MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS

FISHERIES DIVISION

Job Progress Report
Research Project Segment

State: Montana Title: Reservoir Investigations

Project No.: F-34-R-15 Title: Hungry Horse Reservoir Study

Job No.: II-a

Period Covered: 1 July 1980 through 30 June 1981

ABSTRACT

Fish population trends were determined in Hungry Horse Reservoir by gill net sampling in spring and fall 1980. Road culverts blocking fish access into two reservoir tributaries were examined and recommendations submitted.

OBJECTIVES

The objectives of this job were to determine fish population trends in Hungry Horse Reservoir, to determine angler harvest from the reservoir and its tributary streams during the latter half of October 1980 and determine feasibility of restoring adfluvial cutthroat trout spawning runs into Felix and Riverside creeks. Spawning runs of cutthroat trout from the reservoir into Felix Creek have been blocked by a road culvert since the reservoir was filled in 1952. Check dams below the Riverside Creek culvert which provided fish passage into the culvert have deteriorated in recent years and may in themselves constitute barriers.

PROCEDURES

Population trends have been determined by gill net sampling several areas of the reservoir each spring and fall every even numbered year since 1966. This sampling was done in May and October, 1980. Visual observations were made of fish passage problems at the Felix Creek and Riverside Creek culverts during cutthroat trout spawning in May-June, 1981. The fish population in Felix Creek above the road culvert was sampled in August, 1980 using hook and line. Age and growth rates of bull trout collected from the reservoir in 1972, 1976 and 1980 were determined from analysis of scale samples. Creel census information was not collected in October 1980 because of funding limitation of this D-J project and the P-R project.

WORK ACCOMPLISHED

A total of 39 overnight sinking gill net sets were made at four locations in Hungry Horse Reservoir the week of May 18, 1980 and 50 overnight sinking net sets were made at five reservoir locations the week of October 26, 1980. Data collected included catch-per-net-night by species, lengths and weights of most fish captured and scale samples from a representative sample of the game fish caught. Average catch per net night for the spring and fall sampling is shown in Table 1.

Table 1. Average catch per net night by species, Hungry Horse Reservoir, spring and fall netting, 1980.

Sample time	Number of nets	Pool elevation[1/]	WCT[2/]	DV	MWF	CSU	FSU	SQ
May 1980	39	23 feet	0.8	7.3	10.7	4.7	4.0	5.2
Oct. 1980	50	13 feet	0.9	4.4	14.1	1.3	0.0	0.9

1/ Feet below full pool elevation of 3,560 feet msl.
2/ WCT is westlope cutthroat, DV is bull trout, MWF is mountain whitefish, CSU is coursescale sucker, FSU is longnose sucker and SQ is squawfish.

Scale samples collected from bull trout netted in 1972, 1976 and 1980 were aged (Table 2) and growth calculated assuming a straight line relationship between scale length and fish body length with the X-Y intercept at 0.0 inches length. These assumptions have been made for all fish scales read from Hungry Horse Reservoir since 1958.

Table 2. Age and growth of bull trout collected from Hungry Horse Reservoir in 1972, 1976 and 1980.

Sample year	Length in inches at annulus								
	I	II	III	IV	V	VI	VII	VIII	IX
1972	3.3 (183)[1/]	6.0 (138)	8.9 (110)	13.0 (67)	16.2 (38)	19.2 (21)	22.1 (10)	25.7 (5)	27.5 (2)
1976	3.3 (148)	5.9 (148)	8.7 (124)	12.1 (76)	15.2 (44)	18.2 (34)	21.5 (22)	26.4 (5)	29.6 (1)
1980	3.0 (150)	5.5 (150)	8.5 (140)	11.6 (91)	14.7 (48)	18.9 (20)	22.1 (8)	25.2 (3)	30.7 (1)

1/ Number in parenthesis is size of sample.

The Felix Creek culvert has been a barrier preventing upstream fish movement since the reservoir was filled in 1952. The barrier at this culvert consists of two parts; the culvert itself and a six-foot high culvert outflow falls. This culvert contains herring-bone baffles and if fish could swim up the falls they could swim through the culvert itself. The U.S. Forest Service has shown some desire to eliminate this by installing a steepway fish ladder elminating the falls providing access into the culvert.

Desirability of establishing a population of adfluvial cutthroat trout on a resident stream cutthroat trout population had to be established. Hook and line sampling by the project biologist and a Forest Service biologist indicated that Felix Creek above the culvert contained an excellent population of stream resident cutthroat trout. About 80 cutthroat trout were caught in three hours of fishing effort. Fish caught ranged from three to eight inches long and included immature and adult fish. It was concluded that establishment of adfluvial cutthroat trout in Felix Creek and its interactions with the resident cutthroat may not be appropriate.

Visual examination of adfluvial passage through the Riverside Creek culvert and downstream check dams installed in the late 1960's was made in spring 1980 and 1981. Stream channel deterioration below the lowermost (2nd) check dam has resulted in a split channel with a falls about five feet high into the check dam pool. Some spawning cutthroat were able to jump this falls and reach the mouth of the culvert. The culvert contains herring-bone baffles materially reducing water velocities within the culvert and it is assumed fish reaching the mouth of the culvert could pass through the culvert.

Future channel deterioration below the check dams will cause a collapse of the check dams which will result in a complete fish barrier. It was recommended to the Forest Service biologist that consideration be given to removal of the culvert and check dams replacing them with a bridge.

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Waters Referred to:

Hungry Horse Reservoir	-	08-8800-05
Felix Creek	-	08-2700-01
Riverside Creek	-	08-5860-01

Key Words:

Lake
Population survey
Bull trout - age-growth