

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

**Project name:** *Status of Bull Trout in the Kakwa River*

**Project leader:** Tyler Johns

**Primary ACA staff on this project:**

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**Partnerships:**

Alberta Sustainable Resource Development  
Devon Energy Corporation  
Talisman Energy  
Weyerhaeuser Canada

**Key findings**

- Estimated bull trout abundance within a 32-km reach of the Kakwa River was 421 fish or 13 fish/km in 2006, and bull trout ranged in size from 103 to 646 mm fork length (FL) with a mean size of 422 mm.
- General trends indicate that bull trout stocks in the Kakwa River have remained stable between 1997 and 2006.

**Introduction**

Bull trout (*Salvelinus confluentus*), a native sport fish in Alberta, has declined in abundance and distribution across the province as a result of increased angling pressure, habitat alteration and non-native species introductions (Post and Johnston 2002; Brewin and Brewin 1997). In 1994, the *Alberta Bull Trout Management and Recovery Plan* (BTMRP) was developed to address issues related to the decline of this species (Berry 1994). As part of the BTMRP, we compared the abundance and size distribution of the species within a 32-km reach of the Kakwa River in 2006 with historical data from 1997 and 2000. This information will aid in formulating management guidelines for this species in the Kakwa River.

**Methods**

We conducted a mark-recapture survey between 25 - 28 September 2006 using similar methods and within the same 32-km reach as in 1997 and 2000, starting at the mouth of the South Kakwa River and ending 32 km downstream. We captured fish using raft-mounted electrofishing and

angling. All captured fish were identified to species, measured for fork length (FL) and released. We marked bull trout  $\geq 300$  mm FL with individually identifiable T-bar anchor tags (Floy Tag™) inserted just below the dorsal fin. We batch-marked fish  $< 300$  mm FL using an adipose fin clip. We examined recaptured fish for marks (tag or fin clip) and measured their FL. In total, we captured and marked 115 bull trout. During the recapture run, we captured 90 bull trout, of which 24 were previously marked. We estimated bull trout abundance using a modified Lincoln-Petersen estimate (Chapman 1951).

## Results

Based on the mark-recapture survey, the estimated population size of bull trout in the 32-km reach in 2006 was 421 or 13 fish/km, compared to 278 or 9 fish/km in 1997 and 330 or 10 fish/km in 2000 (Figure 1). Overall, bull trout abundance appears to be stable between 1997 to 2006; among year variations may not be statistically significant as suggested by the overlap in 95% CIs (Figure 1).

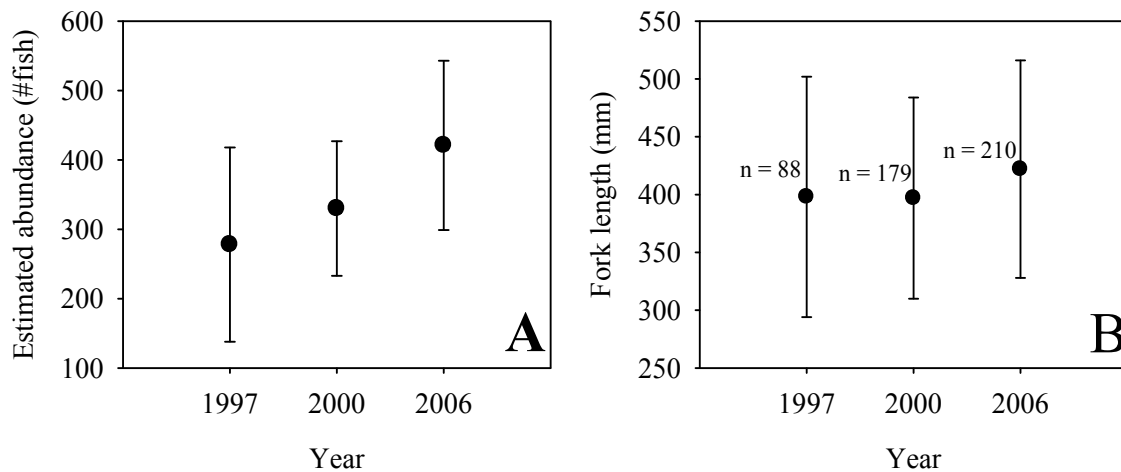


Figure 1. Estimated abundance (A) and mean length distributions (B) of bull trout in a 32-km reach of the Kakwa River. Error bars represent  $\pm 95\%$  CI and  $\pm$  SE for A and B, respectively.

Size of bull trout captured in 2006 ranged from 103 to 646 mm FL compared to 151 to 629 mm FL in 1997 and 155 to 584 mm FL in 2000. Overall mean size did not differ significantly among years (ANOVA:  $F = 4.02$ ,  $df = 2$ ,  $p = 0.02$ ), ranging from 397 mm in 1997 to 422 in 2006 (Figure 1).

## Conclusion

Bull trout abundance and distribution has been monitored in the Kakwa River since 1997 making it the most comprehensive bull trout monitoring effort of its kind in Alberta. Our abundance data suggest that the population appears stable and the size class distribution does not appear to have changed significantly since 1997.

### **Communications**

- Alberta Conservation Association data report produced to summarize results.
- Presentation made to an international meeting of bull trout biologists.
- Results were included in the recent update of the *Status of Bull Trout in Alberta* wildlife status report.

### **Literature cited**

Berry, D.K. 1994. Alberta's bull trout management and recovery plan. Pub. No. T/289, Alberta Environmental Protection, Fish and Wildlife Service, Fisheries Management Division, Edmonton Alberta. 22 pp.

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, eds. Friends of the bull trout conference proceedings. Bull Trout Task Force (Alberta), c/o Trout Unlimited Canada, Calgary, AB.

Chapman, D. G. 1951. Some properties of the hypergeometric distribution with applications to zoological censuses. University of California Publications in Statistics 1: 131–160.

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.



Alberta Conservation Association staff conducting raft electrofishing. Left to right: Tyler Johns, Greg Fortier, Nathan Carruthers. (Photo: Dave Fairless)



Paul Hvenegaard holding a bull trout caught by sample angling. (Photo: Dave Fairless)



Upper reach of the Kakwa River. (Photo: Dave Fairless)