MONTANA FISH AND GAME DEPARTMENT
FISHERIES DIVISION

JOB PROGRESS REPORT

State Montana

Project No. F-32-R-6 Title Helicopter Mountain Lake Survey

Job No. I-a Title Helicopter Mountain Lake Survey
District One

Period Covered July 1, 1969 to June 30, 1970

Abstract

Fish population surveys of 18 mountain lakes outside wilderness areas in the Stillwater and South Fork of the Flathead River drainages were conducted July 2 through July 12, 1969. Trout populations were present in 7 lakes. Fish species collected were cutthroat trout (Salmo clarki), rainbow trout (Salmo gairdneri), brook trout (Salvelinus fontinalis), longnose sucker (Catostomus catostomus), pumpkinseed (Lepomis gibbosus), and peamouth (Mylocheilus caurinus). Physical and chemical data (depth soundings, water temperature profiles, specific conductance, pH and total alkalinity) were collected in conjunction with fish population data.

An additional 33 small lakes in close proximity of the lakes surveyed were observed from the air and designated as being too shallow for fish management.

Objectives

The purpose of this survey is to inventory fish populations of mountain lakes inaccessible to wheeled vehicle travel but outside wilderness and primitive area boundaries. This is a continuing project.

Procedures

A two-man helicopter crew conducted the lake surveys. Monofilament gill nets, 125 feet in length by 5 feet in depth with graduated mesh size of 3/4 to 2 inches square, were used to sample fish populations. Gill nets were set from pontoons of the helicopter as it taxied across the surface of the water. Total lengths of all fish collected were recorded. Scale samples were collected for age and growth analysis. Outline maps of most lakes were drawn from U. S. Forest or U. S. Geological Survey maps and surface areas were determined with a planimeter. Lake depths were recorded with a Lowrance Fish Lo-K-Tor. Lake elevations were recorded from altimeter readings. Data for all lakes surveyed were recorded on index file cards and kept on file at the district and Helena Offices. Lakes too shallow for fish management were identified by location (township, range and section) and are shown in Table 1.

TABLE 1. Mountain lakes observed by helicopter considered too shallow for fish management, July 2 through July 12, 1969

Lake	Immediate drainage	No. of lakes	Location T	R	S
South Fork Flathead River Drainage					
Alpha	Alpha Cr.	1	30	19	33
Unnamed	Fawn Cr.	1	29	19	5
Unnamed	Fawn Cr.	1	29	19	33
Stillwater River Drainage					
Unnamed	Martin Cr.	1	32	24	4
Unnamed	Le Beau Cr.	4	32	24	27,34
Unnamed	Stillwater R.	4	33	24	16,17
Unnamed	Jumbo Cr.	6	34	25	23,36
Woods	Spring Cr.	1	32	24	10
Unnamed	Spring Cr.	1	32	24	3
Meadow	Lazy Cr.	1	32	24	4
Unnamed	Lazy Cr.	10	32	23	9,10,14,22
Unnamed	Dog Cr.	2	33	23	28,29

Findings

The mountain lakes surveyed in the summer of 1969 include 5 lakes in the South Fork of the Flathead River drainage and 13 lakes in the Stillwater River drainage. Originally scheduled for survey in 1969 were high altitude lakes in the Eureka area. Because of adverse weather conditions at high altitudes, plans were changed to include lakes lying at lower elevations in the Stillwater River drainage.

The elevation (MSL) of the lakes surveyed ranged from 3,210 to 6,275 feet. Maximum depths ranged from 15 to 76 feet. Lake surface areas ranged from 1.8 to 28.8 acres. Surface temperatures of lakes in the South Fork drainage ranged from 46° to 53° F. as compared to 60° to 68° F. for lakes in the Stillwater River drainage. Water chemistry data collected include pH, alkalinity and standard conductance. A summary of the physical and chemical data collected from the helicopter mountain lake survey in 1969 is presented in Table 2.

An additional 33 lakes in which the entire lake basin could be observed by air were considered too shallow for fish were identified by location. No other data were collected for these lakes.

TABLE 2. Summary of physical and chemical data collected for mountain lakes surveyed by helicopter July 2 through July 12, 1969

Lake	Location T	R	S	Elevation (feet MSL)	Surface area (acres)	Maximum depth (feet)	pH units	Standard conductance (micromhos/cm)	Total alkalinity (ppm)
South Fork Flathead River Drainage									
Beta	30	19	33	5480	9.2	21	7.80	174	97
Doris #1	29	19	6	6275	9.2	27	7.85	131	77
Doris #2	29	19	6	6150	7.3	31	8.00	164	100
Fawn	30	19	6	6200	9.2	20	7.85	148	100
Jenny	29	19	18	-	7.3	35	7.65	44	19
Stillwater River Drainage									
Blue	33	25	1	3220	11.9	76	7.55	324	197
Burnt	33	24	17	3700	4.8	40	7.55	259	144
Fire	33	24	17	3710	11.2	64	7.75	335	203
Hidden	34	25	35	3440	8.3	65	7.55	272	158
Hole in the Wall (Upper Wall)	33	24	22	3390	16.0	30	7.90	142	79
Jumbo	34	25	35	3300	1.8	15	7.70	281	221
Lagoni, Upper	33	24	21	3790	8.0	32	7.50	256	153
Leech	32	24	3	3475	9.6	25	7.70	158	86
Martin, Lower	32	24	11	3250	17.2	34	7.65	295	175
Martin, Upper	32	24	10	3250	17.2	64	7.90	291	164
Spring	33	24	4	3820	9.6	35	7.85	281	170
Sunday, Lower	33	24	7	3400	8.0	30	7.40	95	51
Wall (Lower Wall)	33	24	22	3210	28.8	52	7.75	161	96

Fish populations were found to be present in 9 of the 18 lakes surveyed. Five lakes sampled had adequate or over-abundant populations of game fish. Non-game fish were found to be present in 6 lakes.

Doris Lakes #1 and #2 were stocked with westslope cutthroat fry by air in the summer of 1967. The absence of fish from the Doris Lake #1 fish population sample may have been a result of the air drop missing the lake. Consequently, this lake was restocked in 1969.

Beta Lake was stocked with westslope cutthroat fry in the summer of 1968. No fish were collected from this lake during the present survey but catches of small cutthroat trout were reported later in the season. Follow-up gill net efforts later in the season collected 5 to 7 inch fish. Apparently these fish were too small to be netted during the earlier survey. Consequently, Beta Lake was deleted from the stocking recommendations.

A summary of the mountain lake gill netting data is shown in Table 3.

TABLE 3. Summary of fish collected by one overnight gill net set from the mountain lakes surveyed by helicopter July 2 through July 12, 1969

Lake	Immediate drainage	Species 1/ number caught in parentheses	Game species average length (inches)	Game Species size range (inches)
South Fork Flathead River Drainage				
Beta	Beta Creek	None		
Doris #1	Fawn Creek	None		
Doris #2	Fawn Creek	Ct (39)	Ct (9.4)	7.6 - 11.6
Fawn	Fawn Creek	None		
Jenny	Doris Creek	None		
Stillwater River Drainage				
Blue	Stillwater River	Eb (43) PS (2)	Eb (8.7)	6.5 - 13.2
Burnt	Stillwater River	None		
Fire	Stillwater River	Eb (10)	Eb(12.1)	8.8 - 15.3
Hidden	Jumbo Creek	None		
Hole in the Wall (Upper Wall)	Upper Stillwater Lake	Eb (29)	Eb (7.5)	6.5 - 11.3
Jumbo	Jumbo Creek	Eb (1) Rb (4) Su (95)	Eb(11.5) Rb(10.3)	8.5 - 12.0
Lagoni, Upper	Lagoni Creek	None		
Leech	Stillwater River	None		
Martin, Upper	Martin Creek	Eb (3) FSu(3)	Eb(10.1)	6.1 - 15.0
Martin, Lower	Martin Creek	FSu(10)		
Spring	Spring Creek	None		
Sunday, Lower	Sunday Creek	PS (56)		
Wall, (Lower Wall)	Upper Stillwater Lake	Eb (10) Pm (6)	Eb (9.5)	8.4 - 10.4

1/ Eb = brook trout, Rb = rainbow trout, FSu = longnose sucker, PM = peamouth, PS = pumpkinseed

TABLE 4. Management recommendations for mountain lakes surveyed by helicopter July 2 through July 12, 1969

Lake	Code number	Recommendations for stocking
Beta	8-8075-3	None, stocked with Wct fry in 1968
Doris #1	8-8525-3	Stock Wct fry
Doris #2	8-8526-3	None, adequate population of Wct
Fawn	8-8545-3	Stock Wct fry
Jenny	8-8900-3	Stock Wct fry
Stillwater River Drainage		
Blue	7-6560-3	None, adequate population of Eb
Burnt	7-5590-3	Stock Wct fry
Fire	7-6360-3	None, adequate population of Eb
Hidden	7-6722-3	Stock Wct fry
Hole in the Wall (Upper Wall)	7-6760-3	None, adequate population of Eb
Jumbo	7-7005-3	None, over-abundant population of FSu
Lagoni, Upper	7-9408-3	Stock Wct fry
Leech	7-7245-3	Stock Wct fry
Martin, Upper	7-7661-3	None, populated with FSu
Martin, Lower	7-7660-3	None, populated with FSu
Spring	7-8840-3	Stock Wct fry
Sunday, Lower	7-8979-3	None, overpopulated with PS
Wall, (Lower Wall)	7-9500-3	None, populated with PM

Abbreviations: Eb = brook trout, FSu = longnose sucker, PM = peamouth, PS = pumpkinseed, WCt = westslope cutthroat.

Eight lakes were recommended for stocking with westslope cutthroat trout fry. These include 3 lakes in the South Fork of the Flathead River drainage and 5 lakes in the Stillwater River drainage. All lakes recommended for stocking with the exception of Jenny Lake were planted in the late summer of 1969.

Recommendations

Management recommendations made for lakes surveyed are presented in Table 4. Air plants of westslope cutthroat trout were recommended for 8 mountain lakes.

Prepared by Robert J. Domrose
Robert J. Domrose

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Code numbers of waters referred to are listed in Table 4.