

**Alberta Conservation Association
2022/23 Project Summary Report**

Project Name: New Lake Aeration Development

Fisheries Program Manager: Peter Aku

Project Leader: Brad Hurkett

Primary ACA Staff on Project: Troy Furukawa and Ariel Schlereth

Partnerships

Government of Alberta

Key Findings

- Monitored winter dissolved oxygen and temperature at Chatwin Lake and Blue Ridge Pit Pond to determine their potential for future aeration.
- Preliminary screening indicates Petite Lake poses substantial logistics and operational challenges due to its remote location, and hence does not fit our criteria for aeration.

Abstract

Alberta Conservation Association's (ACA) Lake Aeration Project promotes angling opportunities in stocked waterbodies across Alberta where such fishing opportunities are otherwise limited. Waterbodies we aerated are prone to fish kills during winter and summer months due to low dissolved oxygen (DO), but with aeration, we maintain DO concentrations at levels that promote year-round survival of stocked trout. Each year, we receive several requests to aerate waterbodies throughout the province. Given the substantial cost associated with aeration operations, we carefully screen candidate waterbodies to ensure that we address top Government of Alberta (GoA) provincial-level priorities. In 2022/23, we screened two waterbodies, Chatwin Lake and Blue Ridge Pit Pond, by monitoring DO and temperature profiles during winter months. With assistance of local GoA (Cold Lake fish hatchery) staff, this is the third year collecting DO and temperature data at Chatwin Lake, and our first year at Blue Ridge Pit Pond.

Introduction

Alberta Conservation Association's (ACA) Lake Aeration Project provides Albertans with recreational angling opportunities in lakes across the province where such fishing opportunities are otherwise limited. The lakes we aerate are prone to both summer and winter fish kills due to low dissolved oxygen (DO), but through aeration, we maintain DO at levels that promote year-round survival of stocked trout. Each year, ACA receives several requests for aeration at new waterbodies across the province. Given the substantial cost associated with aeration, we carefully screen requests to ensure that we address top Government of Alberta (GoA) provincial-level priorities. After a preliminary review of the requests received, we developed a short list of lakes for further screening as potential candidates for future aeration; this year, we screened three waterbodies: Chatwin Lake, Blue Ridge Pit Pond, and Petite Lake.

Methods

We identify candidate waterbodies for aeration through ongoing consultation with GoA, local anglers, and other stakeholders, following the evaluation criteria in Table 1. As part of the screening process, we measured monthly winter DO and temperature profiles at Chatwin Lake and Blue Ridge Pit Pond in partnership with GoA. Local GoA staff collected the data at Chatwin Lake, and ACA staff collected data at Blue Ridge Pit Pond. We did not conduct similar surveys on Petite Lake as our initial screening indicates it does not meet the logistics and operational cost criteria (Table 1). Key screening criteria include alignment with GoA/ACA provincial-level priorities, multi-year patterns in frequency and severity of fish kills, water quality data (particularly nutrients and DO profiles), lake depth and size, and proximity to electrical power, roads, and major population center (Table 1).

Table 1. Evaluation criteria used to screen candidate waterbodies for winter surface aeration.

Criteria	Description
Waterbody identification	
	Alignment with GoA/ACA (Joint Program Committee – JPC) provincial-level priorities.
	Request for investigation by GoA.
	Request for investigation by other stakeholders (e.g., Alberta Fish & Game Association [AFGA]).
	Typically, a stocked fishery, existing or in development.
	Does project add to diversity of angling experience/opportunity in area?
Waterbody assessment	
Historical fish kill pattern	What is the history of winter fish kills in the lake? Historical patterns in frequency and severity of fish kills. Partial or complete kill?
Water quality data	Availability of water quality data, particularly DO and nutrients. Depending on available data or where sufficient data does not exist, water quality will be monitored monthly during winter for one to three years. Highly eutrophic waterbodies with high nutrient loads and low DO are less desirable candidates for aeration.
Mean depth	Most Alberta shallow lakes tend to be more eutrophic and productive than deeper lakes and therefore require greater aeration input. Generally, <2.5 m not desired, 2.5–3.5 m acceptable, and >3.5 m ideal.
Waterbody size	Relates directly to the number of aerators required and associated cost and maintenance needs. Larger lakes provide a greater angling opportunity but require more aerators, higher operating and development costs, and maintenance needs. Conversely, smaller lakes typically provide less of an angling opportunity, but have lower operating and development costs, and maintenance needs: <2.5 ha not desired, 10–60 ha acceptable/ideal, and >100 ha considered.
Logistics and operational cost	Proximity to electrical power, road access, and proximity to major population centres; other existing facilities.
Partner support	Project support (i.e., monetary or in-kind) from corporate, organizational, and stakeholder project partners to reduce development and/or operational costs and maintenance needs.

Results

In 2022/23, ACA and local GoA staff collected winter DO and water temperature data at two waterbodies across the province. This is the first season collecting DO and temperature data at Blue Ridge Pit Pond and the third season at Chatwin Lake; GoA began monitoring winter DO and water temperature at Chatwin Lake in 2020/21 before it was considered a lake aeration candidate. We continue our preliminary assessment of Petite Lake before considering it as a screening candidate which currently does not meet all the measures in our criteria evaluation. Our preliminary screening indicates that due to its remote location, Petite Lake poses substantial logistics and operational challenges, and hence does not fit our criteria for aeration.

Conclusions

We continue to expand ACA's Lake Aeration Project with the purpose of year-round angling opportunities to our stakeholders. We continue our assessment at Chatwin Lake and Blue Ridge Pit Pond for aeration development. Preliminary screening indicates Petite Lake poses substantial logistics and operational challenges due to its remote location, and hence does not fit our criteria for aeration.

Communications

- Water quality data results were shared with GoA.

Literature Cited

Not applicable

Photos



Photo 1. ACA staff preparing dissolved oxygen and water temperature monitoring equipment at Blue Ridge Pit Pond. Photo: Troy Furukawa