

**Alberta Conservation Association
2008/09 Project Summary Report**

Project name: *Wabasca Lakes Walleye Study*

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Partnerships:

Alberta Sustainable Resource Development

Key findings

- We successfully relocated 20 (57%) of 35 mature walleye were implanted with radio transmitters in the Wabasca Lake system between August 2008 and January 2009.
- Overall, we relocated 37, 23, and 25% of the total number of tagged fish in August, November, and January respectively.
- Due to the high proportion of missing fish (43%) we intend to revise our study design, including, increasing the number of tagged fish during the spring of 2009.

Abstract

A spring conservation closure (1 April - 1 June) has been established at two inlets, Drowned-horse Creek and Willow River, on North and South Wabasca lakes to protect actively spawning walleye (*Sander vitreus*) from seasonal harvest. The primary purpose of this study is to assess the effectiveness of these closures by tracking the distribution of mature walleye within the lakes and closures before, during and shortly after their spawning season. Our goal for the 2008-09 season (Year 1 of 3) was to surgically-implant 35 mature walleye (15 from Drowned-horse Creek, 15 from Willow River, and 5 from North Wabasca Lake) between May and July with radio transmitters and attempt locate these fish during the months of August, November, and January to evaluate the effectiveness of radio telemetry in tracking movement of walleye in the Wabasca Lake system. In total, we relocated 20 (57%) of the 35 originally tagged fish of which 12 fish were tagged in Drowned-horse Creek, 6 in Willow River, and 2 in North Wabasca Lake. Fish tagged in both the Willow River and Drownhorse Creek distributed into both North and South Wabasca lakes and fish tagged in North Wabasca were relocated in Drownhorse Creek.

Due to the high proportion of missing fish (43%) we intend to revise our study design, including increasing our sample size by implanting more transmitters during the spring of 2009.

Introduction

Previous studies of North and South Wabasca lakes suggest walleye spawn in the Willow River, an inlet on the southwest corner of North Wabasca Lake (NWL), and in Drowned Horse Creek, an inlet on the south side of South Wabasca Lake (SWL). Domestic and recreational harvest of spawning walleye from these sites is a potential threat to the sustainability of walleye populations in both lakes. In response to a petition by the Bigstone Cree Nation and the public to protect walleye during their spawning season, the Alberta Sustainable Resource Development implemented spring conservation closures from 1 April – 1 June surrounding the Willow River and Racehorse Creek (Figure 1). Overall goal of the study is to determine if the closure zones effectively encompass the distribution of spawning walleye by determining walleye locations before, during, and after the spring closures period. The 2008 study was a preliminary survey designed to evaluate the effectiveness of radio telemetry in tracking movement of walleye in the Wabasca Lake system. The spatial and temporal information generated will be used in adjusting our sampling strategies for more comprehensive surveys to be conducted over the next two years.

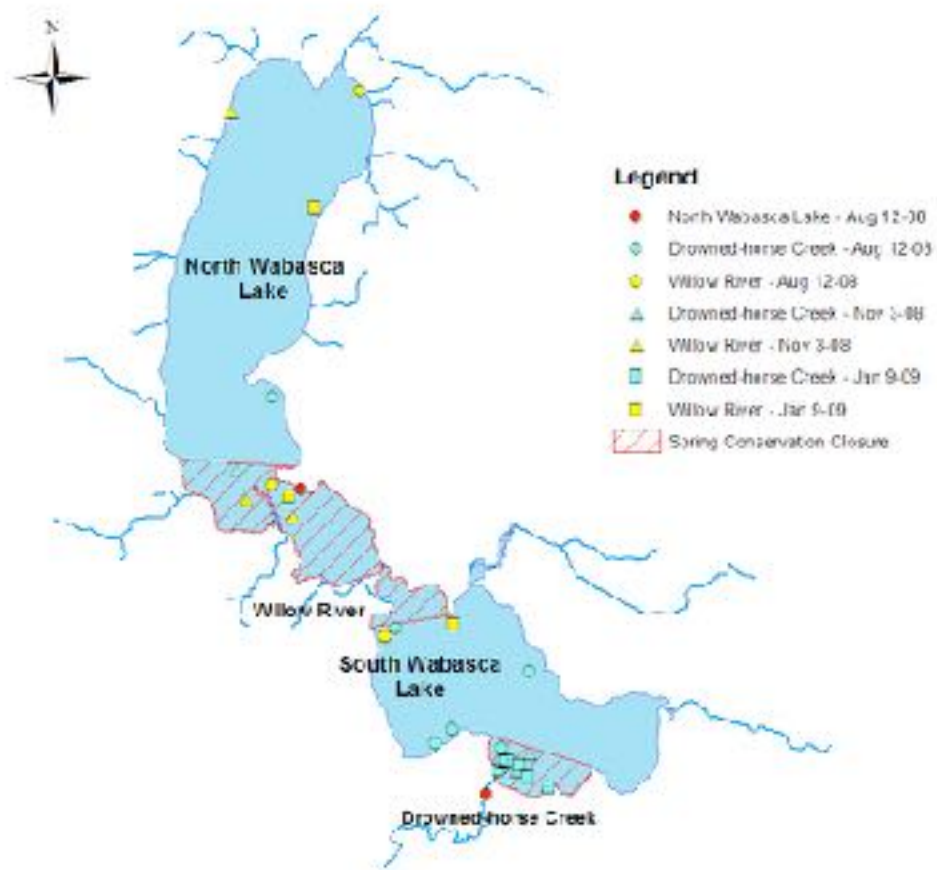


Figure 1. Map showing radio-tagged walleye relocation sites between August and January (2008-2009) on North and South Wabasca Lakes.

Methods

To monitor their movements, we surgically implanted 35 walleye with LOTEK MCFT-3L high frequency radio transmitters on 13 and 14 May 2008 following procedures in Bidgood (1980). We implanted 15 fish each from the Willow River and Drowned-horse Creek captured using electrofishing and five in North Wabasca Lake on 18 captured by angling. Mature walleye with the appropriate weight (i.e., transmitter was <5% of body weight) were selected for transmitter implants. We use a helicopter (Bell 206 Ranger) and a fixed-wing plane for relocation flights and tracked fish using a uni-directional Yagi antennae/radio receiver (LOTEK SRX_400) combination on 12 August 2008, 3 November 2008, and 9 January 2009 as per Osokin and Tchir (2004). Each flight lasted approximately 4 h and covered the entirety of both North and South

Wabasca lakes twice by following the shoreline (~100m out from shore). Both Drowned-horse Creek and Willow River were also covered at least once, roughly to the extent at which walleye migrate to spawn.

Results

We relocated 20 (57%) of the 35 walleye originally implanted with radio transmitters, some of which were relocated multiple times (a total of 30 signal relocations). On 12 August we located 4 fish originally implanted from Willow River fish (2 in NWL, 2 in SWL), 7 Drowned-horse Creek fish (1 in NWL, 6 in SWL), and 2 North Wabasca Lake fish (1 in NWL, 1 in SWL) (Figure 1). On 3 November we relocated 5 fish from Drowned-horse Creek (1 in NWL, 4 in SWL) and 3 fish from Willow River (all 3 in NWL). On 9 January 2009, 9 Drowned-horse Creek fish (2 in NWL, 7 in SWL) and 3 Willow River fish (2 in NWL, 1 in SWL) were located (Figure 1). Thus, fish tagged in both the Willow River and Drownhorse Creek distributed into both North and South Wabasca lakes and fish tagged in North Wabasca were found in Drownhorse Creek. Overall, we relocated 37%, 23%, 25% of the total number of tagged fish in August, November, and January respectively.

Conclusion

In total, we relocated 20 (57%) of the 35 originally tagged fish on subsequent dates, of which 12 fish were tagged in Drowned-horse Creek, 6 in Willow River, and 2 in North Wabasca Lake. The 15 fish not relocated (missing) could have been due to several factors, including natural death, harvest by fishermen, transmitters not functioning properly, or they were out of range during our relocation dates. Due to this high proportion of missing fish (43%) we intend to revise our study design, including increasing our sample size by implanting more transmitters during the spring of 2009. The work we completed this year is one stage of a larger project assessing the effectiveness of the spring conservation closures at Wabasca lakes. The transmitters implanted this year will continue to provide data into next year. These data will aid ASRD in evaluating temporal and spatial closure boundaries, that are intended to help sustain the walleye population in Wabasca lakes.

Communications

- ACA activity report prepared.

Literature cited

- Bidgood, B. 1980. Fish surgical procedure for implantation of radio tags in fish. Alberta Division of Fish and Wildlife. Fisheries Research Report 20. Alberta, Canada.
- Osokin, L., J. Tchir. 2006. South Heart River walleye project 2004. Data Report (D-2004-018) produced by Alberta Conservation Association, Slave Lake, Alberta, Canada.