10.0 Monitoring Spawning Rainbow Trout in the Slocan River: 2003

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1.0 Introduction

The Slocan Rivers Streamkeepers have begun long term monitoring of a variety of environmental and biological variables in the river to serve as a baseline from which to monitor ecological change. We identified spawning productivity of rainbow trout (*Oncorhynchus mykiss*) as a reasonable measurement of ecosystem health and therefore a valuable biological variable to monitor over time. The intent of this survey is to collected data for comparison from year to year at the same location (relative abundance) versus determining total productivity through out the river.

Our objectives for the first year was to begin collecting the relevant data required for baseline monitoring as well as develop a monitoring system that was efficient, cost effective and requires a minimum of technical skill, thereby developing a program that is easy for a community group to complete.

The majority of rainbow trout in the Slocan River spawn in the mainstem of the river below the outlet of Slocan Lake (Baxter and Roome, 1998). Spawning is reasonably concentrated both in timing and geographic position with a bridge crossing over primary spawning habitat. These conditions offer a reasonably efficient opportunity to enumerate spawning fish and redds in the Slocan River.

This report covers the first year of monitoring spawning rainbow trout in the river. It is our intent to continue this monitoring program annually. A primary component of the Steamkeeper's mission is to involve our community with our program at various levels. To this end we will be conducting the spawning trout enumeration in conjunction with the Outdoor Education program at W.E. Graham Middle School.

2.0 Methods

Two methods were employed this season to tally spawning trout and their associated redds. The first method was to count the number of spawning fish and redds observed up stream from the second bridge. Both total observation and a fixed plot were used. The fixed plot measured the length of the bridge, extending upstream (approximately 36x8 M). Observation began March 19th and continued through till May 6th, 2003.

The second method employed was snorkel float counts conducted between the first and second bridges. We used 6 counting lanes, stratified by shore, near-shore and mid channel zones for both of the right and left sides of the river, one diver per lane. All fish observed were tallied. Four floats were conducted between April 11th and May 6th, 2003. Only on the final float were redds tallied.

3.0 Results

Total observations from the second bridge were first made on March 19th with the final observations made on April 30th , 2003. The results are tabulated in Figure 1.

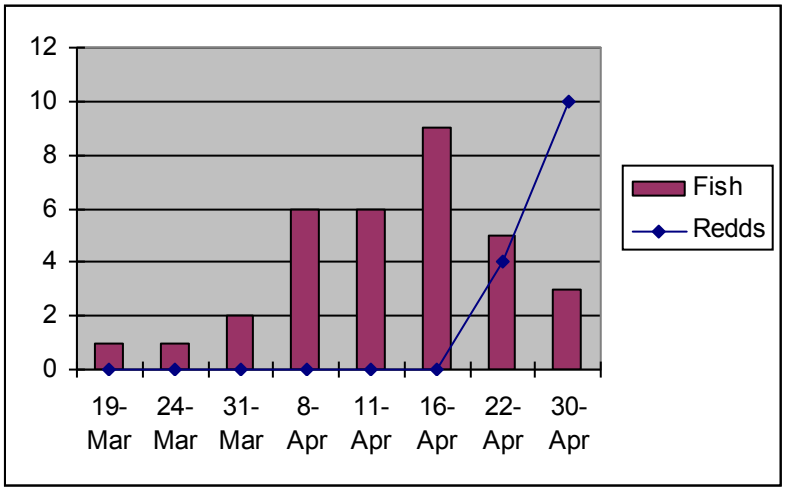

Figure 1. Total number of spawning rainbow trout and their associated redds observed from the second bridge from the outlet of Slocan Lake on the Slocan River, 2003.

Total observation recorded in the fixed plot up stream of the second bridge can be found in Figure 2 below.

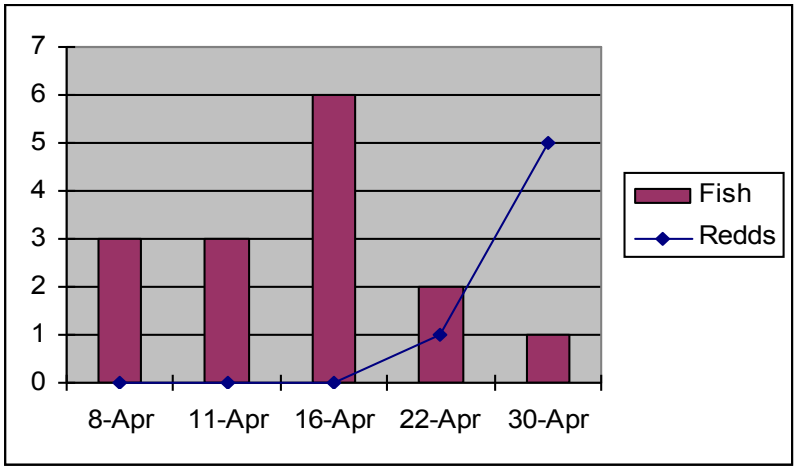

Figure 2. Total number of spawning rainbow trout and their associated redds observed from the fixed plot (36x8 m) at the second bridge from the outlet of Slocan Lake on the Slocan River, 2003.

Snorkel float counts were performed four times throughout the study. These results are summarized in Table 1 below.

Table 1. The number of spawning rainbow trout and their associated redds observed during snorkel float counts on the Slocan River, 2003. The floats were conducted using 6 observation lanes established across the river and were conducted between the first and second bridges below the outlet of Slocan Lake.

Date	# of pair	# of singles	Total # of fish	Total # redds
April 11	2	8	12	n/a
April 22	5	16	26	n/a
April 30	3	3	9	n/a
May 6	0	5	5	27

4.0 Discussion

The intent of using various methods of enumeration was to determine which method was the most efficient while still providing relevant data. The fixed plot method would appear to the best method based on cost effectiveness while still providing data that can be replicated. The total observation method is difficult to replicate due to the variability of sighting effectiveness between observes. The snorkel float data is a better representation of spawning activity on a given day due to the larger sample size but it is costly to perform This reduces the number of replications feasible over the spawning season, thereby reducing the precision of the method. It would be useful to complete a snorkel float count of redds at the end of the spawning season to correlate observation at the fixed plot over the larger area of the snorkel float.

Until further data is collected over the years, it is difficult to make any statement regarding the productivity of the rainbow trout population in the river at this time. However, it is encouraging to see this many fish returning to spawn, providing young fish for the establishment of future populations.

5.0 Conclusion

It would appear that we have developed a reliable methodology to measure spawning activity that can be collected accurately and easily over time. This information will be invaluable to record changes in the productivity of the rainbow trout population and to compare these changes with other environmental or biological factors that are being monitored concurrently throughout the Slocan River ecosystem. This information will help us better manage the health of the ecosystem that we all rely on as residents of the Slocan Valley.