

Sheppard Creek
Westslope Cutthroat Trout
Restoration Project



Annual Report
2009

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Biologists estimate that Westslope cutthroat trout have dwelled in the Stillwater River since the glaciers retreated, about 10,000 years ago. But for the past 50 years, non-native brook trout have invaded the entire basin much like a noxious weed. Brook trout displace cutthroat trout. The headwater of Sheppard Creek has one of the last remnants of cutthroat trout in the Stillwater River Basin. Yet even this area has been invaded by brook trout and monitoring suggested cutthroat trout were rapidly declining. By 2001, only 388 age 1+ cutthroat trout remained in the upper Sheppard Creek (compared to nearly 3,000 brook trout)¹.

The goal of this project is to conserve a viable, robust cutthroat trout population in upper Sheppard Creek as long as possible. A barrier to block any further invasion to the headwaters was installed in 2001. Ever since 2001, employees and volunteers have physically removed the brook trout with backpack electroshockers, while releasing all cutthroat trout captured unharmed. This project has not attempted total eradication of brook trout, since that beyond the current budget capability. It is hoped that brook trout eradication can be completed someday (by either chemical or physical means) and thus there would be at least one secured population of genetically-pure cutthroat trout left in the Stillwater River Basin.

From 2001 to 2003, a three year experiment was conducted to see if brook trout suppression is feasible. There was uncertainty if the 6100m (3.8 miles) of habitat upstream of the barrier could be successfully electrofished, especially considering the abundant woody cover. The effort involved multiple electrofishing passes per year and took 198 days total of employee and volunteer labor. The experiment was successful and the brook trout population dropped by about 85%. Cutthroat trout numbers increased to about 500 fish, which was encouraging but not as large of a gain as wished. The three year experiment greatly helped improve technique and efficiency. From 2004 to 2006, annual suppression continued, although at a smaller effort than previous years. By 2006, both brook trout and cutthroat trout were equally numerous at about 600 individuals each.

In 2007, the Brush Creek Wildfire burned the entire project area. All suppression work was suspended in 2007 and 2008 for safety concerns and budgetary shortfalls. However, annual population monitoring continued in three select locations just as it has since 1996.

During the winter of 2008, Peterson et al (2008) published a model that evaluates the best cost/benefit strategy for situations when biologists attempt to suppress brook trout indefinitely. Upon inquiry, the lead author agreed to model the situation in upper Sheppard Creek using local data. This model provided three key findings. First, if no further suppression takes place, the cutthroat trout would be essentially extirpated in ten years (2019). Second, if the entire stream was electrofished at least once every year, even the portions where the density is so low it is inefficient work, it might be possible to eradicate brook trout in fifteen years (2024). Third, the most cost/efficient strategy to

¹ Fisheries biologists generally do not count young-of-year fish in calculations. These small fish have steep mortality curves and are difficult to capture, thus confound any population estimates. This restoration project removed every young-of-year brook trout captured but all figures provided only consider fish greater than 70mm in total length, which is generally age 1+ size.

simply conserve a viable cutthroat trout population is to suppress brook trout for two consecutive years, then rest for three years. This strategy also found relatively little value in completing more than one electrofishing pass in any given year.

Since the goal of this project is to conserve a cutthroat trout population as long as possible (rather than total eradication of brook trout), the 2 years on/ 3 years off strategy is adopted. Suppression resumed in 2009. Six volunteers from Flathead Valley Chapter of Trout Unlimited and agency personnel completed the task in four calendar days. A total of 1244 brook trout were removed, plus roughly another 1000 young-of-year brook trout were removed. It is encouraging to note that cutthroat trout are now at all-time high of 1028 individuals. Suppression work is planned again in 2010, and then no work is planned for the three following years.

The following charts illustrate the current status of the upper Sheppard Creek population. The first chart illustrates the overall population size within the project area based on back-calculations with no confidence figures possible. The second chart is more precise data from the annual monitoring but they represent only very localized data for 100m of stream length.

Figure 1: Estimate of total brook trout and cutthroat trout populations in upper Sheppard Creek from 2001-2009. July dates represent the population prior to annual suppression and the October dates represent after the suppression. Precision and confidence intervals vary widely between reaches and this illustration is not statistically rigorous. No work was completed in 2007-2008, thus the dashed lines are only guesses.

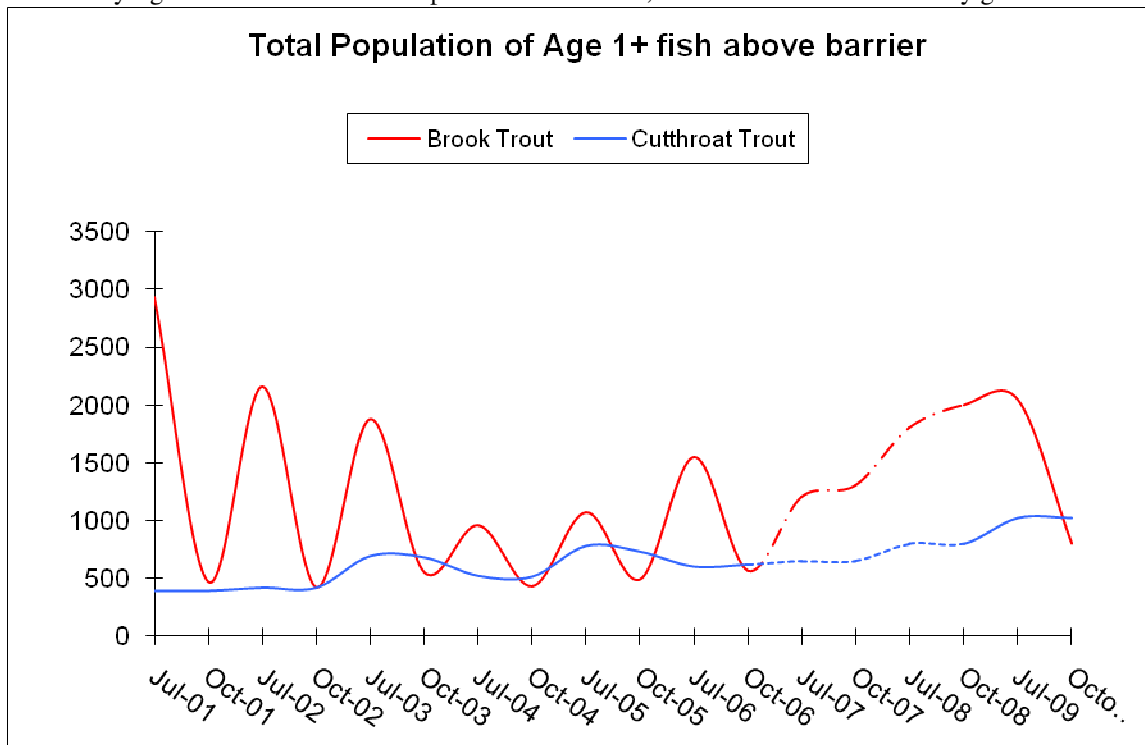
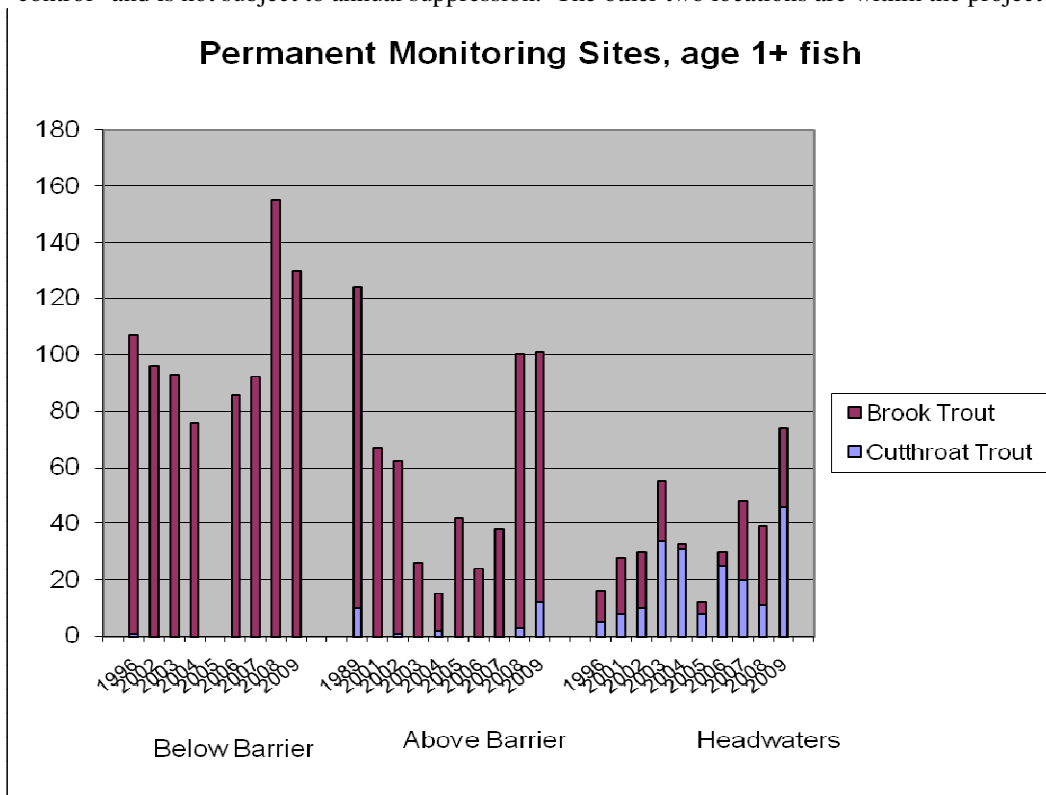


Figure 2. Fish population estimates at selected monitoring locations. The location below the barrier is a “control” and is not subject to annual suppression. The other two locations are within the project area.



Literature Cited

Peterson, D.P., K.D. Fausch, J. Watmouth, and R.A. Cunjak. 2008. When Eradication is not an Option: Modeling Strategies for Electrofishing Suppression of Nonnative Brook Trout to Foster Persistence of Sympatric Native Cutthroat Trout in Small Streams. *North American Journal of Fisheries Management* 28:1847-1867.

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