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MONTANA DEPARTMENT OF FISH AND GAME
FISHERIES DIVISION

JOB PROGRESS REPORT

State Montana

Project No. F-32-R-11 Title Helicopter Mountain Lake Survey

Job No. I-a Title Survey of Mountain Lakes in Region One

Period Covered July 1, 1974 through June 30, 1975

ABSTRACT

Fish population surveys were conducted for twenty-nine lakes in Region One. Most of these lakes were previously surveyed and stocked with westslope cutthroat trout in 1967, 1968 and 1969. Trout populations were found in eight lakes. Water surface temperatures, depth soundings and water chemistry (specific conductance, pH and total alkalinity) were collected in conjunction with fish population data.

BACKGROUND

Since 1966, the helicopter was used to survey the fish population of 154 lakes in Region One outside wilderness areas. During this period, 255 additional lakes were observed from the air and were classified as being too shallow for fish management. Most of the lakes surveyed in 1974 were lakes surveyed and stocked with cutthroat trout in 1967, 1968 and 1969. If fish from the initial plants reproduced successfully, a variation of age class structure should be present in 1974 fish collections.

PROCEDURES

A two-man helicopter crew conducted the lake surveys. Monofilament gill nets, 125 feet 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 water. Total lengths and weights of all fish collected were recorded. Scale samples were collected for age and growth analysis. Outline maps of lakes were traced from U. S. Geological Survey maps and surface areas were determined with a planimeter. Lake depths were recorded with a Lowrance Fish Lo-K-Tor or a Recording Bendix Echo Sounder. Temperature profile data were recorded with a thermister thermometer. Lake elevations were recorded from altimeter readings. Cursory observations were made of inlet tributary streams to evaluate their spawning potential. Data for all lakes surveyed were recorded on index file cards and kept on file at the regional and Helena offices.

Cursory observations of spawning inlet streams from the air can give only a rough estimate of their spawning potential. No measure of spawning success can be obtained from these observations. Therefore, follow-up fish population

Table 1. Summary of fish collected from one overnight gill net set and management recommendations for mountain lakes surveyed by helicopter, July and August, 1974.

Lake	*Year stocked	Species and number	Average length (inches)	Recommended management
Jewel Basin Lakes				
Birch Lake 7-5320-03	1962	Ct(2)	16.4	Stock with Wct
Black Lake 8-8160-03	1973	Rb(7)	12.3	Adequate fish populations, re-survey in 1976
Cliff Lake 8-8380-20	1967	Ct(1)	9.3	Stock with Wct
Crater Lake 8-8400-03	1967	None	--	Stock with Wct
Handerkerchief Lake 8-8740-03	1963	Ct(4) Gr(24)	Ct(12.4) Gr(10.6)	No change - manage with natural reproduction
Lower Seven Acres Lake 8-9630-03	1967	None	--	Stock with Wct
Lower Three Eagles Lake 8-9175-03	1967	Ct(3)	14.0	Stock with Wct
North Jewel Lake 8-9370-03	1967	Rb(14)	11.5	No change - manage with natural reproduction
Squaw Lake 8-9770-03	1967	Ct(1)	15.8	Stock with Wct
Upper Big Hawk Lake 8-9955-03	1967	None	--	Stock with Wct
Upper Pilgrim Lake No Code	1967	None	--	Too shallow, remove from management program

Table 1. Continued.

Lake	*Year stocked	Species and number	Average length (inches)	Recommended management
Upper Three Eagles Lake 8-9958-03	1967	Ct(5)	15.2	Stock with Wct
Wildcat Lake 8-9970-03	1965	Ct(6)	11.5	Stock with Wct
Swan River Drainage				
Beaver Lake 7-5295-20	1969	Wct(2)	15.2	Stock with Wct
Bond Lake 7-5460-03	No Record	Rb(14)	10.8	No change - manage with natural reproduction
Cat Lake 7-5660-20	1969	Wct(2)	14.8	Stock with Wct
Pony Lake 7-8300-03	1969	Ct(5)	11.4	Stock with Wct
North Fork Flathead River Drainage				
Link Lake 8-7120-03	1968	None	--	Stock with Wct
Nasukoin Lake 8-9350-03	1970	Wct(10)	10.3	Re-survey in 1976
Middle Fork Flathead River Drainage				
Almeda Lake 8-8015-03	1969	Wct(2)	13.2	Stock with Wct
Bergsicker Lake 8-8070-20	1969	None	--	Too shallow, remove from management program

Table 1. Continued.

Lake	*Year stocked	Species and number	Average length (inches)	Recommended management
Bradley Lake 8-8240-03	1969	None	--	Too shallow, remove from management program
Castle Lake 8-8280-03	1969	Wct(8)	15.3	Re-survey in 1976
Cup Lake 8-8460-20	1969	Wct(4)	11.4	Stock with Wct
Dickey Lake 8-8510-20	1969	Wct(1)	8.8	Stock with Wct
East Tranquil Lake 8-8537-03	1969	Wct(5)	11.4	Stock with Wct
Elk Lake 8-8540-03	1969	Wct(15)	13.9	Re-survey in 1976
West Tranquil Lake 8-9965-03	1969	Wct(37)	9.2	No change - manage with natural reproduction
Stillwater River Drainage				
Spring Lake 7-8840-03	1969, 1972	None	--	Too shallow, remove from management program

*Year stocked - Most recent year

Species Abbreviations - Wct - Westslope cutthroat trout
Rb - Rainbow trout
Gr - Grayling
Ct - Cutthroat trout, undesignated

surveys are necessary to determine the success of planted cutthroat fry in surviving, reproducing and contributing to a self-sustaining fishery.

FINDINGS

A summary of fish population data collected in 1974 and suggested management changes are presented in Table 1. Self-sustaining fish populations were found in five lakes. Four lakes were judged to be too shallow for fish management and an additional four lakes were recommended for re-survey in 1976. Sixteen lakes were recommended for stocking with westslope cutthroat fry in 1975. Several lakes scheduled for re-survey were omitted because they were frozen over or were inadvertently missed. These include Shorty Creek, Chain Lake #1, Upper Seven Acres, Upper Sheep, Shelf, Doris Lake #1 and Doris Lake #2.

Water chemistry data include pH, alkalinity and standard conductance. The pH range of lakes surveyed ranged from 7.2 to 8.2. Alkalinity and specific conductance values were low, indicating low basic fertility.

RECOMMENDATIONS

Recommendations made for lakes surveyed are presented in Table 1. Air plants of westslope cutthroat trout are recommended for sixteen lakes. Lakes scheduled for survey in 1974 but omitted should be re-scheduled for survey in 1975.

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Waters referred to: See Table 1