

**Alberta Conservation Association  
2019/20 Project Summary Report**

**Project Name:** New Lake Aeration Development

**Fisheries Program Manager:** Peter Aku

**Project Leader:** Brendan Ganton

**Primary ACA staff on project:** Brendan Ganton

**Partnerships**

Alberta Environment and Parks

**Key Findings**

- Collected dissolved oxygen and temperature data at five candidate waterbodies: Little Bear Lake, Peanut Lake, Sauer Lake, Bullshead Reservoir, and Kerbes Pond.
- We began aerating Kerbes Pond using air diffusers during the summer/fall seasons and continue our screening assessment for winter aeration.
- Based on our screening results, candidate waterbodies may be selected for development of aeration facilities and incorporated into ACA's Lake Aeration Program.

**Abstract**

ACA's Lake aeration program promotes angling opportunities in stocked waterbodies across Alberta where such fishing opportunities are otherwise limited. Waterbodies aerated in the program are prone to fish kills during winter and summer months due to low dissolved oxygen (DO) but with aeration, DO levels are maintained to promote year-round survival of stocked trout. Given the substantial cost associated with such operations, it is essential that we carefully

screen candidate waterbodies to ensure that we address top AEP provincial-level priorities. Each year we receive many requests from stakeholder groups to aerate stocked waterbodies throughout the province. After a preliminary review of the requests, we develop a short-list of lakes for further screening as potential candidates for future aeration. Currently ACA is screening five candidate waterbodies in Alberta by collecting DO and temperature data during winter months. In 2019/20, with the assistance of AEP, we have been collecting winter dissolved oxygen (DO) and temperature data at Little Bear, Peanut, and Sauer lakes, Bullshead Reservoir, and Kerbes Pond. This is the first year collecting DO and temperature data at Peanut and Sauer lakes, second year at Little Bear Lake, and Bullshead Reservoir, and third year at Kerbes Pond. In 2019/20, we began aerating Kerbes Pond during the summer/fall season and will continue our screening assessment to determine if winter aeration required. Based on our screening results, candidate waterbodies may be selected for development to expand ACA's aeration program.

## **Introduction**

Alberta Conservation Association's (ACA's) Lake Aeration program provides Albertans with recreational angling opportunities in lakes and ponds 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 new lake aeration across the province. Given the substantial cost associated with aeration, it is essential that we carefully screen requests to ensure that we address top Alberta Environment and Parks (AEP) provincial-level priorities. After a preliminary review of the requests we received, we developed a short-list of lakes for further screening as potential candidates for future aeration.

## **Methods**

We identify candidate waterbodies for aeration through ongoing consultation with AEP, local anglers, and other stakeholders, and also consider provincial-level priorities and needs for AEP. In 2019/20, we screened five lakes including, Bullshead Reservoir, Little Bear, Peanut, Sauer lakes, and Kerbes Pond and collected monthly winter DO and temperature profiles from each

lake in partnership with AEP; local AEP staff collected the monthly data on Bullshead, Peanut, and Little Bear lakes. Key screening criteria include: alignment with AEP/ACA provincial-level priorities; multi-year patterns in frequency and severity of fish kills, water quality data (particularly nutrients and dissolved oxygen profiles); lake depth and size; proximity to electrical power, roads, and major population center (see Table 1 for full list).

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

Criteria	Description
<b>Waterbody identification</b>	
	Alignment with AEP/ACA (JPC) provincial-level priorities.
	Request for investigation by AEP.
	Request for investigation by other stakeholders (e.g., AFGA).
	Typically, a stocked fishery, existing or in development.
	Does project add to diversity of angling experience/opportunity in area?
<b>Waterbody assessment</b>	
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 dissolved oxygen (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, less than 2.5 m not desired, 2.5–3.5 m acceptable, >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, >100 ha considered.
Logistics and operational cost	Proximity to electrical power, road access, and closeness to major population centre; 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 2019/20 we collected winter DO and water temperature data at five waterbodies. This is the first season collecting DO and temperature data at Peanut and Sauer lakes, second year in Little Bear Lake and Bullshead Reservoir, and third year in Kerbes Pond. In 2019/20, we adopted aerating Kerbes Pond from Trout Unlimited Canada during the summer/fall months. We will continue aerating Kerbes Pond using air diffusers during the open water season and continue our screening assessment to determine if winter aeration is required.

## **Conclusions**

We continue to identify and screen potential candidate waterbodies for development to expand ACA's aeration program.

## **Communications**

- Water quality data results have been shared with Alberta Environment and Parks.

## Literature Cited

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## Photos



ACA staff measuring dissolved oxygen and water temperature at Bullshead Reservoir in winter.

Photo: Logan Redman





Air diffusers running in Kerbes Pond during fall. Photo: Diana Rung