Twenty-Fifth Biennial Report

of the

FISH and GAME DEPARTMENT

of the

STATE OF IDAHO

July 1, 1952 to June 30, 1954

State of Idaho
Department of Fish and Game
Idaho Fish and Game Commission

Boise, Idaho

Honorable Robert E. Smylie
Governor of Idaho
State House
Boise, Idaho

Sir:

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

This report covers the period July 1, 1952 through June 30, 1954, with certain data for the last six months of 1954.

Respectfully submitted,

N. F. Raymer, *Chairman*
R. J. Holmes, *Secretary*
Ray Sims
O. W. McConnell
Glen Stanger

Attest:
Ross Leonard, *Director*

Wildlife Policy

The wildlife policy of the State of Idaho has been established under the Fish and Game Commission Initiative Act 10 1938, as follows:

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

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

"In present times the interests of the private citizens are affected to a great extent by the actions of the civil servants. It is the more necessary that the civil servant should bear constantly in mind that the citizen has a right to expect not only that his affairs will be dealt with effectively and expeditiously, but also that his personal feelings, no less than his right as an individual, will be sympathetically considered."

British Parliamentary Report

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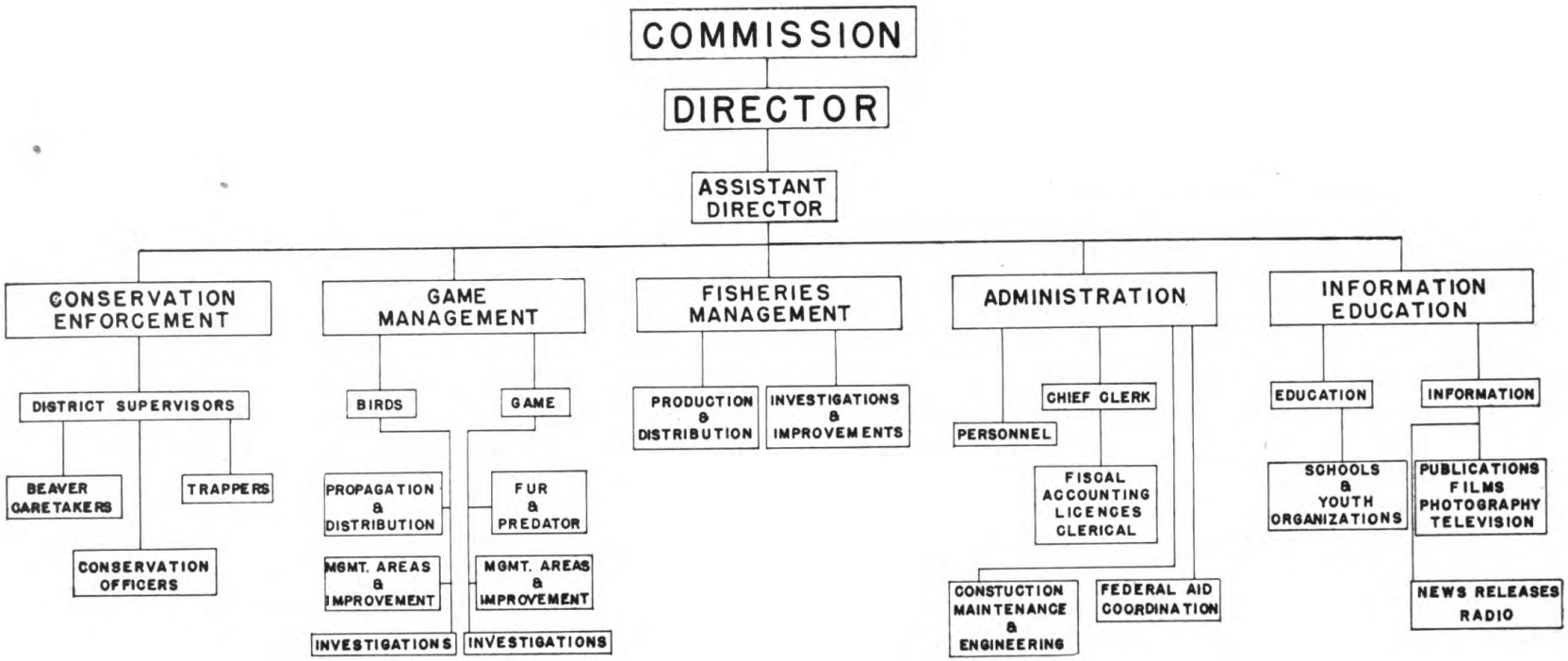


Administration

Following the passage of the initiative act of 1938, the Idaho Fish and Game Department has operated under a five man commission in administering the wildlife resources of the state. This form of government was followed without significant change until 1953, when the legislature amended the law supporting the original act in regard to the method of removal of commissioners from office.

Commissioners are appointed for staggered terms of six years from each of five districts in the state. These districts include the following counties:

District No. 1 - Boundary, Bonner, Kootenai, Benewah, Shoshone.

District No. 2 - Latah, Clearwater, Nez Perce, Lewis, Idaho.

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

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

District No. 5 - Clark, Fremont, Jefferson, Madison, Teton, Bonneville, Bingham, Power, Bannock, Caribou, Oneida, Franklin, Bear Lake.

Members of the Commission

Members of the commission during the first part of the biennium were:

George Moody, Calder, District No. 1
Oliver W. McConnell, Grangeville, District No. 2
R. G. Cole, Boise, District No. 3
Paul Thoman, Twin Falls, District No. 4
John Dahlstrom, Pocatello, District No. 5

Following action by the 1953 Legislature, Governor Len Jordan appointed the following commissioners on April 6, 1953:

George Moody, Calder, District No. 1
Oliver W. McConnell, Grangeville, District No. 2
N. F. Raymer, Boise, District No. 3
R. J. Holmes, Twin Falls, District No. 4
Glenn Stanger, Idaho Falls, District No. 5

Ray Sims, Bonners Ferry, was appointed by Governor Jordan on August 7, 1954, following the resignation of George Moody in District No. 1.

Commission Meetings

The commission serves as the policy-making, budgetary control, and regulatory body for the department, and meets at least once every quarter. In January, the commission establishes fishing seasons and regulations for the coming year. Big game and fur seasons and regulations are set in the April meeting, and bird hunting seasons and bag limits are established in the July meeting. The October meeting is generally conducted for routine business and budget considerations.

Special meetings are also held as the occasion demands for such things as extended game seasons and cooperative meetings with sportsmen's groups.

General Administration

All department operations are supervised by the director. The director is appointed by the commission for an indefinite term.

The administration of the department is further divided among five divisions including fish management, game management, conservation enforcement, information and education, and business administration. Each division has a chief in charge who is responsible to the director for all work in his division.

Regular certified employees of the department are appointed from the civil service register of the Idaho Merit System to all positions under the director of the department.

A chart of department organization (Page Four) was adopted and placed into effect by the commission after a survey of the Idaho Fish and Game Department by the National Wildlife Management Institute in 1953.

Conservation Enforcement

A successful wildlife program is directly dependent upon impartial enforcement of the fish and game laws. Modern concepts of fish and game law enforcement indicates quite clearly that an adequate law enforcement program is the basis for any sound wildlife management program.

The conservation officer of today is a far cry from the game warden of years ago. Not too long ago the only duty of the game warden was to arrest violators for infractions of the fish and game laws. The conservation officer of today has a multitude of duties. Law enforcement is still the most important part of the conservation officer's work but he must also be in a position to know and closely evaluate the wildlife resources in his assigned area. He conducts or assists in making surveys of wildlife and makes recommendations to his immediate supervisor in the best interests of good game management. He is required to participate in many phases of conservation information and education, including radio, television programs, youth group educational projects, sportsmen organizations, and other adult groups interested in wildlife conservation. He works closely with State and Federal agencies as well as other members of the department in order to provide for the public the best wildlife management program possible.

Organization of Division

At the present time the Conservation Enforcement Division consists of a chief of the Division, five district supervisors and fifty-eight conservation officers as compared to the period of July 1, 1950, to June 30, 1952, when the Division consisted of five district supervisors and fifty-three conservation officers. To keep in step with the increased numbers of hunters and fishermen, it will be necessary to increase the field staff in the future.

A definite line of authority is followed in the Division whereby conservation officers are directly responsible to the district supervisor and indirectly responsible to the chief of the Division. The district supervisor is directly responsible to the chief of the Division and in turn the chief is responsible to the Director.

Conservation Officers Manual

Early in 1954, immediately after reorganization of the Division, a Conservation Officers Manual was prepared and distributed to all personnel. The manual is being used as a guide by both experienced and newly employed officers.

The contents outline in detail the more important phases of law enforcement such as the proper procedure to use in making an arrest; the investigation and preparation of evidence; searches, seizures, and forfeitures; and proper court procedure.

Also outlined in the manual are accepted standing orders, policy matters and opinions, information and education methods, and phases of wildlife conservation.

Used as a guide, the manual will give personnel a better understanding of their duties and responsibilities as well as develop a well organized unit of wildlife conservation.

Conservation officers of the enforcement division have many duties. One part of their work is census on big game animals of the state.

Modern Equipment

In order to do the best job possible, it is necessary to provide enforcement personnel with up to date modern equipment.

One of the most essential items is the uniform. The uniform demands respect and dignity and is worn at all meetings, temporary checking stations and in attending court. The last uniforms were furnished in 1947 and present plans call for replacement late in 1954 or early in 1955.

The use of aircraft has been of great assistance in the prevention of violations as well as the apprehension of law violators.

At the present time, the Department has in operation 32 mobile radio units. Although the present system is not entirely satisfactory, the radio has and will continue to play an important part in the enforcement program. Many law violators have been apprehended by use of mobile radios, but most important of all is the psychological effect produced in the prevention of violations. Heavy use of radio in airplane to car operation has increased the efficiency of the program.

In order to further increase efficiency, five or six radio repeater stations should be installed in the state and approximately 38 more mobile units purchased. After this improvement is made, Idaho will undoubtedly have one of the most efficient organizations in the country.

Report of Arrests and Convictions

In 1951 the Legislature passed a law that one half of all monies received from fines in fish and game law violations be retained in the county and the other one half be credited to the general fund of the Fish and Game Department.

Deer trapping and tagging is another of the many things conservation enforcement men do. They work closely with other conservation agencies as well as other members of the department to provide the best management program possible.

During the fiscal year of July 1, 1952 to June 30, 1953, a total of 1332 arrests were made and 1292 convictions obtained. A total of $38,436.50 was collected by the county treasurers who in turn were to remit one half of the fine monies, or $19,218.25 to the Department.

In the fiscal year of July 1, 1953 to June 30, 1954, a total of 1311 arrests were made with 1237 convictions obtained. A total of $35,271.50 was collected by the county treasurers, of which one half, or $17,635.75, was to be remitted to the Department.

During the biennium 2643 arrests were made for game law violations, with 2529 convictions obtained and fines assessed amounting to $73,708.00, of which one half was retained in the county and one half to be remitted to the Department.

In this period several maximum or $300.00 fines were levied for major game law violations. In this category were arrests made for killing moose, mountain sheep and deer; dipping spawning fish, use of dynamite in streams, and killing swan. In some instances jail sentences were also administered along with the fine.

The following table shows a breakdown of violations for each month during the biennium.

Type of Violation

1952	Fishing	Big Game	Upland Birds	Water Fowl	Licenses	Miscellaneous	Trappers Delinquent with Reports	Violation at Checking Station
July	65	1	4		18	2		
August	101	5	7	1	7	2	1	
September	64	33	7	1	15		21	16
October	8	60	12	14	19	2	12	6
November	1	60	49	11	37	12	9	15
December	1	28	16	27	27	2	4	20
1953								
January	1	6	1	13	14		10	16
February	12	8		1	17	2	18	6
March	25	5	1		28	4	1	1
April	39	8	2	1	27	5	9	
May	85	7	4	1	33	3	2	
June	43	1			35	11	1	1
July	82	10	4		94	4	1	
August	39	3	6		46			
September	35	15	57		25	7	15	5
October	7	83	33	16	32	6	5	18
November	17	29	19	1	21	14	3	22
December	5	12	6	46	4	10	3	18
1954								
January	4	11	5	6	23		10	8
February	16	19			21		11	
March	17	7		1	17	1	12	2
April	21	3		3	23		1	
May	35	3			22			
June	69	7			48	5		
TOTAL	792	424	233	143	653	92	149	154

Enforcement personnel assist sportsmen's clubs with their conservation and improvement projects.

Information and Education

Recent trends in the administration of wildlife in Idaho, as well as the entire nation, have shown conclusively that management can proceed no faster than the accompanying information and education program. Converting the results of scientific fish and game surveys into practical management programs can only be attained by thoroughly explaining the needs for the program to the users of the resource—the hunting and fishing public.

Statewide interest and participation in conservation of the wildlife resources demonstrates the need for a continued expansion of basic services of the division. Not only is this demand based on an increasing population, but the number of active users of the resources is getting higher each year.

Information and education was given full divisional status along with game management, fish management, conservation enforcement, and business administration when the department was reorganized during the last year of the biennium. The effect was to place particular emphasis on the coordination of informational work among the various divisions. In addition to expanding the basic services of the division, plans were made to establish closer relationship between the work of the management divisions and those services.

Under the general heading of information, the work is further divided into individual jobs. Maintenance of a departmental news service; publishing of informational and educational pamphlets and bulletins; editing and distributing a regular magazine of the department's activities; printing of legal notices and regulations; production of radio and television programs, and maintaining a photograph and film file are all included in this section.

Conservation education, with emphasis on the wildlife of Idaho, was carried into the public schools through an extensive lecture program. In cooperation with sportsmen's clubs and private industry, the fourth summer workshop in conservation education for Idaho school teachers was established. Also, considerable attention was directed at youth organizations such as 4-H clubs, Boy Scouts, junior sportsmen, and Future Farmers of America, especially at their summer camp sessions.

In-service-training was emphasized at a general statewide school held at the Farragut wildlife management area near Lake Pend d'Oreille. The 150 field and staff officers of the department met in the officers' club building of the old naval base for a three-day session. Classes were conducted in all phases of wildlife management as well as special instruction in law enforcement, personnel administration and hunter safety.

District personnel meetings were held three times each year in the five districts of the state. Recommendations for game animal, furbearing animal, bird and fishing seasons and regulations were submitted by field personnel at those sessions. At the same time seasonal and yearly operations were detailed. Department policies were outlind and equipment needs made known. Each division of the department is represented at these meetings so that each employee is fully informed of department operations, and so that activities and programs may be fully coordinated.

Information

Information relative to department activities; game and fish seasons; rules and regulations; wildlife management; and related programs, was prepared and released to newspapers. Approximately 600 separate news items were disseminated in this manner. In addition, over 200 releases were sent to wire press services and newspapers through personal contact and by telephone.

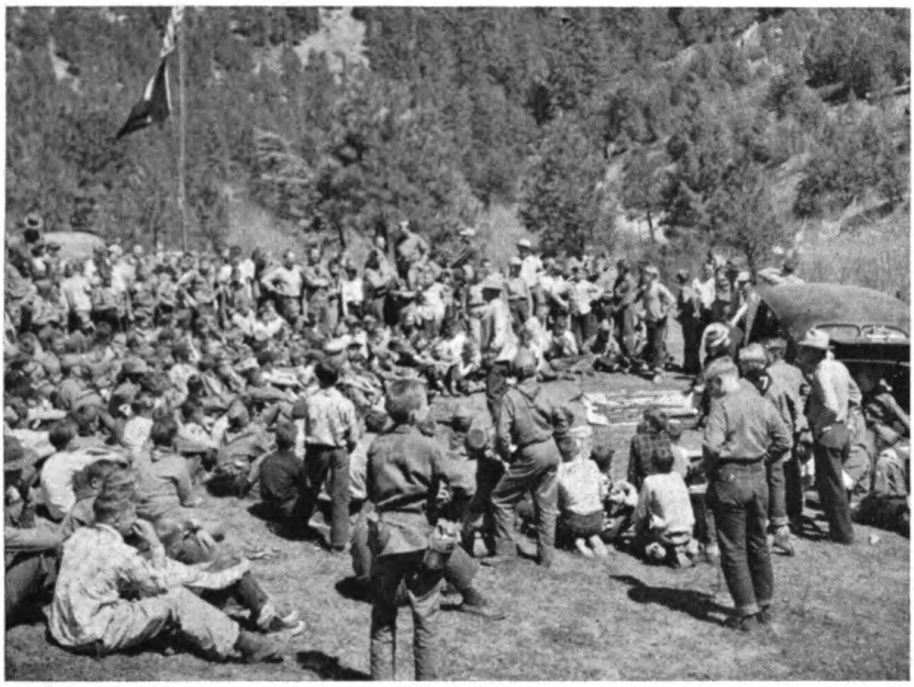
Special articles were prepared for individual publications, and materials compiled upon request. Pictures were supplied many times during the period, and newspaper mats were furnished several times to illustrate articles requiring special attention. It is estimated that over 10,000 requests for hunting and fishing information were answered from this division.

Several hundred meetings were attended by division personnel during the biennium. These included sportsmen's clubs, civic organizations, granges, youth clubs, Parent Teachers associations, and many other groups. Talks were presented on wildlife management, department activities and conservation work. Films were usually shown at these meetings.

Printed materials providing information to hunters on care of game meat; what to do if lost; posters on firearms safety; and bulletins on the Ten Commandments of Safety, were distributed throughout the state.

Legislative matters were assigned to this division during the 1953 session. Legislative changes were prepared and briefed for committee members. Information relative to law changes was prepared for department personnel and in answer to requests.

Department personnel conduct educational programs at youth summer camps.



Gun safety training is a part of the work caried on at summer camps. The firearms safety program is one of the most important department projects.

Publications

The official publication of the department, the IDAHO WILDLIFE REVIEW, is issued bi-monthly. Approximately 13,500 copies are mailed to subscribers in Idaho, to other state agencies, and to individuals in other states and several foreign countries. The magazine is sent free of charge to Idaho residents upon request. Additional copies are distributed at exhibits, fairs, meetings and upon request.

Publishing cost has remained reasonably stable during the biennium, with some decrease in overall cost after the issue was increased to 15,000 copies.

Present supplies of the information bulletin YOUR GAME DEPARTMENT, has been sufficient to meet demands during the biennium. These have now been distributed. Re-issue of a similar publication has been planned for 1955.

Reprints of material on Idaho upland game birds have been prepared from articles in the IDAHO WILDLIFE REVIEW. These are in loose-leaf form and are primarily distributed to teachers for classroom work.

The supply of MOUNTAIN LAKES OF IDAHO booklet has been distributed during the past two years. Present planning calls for a review of this book with additional material added to bring it up-to-date.

A 150 page publication of study and research information obtained about mountain sheep of Idaho, has been printed. A simi-

lar book is to be issued in 1955 covering work done in a study of the mountain goat of this state.

Other information type publications during the biennium included two annual reports of operations; compilation and printing of the Idaho Fish and Game Laws; hunter safety material; care of game meat; rules; regulations; and fishing, hunting and trapping seasons and limits.

Films

Film requests have increased during the biennial period. This increase has been noticeable since television stations have gone into operation with some increased demand for films from youth groups and in schools. As a result the department has added several new films by purchase of prepared subjects and by department production.

The fish and game department film library now contains 58 reels dealing with 36 different subjects. These are nearly all sound and color. They vary in running time from ten minutes to thirty minutes. Nine subjects have been cleared for television use. These were telecasted during the biennium by three stations, and have reached an estimated audience of 250,000 viewers. Approximately 100,000 people have viewed department films when shown at schools, club meetings, summer camps and other meetings. Films are available to clubs and organizations free-of-charge. The only cost attached is the return mailing to the department office.

Two films were completed by the department. One dealing with management work on banding Canada geese, and one showing procedures and operations of transporting and releasing trout. Additional film footage was taken during the period. This will be incorporated into information and education type reels in the future. One film is being made in cooperation with the Portneuf Soil Conservation District showing the importance of conservation practices and the place wildlife occupies on private lands.

Conservation Education in the Schools

Understanding and respect for the basic natural resources of the state and of the nation should become a part of the broad general education of all Idaho youth. Although the department's primary educational concern is to acquaint the public with the problems of management of the wildlife resource, and the value of this resource, it is necessary that the public see the relationship between these resources and the lands and waters that produce our wildlife.

For this reason the department's information and education division is taking an active part in the development of a general conservation education program in Idaho schools.

Conservation Handbook for Idaho Teachers Developed

During the biennium the I & E Division promoted the production of a teacher's guide in resource use by working cooperatively with educators involved with the Conservation Workshop teacher training program. This handbook, an illustrated, 78-page manual of teaching aids and suggestions, was completed and put into the hands of teachers in the spring of 1954.

Material for the guide was prepared and assembled by the teachers enrolled in the Conservation Workshops at the University

of Idaho, Idaho State College, The College of Idaho and Ricks College. Final revision and editing was done jointly by a committee of educators and specialists from various conservation agencies including the fish and game department and the soil conservation and forest services. This work was done under the direction of the state department of education, which also bore the costs of publication. The handbook was approved by the state board of education.

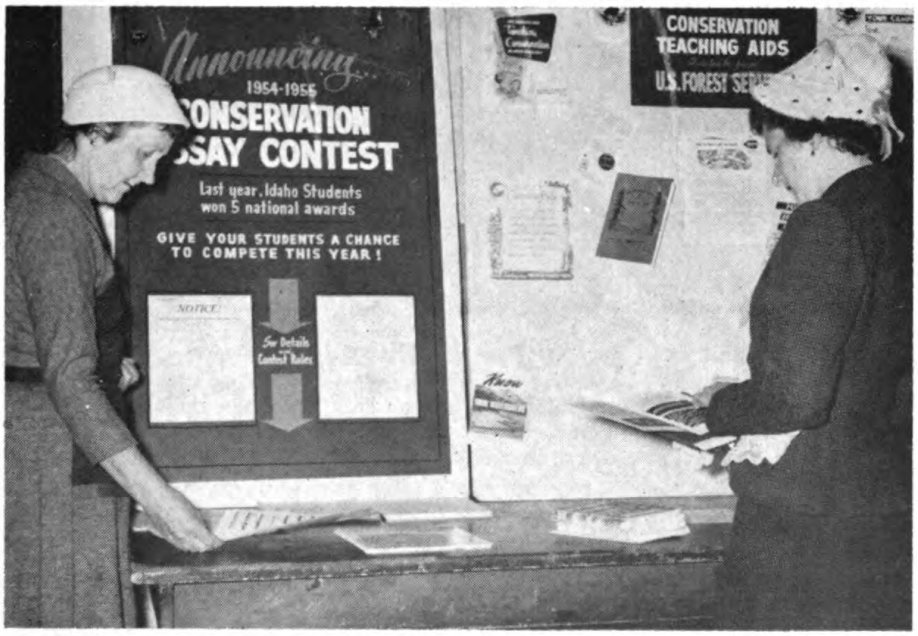
Conservation Workshop Program for Teacher Training

The fish and game department has taken the lead in promoting the organization of the workshop teacher training program in the state, publicizing the need for enrollment in these courses at the various schools, announcing availability of teacher scholarships, and conducting the drive for scholarship funds.

Twenty-two sportsmen's organizations subsidized the project with cash for teacher scholarships during the period the handbook was in preparation, including the summer session of 1954. In this time sportsmen posted a total of $2,877.50 for this purpose. Additional grants from the National Wildlife Federation were received in the amount of $2,550.

Private industry, soil conservation districts, a farm bureau organization and the state Parent-Teachers' association contributed $2,912.50, to bring the total from all sources to $8,340 to aid the Workshop program, 1951 - 1954, inclusive.

Of this total, $7,370 was devoted to teacher scholarships in the four years, while $825 was spent as salary to an out-of-state specialist who supervised one phase of the training in the summer of 1953. An unexpended fund amounting to $180 was returned to



Idaho teachers are supplied with a variety of teaching aids as part of the education program of the information and education division.

certain donors at the close of the 1953 summer session by Superintendent of Instruction Alton B. Jones, who was serving as fund custodian. A balance of $135 still is in the scholarship fund at the end of the 1954 summer season. Harold T. Buck Jones served as fund custodian in 1954.

One hundred eleven teachers have been awarded scholarships in these workshops. Seventy-two of these scholarship were in the amount of $75 each, while thirty-nine teachers received $50 awards. These smaller awards were necessary in some years because of insufficient funds to carry on the scholarship program as advertised. Fund shortages did not seriously affect the program, however. A total of 140 teachers have been enrolled in the workshops during the four years, with an additional 100 teachers reached by a special session at Idaho State College in the summer of 1953. The project has been a truly joint endeavor of educators, professional conservationists, and the general public.

Cooperators supplying scholarship funds for the Conservation Workshop program for the summer sessions of 1951 - 1954 inclusive are presented herewith:

Funds Provided for Workshop Program
1951 - 1954, Inclusive

	Sportsmen's Clubs	National Wildlife Federation	Industrial and Other Organizations
1951	$ 520	$ ———	$ 525
1952	750	750	600
1953	722.50	900	787.50
1954	885	900	1,000
Totals:	$ 2,877.50	$ 2,550	$ 2,912.50

Total, all sources ....$ 8,340

The following sportsmen's organizations in Idaho have contributed to the Conservation Workshop Scholarship program, 1951 - 1954, inclusive:

Sportsmen's Club Donors to Workship Program
1951 - 1954, Inclusive

Coeur d'Alene Wildlife Federation	$600	Franklin Co. Fish & Game Ass'n.	$75
Bonneville Co. Sportsmen's Ass'n.	300	Gem. Co. Rod & Gun Club	75
Moscow Wildlife Federation	300	Grangeville Wildlife Ass'n.	75
Ada Co. Fish & Game League	295	Island Park Sportsmen's Ass'n.	75
Jefferson Co. Sportsmen's Ass'n.	225	Third Dist. Idaho Wildlife Fed.	75
Lewis-Clark Wildlife Club	225	Parma Rod & Gun Club	45
South. Idaho Fish & Game Ass'n.	225	Washington Co. Wildlife Club	37.50
Payette Lakes Wildlife Federation	225	Gem Valley Rod & Gun Club	25
Bannock Co. Sportsmen's Ass'n.	75	Twin Falls Chapter I O A Ass'n.	25
Bonner Co. Sportsmen's Ass'n.	75	Capitol Sportsmen's Club	10
Elmore County Wildlife Club	75	Homedale Rod & Gun Club	10

Total, all Idaho sportsmen's organizations $2,877.50

Other organizations and private industry have contributed to the teacher-training program as follows:

Private Industry & Public Agencies Aiding Conservation Workshop Scholarship Plan
1951 - 1954, Inclusive

National Wildlife Federation	$2,550	C. d'Alene Athletic Round Table	$125
Potlatch Forests, Incorporated	1,200	Washington Water Power Co.	100
Idaho Power Company	300	Gooding Soil Conservation Dist.	75
Idaho State Parent-Teach. Ass'n.	300	State Ass'n. of Soil Cons. Dists.	75
Utah Power & Light Company	300	Nez Perce Soil Cons. District	75
Boise Payette Lumber Company	150	Portneuf Soil Cons. District	75
Bunker Hill Mining & Conc. Co.	150	Statesman Newspapers	75
Sunnyside - Hass Farm Bureau	$37.50		
Total			$5,462.50

Conservation Workshop scholarships have been conferred on teachers at the following Idaho teacher-training institutions, 1951-1954, inclusive:

Record of Conservation Workshop Scholarships Conferred
1951 - 1954, Inclusive

	Boise Junior College	College of Idaho	Idaho State College	Univ. of Idaho	Ricks College
1951	—	—	4	10	—
1952	—	7	4	8	9
1953	—	5	—	7	8
1954	11 ($ 50)	17 ($ 50)	—	11	10 ($ 50)
Totals:	11 ($ 550)	29 ($1,750)	8 ($ 595)	36 ($2,700)	27 ($1,775)

Total scholarships, all schools: 111; total cash conferred, $7,370.00

Conservation Poster and Essay Contests

School students of Idaho took part in the conservation poster contest sponsored by the National Wildlife Federation and Idaho sportsmen's club affiliates during the 1952-1953 school year. The I & E division of the fish and game department assisted the project with news and informational mailings to the schools. Local and state prizes were conferred by Idaho federation affiliates.

Three Idaho school girls won national prizes and honorable mention in the national finals for their poster work, two of these from Avery, in Clearwater County, and one from Potlatch, in Latah County.

A conservation essay contest took the place of the poster contest in the school year of 1953-1954. Aided by informational releases and contest details by the state federation officials and the fish and game department working cooperatively, and stimulated by offers of prizes at the local, state and national level, conferred by interested sportsmen and the state and national federated organization, Idaho students again responded with enthusiastic participation. Hundreds of essays were written on the subject of water pollution at both the junior high and senior high school levels.

Five Idaho school students placed in the national awards class, the only school students west of the Mississippi (Missouri students excepted) to place in this national competition, in January, 1954. It is the plan of the state federation and the department's I & E division to continue publicizing this conservation activity for school students in the on-coming biennium.

Classroom Contacts with School Students Stressed

Personnel of the I & E division made more than 240 school appearances during the two school years between September, 1952, and May, 1954, records of the division show. Average audience was about 290 students plus faculty. In addition, films were mailed to schools on request at an average rate of 25 per month during the biennium.

Classroom programs put on by the department I & E personnel include film showings and exhibits of wildlife specimens, accompanied by talks stressing importance to wildlife resources of the basic topsoil, timber and water resources. Selected films that emphasize the need for wise resource use include such titles as "Topsoil", "Arteries of Life", "Marsh Waters", "The River", and "Yours is the Land." School assembly programs generally are planned for one hour or one class period. These appearances are scheduled statewide during the school year.

The traveling exhibit of game, furbearers and birds has proved very popular with school audiences, and provides the opening wedge to stimulate interest of students in general conservation matters. Students are permitted to handle the furs and hides and are encouraged to ask questions about fish and game populations and the relationships between predator and game populations. Conservation officers are encouraged to attend these school programs and assist in the discussions whenever possible.

Youth Summer Camp Educational Program

Hundreds of teen-age youths at numerous summer camp sessions received benefit of game department educational contacts during the 1952-1953 summer camp sessions. Theme of these educational sessions, conducted at 4-H, Scout and other youth camps emphasized nature study and basic conservation of natural resources. Approximately 1,500 boys and girls were reached each season.

Camp study programs include bird, fish and mammal and plant identification through the use of pictures and study specimens, accompanied by talks by department personnel along the "nature trail" in the camp area. Evenings are devoted to use of films on wildlife and general conservation. As the camps are conducted over a period of several weeks in most cases, it is possible for the department personnel to make return trips to camp, thus reaching larger numbers of youth. The camp program is considered an important part of the department's educational program.

Junior Sportsmen Organization

In line with formal action and recommendations of sportsmen delegates at the annual Idaho Wildlife Federation convention at Boise in January, 1954, the department's I & E division in the early months of 1954 undertook to outline steps for a statewide organization of junior sportsmen clubs.

Prepared was a set of objectives and procedures for junior club organization at the local level, with suggestions to adult sponsors for initial planning and a list of suitable activities for junior club work. Design for an emblem was prepared, and manufacturers' prices for this shoulder patch secured.

Game Management

Beginning early in 1954 the various department activities involving game and fur-bearer management were all placed in the Game Management Division. This division now handles department work including big game, game birds, fur-bearers, predator control, game farms, wildlife management areas and range and habitat improvement.

The overall objective of this division is to manage the wildlife of the state so that populations of desirable kinds of wildlife can be maintained in numbers compatible with other land use, to the end that as much game and fur as possible may be available to the public for harvest through hunting or trapping. Since wildlife is an annual crop, this job requires that survey work be repeated year after year, or season after season, so that regulations concerning the take by hunting and trapping can be based on current conditions. Organizing the results of such work and making suggestions and recommendations concerning forthcoming seasons is a major job of this division.

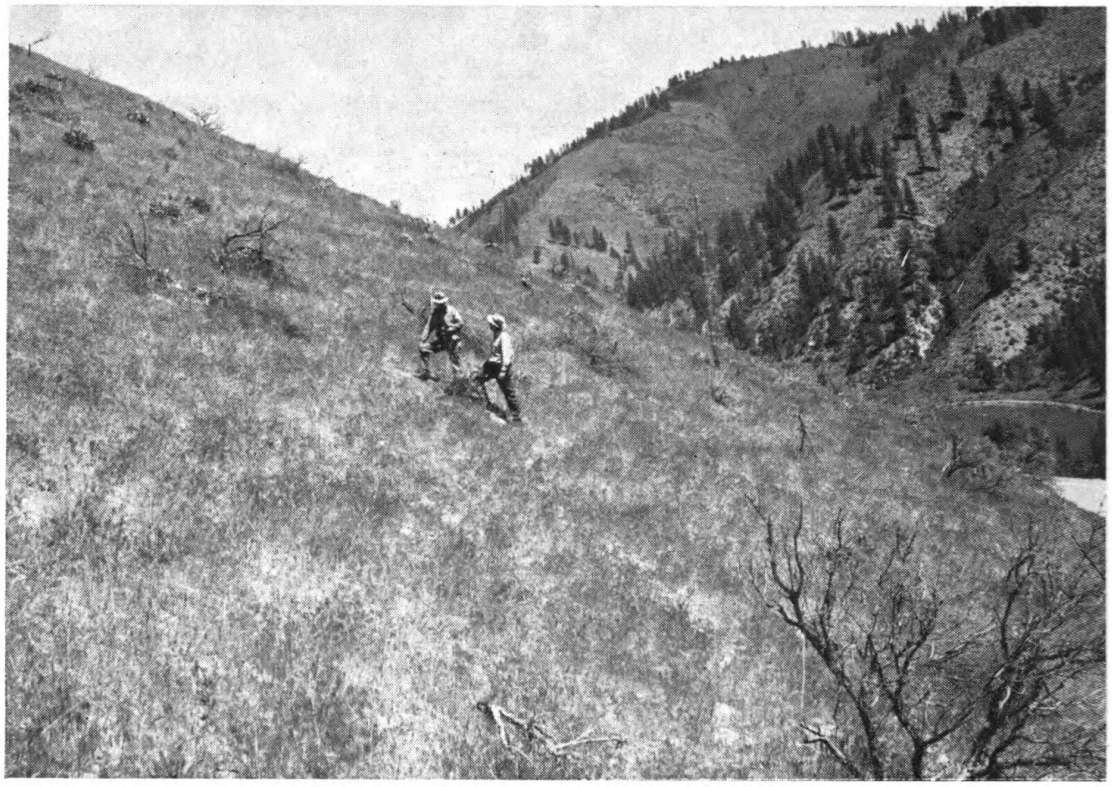
Elk are trapped and ear-tagged in connection with studies on migration, length of life, etc. This is an annual winter job at the Sand Creek Wildlife Management Area in Fremont County where 129 elk were tagged during the biennium.

In addition to routine survey work, special research investigations are necessary to get basic information needed in maintaining the wildlife resource and regulating its use by humans. Other activities are directed towards specific on-the-land improvements to benefit wildlife where local requirements may be lacking.

Much of the work of the division is accomplished through Federal Aid in Wildlife Restoration (Pittman-Robertson) projects.

The individual kinds of activities of the division are reviewed below under the various appropriate headings.

Field investigations conducted in Idaho and many other states have shown that wildlife for public hunting or trapping can be provided only if the conditions required by the animals themselves are found on the land concerned. Hence, present-day game management is directed towards maintaining healthy, productive conditions on the ranges, and in the marshes, fields, forests and other habitat used by game and fur species. An abundant supply of game is the result of good conditions on the land and a major job of the department is to foster good land management or maintenance of good habitat.



Dead bitterbrush on this slope along the South Fork of the Payette River offers no help to deer in the winter. Big game management plans, which include proper harvesting of surplus animals, are designed to maintain the range plants on a productive, long-term basis.

Big Game Projects

Idaho Game Population, Census and Range Study (Project 85-R)

The objective of this project is to obtain annually data which will permit a greater sustained return to the public from their big game resource. Because the factors affecting the game are so varied throughout the State, to accomplish this objective each major herd is considered separately. Recording data in this manner will permit closer scrutiny and planning.

To date this has been done on a statewide basis for deer and elk with other species to be added as the project progresses. The investigative work and appropriate records are listed under the following categories covering various phases of management:

1. *Range* - covers all aspects of game range.
2. *Population* - includes census, trends and population.
3. *Productivity* - treats herd increase and related factors.
4. *Harvest* - game removed by hunting.
5. *Management Recommendations* - measures desired which improve returns and value of this resource.

Emphasis is being placed on study of condition and extent of big game range, particularly the limited winter areas and concentration sites. The condition of this basic habitat will determine the numbers of game produced and maintained. Additional transects and exclosures are being established to help obtain a closer balance of big game numbers to the production and available forage on the limited ranges. With increasing hunter pressure and continued withdrawing of critical big game range due to cultural advancement and related factors, this problem becomes increasingly acute. The total harvest of big game continued to remain relatively even from harvest records to date.

Deer and elk harvested during the biennium by districts (including checking station data and estimates from areas not covered by checking stations.)

	Deer		Elk	
District	**1952**	**1953**	**1952**	**1953**
1	2,520	2,729	1,258	1,295
2	2,790	3,034	4,525	4,499
3	7,617	5,446	1,626	1,791
4	10,595	9,075	708	617
5	6,932	7,792	675	886
Total	30,454	28,076	8,792	9,088

Other Game Species Harvested

Species	1952	1953
Antelope	1,520	1,254
Moose	71	91
Bighorn Sheep	13	18
Rocky Mountain Goat	21	13

Five biologists are employed under this project to obtain necessary data and make recommendations for improving the management of the big game herds.

Big Game Range Improvement (Project 88-D)

The work schedule under Project 88-D-6 consisted chiefly of seedling and cutting transplants, experimental bitterbrush seedings and evaluation of past habitat improvement work. In addition, two enclosures were constructed in the Boise River drainage.

A total of 133,500 bitterbrush seedlings and 10,000 golden willow cuttings were transplanted in three different areas in Southern Idaho. Fall transplants in the Middle Fork of the Salmon River were a complete failure; four to five per cent survival was recorded. Fall transplants of bitterbrush seedlings on the Mores Creek Refuge averaged 41 per cent survival. Spring transplants of bitterbrush seedlings on the Mores Creek Refuge and South Fork of the Payette River plots averaged 47 per cent and 36.4 per cent survival, respectively.

The average cost of seedling transplanting on one typical area was $55.20 per thousand seedlings. Using a ten square foot planting interval this amounts to $15,373.00 per square mile of planted area, or $22.30 per acre.

A modified stratification method was used in breaking dormancy in bitterbrush seed for the spring seeding work. Eighty-four and eighty-five per cent germination was obtained after a 15-day stratification period.

A rodent live-trapping study showed that the mouse populations in the areas studied were not reduced when subjected to tetramine-acetone treated bitterbrush seed that had been stratified and planted in the regular manner. This treatment, however, did act as an excellent to fair repellent, depending on the vegetative type and rodent species present.

Results obtained from spring and fall plantings of bitterbrush seed indicated that there was no difference in emergence and survival based on those two planting dates. Trampling by big game animals was found to be an important decimating factor on the fall planted areas. The fall season was found to be the most practical time of the year for planting bitterbrush seed, mainly because of the cost and time factors involved.

Bitterbrush seedling survival from planted seed following one winter's use by big game dropped almost 50 per cent on one study area.

A total of six species of plants have been planted in various areas in the Middle Fork of the Salmon River during the past four years. All of these plantings were failures. Past seedings of two wheatgrass species and bitterbrush on department owned ranches in the upper South Fork of the Boise River drainage have produced excellent to fair stands.

Coeur d'Alene Deer Management Study (Project 90-R)

This investigative project was in operation from August 1, 1950 to December 31, 1953. Its principal objective was to determine whether the game in the Coeur d'Alene National Forest, principally white-tail deer, were as plentiful as desirable, and being properly harvested. The study has produced enlightening results. One of the major problems presently confronting management is obtaining adequate hunter harvest. With such a secretive and agile game animal in this timbered habitat, it was found that over most of their range during the hunting season, hunters were

Bighorns on the run! Studies of Rocky Mountain Bighorn sheep indicated that some mature rams could be removed annually with no detriment to the herds. Special hunts were held in 1952-53-54.

harvesting only a part of the annual increment from this herd. A greater harvest would be desirable. The mule deer and elk herds here are increasing and gaining in importance annually. Facts and information obtained from the investigations are essential to efficiency in planning for sustained healthy and productive big game herds.

Management Study of the Rocky Mountain Bighorn Sheep (Project 99-R)

In order to obtain desired information regarding the status of the mountain sheep, this research project was started November 29, 1950 and completed March 31, 1954. The manuscript treating this study is being published for distribution.

In recent years various herds of mountain sheep along the main Salmon River show their numbers to be rather static as if they had reached a temporary population peak, while others are still declining. Mountain sheep population at present is far below former numbers. At the turn of the century large die-offs reportedly due to mange are recorded. Today all of the mountain sheep are in the Salmon River watershed except one small group in the upper Selway River watershed and one small group reported to be in the upper reaches of Palisades Creek in Bonneville County.

A number of the groups were studied intensively in an effort to determine the factors limiting their increase. Other herds were studied for distribution and population information. As in the mountain goats, the most heavily recorded losses occur during the first two years after birth.

The special hunts established during the biennium have been based on information obtained by those studies. A total of 95 permits have been issued for mature rams with a total of only 31 taken. This is a success ratio of 30 per cent for 1952, and 41 per cent for 1953, for the hunters participating.

Management Study of the Rocky Mountain Goat (Project 98-R)

This study started on October 1, 1950 was completed on March 31, 1954. It was designed to obtain information regarding the status of the Rocky Mountain goat from early historical records to the present management practices.

One factor retarding their increase is the heavy losses sustained during the first two years of life. The production of young also appears directly related to conditions under which the females wintered prior to parturition.

Obtaining proper hunter distribution so that the most accessible herds are not depleted while the more remote and inaccessible herds are adequately hunted is the basis for the present special permit system of harvesting. During the biennium there have been 112 permits authorized and a total of 34 animals taken by hunters. Forty-seven per cent of the hunters participating during the 1952 season were successful, while 50 per cent were successful in 1953.

A publication covering the findings is in the process of being printed and will be ready for distribution during 1955.

Sand Creek Wildlife Management Area (Project 92-M and 89-D)

One full time refuge manager has been stationed on the area to administer it for the benefit of wildlife.

The acquiring of this property consisting of 4,700 acres in Fremont County was instrumental in the build up of the elk herd from less than 50 in 1940 to approximately 100 in 1946 and over 600 at present. During the fall of 1953 there were over 400 elk in the fields at one time.

This property provided a means by which the elk could be permitted to increase and gain access to extensive winter range to the south and west. In addition to elk the deer and moose numbers have increased so that the hunter take of all three species is at a high for recent times.

The boundary fence has been repaired and maintained. Approximately 100 acres of volunteer wheat has been left for elk which is relished by them in the fall when they concentrate at the refuge. Two hundred fifty-seven acres of perennial grasses have been planted for their use.

In a cooperative project with Fremont County $5,513.00 has been added to county funds to construct approximately 12 miles of new access road during the biennium.

Chamberlain Basin Hunter Access Trails (Project 110-D)

The elk of the Chamberlain Basin are more numerous now than thirty years ago and ample winter range is now an acute problem. Because of the dense timber growth a large part of the elk concentration areas are not available to hunters. Some trails formerly kept open by the Forest Service have been abandoned because of the use of new techniques in the use of aircraft for fire prevention and suppression.

A harvest which this herd can maintain is essential to the perpetuation of the resource. In this cooperative project with the Payette National Forest of the U. S. Forest Service, approximately 40 miles of abandoned trails leading into game concentration areas were opened. New hunter access trail construction of nearly 54 miles was provided. In constructing new trails they were held to minimum specifications which would permit safe passage of saddle and pack stock by cutting a path eight feet wide through the dense timber.

Primitive Area Winter Range (Project 94-M)

One full time refuge manager has been employed to maintain the fences and buildings, take care of browse plantings and habitat improvement work, and to irrigate the meadows to increase food

for game on the lands acquired along the Middle Fork of the Salmon River. All these lands are open to public hunting during season.

In addition records are kept of the number of game harvested, census, migration and movements, losses and winter range conditions.

Big Game Salting (Project 76-M)

In an effort to obtain a wider distribution of big game and more equitable range utilization throughout portions of various big game ranges in the state, 156.35 tons of salt were dropped from aircraft during April and May of 1953. In addition, there were 7.23 tons distributed by ground placement so that the big game use of the salt licks established could more extensively be checked as to its effect on their distribution and movements.

During May and June 1954 there were 117 tons of salt dropped from aircraft on big game range. By placement of salt later it permitted a better selectivity of the drop sites making it more available to the game. Twelve tons were provided and distributed by ground placement under this project. Study and evaluation of the results obtained from this program are being continued.

Boise River Deer and Elk Winter Range (Projects 64-D-3, 101-M)

One full-time refuge manager has been employed to take care of the lands acquired to furnish additional winter browse and forage for game use in the Boise River drainage. Nearly two miles of new fence and the replacement of two miles of old fence was accomplished to protect big game winter range lands from trespass grazing of domestic livestock.

Fencing has not been completed at the Mores Creek Refuge because of the construction of Lucky Peak Dam.

By an agreement with the Elmore County Road Commission, improvements and relocation of portions of the Black Creek - Smith Prairie road was accomplished.

A state lease for 1,630.56 acres of land in Township 3 North, Range 5 and 6 East of Boise Meridian was paid for a ten-year period in order to reserve additional browse and forage for game.

Maintenance of Farragut Wildlife Management Area (Project 103-D-2, 109-M-1 & 2)

A full-time refuge manager was stationed on this former U. S. Naval Training Base of which approximately 3,949 acres were turned over to the Idaho Fish and Game Department for administration for the best interests of wildlife.

This is a natural recreational area adjacent to Lake Pend Oreille and permits public access to this area and the lake. Facilities for campers and fishermen including a public boat dock and camp area have been provided.

White-tail deer are plentiful in the area. On May 6, 1954, the manager reported counting 204 in 45 minutes of checking the perimeter of the range.

To improve the refuge for deer and wildlife the concrete building foundations are being leveled and combustible and waste materials left after the salvage operations are being cleaned up. Control measures have been taken to reduce the goatweed through cultivation and planting of perennial grasses. One hundred acres

A moose is a prized big game trophy. Annual hunts during the eight seasons from 1946 through 1953 took 244 moose, but the population continues to show a gain.

have been planted to various grass species. Of 53 acres of barley planted, three were left unharvested for the deer and pheasants, with the harvested grain being used at the bird farms. Approximately 56 acres were seeded to alfalfa, in addition to various browse and other plant species, to improve the habitat for wildlife.

Trapping and Transplanting (Project 75-D)

Beginning January 20, 1953, and during part of February, there were 232 mule deer trapped on the overutilized winter range near Featherville. They were transported by toboggans and sno-cat from 20 to 30 miles where they were loaded into trucks and hauled to the vicinity of Long Tom reservoir and released. At the trapping site snow was 40 inches deep, while there was practically bare ground at the release site with stands of available bitterbrush and sagebrush present. It is hoped that this transplanting will help build up the deer population in the Long Tom reservoir area, and save winter loss of deer and range depletion on the Featherville winter range.

During January and February of 1954 there were 48 white-tail deer trapped and tagged at Farragut Refuge in Kootenai County and released along the Teton and South Fork of the Snake River in Fremont and Madison Counties. It is the endeavor of this project to form a nucleus from which the re-establishment of an excellent game species into this range will become a reality.

(Predator control work also done under this project is reviewed with other predator control work under a separate section of this biennial report.)

Game Bird Projects

Game Bird Survey

Two Federal Aid projects on game birds were continued during the biennium. These were Project 96-R and 84-R, the former entitled Statewide Game Bird Survey and Investigation and the latter Idaho Management Study of Migratory Waterfowl. The two projects were combined in February, 1953 and the upland bird and waterfowl investigations since that time have been carried out under Project 96-R-5. There are now five persons working on the project with four biologists operating from various stations in the state and the Game Bird Supervisor acting as project leader.

Techniques used in various aspects of game bird management have been standardized and are now uniform over the state. Much help in the field has been received from other Department personnel. It is not unusual to have a fisheries biologist, conservation officer and refuge manager together on a job in game bird management. This leads to a better understanding among Department personnel and is an effective way of accomplishing many jobs which must be completed on a rather tight schedule.

PHEASANTS

Pheasant populations have been high during the biennium. The winters of 1952-53 and 1953-54 were both mild and there was very little winter loss in the state either year. The hatching seasons were at least average and fall populations were very good. The harvest during both hunting seasons was held down some because of relatively hot, dry fall weather. Dogs had a difficult time finding birds in the dusty cover and there was more than ample escapement of birds for brood stock.

Based on sex ratio counts taken in prior years, it was decided in 1952 that the bag limit could be raised to three cocks without endangering the pheasant population. This decision has been proven to be sound since sex ratio counts taken since the bag limit was raised have shown no great gap between the numbers of cocks: 100 hens observed.

Sex ratio counts are taken during January of each year when weather conditions have tended to congregate the birds so that they may be more readily counted. Most game bird managers agree that a ratio of 15 to 20 cocks: 100 hens is adequate. The following tables give the observed ratios during the past three winters. The 1952 ratio was taken following a two cock bag limit and the 1953 and 1954 ratios following a three cock bag limit. It can be seen that we still have a very adequate margin of safety in the spread of sex ratios in pheasants.

Comparison of Pheasant Sex Ratio Counts, 1952 - 54

	1952		Sex Ratio	1953		Sex Ratio	1954		Sex Ratio
District	Cocks	Hens	M/100 F	Cocks	Hens	M/100 F	Cocks	Hens	M/100 F
One	735	1479	50:100	49	92	53:100	93	193	48:100
Two	2398	6709	36:100	806	2233	36:100	824	1967	42:100
Three	4614	9505	49:100	2051	3595	57:100	3015	7140	42:100
Four	3341	5442	61:100	1872	3205	58:100	850	1902	45:100
Five	4689	8532	55:100	1105	1556	71:100	853	1446	59:100
Totals	15,777	31,667	50:100	5883	10,681	55:100	5635	12,648	45:100

Hunter bag checks were made on the opening week end of the 1952 and 1953 seasons. A comparison of hunter success as recorded at the same checking stations is given in the accompanying table.

Results of Pheasant Checks on Opening Week End, 1952-53

District		Hunters Checked	Birds Checked	Av. Hours Hunted	Av. Birds Per Hunter
One	1952	344	215	8.1	0.6
	1953	427	262	4.7	0.6
Two	1952				
	1953	883	918	3.1	1.0
Three	1952	1936	2299	2.8	1.2
	1953	2112	2176	3.3	1.0
Four	1952	1820	1865	2.7	1.0
	1953	1583	1370	3.1	0.9
Five	1952	2102	2048	4.6	0.9
	1953	2731	2249	5.6	0.8

These figures show that hunter success on the opening week end of both years was almost the same with a slight decrease in 1953.

The breeding population figures obtained from surveys taken in the spring of 1954 show an upward trend and a successful harvest season is anticipated for this year.

SAGE GROUSE

Because of a reduction in the average hunter success during the 1951 season plus discouraging reports from breeding ground surveys in the spring of 1952, it was deemed advisable to keep the season closed on sage grouse in 1952. Improved conditions the following year allowed a one day season in 28 counties or portions thereof in 1953. During the one day hunt, 12,983 hunters were checked with 12,328 sage grouse for an average of .95 bird per hunter.

Counts were made on 140 sage grouse booming grounds in the spring of 1954. It is planned to count these grounds each year and to use this information, plus that obtained from brood counts and brood trends routes, when considering the advisability of future seasons.

FOREST GROUSE

Open seasons were held on blue, ruffed and Franklin's grouse during both years of the biennium. In 1952 there were 21 counties or portions thereof open for 4½ to 15½ days, and in 1953 there were 38 counties or portions thereof open for 1 to 21½ days. In an attempt to spread out the hunting pressure, the forest grouse and sage grouse seasons opened on the same day in southern Idaho in 1953. Apparently this measure was effective since the hunting pressure, particularly in District Five, was lower in 1953 than in previous years. Checking stations were operated in some areas and 1,528 hunters with 1,391 grouse came through the stations. Of 1,483 grouse recorded at checking stations and field checks, there were 1,046 (70.5%) blue, 423 (28.5%) ruffed and 14 (1%) Franklin's.

SHARP - TAILED GROUSE

Sharp-tailed grouse numbers apparently remained fairly static the past two years. Scattered flocks were seen regularly in areas

Idaho's first open seasons on chukar partridge were held in 1953 and 1954. Post-season checks indicate no harm to populations, with the prospects of a hunt each year in the future.

where they are known to still persist. Several dancing grounds have been located and counts have been made each spring to maintain a record of the population level. The season remained closed on sharp-tailed grouse.

QUAIL

Quail populations have been relatively high during the biennium. Hunting seasons have been held concurrently with the pheasant seasons and all evidence points to the fact that most of the quail shot are taken incidentally while the hunter is out after pheasants. In the three districts having seasons on quail in 1953, hunters were checked with 7,050 pheasants and 239 quail for a ratio of 1 quail taken for each 29 pheasants shot.

Counts of whistling male bob-white quail were made in Canyon county during the spring of 1954. These counts, which are used to measure the breeding population, indicated a higher population of bob-white in this area than in many of the central states where this species is considered to be one of the major game birds.

HUNGARIAN PARTRIDGE

Hungarian partridge populations still showed a progressive climb upward from the low point following the winter of 1948-49. There

is a limited amount of hun hunting as such, but the majority of these birds harvested are taken by pheasant hunters. In making bag checks in the four districts where the hun season was open concurrently with the 1953 pheasant season, there were 573 huns checked along with 11,352 pheasants for a ratio of 1 hun for each 20 pheasants.

The first general hun season in District Five was held in 1953. There was no indication that the season was detrimental to the birds and it afforded a small harvest from a population which had apparently become fairly static.

CHUKAR PARTRIDGE

The first open season in Idaho on chukar partridge was held in 1953 when a 1½ day hunt was authorized in Gem, Payette, and Washington counties. Checking stations in Gem County checked 130 hunters with 153 birds for an average of 1.2 birds per man. Hunters soon discovered that the chukar was not an easy bird to hunt. After the first flurry of shots the birds took to the ridges and hunters who bagged the limit of three birds were firm in their conviction that they had earned them.

Post season checks indicated that the hunting had not hurt the populations and it appears that Idaho hunters may plan on having chukar hunting from now on. Planting of game farm stock was continued during the biennium in an effort to established the birds in all the range which meets their habitat requirements.

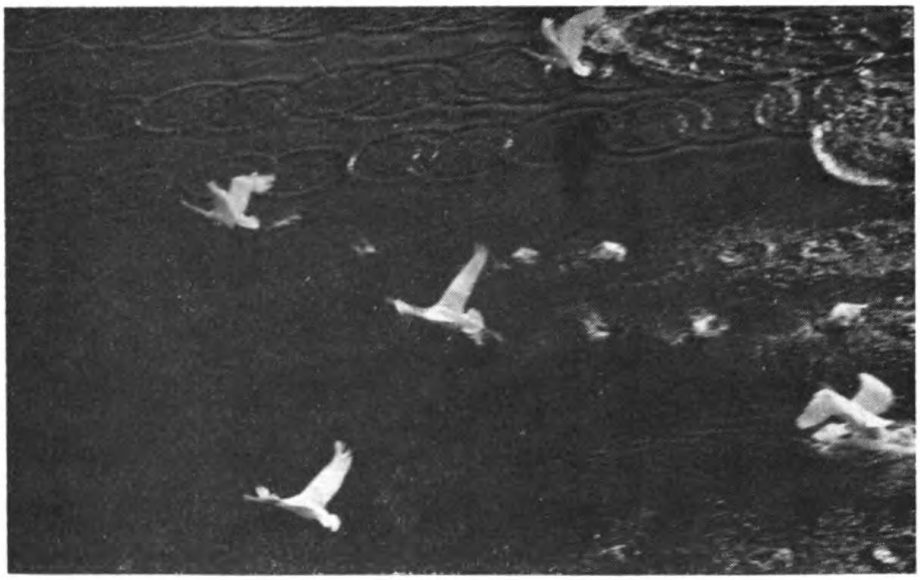
MOURNING DOVE

In 1952, all counties of the state except 13 had a mourning dove season while in 1953 all counties but eight were open to hunting of this species. The season both years was from September 1-15. There were 625 dove wings collected during the 1953 hunt and an analysis of these showed that 49.3 per cent of the birds from which the wings were taken were adults. This was interpreted to mean that the majority of the juvenile doves had migrated prior to the opening of the hunting season. The opening date is established by federal regulation and there appears to be little hope of having an earlier season.

WATERFOWL

Waterfowl hunters in 1952 and 1953 enjoyed some of the most liberal bag limits and season lengths that had been established for years. The 1952 season was open 70 days with a bag and possession limit of six ducks plus two bonus birds (baldpate or pintail) and the 1953 season ran 75 days with a bag and possession limit of seven ducks plus four bonus birds (baldpate or pintail). Hunting in both seasons was marred somewhat by extremely mild fall and winter weather. There seemed to be plenty of ducks, but there was very little good duck hunting weather and shooting was not up to expectations.

The department cooperates each year with the Fish and Wildlife Service in conducting the mid-winter waterfowl inventory in Idaho. Similar counts are taken in all other states at the same time. The results of the Idaho counts for the past five years are shown in the table. Of particular interest here are the 419 trumpeter swan counted in January, 1954. The Fish and Wildlife Service had estimated a total of 577 trumpeter swan in the United States in the previous August. This means that Idaho had approximately 75 per cent of this population wintering in the state.



A total of 419 trumpeter swan were counted in the Island Park area during the annual mid-winter waterfowl inventory in 1954. This was approximately 75 per cent of the total population of these rare birds living in the United States.

Idaho Waterfowl Mid-Winter Inventory
January 1950 - January 1954

Species	1950	1951	1952	1953	1954
Mallard	193,342	166,680	192,808	331,863	394,034
Baldpate	11,815	7,402	8,281	15,013	20,780
Pintail	12,027	7,066	8,309	12,420	24,237
Green-winged Teal	1,490	1,122	2,021	1,453	2,274
Blue-winged Teal		63	1	5	9
Shoveller	3	4	5	213	83
Gadwall	230	1,119	1,821	643	263
Wood Duck	10	10	7	27	102
Redhead	804	361	4,371	687	1,147
Canvasback	1,308	1,396	1,929	439	2,887
Scaup	1,018	3,218	6,563	1,571	2,191
Ringneck	———	———	850	446	800
Goldeneye	4,466	16,514	6,042	9,707	8,414
Bufflehead	345	543	453	1,298	992
Ruddy Duck	131	———	235	274	152
Scoter	———	1	———	———	———
Unidentified Ducks	3,748	5,832	3,812	15,869	7,246
Canada Goose	4,051	8,649	3,714	8,960	12,375
Snow Goose	———	1	———	37	2
Cackling Goose	———	———	———	8	———
Swan	332	———	———	———	———
W. Swan	———	119	47	103	102
T. Swan	———	223	373	171	419
Mergansers	1,838	980	2,187	4,106	5,574
Coot	8,215	3,105	12,392	23,169	49,750
TOTALS	**245,173**	**224,408**	**256,221**	**428,482**	**533,833**

Carey Lake Wildlife Management Area (Project 104-D, 82-L-3)

Carey Lake is a small but desirable area for migratory waterfowl nesting and resting. After the spring run off, this lake is maintained only by return flow from adjacent irrigation, which is often inadequate to maintain desirable fish and wildlife habitat throughout the summer.

This project was initiated to enlarge the existing canal and build approximately one-half mile of new canal, to transport available spring flood water from Little Wood River into this lake prior to the irrigation season. Bridges and water turnouts were installed as necessary. Approximately 16 acres of Department land adjacent to the lake was planted to cereal grain for wildlife use. Fences were erected or maintained to protect wildlife feeds from domestic stock use.

A land exchange was made with an adjacent land owner for 100 acres of marsh land lying within Carey Lake proper for 38 acres of agricultural land acquired under previous land purchase which was surplus to the Department in administering the area in the best interest of wildlife.

North Lake Wildlife Management Area (Projects 24-L-9, 95-M, 55-D-5, 55-D-6)

North Lake Wildlife Management area in Jefferson County is the largest waterfowl management area in the state containing some 8,362.90 acres of state and federal land under Department control. The area is heavily utilized by migratory waterfowl during the spring and fall migrations. The area also benefits pheasants, sage grouse, antelope and muskrats.

Through the above mentioned Federal Aid projects on the area, a full-time refuge manager has been provided to administer the area in the best interest of wildlife.

A new residence, double garage, granary, and combination shop and storage shed have been erected and the machinery necessary to operate the area has been acquired. Power lines have been extended to, and pumps provided for, the three new wells driven on the area to provide water for production of wildlife food and cover.

An effort has been made to reduce the waterfowl depredation in the immediate valley by supplying as much food as possible on the wildlife management area until private crops are harvested. Canals have been dug and dikes erected to create desirable aquatic habitat for nesting waterfowl.

Access to, and within, the area has been improved for public and administrative use.

Provisions have been made for the acquisition of two tracts of land totaling 530.11 acres lying within the high water line of Mud Lake, in an effort to round out this wildlife management area. However, this acquisition has not as yet been completed.

Forty acres of land were obtained here in exchange for a canal right-of-way on Department lands.

Star Lake Wildlife Management Area (Project 73-D, 70-M-4, and 70-M-5)

Waste water from the project farming operation is impounded in Star Lake for use by waterfowl. Pre-season and post-season

irrigation waters are also available through the Dietrich lateral which provides additional water at the lake.

The lower lake bed was fenced under this prdoject, to protect the lake bed, and to provide adjacent margins for wildlife use. A 300 foot lane was left open for livestock watering access.

A full-time refuge manager was assigned to the area to produce food and cover planting and maintain fences, and otherwise administer the area in the best interest of wildlife.

C. J. Strike Wildlife Management Area Development (Projects FW 2-D-1, 1-L-1)

The Idaho Power Company has constructed the C. J. Strike dam across the Snake River. This dam has created an impoundment some 27 miles in length and containing some 7,500 surface acres at high water elevation. The back water of this dam extends up the Bruneau River approximately nine miles.

This large water impoundment sheltered from prevailing winds by the precipitous to gentle sloping banks of the Snake River has created habitat heavily utilized by feeding and resting waterfowl.

This impoundment readily accessible to the populations of Boise, Nampa, Caldwell and smaller towns provides recreation in the form of hunting, fishing and boating.

In purchase of lands necessary for this impoundment, the Idaho Power Company has acquired approximately 1,850 acres of land above the high water line of the reservoir. Some 200 acres of this land near the mouth of the Bruneau River is suitable for agriculture. All of the above mentioned land and other elements of value, through inter-agency agreement, have been turned over to the Idaho Fish and Game Department to administer as a wildlife management area by the Idaho Fish and Game Commission to extend maximum benefits to fish, wildlife and public recreation.

This initial development project provided for: (1) production of cereal grains which will be left unharvested in the field for wildlife use; (2) purchase of the necessary farm machinery to produce said crops; (3) fencing of deeded lands turned over to the Fish and Game Department for wildlife use. Cattle guards are installed to provide public access for hunting, fishing and other recreational use on the area.

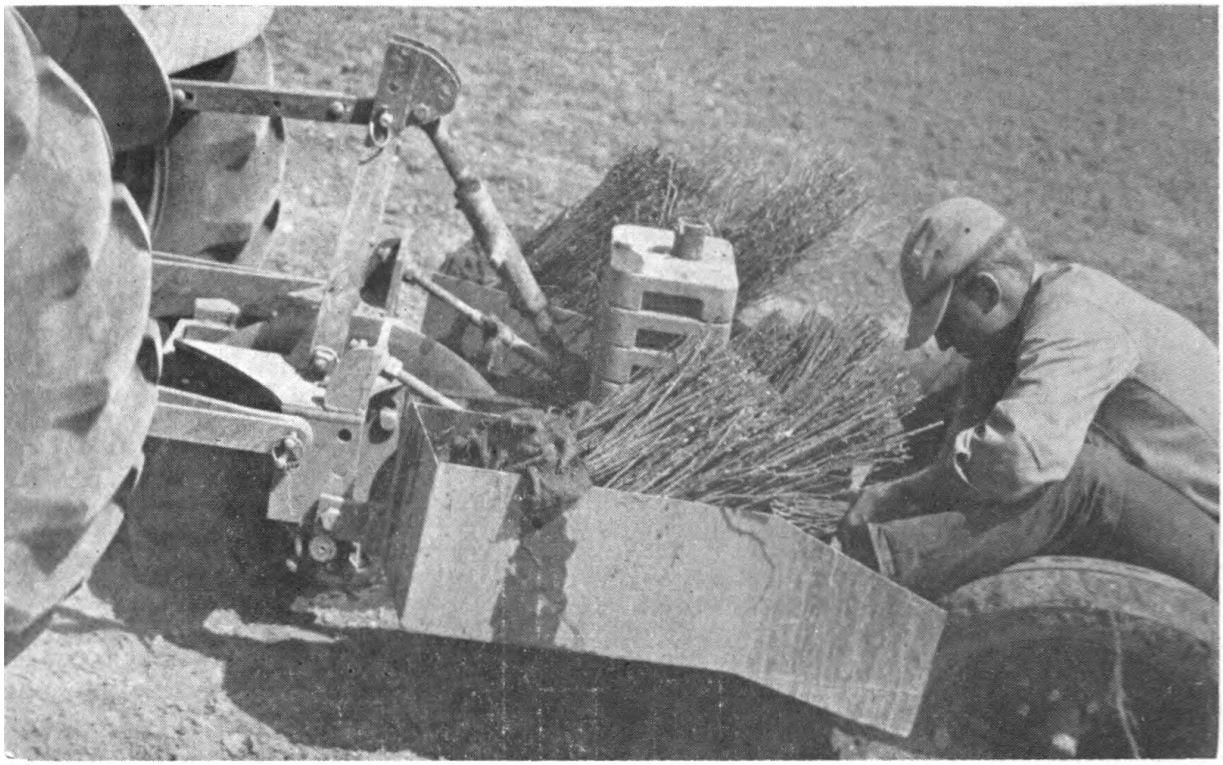
As a result of the C. J. Strike impoundment, water percolated through a porous lava ridge and flooded U. S. and private land to create Crane Falls Lake (approximately 100 acres in size, maximum depth 25 feet, average depth 16 feet). A total of 113.33 acres of private land was purchased to acquire this lake area for public recreational use.

Hagerman Refuge (Projects 36-D-5 and 93-M)

A survey made of the lava rock area associated with the Hagerman Refuge indicated that by a limited amount of diking and utilizing available spring water, two additional lakes suitable for trout fishing could be created. Also that with a short dike and water control bridge across Riley Creek, two additional feet of water could be impounded in the main Riley Creek march greatly increasing the quantity, and quality, of existing fish and wildlife habitat.

Twelve small island (12′ x 30′) were pushed up as a benefit to nesting migratory waterfowl.

A full-time refuge manager was assigned to the area to pro-



A tractor-drawn tree planter in operation. This equipment is used on habitat improvement work. Two men can plant upwards of one thousand trees an hour with this machine.

duce wildlife foods and otherwise administer the area in the best interest of wildlife.

Maintenance of Federal Aid Projects (Projects 78-M-5 and 78-M-6)

This project provides for a full-time refuge manager to be stationed on the Boundary County Wildlife Management Area to maintain fences, buildings, etc., water levels and produce cereal grain for wildlife use during migration periods and to otherwise administer the area in the best interest of wildlife. It also provides for the maintenance of the white-tail deer enclosure fence near Princeton, Idaho, where the University of Idaho is conducting investigative studies relative to white-tail deer for the Fish and Game Department.

Habitat Improvement (Project 80-D)

The program of providing better food and cover for upland birds has continued to expand through incorporating habitat improvement into other regular land use practices. Four full time biologists are assigned to Federal Aid Project 80-D for carrying out the work of this program. Three crews, under the supervision of these biologists, do the field work required for establishing food and cover plantings, and the water development.

As a medium for fitting habitat improvement into regular land and water conservation practices the department has entered into memorandums of understanding with eleven Soil Conservation Dis-

tricts. Provisions for a cooperative tree and shrub planting program are a part of such a memorandum of understanding. Within these cooperating districts the landowners do the necessary ground preparation and maintenance of the plantings. The Department assists the landowner in designing the planting, then furnishes the planting stock and plants it. Most plantings in this program are designed to serve as windbreak, fence row or erosion control plantings, having a direct utility value to the landowner. The species of plants used and the designs of the planting are recommended which will provide for the greatest wildlife values possible. This program is proving quite successful in the irrigated portions of Idaho where utility type plantings are recommended in proper farm planning.

In other areas of the state, it is necessary for the Department to obtain use agreements on odd parcels of land. Development specifically for wildlife can then be made on such areas. However, it is necessary for the department to do all the work involved in establishing, maintaining and protecting such developments. These areas are developed by combinations of tree, shrub and herbaceous plantings plus the protection of existing vegetation. Adaptable species having the highest wildlife food and cover values are used in these developments.

Some of these odd corner plantings are obtained from private landowners who are willing to cooperate with the Department. Other odd areas occur as right-of-ways on lands of utility companies. Many others occur, and are available, on lands controlled by other Federal or State agencies. An agreement has been made with one railroad company and plantings made on their lands. Leases of several corner parcels of land have also been obtained from the Bureau of Reclamation. Sizable developments have been made on these lands and will serve as public hunting areas in future years.

Everybody helps when it comes to planting trees and shrubs. Plantings like this around farm ponds provides excellent pheasant and duck habitat.

The department owns areas over the state known as "Wildlife Management Areas." In an effort to develop these to the maximum potential for upland birds, plantings of trees and shrubs are being made each year on these lands.

Since many of the tree and shrub species have not yet been developed and tested for values to wildlife, the Department has started three test areas on Wildlife Management Areas belonging to the state. In each of these, samples of numerous species of trees and shrubs which might be of value to wildlife are being set out and tested for their adaptability to those areas.

Following is a summary of the trees and shrubs planted for habitat improvement in 1953 and 1954:

Trees Planted

Year	On Private lands	On State Wildlife Management Areas	B. Reclamation & Utility Co. lands	Replants	Total
1953	54,849	17,674	20,826	14,256	107,605
1954	91,391	15,964	4,472	14,115	125,942
Total	146,240	33,638	25,298	28,371	233,547

An important feature in the habitat improvement program is the agreement made with cooperating landowners whereby they will allow hunting by permission. The Department posted all cooperators' lands with signs indicating they are open to "Hunting by Permission." In 1953-54 plantings were made on lands of 157 cooperators. This provided assurance of hunting by permission on a total of 29,000 acres of cooperators' lands.

Other plantings of herbaceous species were also made. Many of these were multi-purpose plantings, principally for erosion control or weed control and secondarily for bird food and cover, especially nesting cover. Plantings were in draws, on ditch banks and odd corner areas. Other plantings were made as cover crops in tree and shrub plantings.

Six prefabricated plastic watering devices for birds have been purchased for experimental installation in pheasant areas, chukar and Hungarian partridge areas and in sage grouse and sharp-tailed grouse areas. These are to be used in an effort to supply critically needed water in semi-desert areas during the late summer and fall season. Experiences in other states have indicated that water development may help a great deal in effecting a better distribution of birds, resulting in increased populations.

Fur-Bearing Animal Projects

Fur Resources Survey (Project 108-R)

The trapping of fur-bearing animals is an industry which returns a quarter-million dollars annually to the trappers of Idaho yet involves a class of our wildlife resources of which we have comparatively little knowledge.

This project was initiated in February 1953 to begin collecting the basic information necessary to sound fur-bearer management.

Specific objectives are to estimate the annual catch and value of the various species of fur-bearers, to determine their range and distribution throughout the state, and to develop methods by which changes in fur-bearer populations can be measured.

A major phase of the project is devoted to a study of the beaver management program. The state controlled Caretaker Trapper system was set up on permanent trap-lines, or allotments, in 1945 under conditions of land use, economics, and beaver populations which have changed considerably since that date.

A survey of each allotment is being conducted to obtain information on which to base any adjustments or revisions of the program which may be necessary to bring beaver management up to date and meet the demands of present conditions.

Note on Predator Control:

Some of the predator control work was done via Federal Aid, but this is reviewed with other predator control work under a separate section on Predator Control.

Game Farms

Production was continued at the game farms at Lapwai and Jerome. Utilization was made of the holding pens at Coeur d'Alene, Eagle and Hagerman. Both game farms raised pheasants and Jerome continued producing chukars. The production and planting records from both farms are given in accompanying tables.

Jerome Incubation Report

Pheasant	**1953**		**1954**	
Eggs Set	25,770	%	26,419	%
Infertile	2,629	10.20	2.248	8.51
Dead Shell	4,016	15.60	5,203	19.69
Broken	49	.20	53	.20
Culls	588	2.28	606	2.29
Hatch	18,478	71.70	18,309	69.30
Chukars	**1953**		**1954**	
Eggs Set	5,729	%	4,764	%
Infertile	382	6.67	283	5.94
Dead Shell	244	4.26	611	12.83
Broken	54	.94	22	.46
Culls	30	.52	114	2.39
Hatch	5,019	87.61	3,734	78.38

Pheasant Production Record
Jerome Game Farm Planting Record

County	1953 Spring Release	1953 Brood Stock	1953 Summer Release	1953 Total	1954 Spring Release	1954 Brood Stock	1954 Summer Release	1954 Total
District No. Three—								
Ada	236		600	836	143		500	643
Adams	193		500	693	200		400	600
Boise	80		100	180				
Canyon	126			126				
Elmore	416		600	1016	310		500	810
Gem	130			130	100		200	300
Owyhee	306		500	806	100		400	500
Payette								
Washington	267		500	767	206		400	606
	1754		2800	4554	1059		2400	3459
District No. Four—								
Butte	200	142	400	742	250	200	400	850
Camas								
Cassia	150	150	400	700	200	100	400	700
Custer		100	200	300		103	200	303
Gooding	62		345	407		100	200	300
Jerome		200	200	400		220	200	420
Lemhi		100	300	400	100		200	300
Lincoln	200	200	300	700	100		200	300
Minidoka	100	150	300	550	200	100	400	700
Twin Falls		200	400	600		200	200	400
	712	1242	2845	4799	850	1023	2400	4273
District No. Five—								
Bannock	200	108		308		255		255
Bear Lake	240			240				
Bingham	60	288	840	1188	60	306	850	1216
Bonneville			415	415			400	400
Caribou		162	200	362		255	160	415
Franklin		184	430	614	305		350	655
Fremont			100	100				
Jefferson	160		750	910	380		680	1060
Madison	200	324		524		306	234	540
Oneida		176	330	506	205		160	365
Power			260	260			200	200
	860	1242	3325	5427	950	1122	3034	5106

Pheasant Production Record

Lapwai Game Farm Planting Record

County	1953 Spring Release	1953 Brood Stock	1953 Summer Release	1953 Total	1954 Spring Release	1954 Brood Stock	1954 Summer Release	1954 Total
District No. One—								
Benewah	690		1292	1982	700		1200	1900
Bonner	240		355	595				
Boundary	690		1400	2090	1162		1950	3112
Kootenai	690		1292	1982	460		775	1235
	2310		4339	6649	2322		3925	6247
District No. Two—								
Clearwater	211	163	825	1199	193	140	725	1058
Idaho	423	312	1640	2375	368	288	1415	2071
Latah	424	326	1650	2400	370	289	1450	2109
Lewis	208	163	775	1146	189	143	750	1082
Nez Perce	427	334	1661	2422	375	386	1697	2658
	1693	1298	6551	9542	1495	1246	6037	8978

Lapwai Incubation Report

	1953	%	1954	%
Eggs Set	22,147		21,896	
Infertile	1,502	6.78	1,838	8.39
Dead Shell	1,819	8.21	1,881	8.59
Broken	223	1.00	174	.79
Culls	254	1.15	351	1.60
Hatch	18,349	82.85	17,652	80.62

Chukar Partridge Planting Record

County	1953 Spring Release	1953 Brood Stock	1953 Summer Release	1953 Total	1954 Spring Release	1954 Brood Stock	1954 Summer Release	1954 Total
Bannock					200			200
Bingham			150	150	300			300
Cassia					500			500
Custer	1200			1200				
Elmore					164			164
Gooding					100		150	250
Idaho		200		200	225			225
Jefferson	300			300	150			150
Nez Perce		300		300	305			305
Owyhee	277		500	777	200	530		730
Power			150	150	150			150
Twin Falls					200			200
Washington					300		150	450
TOTALS	1777	500	800	3077	2794	530	300	3624

Predator Control

Predatory animal control measures, under Federal Aid Project 75-D, were taken on the Snake River plains and in Owyhee County to protect transplanted herds of antelope. All predator control efforts were effected by the U. S. Fish and Wildlife Service, Predator and Rodent Control Division. During the 1952 - 1953 period, there were 660 coyotes and 225 bobcats destroyed by ground control and 111 coyotes and 1 bobcat by aircraft control for a total of 997 predators killed during 1953.

This control project was continued in 1954 with 262 coyotes and 213 bobcats accountable to ground control and 115 coyotes and 1 bobcat to aircraft control totaling 377 coyotes and 214 bobcats destroyed. For the biennium there was a total of 1,148 coyotes and 440 bobcats taken.

In addition to the predatory animals taken under Project 75-D, the cooperative predator animal control program with the State, various predator animal boards, livestock associations, and the Predator Animal and Rodent Control Division of U. S. Fish and Wildlife Service was continued. For the biennium the following table summarizes the portion of the program financed with Game Department Funds; however, Department funds were not used in the poisoning control program.

Cooperative Predator Control Program

Year	Salaries	Gas and Equipment	Airplane Hire	(Predators Taken) Coyotes	Bobcats
1952-53	$ 10,104.06	$ 3,078.63	$ 1,099.38	412	142
1953-54	9,737.20	2,682.15	1,580.65	438	147
Totals	$ 19,841.26	$ 5,760.78	$ 2,680.03	850	147

In addition the Game Department maintained two predator animal trappers in District One during the biennium. The program is briefed in the following table:

No. Trappers	Wages Paid	(Predators Taken) Coyotes	Bobcats	Lynx	Cougar
2	$ 11,350.00	648	158	3	1

Cougar Bounty

Bounty on cougar was continued but the bounty fee was changed effective July 1, 1953, reducing it from $75.00 to $50.00. The bounty claims paid are as follows:

Period	Bounty per Cougar	Cougar Claims	Total
July 1, 1952 to June 30, 1953	$75.00	46	$ 3,850.00
July 1, 1953 to June 30, 1954	75.00	1	$ 75.00
July 1, 1953 to June 30, 1954	50.00	143	7,150.00
Total		190	$11,075.00

Predator control operations accounted for a large number of bobcats during the biennium.

Magpie Control

The magpie control program was continued under the supervision of the district supervisors with conservation officers and temporary help.

Period	District	Amount	Estimated Birds Killed	
July 1, 1952 to June 30, 1953	III	$ 776.72	1,459	
	IV	1,509.62	17,126	(8,870 recovered)
	V	1,116.56	8,670	
		$3,402.90	27,255	
July 1, 1953 to June 30, 1954	III	97.50	300	
	IV	1,941.28	21,292	(9,512 recovered)
	V	1,602.37	14,950	
		$3,641.15	36,545	

Beaver Program

The beaver caretaker trapper program began in 1945 and was continued. To date this method of managing the beaver has been the most successful. Low prices for the fur has made it difficult for caretaker trappers to trap and transplant beaver to suitable areas during the months the fur is not prime. A summary of the beaver taken and receipts for the biennium are as follows:

Number of Beaver Pelted and Value of Pelts Sold

Season	Class "A" Trappers	Class "B" Trappers	Salaried Trappers	Conservation Officers	Total	Receipts from Sale of Pelts
1952-53	459	8,005	80	14	8,558	$102,295.30
1953-54	321	7,559	28	84	7,992	68,584.01
Total	780	15,564	108	98	16,550	$170,879.31

Distribution of Receipts from Sale of Beaver Pelts

		1952-1953	1953-1954
Total Receipts		$102,295.30	$ 68,584.01
Trapper's Share	75%	75,894.18	50,944.76
State's Share	25%	26,401.12*	17,639.25*

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

1952-1953 Trapper's bids were placed on 36 skins. State income was $211.63.
1953-1954 Trapper's bids were placed on 25 skins. State income was $108.00.

Livetrapping and Transplanting

During the biennium there were about 1822 beaver live-trapped and some were transplanted. This is done to relieve damage to property during summer months and to establish new colonies of beaver in watersheds where they will become a part of the beneficial wildlife resource. Beaver do cause serious damage to roads, canals and agricultural pursuits and it is essential that the beaver program keep such damage to a minimum.

Sale of Other Furs

Included are the number of pelts and species confiscated illegally, or accidentally taken and those trapped where they were doing damage to property.

Species	1952-1953 Number	1952-1953 Value	1953-1954 Number	1953-1954 Value
Lynx	184	$ 28.56		
Coyotes	11	10.56		
Muskrats	616	568.30	27	8.50
Mink	18	67.07	8	28.32
Raccoon	2	1.44		
Otter	3	36.24	1	9.12
Ermine	1	.67		
Total	835	$712.84	36	$45.94

Trapper's License Issued and Trapper's Report

In 1952 there were 1,542 trapper's licenses sold against 1,492 in 1953. This decline in trappers' license sales is believed to have been appreciably influenced by the fur prices. Trappers' licenses are sold on a calendar year basis. However, it appears that there has been a tendency for a portion of the reports to cover the spring season of the next year so that the fur reported on the calendar year license treated in the following tables includes this overlap.

Trapper's Report

Species	Number	Amount	Unsold or no price reported	Ave. price per pelt
1952				
Badger			1	$
Bobcats			7	
Fox	6	$ 7.38	11	1.06
Marten	874	9,644.98	351	11.03
Mink	2,790	41,738.30	377	14.96
Muskrat	102,899	98,557.69	10,006	.96
Otter	31	458.00	11	14.78
Raccoon	72	67.95	121	.94
Weasel	23	16.45	16	.71
Totals	106,695	$150,490.95	10,901	
1953				
Fox	3	$ 6.50	3	$ 2.12
Marten	348	2,744.50	223	7.81
Mink (closed)	26	401.00	13	15.42
Muskrat	86,509	59,343.51	8,151	.69
Otter	6	83.00		13.83
Raccoon	41	32.00	44	.78
Totals	86,933	$62,610.51	8,434	

Cooperative Wildlife Research Unit

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

The Wildlife Research Unit is located in the College of Forestry and the Forest, Wildlife and Range Experiment Station at the University of Idaho. Training is offered in wildlife and fishery management for both undergraduate and graduate students.

During the Biennium, graduate students completed theses on:

1) A Preliminary Study on the Life History and Ecology of the Blue Grouse in West Central Idaho. **by Edwin B. Caswell.**
2) A preliminary Study Toward Sage Grouse Management in Clark and Fremont Counties, Idaho, Based on Seasonal Movements. **by Duane B. Pyrah.**
3) The Influence of Silvicultural Thinnings on the Production of Key Foods of White-tailed Deer and Ruffed Grouse. **by Alfred H. Marsh.**
4) Availability of White-tailed Deer Browse within the Hatter Creek Enclosure. **by Joseph V. Basile.**
5) Age, Growth, and Migration of the Steelhead Trout in the Clearwater River, Idaho. **by Charles R. Whitt.**
6) A Limnological Study of Pend Oreille Lake with Special Consideration of the Ecology of the Kokanee. **by Raymond G. Stross.**

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1) Populations, Ecology and Management of Marginal Trout Streams in Southern Michigan. **This is a Ph.D. thesis by Virgil S. Pratt, who completed his degree at the University of Michigan.**

Work is being continued on sage and blue grouse, white-tailed deer and mule deer, and waterfowl by both staff and graduate students.

Publications of the Unit during the two years include 12 papers in national journals, state magazines and University of Idaho publications.

Six men completed their requirements for the master's degree, and all but one are now employed in wildlife or fishery management.

The Undergraduate training program in fishery and wildlife management was begun two years ago. Six students graduated under this program to date. Three of them entered the armed forces, two entered graduate study at other Universities and one is employed by the Fish and Game Department.

Wildlife Research Unit Staff:

Virgil S. Pratt, **Assistant Professor of Fishery Biology.**
Kenneth E. Hungerford, **Associate Professor of Wildlife Management and Assistant Leader of the Unit.**
Paul D. Dalke, **Unit Leader and Professor of Wildlife Management.**

Federal Aid In Fish and Wildlife Restoration

WILDLIFE RESTORATION

The Federal Aid in Wildlife Restoration Act provides that the Federal Government will finance 75 percent of approved wildlife projects. Under this act Congress appropriates annually funds received from revenue derived from an 11 percent excise tax on sporting arms and ammunition. The Idaho legislature passed an enabling act authorizing the Fish and Game Department to participate in this program on March 4, 1939.

Types of Suitable Projects

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

1. LAND PURCHASED—Purchase of lands for the rehabilitation of wildlife.
2. LAND DEVELOPMENT—To make areas more suitable for wild mammals and birds, by environmental improvement with food and cover plantings, water impoundment and stabilization, release of game birds or mammals where seed stock is needed, and other activities necessary to accomplish this purpose.
3. INVESTIGATIONS AND SURVEYS—Research to solve pressing wildlife management problems. These studies must be confined to procurement of factual information designed to improve the administration of the wildlife resources of the state.
4. COORDINATION—The coordination of projects necessary to efficient management affecting wildlife resources.
5. MAINTENANCE—To effect the upkeep and repair of structures and related restoration developments completed under Federal Aid projects.

Wildlife Restoration Funds Received

One-half the federal funds available to the states for wildlife restoration projects is allocated in the ratio that the area of each state bears to the total area of all the states; the remainder is allocated in the ratio of the state's paid hunting licenses to the total number of paid hunting license holders in all the states. No state shall receive less than one-half of one percent, nor more than five percent of the total amount apportioned to all the states. Since March 11, 1939, when the Idaho legislature passed the Act enabling participation, $1,817,757.96 in federal apportionments has been allocated to the State of Idaho.

The following financial report is for the period July 1, 1952 to June 30, 1954:

Unobligated balance of Federal funds, July 1, 1952	$ 95,311.07
Apportionment Fiscal Year, 1953	203,710.04
Apportionment, Fiscal Year, 1954	240,361.63
Total Federal money available to finance approved projects for period July 1, 1952 to June 30, 1954	$539,382.74
Unobligated balance of Federal funds as of June 30, 1954	3,757.09

Federal Aid in Wildlife Restoration Projects Initiated During Biennium July 1, 1952 to June 30, 1954

Coordination		Federal	State	Estimated Total
FW 40-C-12	Coordination	$ 17,822.25	$ 5,940.75	$ 23,763.00
FW 40-C-13	Coordination	18,189.75	6,063.25	24,253.00
	Total Coordination	$ 36,012.00	$ 12,004.00	$ 48,016.00
Development				
W 89-D- 2	Sand Creek Development	$ 3,750.00	$ 1,250.00	$ 5,000.00
W 55-D- 6	North Lake Development	3,960.00	1,320.00	5,280.00
W 80-D- 6	Habitat Development	29,325.00	9,775.00	39,100.00
W 55-D- 4	North Lake Development	12,600.00	4,200.00	16,800.00
W 73-D- 3	Star Lake (fence)	2,000.00	1,000.00	4,000.00
W 75-D- 6	Trapping and Transplanting	17,550.00	5,850.00	23,400.00
FW 2-D- 1	C. J. Strike Development	26,850.00	8,950.00	35,800.00
W 36-D- 5	Hagerman Development	10,350.00	3,450.00	13,800.00
W 55-D- 5	North Lake Development	53,100.00	17,700.00	70,800.00
W 64-D- 3	Boise River Development	8,850.00	2,950.00	11,800.00
W 75-D- 7	Trapping and Transplanting	18,825.00	6,275.00	25,100.00
W 80-D- 7	Habitat Development	31,500.00	10,500.00	42,000.00
W 88-D- 6	Range Development	14,406.00	4,802.00	19,208.00
W 110-D- 1	Chamberlain Basin Trails	3,000.00	1,000.00	4,000.00
	Total Development	$237,066.00	$ 79,022.00	$316,088.00

Lands		Federal	State	Estimated Total
FW 1-L- 1	C. J. Strike	$ 717.19	$ 239.06	$ 956.25
W 82-L- 3	Carey Lake	165.00	55.00	220.00
FW 3-L- 1	Round Lake	575.15	191.72	766.87
W 24-L- 9	North Lake	12,075.00	4,025.00	16,100.00
	Total Lands	$ 13,532.34	$ 4,510.78	$ 18,043.12
Maintenance				
W 70-M- 4	Star Lake Maintenance	$ 8,775.00	$ 2,925.00	$ 11,700.00
W 78-M- 5	Federal Aid Project Maint.	7,425.00	2,475.00	9,900.00
W 92-M- 4	Sand Creek Maintenance	16,425.00	5,475.00	21,900.00
W 93-M- 3	Hagerman Maintenance	9,000.00	3,000.00	12,000.00
W 95-M- 4	North Lake Maintenance	7,050.0	2,350.00	9,400.00
W 101-M- 3	Boise River Range Maintenance	6,750.00	2,250.00	9,000.00
W 109-M	Farragut Maintenance	10,425.00	3,475.00	13,900.00
W 76-M- 6	Salting	10,275.00	3,425.00	13,700.00
W 94-M- 4	Primitive Area Maintenance	3,525.00	1,175.00	4,700.00
W 70-M- 5	Star Lake Maintenance	8,475.00	2,825.00	11,300.00
W 76-M- 7	Salting	7,500.00	2,500.00	10,000.00
W 78-M- 6	Federal Aid Project Maint.	6,825.00	2,275.00	9,100.00
W 92-M- 5	Sand Creek Management	8,775.00	2,925.00	11,700.00
W 93-M- 4	Hagerman Maintenance	12,000.00	4,000.00	16,000.00
W 94-M- 5	Primitive Area Maintenance	4,500.00	1,500.00	6,000.00
W 95-M- 5	North Lake Maintenance	16,500.00	5,500.00	22,000.00
W 101-M- 4	Boise River Range Maintenance	5,475.00	1,825.00	7,300.00
W 109-M- 2	Farragut Maintenance	5,925.00	1,975.00	7,900.00
	Total Maintenance	$155,625.00	$ 51,875.00	$207,500.00
Research				
W 96-R- 4	Bird Survey & Investigation	$ 29,250.00	$ 9,750.00	$ 39,000.00
W 108-R- 1	Fur Resources Survey	7,575.00	2,525.00	10,100.00
W 90-R- 3	Coeur d'Alene Deer Study	9,000.00	3,000.00	12,000.00
W 85-R- 5	Game Study	59,250.00	19,750.00	79,000.00
W 96-R- 5	Bird Survey & Investigation	31,500.00	10,500.00	42,000.00
W 108-R- 2	Fur Resources Survey	13,800.00	4,600.00	18,400.00
	Total Research	$150,375.00	$ 50,125.00	$200,500.00

Summary of Estimated Costs

Type of Project	Federal	State	Estimated Total	% of Total Money Obligated
Coordination Projects	$ 36,012.00	$ 12,004.00	$ 48,016.00	6.08%
Development Projects	237,066.00	79,022.00	316,088.00	40.00%
Maintenance Projects	155,625.00	51,875.00	207,500.00	26.26%
Research Projects	150,375.00	50,125.00	200,500.00	25.38%
Land Projects	13,532.34	4,510.78	18,043.12	2.28%
Total	$592,610.34*	$197,536.78	$790,147.12	100.00%

* This figure represents the total federal funds obligated for projects initiated during the biennium. Many of the projects are continuing and are carried beyond the biennium period, therefore, this figure does not represent actual expenditures. The total expenditure for all active wildlife restoration projects during the biennium was $535,625.65.

FISH RESTORATION

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

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

The following financial report is for the period July 1, 1952 to June 30, 1954.

Unobligated balance of Federal funds, July 1, 1952	$ 5,550.23
Apportionment Fiscal Year, 1953	43,617.31
Apportionment Fiscal Year, 1954	74,352.54
Total Federal money available to finance approved projects for period July 1, 1952 to June 30, 1954	$123,520.08
Unobligated balance of Federal funds as of June 30, 1954	$ 48,043.17

Federal Aid in Fish Restoration and Management Projects Initiated During Biennium July 1, 1952 to June 30, 1954

Coordination			Federal	State	Estimated Total
FW	40-C-12	Coordination	$ 2,202.75	$ 734.25	$ 2,937.00
FW	40-C-13	Coordination	4,835.25	1,611.75	6,447.00
		Total Coordination	$ 7,038.00	$ 2,346.00	$ 9,384.00
Development					
F	9-D	Caldwell Ponds	$ 1,500.00	$ 500.00	$ 2,000.00
F	11-D	Roseworth Reservoir	11,550.00	3,850.00	15,400.00
		Total Development	$ 13,050.00	$ 4,350.00	$ 17,400.00
Research					
F	3-R- 3	Pend Oreille Survey	$ 7,125.00	$ 2,375.00	$ 9,500.00
F	7-R- 2	Salmon River Creel Census	3,000.00	1,000.00	4,000.00
F	10-R- 1	Bear Lake Investigation	3,000.00	1,000.00	4,000.00
F	8-R- 1	Snake River Research	6,675.00	2,225.00	8,900.00
F	3-R- 2	Pend Oreille Survey	$ 8,850.00	$ 2,950.00	$ 11,800.00
F	1-R- 2	Chinook Salmon	3,825.00	1,275.00	5,100.00
F	1-R- 3	Chinook Salmon	3,600.00	1,200.00	4,800.00
F	3-R- 4	Pend Oreille Survey	10,500.00	3,500.00	14,000.00
F	8-R- 2	Snake River Research	6,750.00	2,250.00	9,000.00
F	10-R- 2	Bear Lake Investigation	3,750.00	1,250.00	5,000.00
F	13-R- 1	Henry's Lake Investigation	5,325.00	1,775.00	7,100.00
F	15-R- 1	Clearwater River Investigation	4,800.00	1,600.00	6,400.00
		Total Research	$ 67,200.00	$ 22,400.00	$ 89,600.00
Lands					
FW	1-L- 1	C. J. Strike	$ 717.19	$ 239.06	$ 956.25
FW	3-L- 1	Round Lake	575.16	191.72	766.88
		Total Lands	$ 1,292.35	$ 430.78	$ 1,723.13

Summary of Estimated Costs

Type of Project	Federal	State	Estimated Total	% of Total Money Obligated
Coordination Projects	$ 7,038.00	$ 2,346.00	$ 9,384.00	7.95%
Development Projects	13,050.00	4,350.00	17,400.00	14.73%
Research Projects	67,200.00	22,400.00	89,600.00	75.86%
Lands	1,292.35	430.78	1,723.13	1.46%
Total	$ 88,580.35*	$ 29,526.78	$118,107.13	100.00%

* This figure represents the total federal funds obligated for projects initiated during the biennium. Many of the projects are continuing and are carried beyond the biennium period, therefore, this figure does not represent actual expenditures. The total expnditure for all active fish restoration and management projects during the biennium was $75,476.91.

Fisheries Management

General

Charged with management of the State's fisheries resource, the Department has tried to carry on a management program based on sound biological investigation. Fish culture remains the major activity of this Division and, as such, the greater portion of the Fisheries' budget is spent on it. Because of the magnitude of this program and since it is geared mainly to the production of catchable-size fish, we are naturally desirous of determining its effectiveness in providing fish for the creel. Better answers are needed, which can be supplied only by a trained biological field staff, to determine the value of the hatchery product in the over-all program. At present, five area fisheries biologists are assigned throughout the State, and it is hoped that a sixth one can soon be added in order to round out the program. In carrying out a program of long-range fisheries management, this Division has engaged in many activities in addition to fish culture and investigations. A summary of these follows:

Fishing Regulations

The fishing regulation, oldest tool in fisheries management, continues under test to determine its value. It is the policy of the Department to permit as large an annual harvest of our game fish as is possible and still maintain the resource. The Commission has relaxed regulations pertaining to creel limits on perch, brown bullheads, and whitefish in many waters. Except for a few isolated instances, a year around season is permitted for the taking of all warm-water fish species. The season on some waters has been extended from November through February for the taking of whitefish. This has aided in the harvest of a valuable food and game fish which is much neglected by anglers during summer months. Pole and line fishing for sturgeon has become very popular in the Snake River from Glenns Ferry to Weiser. Consequently, the Commission passed a regulation prohibiting the use of set lines for the taking of sturgeon in that portion of the river.

As a result of increased fishing pressure, it became necessary in 1953 to reduce the creel limit on trout from 20 to 15 fish. The poundage, however, remains seven pounds and one fish.

Because of the intensive management practices which must be applied in order to perpetuate our spring chinook salmon resource, it has been necessary to enforce rather stringent regulations governing length of season and open and closed waters. That such regulations have been effective is proved by the increase in the numbers of salmon returning each year.

Commercial Fishing

The harvest of carp, suckers and chubs from the Snake and Bear River drainages by commercial fishermen operating under permit continued throughout the biennium. (See table 8). There were seven permits issued in 1953 and nine in 1954. Each permittee is required to pay a royalty to the Department of $0.45 per hundredweight of all fish taken. To date, permittees have been limited to the use of seines for taking fish; however, a Dingell-Johnson project will be inaugurated in 1955 to try other methods and different types of gear which may be adapted to the harvest of non-game species of fish.

The intensity of the commercial fishery for kokanee in Pend Oreille Lake has increased considerably during the past two-year period. The taking of kokanee is restricted to the use of hand lines or trolling with conventional fishing gear. The harvest of kokanee by commercial fishermen has been high, particularly so considering the restrictions placed on the type of gear that may be used. The Pend Oreille Creel Census Project shows 268 fishermen caught 541,000 fish in 1953 and 246 fishermen caught 520,000 fish in 1954. The commercial catch of kokanee has contributed greatly to the economy of northern Idaho, and most particularly to the city of Sandpoint. It is estimated that the value of the catch was worth $107,800 in 1953 and $104,000 in 1954.

Commercial fishing for whitefish in Pend Oreille Lake is also permitted; however very few were taken during this biennium.

Personnel Conferences

In 1953, a training session was held for hatchery Superintendents and Foremen. In 1954, a similar session was held for Hatchery Helpers. The purpose of the conference was to bring the employees up-to-date on the most modern methods of fish culture and hatchery practices. Annual conferences of the biological staff have been held to discuss work plans and programs for the ensuing year.

One of the major activities of the fisheries division is the production and release of catchable-size fish.

Pollution Control

Pollution control and abatement activities of the Department have been very limited during the biennium. During 1954, several mining companies were contacted and plans worked out with them for improved settling ponds for impounding mine tailings and mill wastes.

The absence of a pollution control authority and lack of suitable pollution control laws makes it most difficult to prevail both upon industry and municipalities to curtail pollution.

Public Access

Much of the area of Idaho is in Federal ownership. As such, the public has the right of access to all fishing waters located on those lands; however, there are many lakes, streams and rivers that are completely surrounded by private lands. Many of these waters either have a good fishery or are capable of sustaining one, yet the resource cannot be harvested because the fishing public cannot gain access to the waters.

There is much public support for an accelerated program of acquisition of right-of-way access to public waters. Although only a limited amount of progress has been made during the biennium in providing access to public waters, some of the gains have been made due to the policy of the Department whereby no lake will be treated to eradicate the undesirable species of fish and restocked with game fish unless public access is guaranteed.

Lands Acquired by Department for Fisheries

Area	County	Type of Agreement	Purpose for Which Acquired
American Falls 5.93 acres	Power	Purchase	Access to Snake River
Hayden Lake 2 - 50' lots	Kootenai	Purchase	Access to Hayden Lake
Hayspur Fish Hatchery	Blaine	Purchase	Hatchery expansion and access to Loving Creek
Kamiah 2.75 acres	Lewis	Perpetual easement	Fish holding ponds
Mirror Lake	Bonner	Right-of-way easement Bonner County	Access to Mirror Lake
Niagara Springs	Gooding	Easement from Idaho Power Co.	Access to Snake River
Niagara Springs 99.68 acres	Gooding	Purchase	Access to Snake River
Wolf Lodge 16.20 acres	Kootenai	Purchase	Fish holding ponds
Round Lake 162 acres	Benewah	Purchase	Access to Chatcolet Lake
C. J. Strike (Crane Falls Lake) 113.33 acres	Owyhee	Purchase	Access to Crane Falls Lake and Snake River arm of C. J. Strike Reservoir
C. J. Strike Reservoir	Owyhee	Easement from Idaho Power Co. for company-owned lands	Access to Bruneau arm of C. J. Strike Reservoir
Kelso Lake	Bonner	Gift	Access to Kelso Lake
Lambertson Lake	Bonner	Gift	Access to Lambertson Lake
Blue Lake	Bonner	Easement obtained by County	Access to Blue Lake

Hatchery Operations

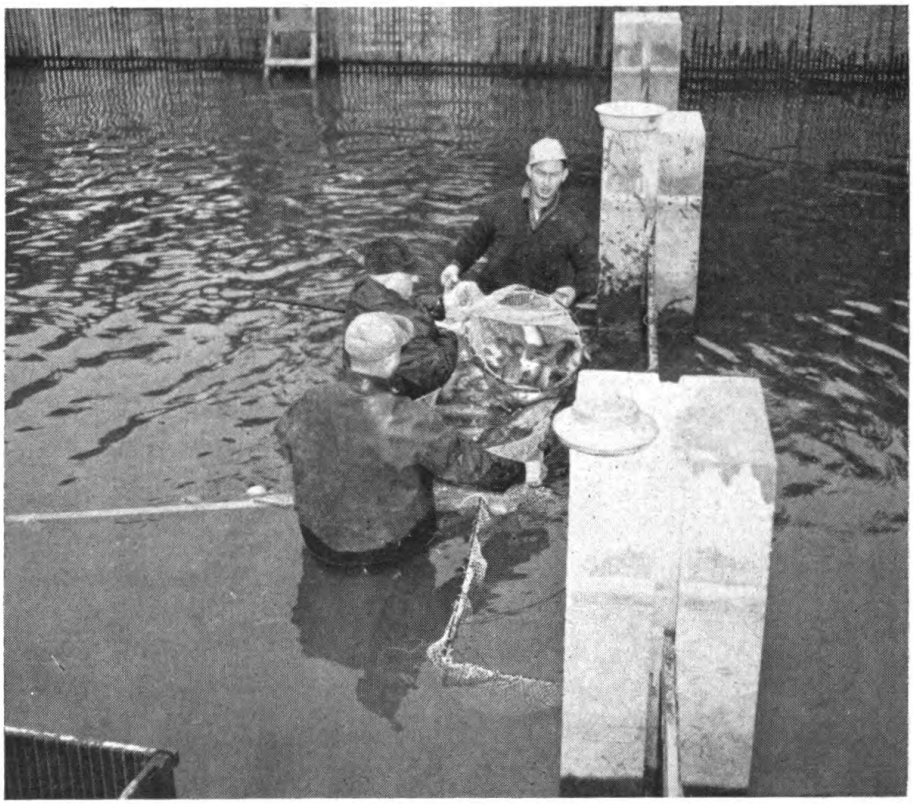
Fish Diseases

Relatively little disease has been encountered at hatcheries during the past two years. One very perplexing bacterial blood disease, referred to by hatcherymen as "redthroat", appeared at several stations, principally Hagerman and Eagle, but was brought under control by feeding sulfamethazine in the hatchery diet. Ulcer disease broke out among the dolly varden at Clark Fork in the fall of 1952; this disease also was controlled by feeding sulfamethazine. In 1953, a similar disease occurred in brook trout in the same station. It did not respond to treatment with the sulfa drug.

Parasitic copepods appeared on wild rainbow trout from several lakes throughout the State; however, it is felt that the infestations are not severe enough to have a decimating effect on the trout population.

Fish Feed

During the period from 1947 to 1954, there has been considerable expansion of the State's fish hatchery facilities. As a result, the volume of fish feed required to keep the facilities operating to capacity has increased tremendously. Unfortunately, the major



Proper care and handling of brood stock from which eggs are obtained is an important phase of hatchery operation.

fish food item, horsemeat, has almost completely disappeared from the market. This has necessitated the substitution of other meat products, mainly fish and fish by-products, in the hatchery diet. In 1954, some whale meat was purchased to test its suitability as fish feed. Although the cost per pound would be somewhat higher than that paid for horsemeat, preliminary conclusions from our experiments indicate that it could be used as a red meat in hatchery diets.

There has been some interest shown by feed manufacturing companies in the development of dry feeds, both meal and pellets which could be used in diets for hatchery fish. Although dry feeds are of value as a food item, they must be supplemented with red meats for, as yet, no completely dry diet has been found which will maintain healthy fish without the addition of red meat. Some experimental work has been done with antibiotics to determine if they are valuable as growth stimulants. It has been concluded that they are of value if fed to the fish for the first three months after the fish start feeding; after that, it seems to be of little aid as a growth stimulant.

Exotic Species of Fish

Brown Trout: Brown trout have been introduced into several bodies of water within the State; however, most of the releases failed to establish the species. In recent years, the Department has been hatching and rearing approximately 250,000 brown trout annually. They have been distributed to three bodies of water: Weiser River from Council to the mouth, Snake River from Minidoka Dam to Milner Dam and Portneuf River from the falls below Lava Hot Springs to the mouth.

Brown trout releases in the Weiser River have been discontinued because the species has become established and further releases are unnecessary. Natural reproduction should maintain the population to the peak of the carrying capacity of the stream. Conclusions have not been reached as to the success of the releases in Snake River; however, some catches have been made during the fall and winter. Of the fish examined, it would appear that the fish are making good growth after being planted. Of the three streams, the Portneuf River has the heaviest fishing pressure. To assure continued good fishing in the stream, it is felt that periodic releases of catchable-size fish will be necessary. Releases of fingerling brown trout seems to have had little effect in establishing the species in any of the three waters.

Smallmouth Bass: For the past six years, attempts have been made by the Division to establish smallmouth bass in streams which have not been producing trout. The greatest success obtained to date has been in the Clearwater River from Kamiah downstream. Fishermen have been making some good catches and many schools of fry have been seen this past season.

Largemouth Bass: The range of the largemouth bass in Idaho was extended to include one additional large body of water during the biennium. The habitat of the Bruneau arm of the C. J. Strike Reservoir on Snake River appeared to be more suitable for the production of bass and crappie than for trout; therefore, it was stocked with 126,900 bass fingerling in 1952 and 32,400 black crappie in 1953. The survival of bass appears to have been successful for some weighing in excess of one pound were caught in the spring of 1954.

Grayling: Numerous attempts have been made to establish grayling in Idaho waters. In all cases they have been planted in waters containing other species of fish and, since they are unable to thrive in the face of competition, all have disappeared. Since the species is fast disappearing from its native range, efforts are being made by several States to establish it so that the species will not become extinct. In 1954, 25,000 grayling fry were planted in Sand Lake and 25,000 in Keokee Lake, both in Bonner County. Prior to being stocked with grayling, both lakes were barren.

Coeur d'Alene Fish Hatchery

The Coeur d'Alene hatchery, constructed in 1913, was supplied with water by means of pumps from Coeur d'Alene Lake. The quality of the water was poor for fish rearing purposes and its temperature ranged from 38° F. to 48° F. in April to 47° F. to 60° F. in August. Because of these factors, it was most difficult to get good growth of fish. For the past several years the station has been operated on a seasonal or part-time basis.

In recent years, the fisheries program has changed from the production of small fish to that of catchable-size fish; therefore, continued operation of the Coeur d'Alene Hatchery was serving little useful purpose since it could never be geared to fit in with the Department's program.

In January of 1954 the Commission moved to close the station permanently and instructed the Director to dispose of the Department's land and buildings. The hatchery was located on land leased from Boise Water Corporation, therefore ownership of the building has reverted to the company. The residence and small lot on which it is located have been advertised for sale.

Delayed Mortality

Fish, in a healthy condition, seldom show any ill effects from hauling. On occasion, however, it has been noticed that a load of fish moved from one hatchery to another will suffer heavy losses on the second and third days even though at first the fish appeared to have hauled without any visible ill effects. Such a loss of fish is spoken of as **delayed mortality.** The fish from those loads which suffer heavy mortalities exhibit extreme nervousness; sudden movements in the vicinity of the pond in which the fish are held will cause the fish to swim erratically, many of them dashing their heads into the sides of the pond and some literally turning over and dying as if from fright.

Considerable research work has been done on the problem of delayed mortality, both by this Division and the fishery agencies of other States. To date, the cause or causes have not been determined.

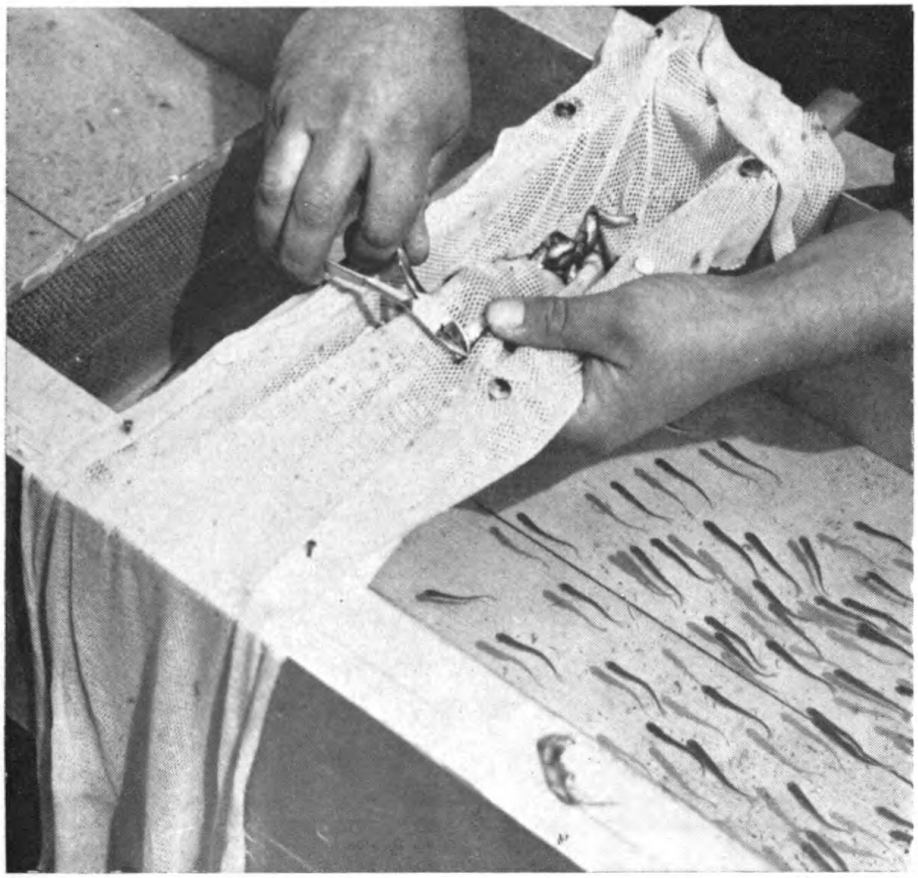
Sodium amytol, one of the barbiturate drugs, was experimented with to determine if the drug would have a quieting effect on fish by reducing the fish's metabolism; however, from the tests it was concluded that there was little value to be gained from its use. Had the use of the drug proved beneficial, a greater poundage of fish per load could have been hauled thus reducing the cost of transportation.

Fish Salvage

The salvage of fish from irrigation canals has continued as a regular Division activity during the biennium. In the past such

activities have been confined to the Richfield Canal in Blaine County, Lost River in Butte County, and Lake Lowell canals in Canyon County. In 1953, considerable checking was made on the loss of fish in canals in eastern Idaho. Of the canals checked, it was found that either there were an insufficient number of fish in them to make the operation worthwhile or there was ample water remaining in them over winter to support fish life thereby making salvage unnecessary.

The uneven and rocky bottoms of many canals often coupled with extensive weed growths make salvage by seining next to impossible. For several years an electric shocker using alternating current has been employed in the salvage of trout from Richfield Canal. In 1953, a shocker using direct current provided by a 1500-watt generator was tried out to see if losses of and injury to fish could be reduced. This shocker was ineffective. In 1954, a shocker using direct current from a 2500-watt generator was tried and proved very effective. Not only were injuries and losses reduced, but the salvage time was shortened from the normal three to two days.



Fin-clipping to mark young fish for future identification is a part of several types of fisheries management research.

Hatchery Maintenance and Improvements

American Falls:
Graded and graveled the roads and walkways around the dirt raceways.

Ashton:
Drilled a well 100 feet deep to provide an unpolluted domestic water supply.
Rebuilt porches and poured a concrete basement floor in Assistant's residence.
Installed an oil furnace in Assistant's residence.

Clark Fork:
All buildings were painted.

Eagle:
Constructed a new cold storage building which includes a meat grinding and mixing room, an office, lavatory and locker room and a machine room. The storage capacity of the plant is estimated at 400,000 pounds.
Built a five-room residence.
Added one concrete raceway, 12' x 166'.
Superintendent's residence was painted.
Constructed an access bridge to cold storage building.
Rewired hatchery and old cold storage building.

Grace:
Installed a new oil furnace in Assistant's dwelling.
Insulated Assistant's dwelling.
Reconstructed garage doors.

Hagerman:
Constructed one five-acre pond for public fishing.
Painted all buildings.

Hayspur:
Removed mud from bottom of brood stock pond.
Constructed a drainage channel, 1,200 feet in length, from brood stock pond to Loving Creek.
Raised the level of the hatchery access roadbed two feet and graveled the surface.
Raised and widened the railroad crossing on the access road.
Added a clothes closet to one bedroom of Assistant's residence.
Placed topsoil on fringe areas so grass could be planted to improve appearance of the hatchery grounds.

Henrys Lake:
Demolished old residence.
Constructed a modern dwelling with three rooms and bath.
Painted all buildings.
Drained and graded grounds around hatchery and new residence.
Cleared and burned drift timber along lakeshore front of State property:

Kamiah:
Constructed a holding pond, 7' x 130'.
Built a four-room residence for attendant.

Mackay:
Built a five-room dwelling for Superintendent.
Planted a lawn and built sidewalks around Superintendent's dwelling.
Painted Assistant's quarters and garage.

New telephone line was constructed to hatchery.
Completed access road and stream crossing and grading and graveling around raceways.

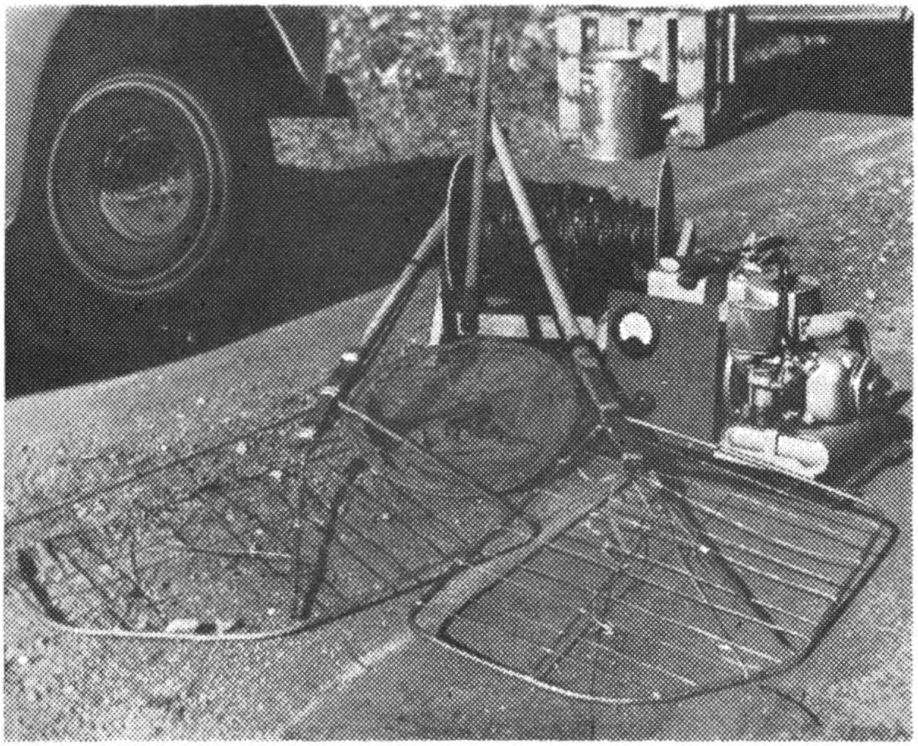
McCall:
Remodeled residence, adding an enclosed front porch.
Painted all buildings.
Reroofed all buildings with galvanized metal.

Sandpoint:
Constructed a new 40' x 60' hatchery building.
Replaced part of wooden hatchery water supply line with metal pipe.
Painted all buildings.
Riprapped that part of Pend Oreille Lake shoreline along State property.

Warm River:
Painted all buildings.

Wolf Lodge:
Constructed a holding pond, 7' x 155'.

Fish Distribution:
Two new 350-gallon fish distribution tanks were added to the fleet.



Electrodes and motor generator make up the "electric shocker" which is used for salvaging fish and making population studies in waters where seining is impractical.

Activities of the Biological Staff

Mountain Lakes Investigation

The investigation of mountain lakes continued throughout the biennium. To the fisherman who is willing to pack or hike into the mountains, alpine lakes offer some excellent trout fishing. To date, relatively few of the lakes which have been stocked have been fished sufficiently to keep the fish population in balance with the food supply. The policy has been to stock those lakes, in need of planting, every third or fourth year in order that a desirable growth of the fish can be obtained and thus entice fishermen into the area.

In some areas, particularly the Boise River drainage, there are many barren lakes which could be stocked and would be fished if suitable access trails were constructed into the areas. Some investigative work was done on the problem in 1954. It is anticipated that the Department will get a project underway to assist in making these waters available to the fishing public within the coming year.

Stream Improvement

The production of trout in the majority of Idaho's streams is limited by the pool structure. Stream improvement in the form of increased pool structure is occasionally undertaken; however, the gradient of the majority of Idaho's streams is so steep that improvement is not economically justifiable. Buffalo River, a tributary of Henrys Fork of the Snake River, is a stream where it has been possible to obtain good results from stream improvement. In the 1930's, it was cleared of all obstructions which were mainly in the form of fallen trees. As soon as these obstructions were removed, the soil washed out leaving the bottom covered with fine sand. As a result, the river became a biological desert. In 1950, an experimental program of stream improvement was undertaken, which consisted of falling and anchoring some large lodgepole pine trees in the river at 45° angles to the stream course. By 1953, large beds of plant growth were in evidence and the stream was stocked with catchable-size rainbow. In 1954, this stream supported several hundred hours of angling. Several other streams in the area which are similar in character to the Buffalo River have since been improved, mostly by sportsmen, and promise to show equally as good results.

Some additional stream improvement projects are planned for those waters where the program can be justified economically.

Rough Fish Control

Present-day fisheries workers realize that the competition between non-game or rough fish and game species for food and space and predation by some of the non-game species are in most cases detrimental to the species preferred by anglers, particularly trout. Whenever possible and when economically feasible, the fisheries manager prefers to eradicate completely all the fish from a body of water and then restock it with the desired species. However, when such is not practicable or possible, partial control may play a part in providing a better balance between the game and non-game species.

In Idaho, four species of non-game fish, all members of the minnow family, are particularly undesirable. These are: squawfish, Utah chub, carp and tench, of which the carp and tench are

introduced species. Most waters where these species are found are too large to permit complete eradication under present-day costs of materials; possibly, however, through partial control the populations might be held in check. In 1953, a project was started on Hayden Lake to attempt control of squawfish by attacking the breeding population at time of spawning. A rather thorough survey of the lake indicated that spawning areas available to squawfish were limited to one area. The use of gill nets and toxicants proved infeasible, but through trial and error it was determined that large numbers of fish could be killed by detonation of several charges of dynamite during spawning concentrations. It is estimated that 2,500 fish were killed in 1953 and 11,338 (16,176 pounds) in 1954. Sufficient time has not elapsed to evaluate the effectiveness of this program. A similar program was tried on the St. Joe River in Shoshone and Benewah Counties but the long-range beneficial effects are yet to be determined.

A Dingell-Johnson project, which is designed to check numerous methods which might be employed to harvest and control populations of non-game fishes and to determine the effectiveness of such a program on the game fish populations, has been written and submitted to the United States Fish and Wildlife Service for approval.

Multiple Water Uses

Our present-day economy and the industrial expansion of the Pacific Northwest has placed heavy demands for the use of the waters of the State, the greatest being the development of our rivers for the production of power. In past years, all too little consideration has been given to the maintenance of our fisheries by those agencies sponsoring power and reclamation developments. The runs of anadromous species of fish have been destroyed in many river systems because no fish passage facilities were installed in the dams. True, fisheries workers have been unable to supply all of the answers as to what facilities are needed to pass fish over high dams, the reason being that funds with which to carry on the necessary research have not been available.

During the biennium, many private companies, in addition to Federal agencies, have made plans for the development of many of our river systems for the production of power. As a result, it has been necessary for personnel of the Division to attend a great many meetings in the interest of maintenance of the fisheries, both resident and anadromous, of our rivers.

Five dams are presently proposed for the Middle Snake River between the mouth of the Salmon River and Weiser. The construction of these dams will, in all probability, destroy the runs of steelhead and fall and spring chinook salmon unless construction is delayed until better methods of fish passage, particularly downstream passage, are found. Of greater threat to the fisheries resources of the State, however, are the two dams, Bruces Eddy and Penny Cliffs, proposed for construction on the Clearwater River drainage. Each would have a hydraulic height in excess of 575 feet and most certainly would destroy the very valuable runs of steelhead. (Table 9). The steelhead runs in the Clearwater drainage are of major importance because both the adults and the immature fish are available to the fishermen. If the steelhead run is lost, it would become necessary to replace the immature steelhead with catchable-size hatchery-reared rainbow. Such a program would be extremely expensive.

Fishery Research Program under Sponsorship of United States Army, Corps of Engineers

During the fiscal year, 1952-53, the Idaho Fish and Game Department entered into a contract with the Corps of Engineers for fishery research. The contract called for:

1. Counts of anadromous fishes over existing dams on Snake River and its tributaries.
2. Size and timing of runs of anadromous fishes entering Snake River tributaries and tributaries of the Columbia River between McNary and Rock Island Dams.
3. Spawning ground studies in the above streams and in Redfish Lake for enumeration of blueback runs.

The contract in fiscal year 1952 covered the planning phases of the 1953 work. Contract price for fiscal year 1953 was $8,500.00.

The study is part of a comprehensive fishery research program on the Columbia River drainage, coordinated by the fishery agencies of Oregon, Washington and Idaho and the Fish and Wildlife Service. Its purpose is to complete basic fishery research needed to solve the problems created by construction of dams in the Columbia Basin. The program was originally planned for six years at a cost of $3,000,000.00.

Dingell - Johnson Program

The Federal Aid in Fish Restoration Program, which began in 1951, has been of tremendous assistance in the development of a management plan for the fisheries of the State. Many projects, both research and development, have been inaugurated since its inception.

Dingell - Johnson Projects

9 - D Development of Caldwell Gravel Ponds

This project was initiated to develop two ponds on property acquired with Federal Aid to Fisheries funds (Project F-2-D) near Caldwell. Included in the development were:

1. Construction of a water control structure to maintain pond elevations and prevent the entry of non-game fish.
2. Lakeshore improvement including leveling and clearing of parking areas and planting trees with the cooperation of the habitat improvement project crews.
3. Fish population control covering removal of all fish in the ponds by eradication. Many game fish were salvaged.
4. Restocking with game fish. Bass and perch were planted in the north pond; catfish, crappie and bluegills in the south pond.

Civic groups at Caldwell have further developed the pond area by furnishing picnic tables and sanitary facilities.

The total cost of the project was $2,000.00.

11 - D Rehabilitation of Roseworth Reservoir

This development project was initiated in August, 1953, to rid Roseworth Reservoir of rough fish and restock with trout. The reservoir was treated on September 27, 1953, by 54 boat crews of sportsmen from south-central Idaho under Department supervision. Treatment of the 450-acre reservoir was preceded by considerable

Portable spray equipment is one of several methods of applying chemicals to eradicate unwanted species before restocking lakes and ponds with game fish.

preliminary work such as hydrographic survey, treatment of all tributaries, and distribution of 27,800 pounds of toxicant around the shoreline for use by boat crews.

The reservoir was restocked in April - May, 1954, with 444,200 rainbow trout fingerlings and will reopen to public fishing in 1955.

Total cost of the project will be $14,000.00

12 - D Rehabilitation of Mud Lake and Closely Connected Water Areas

Mud Lake lies in Jefferson County at the lower end of Camas Creek and is connected to numerous canals, channels and shallow lakes or ponds including those of the Camas Wildlife Refuge. All of these waters were heavily populated with non-game species of fish and stunted perch. The project was initiated in order to reclaim Mud Lake for sport fishing for trout.

All of the wells and inflowing streams were treated with emulsifiable rotenone prior to the treatment of the lake. The 2,000-acre lake, as well as all of the lakes, ponds and that portion of Camas Creek on the Wildlife Refuge, were treated by the aerial application of emulsifiable rotenone at the rate of one part per million. The spray planes were directed in their operation by flagmen around the shoreline of the lake. The treatment of Camas Creek upstream through areas inhabited by non-game fish followed treatment of refuge waters. The eradication work was completed during August and September, 1954. Mud Lake will be restocked with rainbow trout early in 1955, and will reopen to fishing in 1956.

It is estimated that the project will cost $18,000.00.

14 - D Slate Creek Stream Improvement

This development project was started in July, 1954, in order to determine the value to the sport fishery of stream improvement in cut-over or burned-over areas where the stream bed has been damaged by severe stream flow fluctuation.

A two-mile section of Slate Creek, a tributary of the St. Joe River in Shoshone County, was improved by the construction and placement of deflecting, and digging, rock crib and log structures to develop pools.

The effects of the improvement will be measured and, if economically feasible, this type of development will be extended to other similar streams in the area.

The project cost was $2,000.00.

16 - D Silver Creek Stream Improvement

This development project was approved in July, 1954. It calls for the construction and placement of stream improvement structures in internationally famous Silver Creek in Blaine County. These structures are designed to improve the habitat for trout during years when the equatic vegetation has been lost.

The effects of the several types of structures placed the first year will be evaluated and the more successful designs will be used in future work in Silver Creek.

The first year's segment of the project will cost an estimated $4,700.00.

17 - D North - Idaho Lake Development

This project, started in August in 1954, is designed to improve sport fishing in four North-Idaho lake areas:

1. The Granite Lake chain eradication segment called for the treatment of Kelso, Lambertson, Beaver and Granite Lakes in Bonner County. Options were obtained to purchase land adjacent to Kelso and Lambertson Lakes to insure public access. The lakes treated during September, 1954, will be restocked next year and will open to public fishing in 1956. A surface area of 131 acres is involved in the four lakes.
2. Dennick and Sand Lakes in Boundary County were included in the second portion of the project. Dennick Lake was treated to get rid of a heavy population of yellow perch and black crappie. It will be restocked with cutthroat trout. Sand Lake has been stocked with grayling. A foot trail was developed to the two lakes.
3. Blue Lake in Bonner County's Priest River district was treated in September, 1954, to rid it of its populations of rough fish. This 90-acre lake will be restocked with brook trout and will reopen to public fishing in 1956.
4. A public dock and breakwater is being constructed on Lake Pend Oreille at the Farragut Wildlife Management Area to facilitate the free, safe launching of boats.

Total cost of the North-Idaho Lake Development Project is $14,000.00.

19 - D Rehabilitation of Stanley Lake

This development project on the 180-acre lake in the Stanley Basin area of Custer County includes three phases of work:

1. Construction of a low-head dam in the outlet to prevent the re-entry of non-game fish.

2. Eradication of all fish in the lake and its tributaries and restocking with kokanee and rainbow trout, and
3. Fertilization of the lake in an attempt to increase the available food to fishes.

The dam was constructed in September, 1954, and the lake was treated on September 19 by sportsmen and Department personnel. The lake will be restocked early in 1955, and will reopen to sport fishing in 1956.

The fertilization will be carried on experimentally to determine the economic feasibility of fertilizing similar lakes. Waters in a large part of central Idaho have their origin in granitic formations and, consequently, contain little dissolved chemicals which are important in food-chain cycles. Basic compounds such as lime, phosphates, and potassium salts will be added to the lake to increase the dissolved chemicals in the waters and thus increase the available elements basic to plant and animal life.

Total cost of the project to date has been about $14,000.00.

4 - D Mirror Lake Fisheries Development

Mirror Lake in Bonner County was treated in August in 1953, to rid it of heavy populations of stunted perch, sunfish, bullheads and non-game fish. It is to be restocked with trout and will open to public fishing in 1955. Public access has been obtained through private land and the Bonner County Road Commission has constructed and will maintain a graveled road to the lake.

The project cost was $3,020.00.

6 - D Extending the Range of the California Golden Trout in Idaho

In this development project, eggs were taken from California golden trout in Bellas Lake in the Lost River drainage and the fingerlings planted in eleven widely scattered mountain lakes. The purpose of the project was to make use of this beautiful exotic species in the management of mountain lakes throughout Idaho. The following lakes, located by drainage and county, were planted with golden trout:

Lake	Drainage	County
Hunt Creek	Priest River	Bonner
Big Brown's	Little Queens River	Elmore
Everly	South Fork Payette River	Boise
P. S.	Middle Fork Boise River	Elmore
Swet	Selway River	Idaho
White Sands	Lochsa River	Idaho
Lower Enos	Secesh River	Valley
Rock	Secesh River	Idaho
Ann's	North Fork Payette River	Valley
North	North Fork Payette River	Valley
Lake Fork	Pahsimeroi River	Lemhi

These lakes will open to public fishing during the 1955 season. Cost of the project was $2,000.00.

3 - R Biological and Economic Survey of Fishery Resources in Lake Pend Oreille

Lake Pend Oreille supports an extremely large sport fishery for trout and kokanee, as well as other game fish. These natural resources are threatened by construction of two dams, one on the principal inlet, the Clark Fork River, and one on the outlet, the

The objective in fisheries management is to obtain the greatest harvest possible from Idaho's waters and yet maintain an adequate growing crop for the future.

Pend Oreille River. The Clark Fork Dam (Cabinet Gorge) blocked fish from the spawning areas of this river while the Pend Oreille Dam (Albeni Falls) could affect the shoal-water, lake spawning of the kokanee by changing the lake surface elevations during and after spawning. Creel census and spawning ground surveys are the tools being used in the project to measure changes in the fishery. Limnological data were also collected to complete the picture.

The drawdown through Albeni Falls in 1952 had an adverse effect upon kokanee spawning. In addition to preventing the trout and kokanee from ascending the Clark Fork River since 1951, Cabinet Gorge Dam, through power-peaking operations, has been responsible for losses of trout and kokanee spawn in the river below the dam since power production operations began in 1952.

The first measurable effects of the dams upon the kokanee fishery will occur in 1955 and 1956 when the next generation will enter the sport catch. The kokanee has a four-year life cycle and is available to fishermen only during its last year of life.

It is becoming more apparent each year that Cabinet Gorge is having adverse effects upon the trout fishery. Loss of natural reproduction is indicated by decreasing success ratios in the trout catch.

The total estimated catch of kokanee, trout and other game fish species is given for each year since the beginning of the project.

Year	Men	Hours	Total Estimated Catch of: Kokanee	Trout	Other Game Fishes
1951	60,172	330,923	820,486	10,750	18,838
1952	57,814	308,850	514,913	8,778	*
1953	99,855	522,692	1,335,881	16,398	73,523

* Not tabulated.

1 - R Utilization of Idaho Waters by Spring Chinook Salmon

This research project was designed to measure the size and value of the spring chinook salmon escapement in Idaho. Inasmuch as the spring chinook which enter each stream in Idaho must be considered as a separate race, the proper management of the species is made only through knowledge of the numbers which enter the sport catch and those left to complete spawning each year. The returns to each of these streams four years later may be anticipated from the spawning escapement each year, all other factors remaining equal.

A summary of the sport catch and spawning escapement for the biennium is given.

Year	Number	Value	Spawning Escapement	Total Escapement
1952	7,140	$178,000	14,964	22,104
1953	8,727	186,000	17,399	26,126

That the chinook salmon is being managed to its advantage is indicated in a high escapement for four consecutive years, 1951-54, as compared to a high in 1947 followed by three years of low escapement from 1948-50, inclusive.

7 - R Random Creel Census of Little Salmon River.

This research project was initiated to evaluate hatchery plantings and natural production in a heavily-fished stream with an extended open season. Findings indicated an over-harvest of native or wild fish in the stream.

A summary of findings, based on voluntary creel returns from a random sampling of days through the season, is given:

	1952	1953
1. Total estimated fishermen	6,555	6,991
2. Total estimated hours fished	21,500	22,810
3. Total estimated fish caught	47,772	46,997
4. Fish caught per hour fishing	2.2	2.06
5. Total estimated fish harvested	27,947	33,914
6. Total estimated harvest/mile of stream	1,164	1,413
7. Hatchery trout returns, per cent	37.5	57.9

Rainbow trout constituted over 95 per cent of the catch each year. The project cost for the two years was $6,910.00.

8 - R Effect of Hydroelectric Development on the Fishery Resource of Snake River

Designed to measure the effects of power-peaking operations from a series of Snake River dams on the fishery resource, this project was initiated in 1952 and will be completed at the end of the calendar year.

The study has been measuring changes in biological and physical factors involved by construction of the dams. Changes in fish populations and availability of fish food organisms are being stressed in the study.

Total project cost will be approximately $15,000.00.

10 - R Fisheries Investigations on Bear Lake

This study is evaluating the sport fishery of Bear Lake and the returns of hatchery-reared trout as well as measuring various biological and physical features of the lake in an attempt to determine if there are factors present which limit trout production.

The study, a cooperative venture with the Utah Department of Game and Fish and the Utah State Wildlife Cooperative Research Unit, will require three years. It was initiated in 1953, at an estimated annual cost of $4,000 for the Idaho portion of the study.

Creel census, population studies and collection of limnological data are the principal jobs being applied to the project.

13 - R Fisheries Investigations on Henrys Lake

This study of one of Idaho's most famous cutthroat trout lakes was started in March, 1954, in order to measure natural mortality of adult trout in the lake. Besides supplying some 8 to 10 thousand man-days of fishing each year and a harvest of some 12 to 15 tons of trout, Henrys Lake also supplies all of the State's cutthroat trout egg needs for fish cultural purposes.

The study involves trapping and marking of all adult trout entering tributaries of the lake and examination of the creels of a sample of fishermen during the fishing season. Re-entry of marked adult fish to spawning streams in subsequent years will be observed.

The study will require three years at an estimated cost of $11,000.00.

15 - R Clearwater River Fisheries Investigation

The Clearwater River study is designed to measure the value of the steelhead rainbow trout in the sport fishery of the river drainage. It includes trapping, marking and retrapping downstream-migrating trout for making population estimates as well as examining the fisherman's creel for composition and for making total estimates of the catch. The role of the adult steelhead in the sport fishery will also be measured.

The study will require three years at an estimated cost of $28,000.00.

Table 1

IDAHO FISH PLANTINGS

BY SPECIES, SIZE — ALL AGENCIES

(November 1, 1952 - October 31, 1954)

Species	Year	Numbers of Each Species Planted, by Size			Total	Pounds
		1 to 3-inch	3 to 6-inch	6 to 22-inch		
Rainbow	'53	4,477,177	946,846	1,437,355	6,861,378	317,009.25
	'54	3,767,107	1,313,877	1,577,429	6,658,429	390,930.75
Cutthroat	'53	3,548,932	50,026	4,510	3,603,468	5,510.06
	'54	6,880,377	75,212	21,785	6,977,374	10,298.2
Brook	'53	239,030	484,232	120,275	843,537	31,525
	'54	443,018	253,755	60,587	757,360	17,898.25
Brown	'53	12,000	29,515	72,894	114,409	9,467
	'54		46,133	54,123	100,256	9,023
Kamloops	'53	320,400	24,000	22,568	366,968	8,039
	'54	199,000		27,850	226,850	8,348
Mackinaw	'54			8,909	8,909	755
Goldens	'54	1,905			1,905	.75
Kokanee	'53	987,400			987,400	311
	'54	1,598,385	19,680		1,618,065	1,006.5
Chinook	'53	29,232			29,232	56
	'54	45,600			45,600	75
Grayling	'54	50,000			50,000	4
Smallmouth Bass	'53	1,000			1,000	12.5
	'54		3,360		3,360	42
Largemouth Bass	'54	20,000	1,911		21,911	23
Totals	'53	9,615.171	1,534,619	1,657,602	12,807,392	371,929.81
	54	13,005,392	1,713,928	1,750,683	16,470,003	438,404.45
Totals, Biennium		22,620,563	3,248,547	3,408,285	29,277,395	810,334.26

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

Table 2

HATCHERY PRODUCTION 1953 and 1954

(November 1, 1952 - October 31, 1954)

Station	Year	Rainbow No.	Rainbow Lbs.	Cutthroat No.	Cutthroat Lbs.	Brook No.	Brook Lbs.
American Falls[1]	'53	665,232	27,870	7,506	258	26,060	388
	'54	612,137	63,632	244,043	860	34,318	1,010
Ashton	'53	676,348	11,991	112,200	175	82,600	1,000
	'54	633,150	13,158	491,030	963	120,367	2,075
Clark Fork	'53	205,400	8,551	165,700	98	83,543	7,143
	'54	30,650	11,300	870,352	1,273	17,100	570
Coeur d'Alene	'53			253,500	65		
Eagle[2]	'53	651,126	15,114	273,600	243	80,100	1,022
	'54	677,054	20,155	196,060	127	49,084	703
Grace	'53	520,055	18,181	796,580	2,923	165,726	8,284
	'54	519,773	33,430	951,226	4,119	17,401	2,054
Grangeville	'53			337,083	117.5		
	'54			327,488	86		
Hagerman[3]	'53	885,155	121,990			17,730	2,785
	'54	1,126,520	139,485			12,375	2,335
Hayspur	'53	575,534	18,422	171,984	557	37,260	1,644
	'54	548,139	21,287	212,560	191	76,971	3,601
Henrys Lake	'53			608,000	202.66		
	'54			1,223,160	437		
Mackay	'53	340,612	16,230.5	30,170	351	16,410	2,035
	'54	555,315	24,495.25	334,402	883	13,361	1,695
McCall	'53	256,500	91	159,500	69	174,440	514
	'54	316,600	135	494,100	196	157,430	262
Mullan	'53	455,314	2,294	57,612	33		
	'54	251,539	1,755	248,708	135		
Sandpoint[4] [5]	'53	126,550	71	497,824	134	89,180	1,310
	'54	463,200	528.5	871,480	245	271,975	330.25
Twin Falls[6]	'53	525,205	16,157			145,750	4,090
	'54	611,525	14,720.5			75,000	3,157
Warm River[7]	'53	118,360	531.5	234,699	372.5		502
	'54	137,869	447	526,100	812.7		727
Totals	'53	6,001,391	257,494	3,705,958	5,598.66	918,799	30,717
	'54	6,483,471	344,528.25	6,990,709	10,327.7	845,382	18,519.25
Totals, Biennium		12,484,862	602,022.25	10,696,667	15,926.36	1,764,181	49,236.25

[1] Inc. 61,412 (475 lbs.) Rb. trans. '53 to Grace and 43,866 (1,689 lbs.) Rb. trans. '54 to Mackay for holding.

[2] Inc. 30,200 (151 lbs.) Brk. trans. '53 and 31,074 (543 lbs.) Brk. trans. '54 to Hagerman for holding.

[3] Inc. 13,500 (1,500 lbs.) Rb. trans. '53 to Grace and 38,575 (1,750 lbs.) Rb. trans. '54 to Mackay for holding.

[4] Inc. 90,600 (302 lbs.) Rb. and 54,000 (180 lbs.) trans. '54 to Clark Fork for holding. In addition, 285,000 Brk. fry were trans. '53 to Clark Fork.

[5] Increase in wt. KRB. trans. from Clark Fork for temporary holding.

[6] Inc. 25,000 (1953) and 28,934 (1954) eyed kokanee eggs planted in Salmon Falls Reservoir.

[7] Increase in wt. of Brk. trans. from Grace (1953) and Ashton (1954) prior to planting.

Table 2

HATCHERY PRODUCTION 1953 and 1954

(November 1, 1952 - October 31, 1954)

Brown		Kamloops		Kokanee		Other Species			Totals	
No.	Lbs.	No.	Lbs.	No.	Lbs.	Species	No.	Lbs.	No.	Lbs.
30,134	3,741								728,932	32,257
18,773	1,718								909,271	67,220
									871,148	13,166
				61,830	529				1,306,377	16,725
		366,969	7,953	743,400	177				1,565,012	23,922
		226,850	8,348	802,900	217				1,947,852	21,708
									253,500	65
60,230	2,871			100,000	40				1,165,056	19,290
44,673	2,383			186,480	63	Largemouth Bass	21,911	23	1,175,262	23,454
									1,482,361	29,388
						Mackinaw	8,909	755	1,497,309	40,358
									337,083	117.5
									327,488	86
24,045	2,855					Smallmouth Bass	1,000	12.5	927,930	127,642.5
14,310	2,022					Smallmouth Bass	3,360	42	1,156,565	143,884
									784,778	20,623
									837,670	25,079
									608,000	202.66
									1,223,160	437
									387,192	18,616.5
						Goldens	1,905	.75	904,983	27,074
				72,000	24				662,440	698
				73,600	23				1,041,730	616
						Chinook	29,232	56	542,158	2,383
						Chinook	45,600	75	545,847	1,965
			86						713,554	1,601
				419,321	129.5				2,025,976	1,233.25
12,000	300			72,000	70				754,955	20,617
22,500	2,900			73,934	45				782,959	20,822.5
									353,059	1,406
									663,969	1,986.7
126,409	9,767	366,969	8,039	987,400	311		30,232	68.5	12,137,158	311,995.16
100,256	9,023	226,850	8,348	1,618,065	1,006.5		81,685	895.75	16,346,418	392,648.45
226,665	18,790	593,819	16,387	2,605,465	1,317.5		111,917	964.25	28,483,576	704,643.61

Table 3

FISH PLANTINGS IN IDAHO BY OTHER AGENCIES
1953 and 1954

(November 1, 1952 - October 31, 1954)

Station	Year	Rainbow		Cutthroat		Brook		Total	
		No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
U. S. Hagerman*	'53	1,132,041	68,088			10,850	775	1,142,891	68,863
	'54	639,191	60,016					639,191	60,016
Western Wyoming	'53			8,060	10.4	1,172	109	9,232	119.4
	'54			38,400	15	8,537	53	46,937	68
Hayden Lake Fish & Game Association**	'54	13,445	2,689					13,445	2,689
Totals	'53	1,132,041	68,088	8,060	10.4	12,022	884	1,152,123	68,982.4
	'54	652,636	62,705	38,400	15	8,537	53	699,573	62,773
Totals, Biennium		1,784,677	130,793	46,460	25.4	20,559	937	1,851,696	131,755.4

* Includes transfer to State Hatcheries for holding - (1953) 193,012 (2,740 lbs.) rainbow trout.
**Purchased by the club and planted by the Department.

Table 4

FISH FOOD, 1953 and 1954

(November 1, 1952 - October 31, 1954)

Item	Year	Pounds	Cost
Liver	'53	272,437	$ 33,127.74
	'54	335,184	40,823.05
Slaughterhouse by-products	'53	431,094	20,482.02
	'54	682,982	30,457.38
Horsemeat	'53	234,810	16,527.50
	'54	233,213	16,156.13
Fish and fish viscera	'53	440,626	16,677.39
	'54	555,371	22,429.08
Meal and meal products	'53	191,003	14,101.36
	'54	236,892	17,514.28
Totals	'53	1,569,970	$100,916.01
	'54	2,043,642	127,379.92
Totals, Biennium		3,613,612	$228,295.93

Table 5

EGGS TAKEN BY STATE, 1953 and 1954

(November 1, 1952 - October 31, 1954)

Station	Year	Species	Number Green Eggs	Eye-Up, %	Number Eyed Eggs
American Falls	'53	Brown	42,364	22.5	9,520
	'53	Rainbow	2,067,032	78.7	1,626,754
	'54	"	2,604,950	82.9	2,158,766
Bellas Lake	'54	Goldens	21,700	81.1	17,600
Clark Fork	'53	Kamloops	642,048	96.6	620,000
	'54	"	469,568	98	460,000
Clearwater River	'54	Steelhead	33,196	77.5	25,728
Coffee Pot	'53	Rainbow	5,466,120	75.4	4,122,512
	'54	"	2,692,650	82.8	2,201,350
(N. Fk. Snake River)	'53	Kokanee	106,380	67.7	72,000
	'54	"	346,368	87.8	304,000
Elk Creek	'53	Chinook	132,470	73.8	97,788
Hayspur	'53	Rainbow	30,540	82	25,042
Henrys Lake	'53	Cutthroat	4,432,920	95.2	4,218,938
	'54	"	11,955,417	91.1	10,887,256
Mullan	'53	Rainbow	424,954	83.7	355,453
	'54	"	313,968	92.2	289,522
Pend Oreille Lake	'53	Dolly Varden	152,200	34.4	52,360
	'53	Kokanee	1,228,900	98	1,204,322
	'54	"	2,702,712	95.9	2,591,700
St. Charles Creek	'53	Cutthroat	377,750	91.1	344,150
	'54	"	218,880	88	192,615
	'54	Rainbow	104,640	79.7	83,440
Williams Lake	'53	Rainbow	1,084,280	96.2	1,043,358
	'54	"	2,066,175	96.3	1,990,026
Totals	'53		16,187,958	85.2 (Av.)	13,792,197
	'54		23,530,224	90.1 (Av.)	21,202,003
Totals, Biennium			39,718,182		34,994,200

Table 6

EGGS RECEIVED BY PURCHASE OR EXCHANGE FROM, AND EXCHANGED TO, OTHER AGENCIES - 1953 and 1954*

(November 1, 1952 - October 31, 1954)

Species	Year	Number Received	Number Exchanged
Brook	'53	2,131,268	
	'54	1,492,923	
Brown	'53	296,520	
	'54	257,854	
Cutthroat	'54		2,339,208
Kokanee	'53	191,268	404,294
	'54		1,008,358
Mackinaw	'53	32,640	
	'54	200,446	
Rainbow	'53	3,267,386	
	'54	3,842,542	
Totals	'53	5,919,082	404,294
	'54	5,793,765	3,347,566
Totals, Biennium		11,712,847	3,751,860

* In addition, 50,000 grayling fry were received from the Montana Fish and Game Department.

Table 7

FISH SALVAGED AND PLANTED, 1953 and 1954

(November 1, 1952 - October 31, 1954)

Station Area	Year	Trout	Bass	Crappie	Bullheads	Sunfish	Perch	Total
Ashton	'53	1,174						1,174
Coeur d'Alene	'53		13	19	5,000		5,000	10,032
Eagle	'53		24,935	29,475	11,430	60	289,476	355,376
	'54		1,650	11,655	60,000		32,000	105,305
Grace	'53	3,500						3,500
Grangeville	'53		110					110
	'54		182					182
Hagerman	'53		20					20
	'54		76					76
Hayspur	'53	456						456
	'54	607						607
Mackay	'54	3,907						3,907
Twin Falls	'53						8,000	8,000
Totals	'53	5,130	25,078	29,494	16,430	60	302,476	378,668
	'54	4,514	1,908	11,655	60,000		32,000	110,077
Totals, Biennium		9,644	26,986	41,149	76,430	60	334,476	488,745

Table 8

ROUGH FISH REMOVAL — SEINING PERMITS*
In Pounds
(November 1, 1952 - October 31, 1954)

Species	Year	Pounds
Tench	'53	49,593
Carp	'53	791,390
	'54	346,983
Suckers	'53	547,422
	'54	850,973
Unidentified	'53	83,421
	'54	161,253
Totals	'53	1,471,826
	'54	1,359,209
Totals, Biennium		2,831,035

* Includes rough fish taken in Department - sponsored programs.

Table 9

FISH COUNTS
LEWISTON DAM FISH LADDERS
(November 1, 1952—October 31, 1954)

Month	Year	Steelhead	Chinook Salmon	Whitefish	Smallmouth Bass
November	'52	26			
	'53	102		17	
December	'52	7			
	'53	55			
January	'53	94			
	'54	4			
February	'53	165		1	
	'54	97			
March	'53	4,377		9	
	'54	947			
April	'53	3,774		18	
	'54	2,776			
May	'53	1,757	5		
	'54	1,813			
June	'53	99	23		10
	'54	118	2		
July	'53	16	35	142	176
	'54	12	15	2	3
August	'53	18	3	6	9
	'54	5	1	4	10
September	'53	214		4	36
	'54	800			
October	'53	987	1	11	2
	'54	1,954			
Totals	'53	11,534	67	191	233
	'54	8,683	18	23	13
Totals, Biennium		20,217	85	214	246

Work done under contract with Corps of Engineers during 1954.

Financial Report

Fish and Game Department disbursements showed a slight increase compared to the previous biennium. Total funds expended amounted to $3,211,494.91 compared to $2,796,885.86 for an increase of approximately $425,000.00. The increase in expenditures was mainly accounted for by expansion within the department and increased fisheries production.

The Fish and Game Fund required $2,196,912.62 for regular activities of the department in game management, fish and game bird production and planting, and law enforcement. The Director's Predatory Animal Fund No. 60 utilized $63,272.60. Of this amount $12,625.00 was paid out for bounties on 230 cougar; $1,400.29 was expended directly for magpie control and the balance for general control on all types of predators.

The Woldlife Restoration Project's (Pittman - Robertson) Fund No. 61 for land purchases of winter game range, game management studies, and habitat improvement for all types of wildlife directly connected with game animals and game birds utilized $736,004.60; and $77,103.24 was expended from the Fish Restoration Project's Fund (Dingell-Johnson) No. 65. This is another Federal Aid projects fund which was put into effect the latter half of the 1951-1953 biennium. The program is just getting well under way and expenditures have been fairly small to the present time. However, they will increase as new projects are formulated and approved and funds become available.

Receipts

Receipts for the biennium amounted to $3,470,076.97 showing an increase over the receipts for the last previous biennium in an amount of $665,180.85, an all time high for Fish and Game Department income. Sales of licenses, tags and permits brought in $2,541,-395.20 an increase of $459,561.30 — refunds from Federal Aid projects contributed $595,663.98 an increase of $276,198.32 — miscellaneous sales accounted for the balance of the revenue. Non-resident hunting and fishing licenses accounted for $919,703.55. Tags are not included in this amount, but probably accounted for another $10,000.00 in out of state revenue.

License Sales

Sales of resident and non-resident fishing and hunting licenses reached an all-time high during the biennium. Resident combination licenses led all classes with a total number of 260,813 issued— an increase of 15,322 over the previous biennium. Resident hunting licenses showed an increase of 4,603; resident fishing permits jumped 4,199; non-resident combination hunting and fishing licenses moved up 3,021 during the period, to a total of 6,507.

Non-residents contributed heavily to department revenues in numbers of fishing licenses purchased as they boosted season license sales to 28,957. Tourist class five-day fishing permits increased 20,627 over the 1950-1952 biennium with 90,318 issued.

Big game hunters swelled the ranks as they purchased 208,114 deer tags and 91,596 elk tags during the two-year period. Deer tag sales jumped approximately 20,000 above the last biennium while elk tags moved up 14,543 for the same period.

There was a general levelling off during the biennium and sales during the two-year period showed small increases only for the 1953-1954 fiscal year over 1952-1953.

Fines

Fish and Game Department revenues were increased by $35,858.30 as a result of fines and confiscations during the biennium. Conservation officers reported 2,228 arrests for game law violations during the period.

Legislation providing that one-half of all funds received from fines in fish and game law violation cases be retained in the county in which the case was held, was placed in effect on May 11, 1951. Previous to that time the entire amount of such fines was remitted to the fish and game department. The above figure is the department's share only.

Detail of Disbursements

Fish and Game Fund No. 6	1952-53	1953-54	Total
Salaries and Wages	$ 460,294.26	$ 532,803.82	$ 993,098.08
Travel	34,712.51	39,043.75	73,756.26
Operating Expense	350,230.77	351,223.40	701,454.17
Capital Outlay	174,791.65	233,596.04	408,387.69
Refunds	1,113.80	165.55	1,279.35
Special Audit Fees	1,450.00	500.00	1,950.00
Social Security (State Share)	7,469.34	9,517.73	16,987.07
Total Fund No. 6	$1,030,062.33	$1,166,850.29	$2,196,912.62
Predatory Animal Fund No. 60			
Salaries and Wages	18,052.45	18,870.20	36,922.65
Travel	1,093.46	2,362.75	3,456.21
Operating Expense	4,963.30	3,623.33	8,586.63
Cougar Bounties	4,125.00	8,500.00	12,625.00
Magpie Control	771.43	628.86	1,400.29
Social Security (State Share)	122.91	158.91	281.82
Total Fund No. 60	$ 29,128.55	$ 34,144.05	$ 63,272.60
Wildlife Restoration Fund No. 61			
Salaries and Wages	158,812.26	208,851.48	367,663.74
Travel	8,269.13	8,601.73	16,870.86
Operating Expense	82,144.33	112,837.84	194,982.17
Capital Outlay	71,991.59	79,244.18	151,235.77
Social Security (State Share)	2,145.63	3,106.43	5,252.06
Total Fund No. 61	$ 323,362.94	$ 412,641.66	$ 736,004.60
Fish Restoration Fund No. 65			
Salaries & Wages	$ 12,700.92	$ 20,602.49	$ 33,303.41
Travel	2,415.97	4,571.17	6,987.14
Operating Expense	6,869.44	18,658.57	25,528.01
Capital Outlay	6,027.31	4,962.55	10,989.86
Social Security (State Share)	80.70	214.12	294.82
Total Fund No. 65	$ 28,094.34	$ 49,008.90	$ 77,103.24
Beaver Suspense Fund No. 149			
Claims Paid to Trappers	82,846.87	55,354.98	138,201.85
Total Disbursements All Funds	$1,493,495.03	$1,717,999.88	$3,211,494.91

Detail of Cash Receipts

FISH AND GAME FUND NO. 6	7/1/52 through 6/30/53		7/1/53 through 6/30/54		Biennium Total	
	Number	Amount	Number	Amount	Number	Amount
Resident Hunting and Fishing	129,144	$ 368,060.40	131,669	$ 375,256.65	260,813	$ 743,317.05
Resident Hunting	48,724	92,575.60	45,990	87,381.00	94,714	179,956.60
Resident Fishing	44,084	83,759.60	47,053	89,400.70	91,137	173,160.30
Non-Resident Hunting and Fishing	3,181	151,097.50	3,326	157,985.00	6,507	309,082.50
Non-Resident Fishing	14,085	133,807.50	14,872	141,284.00	28,957	275,091.50
Non-Resident 5-Day Fishing	43,492	123,952.20	46,826	133,454.10	90,318	257,406.30
Non-Resident Bird	820	15,580.00	1,033	19,627.00	1,853	35,207.00
Alien Bird	1	23.75			1	23.75
Alien Gun	1	4.75			1	4.75
Alien Fish	6	142.50	2	47.50	8	190.00
Non-Resident Gun	6	11.40	7	13.30	13	24.70
Resident Trapper	1,234	5,861.50	816	3,876.00	2,050	9,737.50
Non-Resident Trapper	5	356.25			5	356.25
Non-Resident Trophy	908	21,565.00	899	21,351.25	1,807	42,916.25
Guide License	109	545.00	102	510.00	211	1,055.00
Outfitters License	140	700.00	162	810.00	302	1,510.00
Shipping Permits	1,556	622.40	1,515	606.00	3,071	1,228.40
Resident Fur Buyers	61	305.00	55	275.00	116	580.00
Non-Resident Fur Buyer	2	40.00	3	60.00	5	100.00
Taxidermist	9	90.00	14	140.00	23	230.00
Private Pond Permits	29	290.00	40	400.00	69	690.00
Bird Farm Permits	12	120.00	23	230.00	35	350.00
Whitefish and Blueback Salmon	270	2,700.00	309	3,090.00	579	5,790.00
Sheep Permits	45	1,125.00	50	1,250.00	95	2,375.00
Goat Permits	51	255.00	30	150.00	81	405.00
Deer Tags	106,532	101,205.40	101,582	96,502.90	208,114	197,708.30
Elk Tags	47,499	90,248.10	44,097	83,784.30	91,596	174,032.40
Moose Tags	75	750.00	100	1,000.00	175	1,750.00
Antelope Tags	2,295	2,295.00	1,947	1,947.00	4,242	4,242.00
Archery Antelope Permits			12	36.00	12	36.00
Deer Permits	12,400	37 200.00	12,970	38,910.00	25,370	76,110.00
Elk Permits	2,360	11,800.00	2,500	12,500.00	4,860	24,300.00
Moose Permits	75	1,875.00	100	2,500.00	175	4,375.00
Antelope Permits	2,295	6,885.00	1,935	5,805.00	4,230	12,690.00
Archery Elk Permits	33	165.00			33	165.00
Archery Deer Permits	64	192.00	200	600.00	264	792.00
Sheep Tags	45	450.00	50	500.00	95	950.00
Goat Tags	51	510.00	30	300.00	81	810.00

Commission Saved	1,002.70	1,420.00	2,422.70
Receipts in lieu of Licenses Sold	106.65	117.30	223.95
Total Licenses, Tags, Permits, etc.	$1,258,275.20	$1,283,120.00	$2,541,395.20
Beaver Hides (States Share)	$ 29,874.40	$ 18,669.13	$ 48,543.53
Fines (Department Share)	16,341.92	19,516.38	35,858.30
Confiscations	243.79		243.79
Rentals	10,517.65	9,139.55	19,657.20
Royalty Non-Game Fish	4,571.17	7,015.89	11,587.06
Refunds	4,975.26	33,768.67	38,743.93
Miscellaneous Sales	35,853.26	4,281.21	40,134.47
Cancelled Warrants	32.95	28.38	61.33
Total Fund No. 6	$1,360,685.60	$1,375,539.21	$2,736,224.81
WILDLIFE RESTORATION FUND NO. 61			
Federal Refunds	212,150.58	308,210.85	520,361.43
Miscellaneous Sales	3,538.71	9,896.35	13,435.06
Cancelled Warrants	54.75		54.75
Total Fund No. 61	$ 215,744.04	$ 318,107.20	$ 533,851.24
FISH RESTORATION FUND NO. 65			
Federal Refunds	16,514.42	45,300.32	61,814.74
BEAVER SUSPENSE FUND NO. 149			
Sale of Beaver Hides (Trappers Share)	82,831.75	55,354.43	138,186.18
Total Receipts All Funds	$1,675,775.81	$1,794,301.16	$3,470,076.97

OPERATION IN FUNDS

FUNDS	Balance 7/1/52	Receipts Cash	Receipts Transfer	Disbursements Cash	Disbursements Transfer	Balance 6/30/54
Fish and Game	$420,819.11	$2,736,224.81	$	$2,196,912.62	$281,000.00	$679,131.30
Predatory Animal	11,183.06		56,000.00	63,272.60		3,910.46
Wildlife Restoration	39,716.41	533,851.24	200,000.00	736,004.60		37,563.05
Fish Restoration	17,165.32	61,814.74	25,000.00	77,103.24		26,876.82
Beaver Suspense	270.90	138,186.18		138,201.85		255.23
Revolving Fund	1,000.00					1,000.00
Total All Funds	$490,154.80	$3,470,076.97	$281,000.00	$3,211,494.91	$281,000.00	$748,736.86