

Alberta Conservation Association 2017/18 Project Summary Report

Project Name: Abundance, Distribution, Spawning, and Thermal Habitat of Westslope Cutthroat Trout and Bull Trout in the Stimson Creek Watershed

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Partnerships

Alberta Environment and Parks
Environment and Climate Change Canada

Key Findings

- Both westslope cutthroat trout and bull trout continue to persist in the Stimson Creek watershed, but in low numbers.
- We observed a total of 214 westslope cutthroat trout, the greatest catch rates of westslope cutthroat trout were observed in upper Pekisko Creek, immediately below and upstream of McConnell Falls.
- We observed six bull trout redds and ten adult bull trout during fall spawning surveys in upper Pekisko Creek.

Introduction

Westslope cutthroat trout (WSCT) and bull trout (BLTR) coexist in many East Slope streams of southwestern Alberta, the majority of which have been impacted by habitat degradation and fragmentation, the introduction of non-native fish species, and overfishing (Fisheries and Oceans Canada 2014, and Alberta Sustainable Resource Development 2012). Pekisko Creek, a headwater tributary to the Stimson Creek watershed is a refuge for *near pure* (>95% – <99%) WSCT and BLTR populations. Despite many anthropogenically induced changes in fish habitat and fish communities both species continue to persist in the watershed (Western Native Trout Campaign 1991). In the summer of 2017, Alberta Conservation Association completed a comprehensive watershed trout assessment in the Stimson Creek watershed to identify undocumented pure WSCT populations, determine abundance and distribution of WSCT and BLTR, and assess BLTR spawning distribution and redd density in Pekisko Creek.

Methods

From July 4 – 27 and September 25 – 27, we completed surveys at 33 randomly selected sites in third-order or greater streams throughout the Stimson Creek watershed. We electrofished in an upstream direction. We measured length (fork length and total length [mm]) and weights (g) of all captured fish, and collected fin clips from all WSCT and cutthroat - rainbow trout hybrids for DNA analysis. We completed bull trout spawning surveys between September 5 – 7, and September 20 – 22 in Pekisko Creek from the mouth of the stream upstream to McConnell Falls covering a total distance of 44 kilometres. In crews of two, we hiked the stream in an upstream direction assessing spawning habitat potential, spawning activity, and collecting spawning habitat data which includes: geographic location, spawning substrate type, redd dimensions (length x width x pit depth [cm]), stream cover, location, and habitat type (run, riffle, pool) for each redd observed.

Results

We captured a total of 2,447 fish, consisting of 13 species, five of which were sportfish species, representing 21.7 percent of the total catch. Rainbow trout dominated the sportfish catches representing 46.7 percent of the catch, followed by WSCT at 40.3 percent and cutthroat x rainbow trout hybrid at 11 percent; bull trout and mountain whitefish represented only two percent combined (Table 1). Westslope cutthroat trout catch rates were highest in upper Pekisko Creek, Greenfeed Creek, and Bear Creek (Figure 1). The highest WSCT catches were above McConnell Falls, the same reach where a *near pure* WSCT population was identified following DNA analysis in 2008. Bull trout were captured at two sites in the Pekisko Creek watershed, on upper Pekisko and Miller creeks. Rainbow trout distribution was widespread throughout the watershed but absent upstream of McConnell Falls, and the lower and mid reaches of Stimson Creek. In total we observed six BLTR redds in upper Pekisko Creek, two downstream of McConnell Falls and four in the upper reach of Pekisko Creek (Figure 2). Furthermore we observed ten adult bull trout at or near redds downstream of McConnell Falls during our fall surveys.

Table 1. Fish catch in Stimson Creek watershed, 2017.

Fish category	Species	Total catch (n)	Proportion of total catch (%)
Sportfish	Rainbow trout	248	21.7%
	Cutthroat trout	214	
	Cutthroat x rainbow trout	59	
	Bull trout	8	
	Mountain whitefish	2	
Minnows	Longnose dace	1,153	56.8%
	Lake chub	110	
	Trout perch	99	
	Fathead minnow	20	
	Brook stickleback	7	
Suckers	White sucker	301	21.5%
	Longnose sucker	129	
	Mountain sucker	97	

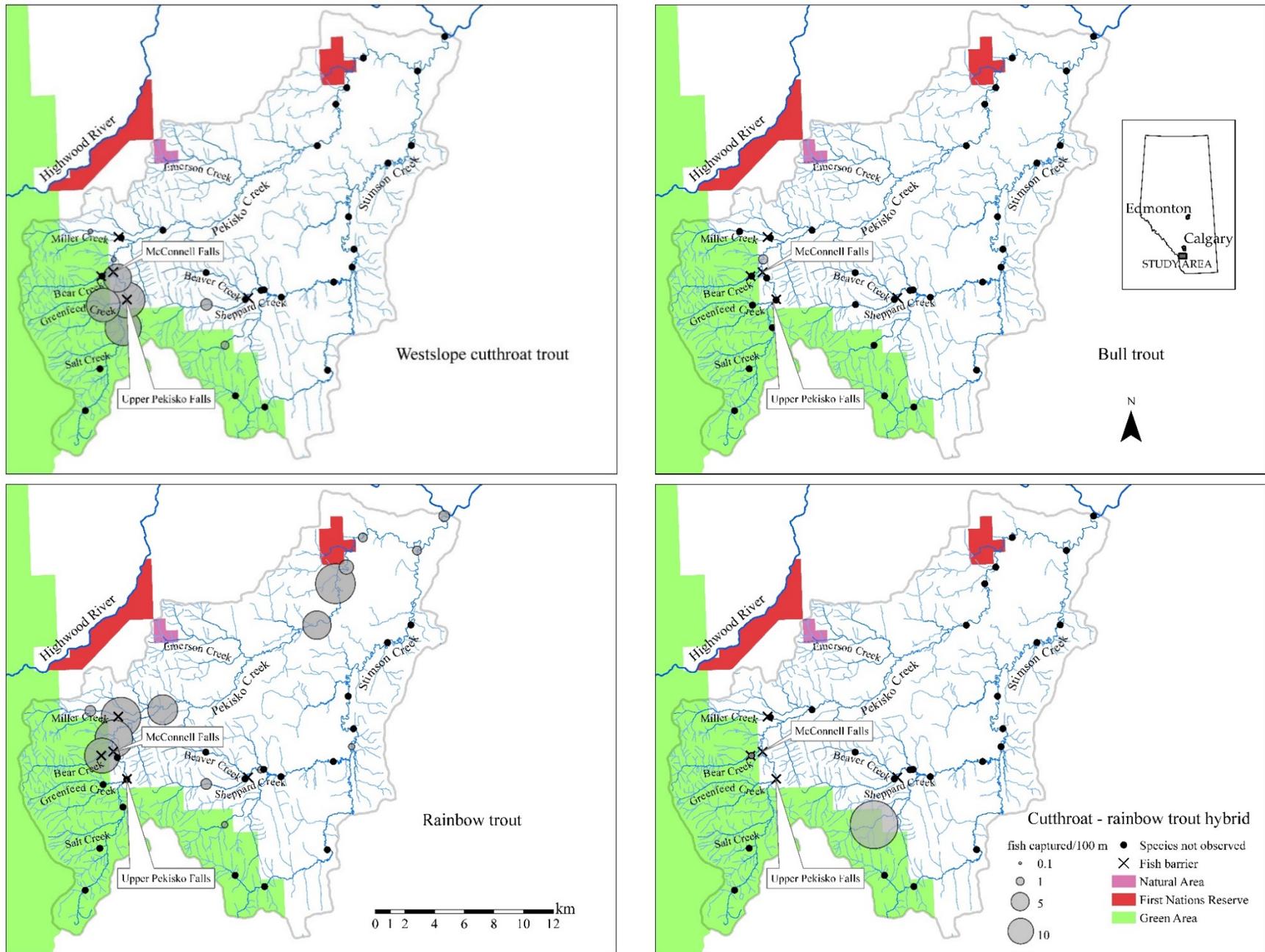


Figure 1. Relative abundance by catch-per-unit-effort (fish/100 m) of trout species captured in the Stimson Creek watershed, 2017.

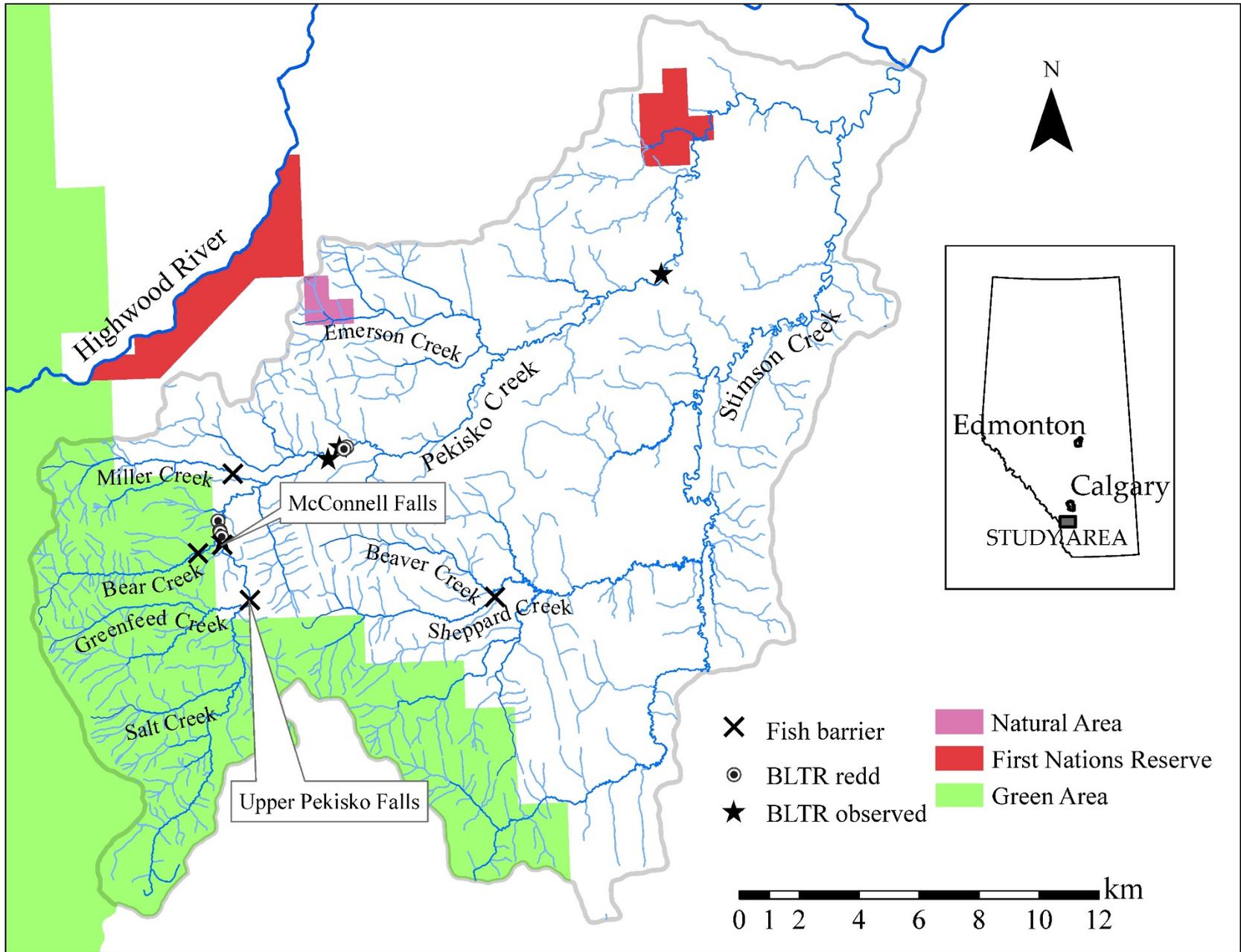


Figure 2. Bull trout redd distribution in the Stimson Creek HUC10 watershed, 2017

Conclusion

Westslope cutthroat trout and bull trout populations continue to persist in the Stimson Creek watershed but in low numbers. Westslope cutthroat trout were captured in the upper reaches of Pekisko Creek, Sheppard Creek, and Hay Creek, and rainbow trout were captured at most sites downstream of McConnell Falls. Sites upstream of McConnell Falls had the highest abundance of WSCT in the watershed, likely attributed to higher quality fish habitat, cold water temperatures, and absence of rainbow trout. Bull trout and bull trout spawning habitat was only identified in the Pekisko Creek watershed, suggesting that the current population consists of a small group resident fish.

Communications

- Fish data has been entered into Fish and Wildlife Information System loadform (FWMIS) and submitted.
- Final data report will be completed by March 31, 2018.

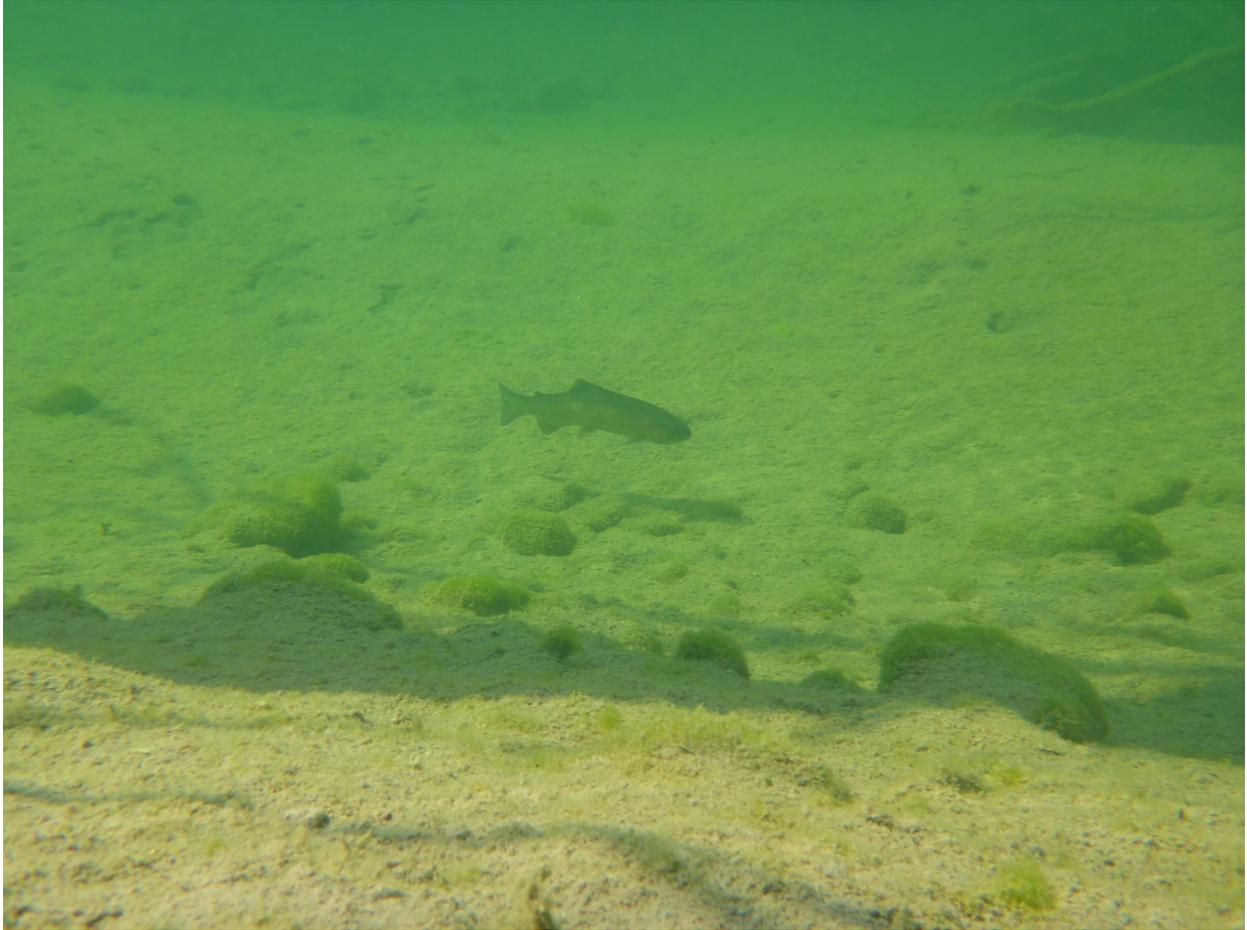
Literature Cited

- Alberta Sustainable Resource Development. 2012. Bull Trout Conservation Management Plan 2012 – 2017. Alberta Sustainable Resource Development, Species at Risk Conservation Management Plan No. 8. Edmonton, AB. 90 pp.
- Fisheries and Oceans Canada. 2014. Recovery Strategy for the Alberta populations of Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*) in Canada [Final]. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. iv + 28 pp + Appendices
- Western Native Trout Campaign. 1991. Imperiled Western Trout and the Importance of Roadless Areas. Centre for Biological Diversity, Tucson, Arizona; Pacific Rivers Council, Eugene, Oregon; Biodiversity Associates, Laramie, Wyoming.

Photos



McConnell Falls, lower fish barrier in Pekisko Creek, 2017. Photo: Jason Blackburn.



Rainbow trout observed during bull trout spawning surveys in Pekisko Creek.
Photo: Jason Blackburn.



Westslope cutthroat trout captured in Pekisko Creek upstream of McConnell Falls.
Photo: Jessy Dubnyk.