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CATCHABLE-SIZED HATCHERY TROUT AND RESIDENT TROUT SURVIVAL COMPARED IN FLINT CREEK, MONTANA

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The Flint Creek test stream drains from Georgetown Lake, a highly productive 3,000 acre trout lake. The study area is approximately 1½ miles downstream from an electric power plant in the outlet of the lake. Three Herrington-Stringer type fish fences divide the study area into two sections; each approximately ½ mile in length. These fences are maintained as barriers to fish movement throughout the year, although washouts or flooding over the fences has occurred during periods of autumn leaf-falls and severe winter icing.

A 240-volt direct current electric shocker is used to census the stream population in June and again in September of each year. No correction for shocker inefficiency to capture trout is made in presenting "survival" data. Hatchery-reared rainbow trout, wild rainbow trout and cutthroat trout used in the study are tagged with serially numbered jaw tags.

1954-55 Tests

During the first year of operation most of the wild trout were removed from the upper section while about one-half of the wild trout in the lower section were removed and about one-half were tagged and returned to the stream. Wild fish removed from the two sections were replaced on a pound for pound basis with tagged rainbow trout of a fall-spawning strain obtained from the Anaconda Hatchery. Planting was done in late July and early August. Overwinter survival of the 447 wild trout tagged was 70 percent while that of the two hatchery groups was 40 percent for the group of 884 fish planted into the upper section and 60 percent for the group of 400 fish planted into the lower section. It was then concluded that competition from wild trout was less important to survival

than mechanical injuries inflicted upon the hatchery trout in the upper section during scatter planting operations. During the fall "schocking" of 1956 after two winters and three summers in the test stream; 28 percent of these wild trout and 11 and 12 percent of the two hatchery groups were recovered by the shock census crew. Examinations of scales taken from wild trout in 1954 indicated this group to be three years old or older at the time of tagging. The hatchery trout were 1½ years old when tagged and planted.

1955-56 - Tests

In 1955 the two sections of Flint Creek were deliberately overstocked with rainbow trout from the Anaconda and Hamilton Hatcheries. The upper section planting resulted in a game fish population 2 1/3 times as large poundagewise as was present in 1954 during the first shock census of the stream. The population of the lower section was increased to 3 2/3 times its former weight. Overwinter survival of the Anaconda Hatchery trout was 53 percent of 732 fish planted into the upper section and 41 percent of 1665 fish planted into the lower section. Hamilton Hatchery trout survived at the rate of 15 percent (292 planted) in the upper section and 4 percent (278 planted) in the lower. Wild trout tagged in 1955 survived at the rate of 42 percent (113 tagged) and 35 percent (46 tagged) in the upper and lower sections respectively.

Summary

At the stocking rate used during the 1954-55 tests, no effect of intraspecific competition on survival was demonstrated, however, at the higher stocking levels used in the 1955-56 tests there were consistently lower survival rates in the section of highest stocking density.

Overwinter survival of trout from the Anaconda Hatchery for both years ranged from 40 to 60 percent while wild trout survivals ranged from 35 to 70 percent. Hamilton trout survival was low; being only 4 to 15 percent over the winter of 1955-56. These survival comparisons lend support to the observations of Nielson et al (1957) on Convict Creek where hatchery-reared rainbow trout survival ability was equal to that of resident wild brown trout and it was concluded that there must be some reason or reasons for this unexpectedly high quality in the hatchery source of the fish and its operational procedures. Adelman and Bingham (1955) have reported little or no difference between hatchery-reared brook trout and native brook trout in their ability to survive the winter months. Whether these high survival abilities are due to improving hatchery diets or to some other improvement in the hatchery environment remains to be determined.

A change in the thinking of management people towards use of hatchery-reared, catchable-sized trout seems to be indicated. Such fish were formerly limited to use in put-and-take stocking. It is hoped that presentation of this information at the annual Great Plains Fisheries Workers meeting will stimulate discussion of other uses for these costly fish.

Literature Cited

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1955. Winter survival of hatchery-reared and native brook trout. Prog. Fish- Cult. 17 (4): 177-180.

Nielson, Reed S., Norman Reimers, and Harry D. Kennedy
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