MONTANA STATE DEPARTMENT OF FISH AND GAME
FEDERAL AID IN FISH RESTORATION SECTION
HELENA, MONTANA

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. F-7-R-5 Job No. II

Title of Job: Effectiveness of Smith Lake Rearing Pond

Abstract:

In July 1954, 25,070 cutthroat trout fry were planted by placing all the fish in one spot in the lake. The pond was drained in June, 1955, and 8,288 cutthroat trout and 4 eastern brook trout were recovered. The cutthroat trout averaged 5.7 inches in length and the total weight of these fish was 555.7 pounds. Thus 33.1 percent of the fish planted survived. Weighing the monetary value of the fish produced against the cost of the fry planted, the cost of operation, and cost of construction, it was shown that the Department lost $124 by raising these fish in the pond instead of at a fisheries station. None of these fish were reported caught in Whitefish Lake.

Objective:

The primary objectives are to measure the actual production of Smith Lake as received from a known number of fry cutthroat trout planted and to determine the economics of the operation considering the cost of the installation, the cost of the fry, the cost of operation and the value of the yearling fish produced. As the investigation for the primary objective has provided, it has been noted that the technique used in liberating the trout fry apparently has had a great deal to do with the numbers of fish produced by the pond. In 1950 and 1951 the fish were planted in one place directly from the truck, and in 1952 and 1953 they were scattered over the lake from a planting boat. In 1953 the survival was increased fourfold over the previous two years and more than fivefold in 1954. It is therefore deemed advisable to examine, as an added objective, the method of liberation more closely as it relates to survival. The fish are to be planted by scattering one year and the next in one place. In succeeding years, boat or shore plants will be made in alternate years until such time as proven conclusions can be known.

As an incidental objective, since each fish must be handled for measuring each will be marked prior to release into Whitefish Lake. Random creel checks and resort operators reports will indicate the percentage contribution of these fish to the total catch.

Techniques Used:

The rearing pond was observed periodically and the diversion on the inlet stream adjusted so that no water went over the spillway and a maximum lake level was maintained. There was ice on the lake on April 23. On May 2 some of the stream water was made to by-pass the lake and an ice cover was still on the lake. The pond was

again checked on June 3. A screen was placed in the spillway in case water may have gone over the spillway, but none had. Two six inch planks were removed from the spillway on June 16. The inlet stream was completely diverted around the lake, and another plank was removed the following day. From June 17 to July 1 the pond was drained, the cutthroat trout captured, the right pectoral fin clipped, and the fish placed in the stream below the pond. Fifty of the trout were weighed and measured and the remainder were measured for total length. The pond was left dry until July 17, when the planks were replaced and the stream diverted back into the lake. On August 4, 25,200 cutthroat trout fry were planted in the lake from a boat. These fish were scattered all over the lake. Posters requesting anglers to report any fin-clipped cutthroat trout caught were distributed to the resort owners on Whitefish Lake.

Findings:

In 1954, 25,070 cutthroat were planted by fluming them from a truck through a pipe into the lake. A total of 8,288 cutthroat trout and 4 eastern brook trout were taken from the pond by the project leader and helpers in 1955. The average length of the cutthroat trout was 5.7 inches with a range of 2.7 to 8.7 inches. The calculated total weight of the cutthroat trout was 555.7 pounds.

The planks on the spillway were fastened with a log chain and lock in such a manner that anyone would have extreme difficulty in draining the pond without authorization. Yet, the lock was shot up by high caliber rifles and difficulty was encountered in getting it unlocked. At least no unauthorized removal of planks or drainage of the pond occurred this past year.

None of the plant of marked fish was reported caught in Whitefish Lake during 1955. Resort owners and anglers reported good fishing for cutthroat trout but no records were obtained of their catches.

Analysis and Recommendations:

The number of fish taken from the pond was 33.1 percent of the number planted. The value of the 555.7 pounds of fish produced is $833.00 based on the amount of $1.50 per pound as the cost of raising a pound of cutthroat trout at a hatchery. The economics of production of the rearing is as follows:

25,070 fry at $9.50 per thousand	$ 238.00
Law enforcement (pond is closed to fishing)	28.00
Cost of operation (18 man days)	328.00
Transportation (936 miles at 7¢)	65.00
Expected return on investment (5% of the $5,960 which was cost of dam to the department)	298.00
Cost of one year's operation	$ 957.00
Value of fish produced	833.00
Net yearly loss	$ 124.00

After two years of showing a small savings, this year the operation has shown a loss. This is primarily due to higher costs of operation and increase in vigilance on the lake due to vandalism that took place last year.

TABLE I

Numer of Cutthroat Trout Planted and Recaptured in Smith Lake Rearing Pond for the Years 1951 through 1955

Year	No. of Fish Planted Previous Years	Method of Release	No. of Fish Captured	Percent Return	Total Weight	Range in Length	Average Length
1951	30,000	One spot	1,707	5.7	143.9	2.8-9.2	6.0
1952	29,000	One spot	1,670	5.8	226.5	4.6-9.2	7.5
1953	25,000	Scatter	5,882	23.5	584.6	2.4-9.4	6.9
1954	25,000	Scatter	9,076	36.3	591.6	2.9-8.6	6.0
1955	25,070	One spot	8,288	33.1	555.7	2.7-8.7	5.7

As was mentioned previously, the fry planted in 1954 were dumped in one spot along the shore of the pond. However, the resulting fish captured out of the pond was extremely high as compared to those in 1951 and 1952. At present there is no explanation for the high survival. It may well be that once the technique of planting fish by scattering is accomplished that our present figures for survival by this means is extremely low. It is strongly recommended that this study be continued for an indefinite period and that an effort be made to determine the cause of survival differences. It is further recommended that on alternate years, (1) the fish be scattered over the lake with the aid of a boat, and (2) the fish be carried by buckets to one spot on the lake from the planting truck.

Summary:

In July, 1954, 25,070 cutthroat trout fry were planted by placing all the fish in one spot in the lake. The pond was drained in June 1955 and 8,288 cutthroat troat fry and 4 eastern brook trout were recovered. The cutthroat trout averaged 5.7 inches in length, and the total weight of these fish was 555.7 pounds. Thus 33.1 per cent of the fish planted survived. Weighing the monetary value of fish produced against the cost of the fry planted, the cost of operation, and cost of construction, it was shown that the Department lost $124 by raising these fish in the pond instead of at a fisheries station. None of these fish were reported caught in Whitefish Lake.

Data and Reports:

The original data and reports are with the fisheries biologist at Kalispell and the Superintendent of Fisheries in Helena, Montana.

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Date February 1, 1956