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Silver Creek Research

Summary

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As the fishing season draws to a close for 1987, we are completing the field work for the evaluation of the Silver Creek fishery. When the study began in June 1986, we focused on a few important questions. Changes in the average size, growth and longevity of the trout were on the top of the list. Because of the popularity of Silver Creek, changes in the angler effort and success were also identified as areas of concern. When our results are compared with those of the Idaho Department of Fish and Game 1977 study, some interesting findings surface.

Since the institution of catch and release regulations on Silver Creek 10 years ago, the average size of rainbow trout has increased slightly. Rainbow trout over 400 mm (15.7 inches) increased by 13 percent within The Nature Conservancy Preserve (Fig. 1).

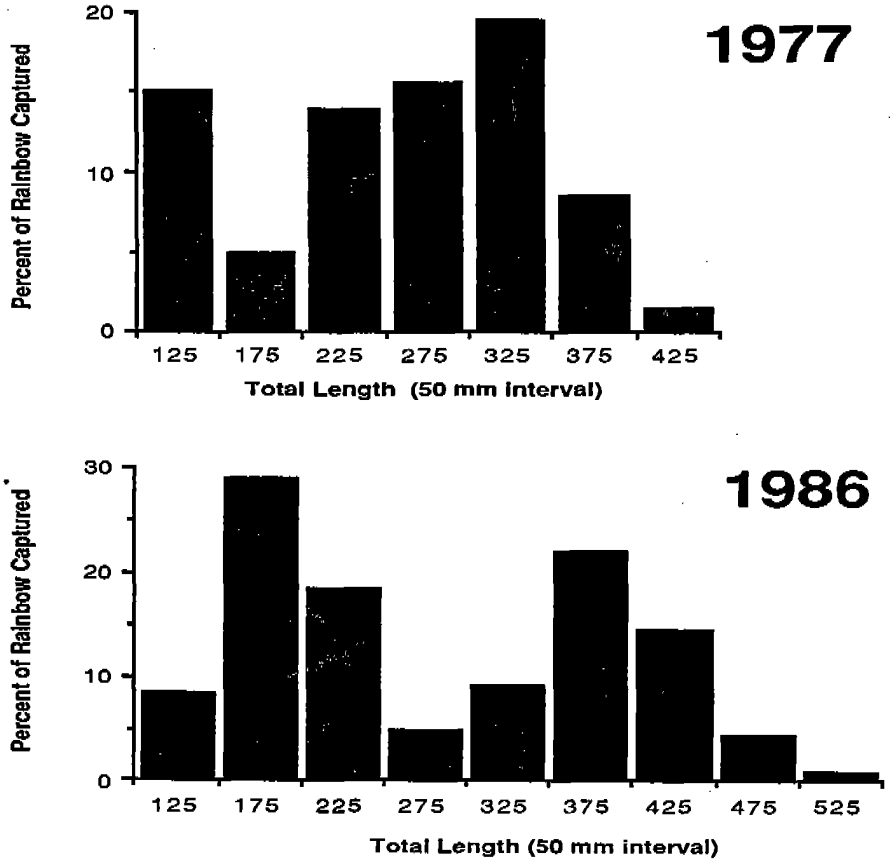


Figure 1. Length frequency of rainbow trout captured by electrofishing on the Nature Conservancy Preserve in 1977 and 1986. Note the increase in fish over 400 millimeters.

With the increase in size, an increase in longevity should follow. In 1987, we found 20% of the rainbow trout in our sample to be 4 years old and 3.5% over 5 years of age. In 1977, only 6.8% of the rainbow were four years old and none were found to be 5 years of age. Such an increase in size and longevity of fish is expected from a period of catch and release regulations . Also, the average rate of growth of rainbow in Silver Creek has increased slightly in the last ten years. In 1986, an average four year old rainbow attained a length of 363 mm (14.2 inches), compared to 349 mm (13.7 inches) in 1977.

Along with this apparent upswing in the health of the fishery since 1977 comes increased numbers of people enjoying the recreational opportunities at Silver Creek. The number of hours spent fishing on The Nature Conservancy Preserve in 1987 has approximately doubled over the last ten years. However, the amount of fishing effort spent in the general regulations area actually showed a decrease--down by about 47 percent in the Point of Rocks area and down by about 35 percent in the Priest area from 1977 (Fig. 2).

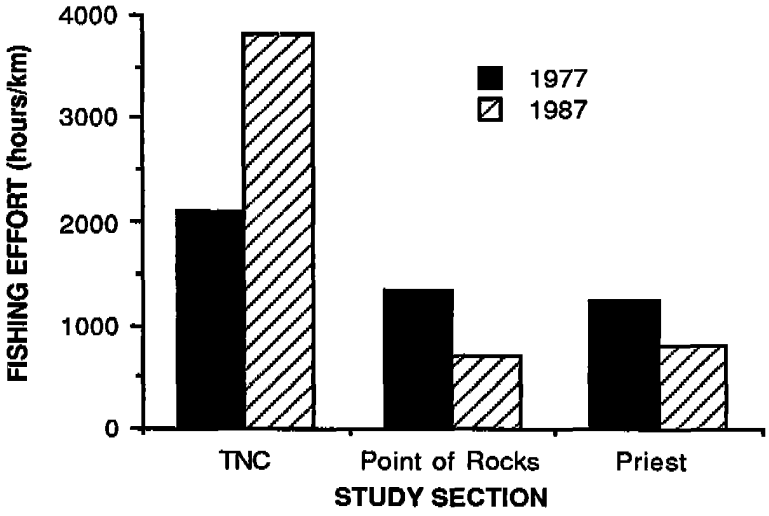


Figure 2. Number of hours people spent fishing on Silver Creek for every kilometer of stream. The period from the opening of the fishing season in May through mid-October in shown. Point of Rocks and Priest are under general fishing regulations.

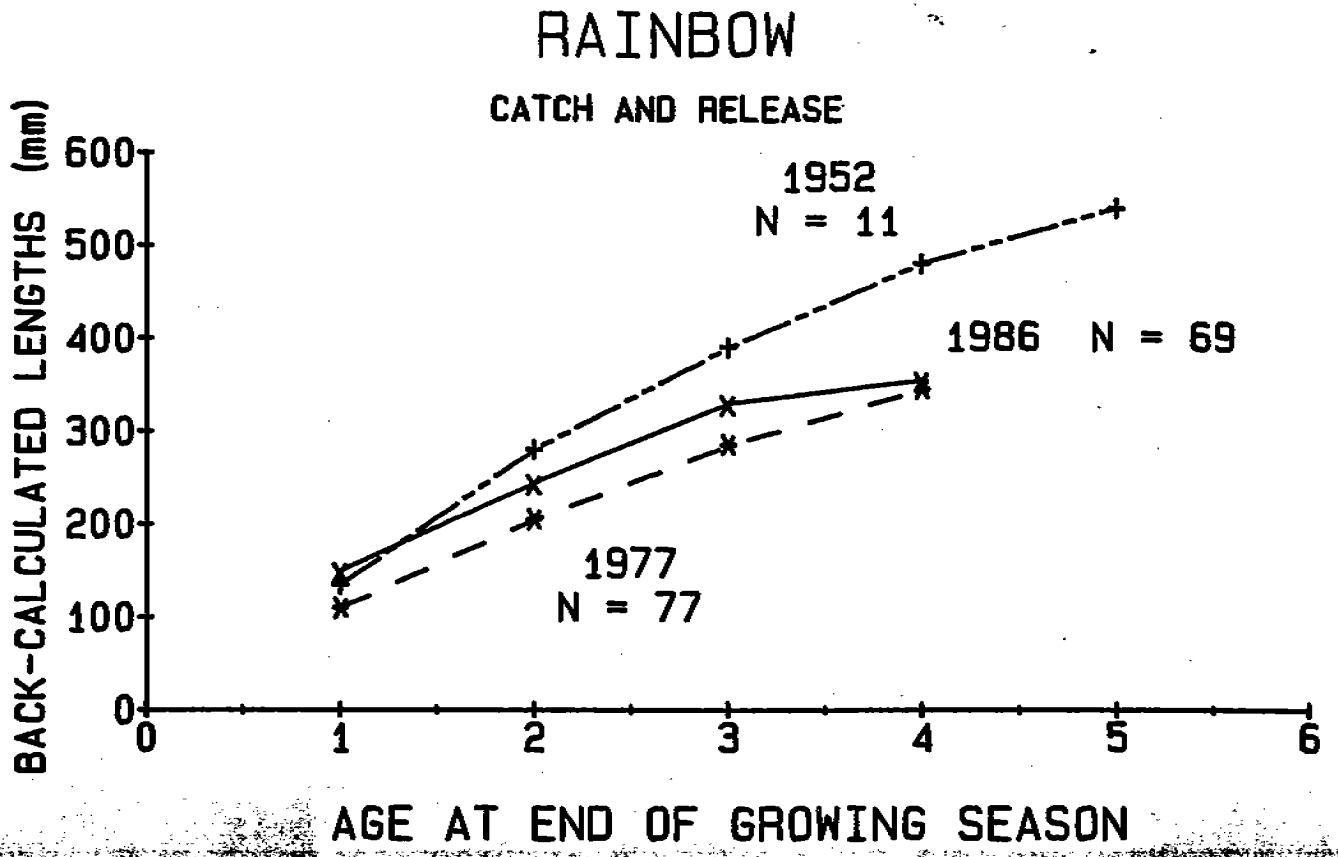
One of the most intriguing changes in the Silver Creek fishery is the increase in numbers of brown trout. In 1977, no browns were found above the town of Picabo. Today browns make up about one-third of the trout population by number in some of the middle portions of Silver Creek. In The Nature Conservancy Preserve, browns comprise only three percent of the total trout population. Some of those fish are quite large, as some anglers have learned firsthand. Whether the brown trout population will continue to increase is not known at this time. One thing is clear--

browns hold a greater potential for attaining a larger size than do rainbow. They live longer and also have a faster growth rate. Brown trout up to 4.3 kilograms (9 1/2 lbs) have been captured during our sampling.

Blaine's summer research also focused on the possibility of anglers disturbing the feeding of rainbow trout. Since growth and survival are ultimately dependent on energy intake, this topic is one of growing concern in catch and release fisheries. One of the most important findings was that feeding rates did not decrease but actually remained constant during the periods of angler disturbance. Surface drift rates of the mayfly *Tricorythodes minutus* sometimes exceeded 800 mayflies per minute through a net 13 centimeters wide. The feeding rate of adult trout ranged from 26 to 39 insects per minute depending on insect species. Most feeding periods lasted from 45 minutes to 2 hours. It was calculated that a trout in Silver Creek could conceiveably ingest enough prey in 2 hours of feeding to meet its daily energy requirements for the next 16 to 20 hours, depending on water temperatures and water velocities. Based on the data that has been collected, there is reason to believe that the impacts of angling disturbance on surface-feeding trout in Silver Creek are negligible. This research, however, deals with but one aspect of the angler disturbance question. It is possible that other impacts such as multiple captures and trampling of food resources could have a negative impact on catch and release fisheries. These are topics that we are in the process of evaluating.

Mike's winter research focuses on the winter ecology of juvenile rainbow trout. Little is known about the type of habitat juvenile trout need in winter for survival. Since winter can be a period of high mortality for juvenile rainbow, more information is needed. With the use of snorkeling and electrofishing the habitat the juvenile trout are selecting is being characterized. Also, Mike is investigating the feeding behavior of juvenile trout in relation to their habitat selection. From the data collected so far, there are some basic trends surfacing. In the fall, water temperatures drop to a point where the mobility of the fish is decreased. Juvenile trout have adapted their behavior to hide in dense cover during the day in winter. In Silver Creek, that cover is the aquatic vegetation, predominantly *Chara* sp. Because of this strong tendency to seek cover, periods of high food availability are not utilized. Specifically, in the fall, juvenile rainbow do not feed on the daytime insect hatches. Although less food is eaten during the day, less food may be needed because of the reduced mobility of the fish. These aspects of the winter ecology of trout are being investigated to increase knowledge of how fish adapt to winter conditions and what their requirements are for survival during the winter.

This report is a synopsis of our findings at this time. A fully detailed and complete explanation of the data will be included in the final report which will be completed in Feburary of 1988.


RAINBOW
CATCH AND RELEASE
BACK-CALCULATED LENGTHS (mm)
600
500
400
300
200
100
0
0
1
2
3
4
5
6
1952
N = 11
1986 N = 69
1977
N = 77
AGE AT END OF GROWING SEASON