

**Alberta Conservation Association
2007/08 Project Summary Report**

Project name: *Upper Oldman River Bull Trout Status Assessment – Phase 1*

Project leader: Trevor Council

Primary ACA staff on this project: Jason Blackburn, Trevor Council, Chris Delage, Brad Hurkett, and Mike Jokinen

Partnerships:

Alberta Sustainable Resource Development
Devon Canada Corporation

Key findings

- Hidden Creek is a critical bull trout spawning stream in the upper Oldman River drainage; 122 adult fish were captured in the creek in 2007.
- Over half the pre-spawning movement of bull trout into Hidden Creek occurred before July 31 and the majority (87%) of post-spawn migrants left the creek in the first week of September when minimum water temperature dropped to 5 - 6°C.

Introduction

Bull trout (*Salvelinus confluentus*) distributions and abundance have declined throughout the province of Alberta due to human activity, such as angling pressure, habitat degradation and fragmentation, migratory barriers, and the introduction of non-native species (Post and Johnston 2002; Brewin and Brewin 1997). This trend may be exacerbated by the ongoing substantial recreational and industrial activity within watersheds along the eastern slopes of Alberta, including the upper Oldman River watershed; by 1997, bull trout distributions within the Oldman River watershed were reduced to 33% of their historical range (Fitch 1997). As a result, we initiated a long-term bull trout population assessment study within the upper Oldman River drainage to more clearly define bull trout status in the drainage and aid in directing future conservation and management guidelines. The main objective of the current study was to assess the status of adult migratory bull trout populations in the upper Oldman River drainage.

Methods

We installed a bi-directional fish trap in Hidden Creek (a tributary) from 31 July to 2 October 2007 to intercept pre- and post-spawning bull trout (Figure 1) as they migrated between the tributary and the mainstem. We supplemented trap catches with electrofishing

and angling catches throughout the drainage while performing work on another project. We weighed, sexed and fitted each bull trout ≥ 300 mm fork length (FL) with an individually identifiable integrated transponder tag injected into the musculature. To reduce handling stress, we anaesthetised fish in a clove oil bath. We revived and released all fish back into the creek in their direction of travel. We also collected daily water temperatures in an attempt to correlate bull trout movements with water temperature.



Figure 1. Photographs of the Hidden Creek fish trap, 2007. (Photos: Jason Blackburn)

Results

We captured a total of 125 bull trout in the fish trap of which we tagged 122; one subadult was released untagged and the other two were mortalities. In addition, 42 and 25 individuals captured by electrofishing and angling, respectively, were tagged. Fish size ranged from 266 - 760 mm FL with a mean (\pm SD) of 549 ± 8.85 mm. Corresponding weight ranged from 202 - 4,000 g with a mean of $1,752 \pm 76.25$ g. Over half of the pre-spawning movement of bull trout into Hidden Creek occurred before 31 July and by the final capture date, 87% of bull trout were last observed moving downstream and 13% upstream. We observed a major downstream movement of bull trout when minimum water temperatures reached 5 - 6°C in early to mid September, likely indicating the end of the spawning season (Figure 2).

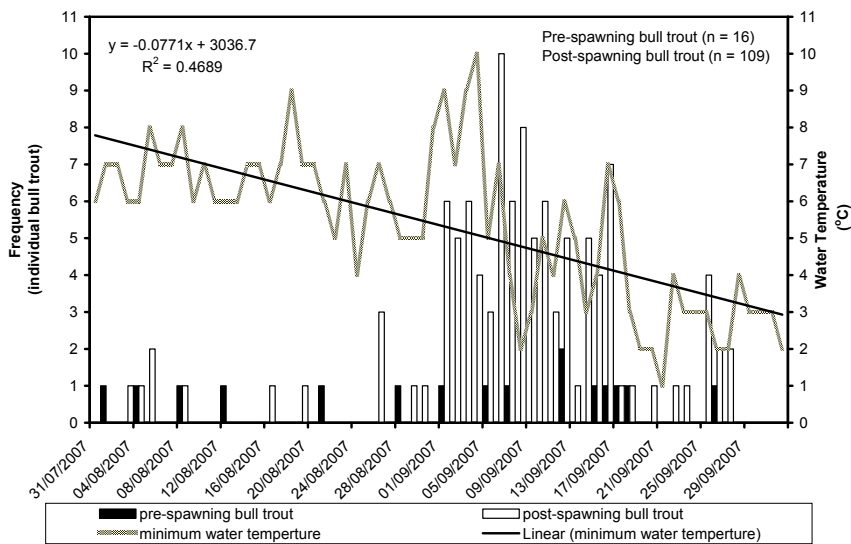


Figure 2. Frequency of pre- and post-spawning bull trout captured in the Hidden Creek trap in relation to minimum water temperature (n = 25, recaptures excluded).

Conclusion

Our results provide insight into the timing of bull trout spawning migrations in Hidden Creek as well as a preliminary estimate of the abundance of migratory bull trout using Hidden Creek for spawning. Future trapping efforts on Hidden Creek will commence near the end of August, prior to the post-spawn run, to intercept fish moving downstream to the Oldman River. This will shorten the sampling period while not biasing abundance estimates. We intend to include the Livingstone River, Racehorse Creek and Dutch Creek in future trapping efforts as they have also been identified as spawning locations for migratory bull trout.

Communications

- A progress report has been submitted to Alberta Sustainable Resource Development.

Literature cited

Brewin, P.A., and M.K. Brewin. 1997. Distribution maps for bull trout in Alberta. Pages. 209-216. *In*: W.C. Mackay, M.K. Brewin, and M. Monita, editors. Friends of the bull trout conference proceedings. Bull Trout Task Force (Alberta), c/o Trout Unlimited Canada, Calgary, Alberta.

Fitch, L.A. 1997. Bull trout in southwestern Alberta: notes on historical and current distribution. Pages 147-160. *In*: W.C. Mackay, M.K. Brewin, and M. Monita,

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Post, J.R., and F.D. Johnston. 2002. Status of the bull trout (*Salvelinus confluentus*) in Alberta. Alberta Sustainable Resource Development, Fish and Wildlife Division, and Alberta Conservation Association, Wildlife Status Report No. 39, Edmonton, Alberta. 40 pp.



Chris Delage holding an adult male bull trout. (Photo Mike Jokinen)



Brad Hurkett and Trevor Warwick (volunteer) measuring a bull trout. (Photo Mike Jokinen)