Alberta Conservation Association 2022/23 Project Summary Report

Project Name: Wildhay River Native Trout Inventory

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Partnerships

Alberta Native Trout Collaborative Fisheries and Oceans Canada Government of Alberta

Key Findings

- We captured 200 fish consisting of six species (Arctic grayling, brook trout, bull trout, burbot, mountain whitefish, and rainbow trout) in the Wildhay River watershed.
- Brook trout were the most abundant fish species but were only caught within the Moberly Creek sub-watershed.
- Athabasca rainbow trout were the most widely distributed fish species, captured in three sub-watersheds: Upper Wildhay River, Moberly Creek, and Ice Water Creek.
- Bull trout were captured in two sub-watersheds: Upper Wildhay River and Ice Water Creek.

Abstract

Athabasca rainbow trout and bull trout are listed under the *Species at Risk Act*, which identifies many anthropogenic threats to native trout in the province. Alberta's Native Trout Recovery Program is a collaboration of government and non-government organizations tasked with assessing native trout populations and promoting recovery of at-risk populations. Through this

collaborative, the Wildhay River watershed was identified as a priority for native trout population assessment. In the summer of 2022, we used backpack electrofishing to assess fish populations at 44 sites randomly distributed across five sub-watersheds in the Wildhay River system. We captured a total of 200 fish of six species. Athabasca rainbow trout, captured in three of the sub-watersheds, were the most widely distributed species. Bull trout were caught in two of the five sub-watersheds. Brook trout were the most abundant species captured, but only occurred in one sub-watershed (Moberly Creek).

Introduction

Native trout species along the Eastern Slopes of the Rocky Mountains, including Athabasca rainbow trout and bull trout, have intrinsic economic and ecological value yet have seen a decrease in population size and distribution compared to historical levels (Sinnatamby et al. 2019). Athabasca rainbow trout (*Oncorhynchus mykiss*) are listed as *Endangered* under the *Species at Risk Act* while Western Arctic populations of bull trout (*Salvelinus confluentus*) are listed as a species of *Special Concern* (COSEWIC 2012, 2014). Anthropogenic threats are leading causes of the decline in both populations. These threats include habitat alteration, fragmentation, sediment introductions, non-native fish-stocking, hybridization, and angling mortality (COSEWIC 2012, DFO 2020).

Recovery initiatives including population assessments and monitoring, habitat rehabilitation, and communication and outreach, are being carried out by the Native Trout Recovery Program, a collaboration between government and non-government organizations in Alberta funded by the Canada Nature Fund for Aquatic Species at Risk (CNFASR). The success of these recovery actions will be assessed using the Alberta Fish Sustainability Index (FSI), a standardized process that enables broad-scale evaluation of management actions and land-use planning (MacPherson et al. 2014).

The Wildhay River watershed was identified through the Native Trout Recovery Program as a priority to provide current population status information on at-risk Athabasca rainbow trout and bull trout. Genetic testing has shown that most rainbow trout populations within the Wildhay watershed are native Athabasca rainbow trout (COSEWIC 2014). Previous inventory work was completed in 2012 by the Government of Alberta (GoA). Results of our project will provide up-

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to-date information on population abundance and distribution of native Athabasca rainbow trout and bull trout in the Wildhay River watershed and will help GoA assess the effectiveness of recovery actions.

Methods

From July 19 to August 7, 2022, we sampled five sub-watersheds (Upper Wildhay River, Rock Creek, Mumm Creek, Moberly Creek, and Ice Water Creek) in the Wildhay River watershed to assess fish distribution and abundance (Figure 1). We selected sample sites from points placed along second- to fifth-order streams using a spatially balanced design. Ten sites and five alternate sites were selected for each sub-watershed. Dry or inaccessible sites were considered non-response and an alternate site was used. We used backpack electrofishing gear to sample 44 sites randomly distributed throughout the five sub-watersheds. Sites were 300 m in length, and we counted all captured fish by species and measured weight (g) and fork length (FL; mm). Fish and habitat sampling followed Alberta Environment and Sustainable Resource Development's (ESRD 2013) *Standard for Sampling of Small Streams in Alberta*.



Figure 1. Backpack electrofishing inventory sites within the Wildhay River watershed, 2022. Inset map shows the location of the study area within Alberta, relative to Edmonton and Calgary.

Results

We sampled 44 sites resulting in 24,708 seconds of effort over 12.9 km of stream. We captured 200 fish consisting of six species (Table 1). Athabasca rainbow trout were the most widespread species, caught in three of the five sub-watersheds and made up 26.4% of our total catch. Bull trout were caught in two of the five sub-watersheds and made up 27.4% of our total catch. Brook trout were the most abundant fish species, comprising 41.6% of the total catch but were only caught in the Moberly Creek sub-watershed. No fish were caught at 28 of the 44 sites sampled; these sites were largely in the headwaters or in Mumm Creek HUC 10 where many areas, including the mainstem near the confluence with the Wildhay River, exhibit subsurface flows.

Fish Captured (n)						
Species	Rock Creek	Upper Wildhay River	Mumm Creek	Moberly Creek	Ice Water Creek	Total Catch
ARGR	0	0	0	1	0	1
BKTR	0	0	0	82	0	82
BLTR	0	15	0	0	39	54
BURB	1	0	0	0	2	3
MNWH	0	0	0	3	5	8
RNTR	0	14	0	12	26	52

Table 1.Total catch of fish species in the Wildhay River watershed using backpackelectrofishing gear, July 19 to August 7, 2022.

Species codes: ARGR = Arctic grayling, BKTR = brook trout, BLTR = bull trout, BURB = burbot, MNWH = mountain whitefish, RNTR = Athabasca rainbow trout.

Conclusions

Athabasca rainbow trout, captured in three of the sub-watersheds, were the most widely distributed species. Bull trout were caught in two of the five sub-watersheds. Brook trout were the most abundant species but were only captured in one sub-watershed (Moberly Creek). This project will provide up-to-date information on population abundance and distribution of Athabasca rainbow trout and bull trout in the Wildhay River watershed for long-term monitoring.

Communications

• Submitted data and summary reports to GoA, Jasper National Park, and Fisheries and Oceans Canada in accordance with their respective permit requirements.

Literature Cited

- Alberta Environment and Sustainable Resource Development (ESRD). 2013. Standard for Sampling of Small Streams in Alberta (Public Version). Alberta Fisheries Management Branch Standards Committee.
- 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. iv + 103 pp.
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2014. COSEWIC Assessment and Status Report on the Rainbow Trout Oncorhynchus mykiss in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
- Fisheries and Oceans Canada (DFO). 2020. Recovery Strategy for the Rainbow Trout (Oncorhynchus mykiss) in Canada (Athabasca River populations). Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vii + 90 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, AB. 51 pp.
- 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 staff, Scott Seward, taking notes beside a remote access site on Mumm Creek. Photo: Nikita Lebedynski



Photo 2. ACA staff Scott Seward and Lindsay Dowbush backpack electrofishing a stream in the Wildhay River watershed. Photo: Nikita Lebedynski



Photo 3. A typical bull trout captured in the Wildhay River watershed. Photo: Lindsay Dowbush