

## **Alberta Conservation Association (ACA)**

**Date:** 2014-2015

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

**Fisheries Program Manager:** Peter Aku

**Project Leader:** Mike Rodtka

**Primary ACA staff on project:**

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### **Partnerships**

- Alberta Culture and Tourism
- Alberta Environment and Sustainable Resource Development
- Alberta Stream Watch Conservation Coalition
- TD Friends of the Environment Foundation

### **Key Findings**

- Captured 89 bull trout ranging in size from 41 to 440 mm fork length at 25 sites in the Muskeg River core area using backpack electrofishing gear.
- Detected juvenile bull trout at six sites.
- Angled 41 bull trout in a 4 km upper reach of the Muskeg River.
- Estimated bull trout abundance to be 50 (95% CI = 41 – 76) in the first 2 km of the upper reach.
- Angled and float electrofished 15 bull trout in a 4.5 km reach of the lower Muskeg River, which was not enough for a valid abundance estimate.

### **Introduction**

Bull trout (*Salvelinus confluentus*) is a sport fish native to the eastern slopes of Alberta. In review of its bull trout management plan, Alberta Environment and Sustainable Resource Development (ESRD) used a modification of the Natural Heritage Network ranking system to rank bull trout population trends in the province (Alberta Sustainable Resource Development and Alberta Conservation Association 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 (United States Fish and Wildlife Service 2008; Fredenberg et al. 2005). Most core areas in Alberta have bull trout populations considered *At Risk* or at *High Risk* of extirpation. More recently, bull trout is an identified focal species for assessment using the Fish Sustainability Index (FSI; Government of Alberta 2014). Our objectives in 2014/15 were to estimate distribution of juvenile bull trout (fork length; FL  $\leq$  150 mm) and of non-native brook

trout (*Salvelinus fontinalis*) and rainbow trout (*Oncorhynchus mykiss*) in the Muskeg River core area, and to assess abundance of adult bull trout (FL  $\geq$  250 mm) at two reaches of the Muskeg River.

## **Methods**

We selected 25 spatially balanced sample sites from points placed along third-order to fifth-order streams to assess sport fish distribution in the Muskeg River core area (Figure 1). We sampled the sites using backpack electrofishing gear by performing a single pass in an upstream direction. Sampling occurred from July 7 to 29, 2014. Sites were 300 m in length or 50 times the mean wetted-width, whichever was greater. We enumerated all captured fish by species and measured their FL (mm).

We used angling and raft electrofishing gear to capture bull trout for mark-recapture abundance estimates at two reaches (8.5 river kilometres total) of the Muskeg River from July 3 to 6, 2014. We fin-clipped and implanted adult bull trout with a passive integrated transponder (PIT) tag for future identification.

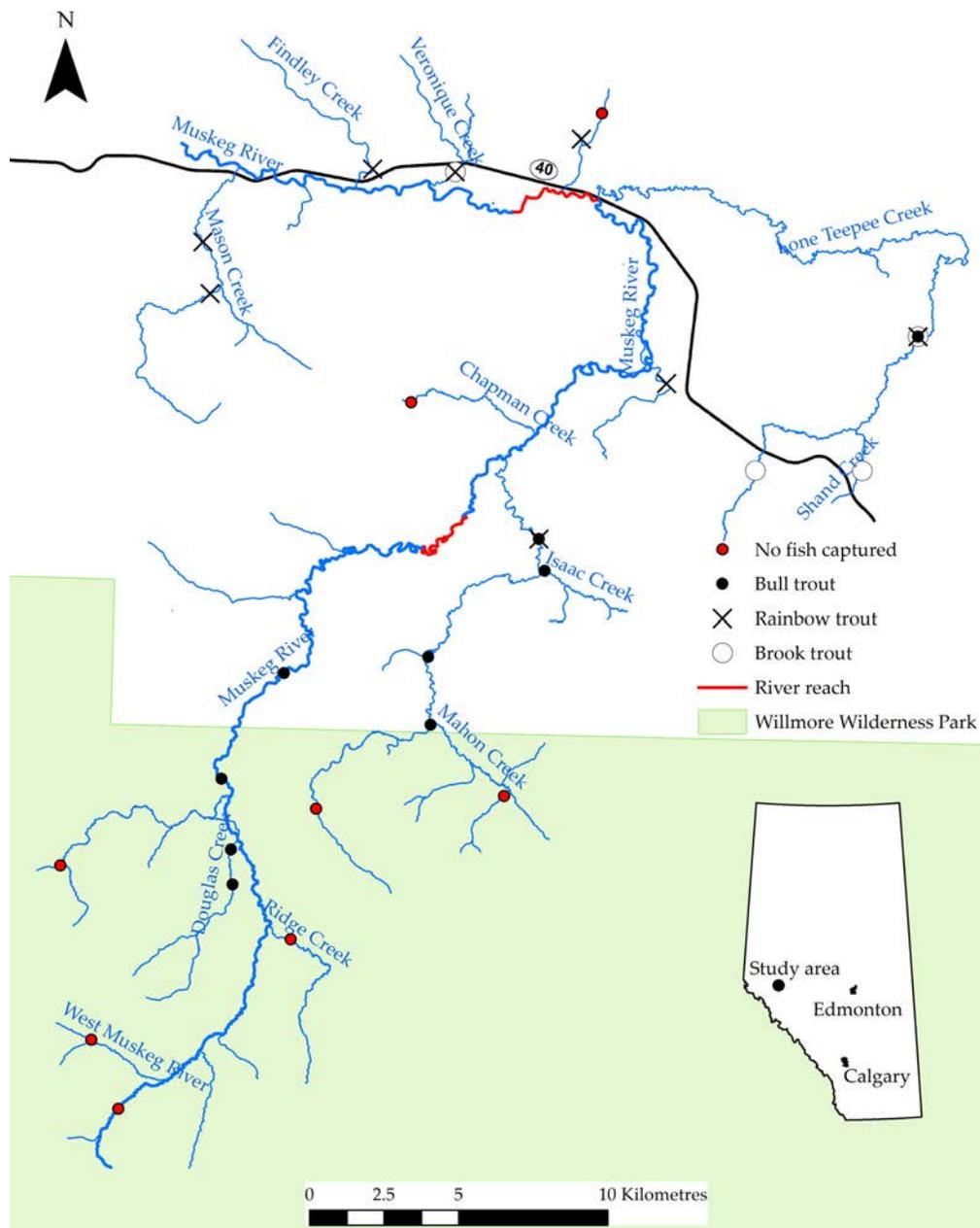


Figure 1. Location of backpack electrofishing sites used to assess sport fish distribution and of river reaches used to assess bull trout abundance in the Muskeg River core area.

## Results

We backpack electrofished 25 sites and caught 89 bull trout, 231 brook trout and 159 rainbow trout. Bull trout ranged in size from 41 to 440 mm FL (Figure 2). Bull trout were caught at nine sites, brook trout at three sites and rainbow trout at eight sites (Figure 1). We detected juvenile bull trout ( $n = 42$ ) at six sites.

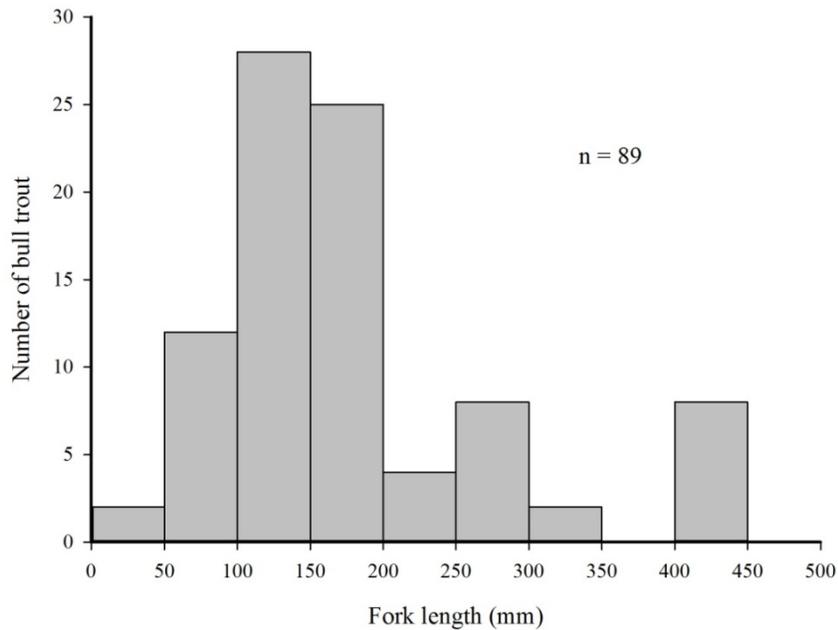


Figure 2. Length frequency distribution for bull trout captured at backpack sites in the Muskeg River core area, 2014.

We angled for 9.6 hours and caught 41 individual bull trout and 1 rainbow trout in 4 km of the upper reach of the Muskeg River. Bull trout ranged in size from 286 to 498 mm FL (Figure 3). We estimated abundance of bull trout in the first 2 km of the upper reach to be 50 (95% CI = 41 – 76). Water conditions limited our ability to sample the upper reach with electrofishing gear. We angled 3.08 hours and electrofished 1,911 seconds and caught 15 bull trout, 7 brook trout and 9 rainbow trout in 4.5 km of the lower reach. Bull trout ranged in size from 262 to 514 mm FL (Figure 3). Our low catch prevented us from formally estimating bull trout abundance at the lower reach.

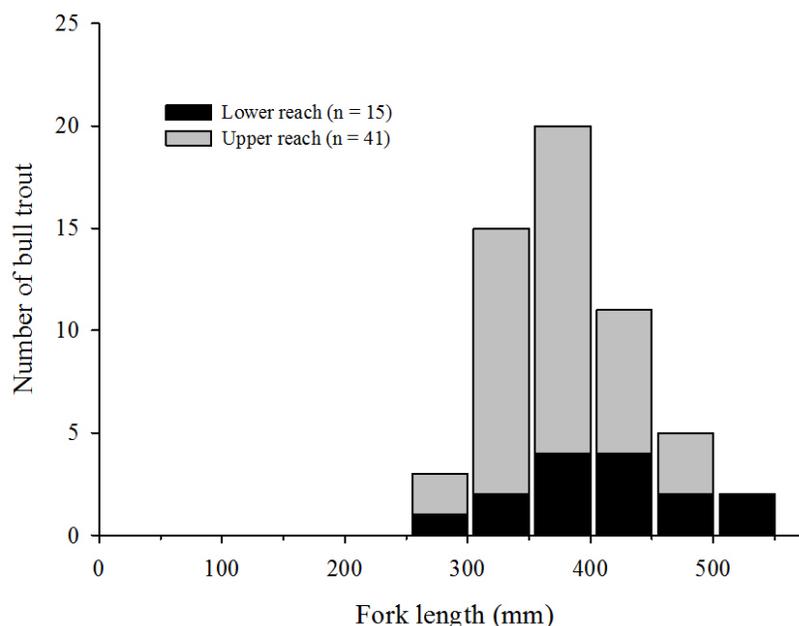


Figure 3. Length frequency distribution for bull trout captured at two reaches in the Muskeg River, 2014.

## Conclusions

We captured 89 bull trout, 231 brook trout and 159 rainbow trout at 25 sites in the Muskeg River core area. Juvenile bull trout were caught at six sites. We captured 41 bull trout in the upper reach of the Muskeg River and estimated abundance to be 50 (95% CI = 41 – 76). We only captured 15 bull trout in the lower reach, which was not enough for a valid abundance estimate.

## Communications

- Delivered presentation to ESRD on project delivery and results.
- Presented project objectives to Aseniwuche Winewak Nation.
- Discussed study objectives and fish passage options with Foothills Forest Products.
- Submitted data for inclusion in the Government of Alberta’s Fisheries and Wildlife Management Information System database.
- Submitted progress report to ESRD and Alberta Culture and Tourism.

## 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, Canada. 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.

Government of Alberta. 2014. A generic rule set for applying the Alberta Fish Sustainability Index, second edition. Edmonton, Alberta, Canada. 50 pp.

United States 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 biologists Chad Judd and Mike Rodtka electrofishing the Muskeg River. Photo: Melissa Buchholtz



Alberta Conservation Association biologists Chad Judd and Mike Rodtka electrofishing a tributary to the Muskeg River. Photo: Melissa Buchholtz