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STATE OF MINNESOTA**C. Elmer Anderson, *Governor*****Department of Conservation****Chester S. Wilson, *Commissioner*****Eleventh Biennial Report****1951-1952****Section III****Division of Game and Fish****Frank D. Blair, *Director***

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STATE OF MINNESOTA
C. Elmer Anderson, Governor

Department of Conservation

Chester S. Wilson, Commissioner

Eleventh Biennial Report

1951-1952



Section III

Division of Game and Fish

Frank D. Blair, Director

This report is published in six sections, as follows:

- I. Commissioner's Report
- II. Division of Forestry
- III. Division of Game and Fish
- IV. Division of Lands and Minerals
- V. Division of State Parks
- VI. Division of Waters

JANUARY, 1953

"The true order of learning should be, first, what is necessary; second, what is useful; and third, what is ornamental. To reverse this arrangement is like beginning to build at the top of the edifice."—Mrs. Sigourney.

St. Paul 1, Minn.

January 5, 1953

To the Honorable C. Elmer Anderson, Governor,
and

To the Legislature of the State of Minnesota:

I have the honor of transmitting herewith the biennial report of the Division of Game and Fish, of the Department of Conservation, for the biennium ending June 30, 1952, being Section III of the Eleventh Biennial Report of the entire department.

For the convenience of those who may be interested only in certain particular conservation subjects but not in the entire field, the commissioner's report and the reports of the five divisions are published separately instead of in a single volume.

Respectfully submitted,

Chester S. Wilson,
Commissioner of Conservation

St. Paul 1, Minn.

January 5, 1953.

Honorable Chester S. Wilson,
Commissioner of Conservation,
State of Minnesota.

Dear Mr. Commissioner:

I have the honor of transmitting herewith the report of the Division of Game and Fish for the biennial period July 1, 1950 to June 30, 1952.

Respectfully submitted,

Frank D. Blair,
Director,
Division of Game and Fish

FDB:OK

DIVISION OF GAME AND FISH

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CONTENTS

	Page
Division of Game and Fish	
Personnel	6
Summary of Chief Accomplishments.....	9
Foreword	11
Recommendations	15
Bureau of Fisheries.....	17
Fisheries General	17
Propagation	17
Fish Rescue	26
Lake and Stream Improvement.....	29
Rough Fish Removal.....	32
Fisheries Research	38
Bureau of Game.....	44
Predator Control	44
Bureau of Game Airplane.....	46
Access to Public Waters.....	47
Emergency Winter Feeding.....	50
Game Cover Planting Program.....	50
State Game Farms.....	52
Game Refuges and Public Hunting Grounds.....	55
Bureau of Wildlife Development.....	62
Project Reports	62
Wildlife Surveys and Investigations.....	71
Bureau of Warden Service.....	80
Bureau of Administration—Division Finances.....	86

TABLES

Table No.	Pages
1 Fingerling Production	20, 21
2 Fish Rescued or Transferred.....	22, 23
3 Fisheries Stations, New Projects.....	24
4, 5 Total Prod.—Commercial Species.....	27, 28
6 Red Lakes Fisheries Prod.....	29
7, 8 Lake and Stream Impr. Proj. Completed.....	30, 31
9-14 Rough Fish	33-37
15, 16 Lake and Stream Surveys.....	39-41
17 Creel Census Lakes.....	42
18 Predators Taken on Game Refuge.....	48
19-20 Access Areas	48, 49
21 Game Bird Distribution.....	52
22 Leases, Bureau of Game.....	54
23, 24 Game Refuges Established and Vacated.....	60
25, 26 Status of Whitewater and Thief Lake Land Acq.....	64
27 Wildlife Food and Cover Planting.....	66
28 Comparison of Browse Conditions.....	73
29 No. of Unlicensed and Licensed Farmer-Hunters.....	75
30 Aerial Census Data—Six Minn. Counties.....	76
31 Ruffed Grouse Roadside Count.....	76
32, 33 Warden Arrests and Confiscations.....	83
34, 35 Division Expenditures and Transfers.....	88, 89
36, 37 Division Income	90, 91
38 Receipts From All Sources By Funds.....	92-94
39-40 Summary of Funds.....	95-96
41-50 Expenditures by Bureaus, Activities, Classification.....	97-106

Summary of Chief Accomplishments

1. The new Roseau River game refuge and public hunting grounds, covering 53,000 acres, is the largest and most outstanding game restoration project in the history of Minnesota game and fish. Cost of land and development will be in excess of \$900,000. After several years of preliminary work, the development project got under way at the close of this biennium. Negotiations involved the Canadian and American governments and the International Joint Commission, and required approval of Congress, the State Legislature, the Province of Manitoba, and the Fish and Wildlife Service of the U. S. Department of the Interior. This is primarily a waterfowl project, but the area will also provide excellent hunting of sharptailed grouse, ruffed grouse and deer. It will probably require two years to complete the building of dikes, roads, and the diversion channel. It is a Pittman-Robertson project for which the state will be reimbursed 75 per cent of the cost from Minnesota's share of the federal allotment derived from the excise tax on sporting arms and ammunition.

2. The cooperative agreement between the Division of Game and Fish and the Department of Highways for use of two-way radio communication was the most outstanding coordination of state law enforcement agencies yet achieved in Minnesota. The radio hook-up will consist of 6 bay stations and 12 sub-stations.

All but 30 of the game wardens' cars have been equipped with the new type radios. Although but one broadcasting station, located in St. Paul, has been operating, radio-equipped wardens' cars have paid off. Automobile accident victims have been given first aid and probably two lives were saved by wardens seeing the accident or being first on the scene, reporting immediately to the Highway Patrol station, and having doctors and ambulances there promptly — thanks to the radio. In another instance, a warden picked up a stolen car and the offender shortly after the station had reported the case.

When stations are completed to cover the entire state, these two agencies working together will give Minnesota the best in law enforcement and assistance to the public on the roads. In case of any catastrophe, power or telephone communication failure, the state could be covered in the emergency by car to car and airplane to car radio. Benefits from this cooperative radio hookup may well be so valuable as to be impossible to measure in dollars and cents, especially in the conservation of human life.

3. Greatest accomplishment in fisheries restoration work has been the gradual control of rough fish. Effects of the intensive program of removal are evidenced in fewer and smaller carp, and better game fishing in southern lakes. Halting passage of carp from rivers to lakes by installation of control dams and automatic screens has had a telling effect upon the population.

4. Construction during the biennium of 11 rearing ponds, covering 272 acres and with a maximum capacity of 3,536,000 fingerling fish, was a record. The Winnibigoshish rearing pond, comprising four units covering 85 acres, is the largest yet constructed. The total maximum capacity of all rearing

ponds is 9,700,000 fingerlings. The goal we have set in order to adequately stock Minnesota waters in accordance with recommendations made by the Fisheries Research Unit, is 20,000,000 fingerlings per year.

5. The number of game food and cover plantings to improve game habitat was increased during the biennium from 445,480 pieces in 1950 to 2,685,100 pieces in 1952.

6. Increased rescue work of landlocked fish, and building of structures on slough spawning grounds to retain water until fish are hatched and returned to main waters, produced excellent results. Many additional such spawning areas will receive attention as rapidly as funds and personnel will permit.

7. The comparatively recent Lake and Stream Improvement Unit of the Bureau of Fisheries handled 54 lake and stream improvement projects during the past two years. A drag line and heavy equipment made many of these projects possible and at less cost than could have been accomplished under contract.

8. Construction of headquarters and storage buildings made possible more efficient operations and better care of equipment, all of which is now stored inside and no longer subject to depreciation by the elements.

9. An agreement with the U. S. Soil Conservation Service and U. S. Fish and Wildlife Service enabled our Bureau of Wildlife Development to launch investigations in the spring of 1952 of all drainage proposals, to determine effects on wildlife and make every effort to save Minnesota water areas wherever possible.

10. A total of about 123,000 acres in game refuge-public hunting ground lands was approved during the biennium. This includes the new 53,000 acre Roseau refuge and establishment of the Mille Lacs game refuge and public hunting grounds, covering 40,226 acres. Also included is the addition of 17,174 acres to the Whitewater game refuge and public hunting grounds, and 12,600 acres to the Carlos Avery refuge, north of the Twin Cities.

A detailed report of all operations follows in reports from each of the five Game and Fish Bureaus.

FOREWORD

The many phases of Game and Fish operations will be shown in reports of the Bureaus which follow. I must again emphasize, however, that effects of such operations will be nullified unless more emphasis is placed on better conservation of our renewable natural resources — the soil, waters, forests and wildlife. Unless this is done, game and fish progress could come to a standstill within 25 years.

Millions of dollars have been spent by government for useful and ornamental purposes, while but thousands have been spent for necessary projects. It should be just the reverse.

Every citizen should be made to understand that his very existence depends upon the soil, water, forests and wildlife. All these basic assets are inter-related and necessary. The soil cannot produce food without water, and forests or cover are necessary as a direct food supply for domestic animals and to conserve water

Wildlife is also necessary. When we mention this subject most people believe that it refers only to game and fish. All creatures not human or domestic are included in this category. Certain species are necessary to fertilize or pollinate much of our food supply. There are other species which are detrimental, either directly or indirectly, to the human species or to our food supply. These we must fight and control. It is these species that keep other bodies active, otherwise the human species and other forms would become lax, sluggish, diseased, and die off. The great difficulty is in knowing where to stop and in trying to keep a proper balance.

Minnesota could well afford to take the lead in the conservation of soil, waters, and forests, as it has done in game and fish. Although some states have species not found in Minnesota and a few may have more of a particular species, none have more game and fish than has Minnesota.

Criticism

Because of having had so much, Minnesota sportsmen are more discriminating and a few offer more criticism of game and fish operations than is generally found in other states. Constructive criticism is welcomed by department officials, as such criticism is based on facts. However, a few critics have charged that all our operations are bad, that our techniques are obsolete, that the officials have no conception of the fundamentals of conservation, that seasons are opened merely to acquire funds from license fees, and that we should contact the sportsmen before taking any action. This type of criticism is purely destructive, with no basis of fact.

Minnesota officials and those of other states and the Federal Government work together. They are continuously pooling their findings, and when anything new is developed which promises better results, all of the states try to adopt it. Any operations proven to be obsolete are discontinued. Techniques used in Minnesota are the same as those used by most states and the Federal

Government. Minnesota officials know as much about the fundamentals of conservation as do those in any other state, and certainly they know more about it than most of the untrained critics.

As to opening seasons merely to enrich game and fish coffers, this was disproven in 1947 when the first closed season on pheasants was brought about; also in 1950 when the deer season was closed by official order, the first such ban made by any department officials. Previous closed deer seasons were made by the legislature, in odd-numbered years from 1921 to 1941, when the deer herd was being built up. This was in lieu of the buck law in other states. The closed pheasant and deer seasons meant a loss of close to \$900,000 in license fees and Pittman-Robertson Federal Aid. It has been the policy of the Department for many years to contact the organized sportsmen and other groups about game conditions, open seasons, and other problems.

Increased License Fees

In 1949, the Department of Conservation and a majority of the organized sportsmens clubs asked the Legislature to double the hunting and fishing license fees in order to speed up game and fish conservation work. License fees were not doubled but the Legislature did grant an increase in fees of about 45 per cent. Increased fees did not affect receipts until the spring of 1950 for hunters license fees, and the spring of 1951 for fishing license fees. Plans had been made for a greatly expanded game and fish program but because of the Korean war situation costs increased to such an extent that most of the increased fees were necessary to take care of salaries, equipment and supplies. However, in spite of this, greater progress was made during the last two-year period on game and fish projects than in any biennial period of the past. The summary of the chief accomplishments listed on the previous pages mentions only a small portion of the many projects completed during the past two-year period. As previously mentioned, Game and Fish Bureau reports following are given in detail, showing all of the operations for this period.

Game and Fish Values

It is estimated that about 14,000,000 units of game and fur bearing animals were taken during this biennium, having a total estimated value of \$65,000,000. An estimated 90,000,000 pounds of fish were taken, having a total estimated value of \$70,000,000. It is estimated that hunters and fishermen spent \$250,000,000 during this biennial period in pursuit of their favorite sports. This includes ammunition, guns, fishing tackle, clothing, transportation, boats, dogs, meals, lodging, and miscellaneous expense. This is mentioned merely to show that game and fish is quite a big business.

Difficulties

The greatest problem in conserving or trying to maintain an ample supply of game and fish for an ever increasing number of hunters and fishermen is the steady reduction of wild land for game and water area for fish. As the population of our country increases there is more wood, concrete and steel covering the land and more of the former water areas placed under

cultivation. But few of our people realize that Minnesota is rapidly losing its water. There is probably 25 per cent less water in Minnesota today than there was 50 years ago. We have built large drainage ditches to drain off millions of acres that held water through all history. A number of once fairly good lakes have vanished. In the agricultural portions of the state, many of the once deep and productive fishing lakes are filled with silt. Today, many of these lakes because of their shallowness and consequent freezing out during the winter months, will not sustain fish life throughout the year.

In the spring of 1952, an agreement was made with the Soil Conservation Service of the U. S. Department of Agriculture, and the Fish and Wildlife Service of the U. S. Department of the Interior, whereby the Department of Conservation would investigate all drainage proposals. A total of 49 such proposals were called to our attention and investigated up to June 30, 1952. The purpose of these investigations was to evaluate the effects of such projects on wildlife. Where it was found that wildlife would be adversely affected, contact was to be made with the landowners to convince them that the water and wildlife value would in the long run exceed the value of any additional acreage gained for agricultural purposes. If the owners remained adamant, attempts were to be made to purchase such water areas under a Pittman-Robertson Federal Aid project, if this could be accomplished at a reasonable figure. We were unable to stop any of these drainage projects. Promiscuous drainage is the most serious problem challenging us today in game and fish conservation work. I have stated a number of times that if we should have another drouth the farmers in the southwest quarter of Minnesota may have to pump underground water in order to raise crops. Some better method must be found to conserve Minnesota waters.

Pollution of Waters

Another serious problem is the pollution of waters. Present game and fish laws make it illegal to run deleterious substances into public waters, but unless **fish life is injured**, we are powerless to prosecute. Pollution may contaminate the flesh of fish and make it unpalatable, or it may kill **water-fowl** or other species, yet nothing can be done about it as long as fish are not injured.

Farmer-Sportsmen Relationships

The matter of farmer-sportsmen relationship remains to be solved. Under our form of government, the individual who is able to own property may protect it. A farmer has a right to protect his property against trespass, as a city home owner or lessee may prevent unwanted persons from trespassing on or in his property. When all hunters and fishermen become sportsmen and respect the farmers' property, this problem can then be solved.

Public Hunting Grounds

Probably we can never obtain enough land as public hunting grounds to accommodate the large number of hunters we now have, and an ever increasing army in the future. We have made some headway in Minnesota,

with 10,681,082 acres of public hunting grounds. Compared to Minnesota's total area of 53,000,000 acres, this amount is small, but larger than that in any other state.

Access to Public Waters

We have also made progress in establishing entrance ways to public waters, where private holders owned all of the land around such waters, thereby depriving the public of access. A total of 50 have been established since this project was undertaken in 1947. In addition, there are 37 public entrances to 37 lakes on state lands under the Division of Forestry.

Comparison with Other States

In comparing Minnesota with other states, it will be found that we lead in the production of inland fish, and contrary to the misconception of many interested people, Minnesota does have a good fisheries policy. The Sport Fishing Institute, Washington, D. C., in its December, 1951, bulletin stated:

"In recent issues we referred to the need for clear-cut fish conservation policies, and mentioned that both California and Ohio had released such policies. Minnesota, too, has released a comprehensive fish management policy. * * * Biological research and administrative trends in Minnesota and other lake states indicate that a new approach to fish management problems must be developed to maintain fisheries resources effectively and economically. Briefly stated, modern fish management stresses environmental improvement, encouragement of natural reproduction, control of fish populations, and full utilization of all species, together with proper use of hatchery reared fishes."

Comparisons with other states show Minnesota in the forefront in game conservation projects and game production.

We are second in the production of fur-bearing animals and among the top five states in law enforcement.

This may look like an excellent picture with nothing to worry about. But we must consider that the Creator endowed the "Land of Sky Blue Waters" with an abundance of natural resources, and that Minnesota is a comparatively young state. The rapid depletion of these resources has not as yet been felt by many of our people. Game and fish conservation, as previously mentioned, has been quite well financed, and has gone further than has the conservation of soil, water and forestry.

Habitat Improvement

Every possible effort has been made during the past few years to improve habitat for both game and fish life. Although we have increased planting stock 500 per cent in two years, we are still planting less than is being destroyed. Fires, and a new and growing menace, promiscuous spraying of chemicals along roadways to destroy noxious weeds supposedly detrimental to agriculture, have during the past three years destroyed more trees, shrubs and vines than we have been able to plant.

Over-cropping of agricultural lands without giving the soil a rest and rebuilding it with cover, has lost millions of tons of topsoil, washing it into

lakes and streams and down rivers to the ocean. Most of the waters are polluted and careless chemical spraying to combat tent caterpillars, has also destroyed large numbers of fingerling fish. Means must be found to stop these losses and rebuild the renewable resources.

Finances

Minnesota game and fish finances the past six years have been in excellent condition. A verbal agreement was made with members of the 1947 Legislature and the Department of Administration whereby a surplus of at least \$750,000.00 would be kept in the treasury so that in case of any closed season and loss of income as occurred in 1947 with a closed pheasant season, and in 1950 with a closed deer season, there would always be sufficient funds available to carry on normal operations. We have operated very successfully under this arrangement.

In closing this part of the report I want to thank the sportsmen, the farmers, the state officials, the press and radio for their excellent cooperation.

Recommendations

The following recommendations are offered as of vital importance to a game and fish program based on sound conservation principles:

1. That ways and means be found to coordinate operations between the Department of Agriculture, the Department of Conservation, units of the University of Minnesota and branches of the federal government concerning soil conservation, drainage, forestry, waters, destruction of detrimental species (primarily insect life and noxious weeds), and game and fish — to insure that all agencies are working together in the best interests of conservation. It is further recommended that an interim committee be appointed by the legislature to survey and evaluate operations by various state and federal units dealing with conservation matters in order to determine how better results may be obtained.

2. That commercial fishing for bullheads within the state be placed on a license basis, the same as that in effect on the Mississippi River.

3. That commercial fishing on the St. Croix River be placed on a license basis, the same as that in effect on the Mississippi River.

4. That the use of gill nets on Lake Namakan be prohibited, as game fish cannot now be legally taken, but are caught in gill nets and cannot be disposed of legally. In lieu of gill nets, provision should be made for the use of pound or trap nets for taking of rough fish. This would be sound conservation.

5. That trapping laws be amended to eliminate the requirement that trappers purchase a small game hunting license in addition to a trapping license; and also to provide for the sealing of muskrat and mink pelts at a reasonable cost per pelt, as has been done with beaver pelts. This would be an equitable method, in that professional trappers taking large numbers of

fur bearing animals would have to reimburse the state accordingly, while the amateur trapper taking but few pelts would pay less. Sealing of pelts would make violations of the law more difficult and facilitate enforcement.

6. That limits and seasons on fish as designated in the law be removed and permit the Commissioner of Conservation to set limits by order. The chief reason for this is that many people read the law, which states that the limit on northern pike is 8 a day and 12 in possession, while Commissioner's orders cut the limit to 3 a day and 3 in possession, which is given on the yearly synopsis. Many people cannot understand why they cannot take the number stated in the law book and why the dates stated for open seasons in the law book differ from those in the synopsis.

7. That pollution laws be amended whereby release into public waters of any substances which destroy any fish or protected game, or contaminate the flesh of any species so as to make it unpalatable for food purposes, be in violation of the law. I believe that polluting public waters with any deleterious chemical or poisonous substance should be designated as a gross misdemeanor.

8. That laws be amended prohibiting burning-over of lands without a permit, including railroad or other right-of-ways, public roads and private lands. The cost of such a permit system and enforcement would be negligible compared to the large fire loss each year.

9. That laws be amended whereby no drainage projects of any kind, affecting public waters, whether going into or out of same, may be undertaken without a permit from the Commissioner of Conservation, such permit to be optional with the Commissioner after due investigation.

10. That water laws relating to dams in existence 15 or more years be amended to include roadways in existence for 15 or more years, that cross public waters.

11. That in an effort to save public hunting and force irresponsible hunters out of the field, entrance without permission on agricultural lands or fields under cultivation and growing crops, or in fields containing live stock, be designated a misdemeanor. The farmer would then no longer be required to post lands against trespass. If anyone hunted without permission, the farmer could call the sheriff, constable, or game warden to arrest such person or persons.

12. That the Legislature be asked to repeal the clause in the reorganization act of 1939, whereby game and fish must pay into the general administration fund 5 per cent of the hunting and fishing license receipts, and pass a law whereby 3 per cent of receipts shall be appropriated for soil, water and forestry conservation in addition to amounts now appropriated, and that 2 per cent be placed in a sinking fund for the purpose of establishing and maintaining a conservation training school.

Bureau of Fisheries

HJALMAR O. SWENSON, *Supervisor*

FISHERIES GENERAL

The Bureau of Fisheries has the responsibility of carrying out a fish management program so as to provide the maximum annual yield of fish from the lakes and streams of the state, and this report covers briefly the activities and accomplishments of the various phases of the fisheries program during the biennium.

In the interest of public understanding and acceptance of the fisheries program of the Division of Game and Fish, a detailed fish management policy was prepared in 1949. It appeared, in full, in the March-April, 1951, issue of *The Conservation Volunteer*. Fisheries operations are planned and carried out in accordance with this policy, and operations are divided into units which coincide with budget allotments.

These units are (1) fisheries general, including propagation, licensed commercial fishing, and general administration; (2) lake and stream improvement; (3) rough fish removal; and (4) fisheries research. Each unit has a supervisor in charge. The state is divided into seven fish management districts, each with a district supervisor in charge. Each district also has a biologist, area supervisors, fish culturists, and other personnel; and three districts have rough fish removal field supervisors.

Propagation

Fish, hatched and reared in the various propagation facilities, are stocked in accordance with recommendations based on surveys of the fishing waters. Walleyed pike fry are stocked in some waters that have a periodical winter-kill, since it has been found that fry stocking has been effective in many such waters. Fingerlings are stocked in waters that have large populations of other species, such as perch, where the natural reproduction has been found to be inadequate.

The greatest expansion in the program was the increase of walleyed pike rearing ponds, as shown in Table 1. This brings the total investment in rearing ponds to \$824,665. The estimated annual production capacity with present facilities for walleyed pike fingerlings is ten to twelve million; but this will vary a great deal because of weather conditions and other factors over which there is no control. This is one of the most important fish management tools, and it should be expanded to an output of twenty million fingerlings per year, which will require an additional 600 acres of pond area at an estimated cost of \$900,000.

The rearing facilities for large and smallmouth bass should also be expanded, and this is planned for the next biennium.

A new trout hatchery was built at Lanesboro to replace the old, obsolete one, and new raceways were built during the previous biennium at this



Walleyed Pike Rearing Ponds at Lake Winnibigoshish. These four ponds have a total area of 85 acres.

same location. The trout program will be increased slightly in the future, particularly in the yearling stocking of stream trout and fingerling stocking of lake trout.

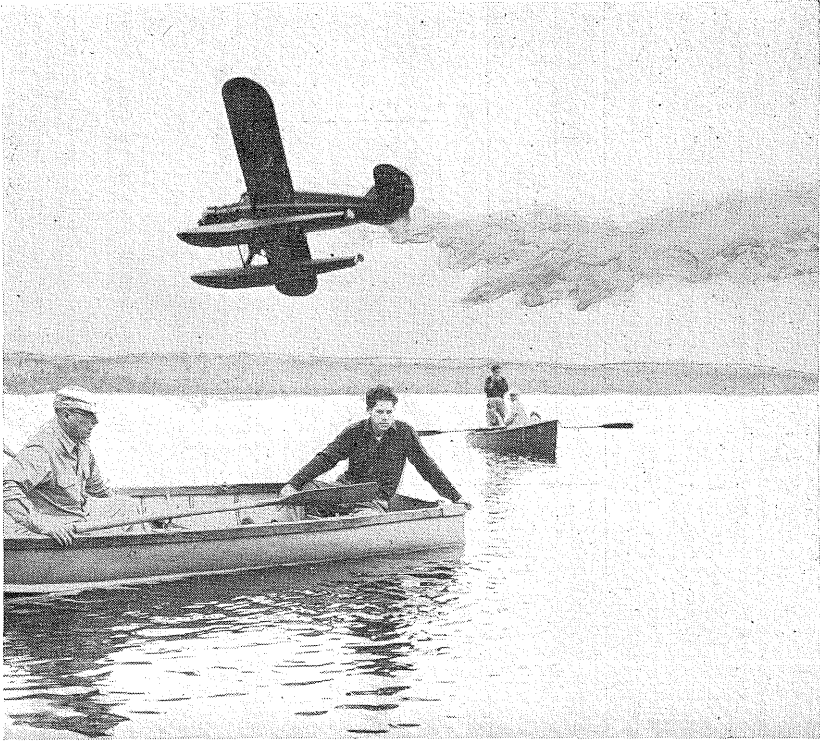
The muskellunge propagation program is conducted on a very limited scale. Muskellunge, although difficult to capture in any large numbers during the spawning season, are being collected as brood stock for the purpose of expanding this program.

Airplane Use in Fish Stocking

Through a cooperative venture with the U. S. Forest Service in Duluth and Ely, a special fish carrying container was built into a U. S. Forest Service plane for the purpose of transporting and releasing fish into some of the lakes in the remote areas of the northeastern part of the state. The first trial of dropping fingerling trout from the plane into the small lakes at 300 feet worked out very well, and practically no fish mortality resulted. This device will speed up the fish stocking in isolated lakes a great deal.

Federal Aid to Fisheries

Federal Aid fisheries projects are originated in the Bureau of Fisheries and administered by the Bureau of Wildlife Development. To date, the following projects have been approved:



Experimental Airplane Stocking. U. S. Forest Service plane dropping lake trout fingerlings into a northeastern Minnesota lake.

1. A new fisheries district headquarters building on Lake Tetonka, near Waterville, in LeSueur County. This will replace the old, obsolete station at St. Peter and will provide facilities for all fish management activities in the southwestern part of the state.

2. Acquisition of spawning areas. This project is for the purpose of acquiring marshy areas that are important or that can be developed as fish spawning areas. By doing this, many valuable fish spawning areas can be saved from being drained or filled in. The spring run-off can thus be controlled in many such areas during the spawning and hatching season by the construction of small water-control structures and, in some instances, channel improvement work. Some projects of this kind will also provide for better rough fish trapping and fish rescue operations.

3. Lake rehabilitation. A project has been set up to poison the entire fish population in some of the small lakes in northeastern Minnesota. These lakes have suitable environment for stream trout and have been stocked, but have not provided good trout fishing because of large numbers of unde-

TABLE 1

SPECIES	Size	Production from State-Owned Rearing Ponds				Production from State-Operated Natural Ponds			
		Number of Ponds Operated		Total Acreage	Number of Ponds		Total Acreage		
		1950	35	500.55	1950	15	75.75		
		1951	31	575.45	1951	14	64.35		
		1950		1951		1950		1951	
Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds		
Walleyed Pike.....	Fingerlings	1,150,214	9,950	2,745,998	14,334	83,057	398.5	89,359	919
Northern Pike.....	Fingerlings	200	8	114,040	386	934	15.25		
Largemouth Bass.....	Fingerlings	68,279	1,651	63,575	914	20,280	297.0	9,971	93
Smallmouth Bass.....	Fingerlings	12,900	218	21,660	435	4,184	28.0	4,048	82
Muskellunge.....	Fingerlings	25	8						
Crappies.....	Fingerlings	16,215	365						
Sunfish.....	Fingerlings	630	90						
Golden Shiners.....	Fingerlings	22,512	168						
Totals.....		1,270,975	12,458	2,945,273	16,099	108,455	738.75	103,378	1,094

TABLE 1—Continued

SPECIES	Size	Production from Cooperative Ponds				Fish Received from U. S. Fish and Wildlife Service			
		Number of Ponds		Total Acreage					
		1950 1951	237 267	1,725.05 2,033.0					
		1950		1951		1950		1951	
Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds		
Walleyed Pike.....	Fingerlings	2,422,337	33,864	2,138,237	34,299				
Northern Pike.....	Fingerlings	4,348	115	168,700	710				
Largemouth Bass.....	Fingerlings	221,333	2,320	92,814	1,809	398,176	1,576.0	302,480	1,217
Smallmouth Bass.....	Fingerlings					5,610	12.0	3,999	57
Crappies.....	Fingerlings	100	2						
Sunfish.....	Fingerlings	3,000	15	37,500	75	38,150	58.0		
Brook Trout.....	Fingerlings					39,346	24.9	60,288	925
Brook Trout.....	Yearlings	444	37	90	10				
Brown Trout.....	Fingerlings					22,550	26.7	56,000	328
Brown Trout.....	Yearlings	400	65	600	60			986	98
Rainbow Trout.....	Fingerlings					9,537	27.25	258,298	1,376
Rainbow Trout.....	Yearlings					10,800	600.0		
Minnows.....						132,735	444.0	88,585	353
Totals.....		2,651,962	36,418	2,437,941	36,963	656,904	2,768.85	770,636	4,354

NOTE:—The above information is for the calendar years 1950 and 1951.

TABLE 2

SPECIES	Size	Fish Rescued or Transferred				Total Distribution*			
		1950		1951		1950		1951	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Walleyed Pike.....	Fry					114,859,000		118,999,000	
Walleyed Pike.....	Fingerlings	120	2	24,501	490	3,575,393	43,212	4,888,996	40,559
Walleyed Pike.....	Yearlings and Adults.....	14,862	7,410	12,494	3,008	87,280	11,031	120,811	12,491
Northern Pike.....	Eggs (green)					4,458,000			
Northern Pike.....	Fry			82,000		9,187,000		12,049,670	
Northern Pike.....	Fingerlings	8,892	254	12,291	123	13,304	67	296,656	1,219
Northern Pike.....	Yearlings and Adults	51,715	15,142	77,686	33,549	52,871	15,213	77,110	32,549
Sand Pike.....	Adults	20	10						
Muskellunge.....	Fry					20,000			
Muskellunge.....	Adults	27	54						
Sturgeon.....	Adults			1	18				
Largemouth Bass.....	Fry			803,200		351,500		803,200	
Largemouth Bass.....	Fingerlings	29,856	652	72,460	725	994,602	6,496	542,391	4,793
Largemouth Bass.....	Yearlings and Adults	3,898	805	4,760	840	15,730	2,389	16,631	874
Smallmouth Bass.....	Fry			3,000		19,000		66,800	
Smallmouth Bass.....	Fingerlings					22,490	258	29,698	574
Smallmouth Bass.....	Yearlings					500	20		
Smallmouth Bass.....	Adults	69	138						
Silver Bass.....	Yearlings and Adults.....	2,341	970	1	1	2,347	970	1	1
Rock Bass.....	Adults			390	130			384	128
Crappies.....	Fingerlings	6,745	67	34,665	173	24,039	444	35,455	173
Crappies.....	Yearlings and Adults	37,651	627	154,310	24,975	61,851	11,564	153,973	24,975
Sunfish.....	Fingerlings	1,080	72	71,600	716	48,390	267	109,400	791
Sunfish.....	Yearlings and Adults	12,736	1,592	102,147	12,241	20,808	3,532	104,161	12,241
Stream Trout.....	Fingerlings					820,417	2,592	1,231,321	7,773
Stream Trout.....	Yearlings					414,084	46,733	373,255	50,116
Stream Trout.....	Adults					110	220	30	60
Lake Trout.....	Fry					1,845,000		1,871,000	
Lake Trout.....	Fingerlings					271,318	354	372,550	633
Herring.....	Fry					3,183,325			
Whitefish.....	Fry					4,850,580		5,800,000	
Whitefish.....	Adults			79	237			76	228
Tullibees.....	Adults	4	4	13	13				

TABLE 2—Continued

SPECIES	Size	Fish Rescued or Transferred				Total Distribution*			
		1950		1951		1950		1951	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Catfish.....	Fingerlings							45,000	45
Catfish.....	Yearlings and Adults	20,027	1,027	35	70	31,032	1,247	29	58
Bullheads.....	Fingerlings	12,250	245	900,050	3,600	10,000	200	120,000	2,400
Bullheads.....	Yearlings and Adults	68,723	12,911	111,838	18,728	97,824	19,852	83,926	27,975
Perch.....	Fingerlings	95,294	635	267,452	535			4,850	48
Perch.....	Yearlings and Adults	122,971	24,242	22,677	2,924	2,254	451	526	105
Redhorse.....	Adults							425	850
Buffalofish.....	Yearlings and Adults	1,450	1,000	7,915	2,875			2,300	2,300
Dogfish.....	Yearlings and Adults	657	195						
Quillback.....	Yearlings	1,000	100						
Carp.....	Fingerlings, Yearlings, and Adults	3,186	1,256	7,198	3,504				
Suckers.....	Fry					3,820,000		1,525,000	
Suckers.....	Fingerlings, Yearlings, and Adults	27,659	22,939	10,265	9,760	30,133	25,402	10,178	9,211
Minnows.....		1,513,711	7,568	786,340	3,931	895,389	4,257	800,585	4,002
Totals.....		2,036,944	99,917	3,569,369	123,170	150,085,571	196,771	150,535,388	237,172

*Includes eggs, fry, fingerlings, yearlings, and adults by species from all hatchery, rearing pond, and rescue operations.

NOTE:—Fry weight cannot be estimated; therefore not shown in pounds. The above information is for the calendar years 1950 and 1951.

TABLE 3
New Projects and Improvements to Fisheries Stations—Biennium Ending June 30, 1952

PROJECT	County	New Rearing Pond	Acreage	New Building	Improvements	Maintenance	Repairs	Other	Cost
Aitkin Rearing Pond.....	Aitkin	x	32.5						\$ 28,265.74
Detroit Lakes Headquarters.....	Becker			x					11,498.34
					x	x	x		10,393.59
Straight Lake Rearing Pond.....	Becker				x				530.00
Bemidji Hatchery.....	Beltrami					x	x		190.40
Waskish Station.....	Beltrami				x	x			21,497.90
Big Stone Lake Rearing Pond.....	Big Stone						x		476.00
Clearwater Lake Rearing Pond.....	Clearwater	x	12.5						34,928.50
Windom Substation.....	Cottonwood			x					20,625.00
Warren Lake Rearing Pond.....	Cottonwood				x				3,545.27
Mission Lake Rearing Pond.....	Crow Wing						x		100.00
Brainerd Headquarters.....	Crow Wing				x				123.40
				x(2)					28,798.40
Frank D. Blair Rearing Pond.....	Douglas						x		365.00
Lanesboro Substation.....	Fillmore							New Raceways	8,340.01*
				x					61,001.00
					x	x	x		7,776.30
Park Rapids Substation.....	Hubbard				x				3,763.75
Grand Rapids Headquarters.....	Itasca			x					12,100.00
					x	x			1,312.65
Island Lake Rearing Pond.....	Itasca	x	37.0						3,403.10*
Winnibigoshish Rearing Ponds.....	Itasca	x(4)	85.0						34,669.02*
Proposed Waterville Headquarters.....	Le Sueur							Land Acquisition (87 acres)	11,590.00
									22,159.80
Kiester Lake Rearing Ponds.....	Martin	x(2)	36.6						154.50
					x				5,723.96
Camp Ripley Rearing Ponds.....	Morrison				x		x		709.03
Shetek Lake Rearing Ponds.....	Murray				x				2,086.25
St. Peter Headquarters.....	Nicollet					x			8,013.39*
Otter Tail Lake Rearing Pond.....	Otter Tail	x	53.4						758.97
					x				1,991.00
Hinckley Rearing Ponds.....	Pine				x	x	x		3,433.43
St. Croix Rearing Ponds.....	Pine						x		6,093.02
Glenwood Headquarters.....	Pope				x	x	x		374.00
Sedan Rearing Ponds.....	Pope				x				16,217.00
St. Paul Headquarters.....	Ramsey			x					11,714.66
					x	x	x		5,860.00*
Melrose Rearing Pond.....	Stearns	x	15.0						2,591.99
French River Headquarters.....	St. Louis				x	x			180.00
Sturgeon Lake Rearing Pond.....	St. Louis						x		3,893.80
Crystal Springs Substation.....	Winona				x	x	x		
Total.....									\$397,248.17

*Expenditures to complete projects started under contract during the previous biennium.

sirable species such as perch and panfish. Most of the lakes selected are from five to twenty-five acres in size. They will be restocked with trout after the poisoning.

Private Fish Hatchery Operations

Private fish hatchery operations are authorized by Game and Fish laws and Commissioner's regulations. Most private fish hatchery operators raise minnows for bait purposes, and since their stock generally must come from public waters, the regulations provide for this and the supervision by a representative of the Division of Game and Fish.

The most desirable minnow species to raise is the sucker, whose eggs must be taken artificially during the spawning season. There are sucker spawning runs in many sections of the state, but it has been found that it would take too much time to supervise the trapping of fish and the taking of small amounts of eggs at many locations. Therefore, during the past two years, sucker trapping activities have been concentrated in areas that have a surplus of suckers, and the private fish hatchery operators have furnished the necessary help. This arrangement has worked out very well, and the time required to supervise has been reduced to a minimum.

Some of the larger operators have their own hatching facilities so they are assigned a quota of eggs from the spawning stations. Many of the smaller operators do not have hatching facilities so their quota of eggs are hatched in the State hatcheries when space is available, and the fry are available to them. The number of eggs or fry that each operator receives is determined by the number of acres of pond area he has covered by his license for the year for that particular species. Minnows attain pike-bait size by July and August and some are held over by private operators until the next year for northern pike and muskellunge bait.

During the calendar year 1950, 100 licenses were issued to private fish hatchery operators covering a total of 146 ponds with a total acreage of 948. The State supplied these operators with 28,423,257 sucker eggs and fry. The number of sucker minnows produced through these operations was 2,032,780; the number of other species, 1,018,770. During the calendar year 1951, 77 licenses were issued covering a total of 181 ponds with a total acreage of 1,159. The State furnished 37,696,000 sucker eggs and fry to these operators. The number of sucker minnows produced through these operations was 3,304,415; and the number of other species, 1,138,102.

Natural Propagation

Checking on the natural reproduction of fish is a very important activity. The information gathered in this way is considered when stocking quotas are established. Natural reproduction of northern pike has been increased a great deal by the control of water levels for short periods during the spawning and incubation periods. Channel improvement work is done to maintain water connections to the main lakes so fish can return from their spawning grounds. This appears to be the most effective method of improving the natural reproduction of this species.

During the calendar year 1950, 346 spawning beds covering 7,176 acres were posted in 261 waters; shoreline seining and spawning area investigations were carried on in 288 waters; and northern pike spawning area improvement work and observations were carried on in 47 waters. During the calendar year 1951, 386 spawning beds covering 8,020 acres were posted in 311 waters; shoreline seining and spawning area investigations were carried on in 404 waters; and northern pike spawning area improvement work and observations were carried on in 83 waters.

Fish Rescue

Fish rescue operations are shown in the listing of fish rescued in Table 2. This activity is necessary, because of shallow waters that fish enter during high-water stages, and, if not rescued, will winterkill due to lack of oxygen.

Fish Rescue Operations on Dora Lake, Le Sueur County



Here, in the fall and winter of 1951-1952, 35,045 game fish were rescued.



Closeup showing some of the fish rescued from Lake Dora.

Darkhouse Spearing

The Conservation Commissioner may close not to exceed 50 per cent of the named waters in each county to darkhouse spearing. For many years around 300 or more lakes have been closed each winter to protect the northern pike from spearing, and the more lakes that were closed, the more spearing pressure was concentrated on the lakes that remained open. Therefore, in the winter of 1951-1952, all lakes were open for a shorter period of time, thereby spreading the spearing pressure over all lakes.

Licensed Commercial Fisheries

Management of licensed commercial fisheries requires reliable statistics on the catch from waters in which such fishing is permitted. During the biennium, licensed commercial fishermen were required to furnish the Department with a record of their daily catch in pounds by species, together with the amount of gear used. Tables 4 and 5 contain statistics compiled from daily reports of commercial fishermen operating in Lake of the Woods, Rainy Lake, Lake Namakan, Lake Superior, and the Minnesota portion of the interstate waters of the Mississippi River.

Table 4
Total Production of Commercial Species
Calendar Years 1950 and 1951

Species	Lake of the Woods		Rainy Lake		Lake Namakan	
	Pounds	Approximate Value	Pounds	Approximate Value	Pounds	Approximate Value
Walleyed Pike.....	353,671	\$ 69,030.00	57,698	\$11,800.00	.....	.....
Northern Pike.....	73,485	6,730.00	21,239	1,930.00	.....	.....
Saugers	107,725	10,920.00	.....	.....	.....	.....
Tullibees	763,314	50,910.00	23,492	790.00	3,740	\$ 110.00
Whitefish	1,829	415.00	50,452	10,330.00	11,645	2,790.00
Perch	14,770	2,080.00	649	100.00	.....	.....
Eelpout	436,991	7,353.00	45,857	1,380.00	3,825	40.00
Suckers	84,709	1,695.00	52,867	1,590.00	3,547	70.00
Quillback	1,896	40.00	.....	.....	.....	.....
Bullheads	16,952	3,435.00	.....	.....	.....	.....
Totals.....	1,855,342	\$152,608.00	252,254	\$ 27,920.00	22,757	\$ 3,010.00
Number of commercial fishermen	43		9		3	
Amount of gear licensed—						
Gill nets (feet).....	74,500		20,000		7,000	
Fyke nets (number).....	53		.....		.....
Pound nets (number).....	36		4		.....
Trap nets (number).....	20		.....		.....

1951						
Walleyed Pike.....	257,681	\$ 64,420.00	26,086	\$ 6,520.00	.....	.....
Northern Pike.....	80,580	7,250.00	20,938	2,090.00	.....	.....
Saugers	73,912	12,570.00	.....	.....	.....	.....
Tullibees	387,866	38,790.00	15,429	770.00	27,299	\$ 1,360.00
Whitefish	379	95.00	34,369	8,590.00	9,444	2,360.00
Perch	11,595	2,200.00	383	60.00	.....	.....
Eelpout	425,753	12,772.00	30,756	620.00	3,777	75.00
Suckers	73,447	2,200.00	41,229	825.00	3,598	70.00
Quillback	2,318	70.00	.....	.....	.....	.....
Bullheads	63,660	12,730.00	.....	.....	.....	.....
Totals.....	1,377,191	\$153,097.00	169,190	\$ 19,475.00	44,118	\$ 3,865.00
Number of commercial fishermen	37		8		2	
Amount of gear licensed—						
Gill nets (feet).....	65,500		20,000		6,000	
Fyke nets (number).....	60		1		.....
Pound nets (number).....	24		3		.....
Trap nets (number).....	20		.....		.....

Note: Suckers include redborse and common suckers.

Law forbids taking of game fish species in Lake Namakan.

The report on Lake of the Woods includes eelpout (burbot) taken under special permits during the winter when there were no active fishing operations under license.

Red Lake Fishery

The commercial fishery at Redby on Lower Red Lake is operated by the Red Lake Indian Agency under agreement between the Office of Indian Affairs of the U. S. Department of the Interior and the State Conservation Department. Commercial fishing is permitted only in those portions of the Red Lakes lying within the Reservation, which include all of Lower Red Lake and approximately the western-half of Upper Red Lake. The fishery is a cooperative venture of the Red Lake Chippewa Tribe. Table 6 contains statistics of the Red Lake fishery supplied by the Office of Indian Affairs.

TABLE 5
TOTAL PRODUCTION OF COMMERCIAL SPECIES
Calendar Years 1950 and 1951

SPECIES	Mississippi River (Interstate)				Lake Superior			
	1950		1951		1950		1951	
	Pounds	Approximate Value	Pounds	Approximate Value	Pounds	Approximate Value	Pounds	Approximate Value
Carp.....	545,890	\$39,900.00	384,336	\$30,746.00				
Buffalofish.....	123,757	16,720.00	177,121	26,570.00				
Sheepshead.....	45,013	4,465.00	84,320	10,120.00				
Catfish.....	37,658	14,065.00	22,613	9,270.00				
Bullheads.....	2	.50	4	1.00				
Suckers.....	2,492	90.00	3,183	95.00				
Quillback.....	5,337	180.00	5,332	270.00				
Mooneyes and Goldeyes.....	505	20.00	344	10.00				
Dogfish.....	5,007	170.00	2,382	50.00				
Garfish.....	824	10.00	1,220	25.00				
Sturgeon.....	268	107.00	885	354.00				
Trout.....					182,826	\$ 66,520.00	224,124	\$100,855.00
Siscowets.....					19,482	6,680.00	8,979	3,590.00
Herring.....					2,489,370	122,520.00	2,237,022	134,220.00
Ciscoes.....					7,293	1,310.00	11,774	1,174.00
Bluefins.....					60	12.00	145	50.00
Whitefish.....					8,506	2,600.00	14,360	5,744.00
Menominees.....					487	170.00	544	190.00
Totals.....	766,753	\$75,727.50	681,740	\$77,511.00	2,708,024	\$199,812.00	2,496,948	\$245,823.00
Number of commercial fishermen.....	315		306		219		169	
Gear licensed—								
Number of set lines (100 hooks per line).....	628		552		...		...
Number of gill nets (500 feet or under).....	569		515		...		...
Amount of seines (feet).....	20,500		17,400		...		...
Number of vessels by type—								
18 feet or under.....	...		...		183		138	
19 feet to 24 feet.....	...		...		21		10	
25 feet to 35 feet.....	...		...		15		21	

Table 6
Red Lakes
Total Production of Commercial Species in Pounds
Calendar Years 1950 and 1951

Species	1950	1951
Walleyed Pike	383,447	556,188
Northern Pike	47,248	29,875
Perch	79,579	111,907
Whitefish	65,102	20,501
Sheepshead	9,880	20,492
Suckers	14,360	.....
Goldeyes	49,007	10,316
Bullheads	3,750	8,215
Totals.....	652,373	757,494

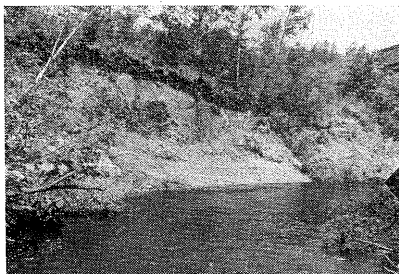
LAKE AND STREAM IMPROVEMENT

The lake and stream improvement program as carried on will be noted in Tables 7 and 8, wherein the various types of projects, such as dams, channel improvement, and carp-control screens, are listed. In carrying out this work, a total of 287 easements were secured during the biennium.

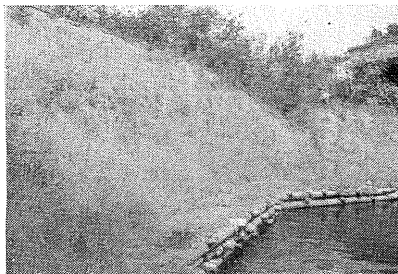


Dam with Carp-Control Device on Ogechie Lake. This dam controls the water level of Mille Lacs Lake; also stops migration of carp into Mille Lacs Lake.

Stream Improvement on Blackhoof River



Bank Erosion.



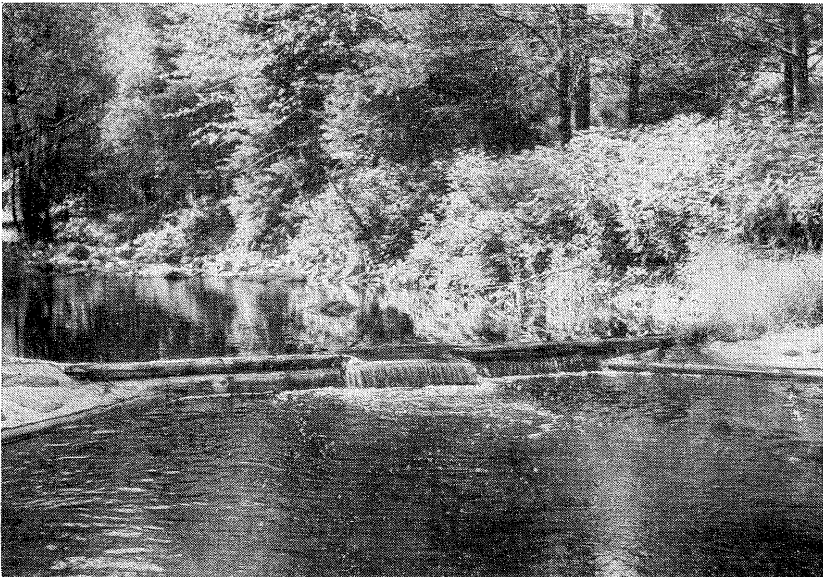
After Improvement Was Made.

TABLE 7
LAKE IMPROVEMENT PROJECTS COMPLETED
Biennium Ending June 30, 1952

PROJECT	Water Control Dam	Water and Carp Control Dam	Carp-Control Screen	Channel Improvement	Other Improvement	Repair Job	Cost
George Lake, Anoka County.....	x						\$ 5,467.00
Fish Lake, Kanabec County.....	x					x	9,140.20
Brawner Lake, Lyon County (Sportsmen's club contributed \$3,000.00).....	x				Artificial lake		38,804.40
Hill River Lake, Polk County.....	x						9,208.00
Mayhew Lake, Benton County (County contributed \$2,000.00).....		x			Road		8,714.55
Pelican Creek, Grant County.....		x					9,750.00
Fox Lake, Martin County.....		x		x			6,144.82
Cedar Lake, Scott County.....		x					5,980.00
Paul (Florence) Lake, Isanti County.....		x	x				2,733.97
Ogechie Lake, Mille Lacs County.....		x	x				33,986.00
Buffalo Lake, Becker County.....			x				667.22
Talcot Lake, Cottonwood County.....			x				1,701.00
Pelican Lake, Grant County.....			x				594.84
Shetek Lake, Murray County.....			x				5,363.49
Ten Mile Lake, Otter Tail County.....			x				847.81
Drywood Lake, Swift County.....			x				590.14
Rice Lake, Crow Wing County.....				x	Culverts and drive		765.80
Vermillion River, Goodhue County.....				x			248.49
Pelican Creek, Grant County.....				x	Culverts and drive		909.35
Jefferson Lake, Le Sueur County.....				x	Culvert		2,142.76
German-Jefferson Lakes, LeSueur County.....				x	Jetties		1,267.49
Belle-Cedar Lakes, Meeker County.....				x			3,943.00
Prior Lake (Candy Cove), Scott County.....				x	Lake bed sealed		1,219.00
Prior Lake, Scott County (Local contribution \$395.00).....				x	Deep well pump and motor		5,395.00
Failla (Mud) Lake, Todd County.....				x	Jetties and screen structure		1,624.41
Spike Lake Dam, Clearwater County.....						x	507.73
Melby Lake Dam, Grant County.....						x	16.96
New London Dam, Kandiyohi County.....						x	209.32
Mille Lacs Lake Dam, Mille Lacs County.....						x	210.00
Platte Lake Dam, Morrison County.....						x	402.45
Hill River Lake Dam, Polk County.....						x	310.89
Failla (Mud) Lake, Todd County.....				x		x	337.39
Total.....							\$159,203.48

Table 8
Stream Improvement Projects
Biennium Ending June 30, 1952

Project	Improvement	Maintenance	Cost
Blackhoof River, Carlton County.....	x		\$12,211.09
Otter Creek, Carlton County.....	x		287.39
Devil's Track River, Cook County.....	x		5,992.10
Swamp Creek, Cook County.....	x		3,034.18
East Beaver Creek, Houston County....		x	33.29
South Branch, Crooked Creek, Hous- ton County		x	354.08
Straight River, Hubbard County.....	x	x	7,332.38
Kabekona River, Hubbard County.....	x		10,398.43
Stewart River, Lake County.....		x	527.11
Knife River, Lake County.....		x	79.90
Split Rock River, Lake County.....	x		515.52
Crooked Creek, Pine County.....	x		675.74
Lester River, St. Louis County.....	x	x	6,172.20
French River, St. Louis County.....	x	x	1,938.36
Sucker River, St. Louis County.....	x	x	2,323.36
Gilmore Creek, Winona County.....		x	26.64
Preparing signs and tag markers.....			440.10
Logging operations and preparation of maps from aerial photographs....			2,948.01
Maintenance of equipment; beaver control; removal of beaver dams....			3,235.02
Cascade (U. S. Forest Service) build- ing, grounds and bridge.....		x	1,087.10
Miscellaneous fisheries operations.....			6,958.56
Total.....			<u>\$66,570.56</u>



Typical Dam to Create Pool in Shallow Trout Streams.

ROUGH FISH REMOVAL

Rough fish removal operations have continued on approximately the same scale as during the previous biennium, except that more new and better equipment has been acquired, and more experienced men have been available to do this type of work.

Rough fish seining operations by State crews are a very important part of the lake survey program, since a check can be made on the game fish population as well as the rough fish. Crews for State operations are now located as follows:

Alexandria	Hawick	Milan
Cambridge	Hutchinson	St. Peter
Fairmont	Lake Shetek	Waconia
	Maple Lake	

State crews have used seines and hoop nets principally, but in a lake in the southwestern part of the state, two pound nets were installed which produced large quantities of bullheads and carp. Experiments with various types of equipment will continue so as to improve methods of rough fish control.

During operations on Lake Traverse on February 2, 1951, a large haul of 291,625 pounds of carp was made, and on February 22, 1951, the crew made a record haul of 401,000 pounds of carp. This was not only a record for the State of Minnesota but for neighboring states as well. Rough fish removal in this lake proved most successful, a total of 2,094,075 pounds of carp having been taken for the season.

Trapping of carp during the spring and early summer is considered the most desirable method of control in waters where there is migration of carp. However, some waters are of such character that trapping operations are not possible, and a lake improvement program is used to control the rough fish population by the installation of barriers and screens and channel improvement work. The unusually high water conditions during the past two trapping seasons have made it very difficult to operate traps in some areas.

Sale of Rough Fish

Until other or new markets are found, the major portion of rough fish is sold to eastern markets, where the market demand still exists for rough fish. There has been a steadily growing demand for carp and buffalofish during the past two seasons. Fur farmers have found that the usual sources of feed for their animals are gradually dwindling, and are using more fish. With this expanding outlet for smaller and poor-quality fish, there is a ready sale for all such fish that are taken. The demands of this market and farmers who use carp for hog feed have exceeded the take during the winter and spring months.

Permits

Class "B" and "C" permits are issued to those who wish to assist in the removal of rough fish. However, indications point to less interest each season, and at present there are very few who actually operate under such permits.

Tables recording the activities of the rough fish removal phase of fisheries work for the biennium follow.

TABLE 9
Rough Fish Production
Fiscal Years 1951 and 1952

Species	Under Contract		Under State	
	1951 Pounds	1952 Pounds	Day-Labor 1951 Pounds	Crews 1952 Pounds
Buffalofish	851,964	627,882	214,225	253,634
Bullheads	1,163,427	557,147	842,238	865,849
Carp	4,969,285	3,160,767	2,018,804	1,401,269
Catfish	3,140	2,946	.....	.....
Dogfish	3,317	1,668	5,780	1,883
Eelpout .....	.....	105	.....	.....
Garfish	5,040	250	700	.....
Mooneyes	8,944	10,879	.....	.....
Perch	7,694	1,471	14,796	12,963
Sheepshead	222,166	483,103	21,266	37,497
Suckers	6,050	7,812	.....	300
Turtles	1,175	90	.....	.....
Totals.....	7,242,202	4,854,120	3,117,809	2,573,395
Number of contracts issued....	28	29	.....	.....
Number of traps installed during the spring.....	.....	.....	149	106
Number of waters seined or hoopnetted for—				
Carp	65	68	99	81
Bullheads	44	33	37	32
Carp and Bullheads.....	.....	1	35	33

TABLE 10
Summary Showing

VALUE OF ROUGH FISH AND BULLHEADS REMOVED BY CONTRACT AND DAY-
LABOR OPERATIONS BY FISCAL YEARS — PERIOD 1941 TO 1952

Seasons	Total Pounds	Total Pounds	Gross Receipts**	Net to State	Net to Contractors
	Rough Fish*	Bullheads			
1941.....	3,011,456	.....	1\$ 79,537.64	3\$ 18,599.43	\$ 58,809.66
1942.....	3,956,609	91,751	2144,631.87	330,301.43	111,026.70
1943.....	5,982,838	308,878	4353,868.80	86,518.19	257,656.92
1944.....	5,418,417	561,199	5299,664.42	104,635.05	185,028.31
1945.....	6,925,320	548,840	6446,019.58	156,578.07	273,332.47
1946.....	7,018,767	345,051	7422,414.95	181,307.06	229,453.51
1947.....	7,688,947	755,685	8437,508.04	154,585.13	259,611.64
1948.....	8,799,101	1,182,408	9418,675.53	159,389.89	243,428.88
1949.....	9,217,335	2,085,352	10461,862.44	117,531.25	333,312.02
1950.....	8,333,107	2,484,556	11458,075.19	121,732.12	327,153.21
1951.....	8,354,346	2,005,665	12506,214.81	157,792.36	329,100.65
1952.....	6,004,519	1,422,996	13466,230.93	165,502.64	283,728.10

¹Includes \$2,128.19—South Dakota's share from sale of fish taken from Big Stone Lake.

²Includes \$3,304.10—South Dakota's share from sale of fish taken from Big Stone Lake.

³36c shortage in account—remitted during 1941-1942 season.

⁴Includes \$9,693.69—South Dakota's share from sale of fish taken from Big Stone Lake.

⁵Includes \$10,001.06—South Dakota's share from sale of fish taken from Big Stone Lake.

⁶Includes \$16,109.04—South Dakota's share from sale of fish taken from Big Stone Lake.

⁷Includes \$11,654.33—South Dakota's share from sale of fish taken from Big Stone Lake.

⁸Includes \$23,311.27—South Dakota's share from sale of fish taken from Big Stone and Traverse Lakes.

⁹Includes \$15,856.76—South Dakota's share from sale of fish taken from Big Stone and Traverse Lakes.

¹⁰Includes \$11,019.17—South Dakota's share from sale of fish taken from Big Stone and Traverse Lakes.

¹¹Includes \$9,189.86—South Dakota's share from sale of fish taken from Big Stone and Traverse Lakes.

¹²Includes \$19,321.80—South Dakota's share from sale of fish taken from Big Stone and Traverse Lakes.

¹³Includes \$17,000.19—South Dakota's share from sale of fish taken from Big Stone and Traverse Lakes.

*Rough fish as referred to above, includes carp, buffalo fish, sheepshead, dogfish, garfish, etc.

**Includes amounts received from sale of fish caught through day-labor operations.

TABLE 11

**Resume of Bullhead Fishing Projects
Fiscal Years 1951 and 1952**

Cut-Foot-Sioux, Itasca County	1951	1952
Administrative deductions.....	\$15,616.47	\$13,917.41
Amount credited to fishermen.....	62,541.85	55,667.86
Gross value of fish sold.....	\$78,158.32	\$69,585.27
Production in pounds—		
Bullheads (round weight).....	897,632	835,316
Dogfish	1,767	391
Eelpout	10,690	6,294
Perch	14,715	12,601
Total poundage	924,804	854,602
Number of lakes fished.....	28	32
Detroit Lakes, Becker County		
Administrative deductions	\$ 4,220.56	\$ 1,115.33
Amount credited to fishermen.....	16,882.21	4,461.40
Gross value of fish sold.....	\$21,102.77	\$ 5,576.73
Production in pounds—		
Bullheads (round weight).....	185,667	61,785
Dogfish	235	140
Eelpout	24	.....
Perch	1,485	155
Total poundage	187,411	62,080
Number of lakes fished.....	6	4
Total production in pounds.....	1,112,215	916,682
Total gross value of fish sold	\$99,261.09	\$75,162.00

TABLE 12

**Rough Fish Removal Permits
Calendar Years — 1950 and 1951**

Type of Permit	1950	1951
Class "A" (Carp) .....	..	1
Class "B"	64	59
Class "B" (Perch)	1	....
Class "C"		
Seining	6	2
Pound Nets (Herring, whitefish, tullibees, and smelt).....	1	7
Number of permits issued.....	72	69

TABLE 12 (Continued)

Rough Fish Production in Pounds—

Buffalofish	38,641	47,926
Bullheads	200	.....
Carp	367,185	499,037
Dogfish	2,184	4,820
Eelpout .....	.....	4,922
Garfish .....	.....	100
*Herring	13,910	28,470
Perch	172	2
Sheepshead	60	800
*Smelt .....	.....	5,790
Tullibeas .....	.....	29,102
Turtles .....	.....	9
Whitefish	31,114	2,795
Total poundage	453,466	623,773
Value of fish sold.....	\$8,324.80	\$9,839.43
State's share	\$ 756.95	\$ 526.12

*These species are not classified as rough fish, but were removed to reduce populations.

TABLE 13

Total Production in Pounds from all Rough Fish Removal Operations*
Fiscal Years 1951 and 1952

Species	1951 Pounds	1952 Pounds
Buffalofish	1,104,830	929,442
Bullheads	3,089,164	2,320,097
Carp	7,355,274	5,061,073
Catfish	3,140	2,946
Dogfish	13,283	8,902
Eelpout	10,714	11,321
Garfish	5,740	350
**Herring	13,910	28,470
Mooneyes	8,944	10,879
Perch	38,862	27,192
Sheepshead	243,492	521,400
**Smelt .....	.....	5,790
Suckers	6,050	8,112
Tullibeas .....	.....	29,102
Turtles	1,175	99
Whitefish	31,114	2,795
Totals.....	11,925,692	8,967,970

*Contract, day-labor, bullhead project, and permit fishing operations.

**These species are not classified as rough fish, but were removed to reduce populations.

TABLE 14
SOURCES OF RECEIPTS—ROUGH FISH REMOVAL OPERATIONS
Fiscal Years 1951 and 1952

Rough Fish Removal Revolving Fund	State		Contractor		Gross		Total
	1951	1952	1951	1952	1951	1952	
Contract Fishing.....	¹ \$ 80,615.04	² \$ 70,501.34	\$329,100.65	\$283,728.10	\$409,715.69	\$354,229.44	\$ 763,945.13
Boxes.....			³ 15.05	³ 96.95	15.05	96.95	112.00
Day Labor Fishing.....	96,499.12	112,001.49			96,499.12	112,001.49	208,500.61
Boxes.....	³ 27.15	³ 108.30			27.15	108.30	135.45
Permit Fishing.....	756.95	526.12	7,567.85	9,313.31	8,324.80	9,839.43	18,164.23
Bullhead Fishing—							
Cut-Foot-Stioux.....	15,616.47	13,917.41	⁴ 62,541.85	⁴ 55,667.86	78,158.32	69,585.27	147,743.59
Detroit Lakes.....	4,220.56	1,115.33	⁴ 16,882.21	⁴ 4,461.40	21,102.77	5,576.73	26,679.50
Totals.....	\$197,735.29	\$198,169.99	\$416,107.61	\$353,267.62	\$613,842.90	\$551,437.61	\$1,165,280.51

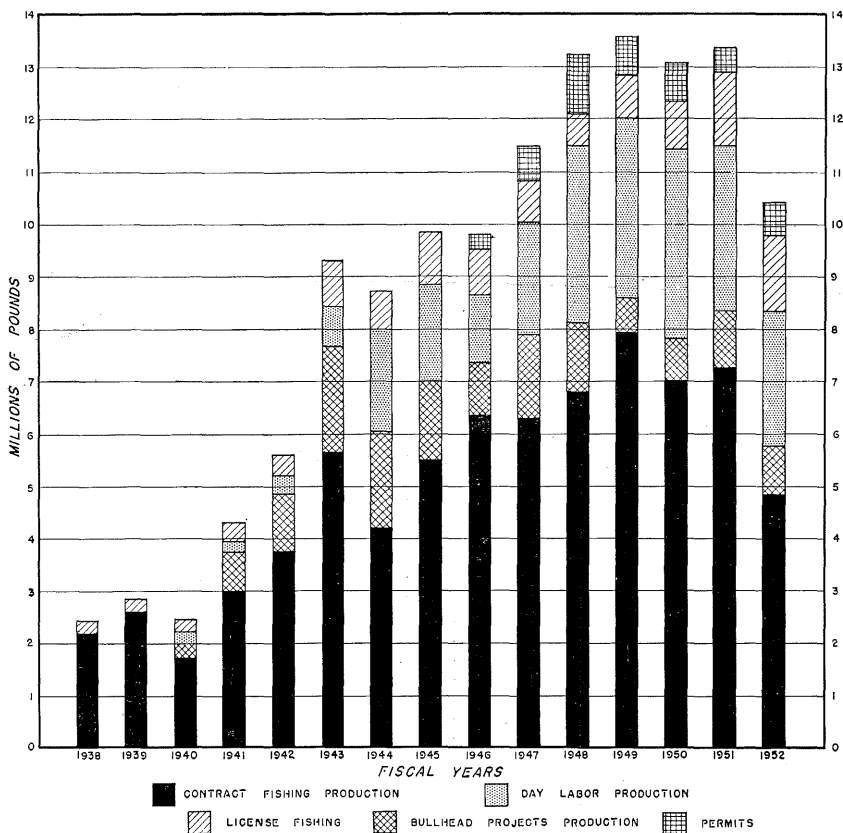
¹Includes \$19,321.80—South Dakota's share from sale of fish taken from Big Stone and Traverse Lakes.

²Includes \$17,000.19—South Dakota's share from sale of fish taken from Big Stone and Traverse Lakes.

³Reimbursements by buyers to fishermen and State for boxes.

⁴Reimbursements to fishermen employed by the State at bullhead projects.

**Rough Fish Removed Under Contract, Day Labor, License Fishing
Bullhead Project, and Permit Operations
Period 1938 to 1952**



FISHERIES RESEARCH

The central office and laboratories of the Fisheries Research Unit are located at St. Paul. From this office, investigations that are statewide in scope or require extensive laboratory facilities are carried out. A fisheries biologist is also located at the district fisheries headquarters at Detroit Lakes, Brainerd, St. Peter, Glenwood, Grand Rapids, and French River. Permanent location of members of the Unit at field stations allows more efficient service on local problems, better understanding of waters managed, and closer cooperation with other field personnel of the Bureau. During the biennium, the number of district biologists has been increased by one.

Work of the Unit includes investigations of problems related to fish management, preservation and use of the waters, lake and stream surveys, general service to the Division, education of the public on fisheries matters,

laboratory analyses, maintenance of a library, and cooperation with agencies in and outside of the Division, both by investigational work and exchange of information.

During the biennium, laboratory facilities at St. Paul have been improved to allow more accurate evaluation of the fertility and potential productivity of the waters and aquatic soils and to carry on investigations on the improvement of diets for hatchery fish. The laboratory is also used for the investigation of water pollution problems. Frequently, field work has been carried out with the aid of equipment and personnel of other units of the Division.

Lake and Stream Surveys

Lake and stream surveys were continued during the biennium as part of a long-range program for obtaining a detailed inventory of surface waters. Surveys included preparation of maps and reports showing physical, biological, and chemical characteristics of individual waters, together with information on use and past history. The usual procedure is to obtain information as to the kind of a fish population for which a water is best suited and the kind of a fish population now present. From this information management recommendations for obtaining maximum yield of game fish for the angler can be made.

The 167 lakes in 40 counties surveyed during the biennium are listed in Table 15. In addition to the lakes listed, less extensive investigations were made on other lakes of such special problems as excessive weed and algal growth, fish kills, angling success, proper water levels, spearing harvest, results of stocking and rough fish removal, alteration of shorelines, and sedimentation of lake basins.

Table 16 lists 24 streams in 12 counties which were surveyed to determine their suitability for trout or other game fishes or the size of non-game fish populations. The investigations include general stream surveys, censusing fish populations with the electrical shocker, evaluation of the results of planting hatchery trout, and examination of effects of stream improvement and beaver dams on trout streams.

TABLE 15
Lakes Surveyed During the Biennium

Anoka County	Blue Earth County	Cass County
Crooked	Ballantyne	Lawrence
George	Duck	Long
		Mule
Becker County	Brown County	Ponto
Bad Medicine	Clear	Tidd
Boot		Washburn
Nemesis	Carlton County	Clearwater County
Strawberry	Chub	Long
	Hanging Horn	Cook County
Beltrami County	Island	Caribou
Dark	Moosehead	Pike
Gull	Tamarack	Little Trout

Cottonwood and Jackson Counties Fish	Kandiyohi County Games	Franklin Jewitt Leek Lida Long Lye Otter Tail Spirit Wall
Crow Wing County Arrowhead Bertha Clamshell Clark Clearwater Crooked Daggett Fox East Fox Gladstone Lower Hay Upper Hay Hubert Island Lower South Long Little Pine Round	Kittson County Bronson	
	Lake County Alice Disappointment Dumbell Fraser Greenwood Harriet Insula Isabella Kane Parent Silver Island Snowbank Stewart Thomas Tofte Upper Twin Windy	Pope County Grove
Crow Wing and Cass Counties Roosevelt Sibley	LeSueur County Clear Francis German Greenleaf Jefferson Sunfish Volney	Ramsey County Johanna Phalen
Douglas County Henry Lobster Smith		Ramsey, Washington, and Anoka Counties Bald Eagle
Crant County Barrett Pomme de Terre	Lincoln County Benton	Rice County Cedar Fox
Hennepin County Bush Champlin Mill Pond Little Long Upper Twin Whaletail	McLeod County Stahlis	Rice and LeSueur Counties Upper Sakatah
Hubbard County Peysensky Big Sand	Martin County Clear Fox	St. Louis County Bassett Berg Big Cadotte Caribou Cummings Dinham Little King Kjostad Leora Long Murphy Myrtle Nichols Lower Partridge Upper Pequaywan Lower Pequaywan Pike Prairie Sand
Isanti County Fannie	Meeker County Betty Clear Dunn's Jennie Richardson Washington	
Itasca County Bear Bozley Buck Coon Sandwich Shallow Sugar Turtle	Meeker and Stearns Counties Koronis	Sherburne County Little Elk
Jackson County Clear Round	Meeker and Wright Counties Collinwood	Stearns County Clear
Kanabec County Fish	Morrison County Alexander Sullivan	Todd County Bass Little Bass Long Mound Pine Island
	Otter Tail County Blanche Block Five	Todd and Douglas Counties Osakis

Wadena County	Waseca and LeSueur	Wright County
Finn	Counties	Cokato
Spirit	Elysian	Fadden
Waseca County	Washington County	Little Moses
Clear	Jane	
Reed	Marine	

TABLE 16

Streams Investigated During the Biennium

Brown County	Deer Creek	Knife River
Hindemans Creek	North Fork Creek	Two Island River
Carlton County	Mary Brook	St. Louis County
Clear Creek	Net River	French River
Mud Creek	Silver Creek	Sucker River
Nemadji River	Skunk Creek	Wabasha, Olmsted,
Little Otter Creek	Spring Creek	Dodge, Goodhue, and
Carlton and Pine	Stoney Brook	Rice Counties
Counties	Hennepin County	Zumbro River System
Anderson Creek	Nine Mile Creek	Yellow Medicine
Blackhoof River	Lake County	County
Cann Trap Creek	Caribou River	Florida Creek

Studies of Fishing Harvest

In the fall of 1951, 23 lakes, representing a cross section of Minnesota fishing waters, were selected for detailed study of fish populations and angling harvest from them. These lakes are listed in Table 17. During the last nine months of the biennium the fishermen's catch from these waters has been censused. The fish populations supplying the catch have been studied by the use of trap nets, which retain the fish alive until they can be released, and by marking and recovery experiments. Fish scales have also been taken, together with lengths and weights of fish, to determine the contribution of fishes of different age to the catch. The purposes of this study are (1) to gather information on the fishing harvest from Minnesota waters; (2) to study the relationships between the size and structure of fish populations and catch; (3) to evaluate the effectiveness of fish management methods; and (4) to allow better interpretation of information collected on lake surveys.

Final calculations have been made for the fishing harvest from the census lakes for the winter of 1951-1952. Average take of fish by angling through the ice was 1.8 pounds per acre for the regular ice-fishing season, and maximum take for this series of lakes was 14.5 pounds per acre. Take of fish by winter spearing averaged 0.7 pounds of fish per acre for the 41-day season, with a maximum for this series of lakes of 3.7 pounds per acre. About nine-tenths of the winter angling harvest was crappies, and about nine-tenths of the winter spearing harvest was northern pike.

An aerial census was made of the number of fish houses on the ice of Minnesota lakes during the winter of 1951-1952. On the basis of the aerial census, ground counts of fish houses and fishermen, creel census, and license

sales, the following estimates of winter fishing are made. During the winter of 1951-1952, it appears that: (1) There were about 220,000 winter anglers; (2) There were about 40,000 spearers who speared from about 12,000 dark-houses; (3) About one-third of the fishing water of the state had winter fishing of some kind; (4) Angling through the ice is more popular in southern Minnesota, and spearing, more popular in the north; (5) Total winter angling harvest is about 1,000,000 pounds, and total winter spearing harvest, about 342,000 pounds.

TABLE 17
Lakes on Which Creel Census Has Been Carried On
During the Biennium

Anoka County Linwood*	Hubbard County Belle Taine	Otter Tail County Little Pine*
Becker County Detroit* Sally*	Itasca County Ball Club* Buck*	Pope County Amelia* Grove*
Carver County Waconia*	Cut Foot Sioux* Moose* Pokegama Wabana	Ramsey County Bald Eagle* Johanna
Clearwater County Itasca	Kandiyohi County Green*	St. Louis County Fish Grand
Crow Wing County Gladstone* Round* White Sand*	Lake County Trout*	Stearns County Koronis
Douglas County Maple*	LeSueur County Francis* Jefferson* Tetonka*	Todd and Douglas Counties Osakis
Hennepin County Eagle*		Waseca County Clear*

*Year-round census lakes.

Special Problems

Several aspects of trout hatchery operations have been investigated. Nutritive value of trout foods has been determined, both by chemical analysis and experimental feeding, and a new diet developed with which more rapid growth of the fish at a lower cost is possible. Methods have been developed for better control of fish diseases and a hatchery sanitation program designed to prevent serious outbreaks of such diseases.

More information has been gathered on the survival of planted trout in streams and their contribution to the anglers' catch and upon the effect of stream improvement and beaver ponds upon trout fishing. A trout management program has been prepared for the abandoned quarries near St. Cloud. Work has continued on a study of fish population and harvest from the lower stretches of the Mississippi River.

Chemical and biological investigations of fish ponds have been carried out on 25 State-operated walleye rearing ponds and 15 experimental minnow

ponds to gain a better understanding of the factors influencing pond yields and the effects of fertilization and cropping. Advice has been given to participants in the expanding industry of minnow rearing.

Service Work

Service work of several kinds is handled by the Unit. During the biennium, 15 lakes were treated with copper salts to control algal blooms and one lake, treated to control swimmer's itch. Investigations were made of waters where pollution injurious to fish was suspected. In pollution investigations the Unit acts as an agent of the Water Pollution Control Commission and usually works in conjunction with the Department of Health.

Fish kills investigated during the biennium proved mostly to be the result of winter oxygen depletion in shallow lakes. In order to anticipate such kills, standardized chemicals are supplied to field personnel who periodically check the oxygen content of lakes in winter. If a fish kill appears imminent, the lake is opened to promiscuous fishing. Nine summer kills of fish were investigated, but none of these were extensive enough to have a serious effect on the fish populations involved.

The Unit collected and analyzed statistics of licensed commercial fishing, issued 72 scientific collecting permits, and maintained the reference library of the Bureau.

Cooperation with Other Agencies

Information was supplied the U. S. Fish and Wildlife Service on fish populations of the upper Mississippi River reservoirs and on the commercial fishing harvest from the lower Mississippi River. Fisheries workers from Siam, Brazil, and India, who were studying in the United States under the auspices of the State Department, were shown methods of fisheries research and management. There was active participation in the work of the Upper Mississippi River Conservation Committee towards better management of interstate waters and in the work of the Great Lakes Sea Lamprey and Great Lakes Lake Trout Committees on problems affecting fishing in Lake Superior. The Unit handled many organizational details of the Midwest Wildlife Conference, which was held in Minneapolis under the sponsorship of the Department in December, 1951. Other work was done in conjunction with the University of Minnesota, the U. S. Soil Conservation Service, and the conservation agencies of Wisconsin and South Dakota.

Bureau of Game

TAYLOR W. HUSTON, *Supervisor*

The activities of the Bureau of Game are concerned primarily with the conservation, protection and increase of game life populations. The work involved includes game research; the operation of two state game farms which produce pheasants, Hungarian partridge and Bobwhite quail; the operation of three game nurseries which produce game food and cover plants for use in connection with a permanent food and cover planting program; the establishment, maintenance and operation of game refuges and public hunting grounds; obtaining contracts with private landholders for game food and cover plantings and investigating complaints concerning wildlife damage to private property.

Other activities include the construction and maintenance of roads, fire lanes, dikes, dams and telephone lines on state-owned and controlled refuge and public hunting ground areas and game farms; harvesting timber on state-owned refuge and public hunting ground lands; operating a sawmill to process lumber for use in construction and maintenance work by the various bureaus of the division; leasing farm, hay and timber lands on game refuge and public hunting ground areas under control of the Bureau of Game; issuing permits to hunt from airplanes animals upon which the state pays a bounty; control of predatory animals; acquiring and developing access right-of-ways to public waters and acquiring and developing lands for game refuge and public hunting ground purposes.

Predator Control

During the biennium, field personnel of the division have been active in predator control, an important phase of game management work. Much



Fox taken by airplane hunters in vicinity of Fergus Falls.

TABLE 18

**Predators and Species Doing Damage Taken on State-Owned
and Statutory State Game Refuges**

July 1, 1951 to June 30, 1952

Species:	State-Owned Refuges By Patrolmen	State-Wide By Wardens	Statutory Game Refuges by Wardens and Permittees (not requiring refuge pelt tags)	Statutory Game Refuges by Permittees (re- quiring refuge pelt tags)
Bear	2	-----	-----	-----
Bobcats	41	29	3	-----
Badger	1	1	1	7
Wolves	65	47	19	-----
Grey Fox.....	22	33	90	-----
Red Fox.....	78	520	240	-----
Stray Dogs....	21	289	36	-----
Stray House Cats.....	68	2,182	211	-----
Woodchuck	21	190	99	-----
Porcupine	20	125	-----	-----
Weasel	165	24	94	-----
Skunk	461	582	307	58
Rabbits	5	18	54	-----
Gophers	2,345	2,458	318	-----
Squirrel	-----	44	187	-----
Beaver	15	-----	-----	-----
Raccoon	15	16	5	239
Muskrat	111	-----	31	668
Mink	12	-----	-----	126
Hawks	92	324	21	-----
Owls	64	307	124	-----
Crows	875	3,962	378	-----
Blackbirds	-----	33	-----	-----
Turtle	11	5	-----	-----
Total pieces....	19,015	-----	-----	-----

credit is due sportsmen, farmers and trappers who have been active in this connection. Numerous reports were received each spring to the effect that stray dogs are responsible for killing a large number of deer. For example, in late March and early April, over a two-week period in 1952, about 30 deer were reported killed by dogs near Malmo, Minnesota.

A total of 17,892 predators and species doing damage was taken during the fiscal year of 1950-51. The following breakdown shows the species and total taken during the fiscal year of 1951-52.

Hunting by Airplane

Airplane hunters during the biennium period covered by such permits took a total of 4,351 animals. Of this number 141 were wolves, 4,163 fox and 14 bobcats. Permits were issued to 101 pilots and 290 hunters. In addition to the above animals taken, game wardens and refuge patrolmen, with the aid of division airplanes, took 58 timber wolves, 9 coyotes, 83 fox and 9 bobcats. The airplane hunting of predatory species is apparently having the desired effect on the control of these predators as there has been a marked decrease in the number taken as compared to the previous biennium.

Bureau of Game Airplane

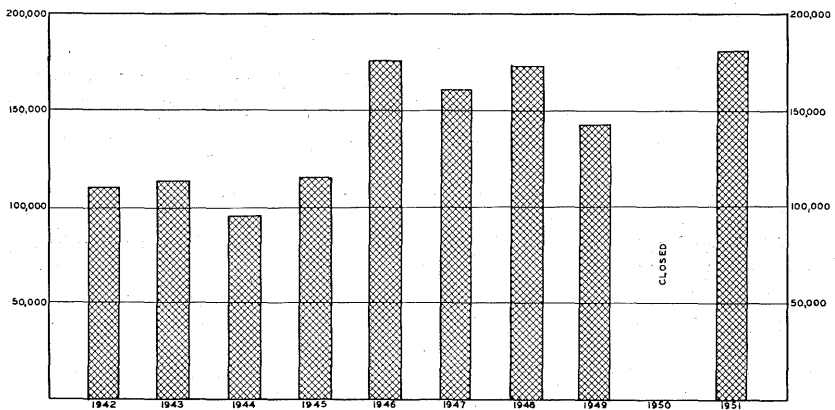
The Stinson Station Wagon airplane purchased in 1947, at a cost of \$5,375.45, was flown a total of 272 hours during the biennium on survey of game species, aerial photography and as a means of travel by personnel of the division and of the department. During this period, reimbursement in the amount of \$4,348.40 was received from Pittman-Robertson funds for use of the airplane in connection with aerial photography, game censuses and surveys. Total reimbursement received from Pittman-Robertson and other divisions for rental of this airplane since its purchase is \$14,629.20. It will be desirable to trade this airplane for a new model during the next biennium. A second airplane, two place tandem seat type, should be purchased for use in connection with predator control, fire and law enforcement patrol in and adjacent to our larger state game refuge and public hunting ground areas, and in general, throughout the state on game censuses and survey work.

Minnesota Hunting Opportunities

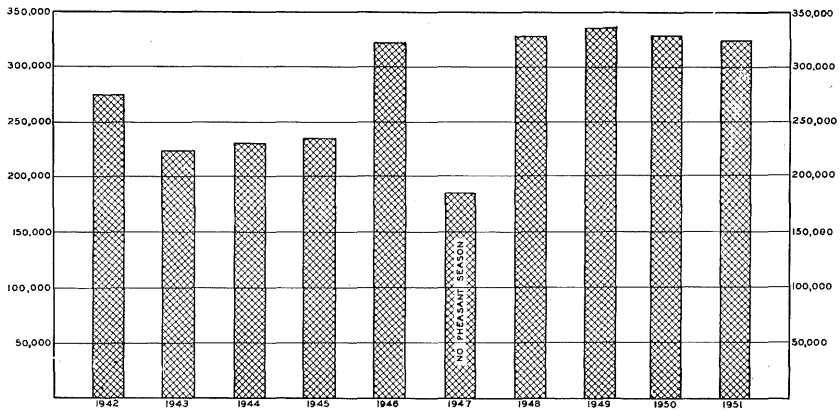
Hunting opportunities have been good during the biennium even though it was found necessary to keep the deer season closed in 1950. The state game refuge system inaugurated in 1915 is largely responsible for the fact that Minnesota has, year after year, continued to provide good hunting for its ever increasing number of licensed hunters. This refuge system is also responsible for saving from extinction some of the native species formerly common to this state. The value of state game refuges is best emphasized by the fact that it has continued to be necessary to open certain refuge areas to hunting during the biennium in order to keep game life populations within the bounds fixed by natural winter food supplies and, in other instances, to prevent damage to agricultural crops on privately-owned lands.

Game and Fur-Bearing Animal Open Seasons

Open seasons are based on information gathered by the Bureau of Game Research Unit, field personnel of the division and department, ques-



Total Big Game Licenses Sold



Total Small Game Licenses Sold

tionnaires supplied to sportsmen's organizations, farm groups and other interested individuals throughout the state. On the basis of this information the Bureau of Game makes recommendations to the director of the division as to areas of the state to be opened and bag and possession limits.

Access to Public Waters

Much credit is given to sportsmen's organizations who have taken an active interest in this program of providing public access right-of-ways to public waters having no access or where the access is inadequate. One or-



Shelter House at Stay Lake, Lincoln County. Constructed by Arco Sportsmens Club.

ganization, the Arco Sportsmen's Club, spent in excess of \$1,400 to improve the access and parking area at Stay Lake, Lincoln County. These areas must be meandered and contain not less than 200 acres. Since the inception of this program, access right-of-ways have been provided to the following public waters:

TABLE 19

Public Access Area to Lakes as of June 30, 1952

County	Lake	Acreage	Lake
Aitkin	341.....	Pine	
Anoka	765.....	Linwood	
Becker	289.....	Straight	
Carver	359.....	Auburn	
Carver	280.....	Parley	
Carver	235.....	Pierson	
Cass	163.....	Agate	
Crow Wing	410.....	Lower Dean	
Crow Wing	9,836.....	Pelican	
Crow Wing (purchased before access law)	158.....	Rice	
Douglas	1,693.....	Le Homme Dieu	
Douglas	1,421.....	Red Rock	
Douglas	3,940.....	Reno	
Douglas	648.....	Smith	
Goodhue (U. S. License) on Mississippi River	3,216.....	Pool No. 3	
Itasca	955.....	White Oak	
Itasca	2,999.....	Island	
Itasca	1,303.....	Spider	
Kandiyohi	855.....	Eagle	
Kandiyohi	734.....	Nest	
Kandiyohi	1,805.....	Wagonga	
Kandiyohi	2,765.....	Norway	
Kandiyohi	327.....	Mud	
Kandiyohi	706.....	Ringo	
Lincoln	198.....	Stay	
Mahnomen	622.....	Island	
Meeker	543.....	Minne Belle	
Otter Tail	792.....	Jewitt	
Otter Tail	1,676.....	Little McDonald	
Otter Tail	986.....	Buchanan	
Otter Tail	5,233.....	Rush	
Otter Tail	2,538.....	Clitherall	
Otter Tail	2,443.....	East Battle	
Otter Tail	4,820.....	Big Pine	
Otter Tail	349.....	Paul	
Pine	1,701.....	Sturgeon	
Polk	205.....	Whitefish	
Pope	2,377.....	Emily	
Pope	1,584.....	Johanna	
Rice	300.....	Fox	
Rice	608.....	Roberts	
Rice	919.....	Cedar	
Rice	437.....	Caron (Mud)	
St. Louis	274.....	Cadotte	
Scott (custodial control)	122.....	Rice	
Sherburne	263.....	Big Mud	
Stearns	243.....	Kings	

Waseca	3,001.....	Elysian
Washington	416.....	Oneka
Wright	516.....	Charlotte
Wright	347.....	Beebe

Access Areas Under Control of the Division of Forestry

In addition to the above the Division of Forestry has provided access right-of-ways to the following areas and these entrance ways have been posted with metal signs provided by the Division of Game and Fish:

TABLE 20

County	Lake Acreage	Lake
Beltrami	220.....	Grant
Beltrami	720.....	Beltrami
Cass	111,527.....	Leech
Cass	1,575.....	Washburn
Clearwater	166.....	Long
Cook	1,326.....	Loon
Cook	564.....	West Bearskin
Cook	455.....	McFarland
Cook .....	.....	Superior
Crow Wing	339.....	Greer
Crow Wing	139.....	Daggett
Crow Wing	6,796.....	Whitefish
Crow Wing	1,102.....	Cross
Itasca	120.....	Wilson
Itasca	227.....	South Sturgeon
Itasca	328.....	Owen
Itasca	48,096.....	Winnibigoshish
Itasca	200.....	Beatrice
Itasca	1,652.....	Deer
Itasca	300.....	Big Bear
Itasca	245.....	Pickerel
Itasca	324.....	Thistledeew
St. Louis.....	5,628.....	Birch
St. Louis.....	19,902 (1).....	Kabetogama
St. Louis.....	.....	Ash River
St. Louis.....	1,237.....	Black Duck
St. Louis.....	655.....	Kawishiwi River
St. Louis.....	955.....	Vermilion River
St. Louis.....	92.....	Perch
St. Louis.....	..... (2).....	Kabetogama
St. Louis.....	1,972.....	Bear Island
St. Louis.....	..... (3).....	Kabetogama
St. Louis.....	..... (4).....	Kabetogama
St. Louis.....	65.....	Indian
St. Louis.....	520.....	Island
St. Louis.....	11,796.....	Pelican
St. Louis.....	37,915.....	Vermilion Lake

By agreement with the State Highway Department all public access areas to lakes will be indicated on the official state map and highway county maps.

Emergency Winter Feeding

For the most part, there has been less than the normal amount of emergency winter feeding required during the biennium. However, each fall sportsmen were urged to locate concentrations of game birds, report them to their local game warden and make plans to provide suitable food and assist the division's field personnel if emergency winter feeding measures were necessary. Game wardens and refuge patrolmen were authorized to make local purchases of grain and grit for use in connection with emergency winter feeding whenever necessary. Feeding programs were carried out in some areas where conditions required such work, and as a result, large numbers of birds were saved which otherwise might have perished as a result of adverse weather conditions.

Game Cover Planting Program

This program, inaugurated in the spring of 1950, has done much towards solving the problem of winter pheasant loss due to inadequate food and cover. Under this plan, contracts are made with landholders to seed plots ranging from 3 to 10 acres with inoculated white blossom sweet clover. These contracts extend for two years and farmers who comply with the terms of their contract receive two payments totaling \$15 per acre. Contracts require the farmer to furnish the necessary seed and to protect the area against grazing, burning, or otherwise destroying its value as game cover. This is not intended as a permanent program but will be continued only until such time as the cover stock planted on hundreds of farms, under the permanent cover planting program, will reach the point where it will provide effective winter cover. The program covers 33 counties in the southwest part of the state where it is badly needed.

Farmers support this program with enthusiasm realizing that in addition to the income they receive from the contract, sweet clover will increase the fertility of their soil. State game wardens supervise this work in their respective districts in cooperation with area game managers. Evaluation of this program from its inception to January 1, 1952, reveals that pheasants have a preference for old sweet clover planting over new sweet clover seedlings as nesting cover. Also, sweet clover plots located adjacent to or within one-eighth mile of corn fields were used more by pheasants than those farther from feed. Plots adjacent to woody cover showed heavier usage than those located in open areas.

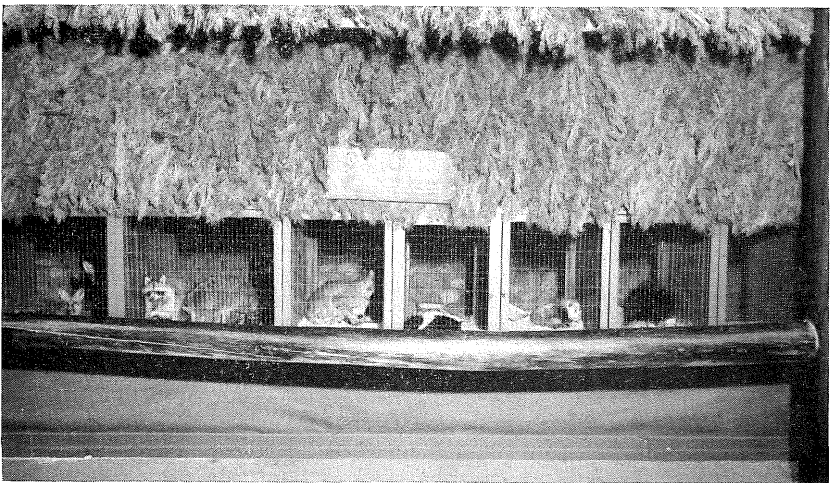
Due to a lack of heavy snowfall, definite conclusions cannot be made concerning the value of sweet clover plots as pheasant winter cover. It is reasonable to assume that the better stands will provide good winter cover and prevent heavy losses in the event of severe winter storms in areas where there would otherwise be a dearth of cover. During the biennium, 810 contracts were made with landholders covering a total of 6,689 acres at a cost of \$100,338.75.

State Fair Exhibit

Due to the unusual public interest shown in the State Fair Exhibit, the display was enlarged during the biennium. Live specimens including deer, bear, timber wolf, brush wolf, bobcat, fox, badger, raccoon, beaver, mink, muskrat, ground squirrel, pocket gophers, several species of protected and unprotected hawks and owls, pheasants, Hungarian partridge, Bobwhite quail, ruffed grouse, sharptailed grouse, spruce grouse, Canada geese and numerous species of migratory waterfowl were displayed. Snakes common to the state were shown in glass fronted cages enabling easy observation and identification of the various species at close range. State game wardens and game refuge patrolmen were on duty at the exhibit throughout the fair to supply information to the public concerning the various species and to answer questions regarding conservation.

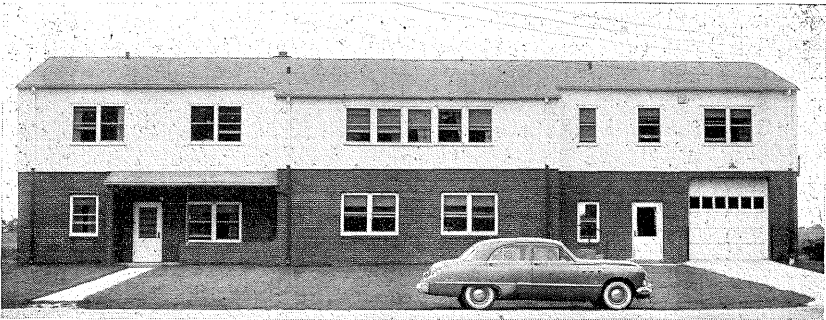
The exhibit also included a display of tanned furs covering the fur-bearing species common to the state and including otter and fisher. A display of seedling trees, shrubs and vines, such as are produced on game nurseries, were shown and information was made available to the public as to the necessity for permanent cover planting and how they could cooperate in this program. With the limited space available for the game exhibit, it is felt that the display was well received and it is clearly indicated that arrangements should be made in the future for the addition of an aviary and permanent pens and cages in which a more complete exhibit of native animals, birds and migratory waterfowl could be shown to better advantage.

A display of native birds and animals was maintained at the annual Sports and Travel Shows held in Minneapolis in March of each year during the biennium. This display attracted much attention and was observed by many thousands of people.

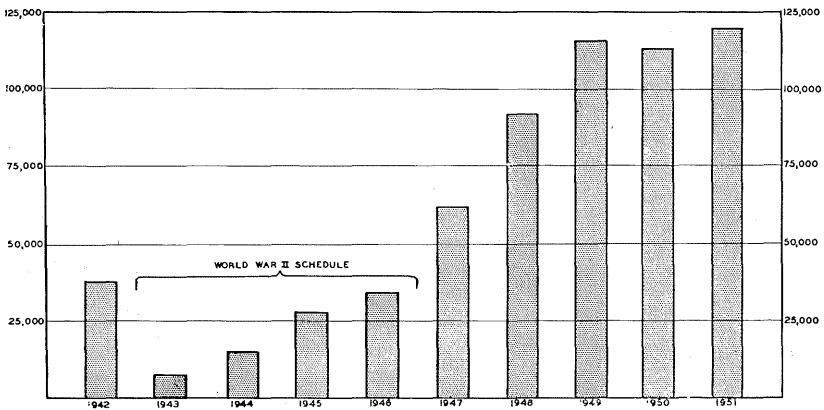


A part of the Game State Fair Exhibit.

At the Madelia Game Farm a badly needed two-story combination barracks, hatchery and garage building (92' x 42') was completed. Additional game bird field rearing pens were built during the winter months and necessary maintenance work was carried out in addition to caring for the breeding stock of game birds annually carried over winter on this farm.



Barracks, hatchery and garage building, Madelia Game Farm.



Total Pheasant Distribution

Game Food and Cover Nurseries

The three game food and cover nurseries, located on the Carlos Avery Game Refuge and Public Hunting Grounds, Anoka County; Whitewater Game Refuge and Public Hunting Grounds, Winona County; and the Talcot Lake Game Refuge and Public Hunting Grounds, Cottonwood County; produced and distributed 241,650 pieces of planting stock in the spring of 1951 and 1,069,275 pieces in the spring of 1952 for a total of 1,310,925 pieces of planting stock. This stock was used in the permanent cover planting program during the biennium.

At the Carlos Avery Nursery a combination stock storage, packing shed and office building (100' x 20') was constructed. During this same period, an addition (40' x 28') was added along with a new loading dock (100' x 16'). A twelve-inch well was drilled and a portable irrigation system installed to provide necessary water for the nursery. A fence was erected around the area devoted to seed beds and transplant fields to repel rabbits and deer. Similar fences were constructed at the Whitewater and Talcot Lake Nurseries. Several pieces of new equipment were purchased for each of the nurseries. Tree production will continue to be increased during the next biennium in an effort to keep pace with the rapidly expanding permanent cover planting program on privately owned lands where 25-year easements are entered into with landholders.



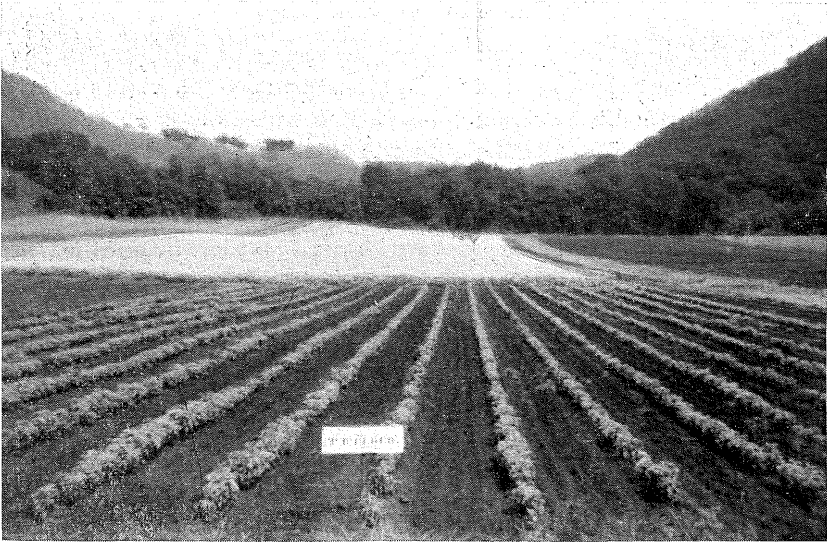
Weeding seedling beds, Whitewater Nursery.

Leases

Agricultural, hay, timber lands and buildings under control of the division required the issuance of the following leases during the biennium:

TABLE 22

	1950-51	1951-52
Building	9	9
Hay	24	5
Share and Cash Rent.....	19	40
Timber	42	88
Total	94	142



Transplants Whitewater Nursery.

Carlos Avery State Game Refuge and Public Hunting Grounds

In order to provide necessary shop, automotive and implement storage space, a garage and storage building (66' x 30') was constructed at the Carlos Avery State Game Refuge and Public Hunting Grounds. A new furnace was installed in the manager's residence and a six inch well was drilled to supply water for the headquarters buildings. In order to further improve this refuge and public hunting grounds for the production of migratory waterfowl and fur-bearers and to provide additional water areas for waterfowl hunting, a system of dikes and channels together with the improvement of existing ones and installation of control structures to stabilize water levels was carried out. Maintenance work including painting and repairing of buildings; dike and road washout repairs; firebreak plowing and disking; road grading and reshaping; planting, cultivating and harvesting of grain food crops for game life constitutes the larger part of the operations carried out in this area.

The Carlos Avery State Game Refuge and Public Hunting Grounds was open to upland game bird and migratory waterfowl hunting during both years of the biennium and in addition, deer hunting in the last year of the biennium. The Carlos Avery Game Refuge and Public Hunting Grounds, Anoka County, comprises 15,535 acres and plans are now under way to expand the area through the acquisition of approximately 12,600 acres. This is to be known as the Sunrise River Addition and when completed will increase the acreage of this unit to approximately 28,125 acres of which approximately 18,125 acres will be public hunting grounds. The proximity of this area to the Twin Cities is a great convenience to sportsmen who do not have the time to travel to more remote sections of the state.

Red Lake State Game Refuge

The Red Lake State Game Refuge, consisting of 434,570 acres and located in Beltrami and Lake of the Woods Counties is the state's largest game refuge and public hunting grounds. It is within the Red Lake Game Preserve established by the Legislature in 1929. The Federal Government owns approximately 80,800 acres within this refuge which was acquired under the land utilization program in the relief years of the 30's in an effort to remove and resettle isolated and distressed settlers living at various points within the area. These lands together with federally-owned equipment are leased to the state for a period of 50 years (this lease will expire in 1990) for conservation management purposes and are operated in conjunction with the Red Lake Game Refuge and Public Hunting Grounds. The refuge headquarters is located at Norris Camp, 18 miles south of Roosevelt, Minnesota.

During the winters 1950-51 and 1951-52, timber management practices carried out by refuge personnel resulted in the harvesting of overmature and dead timber on the federally-owned land. The yield was approximately 110,000 board feet, sawed with the equipment on the area and used by the division in the construction of new buildings, building repairs, fish cribs, fish screens, boat houses, docks, etc.

In the fall of 1951 the cooperation of the U. S. Navy was obtained in carrying out a program of dropping live bombs, ranging in size from 1,000 to 2,000 pounds, at selected points in the refuge to create additional water pools for wildlife. This project was very successful and similar bombing operations are anticipated for the future.

The annual state game warden school was held at Norris Camp in 1951. In addition to state game wardens, this school was attended by Bureau of Game and Bureau of Fisheries field personnel. During the school it was found that repairs and alterations of the existing buildings were necessary. In the spring of 1952 a new foundation was placed under the kitchen-dining hall building and modifications were made to this and other buildings. Additional alterations will be made to barracks and assembly building as fast as time will permit with the limited personnel available. In cooperation with the Division of Forestry, roads throughout the area were repaired and maintained, culverts were cleared and installed where necessary and nuisance beaver were removed.

Numerous complaints of elk depredations were received during the biennium resulting from the elk band that migrates west and southwest from the Red Lake Game Refuge. Each fall these animals leave the refuge and move into the farming areas where they cause extensive damage to hay stacks. Normally the elk return to the refuge in the spring, however in 1952 a number of the animals did not return to the refuge and continued to cause damage by grazing and trampling oat fields.

Superior National Forest State Game Refuge Units

In cooperation with the Bureau of Fisheries, 90 acres of land and several buildings were acquired at the east end of the Shagawa Lake, the Bureau of Fisheries making use of a portion of this area for the construction of a fish rearing pond, the Bureau of Game taking over the buildings and remainder of the area as a headquarters for the Superior Refuge Units. The residence was remodeled into a duplex to house two families of the refuge personnel. Adjacent barn and garage buildings are used for storage. It is anticipated that a new garage and storage building will be constructed during the next biennium. A contact cabin was built at Boot Leg Lake by refuge personnel for use when on patrol duty. Other contact cabins throughout the several units were maintained and repaired.

During the 1951 deer season, refuge units 4, 9, and 10 were open to deer hunting. However, because of the size of these areas and lack of roads, hunters did not penetrate the areas as had been anticipated. It will probably be necessary to again open these units to deer hunting in 1952 in an effort to further reduce deer populations to the point where the winter food supply will be adequate.

Mille Lacs State Game Refuge and Public Hunting Grounds

Land acquisition in connection with the Mille Lacs State Game Refuge and Public Hunting Grounds has progressed satisfactorily during the biennium and a total of 2,931 acres has been acquired. Ultimate total acreage of the area will approximate 43,446 acres. In 1951 two refuge units were established and posted with regulation state game refuge signs and posts. The areas comprise approximately 5,440 acres. Development work including construction of a series of low head dams to create a favorable habitat for migratory waterfowl and fur-bearers, and a system of fire lanes is expected to get under way in 1953. A patrolman was placed on this area in 1951 and a refuge manager will be assigned to the area in the fall of 1952. When complete, this area will provide hunting opportunities for hundreds of sportsmen within one and one-half hours driving from the Twin Cities.

Roseau River State Game Refuge and Public Hunting Grounds

Acquisition of the Roseau River State Game Refuge and Public Hunting Grounds totaling 51,560 acres was completed during the biennium. A contract was awarded for the development and work was started prior to the close of the biennium. This contract in the amount of \$396,471.75 calls for completion November 1, 1953. A refuge manager and patrolman will be placed on this area in the fall of 1952. During the next biennium it is anticipated that headquarters buildings and a patrolman's residence will be constructed and that necessary maintenance equipment will be acquired for this area. When completed, this is to be Minnesota's "duck factory."

In order to provide this area with an additional water supply, Pine Creek, which normally flows into Minnesota from the Province of Manitoba approximately four miles east of the area, is to be diverted. The Manitoba Department of Public Works will contract the diversion work in Canada

and will be reimbursed by the State of Minnesota. It is anticipated that a considerable amount of work in Manitoba will be completed before the winter of 1952-53.

Talcot Lake State Game Refuge and Public Hunting Grounds

On the Talcot Lake State Game Refuge and Public Hunting Grounds a utility building (42' x 28') was constructed adjacent to the supervisor's residence in the first year of the biennium. A foot bridge was built across the Des Moines River at the Talcot Lake Dam. Firebreaks were plowed and kept black. Portions of the area were leased for grain crops, the state's share in most cases is left standing for wildlife winter food. Development work planned for this area will provide impoundments between the outlet of Oak Lake and Talcot Lake which will create water areas for migratory waterfowl and fur-bearing animals. The water level of Talcot Lake was lowered to rid it of carp by winter freezing and to encourage the growth of additional aquatic vegetation. Further expansion of this area is contemplated through the acquisition of submarginal lands adjacent to the Des Moines River. This land has little value for agricultural purposes, but is well suited to game production.

Thief Lake State Game Refuge and Public Hunting Grounds

Thief Lake State Game Refuge and Public Hunting Grounds approximating 16,000 acres is located in Marshall County and provides excellent waterfowl, deer, ruffed and sharptailed grouse hunting. Annually grain crops are planted and cultivated on suitable tracts to provide game food. During the biennium extensive maintenance work has been carried out in connection with building repairs, painting and, in general, cleaning up the headquarters premises and improving patrol roads. Additional land acquisition is contemplated along the Moose River. For the most part, the land to be acquired is either trust fund or tax forfeited; little privately owned land is involved.

Whitewater State Game Refuge and Public Hunting Grounds

Considerable progress has been made in land acquisition and development at the Whitewater State Game Refuge and Public Hunting Grounds and at the close of the biennium the total area under state control approximated 21,350 acres. A utility building (42' x 28') was constructed at the refuge headquarters, old farmsteads were cleaned up and restored to a natural condition and old farmstead buildings not needed for state operation were sold through the State Division of Public Property. Springs throughout the area were cleaned to provide water for game life, and upland ponds were constructed for the same purpose, also to prevent the excess run-off of water thereby reducing land erosion. An extensive planting program was carried out throughout the area to improve game cover conditions. Leases were made with adjacent farmers covering hay and agricultural land suitable for cropping with the Soil Conservation Service cooperating.

Dietrich Lange State Game Refuge

Dietrich Lange State Game Refuge, a 678-acre area in Kandiyohi County, in spite of its comparatively small size, has provided excellent waterfowl hunting, especially "pass shooting." It is anticipated that during the next biennium additional land will be acquired. Efforts will also be made to provide a parking area for the convenience of hunters and fishermen.

Spectacle Lake State Game Refuge

Spectacle Lake State Game Refuge, consisting of 378-acre area in Isanti County, has been improved greatly through the cooperation of the Isanti County Rod and Gun Club which has carried out a tree planting program with the assistance of club members, Boy Scouts and high school students. To date, they have planted 23,400 Norway pine, 60,500 jack pine, and 2,000 spruce trees.

Pool Number Three — Public Hunting Grounds

Pool Number Three — Public Hunting Grounds, an area approximately 3,216 acres of land and water, is licensed to the division by the U. S. Department of the Army. The license expires in January, 1958. The division provided an access road and parking area which is located adjacent to flowage area of Federal Lock and Dam Number 3 on the Mississippi River, Dakota and Goodhue counties. The area is used extensively by Twin Cities hunters and fishermen due to its accessibility.

Statutory State Game Refuges

Fourteen statutory state game refuges totaling 28,180 acres were added to the refuge system during the biennium, and six statutory state game refuges approximating 31,946 acres were vacated as a result of conclusions that they were no longer necessary to the perpetuation of game life species or in the public interest. Four refuges were modified as to boundary resulting in a decrease of 18,340 acres. At the end of the biennium, there were 210 statutory state game refuges totaling approximately 2,515,894 acres.

TABLE 23
Game Refuges Established and Re-established
July 1, 1950 Through June 30, 1952

Order No.		County	Date
195	Establishing Hiawatha Game Refuge	Pipestone—No Hearing	8-4-50
197	Establishing Oak Knoll Game Refuge.....	Hennepin—Hearing	8-31-50
198	Establishing Norris Camp Game Refuge	Lake of Woods—No Hearing	9-1-50
199	Establishing Hadley Lake Game Refuge	Hennepin—Hearing	9-18-50
200	Establishing Pickerel Lake Game Refuge	Dakota—Hearing	9-18-50
201	Establishing Mille Lacs Game Refuge	Mille Lacs—No Hearing	10-2-50
202	Establishing LeHomme Dieu Game Refuge.....	Douglas—No Hearing	10-9-50
203	Establishing Henning Township Game Refuge	Otter Tail—No Hearing	10-24-50
205	Establishing Brainerd Airport Game Refuge	Crow Wing—No Hearing	12-7-50
206	Modification of Sand Dunes Game Refuge.....	Sherburne—Hearing	11-20-50
207	Establishing Bellwood Game Refuge	Dakota—No Hearing	12-28-50
208	Modification of Owens Lake Game Refuge	Itasca—Hearing	1-8-51
209	Establishing of Sandstone Game Refuge	Pine—Hearing	7-2-51
211	Modification of Bemidji Game Refuge.....	Beltrami—Hearing	8-6-51
212	Modification of Payal Township Game Refuge.....	St. Louis—Hearing	8-6-51
213	Establishing of Lura Lake Game Refuge.....	Stearns—No Hearing	9-17-51
215	Establishing of Otter Tail-Todd County Game Refuge.....	Otter Tail and Todd— No Hearing	10-19-51
219	Establishing of Moscow Township Game Refuge.....	Freeborn—No Hearing	4-29-52

TABLE 24

Game Refuges Vacated — July 1, 1950 Through June 30, 1952

Order No.		County	Date
210	Vacating Bird Island Game Refuge.....	Renville—No Hearing	7-2-51
214	Vacating Pepperton Township Game Refuge	Stevens—No Hearing	9-17-51
216	Vacating Knife Lake Township Game Refuge	Kanabec—No Hearing	10-25-51
217	Vacating Pokegama Lake Game Refuge	Itasca—Hearing	11-8-51
218	Vacating Dupont Game Refuge.....	St. Louis—Hearing	2-26-52
220	Vacating Pope County Game Refuge.....	Pope—No Hearing	5-20-52

Floodwood State Game Refuge

Boundary brushing and posting was completed on the Floodwood State Game Refuge consisting of 38,720 acres during the biennium for the first time. Due to the terrain and numerous swamp areas through which boundary lines pass, it was necessary to employ a bulldozer for this operation. Some progress was made in planting food plots for game life, and areas were established on which to study the regeneration of deer browse. Due to an over-population of deer this area was open to deer hunting during the 1951 deer season.

Kelliher-O'Brien State Game Refuge

During the previous biennium, for the first time a patrolman was placed in charge of the 98,560-acre Kelliher-O'Brien State Game Refuge. During the biennium, brushing and posting of boundaries has been completed, and with a full time patrolman on duty, complaints of poaching formerly common to this refuge are seldom heard.

Farmers-Sportsmen Relationship

Due to the agitation resulting from the announcement that pheasant hunting would be limited to afternoons only during the 1951 season, reports were rampant that farms in the pheasant area of the state would be posted against hunting. In order to obtain the facts in this matter, a survey was made by state game wardens from October 29 to November 10, 1952, of the amount of land posted against hunting in townships selected at random in 29 western and southwestern counties, in the belief that the amount of posting in one township would reflect the amount of posting for the entire county.

Each warden recorded the number of landowners or lessees in the township which he surveyed. The smallest number of landholders in any one township was 73 and the largest number was 315 with an average of 165 landholders per township surveyed. In the 29 townships surveyed, a total of 3,562 farms (435,564 acres), were not posted in comparison with 783 farms (107,757 acres) posted against hunting; 405 farms (6,300 acres) posted with hunting by permission only and 47 farms (7,680 acres) posted as leased land. Only 375 of the farms were posted in accordance with the Game and Fish Laws as against 813 posted which did not comply with the law.

As a result of this survey, it was apparent that less than one-third of the farms in the 29 sample townships were posted against hunting in one form or another and that only about 20 per cent were posted against all

hunting. Thus, it is apparent that for every acre of posted land in the 29 sample townships, there were slightly more than four unposted acres. To this should be added 6,300 acres posted "Hunting by Permission." One of the most important facts bearing on pheasant hunting is that pheasants are produced and hunted, for the most part, on privately owned farm land with the result that the landholder has the last word as to whether or not hunting will be permitted.

A large majority of the landholders in the best pheasant range do not approve of morning hunting; therefore, to prevent the practice of land posting from becoming even more widespread, it is important that hunting regulations be drawn which are acceptable to a majority of the landholders. It should be obvious to the sportsmen that it is incumbent on them to ask permission to hunt on private land and to conduct themselves as gentlemen when hunting, in order to promote better farmer-sportsmen relationships.



A welcome sign observed in Martin County during the 1951 pheasant season.

Bureau of Wildlife Development

RICHARD J. DORER, *Supervisor*

Game projects under the Pittman-Robertson Act and fish projects under the Dingell-Johnson Act, which are initiated in the Bureau of Game and the Bureau of Fisheries, respectively, are submitted to the Bureau of Wildlife Development for preparation and pursuance.

Financial Outline

Under the two acts mentioned, funds for annual apportionment to participating states for aid to game are derived from an 11 per cent federal excise tax on sporting arms and ammunition, and those for fisheries aid are secured from a 10 per cent excise tax on sports fishing equipment.

The federal regulations governing expenditures specifically stipulate that participating states must have sufficient funds on hand to finance all approved projects. Consequently, from hunting and fishing license revenues, revolving funds have been established so that the state may participate under both acts to the limits of the annual apportionments.

Separate accounting systems for the game and the fish funds have been devised, are strictly maintained, and are subject to audit by federal representatives at any time. When a project or any major phase of it has been completed, inspected, and accepted, from its apportionment the state is reimbursed in the amount of 75 per cent of the approved cost.

Particular attention should be directed to the following: (1) Funds which remain unexpended or unencumbered at the close of the second fiscal year following their apportionment revert to the federal government. (2) Because of increases in the cost of hunting and fishing licenses, Minnesota has been in a position to participate to the limits of its annual apportionments without a single reversion of funds to the federal government. (3) The entire program is financed by hunters and fishermen. No funds are procured from the general tax fund.

Apportionments	Pittman-Robertson	Dingell-Johnson
Fiscal year 1950-1951.....	\$289,673.90	*
Fiscal year 1951-1952.....	563,650.00	\$128,745.53
Total apportionments for biennium.....	\$853,323.90	\$128,745.53

*Note: The first federal apportionments under the Dingell-Johnson Act were made on July 1, 1951.

Projects Initiated

Of the 28 game projects which have been initiated since December 21, 1938, one has been cancelled, 17 have been completed, one has been reopened and ten are active.

Only two fish projects have been started since participation under the Dingell-Johnson Act began on July 1, 1951. Both projects are now active.

Present Status of Active Projects

Wildlife Management Coordination

This project coordinates all activities pertaining to federal aid in fish and wildlife restoration.

The personnel consists of a coordinator, two assistant coordinators specializing in fish and game respectively, an accountant, and a clerk-stenographer.

Projects pertaining to surveys and investigations and wildlife food and cover planting are delegated to project leaders. Assignments for other work and land acquisition are made directly from the coordinator's office to six wildlife field supervisors.

Wildlife Surveys and Investigations

In our country it is estimated that hunting involves enormous annual expenditures. Therefore, the procurement of vital information for practical application to benefit wildlife is the principal objective justifying the existence of this project.

The importance of this undertaking is self-evident, when consideration is given to the territory covered and the marked fluctuations in wildlife trends which are attributed to weather conditions, game cycles, drainage, overgrazing, uncontrolled burning, flooding, and countless other manipulations to which the wildlife habitat is constantly being subjected.

Personnel consists of a project leader, 12 area game managers, a clerk-stenographer and biologist aides on a part-time basis.

Since the inception of the project in 1941, many factors governing wildlife abundance have been evaluated and applied in all fields of management and development.

Carlos Avery Game Refuge Land Acquisition

On April 22, 1952, this project was reopened to permit the expansion of the Carlos Avery Game Refuge and Public Hunting Grounds in Anoka and Chisago counties through the acquisition of 12,600 acres. When the project has been completed, the refuge will contain 28,125 acres, of which approximately 18,750 acres will be opened to hunting during the regular game seasons.

Whitewater Game Refuge Land Acquisition

The Whitewater Game Refuge and Public Hunting Grounds is situated within the Whitewater River drainage basin in Winona, Wabasha and Olmsted counties. Since it is strategically located near intensely developed agricultural areas and thriving industrial centers, it supplies recreational facilities to a large population.

Restoration of the area has kept pace with the land acquisition program, which began in June, 1943. Table No. 25 shows the status of the project at the close of the biennium:

TABLE 25

Status of Whitewater Land Acquisition as of June 30, 1952

	Acres
State-owned Lands Prior to Project Purchases.....	2,466.86
State-owned Lands in Whitewater State Park.....	688.28
Lands Purchased Under Project.....	17,174.38
Lands Optioned for Purchase But Not Yet Acquired.....	1,019.74
Total in State Ownership or in the Course of Acquisition, June 30, 1952.....	21,349.26

Thief Lake Game Refuge Land Acquisition

This project authorized the purchase of 2,793 acres of privately owned lands, situated within the boundaries of the Thief Lake Game Refuge and Public Hunting Grounds in Marshall County. When the proposed acquisition has been completed, the administration of the refuge will be simplified and it will be possible to utilize the Moose River dam, thereby impounding an additional 2,000 acres of water to the benefit of waterfowl and furbearers. Up to the present time, the dam has been inoperative because of the danger of flooding the private holdings mentioned.

Table No. 26 indicates the status of this project at the close of the biennium:

TABLE 26

Status of Land Acquisition — Thief Lake Game Refuge as of June 30, 1952

	Acres
Lands Proposed for Purchase.....	2,793.00
Lands Purchased.....	2,089.38
Balance of Lands to Be Purchased.....	703.62

It is hoped that the remaining lands, 703.62 acres, can be acquired in the immediate future, so that the Moose River dam can be put into operation during the coming biennium.

Whitewater Experimental Development

On May 9, 1947, approval was granted of a project designed for the purpose of keeping the development of the Whitewater Game Refuge abreast of the land acquisition, so that when the purchase of the acreage had been completed the area would be well along in game production. This project was completed on June 30, 1952, and included the following accomplishments:

The removal of 35,120 rods of three-strand barbed wire fence; the cleaning of 35 farmsites and their restoration to a natural state; the cleaning and dry-walling of 6 springs; the planting of 113,777 trees, shrubs and vines for wildlife cover; the construction of 4 upland ponds and the repair of 5 others; the construction of a refuge headquarters building, and the planting of 1000 sago pondweed tubers, 1000 bullrush, 200 pounds of wild rice, 60 pounds of duck millet, 1100 pounds of sweet white clover, 500 pounds of alfalfa and 360 pounds of mammoth red clover.

The results attained under this project have far exceeded our expectations, for the scars of soil erosion are disappearing, the water run-off is greatly retarded, and all species of wildlife have shown such marked increases that the area has been repeatedly opened to hunting during the regular seasons.



Wildlife Food and Cover Planting

This state-wide project was designed to promote the planting of trees, shrubs and vines on private holdings for the improvement of wildlife habitat, particularly in the agricultural districts, where game cover is being destroyed at an alarming rate.

Under this program, cooperating landholders grant a planting easement in favor of the Division of Game and Fish, the same running with the land for a period of 25 years. The state supplies a planting pattern, distributes planting stock to the grantor, furnishes guidance in the planting and care of the stock, inspects the plantations periodically and makes suggestions for their improvement.

None of the planted stock may be removed, destroyed or otherwise disposed of during the life of the easement without written permission of the Division of Game and Fish.

Table No. 27 reflects the progress to the close of the biennium:

TABLE 27
Wildlife Food and Cover Planting

	1948	1949	1950	1951	1952
Number of Trees Distributed.....	46,572	79,675	372,990	997,075	1,918,975
Number of Shrubs Distributed.....	843	12,647	51,430	203,975	752,850
Number of Vines Distributed.....	100	1,375	21,060	7,350	13,275
Total Planting Stock Distributed.....	47,515	93,697	445,480	1,208,400	2,685,100
Number of Counties Represented.....	26	37	57	65	71
Number of Cooperative Planters.....	55	198	709	1,703	3,365
Pieces of Stock Per County.....	1,828	2,532	7,815	18,436	37,818
Pieces of Stock Per Cooperative Planter.....	864	473	628	710	798
Number of Species Used in the Program.....	18	35	38	37	36
Total Pieces of Stock Distributed During the Five Year Period.....					4,480,192
Total Pieces of Stock Distributed During the Biennium.....					3,893,500

Grazed Shoreline and Woodlot Fencing

The second phase of this project pertains to the fencing of woodlots and the grazed shorelines of lakes, potholes, marshes and bogs for the purpose of supplying cover for upland game, waterfowl, shorebirds and furbearers.

In accordance with the original intent of the fencing project, 15-year site easements have been accepted chiefly on the basis of their potential value as demonstration areas.

A breakdown of the types and amounts of fencing accomplished to the end of the biennium is shown as follows:

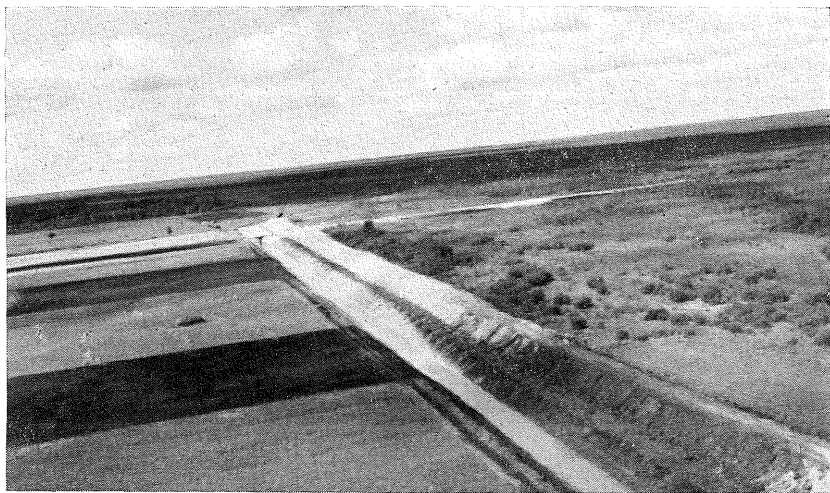
	1950	1951	1952	Totals
Number of Shoreline Fencing Easements Secured.....	19	3	2	24
Number of Woodlot Fencing Easements Secured.....	5	10	.....	15
Totals.....	24	13	2	39
Number of Feet of Shoreline Fencing.....	33,338	12,835	6,706	52,879
Number of Feet of Woodlot Fencing.....	8,520	7,182	.....	15,702
Totals.....	41,858	20,017	6,706	68,581

Roseau River Game Refuge Development

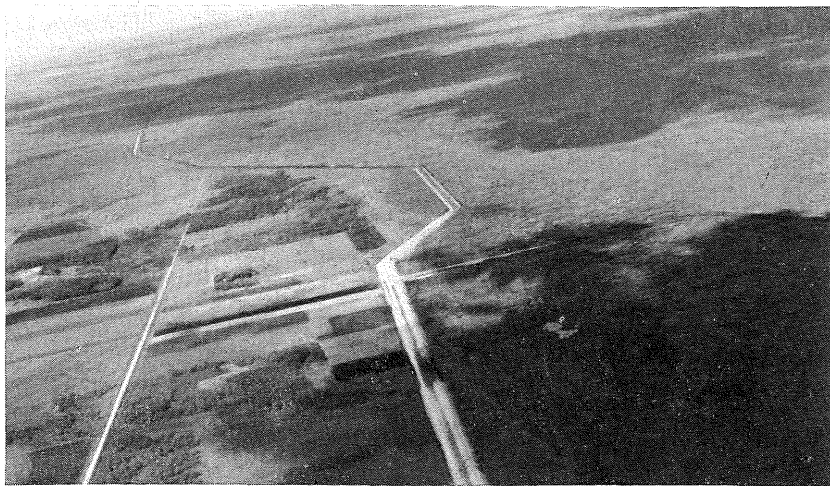
On August 18, 1949, a Pittman-Robertson project was approved for the purpose of acquiring approximately 53,000 acres in the Big Bog area of Roseau County, for establishing a game refuge and public hunting grounds. A total of 51,650.18 acres of land had been brought into state ownership before the close of the biennium.

While acquisition of these lands was in progress, engineers conducted field surveys and prepared plans, specifications and estimates to cover the diversion of Pine Creek in Canada to assure an adequate supply of water, and the construction of dikes, channels, control structures and roads for the improvement and the protection of wildlife habitat in the United States.

In order to simplify operations, it was decided to separate the work in Canada from that in the United States. Therefore the Province of Manitoba



Roseau River Refuge—Dike No. 1 in foreground and No. 2 in distance.

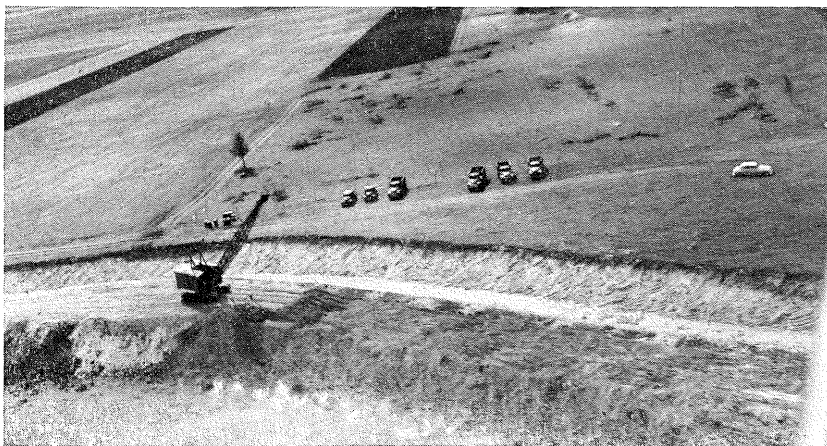


Roseau River Refuge looking west—Dike No. 1 in foreground and No. 2 to west of it.

is handling the contract for the diversion channel of Pine Creek and will be reimbursed for the cost of the project by the State of Minnesota.

Bids for the development of the project in Roseau County were opened on May 8, and the contract was awarded by the Department of Administration on May 16, 1952. Early in June, the contractors moved into the area, and at the close of the biennium the work was well under way.

If the work is completed by the March 14, 1954 contractual deadline, the Roseau River Game Refuge and Public Hunting Grounds will be one of the better waterfowl producing areas in the United States.



Roseau River Refuge—Dragline at work near east end of Dike No. 2.



Diversion ditch from Canada, Roseau River Refuge

Carlos Avery Game Refuge Development

This project, approved on June 7, 1950, included 23 jobs designed primarily to benefit migratory waterfowl and furbearers by the creation of additional water impoundments through the construction of new dikes and channels, the improvement of existing ones, and the installation of control structures to stabilize water levels. Four jobs were finished in 1949, and the remaining 19 were inspected and accepted on January 14, 1952.

Under a third part of this project, a preliminary survey was made of approximately 12,000 acres of land located in the drainage basin of the South Branch of the Sunrise River and contiguous to the Carlos Avery Game Refuge and Public Hunting Grounds. When these lands have been acquired, the development will include three major dikes with suitable control structures to assure adequate water impoundments for migratory waterfowl and furbearers.

Talcot Lake Game Refuge Development

On March 8, 1950, plans were approved for the construction of a refuge utility building under this project. The engineers inspected and accepted the completed structure on June 25, 1951.

Waterfowl and Muskrat Habitat Survey

This activity, which is commonly known as Duck Lake Surveys, was initiated to determine the suitability of shallow water areas for waterfowl, shorebirds and muskrats, and to ascertain what steps should be taken to improve their respective production capacities.

Field work, which is conducted during the summer months and consists of approximately 100 surveys per year, is necessitated by requests emanating from sportsmen's clubs and other interested groups and individuals. Upon the completion of the field work, a detailed map and report are prepared for each individual body of water surveyed, with copies forwarded to those who requested the survey.

Mille Lacs Game Refuge Land Acquisition

On August 15, 1950, approval was granted for the acquisition of 35,924 acres of land, for the purpose of establishing a game refuge and public hunting grounds in Mille Lacs and Kanabec Counties immediately south of Mille Lacs Lake. Through an amendment, the acreage was increased to 40,226 acres, which was necessary to bring the southwestern boundary to a main road to serve as a principal fire lane.

At the close of the biennium, 45 tracts of land totaling 5,019.07 acres had been optioned for purchase, of which 23, embracing 2,931.07 acres, had been brought into state ownership. Since the majority of the lands that remain unoptioned are tax delinquent and tax forfeited, it is believed that the entire acquisition can be completed before the close of the next biennium.

Acquisition of Small Game Habitat Restoration Areas

Because of the tremendous increase in the drainage of small water areas for the purpose of creating additional agricultural lands, this project was initiated to permit the outright purchase of such areas, where good wildlife habitat was in danger of being destroyed. Such small bodies of water should be preserved whenever possible, for they not only are the principal producers of waterfowl, shorebirds and muskrats, but their emergent vegetation also supplies the finest natural cover for upland game, and especially the ring-necked pheasant, which is the most important game bird of the agricultural districts.

Although the project was active during the last nine months of the biennium, it was impossible to purchase a single desirable area because the prices were inflated beyond reason.

This project has the following main objectives:

(a) The investigation of proposed drainage projects to determine whether or not wildlife habitat will be adversely affected, and to inform all interested individuals and agencies of the results of such investigations. If the findings indicate that wildlife habitat will be jeopardized through the prosecution of any drainage proposal, counter measures will be formulated in an effort to prevent it.

(b) To supply a basis of recommendations for the outright purchase of areas to be affected by drainage, if such action is considered to be feasible and economical.

Notices of drainage proposals warranting investigation are now arriving at this office at the rate of 16 per month, which is an increase of 100 per cent since February 1, 1952. Since the close of World War II, drainage has increased at an alarming rate. It is now our most challenging wildlife problem.

Fisheries District Headquarters

On May 21, 1952, this project was approved to cover the proposed construction of a fisheries district headquarters building and a supervisor's residence at a site approximately one mile east of Waterville. At the close of the biennium, the engineers were engaged in preparing the plans, specifications and estimates for these two structures.

Acquisition of Natural Spawning Areas of the Northern Pike

In view of the fact that the northern pike spawning beds have suffered such marked deterioration through drainage and the filling in and the blocking of natural spawning runs, this project was designed to preserve such areas through their outright purchase and management. Approval of the proposal was granted on June 30, 1952, and the actual optioning of desirable sites is scheduled to begin on August 1.

Proposed Projects

1. Acquisition and development of lands at Walnut Lake in Faribault County, for the purpose of creating a game refuge and public hunting grounds.
2. Expansion of the Talcot Lake Game Refuge through the acquisition of marginal lands along the Des Moines River in Cottonwood and Murray counties.
3. Acquisition and development of lands along the Sauk River between the towns of Sauk Centre and Melrose, for the purpose of establishing a game refuge and public hunting grounds if found feasible and cost is justified by the results expected.
4. Acquisition and development of approximately 9,000 acres of land in the drainage basin of the Moose and Willow rivers, Aitkin County, for the purpose of creating a game refuge and public hunting grounds, if found feasible and cost is reasonable.
5. Further development of the Thief Lake Game Refuge and Public Hunting Grounds to improve its wildlife production.
6. Development of the Red Lake Game Refuge and Public Hunting Grounds through the construction of new roads and fire lanes and the improvement of those already established, and through the impoundment of water for the establishment of a migratory waterfowl sanctuary.
7. Acquisition and development of a slough area near Rothsay, Minnesota, for game refuge and public hunting ground purposes if cost is reasonable.
8. Reclamation of small unproductive lakes for trout management.
9. Inauguration of a creel census to determine the fishermen's catch by species from each of some twenty-three lakes which are widely scattered and of various types.
10. Improvement of certain streams and springs for the purpose of increasing the natural reproduction of game fish.
11. Thorough investigation of chemical spraying to determine the extent of its effects on all species of wildlife and their respective environments.

WILDLIFE SURVEYS AND INVESTIGATIONS

Big Game Investigations

Moose and Elk

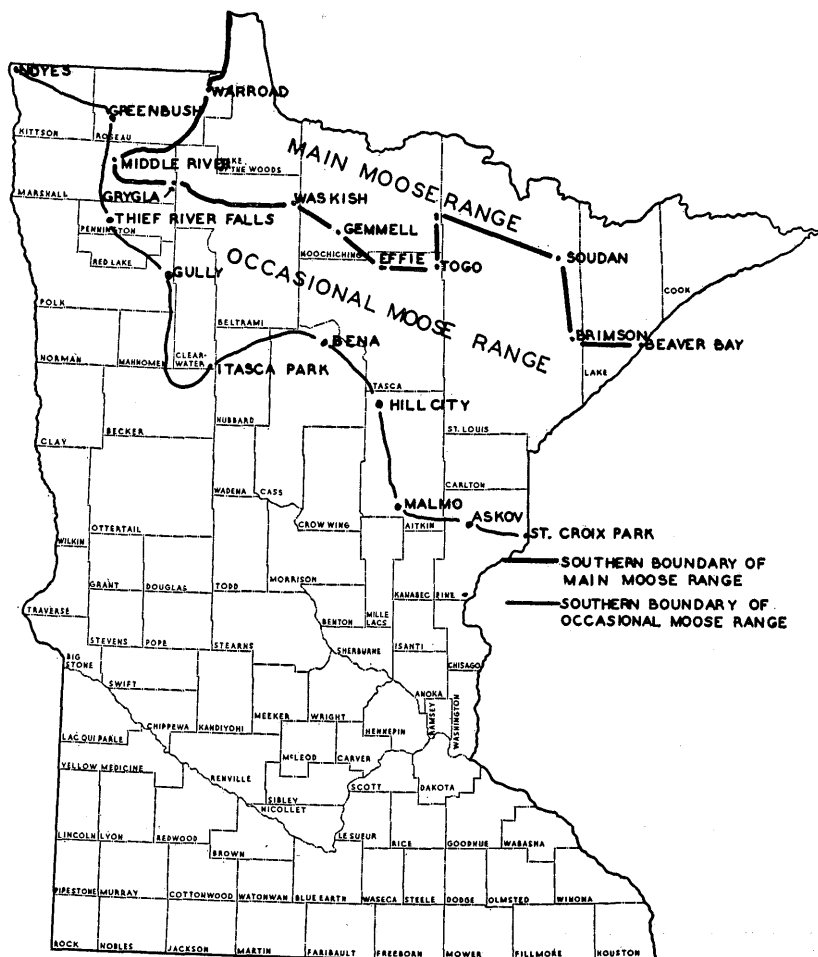
Big game investigations during the biennium were concerned chiefly with census and distribution, evaluation and possible methods of improving food and cover, and calculation of kill statistics.

Aerial censuses of moose and elk on the Red Lake Game Preserve District were continued. Moose populations remained almost the same on the preserve district as in 1950; elk decreased slightly.

A two-year study of extent of moose range, cover type preferences of moose, and sex and age ratios was completed in 1952. The main moose range covers about 10,000 square miles in extreme northern Minnesota. Another 12,500 square miles south and east of the main range is considered as the occasional range (see map).

In northwestern Minnesota, moose are found in black spruce and aspen-willow lowlands. In the northeast, they inhabit the rugged lake and rock topography, chiefly in upland evergreens and evergreen-hardwood mixtures. Large blocks of favorable habitat uninhabited by man seem necessary for moose to maintain populations.

MOOSE RANGE IN MINNESOTA 1952



Observations on sex and age show that herd composition runs about 37 bulls to 45 cows to 18 calves. Twenty-three cows were observed with 27 calves — a ratio of five cows bearing single calves to one bearing twin calves.

Minnesota has a population of 1,100 to 1,425 moose, based on liberal estimates of numbers as determined by aerial surveys and observations.

Deer

Aerial deer counts were continued during the winter of 1952. The 1951 aerial census showed that the population was down about five per cent from 1950. The winter of 1950 was very severe and many deer were lost because of starvation and cold. The winter of 1952 was mild with little snow. The break up came early and deer came through in good condition.

Studies of browse conditions in winter deer yards have been in progress since 1948. To date, 179 yards have been examined and evaluated. Work has progressed far enough to indicate that the conditions shown in Table 28 are probably normal in the northern deer range. Good browse in and near many of our winter deer yards is the main factor limiting the size of the deer herd.

TABLE 28
Comparison of Browse Conditions and Deer
Concentrations in Winter Deer Yards

Winter	Number Yards Examined	Amount of Food			Deer Concentrations		
		Good	Medium	Poor	Heavy	Medium	Light
1948-49	48	7	12	29	12	15	21
1949-50	37	5	6	26	12	14	11
1950-51	58	4	24	30	8	16	2
1951-52	36	6	14	16	5	12	19
Totals:	179	22	56	101	37	57	53

In most old, much-used yards, plant reproduction is held to a minimum by deer browsing and winter food is almost nonexistent.

Experimental work with bulldozer and cut-a-way disk was begun in 1950 in the Floodwood Refuge and in the Chippewa National Forest in an attempt to stimulate the sprouting of browse food plants and to increase winter deer food.

In one of the Floodwood plots cut up by the bulldozer, sprouting of good deer food was notable. For example, of 34 old stems of mountain maple, one of the best deer foods, 331 sprouts grew up, for a sprouting ratio of about 10 to 1. From four old stems of red osier, 16 new stems sprouted. The cost for cutting up this plot amounted to \$6.80 per acre.

The cut-a-way disk method as used on the Chippewa Forest plots for regenerating browse plants induced a sprouting ratio of 22 sprouts to one old plant laid down for red maple; 6 to 1 for mountain maple and a 9 to 1

average for all browse species. The cut-a-way disk does a better job of disturbing the soil than the bulldozer and does not tear out shrubs completely. The average cost per acre for regenerating browse with the cut-a-way disk was \$4.16.

There was no deer season in 1950. In 1951, however, more licenses were sold (181,687) than in any previous year, and 72,671 deer were killed. The success ratio was forty per cent. The 1951 season was statewide, and deer were killed in every county except Rock County.

The following refuges and state parks were also opened to deer hunting: Tamarac National Wildlife Refuge, Mud Lake National Wildlife Refuge, Cloquet Refuge, Floodwood Refuge, Superior Refuges No. 4, No. 9, and No. 10, and Itasca and St. Croix Parks.

Tamarac Refuge was opened in 1951 for the first time since its establishment. Deer populations had built up to a level where they were severely curtailing forest reproduction and many deer were starving to death during severe winters.

Approximately 20,000 acres of the refuge were opened and 770 deer were taken in four days. Age, sex, weight and condition of most of these deer were determined by state and federal employees at established checking stations.

The deer trapping and ear tagging study begun on the Camp Ripley Military Reservation, Morrison County, in 1951 was continued during the winter of 1952.

The Camp Ripley Reservation is recognized as an overbrowsed, overpopulated deer range where many animals starve to death each winter. As a military reservation, the area is not open to hunting. It is an ideal locality, however, for trapping and tagging deer and to study the movements and distribution of deer as they move out from the reservation and are shot during regular open seasons outside the refuge. Trapping, tagging, and retrapping also give information on sex, age, weight, and condition of deer, useful in the management of these animals.

In 1951, 20 deer were ear tagged at Camp Ripley and in 1952, 68 were tagged. A new portable-type deer trap was perfected in 1952.

Upland Game Investigations

1. Numbers of unlicensed small game hunters.

A questionnaire post card was designed to obtain information on the number of farm-dwellers who hunt small game on their own land without licenses and the probable take of small game by these unlicensed hunters and the type of game they hunt. A total of 7,900 cards was sent out; 1,137 replies (14.3 per cent) were received. From the replies it was determined that there were about 39,321 unlicensed farmer-hunters in 1951. It was further calculated that they may have taken 67,710 pheasants; 14,489 ruffed grouse; 3,659 Hungarian partridge; 30,599 ducks; 65,124 cottontails; 55,808 squirrels; 31,024 jack rabbits, and 4,654 raccoons.

Information on unlicensed hunters is summarized in Table 29.

TABLE 29
Number of Unlicensed and Licensed Farmer-hunters,
the Kind and Amount of Game They Kill

Game Management Area	% of Farms Without Hunters	% of Farms with Licensed Hunters	% of Farms with Unlicensed Hunters	No. of Farms in Area	No. of Farms on which are Unlicensed Hunters	Total Unlicensed Hunters
II	29.4	45.8	25.0	5,776*	1,444	2,411
IV	55.8	30.0	14.2	13,523	1,916	2,587
V	40.0	44.3	15.7	16,135	2,535	3,346
VI	48.8	35.0	16.3	14,311	2,326	4,094
VII	46.3	32.6	21.0	7,659*	1,612	2,499
VIII	33.9	46.3	19.8	21,352	4,234	5,822
IX	20.8	49.1	30.2	14,557	4,395	4,791
X	19.6	57.9	22.4	18,664	4,186	5,567
XI	19.0	52.1	28.8	20,582	5,932	8,204
XII	33.3	43.5	42.2	19,937	8,434	11,700
AVERAGES:	33.9	44.4	21.7			
TOTALS:				152,496	28,580	39,321

*Does not include entire area.

2. Pheasants

Winter sex ratio counts of pheasants were continued in 1951 and 1952. The results of these counts are of much value in projecting the outcome of the nesting season. In 1951, 11,058 pheasants were counted with a sex ratio of 2.6 hens per cock, and in 1952, 12,454 pheasants with a ratio of 2.9 hens per cock. Forty-one per cent of the birds were observed in woodlot and slough bottom cover types in 1951 and 60 per cent in 1952. This emphasizes the need for this type of winter cover.

Roadside censuses were continued during the biennium. On 3,540 miles of census route in 1950 there were 2.08 birds per mile, and the calculated kill that fall was 890,837. On 3,924 miles of census route in 1951 there were 2.16 birds per mile. The calculated kill for 1951 was 929,173 birds. A bulletin, "The Pheasant — Minnesota's Most Important Game Bird" was published during the biennium.

Farmers under contract to the Bureau of Game are planting sweet clover for pheasants. Studies, not yet completed, were made on the value of these plantings as nesting and winter cover.

Preliminary work was begun in February, 1951, on a winter aerial type census for pheasants. Townships were selected at random in six counties on the basis of population figures derived on the August roadside census, which indicated excellent, good, and poor pheasant range. Each township was given 100 per cent coverage and all coverts were examined.

Although 1952 was the first year this type of census was used, it promises to give the most accurate estimate of winter pheasant numbers devised up to the present time. Results for the sample townships are given in Table 30. The column on corrected count is based on evidence which indicates that about 10 per cent of the birds were missed from the air.

TABLE 30

Aerial Census Data for Six Minnesota Counties,
Flown February 22-27, 1952

County	Township (36 sq. miles)	Pheasants Counted by Air	Corrected Count	Birds per Square Mile
Martin	Fraser	653	718	19.9
Jackson	Heron Lake	857	943	26.2
Murray	Slayton	630	693	19.2
Lyon	Sodus	903	993	27.6
Chippewa	Havelock	631	694	19.2
Swift	Torning	235	258	7.1

3. Ruffed Grouse

Ruffed grouse drumming censuses started in 1949 were continued during the biennium. Figures resulting from the census are of great value in helping to determine length of season, bag limits, etc. Results of four years of roadside drumming counts are given in Table 31.

TABLE 31

RUFFED GROUSE ROADSIDE DRUMMING COUNT STATISTICS, 1949-1952

Year	Square Miles Covered	Total Drummings Heard	Number Listening Stops Made	Average No. Drummings per 10 Stops	Total Birds per Square Mile	Calculated Take by Hunters
1949	21.80	362	218	16	59.0	885,309
1950	7.82	298	163	18	67.2	936,351
1951	7.82	398	160	24.8	92.7	1,420,325
1952	7.78	451	160	28	104.6	-----

4. Sharp-tailed Grouse

Sharp-tailed grouse like ruffed grouse have been at peak population levels during the past two years. The calculated kill for sharptails in 1950 was 82,726 and 97,823 in 1951.

Work was continued on perfecting a winter and early spring roadside census method for sharp-tailed grouse. Also, experiments were continued in trapping and transplanting sharptails. A total of 58 birds has been trapped in northwestern Minnesota since 1950 and released in the White-water Refuge, Winona County.

Furbearers Investigations

1. Beaver

Airplane censusing of beaver was continued in 1951 and 1952. Aerial photographs of the U. S. Forest Service were also used to determine the number of beaver colonies in Refuge Units 9 and 10 of the Superior National Forest, and also in a control area lying between the two refuge units.

Beaver populations continued to increase in 1950 and early 1951. In order to keep the animals in check, two seasons were declared in 1950 during which 19,555 beaver were trapped. The spring 1951 season saw the removal of another 13,387 animals, and an additional 10,379 were taken in the spring of 1952.

In the early winter of 1952, a disease factor was at work which further cut down beaver numbers. This disease condition was not discovered, however, until trapping began in April, 1952. Dead beaver were reported from all counties open to trapping, and a total of 407 was found during and after the season. Beaver carcasses and cultures of dead animals were sent to the Veterinary Division, University of Minnesota, and the U. S. Public Health Service for examination.

It is believed that the number of beaver which died from the disease equalled the number taken by trappers in 1952.

2. Muskrats

The 1951 aerial census of muskrat houses showed a significant increase over the 1950 count. The increased take of muskrats by trappers in 1951 (587,845) over the 1949 season (364,824) also emphasizes the muskrat "comeback." The season had been closed in 1950 because of the small population.

3. Mink

Mink was the top ranking fur species from the monetary standpoint during the period 1945-1950. It is significant, too, that the mink take has been decreasing each year since 1948. In 1951, the take dropped to 30,187. The cause for this has not been determined. Overtrapping could be the answer.

During the 1950 mink season (November 1 - December 21) a special study was made to determine the dates when mink hides prime up and are of greatest value to the trapper. Of 606 skins trapped in various parts of the state prior to November 15, only 37 per cent were rated as No. 1 grade (fully prime); 37 per cent were No. 2 grade; 23 per cent No. 3 grade; and 3 per cent No. 4 grade. The data collected indicate that from the primeness standpoint the mink season should not open earlier than November 10. Many trappers and buyers contacted concurred in a November 10 to 15 opening.

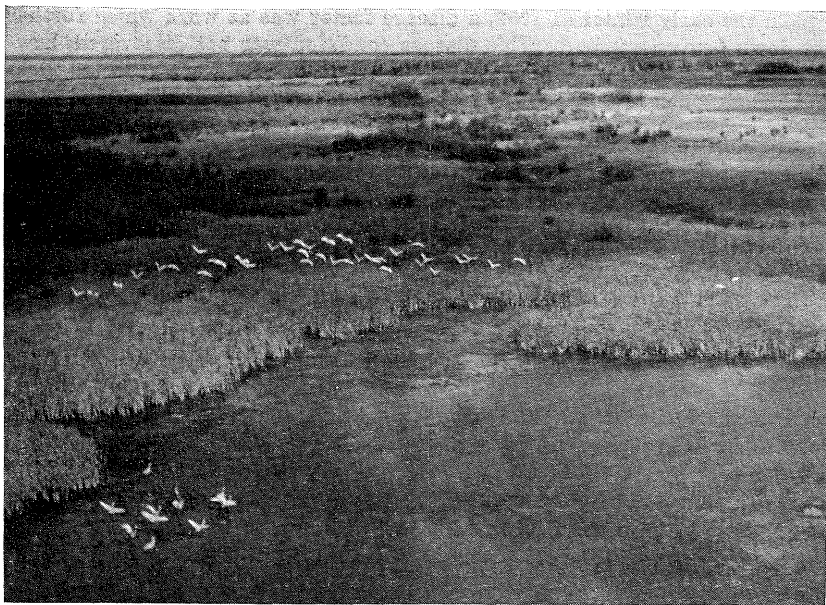
Migratory Waterfowl Investigations

1. Waterfowl Breeding Conditions, 1951-1952

Because the aerial transects sample pothole and dry areas indiscriminately, it is thought that the aerial transect figures represent the more accurate index to indicate changes in the breeding waterfowl population.

Both aerial and ground censuses of breeding waterfowl were taken in the spring of 1951 and 1952.

In terms of ducks per square mile there were, according to the aerial census, 3.66 ducks in 1952 and 3.58 in 1951. According to the ground census (automobile transects), covering the same areas as the aerial census, there were 1.79 pairs of ducks per square mile in 1952 compared with 1.22 for 1951. The pairs per square mile figure is a better index to breeding populations because the ducks per square mile figure includes late migrants present in the state when our local ducks have already started to nest.



A Flock of 47 Sandhill Cranes in Roseau River Game Refuge and Public Hunting Grounds.

2. Duck Brood Counts

Brood counts in 1950 and 1951 were made on 96 water areas throughout the state in all game management areas. A total of 459 broods containing 2,982 young was counted in 1950 with an average brood size of 7.3 young. In 1951, the average brood size was 7.8 based on 444 broods containing 3,479 young. The larger brood size in 1951 was reflected in the larger calculated kill — 2,377,868 ducks in 1951 and 1,825,723 in 1950. Also affecting the kill, of course, was the number of duck stamp purchasers, 162,374 in 1951 and 145,708 in 1950.

3. Inventory of Water Areas

An inventory of water areas in the prairie region of Minnesota was made in conjunction with the aerial portion of the spring waterfowl breeding ground survey.

The 32 transects through the area sampled total 3,096 miles. This mileage represents 1,548 square miles of sample, or 4.2 per cent of the area sampled which amounts to 36,857 square miles.

A total of 5,195 water areas was tallied along the transects for all classifications. By simple proportion, a figure of 123,691 water areas was calculated as a possible total for the 36,857 square miles sampled, or an average of 3.4 water areas per square mile.

An estimated total of 61,506 acres of water areas was tallied for all classifications, not including streams and ditches. From this, a figure of 1,464,423 acres was calculated as a possible total water acreage for the 36,857 square miles sampled. This gives an average of 39.7 acres of water area per square mile.

4. Waterfowl banding, 1950 and 1951

A total of 1,321 waterfowl was banded during the summers of 1950 and 1951. A special attempt was made to band resident waterfowl of the state, i.e., flightless young and flightless adults in the molting stage. Most banding was done during July, August and September in Lyon, Yellow Medicine, Lac qui Parle, Big Stone and Otter Tail Counties.

This banding of young and resident adults gives valuable data relative to the movements, distribution and harvesting of our locally raised ducks. Waterfowl were banded in the following numbers: blue-wing teal, 820; mallard, 184; redhead, 93; pintail, 85; shoveler, 27; gadwall, 13; green-wing teal, 9; black duck, 5; lesser scaup, 5; ringneck, 4; ruddy duck, 2; and coot, 74.

By July, 1952, 135 of the 1,321 banded ducks had been reported as having been shot. This amounts to 10.2 per cent of the number banded. One hundred thirty of the ducks were shot during the first fall after they were banded. Ninety-five of the 135 recoveries were in the state. There were 49 recoveries of blue-wing teal, 41 of the teal being shot in Minnesota. Of the eight out-of-state recoveries of blue-wing teal, two were in foreign countries. A young male banded in Big Stone County on August 22, 1950, was shot in Cuba on November 28, 1950. Another young male banded at Spellman Lake, Yellow Medicine County on August 7, 1951, was shot in November, 1951, near Palmira, Colombia, South America.

Analysis of Hunters' and Trappers' Report Cards

Biologist aides and clerks assisted in counting and analyzing report cards and reported game kill of licensed hunters and trappers for the year 1951. They checked 45,209 big game hunting licensees' report cards, 24,171 small game licensees' report cards, and 2,226 trapping licensees' report cards, making a total of 71,606 report cards of licensed hunters and trappers. This sample consisted of reports from 24.9 per cent of 181,678 licensed deer hunters, 7.4 per cent of 327,611 licensed small game hunters, and 13.4 per cent of 16,906 licensed trappers.

Bureau of Warden Service

HARRY E. CANN, *Supervisor*

The Bureau of Warden Service is charged not only with the enforcement of the game and fish laws, but with a varied program of activities which directly and indirectly contribute to overall wildlife administration. At the present time, the staff consists of a supervisor, an assistant supervisor, six field supervisors and 140 game wardens, one secretary-stenographer and one account clerk. During the biennium, six men joined the service as replacements for warden resignations.

Game warden stations are strategically located throughout the state to be in the best position to carry on the many duties assigned to them. These duties require not only enforcement of the game and fish laws, but active cooperation with field men of other divisions of the Conservation Department and other State and Federal agencies. For instance, wardens investigate property damage by deer, beaver, pheasants, and other wild life. They post and manage statutory game refuges, seal and tag pelts of fur bearers. They cooperate with the Division of Waters in regulating dams and investigate permits for lake and stream shore improvement. They work with the Bureau of Fisheries in the supervision of rough fish removal and fish rescue work. Some of the public relations activities include exhibiting at county fairs, attendance at youth and adult meetings which frequently require speaking and interpretation of game and fish work in that area.

The following table shows the major activities and time spent by the wardens during the past biennium:

5,200 hours posting game refuges.
4,824 hours feeding pheasants.
7,984 hours making game and fish surveys.
2,496 deer damage complaints.
3,600 beaver damage complaints.
625 pheasant damage complaints.
10,096 hours checking commercial fishermen.
10,886 hours predator control.
5,216 hours blowing beaver dams.
3,940 hours water pollution investigation.
28,004 hours planting trees.
100 hours fighting forest fires.
1,072 hours looking for lost persons.
108,544 hours on public relations.
232,000 hours checking fishermen.
52,368 hours checking hunters.
28,824 hours checking trappers.
6,608 hours issuing bounty certificates.
5,808 hours in court.
6,626 hours sealing beaver.
5,308 hours tagging nets.

206 hours checking fur buyers.
1,728 hours flying time.
5,659 sportsmen's club meetings attended.

Game wardens have been required to take Red Cross first aid training, in order to prepare for emergency duty in case of accident or catastrophe. Excellent results of this training and experience in accident cases have been evident in giving relief to injured people and probably saving lives. One such instance occurred during the 1951 deer hunting season in the Winton Area when a lost person was found and his life saved by wardens who risked their lives in the attempt.

One of the major advances of the biennium has been the cooperative establishment of a state-wide radio system by the Game and Fish Division and State Highway Department. The warden service has been using two-way mobile radios for several years, but the system is now being expanded to purchase 120 new two-way mobile units and 10 new two-way portable units. The cost of this equipment and a share of the maintenance and operating costs of the combined broadcasting and transmitting units is financed by the warden service. This expansion is just started, but when completed, there will be intercommunication between the St. Paul office, field stations, and field men at any location within the state.

During the short time since this radio system was established, the wardens have assisted the State Highway Patrol in cases of auto accidents and other such instances. The system has been used to aid in the search for lost persons and has been of most valuable service to the wardens in the prevention of game and fish violations and in the apprehension of violators.

During the last year, the new style of uniforms was approved and procured. It is believed that the uniform will have the tendency to reduce the number of violations and assist in the performance of the varied duties of the warden force.

The following equipment was purchased during the biennium:

120 2-way mobile radio units.
33 auto top carriers.
7 aluminum yokes.
10 battery chargers for RCA portable radio units. Made frequency change on 32 mobile radio units.
1 lightweight aluminum canoe for use with the state-owned airplane located at Winton.
1 lawn mower for use at the Grand Marais Headquarters. Purchase of paint and varnish for state-owned inboard and outboard patrol boats, canoes and trailers.
1 cruiser, 26 ft. Welin Club, for use on Lake of the Woods at Warroad, Minnesota.
60 sirens.
15 boats, 14 ft. aluminum.
2 boats, 16 ft. aluminum.
5 canoes, 17 ft. sq. stern.
1 airplane, Super Cub, stationed at Warroad, Minnesota.
12 sleeping bags.
15 radios, Motorola, portable.

- 150 game warden uniforms.
- 4 canoe brackets.
- 10 pr. snowshoes.
- 7 motors, Johnson, outboard.
- 150 shoullder type holsters for new warden uniforms.
- Purchased first aid supplies for units being used by wardens in the field.
- Purchase of boat fenders, canvas covers for mobile radio units, two files for use in the office.

While it is felt that the personnel of the Warden Service is near the top in efficiency and performance, there is a constant effort to improve both. During the biennium, two very successful warden schools were conducted at Norris Camp, at which time every phase of organization, training, and administration were considered. However, it is believed that a larger number of wardens is necessary to efficiently patrol the state. Since the number of resident and non-resident hunters and fishermen has been increasing each year, the Warden Force should be increased to a minimum of 163. Therefore, it is recommended that the Warden Service be reorganized as follows:

- 1 Supervisor
- 3 Regional Supervisors
- 13 District Supervisors
- 2 Warden Pilots
- 140 Game Wardens
- 1 Account Clerk
- 1 Clerk-Steno II
- 1 Clerk-Steno I

It is recommended that consideration should be given to the purchase of automobiles for use of the Warden Service. The initial cost of these automobiles will increase the allowance for travel during the first year or two, but this increased cost may be justified by the increased service to the public. At the present time, each warden's mileage is limited to about 1,500 miles per month at a rate of eight cents per mile. With state-owned automobiles, the mileage limitation is increased to 3,000 miles a month at a cost of approximately three and one-half cents per mile for operation. It is believed that law enforcement can be more efficient and other warden activities can be more helpful by the use of state-owned automobiles.

Plans for the next biennium include the purchase of the following equipment and erection of the following buildings:

- 20 auto top carriers.
- 25 pr. binoculars.
- 19 boats, 14 ft. aluminum, complete with oars.
- 7 boats, 16 ft. aluminum, complete with oars.
- 2 canoes, 15 ft. standard aluminum.
- 10 canoes, 17 ft. sq. stern aluminum.
- 10 canoe yokes.
- 48 outboard motors.
- 10 life preservers.
- 30 packsacks.
- 10 sleeping bags.
- 10 sirens.
- 5 traps, live beaver.
- 42 radios, 2-way Motorola, mobile.

- 10 radios, Motorola, portable.
 2 radios, 2-way, to be installed in the two state-owned airplanes.
 2 refrigerators, electric, for use at the Winton and Grand Marais Headquarters.
 1 stove, gas and wood combination, for use at the Grand Marais Headquarters.
 4 boathouses; 1 at Crane Lake, 1 at Winton, 1 at Tower and 1 at Lake Kabetogama.
 1 airplane, Super Cub or equal, less trade-in on 1 Aeronca Aircraft now stationed at Winton.
 1 truck, 1½ ton, long wheelbase, less trade-in on 1 1947 1½ ton Ford truck.
 Also, complete the upstairs in the state-owned dwelling at Lake Kabetogama.

TABLE 32
WARDEN ARRESTS

Biennium Ending June 30, 1952

VIOLATIONS	1951	1952
Big Game	124	233
Fishing	1,116	1,120
Fur	40	5
Guns Set Up.....	471	677
Hunting and carrying firearms on a game refuge.....	76	176
Miscellaneous	39	43
Netting	83	92
Small Game	451	510
Trapping	15	69
Hunting from an Airplane.....	.....	9
Wild Rice.....	.....	32
Total Arrests	2,415	2,966

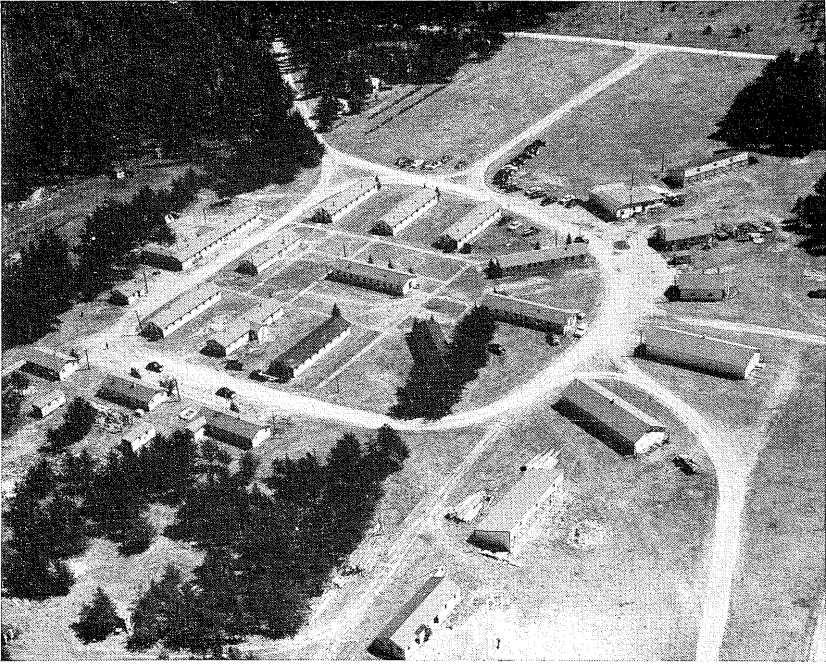
TABLE 33
Confiscations

Biennium Ending June 30, 1952

Articles	1951	1952
FIREARMS		
Pistols	3	4
Rifles	59	58
Shotguns	42	45
FISHING EQUIPMENT		
Boats	3	....
Fish houses.....	3	....
Fishing sticks.....	15	85
Gaff	1	....
Lines	34	21
Poles	21	5
Reels	33	27
Rods	34	28
Spears	126	62
Fish traps	49	....
Fish bag	1	....
License	1	....
Nets—Gill	89	26
Nets—Landing	2	....
Nets—Dip	5	6

Nets—Trammel	2	....
Lines—Set	4	3
Nets—Hoop .....	....	1
Plugs	1	....
LIVE ANIMALS		
Bear .....	....	3
Deer	2	1
Raccoon	5	1
Mink .....	....	2
Birds .....	....	1
MISCELLANEOUS		
Automobiles	5	5
Lanterns	4	....
Flashlights	53	37
Traps, fur	27	310
Wild Rice (pounds)	99	120
Wild Rice (sacks)	8	....
PEELTS		
Beaver	196	96
Mink	87	130
Muskrats	4,944	1,398
Otter	36	37
Raccoon	27	51
Weasel	7	2
Fisher	3	2
Squirrels	35	....
Badger .....	....	5
Wolf .....	....	4
Bobcat .....	....	5
PERISHABLES		
Birds	631	645
Deer	414	73
Pounds	251	187
Quarts	1	....
Elk (pounds) .....	....	70
Deer (hides)	45	72
Moose .....	....	9
Fish	4,767	2,141
Pounds	444	967
Boxes .....	....	6
Packages .....	....	40
Species Upon Which Counties Paid a Bounty		
Timber wolves	306	139
Brush wolves	1,770	919
Red Fox	18,718	22,029
Grey Fox	4,840	4,297
Bobcats	1,577	688
Bear	49	14
Pocket Gophers	22,931	16,999
Common Gophers	15,767	5,079
Crows	1,021	920
Rattlesnakes	316	311
Woodchucks	943	471

Note: Predatory species and species doing damage taken by wardens are listed in the Bureau of Game Report.



Headquarters—Red Lake Game Refuge and Public Hunting Grounds

Bureau of Administration

DIVISION FINANCES

GORDON B. WOLLAN, *Supervisor*

All receipts to the Division of Game and Fish are dedicated to the operation of the division and we report our present financial condition to be sound.

Our requests for appropriations must at all times be prepared so that they can be wholly financed from anticipated receipts plus the free balance carried forward and still leave a surplus of approximately \$1,000,000.

It is also necessary to anticipate the amount of monies from Game and Fish income, which by legislative action will be transferred to other state agencies. These transfers have increased each biennium and for the 1951-53 biennium amounted to in excess of \$1,000,000. At this time it appears that the Legislature for 1953 will surpass even this large amount by an additional \$150,000.

During the past few years it became necessary to close a pheasant season and a deer season, but in spite of losing approximately \$800,000.00 of revenue resulting from these closed seasons, we find, largely due to the increase of license fees and a constant increase in license sales, we are now in a position to finance an appropriation for the coming biennium of more than \$10,000,000.

In our appropriation requests, there again appears an item of \$100,000 for each year to be used as a contingent fund, enabling us to supplement our various appropriations, should an emergency arise, by seeking approval of the Legislative Advisory Committee.

At the conclusion of the coming biennium, it appears that we will have utilized our free balances plus receipts to the point where there will remain only the required surplus of \$1,000,000, which we contend must be reserved to replace receipts in the event it again becomes necessary to close seasons. From that date it will become necessary that we restrict our appropriation requests to the anticipated revenues less the legislative transfers which become a primary charge against our funds. We will then have to plan on operating costs and give less emphasis to capital improvements.

There is a summarizing of our accounting for the past fiscal years 1950-51 and 1951-52 in the tables and graphs which follow, indicating sources of revenues, purposes of transfers and expenditures by classifications for the various activities of operations in our division.

LEGISLATIVE TRANSFERS 1951-1953

Bounties	\$ 140,000.00
Conservation Administration	
Salaries	48,011.60
Supplies and Expense.....	6,240.00
Bureau of Information	
Salaries	49,483.20
Supplies and Expense.....	33,163.00
Legal Bureau	
Salaries	16,056.30
Division of Waters	
Salaries	173,789.00
Supplies and Expense.....	37,315.00
Hydrologic Studies	21,008.00
Water Pollution Control.....	73,694.40
Forestry Fire Fighting.....	100,000.00
General Administration 5% Estimated.....	330,000.00
	<hr/>
	\$1,028,760.50

DEPARTMENT OF CONSERVATION

Graph showing all sources of expenditures with percentage of total from each
Fiscal Year 1950-1951

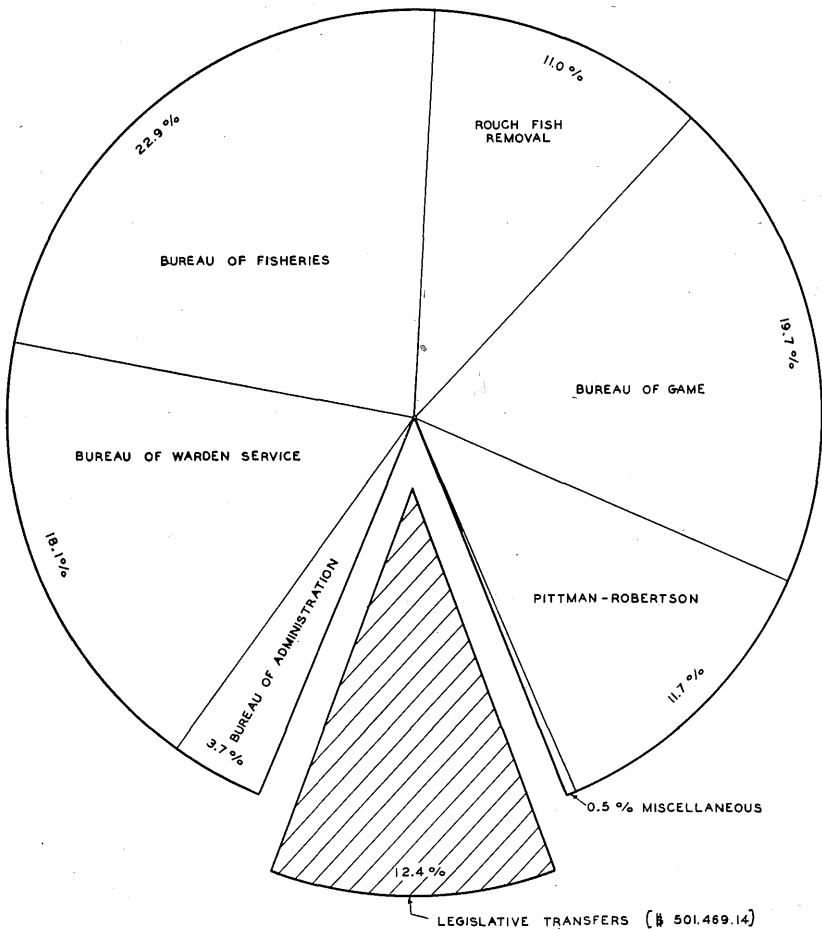


TABLE 34
DIVISION EXPENDITURES AND TRANSFERS
Fiscal Year 1950-1951

Activity	Expenditures
Bureau of Administration.....	\$ 150,971.69
Bureau of Warden Service.....	734,940.14
Bureau of Fisheries.....	929,224.52
Rough Fish Removal.....	447,555.94
Bureau of Game.....	797,714.62
Pittman-Robertson	473,363.22
Miscellaneous	21,236.84
Total Expenditures	\$3,555,006.97
Net Legislative Transfers.....	501,469.14
Total	\$4,056,476.11

Graph showing all sources of expenditures with percentage of total from each
Fiscal Year 1951-1952

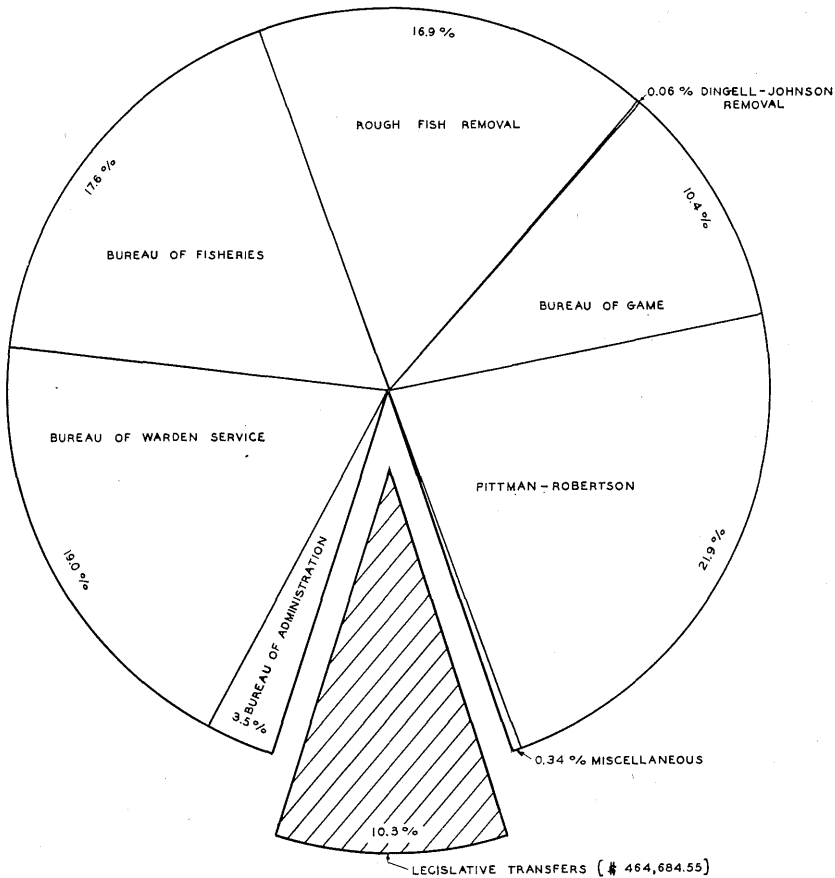


TABLE 35
DIVISION EXPENDITURES AND TRANSFERS
Fiscal Year 1951-1952

Activity	Expenditures
Bureau of Administration.....	\$ 157,972.76
Bureau of Warden Service.....	856,742.87
Bureau of Fisheries.....	790,007.49
Rough Fish Removal.....	757,129.66
Dingell-Johnson Revolving	2,688.24
Bureau of Game.....	469,339.42
Pittman-Robertson	985,103.13
Miscellaneous	14,780.23
Total Expenditures	\$4,033,763.80
Net Legislative Transfers.....	464,684.55
Total	\$4,498,448.35

Graph showing all sources of revenue with percentage of total from each
Fiscal Year 1950-1951

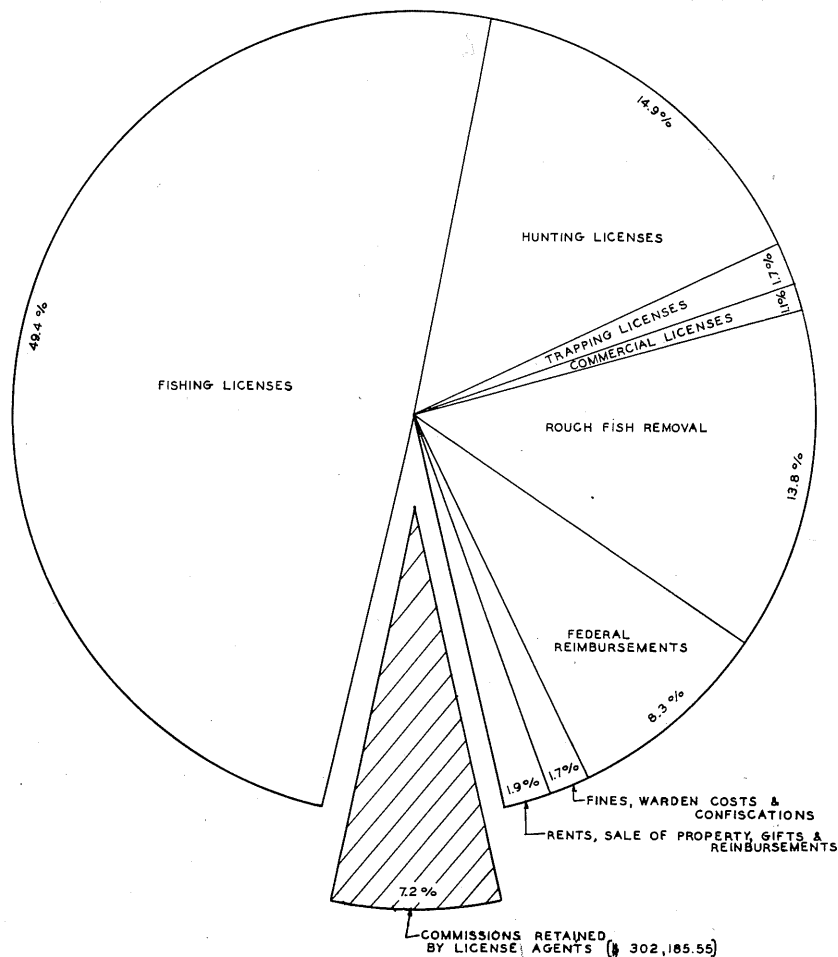


TABLE 36
DIVISION INCOME
Fiscal Year 1950-1951

Source	Gross Income	Commissions on License Sales	Net Income
Fishing Licenses	\$2,305,368.50	\$228,127.85	\$2,077,240.65
Hunting Licenses	697,240.01	69,077.90	628,162.11
Trapping Licenses	74,583.00	4,979.80	69,603.20
Commercial Licenses	46,780.50		46,780.50
Rough Fish Removal (Sale of Fish)	582,513.10		582,513.10
Federal Reimbursements	350,577.31		350,577.31
Fines, Warden Costs and Confiscations	71,704.89		71,704.89
Rents, Sale of Property, Gifts and Miscellaneous	77,710.26		77,710.26
Totals.....	\$4,206,477.57	\$302,185.55	\$3,904,292.02

Graph showing all sources of revenue with percentage of total from each
Fiscal Year 1951-1952

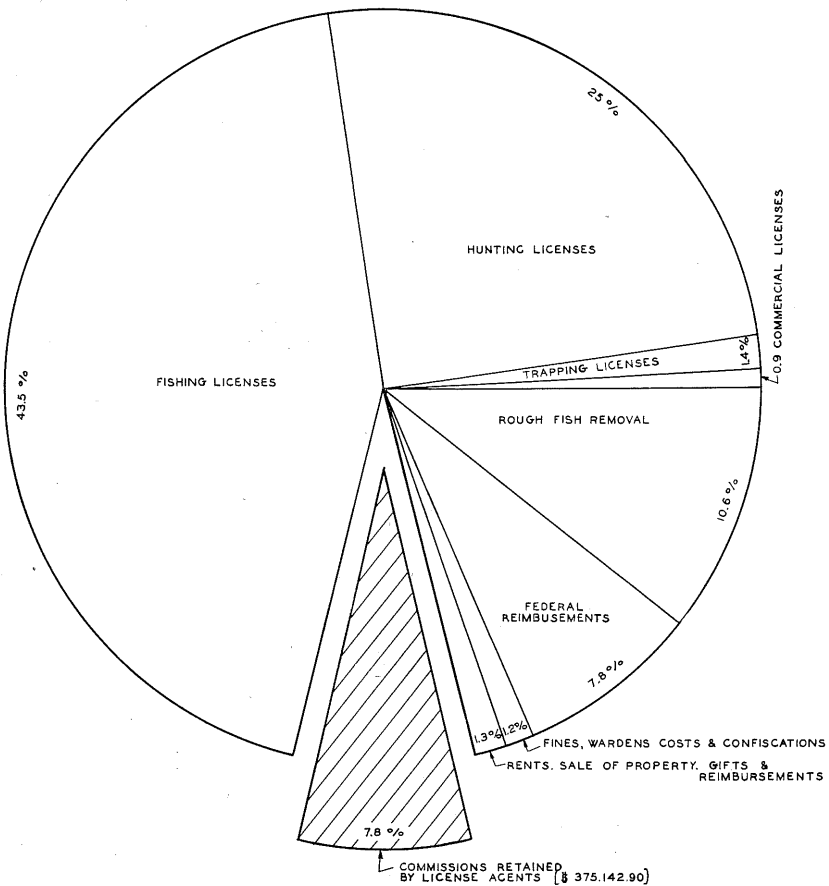


TABLE 37
DIVISION INCOME
Fiscal Year 1951-1952

Source	Gross Income	Commissions on License Sales	Net Income
Fishing Licenses	\$2,341,523.00	\$232,043.07	\$2,109,479.93
Hunting Licenses	1,376,739.75	137,124.03	1,239,615.72
Trapping Licenses	72,820.00	5,975.80	66,844.20
Commercial Licenses	42,200.75		42,200.75
Rough Fish Removal (Sale of Fish)	513,899.05		513,899.05
Federal Reimbursements	379,729.28		379,729.28
Fines, Warden Costs and Confisca- tions	60,009.14		60,009.14
Rents, Sale of Property, Gifts and Miscellaneous	65,293.93		65,293.93
Totals.....	\$4,852,214.90	\$375,142.90	\$4,477,072.00

DEPARTMENT OF CONSERVATION

TABLE NO. 38
RECEIPTS FROM ALL SOURCES BY FUNDS

Fiscal Years 1950-1951 — 1951-1952

FUND	1950-1951		1951-1952	
	No. of Licenses	Amount	No. of Licenses	Amount
Fishing Licenses				
Game and Fish Fund				
Non-Resident Individual	280,465	\$1,011,437.15	286,202	\$1,031,674.37
Non-Resident Combination	1	1.35		
Non-Resident Shipping Coupons.....	12,144	10,929.10	8,898	8,008.60
Non-Resident Ind. Boundary Waters..	245	220.50	308	277.20
Resident Individual	303,538	410,092.50	287,066	387,878.22
Resident Combination	335,549	604,308.45	356,980	642,975.64
Fish House	39,936	35,943.50	38,405	34,566.30
Whitefish Netting—One Net.....	2,828	2,549.40	2,584	2,328.90
Whitefish Netting—Two Nets.....	976	1,761.40	985	1,778.80
Sportsmen				8.10
		\$2,077,240.65		\$2,109,479.93
Hunting Licenses				
Non-Resident Small Game.....	1,598	\$ 35,995.00	1,550	\$ 34,907.50
Non-Resident Deer .....		.01	759	34,356.12
Non-Resident Deer (Bow and Arrow)	1	3.15	52	485.99
Resident Small Game (Old).....	31	56.10		
Resident Small Game (New).....	329,127	591,234.40	329,632	593,698.50
Resident Sportsmen (Old).....	2	9.00		
Resident Sportsmen (New).....	113	864.45		68.40
Resident Deer			181,217	570,953.91
Resident Bow and Arrow.....			1,675	5,282.10
		\$ 628,162.11		\$1,239,615.72
Trapping Licenses				
Resident Trapping	10,750	\$ 28,750.20	17,546	\$ 47,383.20
Beaver Trapping	5,920	13,320.00	2,884	6,489.00
Beaver Permits	200	500.00	208	520.00
Beaver Seals	27,033	27,033.00	12,452	12,452.00
		\$ 69,603.20		\$ 66,844.20
Commercial Licenses				
Minnow Dealer, Local.....	\$ 7,302.50		\$ 7,207.50	
Minnow Dealer, Itinerant.....	6,025.00		6,650.00	
Minnow Dealer, Itinerant Exchange....	112.50			
Minnow Dealer, Itinerant Helper.....	782.50		820.00	
Minnow Dealer—Itinerant Vehicle.....	440.00		360.00	
Lake Superior Commercial Fishing.....	2,720.00		2,310.00	
Lake Superior Fish Buyer.....	350.00		300.00	
International Commercial	2,867.50		3,325.00	
International Commercial Helper.....	70.00		80.00	
Wholesale International Fish Buyer....	300.00		400.00	
International Fish Peddler.....	55.00		50.00	
International Fish Buyer.....	30.00		20.00	
Minnesota and Mississippi River				
Set Line	9.00		14.00	
Inland Mississippi River Commercial				
Fishing	40.00		70.00	
Inland Mississippi River Commercial				
Helper	20.00		30.00	
Interstate Commercial Fishing.....	2,354.50		2,383.00	
Interstate Identification Tags.....	129.00		144.25	
Interstate Commercial Fishing Helper	240.00		145.00	
Resident Mussel	20.00		15.00	
Resident Supplemental Raw Fur				
Dealer			10.00	
Resident Raw Fur Dealer (\$ 20.00).....	7,020.00		6,780.00	
Resident Raw Fur Dealer (\$200.00).....	1,400.00		1,000.00	
Non-Resident Raw Fur Dealer.....	1,600.00		1,200.00	
Resident Taxidermist	140.00		152.00	
Game Breeders	915.00		855.00	
Private Fish Hatchery.....	400.00		450.00	
Wild Rice Buyer.....	3,100.00		3,240.00	
Net Retaining Seals.....	1,986.00		1,887.00	
Fur Tanning and Dressing.....	4.00		4.00	

DIVISION OF GAME AND FISH

93

RECEIPTS FROM ALL SOURCES BY FUNDS

FUND	Fiscal Years 1950-1951 — 1951-1952	
	1950-1951	1951-1952
Wild Rice Harvesting.....	1,383.00	2,299.00
Wild Rice Boat Tags.....	3,965.00	.....
	\$ 46,780.50	\$ 42,200.75
Rents	\$ 435.00	\$ 508.00
Fines	27,769.22	30,097.83
Wardens Costs	1,862.18	1,780.88
Confiscations	7,150.10	10,938.17
Sale of Guns, Fishing Tackle, etc.....	6,892.50	4,701.00
Sale of Furs	16,951.15	7,673.38
Sale of Waste Paper	23.67	19.64
Refunds	182.62	11.83
Suspense	4.80	27.89
Reimbursement—Employee Services.....	67.63	.....
	\$ 61,338.87	\$ 55,758.62
Total Receipts	\$2,883,125.33	\$3,513,899.22
Less ½ Hunting and Trapping License Receipts to Public Shooting Grounds	— 348,728.31	— 653,229.96
	\$2,534,397.02	\$2,860,669.26
Less 60% Resident Fishing License Receipts to State Fish Propagation Fund	— 608,733.18	— 618,512.31
Total Game and Fish Fund.....	\$1,925,663.84	\$2,242,156.95
Permittee Trappers Refunds		
Sale of Furs.....	\$ 11,079.74	\$ 4,817.88
	\$ 11,079.74	\$ 4,817.88
Bureau of Fisheries		
60% of Resident Fishing Licenses.....	\$608,733.18	\$618,512.31
Rents	3,240.00	3,578.50
Sale of Waste Paper, etc.....	116.08	.....
Sale of Fish	298.20	225.70
Sale of Buildings.....	127.00	.....
Refunds .....	.....	13.93
Sale of Equipment	128.00	2,731.65
Contributions .....	.....	2,395.00
Sale of Land .....	.....	1,097.00
Sportsmen .....	.....	— 8.10
Reimbursement—Equipment Rental, etc. ....	.....	4,985.00
Miscellaneous .....	.....	2.19
	\$ 612,642.46	\$ 633,533.18
Public Shooting Grounds		
50% Hunting and Trapping Licenses.....	\$348,728.31	\$653,229.96
Pelt Tags and Seals.....	2,040.50	587.00
Rents	11,744.81	15,968.99
Sale of Furs.....	3,515.57	1,927.22
Sale of Buildings.....	4,213.75	7,066.50
Sale of Hay, Timber, Trees, Plants, etc.	3,448.42	.....
Sale of Land	30,102.00	.....
Refund	1,965.35	17.00
Sale of Natural Increments.....	.....	3,377.98
Sale of Equipment	1,500.00	40.00
Reimbursement—Equipment Rental.....	897.47	4,766.59
Reimbursement—Employee Services	3,277.50	460.48
Sale of Waste Paper, Junk, etc.....	1,947.90	.....
Miscellaneous	584.70	.....
	\$413,966.28	\$687,441.72
Public Shooting Grounds (County Share)		
Rents	\$ 2,893.96	\$ 4,154.43
Crop Share, Sale of Gravel, etc.....	799.55	.....
Sale of Natural Increments.....	.....	2,083.68
	\$ 3,693.51	\$ 6,238.11

DEPARTMENT OF CONSERVATION

RECEIPTS FROM ALL SOURCES BY FUNDS

FUND	Fiscal Years 1950-1951 — 1951-1952		1951-1952
	1950-1951		
Rough Fish Removal Revolving Contract Fishing			
Sale of Fish.....	\$386,492.40		\$326,361.11
Sale of Boxes.....	151.95		96.75
		\$ 386,644.35	\$ 326,457.86
Bullhead Fishing			
Sale of Fish.....	\$ 99,261.11		\$ 75,162.00
Sale of Boxes.....			.50
		\$ 99,261.11	\$ 75,162.50
Day Labor			
Sale of Fish.....	\$ 96,499.12		\$112,001.49
Sale of Boxes.....	27.15		108.30
Sale of Equipment.....	70.80		160.00
Refunds	9.57		8.90
		\$ 96,607.64	\$ 112,278.69
Pittman-Robertson Revolving Research			
Federal Reimbursement	\$ 81,349.88		\$ 79,082.27
		\$ 81,349.88	\$ 79,082.27
Refuges			
Federal Reimbursement	\$269,211.20		\$300,647.01
Refund	16.23		
		\$ 269,227.43	\$ 300,647.01
Beltrami Island Federal Lease			
Rents	\$ 597.50		\$ 794.25
Sale of Timber, Hay, etc.....	3,447.64		8,461.58
Trespass Fee	110.64		
		\$ 4,155.78	\$ 9,255.83
Total Receipts		\$3,904,292.02	\$4,477,072.00

TABLE NO. 39
SUMMARY OF FUNDS
Fiscal Year 1950-1951

ACCOUNT	Cash Balance July 1, 1950	Previous Years Encum- brances Liquidated	Unencum- bered Balance July 1, 1950	Receipts	TRANSFERS		Current Year Disburse- ments	Cash Balance June 30, 1951	Unliqui- dated Encum- brances 1950-1951	Total Expenditures 1950-1951	Unliqui- dated Encum- brances Prior Years	Free Balance June 30, 1951
					Out	In						
Game and Fish Fund	\$1,145,511.42	\$ 35,736.62	\$1,109,774.80	\$1,925,663.84	\$1,224,721.43	\$ 70,000.00	\$ 773,257.77	\$1,107,459.44	\$112,654.06	\$ 885,911.83		\$ 994,805.38
Permittee Trappers Refunds .....	.10		.10	11,079.74	.10		11,079.74			11,079.74		
Auditors and Agents Refunds	1,202.91	1,202.91				9,514.59	7,314.24	2,200.35	2,200.35	9,514.59		
State Fish Propagation	567,730.60	314,268.67	253,461.93	612,642.46	33,179.28	381,830.00	575,864.12	638,890.99	353,360.40	929,224.52	\$68,164.14	217,366.45
Public Shooting Grounds	788,275.60	120,931.72	667,343.88	413,966.28	16,495.96	5,500.00	343,146.32	727,167.88	104,409.62	447,555.94	18,324.00	604,434.26
Public Shooting Grounds (County Share)	2,655.01		2,655.01	3,693.51				6,348.52				6 348.52
State Rough Fish Removal Revolving												
Contract Fishing	65,093.91	25,073.32	40,020.59	386,644.35			339,260.69	87,404.25	13,858.30	353,118.99		73,545.95
Bullhead Fishing	14,968.71	244.39	14,724.32	99,261.11			97,283.14	16,702.29	41.80	97,324.94		16,660.49
Day Labor Fishing	60,231.33	18,284.13	41,947.20	96,607.64		300,000.00	318,704.80	119,850.04	28,565.89	347,270.69		91,284.15
Pittman-Robertson Research	13,700.83	2,354.59	11,346.24	81,349.88		25,000.00	89,722.14	27,973.98	2,682.82	92,404.96		25,291.16
Pittman-Robertson Refuges	199,138.28	177,583.18	21,555.10	269,227.43		200,000.00	351,886.85	138,895.68	29,071.41	380,958.26		109,824.27
Beltrami Island Federal Lease	1,944.47		1,944.47	4,155.78			159.47	5,940.78		159.47		5,940.78
Misc. Legislative Claims	5,900.00		5,900.00		2,400.00	2,983.04	483.04	6,000.00		483.04		6,000.00
Game and Fish Contingent Fund	219,500.00		219,500.00		519,500.00	300,000.00						
	\$3,085,853.17	\$695,679.53	2,390,173.64	\$3,904,292.02	\$1,796,296.77	\$1,294,827.63	\$2,908,162.32	\$2,884,834.20	\$646,844.65	\$3,555,006.97	\$86,488.14	\$2,151,501.41

Transfers to Other State Activities

Conservation Administration	\$ 21,574.90
Water Resources	99,216.80
Water Pollution	32,864.40
Forestry Fire Fighting	50,000.00
Bureau of Information	37,281.35
General Revenue	40.30
Legal Bureau	8,759.10
General Administration 5%	132,760.15
Bounties	156,974.38

Return of Unused Transfers

Conservation Administration	\$ 343.62
Water Resources	31,065.23
Water Pollution	1,821.57
Forestry Fire Fighting	2,224.13
Bureau of Information	1,006.02
Legal Bureau	1,041.67

\$1,833,799.01 \$1,833,799.01

TABLE NO. 40
SUMMARY OF FUNDS
Fiscal Year 1951-1952

ACCOUNT	Cash Balance July 1, 1951	Previous Years Encum- brances Liquidated	Unencum- bered Balance July 1, 1951	Receipts	TRANSFERS		Current Year Disburse- ments	Cash Balance June 30, 1952	Unliqui- dated Encum- brances 1951-1952	Total Expenditures 1951-1952	Unliqui- dated Encum- brances Prior Years	Free Balance June 30, 1952
					Out	In						
Game and Fish Fund.....	\$1,107,459.44	\$112,654.06	\$ 994,805.38	\$2,242,156.95	\$1,382,700.71	\$ 33,000.00	\$ 972,022.87	\$ 915,238.75	\$ 41,923.13	\$1,013,946.00		\$ 873,315.62
Permittee Trappers Refunds.....				4,817.88			4,817.88			4,817.88		
Auditors and Agents Refunds.....	2,200.35	2,200.35				9,013.45	9,013.45			9,013.45		
State Fish Propagation.....	638,890.99	391,063.08	247,827.91	633,533.18	33,706.33	330,073.44	643,317.83	534,410.37	146,689.66	790,007.49	\$31,950.56	355,770.15
Public Shooting Grounds.....	727,167.88	80,175.27	646,992.61	687,441.72	57,290.96		377,612.91	899,530.46	91,726.51	469,339.42	42,558.35	765,245.60
Public Shooting Grounds (County Share).....	6,348.52		6,348.52	6,238.11			6,348.52	6,238.11		6,348.52		6,238.11
Wildlife Protection.....						25,000.00		25,000.00				25,000.00
State Rough Fish Removal Revolving.....												
Contract Fishing.....	87,404.25	13,858.30	73,545.95	326,457.86			303,989.07	96,014.74	2,317.33	306,306.40		93,697.41
Bullhead Fishing.....	16,702.29	41.80	16,660.49	75,162.50			79,082.22	12,740.77	644.08	79,726.30		12,096.69
Day Labor Fishing.....	119,850.04	28,565.89	91,284.15	112,278.69		300,000.00	337,602.44	165,960.40	33,494.52	371,096.96		132,465.88
Pittman-Robertson Research.....	27,973.98	2,682.82	25,291.16	79,082.27		50,000.00	106,045.94	48,327.49	2,160.26	108,206.20		46,167.23
Pittman-Robertson Refuges.....	138,895.68	29,071.41	109,824.27	300,647.01		125,000.00	344,059.78	191,411.50	532,837.15	876,896.93		341,425.65
Dingell Johnson Revolving.....						100,000.00	2,603.53	97,396.47	84.71	2,688.24		97,311.76
Beltrami Island Federal Lease.....	5,940.78		5,940.78	9,255.83			1,438.81	13,757.80	279.72	1,718.53		13,478.08
Misc. Legislative Claims.....	6,000.00		6,000.00					6,000.00				6,000.00
Game and Fish Contingent Fund.....					63,073.44	100,000.00		36,926.56				36,926.56
	\$2,884,834.20	\$660,312.98	\$2,224,521.22	\$4,477,072.00	\$1,536,771.44	\$1,072,086.89	\$3,187,955.25	\$3,048,953.42	\$852,157.07	\$4,040,112.32	\$74,508.91	\$2,122,287.44
Transfers to Other State Activities												
Conservation Administration.....						\$ 27,055.60						
General Administration 5%.....						165,071.53						
Division of Waters.....						119,107.70						
Water Pollution.....						36,787.20						
Forestry Fire Fighting.....						50,000.00						
Bureau of Information.....						41,251.60						
Legal Bureau.....						7,996.95						
Bounties.....						70,000.00						
Return of Unused Transfers												
Division of Waters.....				\$ 10,476.55								
Forestry Fire Fighting.....				1,566.83								
Conservation Administration.....				890.26								
Bureau of Information.....				813.61								
Legal Bureau.....				1,932.30								
Water Pollution.....				11,936.48								
Conservation Area (Wildlife Protection).....				25,000.00								
	\$1,589,357.47			\$1,589,357.47								

TABLE NO. 41
EXPENDITURES OF GAME AND FISH FUNDS BY BUREAUS
Fiscal Year 1950-1951

Expenditure Classification	Bureau of Administration	Bureau of Warden Service	Totals
Full Time Employees.....	\$ 91,422.18	\$431,791.93	\$523,214.11
Seasonal Employees.....		909.25	909.25
Sub-Totals.....	\$ 91,422.18	\$432,701.18	\$524,123.36
Rents and Leases.....	40.19	1,019.40	1,059.59
Advertising and Publications.....	2,449.52		2,449.52
Repairs and Maintenance.....	372.54	6,428.12	6,800.66
Bonds and Insurance.....	69.38	9.60	78.98
Printing and Binding.....	29,219.19	270.66	29,489.85
Non-State Employee Service.....	58.50	484.80	543.30
Communication.....	6,120.42	1,919.41	8,039.83
Travel and Subsistence.....	6,493.37	195,354.73	201,848.10
Freight and Express.....	780.64	34.30	814.94
Utility Service.....		146.30	146.30
Other Contractual Service.....	277.77	137.40	415.17
Stationery and Office Supplies.....	6,869.55	4.22	6,873.77
Gas, Lubricants, etc.....		3,595.68	3,595.68
Medical and Hospital Supplies.....	17.13	98.92	116.05
Scientific and Educational Supplies.....	25.00		25.00
Clothing and Sewing Supplies.....		235.76	235.76
Provisions.....		2,041.71	2,041.71
Fuel.....		225.23	225.23
Maintenance and Construction Materials.....	2,469.68	1,666.81	4,136.49
Misc. Materials and Supplies.....	160.41	2,064.48	2,224.89
Annuities and Pensions.....	34.68	2,367.54	2,402.22
Contributions and Rewards.....	2,970.31	13,105.66	16,075.97
Buildings and Improvements.....	648.00	55,000.00	55,648.00
Furniture and Fixtures.....	407.67	80.97	488.64
Other Equipment.....	65.56	15,875.21	15,940.77
Stores for Resale.....		72.05	72.05
Totals.....	\$150,971.69	\$734,940.14	\$885,911.83

TABLE NO. 42
EXPENDITURES OF GAME AND FISH FUNDS BY BUREAUS
Fiscal Year 1951-1952

Expenditure Classification	Bureau of Administra- tion	Bureau of Warden Service	Construction Revolving	Totals
Full Time Employees	\$105,660.37	\$509,966.54	(\$747.58)	\$614,879.33
Rents and Leases	45.00	684.80		729.80
Advertising and Publications	1,729.00	277.80		2,006.80
Repairs and Maintenance	252.10	4,805.58		5,057.68
Bonds and Insurance	91.04	285.55		376.59
Printing and Binding	21,274.84	118.67		21,393.51
Non-State Employee Service	50.00	872.29		922.29
Communications	7,615.83	2,500.00		10,115.83
Travel and Subsistence	6,391.80	208,206.81		214,598.61
Freight and Express	1,001.40	9.49		1,010.89
Utility Service		225.00		225.00
Other Contractual Services	174.12	612.62		786.74
Stationery and Office Supplies	6,733.70	667.86		7,401.56
Gasoline, Lubricants, etc.		4,082.77		4,082.77
Medical and Hospital Supplies		292.84		292.84
Scientific and Educational Supplies	102.00			102.00
Clothing and Sewing Supplies		14,024.30		14,024.30
Fuel		332.62		332.62
Maintenance and Constr. Materials	2,012.16	756.82		2,768.98
Misc. Materials and Supplies	318.93	2,214.48		2,533.41
Annuities and Pensions	10.65	7,136.27		7,146.92
Contributions and Rewards	3,845.43	18,829.23	(22.05)	22,652.61
Land and Interest in Land		200.00		200.00
Buildings and Improvements		7,664.72		7,664.72
Furniture and Fixtures	664.39	229.66		894.05
Other Equipment		71,594.73		71,594.73
Stores for Resale		151.42		151.42
Totals	\$157,972.76	\$856,742.87	(\$769.63)	\$1,013,946.00

TABLE NO. 43
EXPENDITURES FOR BUREAU OF FISHERIES BY ACTIVITIES
Fiscal Year 1950-1951

Expenditure Classification	Lake and Stream Improvement	Natural Propagation	License Fishing	Fisheries Research	Artificial Propagation	Totals
Full Time Employees.....	\$ 31,493.11	\$ 18,093.27	\$1,479.33	\$51,847.05	\$195,659.28	\$298,572.04
Part Time Employees.....	175.00				1,650.00	1,825.00
Seasonal Employees.....	20,128.74	4,065.24		11,105.44	27,112.73	62,412.15
Sub-Totals.....	\$ 51,796.85	\$22,158.51	\$1,479.33	\$62,952.49	\$224,422.01	\$362,809.19
Rents and Leases.....	159.50			2,567.46	610.08	3,337.04
Repairs and Maintenance.....	1,176.63	88.60		666.39	7,458.83	9,390.45
Bonds and Insurance.....				1.42	7.71	9.13
Printing and Binding.....	175.79	113.90	88.50	170.25	197.77	746.21
Non-State Employee Service.....				157.23	39.60	196.83
Communications.....	123.90	22.00		332.07	3,532.57	4,010.54
Travel and Subsistence.....	8,601.88	2,180.17		9,279.36	15,901.23	35,962.64
Freight and Express.....	15.50			146.55	333.94	495.99
Utility Service.....				483.05	6,627.02	7,110.07
Other Contractual Service.....	226.55			193.51	333.82	753.88
Stationery and Office Supplies.....	68.08			355.22	306.23	729.53
Gasoline, Lubricants, etc.....	3,411.76			1,948.60	15,132.13	20,492.49
Medical & Hospital Supplies.....					61.87	61.87
Scientific and Educational Supplies.....				1,026.90	36.36	1,063.26
Clothing and Sewing Supplies.....	349.55	65.00		154.51	1,592.11	2,161.17
Provisions.....					549.45	549.45
Forage and Care of Animals.....				24.35	27,765.72	27,790.07
Fuel.....					7,668.94	7,668.94
Maintenance and Constr. Materials.....	10,113.88	970.94		116.57	17,528.54	28,729.93
Misc. Materials and Supplies.....	1,570.45	421.99		2,993.65	12,487.36	17,473.45
Annuities and Pensions.....	159.73			21.02	663.97	844.72
Contributions and Rewards.....	1,182.25	601.83	44.38	1,579.97	6,094.05	9,502.48
Land and Interests in Land.....	572.50				13,064.40	13,636.90
Buildings and Improvements.....	114,413.55				228,425.10	342,838.65
Motor Vehicles.....	3,377.80			1,375.00	6,778.90	11,531.70
Furniture and Fixtures.....	95.73			178.50	872.36	1,146.59
Livestock.....					2,040.00	2,040.00
Other Equipment.....	395.58	491.60		254.02	15,000.15	16,141.35
Totals.....	\$197,987.46	\$27,114.54	\$1,612.21	\$86,978.09	\$615,532.22	\$929,224.52

TABLE NO. 44
EXPENDITURES OF BUREAU OF FISHERIES BY ACTIVITY
Fiscal Year 1951-1952

Expenditure Classification	Lake and Stream Improvement	Fisheries Research	Fisheries General	Totals
Full Time Employees.....	\$ 36,664.88	\$ 57,270.04	\$269,473.72	\$363,408.64
Part Time Employees.....	.....	959.00	3,137.37	4,096.37
Seasonal Employees.....	18,638.92	10,864.47	25,214.52	54,717.91
Sub-Totals.....	\$ 55,303.80	\$ 69,093.51	\$297,825.61	\$422,222.92
Rents and Leases.....	443.75	3,115.26	763.50	4,322.51
Advertising and Publications.....	.....	.....	1,319.80	1,319.80
Repairs and Maintenance.....	1,155.34	2,681.15	5,847.21	9,683.70
Bonds and Insurance.....	17.19	17.19	81.18	115.56
Printing and Binding.....	20.00	319.73	2,806.50	3,146.23
Non-State Employee Service.....	.....	35.10	406.44	441.54
Communications.....	495.00	399.04	3,815.00	4,709.04
Travel and Subsistence.....	10,546.05	10,270.44	21,027.63	41,844.12
Freight and Express.....	70.00	225.00	400.00	695.00
Utility Services.....	.....	433.17	7,945.00	8,378.17
Other Contractual Services.....	135.00	400.00	435.00	970.00
Stationery and Office Supplies.....	272.97	633.69	646.20	1,552.86
Gasoline, Lubricants, etc.....	2,824.45	2,263.21	16,173.15	21,260.81
Medical and Hospital Supplies.....	16.66	16.90	228.97	262.53
Scientific and Educational Supplies.....	.....	819.44	554.92	1,374.36
Clothing and Sewing Supplies.....	297.42	95.22	2,059.82	2,452.46
Forage and Care of Animals.....	.....	.....	24,715.13	24,715.13
Fuel.....	.....	.....	8,229.74	8,229.74
Maintenance and Constr. Materials.....	4,736.17	133.12	9,454.39	14,323.68
Misc. Materials and Supplies.....	2,762.58	2,391.79	19,966.52	25,120.89
Annuities and Pensions.....	119.28	5.33	292.40	417.01
Contributions and Rewards.....	1,949.43	2,458.58	10,632.72	15,040.73
Land and Interest in Land.....	2,500.00	.....	.....	2,500.00
Buildings and Improvements.....	39,992.10	.....	88,261.24	128,253.34
Motor Vehicles.....	.....	3,483.28	6,773.70	10,256.98
Furniture and Fixtures.....	69.75	354.10	810.10	1,233.95
Educational and Scientific.....	.....	3,173.66	1,374.20	4,547.86
Livestock.....	.....	.....	322.50	322.50
Other Equipment.....	12,822.12	930.46	16,541.49	30,294.07
Totals.....	\$136,549.06	\$103,748.37	\$549,710.06	\$790,007.49

DIVISION OF GAME AND FISH

101

TABLE NO. 45
EXPENDITURES OF PUBLIC SHOOTING GROUNDS FUND BY ACTIVITY
Fiscal Year 1950-1951

Expenditure Classification	Game Farms and General	Game Refuges	Totals
Full Time Employees.....	\$ 80,517.72	\$ 88,488.17	\$169,005.89
Part Time Employees.....	1,471.05	.....	1,471.05
Seasonal Employees.....	11,916.56	31,903.13	43,819.69
Sub-Totals.....	\$ 93,905.33	\$120,391.30	\$214,296.63
Rents and Leases.....	75,335.10	17.83	75,352.93
Advertising and Publications.....	14.40	310.40	324.80
Repairs and Maintenance.....	676.20	3,150.30	3,826.50
Bonds and Insurance.....	1.42	.....	1.42
Printing and Binding.....	373.28	604.25	977.53
Non-State Employee Service.....	388.93	2,301.44	2,690.37
Communications.....	695.62	582.92	1,278.54
Travel and Subsistence.....	6,415.56	16,701.50	23,117.06
Freight and Express.....	77.75	74.42	152.17
Utility Service.....	1,927.96	953.17	2,881.13
Other Contractual Service.....	473.56	318.38	791.94
Stationery and Office Supplies.....	84.98	227.81	312.79
Gasoline, Lubricants, etc.....	3,571.50	8,372.44	11,943.94
Medical and Hospital Supplies.....	485.53	40.11	525.64
Scientific and Educational Supplies.....	719.44	.....	719.44
Clothing and Sewing Supplies.....	176.40	156.00	332.40
Provisions.....	.....	325.60	325.60
Forage and Care of Animals.....	18,070.30	255.78	18,326.08
Fuel.....	4,400.65	1,412.10	5,812.75
Maintenance and Constr. Materials.....	4,177.74	8,207.37	12,385.11
Misc. Materials and Supplies.....	13,263.95	12,646.27	25,910.22
Annuities and Pensions.....	38.09	1,288.17	1,326.26
Contributions and Rewards.....	2,658.07	3,022.35	5,680.42
Land and Interest in Land.....	.....	3,271.30	3,271.30
Buildings and Improvements.....	967.35	16,489.72	17,457.07
Motor Vehicles.....	4,811.69	8,368.32	13,180.01
Furniture and Fixtures.....	1,624.76	1,054.11	2,678.87
Other Equipment.....	887.58	768.44	1,656.02
Refund of Income Receipts.....	.....	21.00	21.00
Totals.....	\$236,223.14	\$211,332.80	\$447,555.94

TABLE NO. 46
EXPENDITURES OF PUBLIC SHOOTING GROUNDS FUND BY ACTIVITY
Fiscal Year 1951-1952

Expenditure Classification	Game Farms and General	Game Refuges	Totals
Full Time Employees.....	\$ 96,890.18	\$ 98,725.51	\$195,615.69
Part Time Employees.....	1,591.98	.....	1,591.98
Seasonal Employees.....	15,237.47	41,274.04	56,511.51
Sub-Totals.....	\$113,719.63	\$139,999.55	\$253,719.18
Rents and Leases.....	50,228.40	49.50	50,277.90
Advertising and Publications.....	.....	203.60	203.60
Repairs and Maintenance.....	1,178.97	2,195.52	3,374.49
Bonds and Insurance.....	19.10	44.25	63.35
Printing and Binding.....	.....	425.61	425.61
Non-State Employee Service.....	221.88	1,462.62	1,684.50
Communications.....	458.95	620.07	1,079.02
Travel and Subsistence.....	10,695.76	18,403.14	29,098.90
Freight and Express.....	192.98	97.25	290.23
Utility Service.....	2,284.83	1,249.51	3,534.34
Other Contractual Services.....	563.32	398.96	962.28
Stationery and Office Supplies.....	288.20	246.69	534.89
Gasoline, Lubricants, etc.....	3,644.25	8,927.44	12,571.69
Medical and Hospital Supplies.....	249.27	53.46	302.73
Scientific and Educational Supplies.....	9.00	.....	9.00
Clothing and Sewing Supplies.....	.....	2,502.68	2,502.68
Forage and Care of Animals.....	32,037.85	98.32	32,136.17
Fuel.....	4,988.17	1,973.23	6,961.40
Maintenance and Constr. Materials.....	4,985.22	8,841.14	13,826.36
Misc. Materials and Supplies.....	4,272.53	15,840.81	20,113.34
Annuities and Pensions.....	98.51	1,640.18	1,738.69
Contributions and Rewards.....	4,112.00	5,284.58	9,396.58
Land and Interest in Land.....	.....	6,540.00	6,540.00
Buildings and Improvements.....	.....	1,867.50	1,867.50
Motor Vehicles.....	.....	8,156.65	8,156.65
Furniture and Fixtures.....	.....	154.00	154.00
Other Equipment.....	1,387.44	6,426.90	7,814.34
Totals.....	\$235,636.26	\$233,703.16	\$469,339.42

TABLE NO. 47
EXPENDITURES OF ROUGH FISH REMOVAL OPERATIONS BY ACTIVITY
Fiscal Year 1950-1951

Expenditure Classification	Contract Fishing	Bullhead Fishing	Day Labor	Totals
Full Time Employees.....	\$ 7,257.00	\$ 7,227.00	\$ 11,225.71	\$ 25,709.71
Seasonal Employees.....	20,789.54	3,628.47	237,188.98	261,606.99
Sub-Totals.....	\$ 28,046.54	\$ 10,855.47	\$248,414.69	\$287,316.70
Rents and Leases.....			5,207.75	5,207.75
Advertising and Publications.....	182.30	42.00		224.30
Repairs and Maintenance.....		20.02	1,842.07	1,862.09
Bonds and Insurance.....		1.42		1.42
Printing and Binding.....	124.13	123.86	257.20	505.19
Non-State Employee Service.....	32.30		123.85	156.15
Communications.....	767.07	1,050.20	1,943.22	3,760.49
Travel and Subsistence.....	9,791.54	2,858.01	13,500.50	26,150.05
Freight and Express.....			6.27	6.27
Utility Service.....			810.44	810.44
Other Contractual Service.....	322.32	31.65	415.62	769.59
Stationery and Office Supplies.....	265.68	5.70	226.26	497.64
Gasoline, Lubricants, etc.....		11.98	10,725.36	10,737.34
Medical and Hospital Supplies.....			128.13	128.13
Clothing and Sewing Supplies.....			1,152.29	1,152.29
Forage and Care of Animals.....			33.00	33.00
Fuel.....		71.60	4,299.95	4,371.55
Maintenance and Constr. Materials.....			4,618.26	4,618.26
Misc. Material and Supplies.....		34.03	10,435.58	10,469.61
Annuities and Pensions.....	1,860.77	39.23	2,064.79	3,464.79
Contributions and Rewards.....	827.87	2,708.71	7,223.79	10,760.37
Motor Vehicles.....			9,366.00	9,366.00
Furniture and Fixtures.....		47.00	479.50	526.50
Other Equipment.....			21,767.57	21,767.57
Stores for Resale.....			2,228.60	2,228.60
Repayment of Deposits.....	311,398.47	79,424.06		390,822.53
Totals.....	\$353,118.99	\$97,324.94	\$347,270.69	\$797,714.62

TABLE NO. 48
EXPENDITURES OF ROUGH FISH REMOVAL OPERATIONS BY ACTIVITY
Fiscal Year 1951-1952

Expenditure Classification	Contract Fishing	Bullhead Fishing	Day Labor	Totals
Full Time Employees.....	\$ 8,367.50	\$ 8,348.25	\$ 15,259.00	\$ 31,974.75
Seasonal Employees.....	19,022.92	3,689.55	260,104.54	282,817.01
Sub-Totals.....	\$ 27,390.42	\$ 12,037.80	\$275,363.54	\$314,791.76
Rents and Leases.....			6,032.83	6,032.88
Advertising and Publications.....	192.10	42.60		234.70
Repairs and Maintenance.....	19.99		1,991.75	2,011.74
Bonds and Insurance.....	38.20	8.60	70.67	117.47
Printing and Binding.....	140.25			140.25
Non-State Employee Service.....			28.75	28.75
Communications.....	1,453.28	1,226.80	1,424.04	4,104.12
Travel and Subsistence.....	10,187.24	2,767.21	12,780.70	25,735.15
Freight and Express.....			24.14	24.14
Utility Service.....			812.86	812.86
Other Contractual Services.....	324.35	29.95	301.77	656.07
Stationery and Office Supplies.....	64.64	111.81	214.18	390.63
Gasoline, Lubricants, etc.....	165.92	28.17	11,406.22	11,600.31
Medical and Hospital Supplies.....			67.31	67.31
Clothing and Sewing Supplies.....			830.88	830.88
Fuel.....		103.35	4,074.57	4,177.92
Maintenance and Constr. Materials.....		1.35	5,861.56	5,862.91
Misc. Materials and Supplies.....	11.00	44.47	9,857.13	9,912.60
Annuities and Pensions.....		457.58	5,735.43	6,193.01
Contributions and Rewards.....	1,025.11	2,637.35	9,951.99	13,614.45
Motor Vehicles.....	3,056.46		6,452.40	9,508.86
Furniture and Fixtures.....	144.00	100.00	156.90	400.90
Other Equipment.....	33.12		16,922.29	16,955.41
Stores for Resale.....			735.00	735.00
Repayment of Deposits.....	262,060.32	60,129.26		322,189.58
Totals.....	\$306,306.40	\$79,726.30	\$371,096.96	\$757,129.66

TABLE NO. 49
EXPENDITURES FOR ALL PURPOSES BY CLASSIFICATION
Fiscal Year 1950-1951

Expenditure Classification	Game and Fish Fund	Permittee Trappers Refunds	Auditor and Agents Refunds	Fisheries Bureau	Public Shooting Grounds	Rough Fish Removal Revolving	Pittman Robertson Research	Pittman Robertson Refugees	Beltrami Island Federal Lease	Legislative Claims	Totals
Full Time Employees.....	\$523,214.11			\$298,572.04	\$169,005.89	\$ 25,709.71	\$51,841.48	\$ 56,164.97			\$1,124,508.20
Part Time Employees.....				1,825.00	1,471.05		1,606.65	200.00			5,102.70
Seasonal Employees.....	909.25			62,412.15	43,819.69	261,606.99	6,989.68	4,938.11			380,675.87
Sub-Totals.....	\$524,123.36			\$362,809.19	\$214,296.63	\$287,316.70	\$60,437.81	\$ 61,303.08			\$1,510,286.77
Rents and Leases.....	1,059.59			3,337.04	75,352.93	5,207.75	3,311.87	4,782.63			93,051.81
Advertising and Publications.....	2,449.52				324.80	224.30					2,998.62
Repairs and Maintenance.....	6,800.66			9,390.45	3,826.50	1,862.09	141.18				22,020.88
Bonds and Insurance.....	78.93			9.13	1.42	1.42		7.00			97.95
Printing and Binding.....	29,489.85			746.21	977.53	505.19	801.83	682.54			33,203.15
Non-State Employee Service.....	543.30			196.83	2,690.37	156.15					3,586.65
Communications.....	8,039.83			4,010.54	1,278.54	3,760.49	1,090.30	1,535.58			19,715.28
Travel and Subsistence.....	201,848.10			35,962.64	23,117.06	26,150.05	22,616.50	15,569.10			325,263.45
Freight and Express.....	814.04			495.99	152.17	6.27	14.98	12.30			1,496.65
Utility Service.....	146.30			7,110.07	2,881.13	810.44		243.60			11,191.54
Other Contractual Service.....	415.17			753.88	791.94	769.59		35.75			2,766.33
Stationery and Office Supplies.....	6,873.77			729.53	312.79	497.64	467.54	373.99			9,255.26
Gasoline, Lubricants, etc.....	3,595.68			20,492.49	11,943.94	10,737.34					46,769.45
Medical and Hospital Supplies.....	116.05			61.87	525.64	128.13	2.35	14.80			848.84
Scientific and Educational Supplies.....	25.00			1,063.26	719.44		283.13	44.87			2,135.70
Clothing and Sewing Supplies.....	235.76			2,161.17	332.40	1,152.29					3,881.62
Provisions.....	2,041.71			549.45	325.60						2,916.76
Forage and Care of Animals.....				27,790.07	18,326.08	33.00	4.25				46,153.40
Fuel.....	225.23			7,668.94	5,812.75	4,371.55					18,078.47
Maintenance and Constr. Materials.....	4,136.49			28,729.93	12,385.11	4,618.26	396.44	94.44			50,360.67
Misc. Materials and Supplies.....	2,224.89			17,473.45	25,910.22	10,469.61	161.44	37,232.77			93,472.38
Annuities and Pensions.....	2,402.22			844.72	1,326.26	3,464.79	14.71				8,052.70
Contributions and Rewards.....	16,075.97			9,502.48	5,680.42	10,760.37	1,585.87	1,610.99			45,216.10
Land and Interests in Land.....				13,636.90	3,271.30			176,776.91			193,685.11
Buildings and Improvements.....	55,648.00			342,838.65	17,457.07			79,490.55			495,434.27
Motor Vehicles.....				11,531.70	13,180.01	9,366.00					34,077.71
Furniture and Fixtures.....	488.64			1,146.59	2,678.87	526.50	686.40	690.00			6,217.00
Educational and Scientific.....							296.80	372.30			669.10
Livestock.....				2,040.00							2,040.00
Other Equipment.....	15,940.77			16,141.35	1,656.02	21,767.57	91.56	85.06			55,682.33
Stores for Resale.....	72.05					2,228.60					2,300.65
Repayments of Deposits.....						390,822.53					390,822.53
Refund of Income Receipts.....		\$11,079.74	\$9,514.59		21.00				\$159.47	\$483.04	21,257.84
Totals.....	\$885,911.83	\$11,079.74	\$9,514.59	\$929,224.52	\$447,555.94	\$797,714.62	\$92,404.96	\$380,958.26	\$159.47	\$483.04	\$3,555,006.97

TABLE NO. 50
EXPENDITURES FOR ALL PURPOSES BY CLASSIFICATION
Fiscal Year 1951-1952

Expenditure Classification	Game and Fish Fund	Permittee Trappers Refunds	Auditor and Agents Refunds	Fisheries Bureau	Public Shooting Grounds	Rough Fish Removal Revolving	Pittman Robertson Research	Pittman Robertson Refuges	Dingell Johnson Revolving	Beltrami Island Federal Lease	Totals
Full Time Employees.....	\$ 614,879.33			\$363,408.64	\$195,615.69	\$ 31,974.75	\$ 63,035.04	\$ 65,922.58	\$2,030.00	\$ 735.00	\$1,337,601.03
Part Time Employees.....				4,096.37	1,591.98		2,208.80	150.00			8,047.15
Seasonal Employees.....				54,717.91	56,511.51	282,817.01	7,750.59	13,380.19		923.82	416,101.03
Sub-Totals.....	\$ 614,879.33			\$422,222.92	\$253,719.18	\$314,791.76	\$ 72,994.43	\$ 79,452.77	\$2,030.00	\$1,658.82	\$1,761,749.21
Rents and Leases.....	729.80			4,322.51	50,277.90	6,032.88	1,756.50	7,824.95			70,944.54
Advertising and Publications.....	2,006.80			1,319.80	203.60	234.70					3,764.90
Repairs and Maintenance.....	5,057.68			9,683.70	3,374.49	2,011.74	144.35				20,271.96
Bonds and Insurance.....	376.59			115.56	63.35	117.47	13.37	24.51	1.91		712.76
Printing and Binding.....	21,393.51			3,146.23	425.61	140.25	716.80	584.31	3.69		26,410.40
Non-State Employee Service.....	922.29			441.54	1,684.50	28.75					3,077.08
Communications.....	10,115.83			4,709.04	1,079.02	4,104.12	915.30	1,513.27			22,436.58
Travel and Subsistence.....	214,598.61			41,844.12	29,098.90	25,735.15	26,636.81	22,732.38	133.86		360,779.83
Freight and Express.....	1,010.89			695.00	290.23	24.14	2.89	1.67			2,024.82
Utility Service.....	225.00			8,378.17	3,534.34	812.86		291.27			13,241.64
Other Contractual Services.....	786.74			970.00	962.28	656.07		19.00			3,394.09
Stationery and Office Supplies.....	7,401.56			1,552.86	534.89	390.63	792.95	962.86	20.72		11,656.47
Gas, Lubricants, etc.....	4,082.77			21,260.81	12,571.69	11,600.31					49,515.58
Medical and Hospital Supplies.....	292.84			262.53	302.73	67.31					925.41
Scientific and Educational Supplies.....	102.00			1,374.36	9.00		548.66	106.00	15.65		2,155.67
Clothing and Sewing Supplies.....	14,024.30			2,452.46	2,502.68	830.88			9.16		19,819.48
Provisions.....											
Forage and Care of Animals.....				24,715.13	32,136.17		93.70				56,945.00
Fuel.....	332.62			8,229.74	6,961.40	4,177.92					19,701.68
Maint. and Construction Materials.....	2,768.98			14,323.68	13,826.36	5,862.91	114.63	46.39			36,942.95
Misc. Materials and Supplies.....	2,533.41			25,120.89	20,113.34	9,912.60	154.97	65,809.17			123,644.38
Annuities and Pensions.....	7,146.92			417.01	1,738.69	6,193.01	7.46				15,503.09
Contributions and Rewards.....	22,652.61			15,040.73	9,396.58	13,614.45	2,618.38	2,347.69	72.00	59.71	65,802.15
Land and Interest in Lands.....	200.00			2,500.00	6,540.00			196,026.50			205,266.50
Buildings and Improvements.....	7,664.72			128,253.34	1,867.50			498,928.09			636,713.65
Motor Vehicles.....				10,256.98	8,156.65	9,508.86					27,922.49
Furniture and Fixtures.....	894.05			1,233.95	154.00	400.90	655.25	226.10	401.25		3,965.50
Educational and Scientific.....				4,547.86			39.75				4,587.61
Livestock.....				322.50							322.50
Other Equipment.....	71,594.73			30,294.07	7,814.34	16,955.41					126,658.55
Stores for Resale.....	151.42					735.00					886.42
Repayment of Deposits.....						322,189.58					322,189.58
Refund of Income Receipts.....		\$4,817.88	\$9,013.45								\$13,831.33
Totals.....	\$1,013,946.00	\$4,817.88	\$9,013.45	\$790,007.49	\$469,339.42	\$757,129.66	\$108,206.20	\$876,896.93	\$2,688.24	\$1,718.53	\$4,033,763.80

