

Progress Report

Silver Creek
Research

A Study of the Aquatic Resources of Silver Creek
at the Nature Conservancy Site

April 11, 1977

We have made two trips to Silver Creek. During the first trip, November 12, 1976, we met with Tom Lester and Harry Gibson, Idaho Fish and Game Biologist.

We took plant samples from Silver Creek near the mouth of Sullivan Lake. The area sampled was about 70-75% gravel bottom with the water depth up to two feet. Nastercium aquaticum (watercress) and Potamogeton pectinatus were the most abundant. Other aquatic macrophytes present included Fontinalis sp., Lemma trisulca, Veronica sp., and Paspalum distichum.

Invertebrates found with the plants included: two leeches, Dina parra and Helabdella stagnalis, two snails, Physa sp. and Lymnaea sp., two species of shrimp, Gammarus lacustris and Hyallela azteca, and several insects in the families Brachycentridae, Culicidae, Chironomidae and Baetidae.

The second trip to Silver Creek was March 14-18, 1977. We estimated population abundance by electrofishing five sections of Silver Creek in the Nature Conservancy Site (Figure 1). We measured the length of each fish caught and then released them back to the stream.

From the five sections of stream we caught 338 rainbow trout, Salmo gairdneri, ranging from 55 mm to 515 mm in length (Figure 2). Thirty-two were juvenile fish less than one year old and 302 of the rainbows were longer than 250 mm. We also caught 24 brook trout, Salvelinus fontinalis, ranging from 105-325 mm in length, 292 whitefish, Prosopium williamsoni, ranging from 155-445 mm, 10 sculpin, Cottus sp., 12 dace, Rhinichthys sp.,

and 33 suckers, Catostomus sp. Scale samples were taken from 95 of the rainbow trout to determine the age of various sizes of fish.

We caught relatively few (36) rainbow trout less than 250 mm (10 inches) in length. After looking at Harry Gibson's data, we think most of the younger fish rear upstream in Grove and Loving Creeks.

We took drift invertebrate samples at two sites in Silver Creek, representative of gravel-bottom areas and silt-bottom areas. The nets were set at sunset, midnight, sunrise, and noon each day for two days and left for one hour at each setting. This procedure will be repeated April 16 and 17, and then at 3-week intervals during the summer and fall starting late in May.

Flow readings and water depths were taken at sections 1 and 5 on March 18. The water levels were also marked at the two foot bridges, one in section 2 and one between sections 2 and 3.

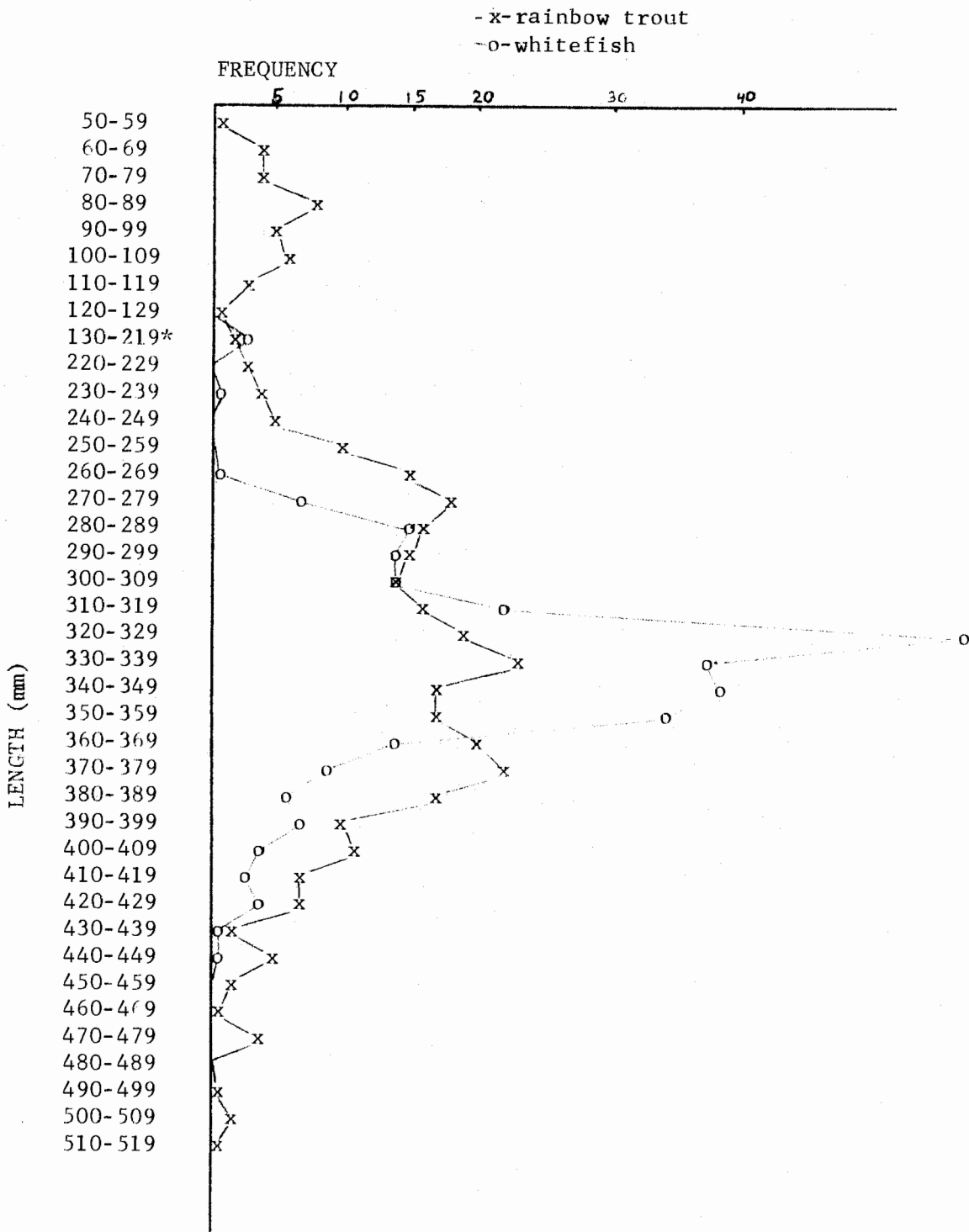
The water temperature during the week averaged about 4^o C, although it did reach 9^o C on the afternoon of April 14.

About 75-85% of the stream bottom was silt bottom, the other 15-25% being gravel. Most of the gravel areas were relatively free from vegetation. Fresh redds could be seen in these areas. The silted areas of stream had about 40-50% vegetation cover. Where vegetation grew, silt collected, creating large mounds of silt. Between these mounds, where there was no vegetation, the bottom was hard.

We learned that the Idaho Department of Water Resources had a water sampling program on Silver Creek during 1976. We have written to them requesting their results. After we see what data they have, we will decide what else we can/want to do with regards to water quality analysis.

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Idaho Cooperative Fishery Research Unit

Figure 2: Length-frequency Relationships with Rainbow Trout and Whitefish in Silver Creek, March 14-16, 1977.



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file Silver Creek

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June, 1977

Since the last progress report, trips were made to Silver Creek on April 15-17, May 23-25, June 2 and June 13-14.

The vegetation in Silver Creek has grown profusely since mid-March. Chara (Chara), a macrophyte which we didn't collect in our first samples, is by far the most abundant, both in area covered and in biomass, with watercress (Nasturtium aquaticum) being the second most abundant. At the present time these two macrophytes cover about 70-90% of the bottom in the silted areas of stream, and in gravel-type substrate, about 50% of the bottom is covered. The chara is growing up to the surface of the water in many places, and where this occurs, moss is growing on top of the chara. In shallow areas, watercress is emergent, especially in the upper tributaries, where it is becoming increasingly more difficult to see the water at all.

Drift insect samples were taken on April 15-17, May 23-25 and June 13-15. Benthos samples were taken on April 17 and June 2. These are currently being analysed for invertebrates.

Flow readings for the main tributaries crossing Highway 68 were taken on April 16, 1977. The readings were as follows: Buhler drain - 5.9 cfs.; Patton Creek - 2.25 cfs.; Cain Creek - 4.3 cfs.; Chaney Creek - 24.8 cfs.; Mud Creek - 8.2 cfs.; and Wilson Creek - 12.6 cfs. Loving Creek on March 18 had a flow of 53 cfs. Because of a lack of time, the flow for Grove Creek was not taken, nor was the flow of Stalker Creek at the Stalker Creek bridge taken. Flow readings on Silver Creek were taken on March 18, April 17 and May 25. In section 1 (electrofishing section), the flow was 125 cfs. on March 18 and April 17, and 119 cfs. on May 25. The flow in section 5 on March 18 and April 17 was 160 cfs.

In spite of the decrease in flow in Silver Creek between April 17 and May 25, the water level had risen from 2 to 4 inches in the stream. This is caused by the growth of vegetation.

Water temperature in Silver Creek during April 15-17 ranged from 4° C at 5:30 a.m., April 16, to 16° C at 4:30 p.m. April 17. The temperatures in the tributaries on the afternoon of April 17 ranged from 13° C to 15° C.

On May 23-25, we electroshocked the same five sections of Silver Creek that we had previously shocked on March 15-17. We caught 110 age I or older rainbow trout and 143+ young-of-the-year rainbow trout. We also caught 16 brook trout, of which 13 were juveniles, 119 whitefish (no juveniles), 110 suckers, 52 sculpin and 539 dace. The large abundance of dace was probably due to vast chara growth, which the dace seem to live in. The relatively small number of rainbow and brook trout and whitefish may be attributed to two factors. We may not have used enough current to attract the fish properly with our electrofishing gear and there may have actually been fewer fish present. Bill McMahan, (owner of Loving Creek Ranch), said that he saw many fish in the tributaries, apparently still spawning. Many of the fish in our samples had heron marks.

Figure 1 shows the length-frequency relationship with rainbow trout and whitefish.

Angler catch and preference data is currently being gathered by Harry Gibson, Idaho Fish and Game Biologist, and his assistant, Terry Powell. Anglers were interviewed on May 28, 29, 30, 31 and June 1, 4, 5, 7, 11 and 12 in the Nature Conservancy property. Forty-seven anglers fished for 106 hours and caught 150 trout for a catch rate of 1.42 trout per hour. Wild rainbow trout accounted for 94.7% of the catch, with brook trout accounting for the other 5.3%. No whitefish were reported caught. The trout ranged in size from 8 to 19

FREQUENCY

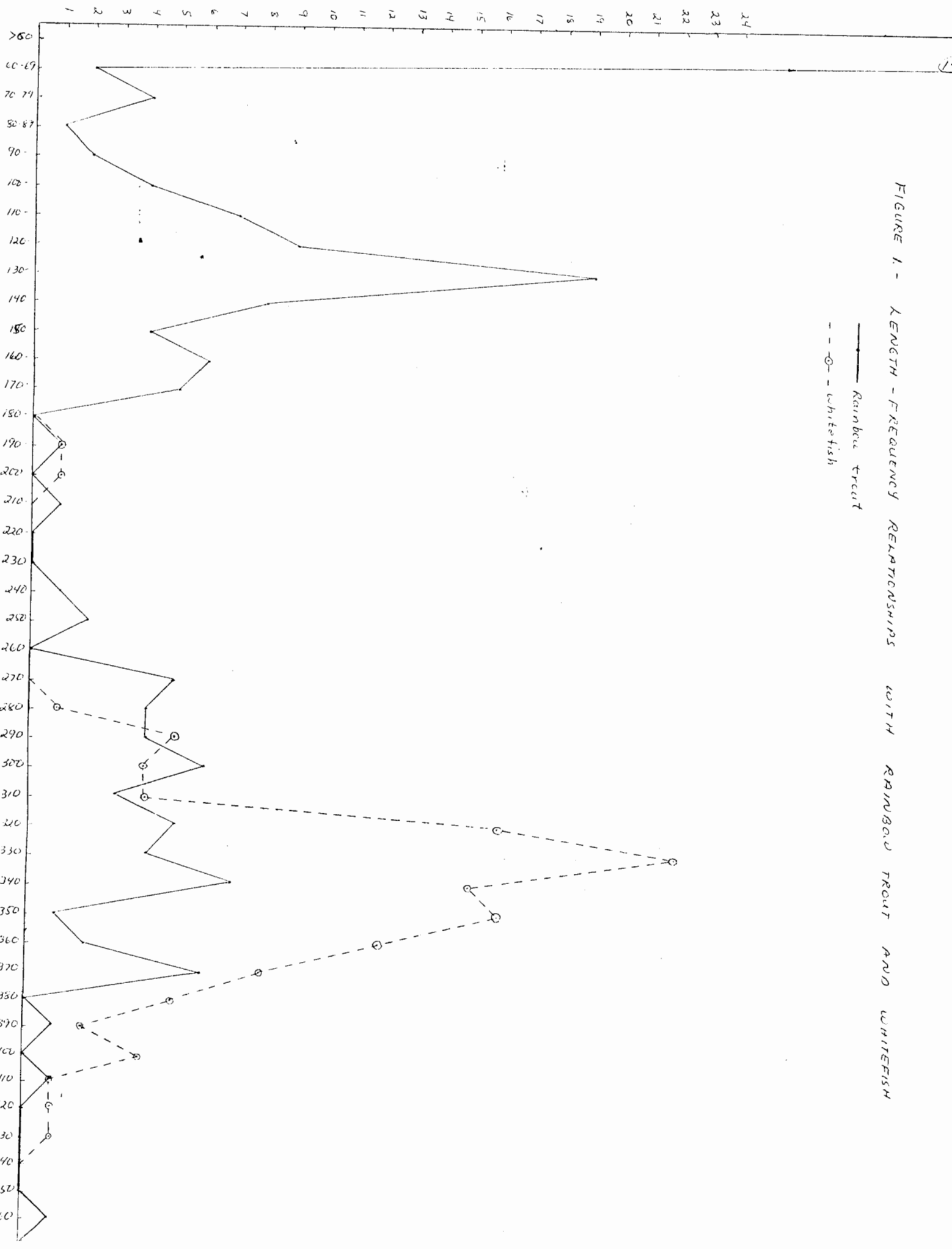


FIGURE 1 - LENGTH - FREQUENCY RELATIONSHIPS WITH RAINBOW TROUT AND WHITEFISH

— Rainbow trout
 - - - O - Whitefish

inches long. Most of the fishermen (72%) lived within 100 miles of the stream, with the remainder coming from California (16%), Colorado and Oregon.

Of the anglers who gave preferences, 79% (15 out of 19) said that fishing was good and 21% said it was fair. Most of the people thought the fish were smaller than in previous years. Eighty-two and four tenths percent of the anglers (14 out of 17) liked the catch and release regulations.

Idaho Department of Water Resources and the Department of Health and Welfare have had a water sampling program on the Silver Creek area since 1975. We have obtained their data from Daryl Clapp of the Department of Water Resources, and are reviewing the data at the present time.

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