

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

Project Name: *Abundance of Spawning Walleye and Availability of Spawning Habitat in Vandersteene Lake*

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Partnerships

Alberta Sustainable Resource Development

Key Findings

- Unable to assess walleye spawning habitat and abundance in Vandersteene Lake due to spring forest fires that prevented access to the lake during the spawning period.
- Angling was not an effective method to capture adequate numbers of walleye for a mark-recapture population estimate.
- For the first time in six to possibly >20 years, water levels were high enough to allow fish passage between Graham and Vandersteene lakes.

Introduction

Vandersteene Lake, located east of Red Earth Creek in northwestern Alberta, has been classified as having a “trophy” walleye (*Sander vitreus*) fishery for over a decade. However, anglers have reported a decline in the quality of the fishery in recent years. In 2004, we conducted a creel survey and gill-netting on the lake to identify the level of angling pressure, as well as walleye abundance and population structure. Results of the study identified high angling pressure and a lack of recruitment as possible limiting factors of the walleye population (Fortier and Tchir 2006). Based on these results and anecdotal evidence from anglers, Alberta Sustainable Resource Development (ASRD) modified walleye harvest on the lake to catch-and-release only. Further, in contrast to Vandersteene Lake, the adjoining Graham Lake has historically supported a relatively healthy, self-sustaining walleye population and has been suspected as a source of recruitment to Vandersteene Lake. However, channel blockage and low water levels have limited fish movement between the two lakes (Wright 1996).

Our project was designed to generate data to aid in a review of existing fishery management regulations on the lake. Our initial objectives were to investigate walleye spawning activity and availability of spawning habitat and to estimate abundance of

spawning fish. Other objectives were to compare genetic structure of walleye between Vandersteene and Graham lakes to determine relatedness, and determine whether reduced fish movement between the two lakes could limit walleye recruitment into the Vandersteene population.

Methods

We were unable to conduct walleye spawning surveys (i.e., documentation of spawning activity and spawning habitat and estimation of abundance of spawning fish) as extensive forest fires in the Red Earth Creek area between May 16 and June 1 prevented access to the lake during the critical spawning period (mid-May to early June). Instead, we evaluated the efficacy of angling as a suitable capture method for marking adequate numbers of walleye for a mark-recapture population size estimate to occur the following spring. Crews of three to five angled from boats during visible light hours between June 2 – 5, 2011. We measured fork length and total length of fish, marked each walleye using a passive integrated transponder (PIT) tag, and removed the first three rays of the left pelvic fin for ageing purposes. We investigated the channel between Vandersteene and Graham lakes for any blockages that could impede fish movement between the two lakes.

Results

We angled for a total of 39.7 h and captured two walleye (0.05 fish/h) and five northern pike (*Esox lucius*) (0.13 fish/h). Our goal was to tag approximately 400 fish (~10% of the 2004 abundance estimate; Fortier and Tchir 2006). However, given our low catch rate, we did not continue this portion of the study. In addition, we could not collect sufficient samples for our genetic analysis.

We observed breached beaver dams in the inlet and outlet of Vandersteene Lake. We used explosives during the winter of 2010 to open the inlet dam obstructing ACA's enhancement structure. Spring flows were sufficient to breach the outlet dam connecting Graham and Vandersteene lakes. No fresh beaver activity was apparent.

Conclusions

Due to low walleye catch rates and unforeseen field complications, we have deferred this project indefinitely. Nonetheless, our observations suggest that fish movement between Graham and Vandersteene lakes was possible in 2011. However, local sources suggested that water levels during our study period (spring 2011) were atypically high and likely the first time in at least six years (and possibly 20 years or more) that fish passage was possible between the two lakes.

Communications

None

Literature Cited

Fortier, G.N., and J.P. Tchir. 2006. Status of sport fishes in Vandersteene Lake, Alberta, 2004. Data report, D-2005-019, produced by Alberta Conservation Association, Peace River, Alberta, Canada. 20 pp + App.

Wright, K.D. 1996. A study of the vulnerability of spawning habitat for walleye (*Stizostedion vitreum*) in Graham Lake, Alberta. Alberta Environmental Protection, Peace River, Alberta. 18 pp + App.



Breached beaver dam in the channel between Graham Lake and Vandersteene Lake.
(Photo: Melissa Buskas)



Alberta Conservation Association staff free an all-terrain vehicle from the mud to move gear into camp. Left to right: Ken Wright, Clayton James and Len Peleshok. (Photo: Melissa Buskas)



Alberta Conservation Association crew angling on Vandersteene Lake. Left to right: Ken Wright, Patricia Halinowski and Len Peleshok. (Photo: Melissa Buskas)



Alberta Conservation Association staff checking-in during a day of field work. Left to right: Clayton James and Len Peleshok. (Photo: Melissa Buskas)