

Alberta Conservation Association 2011/12 Project Summary Report

Project Name: *Clearwater River Core Area Bull Trout Status*

Fisheries Program Manager: Peter Aku

Project Leader: Mike Rodtka

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Partnerships

Alberta Sustainable Resource Development

Key Findings

- Captured 122 bull trout at 57 sample reaches.
- Captured juvenile bull trout in six of 14 patches sampled.
- Estimated bull trout occupancy, which will be used to assess the status of bull trout in the study area and enable more cost-effective design of similar studies in the future.

Introduction

Alberta Sustainable Resource Development (ASRD), in review of their bull trout (*Salvelinus confluentus*) management plan, used a modification of the Natural Heritage Network ranking system to rank bull trout population trends in the province (ASRD and Alberta Conservation Association ACA 2009). This ranking system divides watersheds into core areas that provide habitat and the necessary requirements for long-term survival of bull trout. Core areas are ranked according to adult population size, area of occupancy, short-term trends and threats to the core area (Fredenberg et al. 2005; U.S. Fish and Wildlife Service 2008). The majority of core areas in Alberta have bull trout populations that are considered *At Risk* or at *High Risk* of extirpation. The objective of our study is to determine the area of occupancy of bull trout in the Clearwater River core area; the bull trout population here is considered *High Risk*.

Methods

We used a patch-based approach described by Isaak et al. (2009) for monitoring bull trout distribution, modified to enable occupancy estimation and modeling. Broadly defined, a bull trout 'patch' contains those habitats necessary for spawning and early juvenile rearing. We delineated patches using stream order, elevation and watershed area. This approach resulted in 23 patches.

Based on a bull trout detection probability of 0.3 (2010 pilot study), we determined five sample reaches per patch would achieve a maximum false absence rate of 0.20 (i.e., 20% chance bull trout present but not detected). We randomly selected without replacement sample reaches from within each patch using a Generalized Random Tessellation Stratified (GRTS) design. We assessed alternatives if we considered one of the first five reaches as “non response” (i.e., no access, not safe to wade). Sampling continued until we had sampled five reaches or completed the GRTS sample list. We considered patches where we captured juvenile bull trout (i.e., <150 mm fork length, FL) to be occupied.

We used a hand-held Global Positioning System (GPS) to locate the sample reaches within each patch. Sampling took place from June 15 – August 18, 2011. We sampled the reaches using backpack electrofishing gear by performing a single pass in an upstream direction. Sample reaches were 250 m in length or 50 times the mean wetted-width, whichever was greater. We enumerated all captured fish by species, measured their FL (mm), and returned them to the creek.

Results

We captured a total of 122 bull trout ranging in size from 61 – 302 mm FL at 57 sample reaches (Figure 1). Of the 14 patches sampled, we detected juvenile bull trout in six, all located upstream of Highway 734 (Figure 2). We captured bull trout at two other patches (Tay River and Radiant Creek); however, these fish were larger than our 150 mm FL cutoff (Table 1).

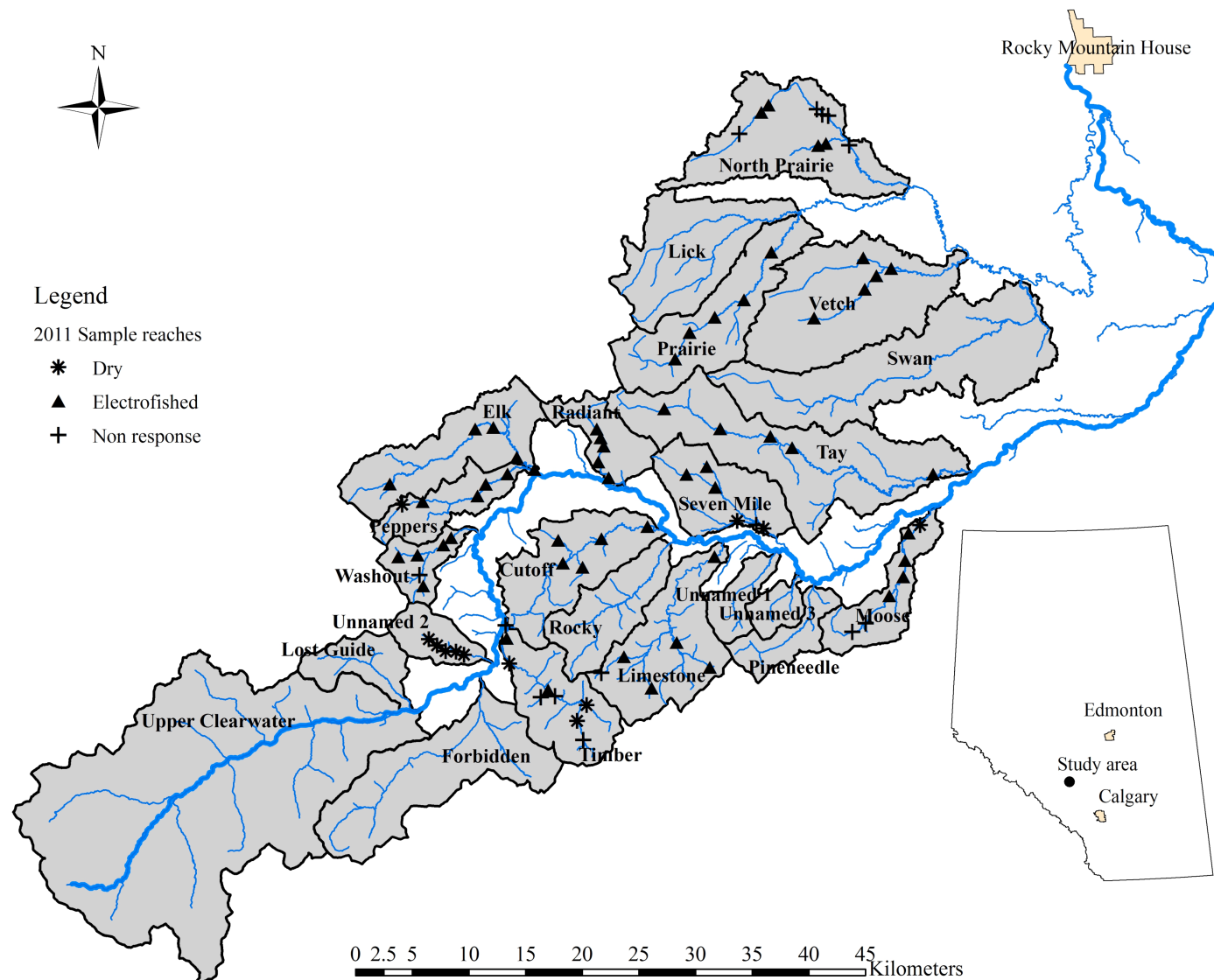


Figure 1. Location of sample reaches in identified patches within the Clearwater River core area.

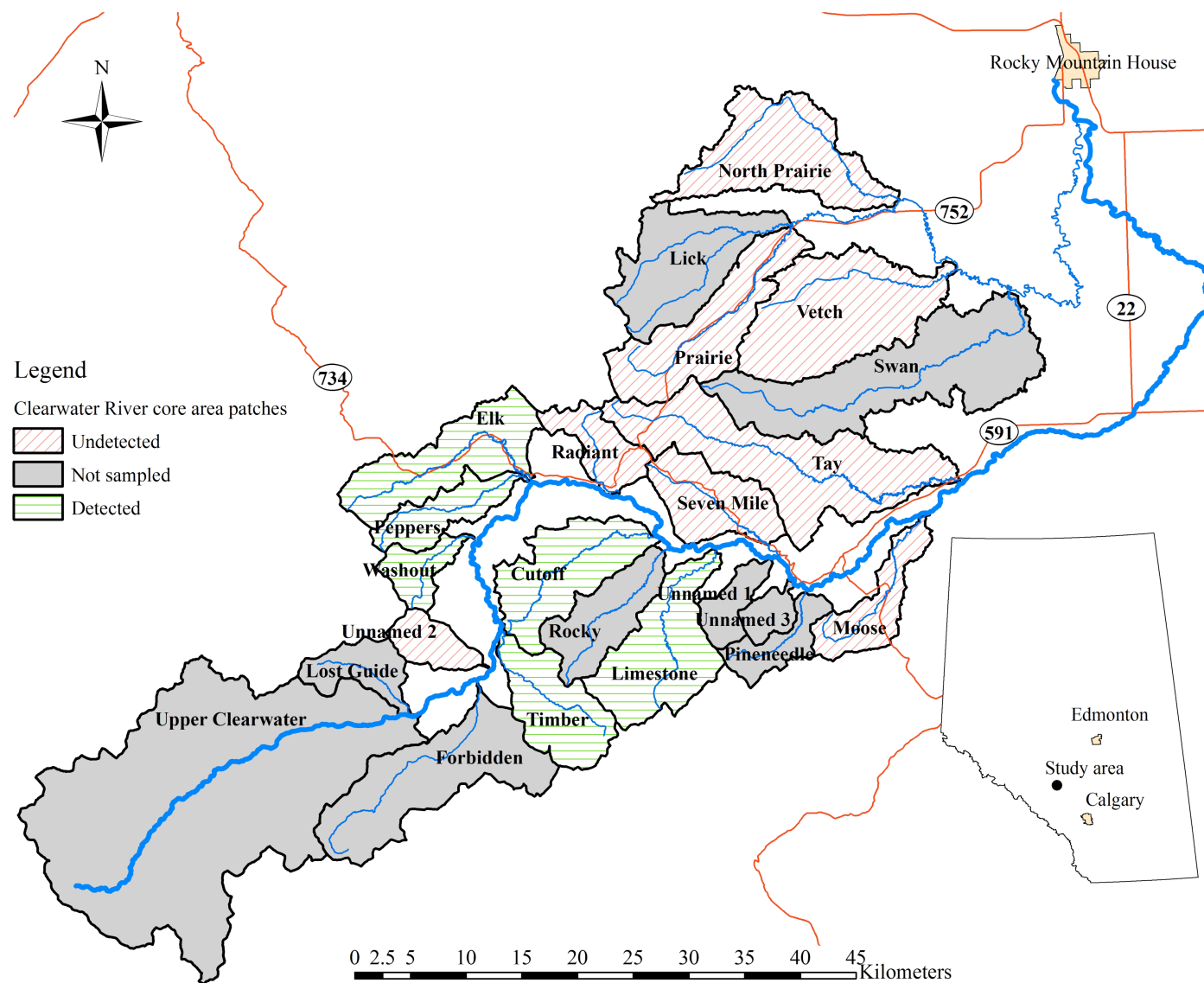


Figure 2. Patches where we detected juvenile bull trout (i.e., <150 mm fork length) in the Clearwater River core area.

Table 1. Species composition and bull trout detection in 14 patches sampled in the Clearwater River core area, 2011. The Unnamed Creek 2 patch was dry and no sites were sampled. Species codes: BKTR = brook trout, BLTR = bull trout, BNTR = brown trout, BKTRxBNTR = brook/brown trout hybrid, BURB = burbot, LKCH = lake chub, LNDC = longnose dace, MNWH = mountain whitefish, SPSC = spoonhead sculpin, WHSC = white sucker.

Patch	Reaches electrofished	Fish species captured	Reaches BLTR detected	Reaches juvenile BLTR detected
Cutoff Creek	5	BKTR, BLTR, BNTR	3	3
Elk Creek	5	BKTR, BLTR, BNTR	5	3
Limestone Creek	5	BKTR, BLTR	4	3
Moose Creek	4	BKTR	0	0
North Prairie Creek	4	BKTR, BURB	0	0
Peppers Creek	4	BKTR, BLTR, BURB	2	1
Prairie Creek	5	BKTR, BNTR	0	0
Radiant Creek	5	BKTR, BKTRxBNTR, BLTR, LNDC	3	0
Seven Mile Creek	3	-	0	0
Tay River	5	BKTR, BLTR, BNTR, LKCH, LNDC, MNWH, SPSC, WHSC	3	0
Timber Creek	2	BLTR	1	1
Unnamed Creek 2	-	-	-	-
Vetch Creek	5	BKTR, BNTR, MNWH	0	0
Washout Creek	5	BLTR	2	2

Conclusions

We captured bull trout in six of the 14 patches sampled this year. All patches where we detected juvenile bull trout are located upstream of Highway 734. Field work will continue in 2012; when complete, our study will be used to assess the status of bull trout in the study area and enable more cost-effective design of similar studies in the future.

Communications

- Presentation to ASRD on project delivery and results.
- Presentation to Dickson Fish and Game Association.

- Presentation to Sundre Forest Products regional advisory committee.
- Presentation to the *Salvelinus confluentus* Curiosity Society.

Literature Cited

- Alberta Sustainable Resource Development and Alberta Conservation Association. 2009. Status of the bull trout (*Salvelinus confluentus*) in Alberta: update 2009. Alberta Sustainable Resource Development. Wildlife Status Report No. 39 (Update 2009). Edmonton, Alberta. 48 pp.
- Fredenberg, W., J. Chan, and J. Young. 2005. Bull trout core area conservation status assessment. U.S. Fish and Wildlife Service, Portland, Oregon, USA. 94 pp + App.
- Isaak, D., B. Rieman, and D. Horan. 2009. A watershed-scale monitoring protocol for bull trout. General Technical Report RMRS-GTR-224. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado, USA. 25 pp.
- U.S. Fish and Wildlife Service. 2008. Bull trout recovery: monitoring and evaluation guidance. Report prepared for the U.S. Fish and Wildlife Service by the Bull Trout Recovery and Monitoring Technical Group, Portland, Oregon, USA. Version 1. 74 pp.

Photos



Alberta Conservation Association staff members, Mike Rodtka and Jennifer Oko, measuring habitat in Washout Creek. (Photo: Chad Judd)



Dry sections of Timber Creek. (Photo: Emily Turton)



Alberta Conservation Association electrofishing crew, Jennifer Oko and Chad Judd, preparing to sample Radiant Creek. (Photo: Mike Rodtka)