

Alberta Conservation Association 2015/16 Project Summary Report

Project Name: North Saskatchewan River Drainage Fish Sustainability Index Data Gaps

Fisheries Program Manager: Peter Aku

Project Leader: Chad Judd

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Partnerships

Alberta Environment and Parks
Sundre Forest Products

Key Findings

- We captured seven fish species at 50 sites distributed throughout three focal areas of the upper North Saskatchewan River watershed.
- Brook trout and brown trout dominated our catch, which also included small numbers of bull trout, longnose dace, mountain whitefish, spoonhead sculpin and white sucker.
- Bull trout were only detected at four sites.
- Only our catch of brook trout and brown trout included fish <50 mm fork length, likely young-of-the-year.

Introduction

Fishery inventories provide resource managers with information on fish abundance, species distribution and fish habitat. This information is a key component of responsible land-use planning and management if threats to stream health are to be minimized. Alberta Environment and Park's (AEP) Fish Sustainability Index (FSI) is a standardized process of assessment that provides a landscape-level overview of fish sustainability within the province and enables broad-scale evaluation of management actions and land-use planning (MacPherson et al. 2014). Collection of data to support FSI development for imperiled native sport species is a priority activity for Alberta Conservation Association (ACA).

Bull trout is a native sport species designated as *Threatened* in Alberta (Saskatchewan – Nelson rivers populations) (COSEWIC 2012). Bull trout is particularly sensitive to habitat change and is thought to be an indicator of general ecosystem health (COSEWIC 2012). This sensitivity, coupled with its relatively wide distribution, makes bull trout an attractive species for monitoring sustainability in headwater streams of the North Saskatchewan River watershed. In 2015, ACA partnered with Sundre Forest Products (SFP) to assess bull trout distribution and abundance in

areas of mutual interest to SFP and government land-use planners in SFP's Forest Management Area.

Methods

We selected sample sites from points placed along first- to fifth-order streams using a spatially balanced design to assess sport fish distribution in three focal areas in the upper North Saskatchewan River watershed. Highest priority was given to sampling areas in the bull trout range where current inventory data are absent. Focal areas were identified in consultation with project partners and included Pineneedle Creek and surrounding streams, Trout Creek, and the headwaters of the Baptiste River (Figure 1). We sampled the sites using backpack electrofishing gear by performing a single pass in an upstream direction. Sampling took place from June 16 to August 17, 2015. Sites were 300 m in length. We enumerated all captured fish by species and measured their fork length (FL; mm).

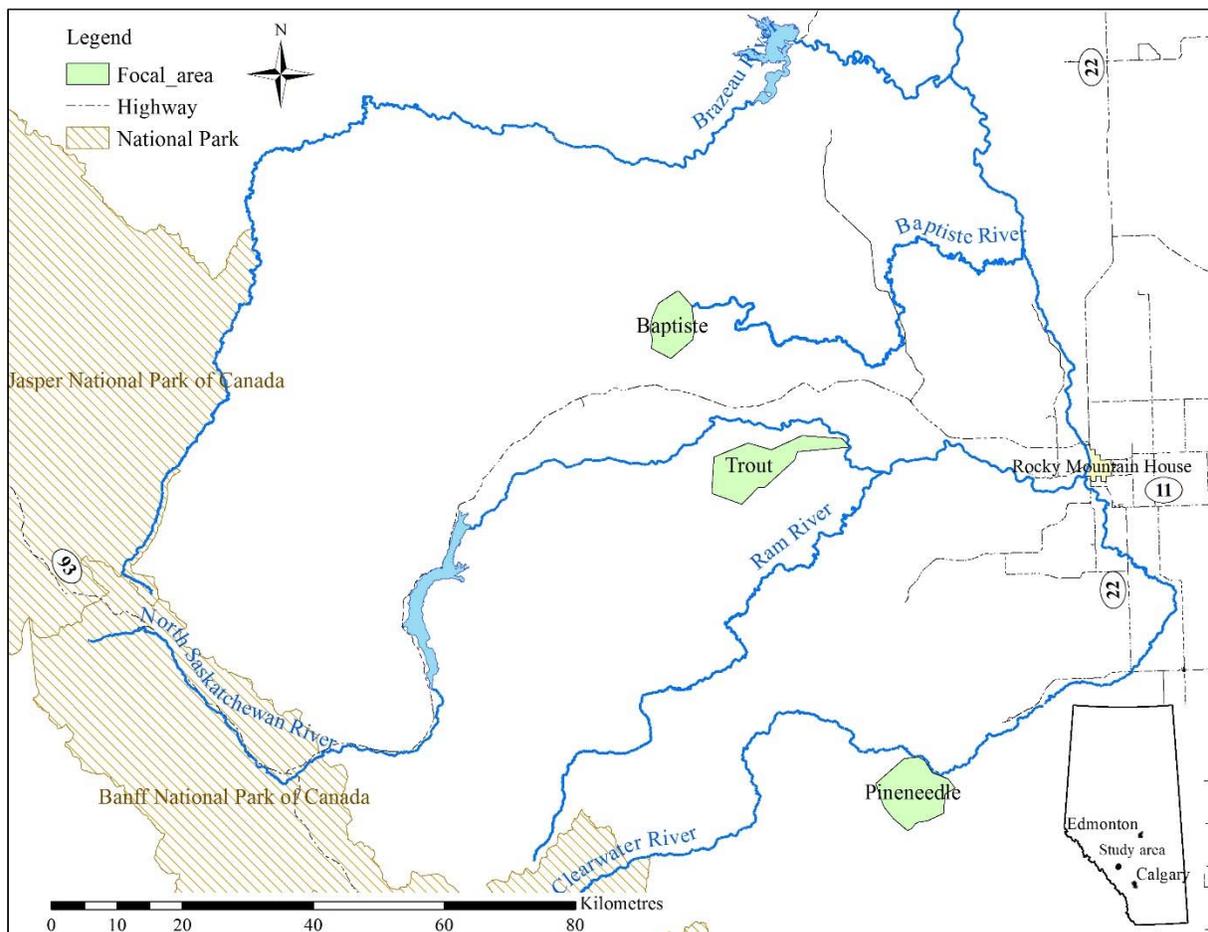


Figure 1. Headwaters of the North Saskatchewan River watershed and 2015 fisheries inventory focal areas.

Results

The 50 sites we sampled resulted in over 36,000 seconds of effort over 13 km of stream. We captured 648 fish, including 7 bull trout. Bull trout were detected at two sites in both the Pineneedle and Trout focal areas. Brook trout dominated our catch ($n = 502$); the species was detected in every area, and it was the most widely distributed species overall (detected at 20 sites). Brown trout was the second most abundant species (9 sites; $n = 121$), but it was detected only in the Trout focal area, along with longnose dace, mountain whitefish, spoonhead sculpin and white sucker. No juvenile (i.e., ≤ 150 mm FL) bull trout were detected, although we captured two bull trout < 155 mm FL at a single site in the lower reaches of Trout Creek. Our catch of brook trout and brown trout included fish < 50 mm FL that were likely young-of-the-year (Figure 2). Streams in the Pineneedle focal area exhibited relatively low water conductivities, which may have diminished the efficiency of our electrofishing gear.

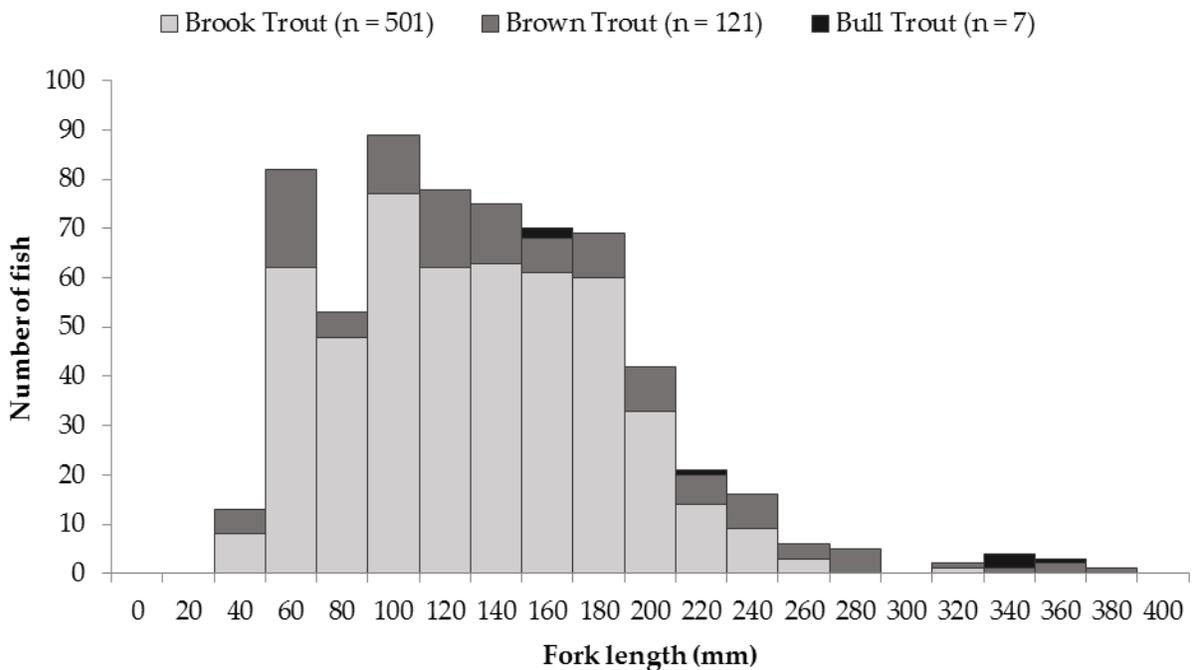


Figure 2. Length-frequency distribution for trout captured at backpack sites in three focal areas of the upper North Saskatchewan River watershed in 2015.

Conclusions

We captured 648 fish, including 7 bull trout, 502 brook trout and 121 brown trout at 50 sites in three focal areas of the upper North Saskatchewan River watershed. The remainder of our catch included small numbers of longnose dace, mountain whitefish, spoonhead sculpin and white sucker. Our study provides land-use managers with information on fish species distribution and abundance necessary to minimize land-use impacts to fish, evaluate bull trout status, and otherwise balance the diverse values of the North Saskatchewan River watershed.

Communications

- Submitted data for inclusion in the Government of Alberta's Fisheries and Wildlife Management Information System database.
- Submitted progress report to AEP and SFP.

Literature Cited

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2012. COSEWIC assessment and status report on the bull trout *Salvelinus confluentus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa, Ontario. 103 pp.

MacPherson, L., M. Coombs, J. Reilly, M.G. Sullivan, and D.J. Park. 2014. A generic rule set for applying the Alberta Fish Sustainability Index, second edition. Environment and Sustainable Resource Development, Edmonton, Alberta. 51 pp.

Photos



A small stream in the Baptiste focal area in which brook trout were caught. Photo: Andrew Clough



Alberta Conservation Association staff Chad Judd, Mike Rodtka and Zachary Spence using a helicopter to access remote sampling sites. Photo: Andrew Clough