

Alberta Conservation Association
2022/23 Project Summary Report

Project Name: Ram River Bull Trout Assessment

Fisheries Program Manager: Peter Aku

Project Leader: Chad Judd

Primary ACA Staff on Project: Andrew Clough, Kevin Fitzsimmons, Mike Rodtka, and Zachary Spence

Partnerships

Fisheries and Oceans Canada – Canada Nature Fund

Government of Alberta

Sundre Forest Products – A Division of West Fraser Mills Ltd.

Key Findings

- The annual Fall Creek redd count was higher than last year with 54 bull trout redds being counted in the 3.5 km section of creek.
- We counted 56 bull trout migrating downstream past our video camera system and seven bull trout that were observed upstream of the camera resulting in a ratio of 1.2 spawners per redd.

Abstract

Bull trout is a native sport fish species classed as *Threatened* in Alberta and is particularly sensitive to habitat change. A government-led initiative, the Native Trout Recovery Program, was implemented in 2017 to recover native trout throughout the Eastern Slopes of Alberta. The program involves implementation of recovery actions (e.g., trail remediation/closures, implementing industry best-management practices, and suppression of non-native species) in an adaptive management framework. In the fall of 2022, we used multiple redd surveys to assess the bull trout population in the lower Ram River watershed. Fall Creek remains an important spawning tributary in the watershed. We counted 54 bull trout redds on a survey of a 3.5 km

reach of Fall Creek. We continued to use our solar-powered video recording system to count adult bull trout exiting the Fall Creek spawning area. We obtained 37 days of footage during the spawning migration counting 56 bull trout moving downstream past the cameras; an additional seven bull trout were observed upstream of the camera at the time of removal. This resulted in a ratio of 1.2 spawners per redd, an index that can be used to estimate bull trout abundance from future redd surveys. Our study provides managers with information on trends in bull trout redd distribution and abundance that can be used to evaluate bull trout response to recovery actions.

Introduction

Bull trout, classified as *Threatened* (Saskatchewan–Nelson rivers populations), are particularly sensitive to habitat change and are thought to reflect general ecosystem health (COSEWIC 2012). This sensitivity, coupled with their relatively wide distribution, make bull trout an attractive species for monitoring sustainability in the Ram River watershed. A government-led initiative, the Native Trout Recovery Program (formerly the North-Central Native Trout Program) was implemented in 2017 to recover native trout throughout the Eastern Slopes of Alberta (GoA 2017). The program involves implementation of recovery actions (e.g., trail remediation/closure, implementing industry best-management practices, suppression of non-native species) in an adaptive management framework. In 2018, 54 stream crossings were reclaimed and motorized access was restricted to Fall Creek, a tributary to the Ram River used by spawning bull trout (GoA 2018). Redd counts are used to monitor trends in bull trout abundance throughout their range as redd counts tend to be less expensive and intrusive than other methods requiring capture and handling of fish (Muhlfeld et al. 2006). We have been counting redds in Fall Creek since 2007 and continue to monitor the Ram River bull trout population using this method.

Methods

We installed and operated a solar-powered video recording system to count adult bull trout exiting Fall Creek. This system included a fence to funnel fish past the cameras and was operational from August 29 to October 4, 2022, obtaining 37 days of footage. The counts combined with redd survey counts provided an estimate of spawner-to-redd ratio. Spawner-to-

redd ratios are used to estimate adult bull trout abundance from redd survey data (Howell and Sankovich 2012).

From September 9 to October 4, we surveyed the 3.5 km reach of Fall Creek above the camera system three times, marking the location of individual bull trout redds (Figure 1). The final count on October 4 was an accumulation of all redds observed and considered the best count. To assess repeatability of our best count, two additional crews surveyed the reach independently on October 4.

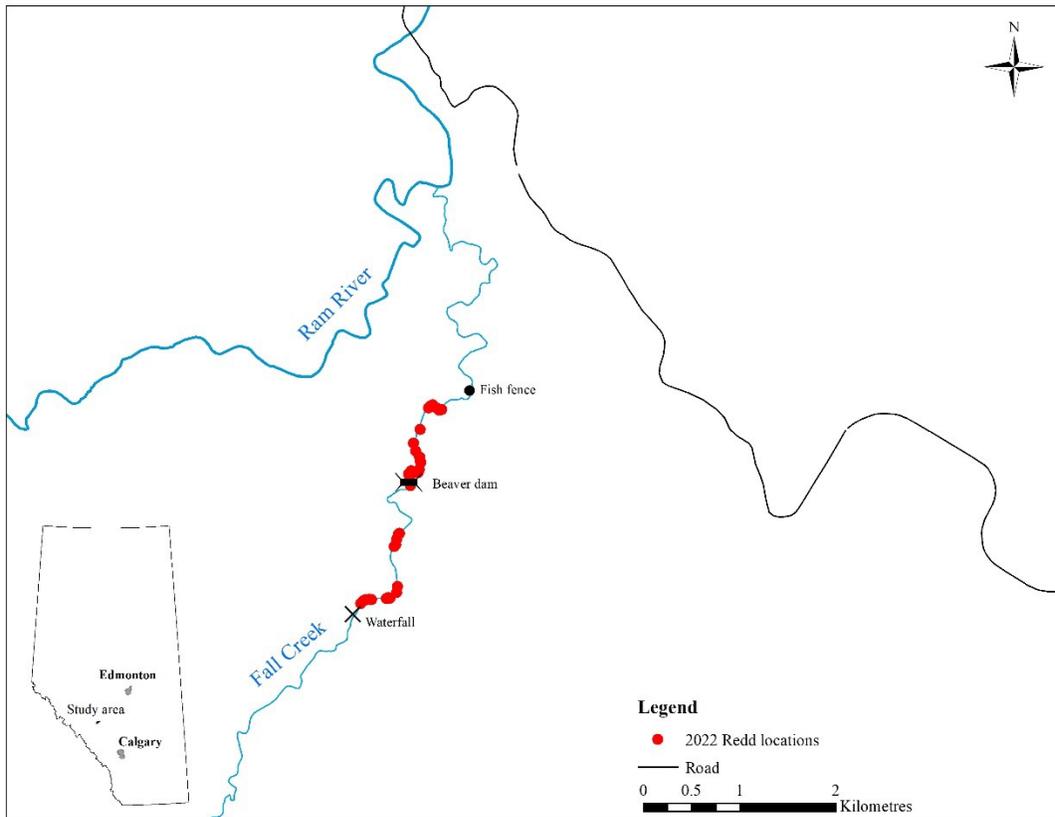


Figure 1. Ram River Bull Trout Assessment Project 2022 study area and bull trout redd locations.

Results

Our best count of bull trout redds was 54, up from the previous year's count of 42 (Figure 2). The independent redd counts were between 89 and 120% (48 and 65) of the best count. We counted 56 adult bull trout migrating downstream past the cameras (Figure 3). A newly

constructed beaver dam within the spawning area potentially limited upstream fish passage. Significant spawning occurred downstream of this beaver dam in areas where redds were rarely observed in previous years (Figure 1). We also counted seven bull trout upstream of the beaver dam at the time of camera removal on October 4 and included these fish in our camera count resulting in an estimated spawner-to-redd ratio of 1.2.

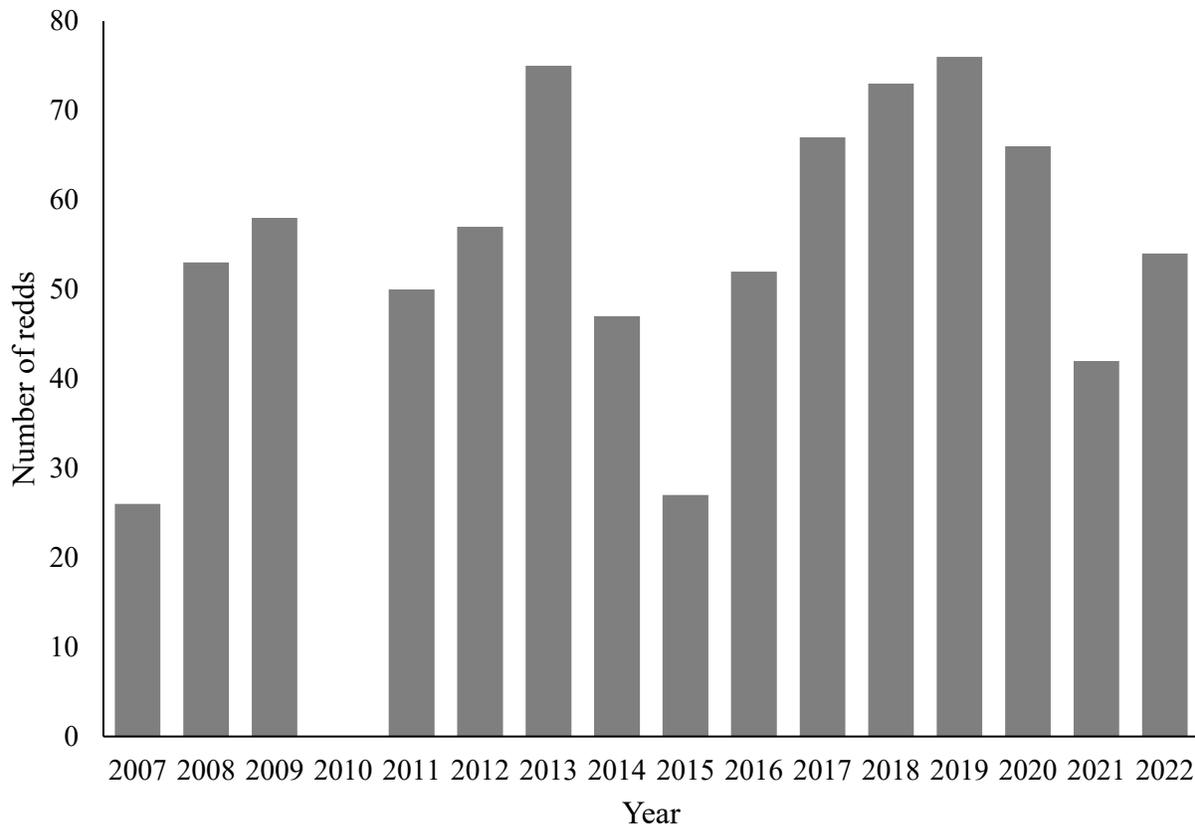


Figure 2. Survey counts by year of bull trout redds observed along Fall Creek in a 3.5 km reach below the falls, 2007–2021 (note: a redd survey was not conducted on Fall Creek in 2010).

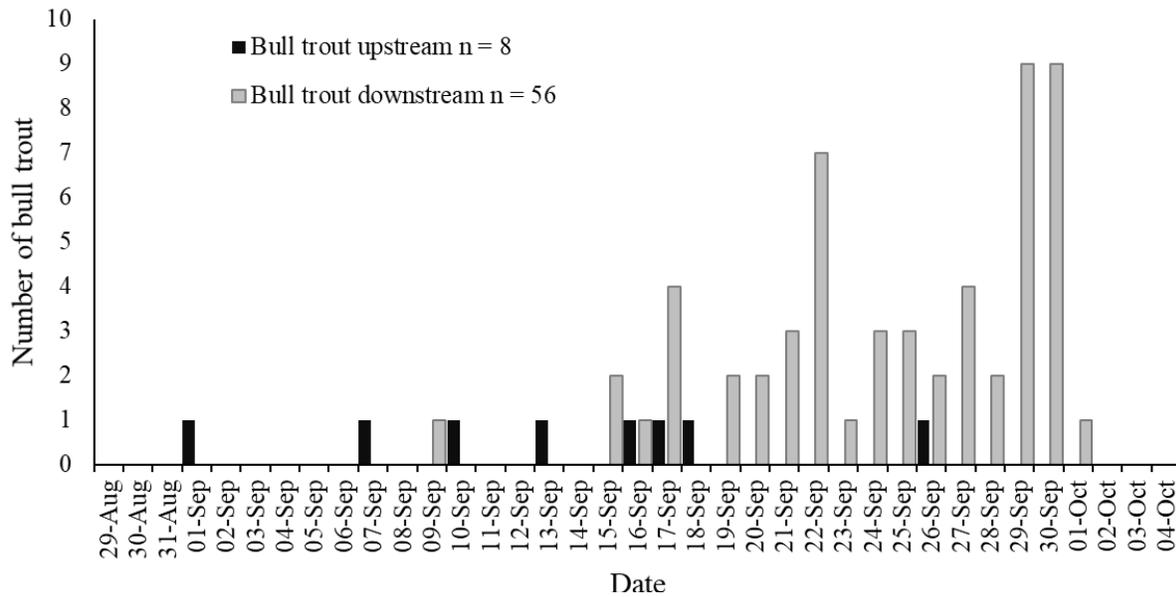


Figure 3. Daily count of bull trout migration past the cameras at the fish fence on Fall Creek, August 29 to October 4, 2022.

Conclusions

The 2022 redd count was higher than the previous year, despite impacts on fish passage and redd distribution caused by a newly constructed beaver dam. Our estimated spawner-to-redd ratio of 1.2 is similar to ratios estimated the past three years and during our initial study in 2008 (Rodtka et al. 2010). Two independently conducted surveys were 89–120% of our best redd count, a range comparable to that observed in similar studies (Howell and Sankovich 2012). Redd surveys continue to be an effective tool for monitoring adult bull trout in the Ram River watershed. Our study provides managers with information on trends in bull trout redd distribution and abundance that can be used to evaluate land use impacts on bull trout population response to recovery actions.

Communications

- Submitted data to Alberta Environment and Protected Areas for inclusion in its Fisheries and Wildlife Management Information System database.
- Submitted data to Fisheries and Oceans Canada (DFO) as a condition of *Species at Risk Act* permit requirements.
- Study results were presented at the 2023 Alberta Native Trout Science Workshop.
- A final data report will be available in April 2023 at www.ab-conservation.com.

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 - 2012*. Committee on the Status of Endangered Wildlife in Canada. Ottawa, Ontario, Canada. 103 pp.
- Government of Alberta (GoA). 2017. *North Central Native Trout Recovery Program – North Saskatchewan River & Lower Ram River*. Government of Alberta fact sheet.
- Government of Alberta (GoA). 2018. *Fall Creek Reclamation Project – North Central Native Trout Recovery Program*. Government of Alberta fact sheet.
- Howell, P.J. and P.M. Sankovich. 2012. An evaluation of redd counts as a measure of bull trout population size and trend. *North American Journal of Fisheries Management* 32(1): 1-13.
- Muhlfeld C., M. Taper, D. Staples, and B. Shepard. 2006. Observer error structure in bull trout redd counts in Montana streams: implications for inference on true redd numbers. *Transactions of the American Fisheries Society* 135(3): 643-654.
- Rodtka, M., C. Judd, and K. Fitzsimmons. 2010. *North Saskatchewan and Ram Rivers bull trout spawning stock assessment, Alberta, 2007–2009*. Alberta Conservation Association.

Photos



Photo 1. ACA staff Jason Blackburn surveying Fall Creek for bull trout redds.
Photo: Logan Redman



Photo 2. Adult bull trout travelling past the cameras in Fall Creek. Photo: ACA