

**Alberta Conservation Association
2009/10 Project Summary Report**

Project Name: *North Saskatchewan and Ram Rivers Bull Trout Spawning Stock Assessment*

Fisheries Program Manager: Peter Aku

Project Leader: Mike Rodtka

Primary ACA staff on project:

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Partnerships

Alberta Streamwatch Conservation Coalition
Alberta Sustainable Resource Development
Forest Resource Improvement Association of Alberta
Shell Canada and Mancal Energy Tay River Environmental Enhancement Fund
Smoky Trout Farm
Sundre Forest Products

Key Findings

- Fall Creek is a key spawning stream for Bull Trout in the North Saskatchewan River drainage and provides rearing habitat for young-of-the-year and juvenile fish.
- Tracked 25 Bull Trout implanted with radio-transmitters in Fall Creek to overwintering locations in the Ram, North Saskatchewan and Clearwater rivers, travelling up to 74. stream km.
- Observed 30, 55 and 58 Bull Trout redds (the gravel nest of spawning trout) in Fall Creek below the falls in 2007, 2008 and 2009, respectively.
- Estimated that approximately 4,000 juvenile Bull Trout inhabit the 7.5 km of Fall Creek below the falls.

Introduction

Anglers reported catching large, presumably migratory Bull Trout (*Salvelinus confluentus*) in Fall Creek, a tributary to the Ram River, but little else was known about the population. The Fall Creek drainage receives substantial recreational and industrial use. These activities have the potential to negatively impact Bull Trout populations, and spawning areas are particularly susceptible. In 2007, we documented the use of Fall Creek by migratory Bull Trout for spawning. In 2008 and 2009, activities focused on identifying the stream of origin of these fish and the

timing and magnitude of the spawning run using a combination of telemetry and genetic techniques.

Methods

We used angling and electrofishing gear to capture Bull Trout from Fall Creek and from the Ram, North Saskatchewan and Bighorn rivers from April to October in 2008 and 2009 for collection of tissue samples (Table 1). An adipose fin clip was taken from all Bull Trout >199 mm fork length (FL) and sent to the University of British Columbia for genetic analysis. We electrofished nine 250-m sites in July 2008 to assess the distribution and abundance of Bull Trout in Fall Creek. We used electrofishing catch data to estimate abundance of juvenile Bull Trout (i.e., fish 70 – 300 mm FL) in the 7.5 km of stream below Fall Creek falls, a barrier to upstream fish passage. We also operated a conduit fish fence and box trap near the mouth of Fall Creek (September – October 2008) to capture post-spawn Bull Trout as they left the stream. We implanted 27 of the 75 Bull Trout captured in the trap with coded radio-tags and tracked them monthly using a helicopter from October 2008 to April 2009 to overwintering locations. We also surveyed Fall Creek for Bull Trout redds (the gravel nest of trout) during the autumn of 2007 to 2009 to assess the location and magnitude of spawning activity.

Table 1. Combined angling and electrofishing effort used to obtain Bull Trout (BLTR) tissue samples from focal drainages within the study area. Tissue samples were typically taken from fish > 199 mm FL and were not collected in 2007.

Drainage	Year								
	2007			2008			2009		
	Effort (hrs)	BLTR	DNA Samples	Effort (hrs)	BLTR	DNA Samples	Effort (hrs)	BLTR	DNA Samples
Ram River	19.1	13	—	26.4	25	17	33.9	34	21
Fall Creek	14.5	38	—	13.5	322	88	0.0	—	—
North Saskatchewan River	5.9	4	—	43.3	5	4	4.0	2	2
Bighorn River	—	—	—	5.2	2	2	4.8	6	6

Results

We captured 451 Bull Trout in approximately 170 hours of effort and obtained tissue samples from Fall Creek and from the North Saskatchewan, Big Horn and Ram rivers (Table 1). Results of the DNA analysis are pending. The size distribution of Bull Trout in the electrofishing catch

ranged from 41 – 680 mm FL indicating Fall Creek is an important stream for spawning and rearing Bull Trout. We estimated 3,857 (90% CI = 1,447 – 9,258) juvenile Bull Trout in the stream below the falls. Relocated implanted fish (n = 25) travelled up to 74 km, migrating rapidly (<30 days) to overwintering locations in the Ram, North Saskatchewan and Clearwater rivers (Figure 1). Bull Trout spawning activity in Fall Creek was concentrated in the upper reaches of the stream below the falls (Figure 2), peaked around the third week in September, and was essentially complete by the second week in October. Fish movement during the winter months was minimal.

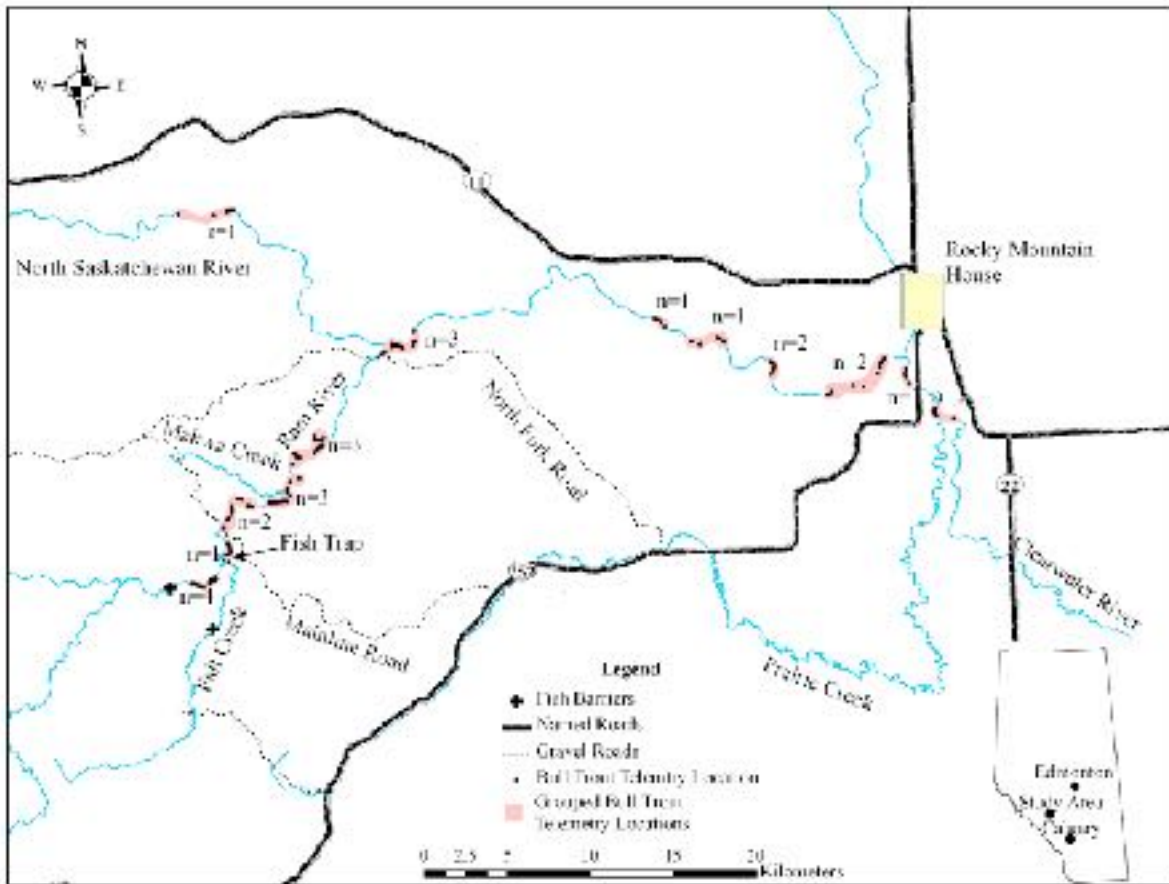


Figure 1. Areas in the Ram, North Saskatchewan and Clearwater rivers where Bull Trout tagged in Fall Creek were relocated (October 2008 – April 2009) using radio-telemetry.

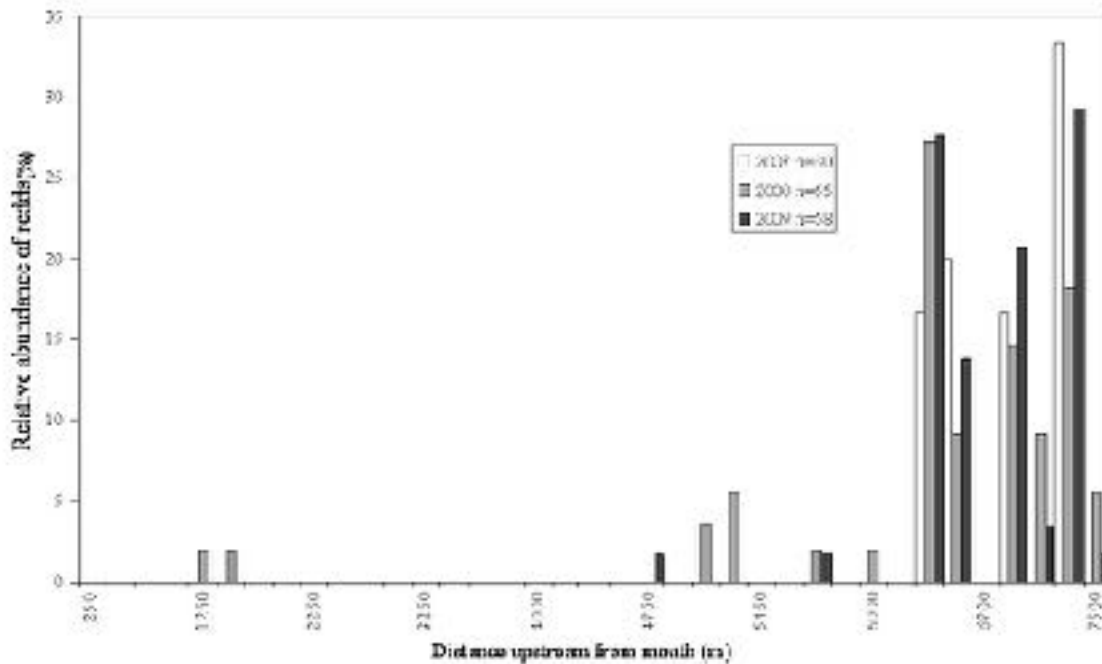


Figure 2. Redd counts from Fall Creek redd surveys in fall of 2007 – 2009 working upstream from the mouth to the falls (7,500 m). We observed four redds (not shown) between the mouth of Fall Creek and 3,750 m in 2007.

Conclusions

Our results document the importance of Fall Creek to the maintenance and recovery of Bull Trout stocks in the Ram, North Saskatchewan and Clearwater rivers. Not only is Fall Creek a key stream for spawning Bull Trout, but it also provides rearing habitat for young-of-the-year and juvenile fish. None of this information was available prior to our study. The information collected over the course of our study is critical for the conservation and management of the species in the North Saskatchewan River watershed and has resulted in proposed changes to recreational and industrial practices in the drainage.

Communications

- Distributed project summary information to project partners.
- Hosted staff from Sundre Forest Products and Alberta Sustainable Resource on field tours of the study area.
- Presentations to Alberta Sustainable Resource Development staff, Alberta Junior Forest Rangers and Alberta Junior Forest Wardens.
- Poster and oral presentations to a Bull Trout organization (*Salvelinus confluentus* Curiosity Society).

Literature Cited

n/a

Photos

Alberta Conservation Association staff, Kevin Fitzsimmons (left) and Chad Judd (right), preparing a Bull Trout for surgery at Fall Creek fish trap. (Photo: Robin McDonald)



Alberta Conservation Association staff, Chad Judd, holding a Ram River Bull Trout. (Photo: Kevin Fitzsimmons)

Winter conditions on the Ram River. (Photo: Chad Judd)