Alberta Conservation Association
2009/10 Project Summary Report

Project Name: *McLeod River Survey Final Report*

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Project Leader: Kevin Fitzsimmons

Primary ACA staff on project:

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Partnerships

Alberta Sustainable Resource Development

Key Findings

- Estimating Bull Trout abundance in a large watershed, such as the McLeod River, requires substantial effort and obtaining accurate results can be cost prohibitive.
- Based on our sampling design, Bull Trout abundance in the McLeod River drainage is low.

Introduction

One of the first tasks in managing wild stocks is an assessment of their abundance. For abundance estimates to be accurate, data need to be collected in a manner that reduces biases. Selecting fish inventory locations based on access considerations or at locations known to contain relatively high densities of fish (i.e., non-random site selection), as was commonly done in Alberta, may bias abundance estimates. Estimating fish numbers with introduced biases can lead to under- or overestimation of fish abundance. Of particular concern is the monitoring of fish abundance by assessing the 'good fishing holes', which can lead to an overestimation of fish numbers; a population may be in a collapsed state before quality sites show any reduction in fish abundance. To reduce biases, we tested a stratified-random sampling approach to assess fish abundance. With this approach, all fish habitats have an equal chance of being sampled and biases in fish numbers should be reduced. In this project, we investigated fish abundance at randomly-located sites in the McLeod River drainage.

Methods

Following a stratified-random sampling design, we collected fish abundance data at 111 sites in the McLeod River drainage in the summer of 2005 and 2006. We used backpack electrofishing at

98 sites in stream orders 1 – 6; a total of 32 km of stream was backpack electrofished. A three-person float crew using an inflatable raft electrofished nine sites in stream orders 6 and 7, and a three-person crew using a tote barge electrofished four sites in stream order 6. Captured fish were identified to species, measured (fork length and weight), and released.

Results

Backpack electrofishing captured 1,998 individual fish from 13 species, including five species of sport fish (Brook Trout (*Salvelinus fontinalis*), Bull Trout (*Salvelinus confluentus*), Burbot (*Lota lota*), Mountain Whitefish (*Prosopium williamsoni*) and Rainbow Trout (*Oncorhynchus mykiss*)). Sport fish represented 80% (n = 1,606) of the total backpack electrofishing catch. We captured a total of 125 Bull Trout (6% of the total catch and 9% of the sport fish catch) at 20 backpack electrofishing sites, with four sites in the Mackenzie Creek drainage, a known Bull Trout spawning stream, accounting for 105 (84%) of the Bull Trout captured. At the 20 sites with Bull Trout captures (8.5 km of backpack electrofishing), the mean, minimum and maximum Bull Trout/km was 15.5, 2.0 and 166.0, respectively. When considering all sites (all 32 km of backpack electrofishing), the catch-per-unit-effort was 3.9 Bull Trout/km. Raft and tote-barge electrofishing captured 838 and 892 fish, respectively. In addition to the sport species captured by backpack electrofishing, raft-tote barge electrofishing captured Arctic Grayling (*Thymallus arcticus*), Walleye (*Sander vitreus*) and Northern Pike (*Esox lucius*). Sport fish represented 95% of the total float electrofishing catch. A total of 32 Bull Trout (2% of both the total fish and the sport fish) were captured by raft and tote-barge electrofishing. Bull Trout were captured at 11 of the 13 raft/tote-barge sites with a mean, minimum and maximum Bull Trout catch of 1.1, 0.2 and 3.0 fish/km, respectively.

Conclusion

Relative to the effort that was allocated to sampling in this project, we captured a small number of Bull Trout in the McLeod River study area. Of all the Bull Trout we captured, 84% were from four sites in the MacKenzie Creek drainage.

Communications

- Produced an activity report detailing key results.

Literature Cited

n/a