MONTANA FISH AND GAME DEPARTMENT
FISHERIES DIVISION

JOB COMPLETION REPORT
RESEARCH PROJECT SEGMENT

State of Montana

Project No. F-7-R-17 Name: Northwest Montana Fishery Study

Job No. 1 Title: Inventory of Waters of the Project Area

Period Covered: July 1, 1967 to April 1, 1968

ABSTRACT:

Fish population surveys were conducted for 15 lakes and 3 streams in District One to provide additional information for the management of these waters. Contour maps of 9 lakes were produced from electronic sonar soundings.

Opening day creel census information was collected for Kilbrennan Lake. An estimated 396 anglers caught 2,808 fish at a catch rate of 1.45 fish per hour. Brook trout comprised 98 percent of the total harvest.

RECOMMENDATIONS:

It is recommended that the project be continued to obtain additional information on chemical, physical and biological characteristics of waters in the project area for purposes of evaluating present and instigating new management practices.

Management recommendations for all lakes are presented in the findings.

OBJECTIVES:

The objective of this project is to obtain biological, chemical and physical data on lakes, streams and reservoirs and to prescribe management practices where needed.

TECHNIQUES USED:

Experimental gill nets of graduated mesh size from 3/4 to 1 inches (bar measure) were used to sample the fish population in lakes. A Mite-lite 110 volt generator in conjunction with a variable voltage pulsator was the power source used for electrofishing to sample stream fish populations.

Individual total lengths and weights of fish were recorded. Lake depths were determined with either a Bendix echo sounder or a Lowrance Fish-Lo-Kator. Tracings of either aerial photos, U.S. Geological Survey maps or Forest Service maps were enlarged with a pantograph and served as base maps. Electronic soundings provided information for bottom contours and were transferred to the outline work map. Reduced copies of the finished lake contour maps were printed and are available for public distribution.

Alkalinity, pH, and conductivity were collected from most lakes surveyed. Dissolved oxygen tests were made where necessary.

Lake survey data are kept on standard file cards at both district and Helena offices.

FINDINGS:

The following fish species were collected from lake and stream surveys conducted between July 1, 1967 and March 31, 1968. Game fish species collected were: rainbow trout (Rb), Salmo gairdneri; cutthroat trout (Ct), Salmo clarki; brook trout (Eb), Salvelinus fontinalis; Dolly Varden (DV), Salvelinus malma; lake trout (LT), Salvelinus namaycush; kokanee (Kok), Oncorhynchus nerka; mountain whitefish (Wf), Prosopium williamsoni. Non-game species found were: yellow perch (YP), Perca flavescens; pumpkinseed (PS), Lepomis gibbosus; northern squawfish (SQ), Ptychocheilus oregonensis; peamouth (CRc), Mylocheilus caurinus; largescale sucker (CSu), Catostomus macrocheilus; longnose sucker (LNSu), Catostomus catostomus. Abbreviations of the common names of fish species listed above are shown in parenthesis.

Lake and stream surveys

Fish population surveys were conducted for 15 lakes and 3 streams in the district where additional data were needed for management.

Contour maps of 9 lakes have been drawn up and printed from sonar depth recordings. Copies of these maps are available at the district office in Kalispell.

Flathead River drainage: Fish population surveys have been conducted for Lagoni, Five, Middle Foy, Mary Ronan and Sunburst Lakes.

An initial population survey was conducted for Lagoni Lake (24 acres), located via jeep trail, 2 miles south of the community of Radnor. This lake has a maximum depth of 27 feet. Gill net data indicated a large population of non-game species, mainly yellow perch and northern squawfish. Game fish species found in order of abundance were mountain whitefish, cutthroat trout and Dolly Varden. The low gradient outlet which drains into Upper Stillwater Lake provides easy access for non-game species to enter Lagoni Lake. No present changes in management are proposed. However, as the need arises for additional trout waters, this lake could be managed for trout by erecting a barrier at the lake outlet and rehabilitating the drainage above the barrier.

Gill net population samples collected from Lake Five showed an abundance of pumpkinseed and few game fish species. Approximately 90% of the fish population was composed of 4-6 inch pumpkinseeds. In recent years cutthroat populations have declined despite stocking efforts. Recommendations have been made to rehabilitate this lake and connecting lakes (Halfmoon and Mud) in the Lake Five drainage in the summer of 1968.

Middle Foy Lake, located 2 miles south west of Kalispell, was sounded and netted to determine the feasibility of managing the lake for rainbow trout. The entire lake bottom is composed of decaying organic material. The lake basin is relatively shallow, having a maximum depth of 15 feet. No fish were collected from two overnight gill net sets. This lake is considered too shallow to sustain fish life through the winter months and at present no consideration will be given to stocking the lake.

Annual fall netting data were collected from Lake Mary Ronan in October, 1967. Mature kokanee ranging in size from 16.9 to 20.2 inches comprised 48 percent of the total catch from five overnight gill net sets while pumpkinseed comprised 52 percent of the catch. Rainbow trout made up less than 1 percent of the catch. Immature kokanee comprised only 2 percent of the total kokanee catch in the fall of 1967 as compared to 44 percent in 1966. It is recommended that spring and fall gill-netting be continued to determine population trends in the relative abundance of game fish species.

Sunburst Lake, one of the largest headwater lakes in the Bob Marshall Wilderness area, has a surface area of 150 acres with a maximum depth of 196 feet. This lake supports an excellent population of large cutthroat trout. An average of 14 trout per net was taken from four overnight net sets. No further management measures are recommended for Sunburst Lake.

Clark Fork drainage: Fish population surveys were conducted for Fish Trap and McGregor Lakes.

Fish Trap Lake was netted to determine the existing fish population. Non-game fish (longnose sucker) comprised 67 percent of the fish population while cutthroat trout comprised the remaining 33 percent. The cutthroat trout were in relatively poor condition, probably due to the competition with a large sucker population. No immediate change in management plans is anticipated.

McGregor Lake was netted in late October, 1967 in an attempt to collect mature lake trout and to evaluate the success of rainbow trout stocking. Lake trout eggs were sought for crossing with male brook trout to produce splake (hybrid). No mature spawning female lake trout were captured. The largest lake trout collected was a 19.0 inch 1.76 pound fish. Rainbow trout continued to show well in the net catch averaging 6.0 fish per net. It is recommended that sub-catchable plants of either rainbow or westslope cutthroat trout be continued on an annual basis.

Kootenai River drainage: Fish population surveys were conducted for Spar, Bull, Upper Cedar, Lower Cedar, Minor, Granite, Upper Sky, Lower Sky Lakes and Vermillion River, Little Beaver and Cherry Creeks.

Spar Lake contained an excellent population of smaller sized lake trout. Lake trout averaging 18.3 fish per net and 13.0 inches in total length were captured from three overnight sets. Kokanee and brook trout made up the remainder of the catch. Sounding records were made in conjunction with the collection of netting data. No changes in management plans are recommended.

Five overnight gill net sets in Bull Lake yielded a total of 176 fish. Rough fish, primarily northern squawfish, comprised 81 percent of the total catch. Mountain whitefish was the most abundant game fish species collected making up 16 percent of the total catch. Other game fish species collected were Dolly Varden, kokanee and rainbow trout. Hathcery stocking to improve fishing has not been successful in former years probably because of the large population of competitive non-game species. Peripheral shoreline treatment with Antimycin A and rotenone base toxicants will be attempted in the spring of 1969 to reduce rough fish populations. Subcatchable cutthroat trout will be stocked later in the year.

Six lakes (Upper and Lower Cedar, Granite, Minor, Upper and Lower Sky) located in the Cabinet Wilderness area were surveyed by a crew traveling by horseback. Rainbow trout were collected from Upper and Lower Cedar Lakes. Granite and Minor Lakes contain an overpopulation of small cutthroat trout. No fish were found in Upper and Lower Sky Lakes. Future management recommendations include the introduction of a predator game species (Dolly Varden) into Granite Lake in an attempt to decrease the cutthroat trout population. This project will commence as soon as fertile eggs can be obtained. Upper and Lower Sky Lakes were recommended for stocking with westslope cutthroat fry.

Stream population sampling with electrofishing gear was conducted for Vermillion River, Little Beaver and Cherry Creeks.

An excellent population of intermediate size (6.3 inches average) westslope cutthroat trout was found in the Vermillion River above Miller Creek. A total of 56 cutthroat and one brook trout was collected from a 300 foot section of stream.

The fish population of Little Beaver Creek, in the vicinity of White Pine, was sampled to determine the status of the brook trout population. Local ranchers had expressed some concern about the excessive harvest of brook trout during the spawning season. A total of 60 mature brook trout, averaging 8.2 inches, were collected from a 200 foot section of stream.

A sparse population of small game fish were collected from a 300 foot section of Cherry Creek. A total of 29 fish were caught of which 80 percent were brook trout.

No changes in management plans were recommended for the Vermillion River, Little Beaver or Cherry Creeks.

Table 1. Summary of lake and stream population data collected by gill netting and electrofishing between July 1, 1967 and March 31, 1968

Lake or stream (I.B.M. code no.)	Number sets	Species (number)	Size range (inches) (game species)	Percent of game species	Average length (inches) (game species)
Flathead River drainage					
Lagoni Lake (07-7100-03)	3	Ct (1), DV (3), Wf (8), YP (39), PM (9), FSu (1), SQ (9)	Ct (11.6) DV (9.0-13.3) Wf (10.3-11.3)	17	Ct (11.6) DV (11.0) Wf (10.9)
Lake Five (08-8550-03)	3	EB (2), Ct (3), PS (183), FSu (10), SQ (1)	Eb (8.3-10.1) Ct (11.8-12.2)	3	Eb (9.2) Ct (12.0)
Middle Foy Lake (07-7840)	2	None	---	--	---
Lake Mary Ronan (07-7700-03)	5	Kok (89), Rb (1), PS (98)	Kok (9.0-20.2) Rb (17.2)	48	Kok (17.8) Rb (17.2)
Sunburst Lake (8-9800-3)	4	Ct (56)	Ct (7.1-20.0)	100	Ct (13.3)
Clark Fork drainage					
Fishtrap Lake (05-8800-03)	3	Ct (15), FSu (30)	Ct (6.7-12.8)	33	Ct (8.8)
McGregor Lake (05-9216-03)	3	Lt (20), Rb (18), FSu (22)	Lt (9.6-19.0) Rb (9.0-16.1)	63	Lt (14.6) Rb (12.5
Kootenai River drainage					
Spar Lake (11-9640-03)	3	Lt (55), Eb (7), Kok (12)	Lt (7.2-19.8) Eb (8.7-16.4) Kok (6.5-12.5)	100	Lt (13.0) Eb (11.7) Kok (8.4)

Table 1. (cont'd.)

Lake or stream (I.B.M. code no.)	Number sets	Species (number)	Size range (inches) (game species)	Percent of game species	Average length (inches) (game species)
Bull Lake (11-8040-03)	5	DV (3), Kok (2), Rb (1), Wf (28), SQ (106), PM (24), CSu (9), FSu (3)	DV (14.3-22.4) Kok (6.8-10.1) Rb (18.5)	19	DV (19.6) Kok (8.5) Rb (18.5)
Upper Cedar Lake (11-9880-03)	2	Rb (32)	Rb (6.2-12.3)	100	Rb (9.0)
Lower Cedar Lake (11-8080-03)	2	Rb (7)	Rb (7.5-11.5)	100	Rb (9.8)
Minor Lake (11-9220-03)	1	Ct (37)	Ct (7.2-11.3)	100	Ct (8.8)
Granite Lake (11-8400-03)	1	Ct (23)	Ct (5.0-7.9)	100	Ct (6.6)
Upper Sky Lake (11-9908-03)	1	None	---	---	---
Lower Sky Lake (11-9088-03)	2	None	---	---	---
Vermillion River (05-7712-01)	---	Ct (56), Eb (1), Eb (9.4)	Ct (2.2-9.3) Eb (9.4)	100	Ct (6.3) Eb (9.4)
Little Beaver Creek (05-4016-01)	---	Eb (64), FSu (1)	Eb (3.7-13.4)	98	Eb (8.2)
Cherry Creek (05-1360-01)	---	Eb (22), Ct (3), Rb (2), DV (1)	Eb (2.7-8.6) Ct (3.8-6.0) Rb (5.7-7.8) DV (6.6)	100	Eb (4.3) Ct (4.5) Rb (6.8) DV (6.6)

Opening day creel census

Kilbrennan Lake: Creel census information was obtained at Kilbrennan Lake (58.5 acres) on the opening day of the state-wide general fishing season, May 19, 1968. The census was conducted to determine the effect of a state-wide 10-pound brook trout limit on the harvest of one of the better producing brook trout lakes in Montana.

The management of Kilbrennan Lake is unique from most other lakes in the state in that the brook trout is protected during spawning by a closed season. The season opened with the state-wide general stream season mid-May and closed October 1. Kilbrennan Lake supports a self-sustaining population of brook trout which is not supplemented by hatchery fish.

On opening day, all fishermen (357) were contacted for completed trip information between the hours of 7:30 A.M. and 7:30 P.M. During this period 2,597 fish were checked of which 98 percent were brook trout and 2 percent rainbow trout. The average hourly catch was 1.5 fish while the average catch per fisherman was 7.3 fish.

Car counts made prior to setting up the checking station and boat and shore fishermen counts made at the end of the census day provided the basis for estimating harvest and fishing pressure for the periods of the day not censused. These expanded data were added to the contact data to compute total opening day estimates of fishing pressure and harvest. Comparative census data for the opening days of 1966, 1967, and 1968 are shown in table 2.

On opening day in 1968, Kilbrennan Lake suppored an estimated 6.60 angler trip per acre and yielded 43.0 fish per acre. The estimated harvest of fish was 1,053 pounds or 18.0 pounds per acre. Local anglers from Lincoln County comprised 95 percent of the total angling pressure.

Table 2. Summary of opening day creel census data for Kilbrennan Lake

Year	Fishermen contacted	Estimated total number fishermen	Average catch per fishermen	Estimated total number harvested	Estimated harvest number (per acre)	Estimated total pounds
1966	177	228	5.9	1,345	23.0	619
1967	335	407	6.1	2,460	42.0	900
1968	357	386	7.3	2,808	48.0	1,053

A gradual increase in the average catch per fisherman was experienced for the second consecutive year. Correspondingly the estimated total harvest and estimated total weight increased. The estimated number of fishermen declined slightly in 1968 as compared to 1967.

Total lengths and weights were collected for 73 brook trout and 3 rainbow trout. Brook trout averaged 10.4 inches and 0.38 pounds and rainbow trout averaged 10.9 inches and 0.43 pounds. The average total length and weight of brook trout showed a slight increase compared to those fish measured in 1967.

A total of 61 anglers contacted, representing 17 percent of the opening day fishermen, exceeded the former 10 fish trout limit which would have been permitted under the 1965-66 regulations. The liberalized trout limit (10 pound, no number limit) increased the total harvest in 1968 by 295 fish which represents 10.5 percent of the total harvest.

On opening day in 1967, a total of 40 anglers contacted, representing 12 percent of the anglers, exceeded the former 10 fish trout limit. An increased harvest of 212 fish or 8.6 percent of the total opening day harvest in 1967 could be attributed to the liberalized trout limit.

None of the 357 anglers contacted caught the allowable 10 pound limit of brook trout. One party (2 anglers) averaged 19.5 fish each, the maximum average number of fish caught per angler. In terms of total weight, these anglers caught an average of 7.4 pounds* fish each, well below the allowable 10 pound limit.

It is recommended that the opening day census be repeated in 1969 to continue the evaluation of the present brook trout limit on harvest and catch rates.

*Based on average weight of brook trout.

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Approved by George D. Holton

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Waters referred to:

11-8640
and 15 lakes and 3 streams listed (IBM numbers included) in Table 1.