwater Lake chain would constitute too large and expensive a job for the department to undertake all in one year. Also, it is good business to evaluate the probable effects of a project of this magnitude before undertaking it in its entirety. Consequently, the overall job will proceed slowly by small sections of the drainage. A fish barrier at the outlet of Rainy Lake prevents the movement of rough fish into treated upper areas. Through preliminary surveys in the summer of 1959, a second possible barrier site below the outlet of Inez Lake was located. During the next biennium, a detailed barrier-engineering survey, the construction of a barrier below Inez Lake, the rehabilitation of Alva and Inez portions of the drainage, and an evaluation of the fishing provided in the completed sections are scheduled.

During the fall of 1959 Rock Creek Lake, a small reservoir near Deer Lodge, was drawn down from its normal 3,700 acre feet to 1,000 acre feet in order to repair the dam. This offered an opportunity for chemical treatment




**Valuable management information is gained through long range studies, such as the creel study on Rock Creek near Missoula.** (Photo by B. J. Rose.)

of the lake to rid it of great numbers of longnose suckers. The lake will be stocked with rainbow trout fingerlings during the summer of 1960 and should greatly improve fishing for several years.

The Rock Creek creel census study is a research project of vital importance. It will provide valuable information on the use of catchable-size fish for stream planting. The study, begun in 1958, is designed to obtain accurate estimates on the fishing pressure and total fish caught from Rock Creek, a tributary of the Clark Fork River.

Checking stations have been set up at each end of the study section so that all anglers using the area must pass through on the single access road to the creek. Stations are manned according to a pre-arranged schedule. Estimates of total fish taken and of fishing pressure will be used to evaluate various planting rates of catchable-size trout in Rock Creek study section. The project, now in its third year, is scheduled to run for a ten year period. Final conclusions on stocking rates will not be made until completion of the study.

During the first year of the study (1958), an estimated 14,800 anglers fished for 55,300 fishermen hours and harvested 50,300 game fish during the summer season. Of this total, 26 per cent were hatchery fish planted the same year. This constitutes a return to the creel of 35% of the trout which were planted there during 1958. During the 1959 summer season an estimated 14,900 anglers fished 48,900 fishermen hours and caught 45,800 game fish. Twenty-three per cent of this second year's catch was composed of hatchery fish. This was a return to the creel amounting to 39% of the rainbow trout planted during 1959.

**Southwest Fisheries District**

During 1958 a series of gill-net sets were made in Canyon Ferry Reservoir duplicating sets made in 1955. The sampling shows a rather rapid domination of the lake by rough fish and a decline of trout despite heavy stocking. Another series of nets will be set in 1960 in order to follow fish population trends and to evaluate an expanded trout stocking program.

Near Three Forks, the ponds in three gravel pits were stocked with fish following removal of rough fish with toxicants. The East Pond was stocked with grayling fry, but the fish did not live. The pond will be restocked with grayling in 1960. Rainbow trout stocked in the middle pond have shown excellent growth, as have the cutthroat stocked in the west.

During the biennium renewed effort was put into grayling study and management on the Red Rocks Lakes National Waterfowl Refuge. The upper Beaverhead River drainage in the Red Rocks Lakes area is the last stronghold of self-sustaining stream grayling in the United States. Competition with other fish appears to be adverse to grayling.

Improvements were made in 1958 on the dikes and ditches of Park Lake near Helena in an effort to raise the water level for insurance against winter fish kills. Rough fish were removed with toxicant. The lake was stocked with rainbow trout fingerlings in 1959. At the time of writing this report, fishing is excellent.

The Boulder River drainage above Big Timber was surveyed during the 1958 field season. Tributary streams were catalogued, fish were sampled with an electric shocker, creel checks were made, and chemical, physical and biological conditions were recorded. While limited access gave the impression of relatively heavy fishing pressure, it was actually quite low, with a peak of four fishermen per mile recorded. Brown trout dominated

lower Boulder River and the East and West Boulder Rivers; fishermen creels, however, averaged 65 per cent rainbow trout.

A general survey of the Big Hole River Drainage was made during the 1959 field season. Fish in the tributaries of the Big Hole River were sampled with the electric shocker and scale samples were taken for age and growth studies. Most of the mountain lakes in the Big Hole Drainage that were accessible by road were surveyed and, in addition, surveys were made on ten lakes in the drainage that could be reached only by pack outfit.

During the past year work on a large electric shocker that will permit sampling fish in some of the larger streams has progressed nicely. Better management of the sport fishery in the larger streams can be realized if the actual numbers and species of fish there can be determined.

Following the August 1959 earthquake in the Madison River area, fish were sampled in the river below the slide. Good numbers of trout and whitefish were present. The importance of wild trout was clearly demonstrated at this time. In spite of relatively heavy planting only one trout in ten was a hatchery fish. Temperatures and turbidity in the Madison River as they may be influenced by changes resulting from the quake will be closely followed.

**Fish and game personnel check the upper Madison River to determine effects of the 1959 earthquake.**
(Photo by George Holton.)

### Central Fisheries District

Nineteen lakes and impoundments were surveyed during the biennium. Information on size, volume and fish numbers was gathered

**Light, portable equipment is used on mountain lake surveys.** (Photo by Tom Smith.)

for use in future management. Fish in five streams were studied by means of an electric shocker. Sampling stations were set up on Belt Creek, and water quality standards are being established for use in determining the effects of any future mine-mill pollution.

A method for measuring the ability of water to produce fish is needed. This problem is being approached from three angles: fish growth, total dissolved solids, and periphyton production. Several streams are being sampled regularly. Some phases of this study are being carried out by the department's fishery laboratory, and the balance is being conducted in the Central Montana Fisheries District.

Rehabilitation to remove rough fish and reintroduce trout was carried out on six lakes and reservoirs and one stream. Follow-up surveys were carried out on the Marias River, Kipp Lake, Eureka Reservoir and Tunnel Lake in order to determine the results of previous rehabilitation and replanting. All had good numbers of trout. Nine private ponds were rehabilitated during this period with owners paying the cost of rehabilitation and replanting.

Cutthroat trout (*Salmo clarki*) originally inhabited all Montana waters in and adjacent to the mountains, except for a considerable number of small isolated virgin lakes. To aid in the management of this fine native trout, a study on the distribution of cutthroat and the factors affecting them was completed. Cutthroat were recorded from 699 streams and 244 Montana lakes. They were predominant

in 253 streams and 142 lakes. Rainbow and/or eastern brook predominated where they were found with cutthroat trout.

Cutthroat are presently restricted to the headwaters of streams which originally were inhabited by them throughout. Natural barriers have aided in restricting non-native species from invading cutthroat waters above the barriers. Factors influencing their distribution are stream habitat changes, competition with non-native species and crossing with rainbow trout. No single characteristic was found to be adequate for identification of cutthroat, but when a combination of characteristics were used satisfactory separation of fish over four inches long was achieved. Much of the problem in identification was caused by crossing of cutthroat and rainbow. Their progeny have characteristics of both species.

**Southeast Fisheries District**

During the biennium surveys were conducted on 63 streams, 13 natural lakes, and four irrigation reservoirs. Two lakes were sounded, mapped and volumes calculated in preparation for future rehabilitation.

Many applications for fish to stock farm and ranch ponds were reviewed and recommendations made. Detailed surveys were made on three ponds; less intensive surveys on many others. Most farm and ranch ponds in Montana were built for stock watering, irrigation, flood control and erosion control rather than for fishing; consequently, most are not suitable for sport fish production. An effort is made, however, to develop those ponds that have sport fishing possibilities, particularly in eastern Montana where fishing waters are often scarce.

A preliminary investigation was made on loss of fish habitat due to a recent Agricultural Conservation Program on Rock Creek (Carbon County) for flood control and repair. A more detailed investigation on the relationships between floodplain grazing intensity and quality of the stream for fish production is in progress on Rock Creek.

Five creeks were investigated as possible sites for study of the effects of sediment on wild trout.

During 1958 a compact earth dike, enclosing a 20-acre rectangle, was built to create Branum Lake, a fishing lake at Miles City. This is in an area that has had limited recreational fishing because of unsuitable reservoirs and the absence of natural fish habitat. The Custer Rod and Gun Club paid initial pumping costs to fill the reservoir with water from Tongue River. Water lost by evaporation is replaced by a pump and well incorporated in the project and with waste water pumped from the adjacent Federal Fish Hatchery.

Cooney Reservoir and portions of streams tributary to this reservoir were chemically treated in October 1958 to eliminate carp in the reservoir and to reduce numbers of other undesirable fish in the drainage. Toxaphene was applied to the reservoir and the streams were treated with a combination of toxaphene and liquid rotenone-based toxicants. This is an irrigation storage reservoir where, in spite of heavy trout planting, fishing had become poor due to the increase of carp and suckers. The reservoir has been restocked with rainbow trout which are expected to grow to catchable size during the summer of 1960.

Lost Lake was chemically treated during September 1959. It is an alpine lake located in the Custer National Forest on the Lake Fork of Rock Creek in the Beartooth Plateau. The lake contained many suckers which were probably introduced by fishermen using small suckers as bait. It is a considerable distance from the normal range of suckers; therefore, this unwanted guest not only limited production of desirable fish in the lake but was a potential source of contamination of other nearby waters.

Willow Creek Reservoir and part of Lodgegrass Creek were chemically treated in May 1950 to control carp, suckers, pumpkinseeds, chubs, and shiners. These fish made up more than 90 per cent of the fish in this body of water. Approximately 225 gallons of toxicant were aerially applied to the reservoir, and the inflowing waters were treated by dripping chemicals into the water above the diversion structures on Lodgegrass Creek. The water is expected to be non-toxic and suitable for planting fish by the summer of 1960.

**Northeast Fisheries District**

Highlighting the fisheries activities of the area during the biennium was the construc-

tion of Beaver Creek Reservoir in Hill County. Completed during late fall of 1959, the reservoir was filled by April, 1960. Portions of the waters above the reservoir were treated with fish toxicant in order to remove undesirable fish before filling the reservoir. Rainbow trout have been stocked there.

Suitable stockwater reservoirs have been managed by the department for trout. These include Miller No. 6, Kuhr-Newhouse, H. C. Kuhr, Riebe, and Ross Reservoirs, all in Blaine County. The latter reservoir has adequate natural reproduction in a small inlet stream. In the other reservoirs, experiments are being conducted in order to determine the most practical method of maintaining trout. Other reservoirs in the area being added to the trout pond program are Riggin-Starch Reservoir and Cow Camp Pond in northeast Blaine County, Dahl Pond and Cole Gravel Pits in Phillips County, Jens Jenson Reservoir in Daniels County, Tvedt Reservoir in Sheridan County and Tolksdorf and Kuester Reservoir in Richland County.

Management of Gartside Reservoir near Sidney has continued successfully. This lake was constructed through the efforts of the Sidney Rod and Gun Club with financial assistance from the Montana Fish and Game Department.

Several marginal trout streams in the area were surveyed during the biennium. These included Big Sandy Creek, Eagle Creek, Beaver Creek, Battle Creek, Wolf Creek, and Whitetail Creek.

Surveys of fish populations were made in Fort Peck Reservoir, Nelson Reservoir, Killenbeck Reservoir, Frenchman Reservoir, and Crandall Reservoir. A study of paddlefish in Fort Peck Reservoir was started and will be continued.

Rough fish in several bodies of water were removed by treatment with fish toxicants. These include Beaver Creek and its tributary, Sucker Creek, Cole Gravel Pits in Phillips County, H. C. Kuhr Reservoir in Blaine County and Whitetail Reservoir in Daniels County.

## STATEWIDE PROJECTS

### Lake and Stream Access

Access to fishing waters in Montana is becoming increasingly important each year. During the biennium the Lands Division, working under the direction of the Superintendent of Fisheries, purchased a total of 17 tracts. Four additional tracts were donated. Six of the sites were on lakes, the balance on rivers. Of the sites on rivers, five are over one mile long. Location of sites acquired during the biennium are as follows:

RIVERS AND STREAMS

| | |
|---|---|
| Stillwater River | 3 tracts |
| West Rosebud River | 1 tract |
| Madison River | 2 tracts |
| Rock Creek (Red Lodge) | 5 tracts |
| Rock Creek (Missoula) | 1 tract |
| Flathead River | 1 tract |
| Sweetgrass Creek | 1 tract |
| Smith River | 1 tract |

LAKES

| | |
|---|---|
| Aarod Lake | 1 tract |
| Flathead Lake | 1 tract |
| Carpenter Lake | 1 tract |
| Crystal Lake | 1 tract |
| Broadview Pond | 1 tract |
| Sophie Lake | 1 tract |

With these sites, thirty-three are now under department ownership. The objective is to have guaranteed public access with facilities for parking automobiles at strategic points on important lakes and streams.

Land already in public ownership is incorporated into this program wherever possible. Since 1951 a survey of state and federal lands to determine their value as fishing has been in progress. As a result the Bureau of Land Management has been requested to retain in public ownership in excess of 100,000 acres and the State Board of Land Commissioners has been requested to retain in public ownership over 155,000 acres so that waters bordering these lands will be accessible to the public.

An amendment to the Fish and Wildlife Coordination Act in August, 1958 has made it possible to restore withdrawals of public domain lands as fishing access. Withdrawals of lands of high fishing access value will be started during 1959. These would be administered by the Bureau of Land Management as they are now. Such lands will continue to be managed for agriculture, grazing, etc., as they have in the past, with reservation from sale being the only change.

### Preserving Fish Habitat

During the biennium, reports were reviewed, recommendations made, and negotiations entered into on proposed dams to be built with Federal funds. Where necessary, field inspections were conducted. Included were reviews of the comprehensive Bureau of Reclamation plans for the Three Forks Division (Upper Missouri Drainage), the Bureau of Reclamation's preliminary plans for the Yellowstone River, and comprehensive plans of the Corps of Engineers for the Clark Fork Drainage. Individual projects reviewed included Yellowtail Dam on the Big Horn River and Spruce Park Dam on the Middle Fork of the Flathead River. Such review of federal water development projects is made possible through the Fish and Wildlife Coordination Act. State conservation agencies do not have a veto, but make recommendations in an effort to mitigate damage to fish and wildlife and, where possible, to enhance fish and wildlife. Much of this work is done in cooperation with the Branch of River Basin Studies of the Bureau of Sport Fisheries and Wildlife.

There are no provisions for reviewing plans of State agencies engaged in water development; however, the Fish and Game Department reviews the water development projects planned by private power companies. Here recommendations are presented to the Federal Power Commission for consideration.

Review of government and private water development projects is requiring an increasing amount of time. This activity, however,

Many types of human destruction drastically reduce or entirely eliminate fish from lengths of once-productive streams.
(Photo by Ray Hollerman)

is of utmost importance in maintaining sport fishing. Dams in the upper reaches of streams and rivers particularly are a threat since they flood out trout spawning areas, destroy valuable trout stream habitat and substitute artificial impoundments that are difficult and sometimes impossible to manage as a fishery.

Negotiations to insure the best possible water conditions for fish in reservoirs and in the rivers below the reservoirs must be carried on during the planning stages long before construction starts. Impoundments that will result in excessive damage to fish or game are opposed and consideration requested for less damaging sites. Such negotiations require knowhow and intensive effort. Recommendations for provisions involving reservoir operations and flow releases must be based on adequate field work and careful analyses.

A multimillion dollar highway construction program is in progress in Montana. Road construction that results in stream straightening removes the meanders which are so very important in providing cover and resting areas for fish. Population studies on Flint Creek, near Philipsburg, Montana show a 94% reduction in catchable size trout when the stream was straightened during highway construction. During the biennium about 20 plan-in-hand inspections were made with constructing agencies in an effort to minimize this damage.

Accumulative effects of dam building, stream straightening, pollution of all kinds (including silt), removing excessive amounts of water from streams for irrigation, stream bank trampling by livestock, and other abuses are reducing trout stream habitat at an alarming rate. Compared to these factors, fishing pressure is a minor cause of the decline of fishing in Montana.

**Pollution Control**

The department pollution biologist, working under a cooperative agreement with the State Board of Health, participated in the classification of the Columbia River Drainage. This classification was in relation to water use by aquatic life. Under the same cooperative agreement, biological data needed for classification of the Missouri River Drainage has been gathered. These data are now being tabulated and summarized so that classification of this important river drainage can be accomplished. A comprehensive report on the bacteriological, biological, chemical, and physical aspects of the Columbia River Drainage was written during the biennium.

Water chemical sampling is in progress on the primary rivers that form the Missouri River mainstem. This survey, when completed, will give information on present water quality in these important trout streams. This information will be extremely valuable in recognizing and evaluating future changes.

Three fish-kills were investigated and abatement measures taken by State Board of Health and Fish and Game personnel. Streams likely to receive waste materials harmful to fish and other aquatic life are under close surveillance. In addition, a good deal of the pollution control biologists' time has been spent surveying state waters to determine the effects of industrial and domestic wastes on aquatic life.

During the biennium the biological pollution laboratory has been modernized and is now in a position to handle many of the problems concerned with pollution.

**Effects of Forest Spraying With DDT on Aquatic Life**

This project was partially conducted in cooperation with the U. S. Forest Service to gather information on the use of DDT aerial sprays which might be used in current spruce budworm control. During this period, investigations were continued on areas sprayed during previous years. They involved a check on the recovery of fish and bottom insects (fish food) in streams where mortalities occurred as the result of DDT. A final report "Effects of an Aerial Application of DDT on Fish and Aquatic Insects in Montana" was prepared in cooperation with the U. S. Forest Service.

In addition, an intensive study of the effects of DDT was carried out as a graduate research problem at Montana State College. It was supported in part by the Montana Fish and Game Department. This investigation has included a controlled application of DDT to a test stream and bioassay work with trout exposed to and fed insects with various concentrations of DDT. The field work in this

study is essentially complete, but final analysis of the data is still in progress. Observations on the forest spraying program will be continued, but will be carried as projects in the individual fishery districts directly concerned.

### Fisheries Investigation Laboratory

During the biennium this project included studies on age and growth of fish, food habits of fish and analyses of samples of stream bottom insects. These jobs were done for fish managers and biologists on a statewide basis. Location of the laboratory on the Montana State College campus allows the use of part-time student help to do much of the time-consuming sorting and preparations.

Age and growth data are used extensively in forming management plans. During this period over 8,600 scale samples from fish were processed. These data were returned to the fisheries project leaders throughout the state. Age and growth data for rainbow, cutthroat, brown, and brook trout from 51 streams and 37 lakes were tabulated and ranked according to growth rates as a part of an investigation to determine if total dissolved solids of the waters can be used as an aid in classification of Montana's waters into broad productivity types.

Stream bottom insects provide much of the trout food and serve as indicators of losses to stream production through pollution. In all, 101 bottom samples from Sheep Creek, Deep Creek and the Boulder River and 205 drift samples from the Bitterroot drainage were sorted and classified mainly in studies to check on the effects of spraying spruce budworm with DDT.

About 500 fish stomachs, from specimens taken in Flint Creek and the Clark Fork River, were analyzed to determine the food habits of several fishes.

In addition to these jobs the laboratory personnel provided liaison with various departments of Montana State College as well as supplying chemicals, preservatives and supplies to field personnel.

### Statewide Creel Census

How good is fishing, what kinds of fish and what size are being caught? The success of Montana's quarter million fishermen is of utmost importance to the Montana Fish and Game Department. This information is obtained by creel census. Statewide creel census has been in operation since 1948. Catch information is gathered by wardens, biologists and hatcherymen, and is received from sportsmen in Fisherman's Logs and through questionnaires sent to a 10% sample of fishing license holders. This information is tabulated by electronic machines. It is used by the district fisheries managers in managing the state's waters.

More than 60% of the fishermen in Montana prefer trout stream fishing to any other type of fishing. Residents fished most in the Flathead River drainage while most non-residents prefer the Madison River drainage. Anglers average catch was 4.5 trout and salmon for each day spent fishing. Montana rates with the top trout fishing states if, indeed, it is not the top state.

### Reservoir Investigations

Hydro-electric plants have been built on many of the larger rivers of Western Montana during recent years. The reservoirs created by these projects have provided improved conditions for rough fish which have increased rapidly during early years of impoundment. Introductions of fingerling trout have provided good fishing in most reservoirs during early years but as the rough fish become more abundant survival and harvest of game fish declines rapidly. Continued management of reservoirs requires the use of larger hatchery fish and costs soon become prohibitive.

Very little information is available regarding the ecology of these large reservoirs. The construction of a hydro-electric plant at Noxon Rapids on the Clark Fork River near Noxon, Montana offered an opportunity to get detailed information regarding the changes that occur in such waters during the early years of impoundment. It also afforded an opportunity to investigate management techniques that might be applied to these large bodies of water. During this biennium a long-range study was started on Noxon and other reservoirs in the area. The project is financed largely with funds made available by the Washington Water Power Company, the agency

that owns and operates the Noxon Rapids Plant.

A pre-impoundment survey indicated that the section of the Clark Fork River to be inundated by the Noxon Rapids Dam contained large numbers of squawfish, chubs and suckers. These fish would provide brood stock that would rapidly saturate the new reservoir with undesirable fish. Therefore, in September, 1958, toxicants were introduced into this section of the Clark Fork River to reduce rought fish to the lowest possible number. It would have been desirable to eliminate these fish from the entire drainage; however, they are generally distributed throughout the Clark Fork and Flathead drainages and chemical rehabilitation on that scale could not be undertaken. Data collected after treatment and during the 1959 season indicate that mature rough fish were reduced to a very low level and that reproduction, especially by squawfish and chubs, was relatively low during the first year of impoundment. Fingerling rainbow trout planted in September, 1958 showed good survival and growth rates and were providing excellent fishing one year later. Annual plants of fingerling rainbow have been made since 1958. Continued study on this reservoir will indicate the value of partial rehabilitation in extending the period of good fishing in large reservoirs.

Information is also being gathered from Cabinet Gorge Reservoir on the Clark Fork River and from Hungry Horse Reservoir on the South Fork of the Flathead River. These reservoirs are approximately the same age but represent different habitat types that are reflected in their fish populations. All game species combined made up less than 10 per cent of the population prior to recent introductions of hatchery fish. Hungry Horse supports many Dolly Varden, cutthroat trout and mountain whitefish, all of which are maintained through natural reproduction. There is some indication that rough fish may still be increasing in Hungry Horse Reservoir so the ratio of game to rough fish may change in the future.

Several more hydro-electric or multi-purpose projects have been proposed on rivers of this area. The information gained from this study will be used in management of existing reservoirs and will also be useful in formulating management plans for future hydro-electric or multi-purpose projects in Western Montana.

**Test Stream**

A test area on Flint Creek in Granite County, Montana has been used continuously since 1954 to study certain aspects of trout survival. In 1958, tests were concluded. It was learned that the ability of hatchery rainbow trout to survive correlated directly with quality of diet fed at the hatchery. This has been the most important factor affecting survival of catchable-sized hatchery trout in Flint Creek. Competition with resident wild trout for food and space has also had a limiting effect on hatchery trout survival. Typically about two-thirds of the catchable wild trout survive for a one-year period while about one-half of the planted hatchery trout survive the same period.

In 1959, a comparison of survival of Lewistown and Bluewater hatchery trout was completed. Despite vastly different mineral qualities of water at these two hatcheries, there was virtually no difference in survival of their trout.

Presently, measurements of the natural production of catchable-size wild trout without hatchery plantings are nearly complete. This and other information from the Flint Creek studies will point the way to better regulation of trout harvests and more efficient use of the expensive catchable-size hatchery fish.

**Hatchery Biologist Activities**

A detailed analysis of the cost of rearing and planting hatchery trout was completed during the biennium. The report appeared in the April, 1960 *Progressive Fish-Culturist* (published by U. S. Fish and Wildlife Service). It particularly concerned cost in relation to size of fish. Total costs ranged from only 3 10ths cent per fish for one-inch fry up to 64 cents per fish for ten-inch trout. "Production costs" which include only those hatchery expenditures directly concerned with feeding and handling the fish were about one-half of total costs and compared very favorably with cost data released from other states and Federal hatcheries. Fish managers are finding this cost data useful in determining the most eco-

nomical management measures to use wherever hatchery fish are involved.

A lake stocking table was assembled on the basis of published factual information on trout survival and harvests and on the basis of information and experience of fishery workers in Montana. The table was accepted as Department policy by the Commission. It will assure that all lakes are managed according to the best biological information available and will also assure equitable distribution of hatchery fish to deserving areas.

The hatchery biologist assisted with a ten day in-service training school for mountain lake survey crews. The school was conducted at Montana State College under the direct supervision of Dr. C. J. D. Brown. Such crews will work to obtain the biological information needed in management of the back-country sport fishery.

A new bacterial disease of yellow perch was discovered in Dailey Lake near Livingston, Montana. The disease does not affect other fish species and this may explain why perch have not overpopulated Dailey Lake. Investigation of this disease will be continued along with other studies of wild and hatchery trout disease and nutrition.

## THE MONTANA FISH HATCHERY SYSTEM

Montana's modern fish hatchery system plays a major role in the maintenance of sport fishing throughout the state's vast water resources. In addition to augmenting wild numbers of fish, many new impoundments and rehabilitated waters have been stocked and are producing sport fishing. Continued expansion of hatchery facilities, increased efficiency of operation, and employment of modern-day techniques have made Montana's hatchery system equal to that of any other state. The Commission feels that the fishing public can best be served by continuing the present propagation program and directing the output to those areas that are most accessible to fishermen.

During the past biennium, expanded facilities at the Lewistown Hatchery were completed and put into operation. The thirty additional raceways will be used primarily in the production of the large numbers of small fish required for restocking rehabilitated waters. Also, where fish are needed in future management of trout waters throughout the State, they can be economically supplied by the Lewistown Hatchery.

Improvements were also made at other state fish hatcheries. New foundations were completed and new windows installed in the main hatchery building at Anaconda. Pipelines for the water supplies at both Great Falls and Libby were replaced. Dirt ponds at Bluewater and Big Timber were converted to concrete.

The increase in hatchery operations has been accompanied by additional hatchery administrative problems. The appointment of a Superintendent of Hatcheries has resulted in improved supervision and more efficient operation of the hatchery system.

State hatcheries have made considerable progress in the use of dry pelleted fish foods. Pelleted food provides a nearly complete trout diet and can be obtained economically from commercial manufacturers at desired specifications. The cost of the dry food is less than that of meat products and the problem of storage and refrigeration has been greatly reduced. The conversion factor (the number of pounds of feed required to produce a pound of fish) of the pellet diet is actually better than that of a meat diet.

Recently, ten new fish-transportation tanks were purchased. These tanks feature new developments in design—an elliptical shape which tends to reduce the area where fish can congregate and smother from lack of oxygen, and a two-inch covering of styra-foam insulation to assure constant temperature control, thus eliminating the need for refrigeration or icing en route.

The old, out-moded system of water recirculation by means of gasoline-motor driven pumps has been replaced by administering oxygen directly into the water. Bottled oxygen is forced through a hard carbon rod four inches in diameter located in the fish transportation tank. The carbon rod diffuses the oxygen into the water in small microscopic particles. This oxygen system is much less subject to mechanical failure than the old motor-driven pumps.

To economically utilize hatchery space and to increase capacities, a system of culturing trout eggs in three-gallon jars has been introduced. This method of hatching trout is especially desirable at those stations with large numbers of raceways. Young trout fry can be cared for in the jars until they are liberated into rearing ponds.

New fiber-glass hatchery troughs were designed and constructed to replace the old redwood troughs that had been in use over the past quarter-century. The new troughs have paint pigment imbedded in the fiber-glass, thus lessening continual maintenance. The new troughs are easier to keep clean and sanitary.

There are two sources of fish eggs; wild stock, or spawn gathered from fish reared under natural conditions in lakes; and domestic stock, or spawn taken from adult fish retained at the hatchery. Often fish produced from wild stock are more difficult to rear in the hatchery, are more susceptible to disease, and grow more slowly. A constant supply of eggs from wild stock cannot always be assured, and often there is adverse public sentiment and conflict where spawning stations are located. There are situations where wild stock is desirable, and at present, spawning stations for wild rainbow trout are maintained at Lake Mary Ronan, Bitterroot Lake, and Willow Creek Reservoir; wild cutthroat trout eggs are obtained from Ashley Lake and Georgetown Lake; and wild grayling eggs from Rogers Lake and Agnes Lake. Eggs are obtained from kokanee seined from Flathead Lake, and walleye and northern pike eggs are obtained from fish in Nelson Reservoir.

Domestic brood stock is maintained at hatcheries to produce fish that have been improved through selective breeding. Such fish grow faster, have early sexual maturity, increased individual egg production, and resistance to disease. That this program is possible is clearly demonstrated at the Arlee Hatchery where a selective breeding program with hatchery brood stock has been carried out over the past several years. At Arlee and Hamilton fall-spawning rainbow trout, California golden trout, and west-slope cutthroat trout are being developed as hatchery brood stock. Plans are presently being formulated to expand this program to include spring-spawning rainbow trout and Yellowstone cutthroat trout, thereby making the hatchery system less dependent on outside egg sources. With the hatchery brood stock program established there will be a constant supply of eggs available from pure strains of fish that can be identified by tagging or marking, and adverse public sentiment to wild stock spawn-taking stations will be reduced.

**EGG PRODUCTION**

| | January 1 - December 31, 1958 | January 1 - December 31, 1959 |
|---|---|---|
| Rainbow | 7,004,112 | 9,818,111 |
| Cutthroat | 4,139,292 | 3,501,568 |
| Grayling | 743,892 | 1,241,453 |
| Kokanee | 8,126,774 | 4,643,104 |
| Walleye Pike | 1,320,000 | 1,410,000 |
| Northern Pike | 832,700 | 590,000 |
| TOTALS | 22,166,770 | 21,204,236 |

## FISH PLANTED BY STATE AND FEDERAL HATCHERIES IN MONTANA

| Species | Size | Jan. 1 - Dec. 31, 1958 Number | Pounds | Jan. 1 - Dec. 31, 1959 Number | Pounds |
|---|---|---|---|---|---|
| Rainbow Trout | Eggs | 5,396 | 2 | | |
| | Fry | 177,188 | 419 | | |
| | 1 | 704,449 | 1,168 | 1,041,331 | 2,755 |
| | 2 | 4,396,279 | 14,306 | 2,797,983 | 10,062 |
| | 3 | 335,851 | 3,057 | 1,427,858 | 13,226 |
| | 4 | 199,609 | 4,805 | 260,839 | 7,825 |
| | 5 | 283,649 | 15,763 | 538,811 | 27,275 |
| | 6 | 160,108 | 19,520 | 242,375 | 32,441 |
| | Legal | 1,650,614 | 399,991 | 1,628,599 | 370,929 |
| | Adult | 2,266 | 2,725 | 1,780 | 1,575 |
| Cutthroat Trout | Eggs | 162,400 | 35 | | |
| | Fry | 144,960 | 30 | 106,008 | 22 |
| | 1 | 1,622,133 | 553 | 3,103,920 | 1,271 |
| | 2 | 776,662 | 1,434 | 682,775 | 1,517 |
| | 3 | 148,889 | 2,550 | 360,659 | 2,896 |
| | 4 | 140,660 | 2,531 | 69,702 | 1,655 |
| | 5 | 58,607 | 2,610 | 135,340 | 5,510 |
| | 6 | 59,230 | 5,185 | 74,530 | 6,179 |
| | Legal | 8,621 | 2,375 | 28,026 | 4,063 |
| | Adult | 2,795 | 2,882 | 1,235 | 3,211 |
| Dolly Varden | 5 | | | 14,410 | 895 |
| Eastern Brook | 2 | 33,213 | 169 | | |
| | 3 | | | 9,900 | 150 |
| | 4 | | | 34,564 | 794 |
| | 5 | | | 68,186 | 2,574 |
| Golden Trout | 1 | 29,000 | 25 | | |
| Sockeye Salmon | Fry | 1,259,399 | 315 | | |
| | 1 | 31,931 | 8 | | |
| Grayling | Eggs | 25,000 | 1 | 630,554 | 31 |
| | Fry | 30,000 | 2 | | |
| | 6 | 139 | 31 | | |
| Bass | 1 | 7,000 | 88 | | |
| | 3 | 59,640 | 742 | | |
| | 4 | 800 | 32 | | |
| Golden Trout | 1 | | | 575 | 2 |
| | 6 | | | 1,874 | 122 |
| Sockeye Salmon | Fry | | | 674,540 | 183 |
| | 1 | | | 1,022,555 | 293 |
| | 2 | | | 20,000 | 8 |
| | Adult | 216 | 45 | | |
| | 6 | | | 9,280 | 580 |
| Sunfish | 1 | 576,000 | 172 | | |
| | 2 | 43,500 | 160 | | |
| | 3 | 3,500 | 18 | | |
| Sauger Walleye | Fry | 988,200 | 22 | 2,111,000 | 108 |
| Northern Pike | Fry | 746,000 | 35 | 380,000 | 18 |
| | Adult | | | 10 | 35 |
| | | 14,873,904 | 483,806 | 17,489,054 | 499,255 |
| | | | | 9,835 | 1,050 |
| | | | | 17,479,219 | 498,205 |

# STATISTICS

## 1958 LICENSE SALES BY COUNTIES

| County | Resident Bird & Fish | Resident Big Game | Tourist Fishing | Non-Res. Fishing | Non-Res. Bird | Non-Res. Big Game | Bow and Arrow | Non-Res. Deer | Mountain Goat | Special Permits | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Beaverhead | 2,831 | 1,871 | 3,223 | 261 | 6 | 169 | 27 | 122 | ..... | ..... | 8,510 |
| Big Horn | 1,760 | 1,133 | 142 | 51 | 5 | 1 | 17 | ..... | ..... | ..... | 3,109 |
| Blaine | 1,600 | 1,011 | 56 | 7 | ..... | 1 | 27 | 4 | ..... | ..... | 2,706 |
| Broadwater | 1,073 | 748 | 121 | 24 | ..... | 15 | 15 | 24 | ..... | ..... | 2,020 |
| Carbon | 2,492 | 1,524 | 444 | 53 | 3 | 20 | 13 | 29 | ..... | ..... | 4,578 |
| Carter | 656 | 627 | 14 | 5 | ..... | 8 | 10 | ..... | ..... | ..... | 1,320 |
| Cascade | 19,722 | 11,847 | 1,314 | 255 | 27 | 163 | 340 | 228 | 46 | ..... | 33,942 |
| Chouteau | 1,857 | 1,116 | 120 | 14 | ..... | 1 | 22 | 27 | ..... | ..... | 3,157 |
| Custer | 2,533 | 1,998 | 48 | 17 | 8 | 67 | 47 | ..... | ..... | ..... | 4,718 |
| Daniels | 742 | 517 | 1 | ..... | ..... | ..... | 2 | ..... | ..... | ..... | 1,262 |
| Dawson | 2,827 | 2,167 | 45 | 19 | 1 | 17 | 73 | ..... | ..... | ..... | 5,149 |
| Deer Lodge | 4,733 | 2,562 | 628 | 73 | 1 | 43 | 38 | 4 | ..... | ..... | 8,082 |
| Fallon | 856 | 742 | 8 | 3 | 1 | 14 | 13 | ..... | ..... | ..... | 1,637 |
| Fergus | 4,797 | 3,892 | 427 | 58 | 5 | 64 | 111 | 695 | ..... | ..... | 10,049 |
| Flathead | 12,094 | 8,231 | 3,067 | 367 | 15 | 179 | 108 | 84 | 254 | ..... | 24,399 |
| Gallatin | 8,700 | 5,471 | 11,537 | 1,305 | 16 | 319 | 92 | 157 | ..... | ..... | 27,597 |
| Garfield | 343 | 313 | 8 | 3 | ..... | 7 | 10 | ..... | ..... | ..... | 684 |
| Glacier | 2,599 | 1,230 | 604 | 136 | 6 | 20 | 55 | 2 | 15 | ..... | 4,667 |
| Golden Valley | 369 | 303 | 22 | 5 | ..... | ..... | 7 | ..... | ..... | ..... | 706 |
| Granite | 1,118 | 870 | 202 | 14 | ..... | 10 | 8 | 13 | ..... | ..... | 2,235 |
| Hill | 5,001 | 2,657 | 270 | 52 | 3 | 17 | 36 | 14 | ..... | ..... | 8,050 |
| Jefferson | 930 | 690 | 260 | 20 | ..... | 19 | 3 | 21 | ..... | ..... | 1,943 |
| Judith Basin | 988 | 812 | 97 | 10 | ..... | 13 | 3 | 33 | ..... | ..... | 1,956 |
| Lake | 3,779 | 1,967 | 2,575 | 201 | 29 | 46 | 4 | 17 | 41 | ..... | 8,659 |
| Lewis & Clark | 8,845 | 5,557 | 1,021 | 164 | 10 | 1,447 | 203 | 4,765 | 772 | ..... | 22,784 |
| Liberty | 1,119 | 376 | 182 | 38 | ..... | ..... | 47 | ..... | ..... | ..... | 1,762 |
| Lincoln | 4,649 | 3,461 | 1,126 | 172 | ..... | 32 | 61 | ..... | 68 | ..... | 9,569 |
| Madison | 2,111 | 1,384 | 2,782 | 202 | 9 | 106 | 12 | 82 | ..... | ..... | 6,688 |
| McCone | 679 | 517 | 8 | 2 | 1 | 3 | 20 | ..... | ..... | ..... | 1,230 |
| Meagher | 1,104 | 896 | 143 | 40 | ..... | 25 | 6 | 78 | ..... | ..... | 2,292 |

## 1958 LICENSE SALES BY COUNTIES—(Continued)

| County | Resident Bird & Fish | Resident Big Game | Tourist Fishing | Non-Res. Fishing | Non-Res. Bird | Non-Res. Big Game | Bow and Arrow | Non-Res. Deer | Mountain Goat | Special Permits | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mineral | 1,129 | 933 | 681 | 592 | 13 | 73 | 1 | 55 | | | 3,477 |
| Missoula | 12,533 | 7,863 | 1,862 | 311 | 34 | 290 | 108 | 127 | 124 | | 23,252 |
| Musselshell | 1,361 | 1,084 | 98 | 16 | | 16 | 9 | | | | 2,584 |
| Park | 4,827 | 3,195 | 1,546 | 180 | 4 | 108 | 30 | 173 | | | 10,063 |
| Petroleum | 234 | 212 | 2 | 2 | | | | 55 | | | 505 |
| Phillips | 1,714 | 1,423 | 40 | 7 | 12 | 3 | 13 | | | | 3,212 |
| Pondera | 2,719 | 1,577 | 211 | 35 | 1 | 12 | 94 | 19 | 2 | | 4,670 |
| Powder River | 602 | 518 | 15 | 9 | | 20 | 6 | | | | 1,170 |
| Powell | 2,282 | 1,686 | 253 | 39 | 1 | 61 | 20 | 9 | 34 | | 4,391 |
| Prairie | 490 | 409 | 6 | | | 5 | 10 | | | | 920 |
| Ravalli | 3,999 | 2,773 | 1,251 | 147 | 2 | 172 | 6 | 60 | | | 8,410 |
| Richland | 2,166 | 1,573 | 37 | 16 | 7 | 2 | 55 | | | | 3,856 |
| Roosevelt | 2,366 | 1,596 | 39 | 6 | 6 | 10 | 42 | | | | 4,065 |
| Rosebud | 1,111 | 913 | 23 | 5 | 1 | 5 | 15 | | | | 2,073 |
| Sanders | 3,050 | 2,360 | 712 | 127 | 18 | 60 | 19 | 113 | 28 | | 6,487 |
| Sheridan | 1,115 | 762 | 3 | | 6 | 2 | 7 | | | | 1,895 |
| Silver Bow | 11,890 | 5,729 | 965 | 117 | 3 | 57 | 81 | 61 | | | 18,903 |
| Stillwater | 2,223 | 1,357 | 363 | 36 | 1 | 24 | 23 | 147 | | | 4,174 |
| Sweet Grass | 1,340 | 965 | 358 | 53 | 2 | 27 | 17 | 102 | | | 2,864 |
| Teton | 2,262 | 1,447 | 144 | 51 | 12 | 14 | 42 | 49 | 14 | | 4,035 |
| Toole | 2,353 | 1,243 | 358 | 240 | 8 | 7 | 41 | | | | 4,250 |
| Treasure | 309 | 239 | 2 | 2 | | | | | | | 552 |
| Valley | 4,037 | 2,815 | 240 | 96 | 7 | 16 | 79 | 10 | | | 7,300 |
| Wheatland | 1,132 | 836 | 152 | 16 | 1 | 30 | 19 | 93 | | | 2,279 |
| Wibaux | 278 | 254 | 10 | 13 | | | | | | | 555 |
| Yellowstone | 17,520 | 10,767 | 1,067 | 172 | 24 | 83 | 240 | 61 | | | 29,934 |
| Special Moose | | | | | | | | | | 572 | 572 |
| Special Sheep | | | | | | | | | | 302 | 302 |
| TOTALS | 187,949 | 121,019 | 40,933 | 5,859 | 309 | 3,923 | 2,413 | 7,533 | 1,398 | 874 | 372,210 |

## 1959 LICENSE SALES BY COUNTIES

| County | Resident Bird & Fish | Resident Big Game | Limited Fishing | Non-Res. Fishing | Non-Res. Bird | Non-Res. Big Game | Bow and Arrow | Non-Res. Deer | Mountain Goat | Boat | Turkey | Special Permits | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beaverhead | 2,798 | 1,861 | 3,138 | 261 | 3 | 192 | 29 | 90 | ..... | 29 | ..... | ..... | 8,401 |
| Big Horn | 1,756 | 1,078 | 242 | 44 | 13 | 5 | 13 | ..... | ..... | 32 | ..... | ..... | 3,183 |
| Blaine | 1,414 | 903 | 63 | 5 | ..... | ..... | 25 | 17 | ..... | 31 | ..... | ..... | 2,458 |
| Broadwater | 1,017 | 713 | 146 | 22 | 1 | 16 | 25 | ..... | ..... | 51 | ..... | ..... | 1,991 |
| Carbon | 2,406 | 1,502 | 450 | 67 | 2 | 15 | 21 | 35 | ..... | 11 | ..... | ..... | 4,509 |
| Carter | 621 | 623 | 7 | 3 | ..... | 12 | 7 | ..... | ..... | 1 | 87 | ..... | 1,361 |
| Cascade | 19,845 | 11,574 | 1,481 | 247 | 27 | 165 | 367 | 268 | 51 | 823 | ..... | ..... | 34,848 |
| Chouteau | 1,913 | 1,219 | 113 | 30 | ..... | 3 | 31 | 31 | ..... | 75 | ..... | ..... | 3,415 |
| Custer | 2,606 | 2,030 | 76 | 13 | ..... | 28 | 38 | 1 | 2 | 56 | 37 | ..... | 4,887 |
| Daniels | 635 | 459 | 6 | 1 | ..... | ..... | ..... | ..... | ..... | 4 | ..... | ..... | 1,105 |
| Dawson | 2,773 | 2,145 | 72 | 24 | 2 | 19 | 77 | ..... | ..... | 60 | ..... | ..... | 5,172 |
| Deer Lodge | 4,542 | 2,439 | 573 | 72 | 1 | 27 | 34 | ..... | ..... | 145 | ..... | ..... | 7,833 |
| Fallon | 860 | 789 | 8 | 2 | 1 | 6 | 14 | ..... | ..... | 2 | 115 | ..... | 1,797 |
| Fergus | 4,743 | 3,902 | 610 | 82 | 11 | 91 | 139 | 948 | ..... | 88 | ..... | ..... | 10,614 |
| Flathead | 11,792 | 8,061 | 3,161 | 337 | 11 | 203 | 152 | 115 | 176 | 964 | ..... | ..... | 24,972 |
| Gallatin | 8,865 | 5,381 | 10,244 | 1,228 | 4 | 265 | 113 | 81 | 1 | 313 | ..... | ..... | 26,495 |
| Garfield | 364 | 350 | 9 | ..... | 2 | 14 | 10 | ..... | ..... | 4 | ..... | ..... | 753 |
| Glacier | 2,603 | 1,184 | 837 | 156 | 10 | 19 | 67 | 8 | 18 | 88 | ..... | ..... | 4,990 |
| Golden Valley | 344 | 273 | 19 | 1 | ..... | 1 | 6 | 20 | ..... | 4 | ..... | ..... | 668 |
| Granite | 1,114 | 817 | 175 | 25 | ..... | 29 | 12 | ..... | ..... | 17 | ..... | ..... | 2,189 |
| Hill | 4,570 | 2,277 | 193 | 45 | 2 | 11 | 50 | 35 | ..... | 197 | ..... | ..... | 7,380 |
| Jefferson | 952 | 703 | 234 | 20 | ..... | 14 | 5 | 24 | ..... | 22 | ..... | ..... | 1,974 |
| Judith Basin | 948 | 778 | 85 | 15 | ..... | 13 | 5 | 45 | ..... | 24 | ..... | ..... | 1,913 |
| Lake | 3,957 | 2,023 | 2,538 | 204 | 17 | 47 | 9 | 28 | 24 | 279 | ..... | ..... | 9,126 |
| Lewis & Clark | 8,810 | 5,536 | 1,064 | 159 | 16 | 1,532 | 226 | 6,005 | 703 | 618 | 559 | ..... | 25,228 |
| Liberty | 1,125 | 364 | 167 | 39 | 1 | ..... | 50 | ..... | ..... | 127 | ..... | ..... | 1,873 |
| Lincoln | 4,627 | 3,380 | 1,165 | 182 | 3 | 34 | 75 | ..... | 63 | 85 | ..... | ..... | 9,614 |
| Madison | 2,164 | 1,404 | 2,513 | 189 | 5 | 128 | 16 | 133 | ..... | 26 | ..... | ..... | 6,578 |
| Meagher | 1,163 | 950 | 200 | 23 | ..... | 48 | 12 | 146 | ..... | 11 | ..... | ..... | 2,553 |
| McCone | 659 | 502 | 10 | 7 | 1 | 5 | 20 | ..... | ..... | 9 | ..... | ..... | 1,213 |

## 1959 LICENSE SALES BY COUNTIES—(Continued)

| County | Resident Bird & Fish | Resident Big Game | Limited Fishing | Non-Res. Fishing | Non-Res. Bird | Non-Res. Big Game | Bow and Arrow | Non-Res. Deer | Mountain Goat | Boat | Turkey | Special Permits | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mineral | 1,188 | 989 | 690 | 592 | 19 | 112 | 5 | 106 | | 7 | | | 3,708 |
| Missoula | 12,521 | 7,931 | 2,004 | 320 | 37 | 314 | 131 | 181 | 118 | 612 | | | 24,169 |
| Musselshell | 1,366 | 1,054 | 130 | 13 | | 14 | 25 | | | 7 | | | 2,609 |
| Park | 4,758 | 3,285 | 1,597 | 144 | 3 | 131 | 34 | 10 | | 76 | | | 10,038 |
| Petroleum | 226 | 209 | 1 | 4 | | | 4 | 147 | | | | | 591 |
| Phillips | 1,562 | 1,269 | 52 | 10 | 5 | 6 | 7 | 49 | | 41 | | | 3,001 |
| Pondera | 2,527 | 1,406 | 158 | 25 | 12 | 7 | 82 | 40 | 1 | 134 | | | 4,392 |
| Powder River | 610 | 536 | 20 | 6 | | 12 | 7 | | | 2 | 16 | | 1,209 |
| Powell | 2,166 | 1,573 | 283 | 38 | 1 | 47 | 17 | 2 | 7 | 73 | | | 4,207 |
| Prairie | 481 | 415 | 8 | | 3 | | 5 | | | 7 | | | 919 |
| Ravalli | 4,003 | 2,812 | 1,362 | 146 | 6 | 169 | 10 | 89 | | 52 | | | 8,649 |
| Richland | 1,944 | 1,425 | 55 | 27 | 4 | | 56 | | | 38 | | | 3,549 |
| Roosevelt | 2,229 | 1,501 | 55 | 8 | 3 | 17 | 49 | | | 78 | | | 3,940 |
| Rosebud | 1,242 | 989 | 29 | 13 | | 1 | 19 | | | 11 | | | 2,304 |
| Sanders | 2,774 | 2,091 | 831 | 153 | 28 | 57 | 25 | 160 | 10 | 82 | | | 6,211 |
| Sheridan | 994 | 725 | 5 | | 9 | | 25 | | | 47 | | | 1,805 |
| Silver Bow | 11,387 | 5,417 | 1,033 | 131 | 3 | 73 | 93 | | | 411 | | | 18,548 |
| Stillwater | 2,181 | 1,318 | 364 | 41 | 1 | 9 | 29 | 73 | | 28 | | | 4,044 |
| Sweetgrass | 1,347 | 943 | 387 | 43 | | 29 | 10 | 134 | | 18 | | | 2,911 |
| Teton | 2,196 | 1,401 | 183 | 31 | 15 | 30 | 52 | 53 | 28 | 127 | | | 4,116 |
| Toole | 2,156 | 1,103 | 145 | 169 | 6 | 4 | 48 | | | 133 | | | 3,764 |
| Treasure | 243 | 189 | 5 | 2 | | | | | | 16 | | | 455 |
| Valley | 4,767 | 3,198 | 277 | 172 | 13 | 19 | 80 | 30 | | 177 | | | 8,733 |
| Wheatland | 1,109 | 814 | 181 | 15 | 2 | 29 | 33 | 93 | | 25 | | | 2,301 |
| Wibaux | 263 | 247 | 4 | 10 | | | 9 | | | 1 | | | 534 |
| Yellowstone | 17,501 | 10,589 | 1,064 | 185 | 30 | 66 | 250 | 94 | 1 | 496 | | | 30,276 |
| Spec Non Res Antelope | | | | | | | | | | | | 1,237 | 1,237 |
| Special Moose | | | | | | | | | | | | 505 | 505 |
| Special Sheep | | | | | | | | | | | | 327 | 327 |
| TOTALS | 185,727 | 118,649 | 40,522 | 5,801 | 333 | 4,088 | 2,753 | 9,291 | 1,203 | 6,895 | 814 | 2,069 | 378,145 |

## MONTANA HUNTING AND FISHING LICENSE SALES
## 1948 THROUGH 1959

| LICENSE | 1948 | 1949 | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Resident Bird & Fish | 152,581 | 160,484 | 159,284 | 170,449 | 183,770 | 181,560 | 186,395 | 189,449 | 191,081 | 188,048 | 187,949 | 185,727 |
| Resident Big Game | 77,390 | 79,329 | 87,261 | 100,740 | 116,566 | 117,984 | 121,712 | 124,932 | 121,026 | 118,235 | 121,019 | 118,649 |
| Non-Res. Limited Fishing | 20,135 | 23,423 | 23,664 | 24,790 | 27,940 | 31,295 | 33,231 | 36,671 | 41,328 | 41,869 | 40,933 | 40,522 |
| Non-Res. Season Fishing | 3,863 | 3,994 | 3,741 | 4,385 | 5,017 | 4,080 | 4,005 | 4,134 | 5,090 | 5,705 | 5,859 | 5,801 |
| Non-Resident Bird | 163 | 184 | 124 | 216 | 262 | 149 | 201 | 242 | 268 | 277 | 309 | 333 |
| Non-Resident Big Game | 1,074 | 754 | 897 | 1,245 | 1,615 | 1,607 | 1,547 | 2,180 | 2,974 | 3,774 | 3,923 | 4,088 |
| Bow and Arrow | ..... | ..... | ..... | ..... | ..... | 535 | 715 | 841 | 1,453 | 1,929 | 2,413 | 2,753 |
| Special Antelope | 2,652 | 3,932 | 8,345 | 9,272 | 18,622 | 23,677 | 20,886 | ..... | ..... | ..... | ..... | ..... |
| Special Moose | 80 | 82 | 76 | 105 | 211 | 142 | 192 | 343 | 405 | 411 | 572 | 505 |
| Special Elk | 270 | 185 | 245 | 357 | 341 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Special Deer | 93 | 877 | 1,513 | 1,254 | 4,270 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Special Mt. Sheep | ..... | ..... | ..... | ..... | ..... | 30 | 53 | 58 | 269 | 195 | 302 | 327 |
| Special Mt. Goat | ..... | ..... | ..... | ..... | ..... | 50 | 100 | 225 | 851 | 1,070 | 1,398 | 1,203 |
| Special Buffalo | ..... | ..... | ..... | ..... | ..... | 3 | 3 | ..... | ..... | ..... | ..... | ..... |
| Non-Resident Deer | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2,623 | 6,445 | 5,038 | 7,533 | 9,291 |
| Non-Resident Antelope | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3,495 | 5,033 | 2,895 | ..... | 1,237 |
| Boat Applications | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 6,895 |
| Turkey | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 814 |
| TOTALS | 258,301 | 273,244 | 285,150 | 312,813 | 358,614 | 361,112 | 369,040 | 365,193 | 376,223 | 369,446 | 372,210 | 378,145 |

# MONTANA FISH AND GAME DEPARTMENT

## STATEMENT OF INCOME AND EXPENDITURES, TWELVE-MONTH PERIOD

## MAY 1, 1958 THROUGH APRIL 30, 1959

| | TOTAL INCOME | | COLLECTIONS | | P. R. REIMB. | | D. J. REIMB. | | EXPENDITURES | |
|---|---|---|---|---|---|---|---|---|---|---|
| | May 1, 1957 Apr. 30, 1958 | May 1, 1958 Apr. 30, 1959 | May 1, 1957 Apr. 30, 1958 | May 1, 1958 Apr. 30, 1959 | May 1, 1957 Apr. 30, 1958 | May 1, 1958 Apr. 30, 1959 | May 1, 1957 Apr. 30, 1958 | May 1, 1958 Apr. 30, 1959 | May 1, 1957 Apr. 30, 1958 | May 1, 1958 Apr. 30, 1959 |
| May | $ 61,218.61 | $ 62,109.32 | $ 34,634.00 | $ 24,300.25 | $ 21,022.76 | $ 32,928.88 | $ 5,561.85 | $ 4,880.19 | $ 89,508.35 | $ 180,123.34 |
| June | 291,348.42 | 337,608.05 | 227,679.43 | 280,367.18 | 58,671.20 | 27,790.25 | 4,997.79 | 29,441.62 | 331,789.20 | 309,089.92 |
| July | 204,061.72 | 233,280.09 | 203,538.35 | 205,595.83 | 523.37 | 27,684.26 | | | 108,288.77 | 97,907.82 |
| Aug. | 240,710.78 | 241,354.87 | 240,518.63 | 239,516.39 | 192.15 | 777.73 | | 1,060.75 | 152,977.52 | 194,262.17 |
| Sept. | 264,706.30 | 107,687.79 | 184,543.47 | 107,687.79 | 59,196.36 | | 20,966.47 | | 247,950.79 | 247,599.93 |
| Oct. | 228,605.83 | 207,716.90 | 220,569.93 | 207,716.90 | 8,035.90 | | | | 238,788.39 | 241,816.98 |
| Nov. | 479,546.76 | 409,444.50 | 351,222.97 | 355,185.90 | 112,050.66 | 18,195.32 | 16,273.13 | 36,063.28 | 188,345.09 | 194,090.21 |
| Dec. | 178,783.69 | 422,024.60 | 152,932.88 | 237,697.21 | 2,643.74 | 171,364.19 | 23,207.07 | 12,963.20 | 229,619.38 | 237,463.43 |
| Jan. | 147,327.95 | 92,186.91 | 61,918.51 | 54,654.69 | 75,661.37 | 28,894.54 | 9,748.07 | 8,637.68 | 211,597.28 | 154,732.46 |
| Feb. | 77,317.11 | 98,307.98 | 35,597.77 | 20,456.72 | 31,660.44 | 69,683.66 | 10,058.90 | 8,167.60 | 166,235.10 | 149,419.12 |
| Mar. | 139,032.72 | 124,749.63 | 99,238.03 | 25,790.29 | 34,591.47 | 91,554.81 | 5,203.22 | 7,404.53 | 277,016.91 | 158,883.80 |
| Apr. | 20,770.17 | 19,456.86 | 20,770.17 | 19,456.86 | | | | | 184,611.81 | 190,643.63 |
| TOTAL | $2,339,430.06 | $2,355,927.50 | $1,839,164.14 | $1,778,426.01 | $ 404,249.42 | $ 468,882.64 | $ 96,016.50 | $ 108,618.85 | $2,426,827.68 | $2,356,032.81 |

| | |
|---|---|
| Balance April 30, 1958 | $ 604,705.87 |
| Income May 1, 1958-Apr. 30, 1959 | 2,355,927.50 |
| Redeemed bonds (Aug. '58) | 400,000.00 |
| | $3,360,633.37 |
| Expenditures May 1, 1958-Apr. 30, 1959 | $2,356,032.81 |
| Operating Balance—May 1, 1959 | 1,004,600.56 |
| Bond Investments | 100,000.00 |
| Gross Funds Available | $1,104,600.56 |
| Less Wash Obligated Funds | 144,134.07 |
| Less Dept. Major Obligations | 254,654.32 |
| NET FUNDS AVAILABLE | $ 705,812.17 |
| Fed. Aid Accounts Receivable | 126,496.71 |
| | $ 832,308.88 |

### COMPARISON RECAP

| | 1957-58 | 1958-59 | Increase | Decrease |
|---|---|---|---|---|
| Income | | | | |
| May 1-April 30 | $2,339,430.06 | $2,355,927.50 | $ 16,497.44 | $ |
| Collections | | | | |
| May 1-April 30 | 1,839,164.14 | 1,778,426.01 | | 60,738.13 |
| Expenditures | | | | |
| May 1-April 30 | 2,426,827.68 | 2,356,032.81 | | 70,794.87 |

## MONTANA FISH AND GAME DEPARTMENT

## STATEMENT OF INCOME AND EXPENDITURES, TWELVE-MONTH PERIOD

## MAY 1, 1959 THROUGH APRIL 30, 1960

| | TOTAL INCOME | | COLLECTIONS | | P. R. REIMB. | | D. J. REIMB. | | EXPENDITURES | |
|---|---|---|---|---|---|---|---|---|---|---|
| | May 1, 1958 Apr. 30, 1959 | May 1, 1959 Apr. 30, 1960 | May 1, 1958 Apr. 30, 1959 | May 1, 1959 Apr. 30, 1960 | May 1, 1958 Apr. 30, 1959 | May 1, 1959 Apr. 30, 1960 | May 1, 1958 Apr. 30, 1959 | May 1, 1959 Apr. 30, 1960 | May 1, 1958 Apr. 30, 1959 | May 1, 1959 Apr. 30, 1960 |
| May | $ 62,109.32 | $ 143,902.94 | $ 24,300.25 | $ 31,027.60 | $ 32,928.88 | $ 102,306.16 | $ 4,880.19 | $ 10,569.18 | $ 180,123.34 | $ 234,091.55 |
| June | 337,608.05 | 237,804.41 | 280,367.18 | 237,804.41 | 27,799.25 | | 29,441.62 | | 309,089.92 | 285,775.02 |
| July | 233,280.09 | 255,822.85 | 205,595.83 | 224,279.48 | 27,684.26 | 27,697.87 | | 3,845.50 | 97,907.82 | 126,018.38 |
| Aug. | 241,354.87 | 275,283.62 | 239,516.39 | 238,016.71 | 777.73 | 29,598.60 | 1,060.75 | 7,668.31 | 194,262.17 | 273,592.34 |
| Sept. | 107,687.79 | 194,531.73 | 107,687.79 | 146,982.54 | | 37,541.89 | | 10,007.30 | 247,599.93 | 262,556.25 |
| Oct. | 207,716.90 | 210,001.90 | 207,716.90 | 209,738.53 | | | | 263.37 | 241,816.98 | 177,292.21 |
| Nov. | 409,444.50 | 499,338.52 | 355,185.90 | 409,681.63 | 18,195.32 | 67,516.82 | 36,063.28 | 22,140.07 | 194,090.21 | 307,324.58 |
| Dec. | 422,024.60 | 213,896.56 | 237,697.21 | 213,698.43 | 171,364.19 | | 12,963.20 | 198.13 | 237,463.43 | 210,187.43 |
| Jan. | 92,186.91 | 136,591.77 | 54,654.69 | 54,496.90 | 28,894.54 | 65,656.43 | 8,637.68 | 16,438.44 | 154,732.46 | 158,095.28 |
| Feb. | 98,307.98 | 120,743.92 | 20,456.72 | 20,824.45 | 69,683.66 | 79,761.90 | 8,167.60 | 20,157.57 | 149,419.12 | 323,043.56 |
| Mar. | 124,749.63 | 64,673.70 | 25,790.29 | 19,851.50 | 91,554.81 | 38,897.45 | 7,404.53 | 5,924.75 | 158,883.80 | 187,453.37 |
| Apr. | 19,456.86 | 99,323.21 | 19,456.86 | 12,824.67 | | 80,654.09 | | 5,844.45 | 190,643.63 | 199,623.05 |
| TOTAL | $2,355,927.50 | $2,451,915.13 | $1,778,426.01 | $1,819,226.85 | $ 468,882.64 | $ 529,631.21 | $108,618.85 | $ 103,057.07 | $2,356,032.81 | $2,745,053.02 |

Balance April 30, 1959 ..... $1,004,600.56
Income May 1, 1959-Apr. 30, 1960 ..... 2,451,915.13
$3,456,515.69

Expenditures May 1, 1959-Apr. 30, 1960 ..... $2,745,053.02
Cash Balance—Apr. 30, 1960 ..... 711,462.67
Less Washington Water Power Obligations $ 90,673.71
Unobligated Balance—Apr. 30, 1960 ..... $ 620,788.96*

* Does not include $100,000 Bond Investment.

### COMPARISON RECAP

| | 1958-59 | 1959-60 | Increase | Decrease |
|---|---|---|---|---|
| Income May 1-Apr. 30 | $2,355,927.50 | $2,451,915.13 | $ 95,987.63 | |
| Collections May 1-Apr. 30 | 1,778,426.01 | 1,819,226.85 | 40,800.84 | |
| Expenditures May 1-Apr. 30 | 2,356,032.81 | 2,745,053.02 | 389,020.21 | |

## MONTANA FISH AND GAME DEPARTMENT
## STATEMENT OF INCOME
## MAY 1, 1958 - APRIL 30, 1959

**Hunting and Fishing Licenses:**

| | | | | | |
|---|---|---|---|---|---|
| Resident Bird & Fish | 187,949 | @ | $ 3.00 | $ 563,847.00 | |
| Resident Big Game | 121,019 | @ | 3.00 | 363,057.00 | |
| Non-Resident 6-Day Fishing | 40,933 | @ | 3.00 | 122,799.00 | |
| Non-Resident Fishing | 5,859 | @ | 10.00 | 58,590.00 | |
| Non-Resident Bird | 309 | @ | 25.00 | 7,725.00 | |
| Non-Resident Big Game | 3,923 | @ | 100.00 | 392,300.00 | |
| Shipping Permits | 6,352 | @ | .60 | 3,811.20 | |
| Certificates of Identification | 2,278 | @ | .50 | 1,139.00 | |
| Bow and Arrow | 2,413 | @ | 2.00 | 4,826.00 | |
| Fur Shipping Permits | 235 | @ | .60 | 141.00 | |
| Non-Resident Deer | 7,533 | @ | 20.00 | 150,660.00 | |
| Mountain Goat | 1,398 | @ | 5.00 | 6,990.00 | |
| Moose | 572 | @ | 25.00 | 14,300.00 | |
| Mountain Sheep | 302 | @ | 15.00 | 4,530.00 | |
| | | | | $1,694,715.20 | |
| Less Dealers' Fees | | | | —37,083.30 | $1,657,631.90 |
| 1956 Account Paid | | | | | 200 |
| 1957 Accounts Paid | | | | | 8,404.00 |
| Total Income from Hunting & Fishing License Sales | | | | | $1,666,037.90 |

**Miscellaneous Sales:**

| | | | | | |
|---|---|---|---|---|---|
| General Trappers | 980 | @ | 10.00 | 9,800.00 | |
| Land Owner Trappers | 162 | @ | 1.00 | 162.00 | |
| Beaver Tags | 16,606 | @ | .50 | 8,303.00 | |
| Beaver Permits | 479 | @ | 5.00 | 2,395.00 | |
| Outfitters | 399 | @ | 10.00 | 3,990.00 | |
| Resident Fur Dealer | 28 | @ | 10.00 | 280.00 | |
| Taxidermists | 24 | @ | 15.00 | 360.00 | |
| Fur Dealer Agent | 22 | @ | 10.00 | 220.00 | |
| Non-Resident Fur Dealer | 8 | @ | 50.00 | 400.00 | |
| Minnow Seining | 12 | @ | 10.00 | 120.00 | 26,030.00 |

**Miscellaneous Revenue:**

| | | |
|---|---|---|
| Fines | $ 34,644.05 | |
| Sale of Confiscated Fish & Meats | 3,776.49 | |
| Other Revenue | 18,320.81 | |
| Lease of Land—Tiber Dam | 4,680.56 | |
| Lease of Land—Canyon Ferry | 1,872.85 | |
| Sale of Fish Eggs | 10,080.00 | |
| Interest From Bonds | 11,780.88 | |
| Rough Fish—Ft. Peck Lake | 983.47 | |
| Sale of Hides & Furs | 202.50 | |
| Royalty on Live Beaver Sold | 4.50 | 80,358.11 |
| | | $1,778,426.01 |
| Pittman-Robertson Income by Federal Reimbursement | | 468,882.64 |
| Dingell Johnson Income by Federal Reimbursement | | 108,618.85 |
| TOTAL INCOME TO DEPARTMENT FOR PERIOD MAY 1, 1958 APRIL 30, 1959 | | $2,355,927.50 |

## MONTANA FISH AND GAME DEPARTMENT
## STATEMENT OF INCOME
## MAY 1, 1959 - APRIL 30, 1960

**Hunting and Fishing Licenses:**

| | | | | | |
|---|---|---|---|---|---|
| Resident Bird & Fish | 185,727 | @ | $ 3.00 | $ 557,181.00 | |
| Resident Big Game | 118,649 | @ | 3.00 | 355,947.00 | |
| Non-Resident Limited Fishing | 40,522 | @ | 3.00 | 121,566.00 | |
| Non-Resident Fishing | 5,801 | @ | 10.00 | 58,010.00 | |
| Non-Resident Bird | 333 | @ | 25.00 | 8,325.00 | |
| Non-Resident Big Game | 4,088 | @ | 100.00 | 408,800.00 | |
| Shipping Permits | 6,806 | @ | .60 | 4,083.60 | |
| Certificates of Identification | 2,108 | @ | .50 | 1,054.00 | |
| Bow and Arrow | 2,753 | @ | 2.00 | 5,506.00 | |
| Fur Shipping Permits | 158 | @ | .60 | 94.80 | |
| Non-Resident Deer | 9,291 | @ | 20.00 | 185,820.00 | |
| Non-Resident Antelope | 1,237 | @ | 20.00 | 24,740.00 | |
| Mountain Goat | 1,203 | @ | 5.00 | 6,015.00 | |
| Mountain Sheep | 327 | @ | 15.00 | 4,905.00 | |
| Moose | 505 | @ | 25.00 | 12,625.00 | |
| Turkey | 814 | @ | 2.00 | 1,628.00 | |
| Boat Applications | 6,895 | @ | 3.00 | 20,685.00 | |
| Boat Cert. of Identification | 29 | @ | .50 | 14.50 | |
| | | | | $1,776,999.90 | |
| Less Dealers' Fees | | | | —56,031.60 | $1,720,968.30 |
| 1958 Accounts Paid | | | | | 4,777.00 |
| Total Income from Hunting & Fishing License Sales | | | | | $1,725,745.30 |

**Miscellaneous Sales:**

| | | | | | |
|---|---|---|---|---|---|
| General Trappers | 898 | @ | 10.00 | 8,980.00 | |
| Land Owner Trappers | 151 | @ | 1.00 | 151.00 | |
| Beaver Tags | 13,309 | @ | .50 | 6,654.50 | |
| Beaver Permits | 404 | @ | 5.00 | 2,020.00 | |
| Outfitters | 284 | @ | 10.00 | 2,840.00 | |
| Resident Fur Dealer | 33 | @ | 10.00 | 330.00 | |
| Taxidermist | 13 | @ | 15.00 | 195.00 | |
| Fur Dealer Agent | 22 | @ | 10.00 | 220.00 | |
| Non-Resident Fur Dealer | 5 | @ | 50.00 | 250.00 | |
| Minnow Seining Permits | 6 | @ | 10.00 | 60.00 | 21,700.50 |

**Miscellaneous Revenue:**

| | | |
|---|---|---|
| Fines | $ 38,453.57 | |
| Sale of Confiscated Fish & Meats | 1,964.01 | |
| Other Revenue | 20,850.85 | |
| Lease of Land—Tiber Dam | 4,431.51 | |
| Lease of Land—Canyon Ferry | 708.95 | |
| Sale of Fish Eggs | 240.00 | |
| Interest—Bond Investment | 3,750.00 | |
| Rough Fish—Ft. Peck Lake | 648.56 | |
| Sale of Confiscated Hides | 44.00 | |
| Royalty on Live Beaver Sold | 4.00 | |
| Allan Foundation | 685.60 | 71,781.05 |
| | | $1,819,226.85 |
| Pittman-Robertson Income by Federal Reimbursement | | 529,631.21 |
| Dingell-Johnson Income by Federal Reimbursement | | 103,057.07 |
| TOTAL INCOME TO DEPARTMENT FOR PERIOD MAY 1, 1959-APRIL 30, 1960 | | $2,451,915.13 |

## DETAIL OF EXPENDITURES

### For Fiscal Years Ending April 30, 1959 and April 30, 1960

| | April 1959 | April 1960 |
|---|---|---|
| COMMISSIONERS | | |
| Per Diem | $ 3,946.69 | $ 3,614.07 |
| Operation | 6,822.84 | 7,589.70 |
| TOTAL | $ 10,769.53 | $ 11,203.77 |
| ADMINISTRATION | | |
| Salaries | $ 119,996.84 | $ 125,554.30 |
| Operation | 41,932.20 | 47,023.42 |
| Capital Expenditure | 512.85 | 1,309.31 |
| Repair & Replacement | 1,171.41 | 807.96 |
| TOTAL | $ 163,613.30 | $ 174,694.99 |
| MISCELLANEOUS ACCOUNTS | | |
| Printing Licenses - Maps | $ 34,205.36 | $ 38,933.59 |
| Refunds | 1,125.40 | 1,018.40 |
| Appropriation to State Controller | 6,772.82 | 5,494.70 |
| Canyon Ferry Dam | 2,033.46 | 2,452.20 |
| Tiber Dam | 1,523.23 | 2,150.18 |
| River Basins Projects | | 4.40 |
| Fishes of Montana | 540.55 | |
| Search and Rescue | 765.59 | 1,462.88 |
| Miles City Goose Pasture | 500.21 | 544.27 |
| Land Agent | 8,103.11 | 30,206.32 |
| Extension Trapper | 8,985.82 | |
| Fisher Stocking Program | 1,916.48 | 244.28* |
| Game Damage | 5,295.72 | 20,046.18 |
| Turkey Transplanting (other than P.R.) | 917.49 | 21.24 |
| Elk Transplanting (other than P.R.) | 3,274.49 | 2,093.12 |
| Checking Stations (other than P.R.) | 378.14 | |
| Indian Affairs | 2,000.31 | 1,000.23 |
| Bulk Gasoline and Oil Account | 787.30 | 307.03* |
| TOTAL | $ 79,305.48 | $ 104,936.49 |
| INFORMATION AND EDUCATION | | |
| Salaries | $ 30,869.10 | $ 38,324.14 |
| Operation | 21,375.10 | 29,835.32 |
| Capital Expenditures | 12,981.75 | 1,471.45 |
| Repair and Replacement | 294.21 | 765.02 |
| TOTAL | $ 65,530.16 | $ 70,395.93 |

*Indicates Credit

## DETAIL OF EXPENDITURES—(Continued)

| | April 1959 | April 1960 |
|---|---|---|
| HUNTER AND BOAT SAFETY PROGRAM | | |
| Salaries | $ 9,102.03 | $ 12,009.85 |
| Operation | 8,150.83 | 9,002.09 |
| Capital Expenditure | 377.04 | 366.91 |
| Repair and Replacement | 5.95 | 10.17 |
| TOTAL | $ 17,635.85 | $ 21,389.02 |
| DISTRICT 2 INFORMATION & EDUCATION PROGRAM | | |
| Salaries | | $ 5,682.42 |
| Operation | | 2,808.65 |
| Capital Expenditure | | 512.43 |
| Repair and Replacement | | 50.00 |
| TOTAL | | $ 9,053.50 |
| DISTRICT 4 INFORMATION & EDUCATION PROGRAM | | |
| Salaries | $ 7,803.46 | $ 7,104.33 |
| Operation | 3,065.62 | 4,431.62 |
| Capital Expenditure | 151.04 | 185.45 |
| Repair and Replacement | 2.10 | 79.00 |
| TOTAL | $ 11,022.22 | $ 11,800.40 |
| DISTRICT 5 INFORMATION & EDUCATION PROGRAM | | |
| Salaries | | $ 6,238.21 |
| Operation | | 3,603.70 |
| Capital Expenditure | | 393.77 |
| Repair and Replacement | | 63.84 |
| TOTAL | | $ 10,299.52 |
| DISTRICT 6 INFORMATION & EDUCATION PROGRAM | | |
| Salaries | | $ 5,743.99 |
| Operation | | 3,467.62 |
| Capital Expenditure | | 218.78* |
| Repair and Replacement | | 50.00 |
| TOTAL | | $ 9,042.83 |
| APPROPRIATIONS | | |
| Montana State University | $ 9,500.00 | $ 9,500.00 |
| Montana State College | 9,400.00 | 9,400.00 |
| Superintendent of Public Instruction | 7,805.76 | |
| TOTAL | $ 26,705.76 | $ 18,900.00 |
| TOTAL INFORMATION & EDUCATION | $ 120,893.99 | $ 150,881.20 |
| DISTRICT HEADQUARTERS ACCOUNT | | |
| Operation | | $ 7,016.62 |
| Capital Expenditures | | 1,350.83 |
| Repair and Replacement | | 3,205.25 |
| Credit for Rental | | 16,712.00* |
| TOTAL | | $ 5,139.30* |

*Indicates Credit

## DETAIL OF EXPENDITURES—(Continued)

| | April 1959 | April 1960 |
|---|---|---|
| **PREDATOR CONTROL** | | |
| Grant | $ 41,050.60 | $ 35,374.57 |
| Mountain Lion Bounties | 3,200.00 | 3,700.00 |
| Bobcat Bounties | 3,494.00 | 414.00 |
| Magpie and Crow Bounties | 612.80 | |
| TOTAL | $ 48,357.40 | $ 39,488.57 |
| **UNIVERSITY RESEARCH UNIT** | | |
| Salaries | $ 11,198.02 | $ 15,052.41 |
| Operation | 3,071.65 | 4,410.48 |
| Capital Expenditure | 534.95 | 758.73 |
| Repair and Replacement | 297.98 | 421.09 |
| TOTAL | $ 15,102.60 | $ 20,642.71 |
| **AIRPLANE ACCOUNT** | | |
| Salaries | $ 318.90 | $ 401.56 |
| Operation | 13,601.26 | 14,016.75 |
| Capital Expenditure | 11,785.86 | 582.97 |
| Repair and Replacement | 11,542.71 | 12,272.94 |
| *Credit for Airplane Rental | 23,673.00* | 21,504.80* |
| TOTAL | $ 13,575.73 | $ 5,769.42 |
| **VEHICLE ACCOUNT** | | |
| Salaries | $ | $ 23.45 |
| Operation | 97,012.74 | 99,436.79 |
| Capital Expenditure | 13,374.24 | 4,766.94 |
| Repair and Replacement | 51,896.29 | 134,840.28 |
| *Credit for Vehicle Rental | 227,487.39* | 230,281.90* |
| TOTAL | $ 65,204.12* | $ 8,785.56 |
| **OVERSNOW VEHICLE ACCOUNT** | | |
| Salaries | $ 31.67 | $ 15.80 |
| Operation | 1.84 | 51.26 |
| Capital Expenditure | 5,539.36 | |
| Repair and Replacement | | 579.65 |
| *Credit for Vehicle Rental | | 1,369.50* |
| TOTAL | $ 5,572.87 | $ 722.79* |
| **ENFORCEMENT — District No. 1** | | |
| Salaries | $ 40,793.70 | $ 37,218.20 |
| Operation | 23,016.84 | 20,598.47 |
| Capital Expenditure | 912.44 | 2,574.23 |
| Repair and Replacement | 1,024.35 | 339.65 |
| TOTAL | $ 65,747.33 | $ 60,730.55 |

*Indicates Credit

## DETAIL OF EXPENDITURES—(Continued)

| | April 1959 | April 1960 |
|---|---|---|
| ENFORCEMENT — District No. 2 | | |
| Salaries | $ 38,931.97 | $ 42,821.58 |
| Operation | 26,760.35 | 25,663.35 |
| Capital Expenditure | 2,308.40 | 702.26 |
| Repair and Replacement | 1,639.36 | 376.81 |
| TOTAL | $ 69,640.08 | $ 69,614.00 |
| ENFORCEMENT — District No. 3 | | |
| Salaries | $ 57,909.20 | $ 54,052.53 |
| Operation | 36,005.05 | 33,874.71 |
| Capital Expenditure | 1,738.87 | 2,881.28 |
| Repair and Replacement | 768.15 | 570.00 |
| TOTAL | $ 96,421.27 | $ 91,378.52 |
| ENFORCEMENT — District No. 4 | | |
| Salaries | $ 53,195.48 | $ 51,267.11 |
| Operation | 29,139.74 | 31,468.55 |
| Capital Expenditure | 1,158.18 | 463.30 |
| Repair and Replacement | 318.89 | 87.89 |
| TOTAL | $ 83,812.29 | $ 83,286.85 |
| ENFORCEMENT — District No. 5 | | |
| Salaries | $ 42,317.22 | $ 40,672.94 |
| Operation | 22,664.70 | 22,222.52 |
| Capital Expenditure | 29,894.03 | 995.98 |
| Repair and Replacement | 360.03 | 147.67 |
| TOTAL | $ 95,235.98 | $ 64,039.11 |
| ENFORCEMENT — District No. 6 | | |
| Salaries | $ 26,775.52 | $ 29,380.29 |
| Operation | 18,258.12 | 21,204.97 |
| Capital Expenditure | 46.26 | 344.21 |
| Repair and Replacement | 127.67 | 47.81 |
| TOTAL | $ 45,207.57 | $ 50,977.28 |
| ENFORCEMENT — District No. 7 | | |
| Salaries | $ 24,663.41 | $ 26,691.89 |
| Operation | 17,802.75 | 18,185.28 |
| Capital Expenditure | 326.49 | 367.39 |
| Repair and Replacement | 399.76 | 86.74 |
| TOTAL | $ 43,192.41 | $ 45,331.30 |

## DETAIL OF EXPENDITURES—(Continued)

| | April 1959 | April 1960 |
|---|---|---|
| ENFORCEMENT — General | | |
| Salaries | $ 1,407.16 | $ 1,993.14 |
| Operation | 6,602.83 | 13,112.78 |
| Capital Expenditure | 15.66 | 16.06 |
| Repair and Replacement | 30.97 | 45.54 |
| TOTAL | $ 8,056.62 | $ 15,167.52 |
| TOTAL ENFORCEMENT | $ 507,313.55 | $ 480,525.13 |
| **FISHERIES DIVISION:** | | |
| FISH HATCHERIES | | |
| ANACONDA | | |
| Salaries | $ 18,935.67 | $ 18,756.72 |
| Operation | 18,423.33 | 22,789.37 |
| Capital Expenditure | 350.98 | 71.40 |
| Repair and Replacement | 3,370.86 | 10,917.18 |
| TOTAL | $ 41,080.84 | $ 52,534.67 |
| ARLEE | | |
| Salaries | $ 15,283.69 | $ 15,341.37 |
| Operation | 11,871.55 | 12,559.42 |
| Capital Expenditure | 60.03 | 282.88 |
| Repair and Replacement | 1,960.68 | 5,970.11 |
| TOTAL | $ 29,175.95 | $ 34,153.78 |
| BLUEWATER | | |
| Salaries | $ 18,253.79 | $ 20,264.00 |
| Operation | 17,571.87 | 19,736.08 |
| Capital Expenditure | 499.38 | 560.84 |
| Repair and Replacement | 1,798.33 | 5,183.26 |
| TOTAL | $ 38,123.37 | $ 45,744.18 |
| BIG TIMBER | | |
| Salaries | $ 9,774.03 | $ 10,384.72 |
| Operation | 4,817.92 | 3,678.44 |
| Capital Expenditure | 118.25 | 71.05 |
| Repair and Replacement | 724.33 | 1,361.45 |
| TOTAL | $ 15,434.53 | $ 15,495.66 |
| EMIGRANT | | |
| Salaries | $ 11,774.41 | $ 10,669.29 |
| Operation | 6,040.02 | 6,039.64 |
| Capital Expenditure | 37.10 | 621.79 |
| Repair and Replacement | 1,034.55 | 1,199.93 |
| TOTAL | $ 18,886.08 | $ 18,530.65 |

## DETAIL OF EXPENDITURES—(Continued)

| | April 1959 | April 1960 |
|---|---|---|
| GREAT FALLS | | |
| Salaries | $ 18,411.30 | $ 17,992.66 |
| Operation | 12,211.25 | 9,695.20 |
| Capital Expenditure | 161.58 | 118.70 |
| Repair and Replacement | 1,011.00 | 16,820.04 |
| TOTAL | $ 31,795.13 | $ 44,626.60 |
| HAMILTON | | |
| Salaries | $ 11,661.62 | $ 11,819.49 |
| Operation | 4,057.47 | 4,837.32 |
| Capital Expenditure | 20.99 | 18.44 |
| Repair and Replacement | 282.11 | 3,414.27 |
| TOTAL | $ 16,031.19 | $ 20,089.52 |
| LEWISTOWN | | |
| Salaries | $ 27,920.44 | $ 32,763.19 |
| Operation | 24,835.52 | 31,875.58 |
| Capital Expenditure | 36,518.90 | 78,763.99 |
| Repair and Replacement | 33,568.03 | 5,925.84 |
| TOTAL | $ 122,842.89 | $ 149,328.60 |
| LIBBY | | |
| Salaries | $ 11,503.21 | $ 11,268.85 |
| Operation | 5,559.61 | 5,661.06 |
| Capital Expenditure | 120.71 | 74.61 |
| Repair and Replacement | 343.88 | 1,100.31 |
| TOTAL | $ 17,527.41 | $ 18,104.83 |
| McNEIL | | |
| Salaries | $ 2,652.70 | $ 2,957.23 |
| Operation | 1,826.43 | 2,363.77 |
| Capital Expenditure | 75.56 | 266.66 |
| Repair and Replacement | 253.61 | 235.33 |
| TOTAL | $ 4,808.30 | $ 5,822.99 |
| OVANDO | | |
| Operation | $ 64.27 | $ 59.15 |
| Repair and Replacement | 230.00 | |
| TOTAL | $ 294.27 | $ 59.15 |
| POLSON | | |
| Salaries | $ 3,385.50 | $ 3,183.32 |
| Operation | 1,173.14 | 1,253.83 |
| Capital Expenditure | 83.79 | 42.40 |
| Repair and Replacement | 115.58 | 88.16 |
| TOTAL | $ 4,758.01 | $ 4,567.71 |

## DETAIL OF EXPENDITURES—(Continued)

| | April 1959 | April 1960 |
|---|---|---|
| SOMERS | | |
| Salaries | $ 11,963.22 | $ 11,813.22 |
| Operation | 4,524.73 | 6,194.26 |
| Capital Expenditure | 405.80 | 193.22* |
| Repair and Replacement | 692.53 | 379.19 |
| TOTAL | $ 17,586.28 | $ 18,193.45 |
| FISHERIES GENERAL (Includes fish distribution, hatchery biologists & supt. of hatcheries) | | |
| Salaries | $ 13,260.68 | $ 15,615.42 |
| Operation | 16,285.74 | 19,454.84 |
| Capital Expenditure | 2,613.48 | 620.20 |
| Repair and Replacement | 1,265.68 | 957.35 |
| TOTAL | $ 33,425.58 | $ 36,647.81 |
| SPAWNING STATIONS | | |
| Salaries | $ 11,271.29 | $ 17,840.46 |
| Operation | 6,232.15 | 8,105.62 |
| Capital Expenditure | 470.17 | 202.15 |
| Repair and Replacement | 350.78 | 345.04 |
| TOTAL | $ 18,324.39 | $ 26,493.27 |
| CREDIT FOR FISH PLANTED (Washington Water Power) | | |
| Noxon Rapids | | $ 14,887.06* |
| Cabinet Gorge | | 25,365.60* |
| TOTAL CREDIT | | $ 40,252.66* |
| FEDERAL HATCHERIES | | |
| CRESTON | | |
| Salaries | $ 3,555.93 | $ 2,106.91 |
| Operation | 828.91 | 2,873.20 |
| Capital Expenditure | 59.72 | |
| Repair and Replacement | 91.10 | |
| TOTAL | $ 4,535.66 | $ 4,980.11 |
| ENNIS | | |
| Salaries | $ 2,674.27 | |
| Operation | 1,640.31 | |
| Capital Expenditure | 139.82 | |
| Repair and Replacement | 637.54 | |
| TOTAL | $ 5,091.94 | |

*Indicates Credit

## DETAIL OF EXPENDITURES—(Continued)

| | April 1959 | April 1960 |
|---|---|---|
| MILES CITY | | |
| Salaries | $ 3,893.40 | $ ..... |
| Operation | 574.10 | 552.90 |
| TOTAL | $ 4,467.50 | $ 552.90 |
| FISHERIES MANAGEMENT PROJECTS | | |
| MISCELLANEOUS FIELD PROJECTS | | |
| Salaries | $ 55,023.14 | $ 64,056.88 |
| Operation | 34,815.13 | 73,500.72 |
| Capital Expenditure | 30,058.74 | 139,280.21 |
| Repair and Replacement | 888.79 | 381.08 |
| TOTAL | $ 120,785.80 | $ 277,218.89 |
| DINGELL-JOHNSON PROJECTS | | |
| Salaries | $ 90,424.32 | $ 88,952.28 |
| Operation | 56,528.15 | 45,071.91 |
| Capital Expenditure | 60,840.19 | 39,491.59 |
| Repair and Replacement | 2,759.23 | 2,183.94 |
| TOTAL | $ 210,551.89 | $ 175,699.72 |
| TOTAL FISHERIES DIVISION | $ 755,527.01 | $ 908,591.83 |
| GAME FARM DIVISION | | |
| BILLINGS | | |
| Salaries | $ 4,488.99 | $ ..... |
| Operation | 2,676.45 | 40.79 |
| Capital Expenditure | 2,711.61* | ..... |
| Repair and Replacement | 2,737.78 | 70.50 |
| TOTAL | $ 7,191.61 | $ 111.29 |
| FORT PECK | | |
| Salaries | $ 17,810.40 | $ 12,513.35 |
| Operation | 12,666.07 | 10,299.42 |
| Capital Expenditure | 8.45 | 232.33 |
| Repair and Replacement | 6,348.42 | 2,136.66 |
| TOTAL | $ 36,833.34 | $ 25,181.76 |
| WARM SPRINGS | | |
| Salaries | $ 16,638.33 | $ 15,109.87 |
| Operation | 10,630.43 | 11,158.60 |
| Capital Expenditure | 6.98 | 196.83 |
| Repair and Replacement | 5,698.13 | 1,568.64 |
| TOTAL | $ 32,973.87 | $ 28,033.94 |

*Indicates Credit

## DETAIL OF EXPENDITURES—(Continued)

| | April 1959 | April 1960 |
|---|---|---|
| MOIESE | | |
| Salaries | $ | $ |
| Operation | | 126.94 |
| Capital Expenditure | | |
| Repair and Replacement | 241.51* | 60.61 |
| TOTAL | $ 241.51* | $ 187.55 |
| TOTAL GAME FARM DIVISION | $ 76,757.31 | $ 53,514.54 |
| HELENA WAREHOUSE | | |
| Salaries | $ 7,002.73 | $ 10,288.06 |
| Operation | 1,166.66 | 1,503.00 |
| Capital Expenditure | 10.25 | 380.20 |
| Repair and Replacement | 356.99 | 505.12 |
| TOTAL | $ 8,536.63 | $ 12,677.37 |
| MECHANIC SHOP | | |
| Salaries | $ 13,611.45 | $ 14,260.18 |
| Operation | 1,330.73 | 1,621.41 |
| Capital Expenditure | 132.88 | 21.20 |
| Repair and Replacement | 59.49 | 24.14 |
| Stock | 2,200.70 | 2,402.93 |
| Credit for Services | 8,403.46* | 7,477.09* |
| TOTAL | $ 8,931.79 | $ 10,852.77 |
| WOODWORKING SHOP & BUNKHOUSE | | |
| Salaries | $ 1,982.41 | $ |
| Operation | 552.24 | 173.53 |
| Capital Expenditure | 44.26 | |
| Repair and Replacement | 292.39 | |
| TOTAL | $ 2,871.30 | $ 173.53 |
| STORES AND SUPPLIES | | |
| Expenditures for Merchandise | $ 20,609.58 | $ 36,551.39 |
| Credit for Merchandise Checked Out | 19,207.50 | 28,310.19* |
| TOTAL | $ 1,402.08 | $ 8,241.20 |
| WILDLIFE RESTORATION | | |
| Salaries | $ 310,730.81 | $ 327,915.61 |
| Operation | 165,231.39 | 182,512.30 |
| Capital Expenditure | 78,898.80 | 238,149.77 |
| Repair and Replacement | 47,845.36 | 11,358.35 |
| TOTAL | $ 602,706.36 | $ 759,936.03 |
| GRAND TOTAL | $ 2,356,032.81 | $ 2,745,053.02 |

*Indicates Credit

## DETAIL OF EXPENDITURES—(Continued)

| | April 1959 | April 1960 |
|---|---|---|
| TOTAL SALARIES | $ 1,183,148.10 | $ 1,239,785.29 |
| TOTAL OPERATIONS | 630,071.24 | 704,860.61 |
| TOTAL CAPITAL EXPENDITURES | 290,701.62 | 519,098.74 |
| TOTAL REPAIR AND REPLACEMENT | 184,355.49 | 227,033.81 |
| TOTAL APPROPRIATIONS | 67,756.36 | 54,274.57 |
| GRAND TOTAL OF EXPENDITURES | $ 2,356,032.81 | $ 2,745,053.02 |

# RECAPITULATION OF FUNDS

### May 1, 1958 to April 30, 1959
### And
### May 1, 1959 to April 30, 1960

| | | |
|---|---|---|
| Balance Forward April 30, 1958 | | $ 604,705.87 |
| Income May 1, 1958-April 30, 1959 | | 2,355,927.50 |
| Bonds Redeemed May 1, 1958-April 30, 1959 | | 400,000.00 |
| Funds Available During Fiscal Year 1958-59 | $ 3,360,633.37 | |
| Disbursements During Fiscal Year 1958-59 | 2,356,032.81 | |
| Balance April 30, 1959 | | $ 1,004,600.56 |
| Income May 1, 1959-April 30, 1960 | | 2,451,915.13 |
| Funds Available During Fiscal Year 1959-60 | $ 3,456,515.69 | |
| Disbursements During Fiscal Year, 1959-60 | 2,745,053.02 | |
| Balance With State Treasurer April 30, 1960 | | $ 711,462.67 |
| Bond Investments | | 100,000.00 |
| Total Funds April 30, 1960 | | $ 811,462.76 |

## Montana Fish & Game Commission

| | |
|---|---|
| H. W. Black, Polson | Chairman |
| John T. Hanson, Sr., Malta | Vice Chairman |
| E. G. Leipheimer, Jr., Butte | Member |
| Ralph D. Shipley, Miles City | Member |
| E. J. Skibby, Lewistown | Member |

## Montana Fish & Game Department

| | |
|---|---|
| Walter J. Everin, Helena | Director |
| Don L. Brown, Helena | Deputy Director |

### DIVISION CHIEFS

| | |
|---|---|
| Robert F. Cooney, Helena | Chief of Game Management |
| William Alvord, Helena | Chief of Fisheries Management |
| Frank H. Dunkle, Helena | Chief of Information & Education |
| Orville W. Lewis, Helena | Chief Law Enforcement Officer |
| R. H. Turnbull, Helena | Chief Clerk |

### OFFICE AND FISCAL

| | |
|---|---|
| Robert Armagost, Helena | Photo Lab Assistant |
| Lucille Baker, Helena | Clerk-Stenographer |
| Opal Bourassa, Helena | Clerk-Stenographer |
| Frances Breslin, Helena | Clerk |
| Ralph Cooper, East Helena | Department Pilot |
| Effie Cutler, East Helena | Commission Secretary |
| Shirley Davy, Helena | Clerk-Stenographer |
| Dave H. Dennis, Helena | Claims Examiner |
| Dorothy Erickson, Helena | Key Punch Operator |
| Fred E. Everett, Helena | Clerk |
| Sylvia Fitzgerald, Helena | IBM Supervisor |
| Lewis Hall, Helena | Accounting Clerk |
| Margaret Jennings, Helena | Cashier |
| Thomas H. Leik, Helena | Wildlife Statistician |
| Gertrude Martin, Helena | Clerk |
| Glen Mergenthaler Helena | Accounting Clerk |
| Don Roberts, Helena | IBM Operator |
| Ann Rudio, Helena | Clerk |
| Billie Ann Sandru, Helena | Clerk |
| Evelyn Stanghill, East Helena | Clerk-Stenographer |
| Ethel Summerfelt, Helena | Clerk Stenographer |
| Jim Tubbs, Helena | Accounting Clerk |
| John Van Engen, Helena | Mail Clerk |

### ENFORCEMENT

| | |
|---|---|
| Chester H. Anderson | Bozeman |
| Donavan N. Berg | Sidney |
| Robert Bird | Big Timber |
| Herbert Brusman | Kalispell |
| George Carlton | Miles City |
| A. H. Cheney | Thompson Falls |
| Leonard J. Christensen | Havre |
| John R. Cook | Plentywood |
| David E. Cooper | Libby |
| Lawrence C. Deist | Kalispell |
| Harold Douglas | Browning |
| Ray Dupler | Forsyth |
| Harold J. Eberle | Columbus |
| William E. Eckerson | Helena |
| K. O. Fallang | White Sulphur Springs |
| Wayne M. Fitzwater | Dillon |
| James A. Ford, Great Falls | District Warden Supervisor |
| J. E. Gaab | Livingston |
| Kenneth Graber | Great Falls |
| William L. Harryman | Superior |
| Garth L. Haugland | Billings |
| Thomas R. Hay, Kalispell | District Warden Supervisor |
| James M. Henry | Great Falls |
| Floran C. Higgins | Great Falls |
| Kenneth V. Holt | Fort Peck |
| Clyde P. Howard | Missoula |
| James J. Jordan | Seeley Lake |
| Erwin J. Kent | Miles City |
| Louis M. Kis | Butte |
| Jack R. Kohler, Billings | District Warden Supervisor |
| Robert H. Lambeth | Polson |
| Howard R. Larsen | Butte |
| Orville W. Lewis | Chief of Law Enforcement |
| Warren Linville | Broadus |
| James W. Logan | Glendive |
| Don Malmberg | Fort Benton |
| William S. Maloit, Miles City | District Warden Supervisor |
| Stuart P. Markle | Anaconda |
| William McKiernan | Bozeman |
| Paul K. Mihalovich | Augusta |
| Robert Miller | Deer Lodge |
| Loren R. Netzloff | Eureka |
| Peter F. Quiring | Lewistown |
| James S. Ramsey | Missoula |
| James Reeve | Malta |
| Jack Rott | Billings |
| Edwin M Sager | Kalispell |
| Kenneth Sears | West Yellowstone |
| Leonard M. Secor | Sheridan |
| Gene H. Sherman, Bozeman | District Warden Supervisor |
| Raleigh Shields | Roundup |
| Ray L. Somers | Conrad |
| Frank Starina | Hardin |
| Sherman Strate | Stanford |
| Courtney L. Taylor, Jr | Hamilton |
| John C. Thompson | Townsend |

E. W. Tierney ..... Harlowton
I. L. Todd ..... Ennis
Vernon Waples ..... Red Lodge
Arthur Warner ..... Missoula
M. J. Watt, Missoula ..... District Warden Supervisor
George H. Woodhall ..... Glasgow
Don W. Wright, Glasgow ..... District Warden Supervisor

## FISHERIES

William Alvord, Helena ..... Chief of Fisheries Management
George D. Holton, Helena ..... Chief Management Biologist
Forest S. Keller, Helena ..... Hatchery Superintendent
Clinton G. Bishop, Helena ..... Fishery Biologist
Edith Barker, Helena ..... Clerk-Stenographer
Ellen Reid, Helena ..... Clerk-Stenographer
Robert Averett, Helena ..... Pollution Biologist
J. E. Bailey, Bozeman ..... Hatchery Biologist
Wallace Beaubry, Anaconda ..... Hatcheryman
E. L. Blaskovich, Arlee ..... Fish Culturist
Ralph Boland, Missoula ..... Fishery Biologist
Clinton Burnett, Arlee ..... Hatcheryman
V. R. Campbell, Arlee ..... Foreman-Hatchery
E. D. Champin, Lewistown ..... Hatcheryman
Neil Clothier, Lewistown ..... Assistant Foreman-Hatchery
Emmett L. Colley, Fromberg ..... Foreman-Hatchery
John T. Cox, Somers ..... Foreman-Hatchery
Elmer Engebrecht, Anaconda ..... Hatcheryman
Edward H. Furnish, Lewistown ..... Foreman-Hatchery
John J. Gaffney, Bozeman ..... District Fish Manager
Eldon E. Haag, Somers ..... Hatcheryman
Delano Hanzel, Kalispell ..... Fishery Biologist
John R. Heaton, Bozeman ..... Project Leader
Cliff Hill, Glasgow ..... Fishery Biologist
Iver S. Hoglund, Great Falls ..... Foreman-Hatchery
R. L. Hughes, Lewistown ..... Fish Culturist
Joe E. Huston, Thompson Falls ..... Fishery Biologist
Harry P. Johnson, Fromberg ..... Fish Culturist
Leo S. LaTray, Hamilton ..... Foreman-Hatchery
W. R. Matthew, Big Timber ..... Hatcheryman
E. R. McBride, Great Falls ..... Fish Culturist
Donald D. Miller, Fromberg ..... Hatcheryman
George Miller, Emigrant ..... Foreman-Hatchery
Bob Mitchell, Missoula ..... Laborer
Thomas F. Morgan, Emigrant ..... Fish Culturist
W. B. Morin, Somers ..... Assistant Foreman-Hatchery
Perry Nelson, Billings ..... District Fish Manager
E. M. Nevala, Great Falls ..... Laborer
Lester Newman, Libby ..... Foreman-Hatchery
C. R. Nyquist, Great Falls ..... Hatcheryman
Boyd R. Opheim, Kalispell ..... District Fish Manager
John C. Peters, Billings ..... Fishery Biologist
Thomas Schurr, Polson ..... Foreman-Hatchery
Walter R. Snyder, Big Timber ..... Foreman-Hatchery
A. E. Tangen, Anaconda ..... Foreman-Hatchery
Jim Taylor, Hamilton ..... Hatcheryman
Warren K. Taylor, Fromberg ..... Hatcheryman
W. J. Thompson, Libby ..... Fish Culturist
Nels A. Toreson, Great Falls ..... District Fish Manager
J. P. Waynard, Emigrant ..... Hatcheryman
Gene Welch, Great Falls ..... Fishery Biologist
A. N. Whitney, Missoula ..... District Fish Manager

## GAME MANAGEMENT DIVISION

Robert F. Cooney ..... Chief of Game Management
Wynn G. Freeman ..... State Small Game Manager
Fletcher Newby ..... State Big Game Manager
Glen F. Cole ..... Big Game Research Supervisor
Robert L. Eng ..... Small Game Research Supervisor
Vera Lansing ..... Clerk-Stenographer
Margaret Klickman ..... Clerk-Stenographer
Joaquina Lovely ..... Clerk-Stenographer
Dorothy Zimmerman ..... Clerk-Stenographer
Richard Borgmann ..... Land Agent
Robert L. Brown ..... Biologist
Faye M. Couey ..... District Game Manager
Chester L. Duffy ..... Assistant Land Agent
Joseph L. Egan ..... District Game Manager
LeRoy Ellig ..... District Game Manager
Bert Goodman ..... Manager—Sun River Game Range
Kenneth R. Greer ..... Biologist
Fred L. Hartkorn ..... Biologist
Vernon Hawley ..... Biologist
Robert G. Hensler ..... Biologist
Reuel Janson ..... District Game Manager
Charles Jonkel ..... Biologist
Richard R. Knight ..... Biologist
Richard Mackie ..... Biologist
James McLucas ..... Fieldman
James Mitchell ..... Biologist
Tom Mussehl ..... Biologist
Jack Owens ..... Fieldman
Harold Picton ..... Biologist
Robert Rathweiler ..... Biologist
Jack Ray ..... Fieldman
Merle Rognrud ..... District Game Manager
Ralph Rouse ..... Biologist
David Spaulding ..... Manager—Porcupine Game Range
David Stonehouse—
Manager—Blackfoot-Clearwater Game Range
Joseph E. Townsend ..... District Game Manager
Richard Trueblood ..... District Game Manager
Robert Varner ..... Manager—Judith Game Range
Richard Weckwerth ..... Biologist
John Weigand ..... Biologist
Dale W. Witt ..... Biologist

## INFORMATION AND EDUCATION DIVISION

Frank H. Dunkle, Helena ..... Chief
Vernon E. Craig, Helena ..... Assistant Chief
Margaret Brooks ..... Secretary, Helena
Lloyd Casagranda, Billings—
District I & E Representative
Robert J. Donlin, Helena—
Supervisor-Water & Hunter Safety
Hector J. LaCasse, Helena—
Movie & Photographic Supervisor
Joyce MacDuffie, Helena ..... Clerk-Stenographer
Phyllis L. McLean, Helena—
Information & Education Assistant
Richard J. Munroe, Great Falls—
District I & E Representative
B. J. Rose, Missoula ..... District I & E Representative
Tom L. Smith, Helena ..... Education Assistant
H. Max Stone, Glasgow ..... District I & E Representative

## ENGINEERING

Paul Williams, Helena ..... Department Engineer
John Waldron, Helena ..... Assistant Engineer

## SHOP

Rex C. Smart, Helena ..... Shop Foreman
Edward Ludtke, Helena ..... Mechanic
James Turner, Helena ..... Mechanic

## WAREHOUSE

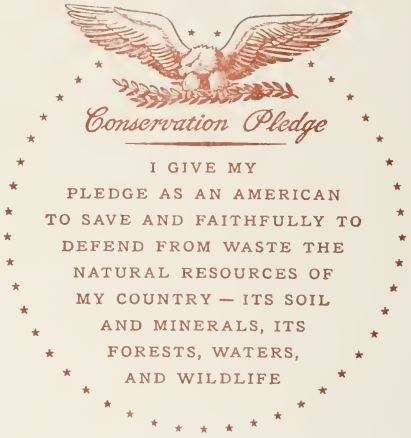
Keith A. Freseman, Helena ..... Property Officer
Jim Gibson, Helena ..... Laborer
Beverly Hilger, Helena ..... Clerk-Stenographer

## DISTRICT HEADQUARTER SECRETARIES

Dorothy E. Smith, Kalispell ..... District 1
Beth A. Miller, Missoula ..... District 2
Dorothy H. Bryson, Manhattan ..... District 3
Mary Oliver, Great Falls ..... District 4
Seena R. Walker, Great Falls ..... District 4
Marian J. Cloyd, Billings ..... District 5
Deanna R. Nelson, Tampico ..... District 6

## U. S. FISH & WILDLIFE SERVICE

Ashton Brann, Helena ..... U. S. Game Management Agent
E. F. Grand, Billings ..... Dist. Agent-Predator Control




## BE A GOOD SPORTSMAN

Ask Permission

To Hunt Or Fish

ON PRIVATE PROPERTY