

**Alberta Conservation Association  
2011/12 Project Summary Report**

**Project Name:** *Life History Strategies and Spawning Demographics of Bull Trout in the Upper Red Deer River Drainage*

**Fisheries Program Manager:** Peter Aku

**Project Leader:** Kevin Fitzsimmons

**Primary ACA staff on project:**

Kevin Fitzsimmons, Patricia Halinowski, Kelly Hooey, Chad Judd and Jennifer Oko

**Partnerships**

Alberta Sustainable Resource Development

**Key Findings**

- Identified Sheep Creek as a bull trout spawning stream within the Red Deer River drainage; this result was previously undocumented.
- Captured 41 bull trout in Sheep Creek (66 – 338 mm fork length).
- Estimated bull trout abundance in Sheep Creek is 949 fish.
- Captured seven bull trout moving upstream through a fish trap on Sheep Creek and 17 bull trout moving downstream of the trap (256 – 575 mm fork length) indicating a fluvial population of bull trout in Sheep Creek.
- Counted 68 redds in Pinto Creek (5.2 redds/km) and 44 redds in Sheep Creek (5.7 redds/km).

**Introduction**

Insufficient information on bull trout (*Salvelinus confluentus*) abundance and life history strategies complicates management of the species in the upper Red Deer River drainage. The current status of the Red Deer River bull trout core area population is *At risk* of extirpation, with the short-term trend indicating a population in decline (Alberta Sustainable Resource Development and Alberta Conservation Association 2009). Impacts on bull trout from land use and increased angling pressure are concerns in this drainage. Describing bull trout abundance and life history strategies and identifying spawning habitat in the upper Red Deer River drainage are fundamental to the management and conservation of the species. Our objectives in 2011/12 were to estimate the abundance and spatial distribution of juvenile or resident bull trout in Sheep Creek, evaluate the magnitude and timing of fluvial bull trout out-migrations from Sheep Creek, and assess bull trout spawning activity in prioritized streams in the upper Red Deer River drainage. Data collected through this project will be made available to resource managers to aid in making informed management decisions regarding bull trout in the upper Red Deer River drainage.

## **Methods**

We used single pass backpack electrofishing to capture fish from eight locations along Sheep Creek from July 5 – 7, 2011. We then used fish capture data and spatial models to estimate the abundance of bull trout in Sheep Creek. To enumerate post-spawn fluvial bull trout, we operated a fish trap on Sheep Creek from September 6 – 27, 2011 (2.9 km upstream of the mouth of Sheep Creek and the Panther River). We uniquely identified each fish captured and then moved them upstream or downstream of the trap based on their original direction of travel. We conducted redd counts from September 15 – 26, 2011 to evaluate bull trout spawning in portions of North Burnt Timber, Sheep, Scalp and Pinto creeks.

## **Results**

During mid-summer electrofishing in Sheep Creek, we captured a total of 41 bull trout ranging in size from 66 to 338 mm fork length (FL) and estimated bull trout abundance for the creek to be 949 fish (95% confidence interval (CI) = 321 – 3,087). Bull trout abundance in Sheep Creek decreased from the confluence with the Panther River upstream to an impassable waterfall barrier approximately 7 km upstream. We did not capture or observe fish above the waterfall.

From September 6 – 27, 2011, we captured seven bull trout moving upstream through the trap on Sheep Creek and 17 moving downstream of the trap. The 24 individual bull trout captured ranged in size from 256 to 575 mm FL and included nine males, five females and 10 of undetermined sex. Peak bull trout movement out of Sheep Creek occurred between September 12 – 16, 2011.

From September 15 – 26, 2011, we counted 68 redds in Pinto Creek (5.2 redds/km), 44 redds in Sheep Creek (5.7 redds/km) and 18 redds in North Burnt Timber Creek (1.3 redds/km). In the remainder of streams, we found low redd densities at 1.0 – 1.3 redds/km of stream.

## **Conclusions**

Based on fish captures and redd densities, we believe that Pinto and Sheep creeks are important spawning streams for fluvial bull trout in the Red Deer River drainage and provide rearing habitat for juveniles.

## **Communications**

- Completed ACA project report.
- Presented results to Alberta Sustainable Resource Development, Fisheries biologists.
- Communicated documented threats to bull trout from illegal harvest to Alberta Sustainable Resource Development, Enforcement Field Services.

## Literature Cited

Alberta Sustainable Resource Development and Alberta Conservation Association. 2009. Status of bull trout (*Salvelinus confluentus*) in Alberta. Update 2009. Alberta Sustainable Resource Development. Wildlife Status Report No. 39 (Update 2009). Edmonton, Alberta. 48 pp.

## Photos



Alberta Conservation Association staff member, Kevin Fitzsimmons, uniquely marking a bull trout captured in the Red Deer River using a passive integrated transponder (PIT) tag. (Photo: Marco Fontana)



North Burnt Timber Creek, upper Red Deer River drainage. (Photo: Kevin Fitzsimons)



Alberta Conservation Association staff member, Jennifer Oko, constructing a fish trap on Sheep Creek. (Photo: Kevin Fitzsimons)