

Alberta Conservation Association
2021/22 Project Summary Report

Project Name: East Slopes Fisheries Inventory

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Partnerships

Alberta Environment and Parks

Fisheries and Oceans Canada – through the Canada Nature Fund

Key Findings

- We sampled 38 sites distributed throughout the Upper McLeod River watershed, capturing 620 fish.
- Rainbow trout were the most abundant and widely distributed fish species.
- We only detected bull trout at one site, which was in the Gregg River HUC 10.

Abstract

Athabasca rainbow trout and bull trout have seen their populations and distributions decrease from historical levels. These species are now listed under the *Species at Risk Act*, which has identified many anthropogenic threats to these species. The Native Trout Recovery Program is a collaboration of government and non-government organizations tasked with monitoring the populations and, through remediation activities, recovering the populations to a more sustainable level. The Upper McLeod River watershed was identified as a priority watershed for inventory work to assess the abundance status and distribution of Athabasca rainbow trout and bull trout. In the summer of 2021, we used backpack electrofishing gear to sample 38 sites randomly distributed throughout four Hydrological Unit Code 10 (HUC 10) watersheds. We captured a

total of 620 fish with rainbow trout being the most abundant and widely distributed species. Bull trout were only captured at a single site in the Gregg River HUC 10 watershed. This is the first year of a 2-year project with the remaining four HUC 10 watersheds to be completed in 2022. A final data report will be completed at that time. Results of our project will provide up-to-date information on population status of native Athabasca Rainbow trout and bull trout in the Upper McLeod River watershed.

Introduction

Native trout species along the Eastern Slopes of the Rocky Mountains have intrinsic economic and ecologic value yet have seen a decrease in population size and distribution compared to historical levels (Sinnatamby et al. 2019). Three native trout species—Athabasca rainbow trout (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*), and Westslope cutthroat trout (*Oncorhynchus clarkii lewisi*)—are listed under the *Species at Risk Act* and have federal recovery plans developed to aid in the recovery of these species. Within the recovery plans, anthropogenic threats have been identified as leading causes to the decline in all three populations (DFO 2014, 2020a, 2020b). These threats include habitat alteration, fragmentation, sediment introductions, non-native fish stocking, hybridization, and angling mortality.

The Native Trout Recovery Program is a collaboration between Alberta Environment and Parks (AEP), Trout Unlimited Canada, Cows and Fish, and Alberta Conservation Association with the goal of assessing, recovering, and monitoring populations of native trout in the watersheds of the Eastern Slopes by supporting activities that address the key threats to the populations. These activities include population assessments, habitat rehabilitation and reconnection, and communication and outreach. Success of recovery actions is assessed using the Alberta Fish Sustainability Index (FSI). The 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).

The Upper McLeod River Watershed Hydrologic Unit Code 8 (HUC 8) has been identified through the Native Trout Recovery Program as a priority for inventory work to provide current fisheries information on at-risk Athabasca rainbow trout and bull trout. The previous watershed-scale assessment was completed 15 years ago in 2006 (Fitzsimmons 2010). Angling restrictions

have led to some protection for bull trout and rainbow trout; however, habitat degradation, fragmentation, and poaching still contribute to the stresses on these trout populations. While non-native rainbow trout stocking occurred in the McLeod River watershed, genetic testing has shown that most trout populations are native (COSEWIC 2014). Results of our project will provide up-to-date information on population abundance and distribution of native Athabasca rainbow trout and bull trout in the Upper McLeod River watershed.

Methods

To assess fish distribution and abundance, we selected sample sites from points placed along second- to fifth-order streams using a spatially balanced design. Within the Upper McLeod River HUC 8 watershed, we sampled the following HUC 10 watersheds: Beaverdam Creek, Upper McLeod River above Sundance Creek, Gregg River, and Whitehorse Creek (Figure 1). From July 13 to August 13, 2021, we used backpack electrofishing gear to sample sites randomly distributed throughout the Upper McLeod River watershed. Sites were 300 m in length, and we enumerated all captured fish by species and measured their fork length (FL; mm). Fish and habitat sampling followed Alberta Environment and Sustainable Resource Development's (ASRD 2013) *Standard for Sampling of Small Streams in Alberta*.

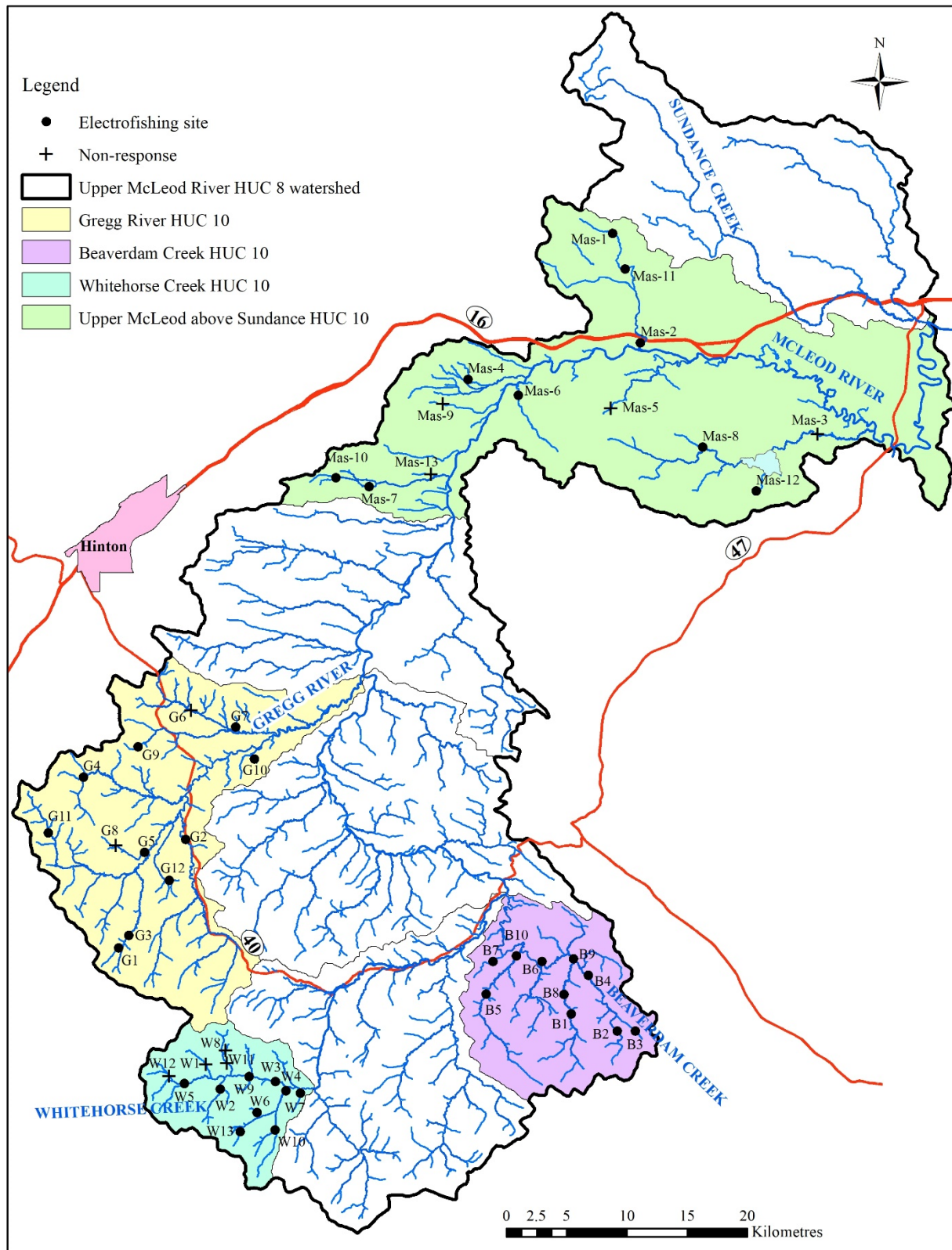


Figure 1. Fish inventory sites within the Upper McLeod River HUC 10 watersheds, 2021.

Results

We sampled 38 sites resulting in over 35,000 seconds of effort over 11 km of stream. We captured 11 different fish species totalling 620 fish (Table 1). Rainbow trout were caught in each of the HUC 10 watersheds and made up 45% of our total catch. Bull trout were only detected at site G2 in the Gregg River HUC 10.

Table 1. Number of sites fish were detected in each HUC 10 watershed and total catch of fish species during the Upper McLeod River Fisheries Inventory project using backpack electrofishing gear, July 13 to August 13, 2021.

Species	Site Detections (n) per HUC				Total Catch (%)
	Beaverdam	Gregg	McLeod above Sundance	Whitehorse	
BKTR	8	1	0	0	89 (14)
BLTR	0	1	0	0	6 (1)
BRST	0	0	2	0	8 (1)
BURB	5	0	1	0	18 (3)
FNDC	0	0	1	0	5 (1)
LNDC	2	0	1	0	15 (2)
MNWH	3	0	0	0	33 (5)
PRDC	0	0	5	0	85 (14)
RNTR	8	3	3	1	276 (45)
SPSC	7	0	0	0	35 (6)
WHSC	0	0	1	0	50 (8)

Species codes: BKTR = brook trout, BLTR = bull trout, BRST = brook stickleback, BURB = burbot, FNDC = finescale dace, LNDC = longnose dace, MNWH = mountain whitefish, PRDC = pearl dace, RNTR = rainbow trout, SPSC = spoonhead sculpin, WHSC = white sucker.

Conclusions

Rainbow trout was the most abundant and widely distributed species captured in the Upper McLeod River watershed. Bull trout were only captured at a single site in the Gregg River HUC 10. We will be completing the remaining HUC 10 watersheds in 2022. Results of our project will provide up-to-date information on population abundance and distribution of Athabasca rainbow trout and bull trout in the Upper McLeod River watershed.

Communications

- Submitted data to AEP for inclusion in its *Fisheries and Wildlife Management Information System* database.
- Summary report completed and submitted to AEP and Fisheries and Oceans Canada (DFO).

Literature Cited

Alberta Environment and Sustainable Resource Development (ASRD). 2013. *Standard for Sampling of Small Streams in Alberta (Public Version)*. Alberta Fisheries Management Branch Standards Committee.

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Sinnatamby, N., A. Cantin, and J.R. Post. 2019. Threats to at-risk salmonids of the Canadian Rocky Mountain Region. *Ecology of Freshwater Fish* 29:477–494.

Photos



Photo 1. ACA technician Andrew Clough backpack electrofishing a high alpine stream in Whitehorse Wildland Provincial Park. Photo: Zachary Spence



Photo 2. A typical rainbow trout captured in Beaverdam Creek. Photo: Zachary Spence