MONTANA DEPARTMENT OF FISH AND GAME

FISHERIES DIVISION

Job Progress Report
Research Project Segment

State Montana Title Reservoir Investigations

Project No. F-34-R-6 Title Hungry Horse Reservoir Study

Job No. II-a

Period Covered July 1, 1971 - June 30, 1972

Summary

Twenty-four overnight gill net sets were made at four netting stations in May 1972. These data combined with similar netting to be done in October 1972 will complete the 1972 biennial sampling of the reservoir's fish population. Efforts were made to collect fish from the South Fork Flathead River above the reservoir but gear failure aborted this mission. Location of some of the spawning areas used by Dolly Varden (Salvelinus malma) in the South Fork Flathead River drainage within the Bob Marshall Wilderness area are given.

Background

Hungry Horse Reservoir is a federally built and operated hydroelectric impoundment on the South Fork Flathead River near the town of Hungry Horse, Montana. Maximum surface area is about 23,000 acres. The maximum capacity is 3.5 million acre-feet of water. Annual water level fluctuation has ranged from about 40 to 120 feet and varies with power demands and flood control.

Montana Department of Fish and Game has been conducting research and management activities on the reservoir and its tributary streams since 1958. The general management policy has been toward the maintenance of the native fish sport fishery within the drainage. Only one exotic fish, the arctic grayling (Thymalus arcticus) has been planted in the reservoir or immediate tributaries in recent years. An occasional rainbow trout (Salmo gairdneri), yellowstone cutthroat trout (Salmo clarki) and Salmo hybrids are also found in the reservoir. The rainbow and yellowstone are not native to the drainage but were planted in lakes within the drainage in the 1930's and 1940's. Native fishes found in the drainage include the westslope cutthroat trout (Salmo clarki subsp.) Dolly Varden (Salvelinus malma), mountain whitefish (Prosopium williamsoni), northern squawfish (Ptychocheilus

oregonensis), longnose sucker (Catostomus catostomus), and largescale sucker (C. macrocheilus).

Objectives

The objectives of this job were to collect data on fish populations to determine trends in the reservoir and to determine location of stream spawning habitat used by reservoir fish in the South Fork Flathead River drainage above the reservoir.

Procedures

Trends in the reservoir fish populations are determined by gill net sampling in the spring and fall every even-numbered year. Since 1960, five netting stations have been used except when drawdown eliminates the uppermost station. Six to eight overnight bottom gill net sets are made at each station. Sampling in May 1972 was done at four stations with six nets being fished at each station.

Cutthroat trout and Dolly Varden were recorded separately from each net and measured (total length), weighed and scale samples taken. Individual fish of other species were weighed and measured from about one-half of the nets. Scale samples from a representative sample of mountain whitefish were taken. Catches from the other nets were counted and recorded by species.

It was planned that fish would be collected from the South Fork Flathead River using a jet-powered boat mounting electrofishing gear. The sampling had to be cancelled when both the outboard jet and electrical transformer malfunctioned. Dolly Varden caught in the reservoir in 1962 through 1965 were tagged with numbered jaw tags. The tag-return information will be reported here although work was part of state project 2262.

Findings

In May 1972, a total of 24 overnight gill net sets were made at four sampling stations in the reservoir. Average catch-per-net-night was 0.5 cutthroat trout, 5.2 Dolly Varden, 10.0 mountain whitefish, 5.8 largescale suckers, 6.0 longnose suckers and 8.0 northern squawfish. These average catches are very similar to those in the netting data collected in May 1970. The May 1972 data will be combined with the October 1972 data and reported in F-34-R-7 job progress report.

Although gear failure aborted efforts to sample the fish population of the South Fork Flathead River above Hungry Horse Reservoir it was learned that this method would catch fish. Electrofishing will have to be done at night when river flows are greater than 1500 cfs.

Limited information about the location of Dolly Varden spawning has been obtained from the recapture of marked fish. Fish captured by gill nets were measured, marked by insertion of a numbered jaw-tag and released. A total of 162 Dolly Varden ranging in total length from 9 to 40 inches were tagged and released in 1962 through 1965. Location, date and size at release; and location, data and size at recapture are shown in Figure 1 for the eight tags returned by anglers.

The rate of tag return varied markedly between immature and mature fish. Dolly Varden less than 17 inches long are generally immature and only two tags from 104 fish tagged were returned. Mature fish longer than 17 inches yielded a return of 6 tags from the 58 fish released. The lower rate of return from the immature fish is probably related to a minimum size limit of 18 inches, greater mortality and a higher tag loss.

General surveys of reservoir tributary streams completed so far indicate that only the South Fork Flathead River Drainage, Sullivan Creek and Wheeler Creek support spawning runs of Dolly Varden from the reservoir. The recapture of two mature fish from Wheeler Creek substantiates the belief that this creek is a spawning area.

The return of one tag from a mature Dolly Varden caught in Spotted Bear River would appear to confirm that this tributary of the South Fork is used for spawning also.

Of primary importance were the two tag returns from tributaries of the South Fork above Meadow Creek Gorge. Passage through this gorge was thought to be difficult if not impossible for most fish. It contains several low falls, has very steep rapids or chutes and one severe flow constriction. It is likely that the Dolly Varden is the only reservoir fish able to negotiate this gorge and continue up the South Fork. One tag return was from White River, a major tributary, about 41 miles above the reservoir. The second return was from Danaher Creek about 68 miles above the reservoir.

Gill net sampling in the upper end of the reservoir has indicated that mature Dolly Varden congregate there in late winter and early spring. Movement up the South Fork is thought to occur in June and July with actual spawning occurring in September and October. Net sampling also indicates that the spent fish do not return to the reservoir until November or December. It is also thought that Dolly Varden do not spawn every year.

Hook and line sampling and visual observations in Wheeler and Sullivan Creeks indicates that spawning Dolly Varden enter these drainages in August and September. Spawning probably occurs in September or October.

RECOVERY INFORMATION

No.	Release Date	Release Length	Return Date	Return Length
1	25 Apr 64	13"	8 Oct 65	24"
2	8 May 63	29"	27 Apr 66	31"
3	8 May 63	26"	29 Jul 64	32"
4	10 May 62	18"	14 Sep 62	19"
5	14 Nov 62	20"	21 Jul 63	21"
6	10 May 62	19"	17 Jul 65	25"
7	14 Nov 62	29"	28 Sep 63	?
8	10 May 62	28"	12 Sep 62	29"

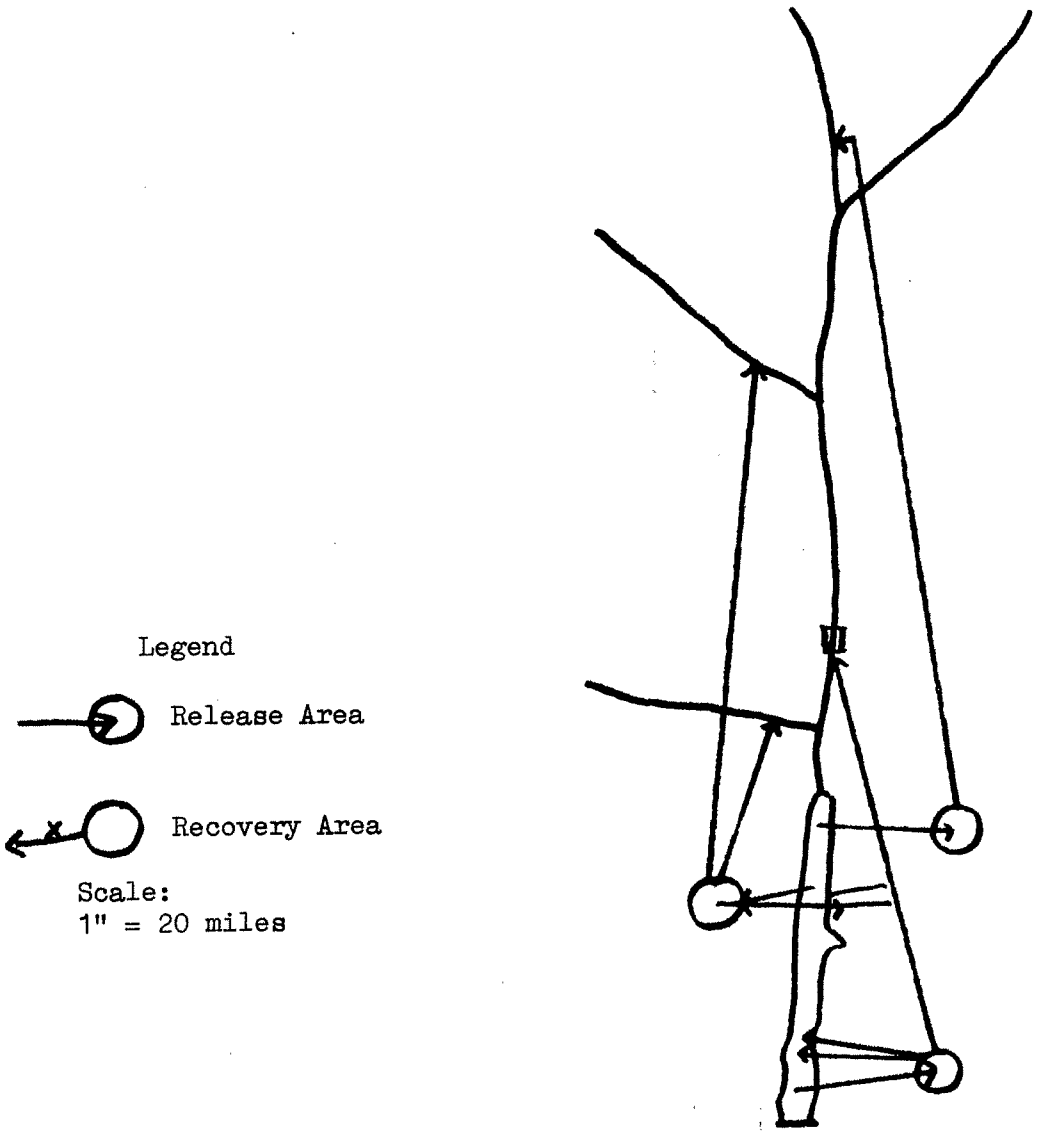

Figure 1. Locations of Recapture of Dolly Varden tagged and released in Hungry Horse Reservoir, 1962 - 1965.

Recommendations

Sampling to determine trends in the reservoir fish population should be continued in a manner similar to the past year's procedures. Efforts should be continued to sample the fish population of the South Fork Flathead River above the reservoir and locate spawning areas of reservoir-living fish.

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Waters referred to:

1-08886005
1-07480010
1-08772001
1-08666001
1-08674001
1-08190001