

Alberta Conservation Association 2017/18 Project Summary Report

Project Name: New Lake Aeration Development

Fisheries Program Manager: Peter Akum

Project Leader: Brendan Ganton

Primary ACA staff on project: Brendan Ganton, David Jackson, and Chad Judd

Partnerships

Alberta Environment and Parks
Mountain View County
Municipal District (MD) of Greenview

Key Findings

- In partnership with Mountain View County, we expanded ACA aeration program to include Winchell Lake.
- Operated surface aerators at Winchell Lake for the first time in winter 2017/18; aerators maintained adequate dissolved oxygen levels to overwinter trout.
- Continued discussions with the MD of Greenview regarding development of aeration infrastructure for West Dollar Lake.

Introduction

Alberta Conservation Association (ACA) uses aeration as a management technique to provide Albertans with recreational angling in areas of the province where such fishing opportunities are otherwise limited. Aerated waterbodies are typically shallow and eutrophic, experience prolonged ice cover, and are prone to both summer and winter fish kills. Low winter hypolimnetic dissolved oxygen resulting from the interplay of shallow depths, low photosynthetic oxygen production, and high biological oxygen demand lead to winterkills (Miller and Mackay 1996). We currently aerate 19 waterbodies across the province. With increased demand for recreational angling opportunities and a levy increase in 2014, additional funds were allocated to the Fisheries Program to expand our aeration projects. In 2017, Winchell Lake in the Central Alberta region, and West Dollar Lake in the Northwest region, were identified as potential sites for developing new aeration infrastructure.

Methods

We contracted Fortis Alberta to complete installation of power supply to Winchell Lake. With the support of Mountain View County, we installed and operated aerators on Winchell Lake for the first time. To ensure successful overwintering of fish we measured dissolved oxygen and temperature profiles monthly at Winchell Lake. At West Dollar Lake we partnered with the MD of Greenview and laid out plans for extension of existing power facilities from East Dollar Lake allowing for aeration of both East and West Dollar lakes from one central location. This work is planned to be completed in Spring 2018 to allow for stocking of West Dollar Lake that season.

Results

Power facility installation at Winchell Lake was completed in early December 2017 and aeration was immediately commenced. Oxygen levels remained adequate throughout the winter season and were consistently higher than previous unaerated seasons (Table 1).

Table 1. Comparison of average winter monthly dissolved oxygen concentrations at all sites and depths at Winchell Lake prior to and during surface aerator (2017/18) operation.

Winter	Dissolved oxygen (mg/L)			
	Dec	Jan	Feb	Mar
2013/14			1.32	2.07
2016/17	6.99	5.30	–	3.30
2017/18	7.26	6.23	6.51	–

We held meetings with the MD of Greenview regarding aeration at West Dollar Lake, culminating in financial support for the project from the MD. Subsequently, a formal request for commencement of aeration and fish stocking was made through Alberta Environment and Parks. Plans are now in place for commencement of aeration activities in spring 2018.

Conclusions

With the addition of Winchell Lake in 2017/18 season, we now aerate 19 waterbodies across the province. Surface aeration has been successful at maintaining dissolved oxygen at a level suitable for trout survival at Winchell Lake. We have partnered with MD of Greenview to extend power permitting aeration at West Dollar Lake beginning in spring 2018.

Literature Cited

Miller, T.G., and W.C. Mackay. 1996. A comparison of mechanical surface aeration and point release air injection used to prevent winterkill in Alberta. Second annual progress report on winter lake aeration. Department of Biological Sciences, University of Alberta, Edmonton, Alberta, Canada. 64 pp.

Photos



Fountain action of the surface aerators shortly after being powered on for the first time at Winchell Lake. Photo: Andrew Clough



Safety fence and warning signage surrounding surface aerator in Late January 2018 at Winchell Lake. Photo: Andrew Clough