

Alberta Conservation Association 2016/17 Project Summary Report

Project Name: Assessment of Winter Dissolved Oxygen for Priority Cold-water Fish Species

Fisheries Program Manager: Peter Aku

Project Leader: Jason Blackburn

Primary ACA staff on project:

Jason Blackburn, Brad Hurkett, Dave Jackson, Nikita Lebedynski, Garret Mcken, Logan Redman and Scott Seward

Partnerships

Alberta Environment and Parks

Key Findings

- We have recorded unsuitable dissolved oxygen levels and/or ice thickness at 6 of 13 locations in the Whitemud River watershed and 6 of 17 locations in the Willow Creek watershed.
- Winter dissolved oxygen monitoring will continue until spring break-up in 2017.

Introduction

Cumulative landscape disturbances have resulted in widespread declines of lotic fisheries across Alberta, and the nutrient inputs from surrounding land management practices have been linked to anoxic conditions in Alberta streams. Low dissolved oxygen (DO) levels in winter can be a significant limiting factor for fish production, particularly for cold-water fish species in Alberta such as Arctic grayling, bull trout, Athabasca rainbow trout, and westslope cutthroat trout. Past measurements suggest winter DO falls below the federal guidelines for cold-water species in some Alberta streams and approaches sub-lethal levels in others. In winter 2016/17, we began broad-scale monitoring across two watersheds to identify locations where winter DO levels may become limiting for Arctic grayling in the Whitemud River watershed of northwestern Alberta and for westslope cutthroat trout in the Willow Creek watershed in southwestern Alberta. We installed datasondes to monitor under-ice DO levels and investigate diurnal patterns along the mainstems at eight locations on the Whitemud River and six locations on Willow Creek. We began bi-weekly measurements with handheld DO meters at all datasonde stations and on all major tributaries entering the mainstems. To date, we have observed unsuitable DO levels and/or ice conditions at 6 of 13 sampling locations in the Whitemud River watershed and 6 of 17 locations in the Willow Creek watershed. We will continue monitoring until ice break-up in the spring of 2017, at which time datasondes will be retrieved and analyzed, and methods will be refined for future assessments.

Photos



Alberta Conservation Association staff member Nikita Lebedynski installing datasonde in the Whitemud River. Photo: Garret Mcken



Datasonde below the ice in the Whitemud River. Photo: Nikita Lebedynski



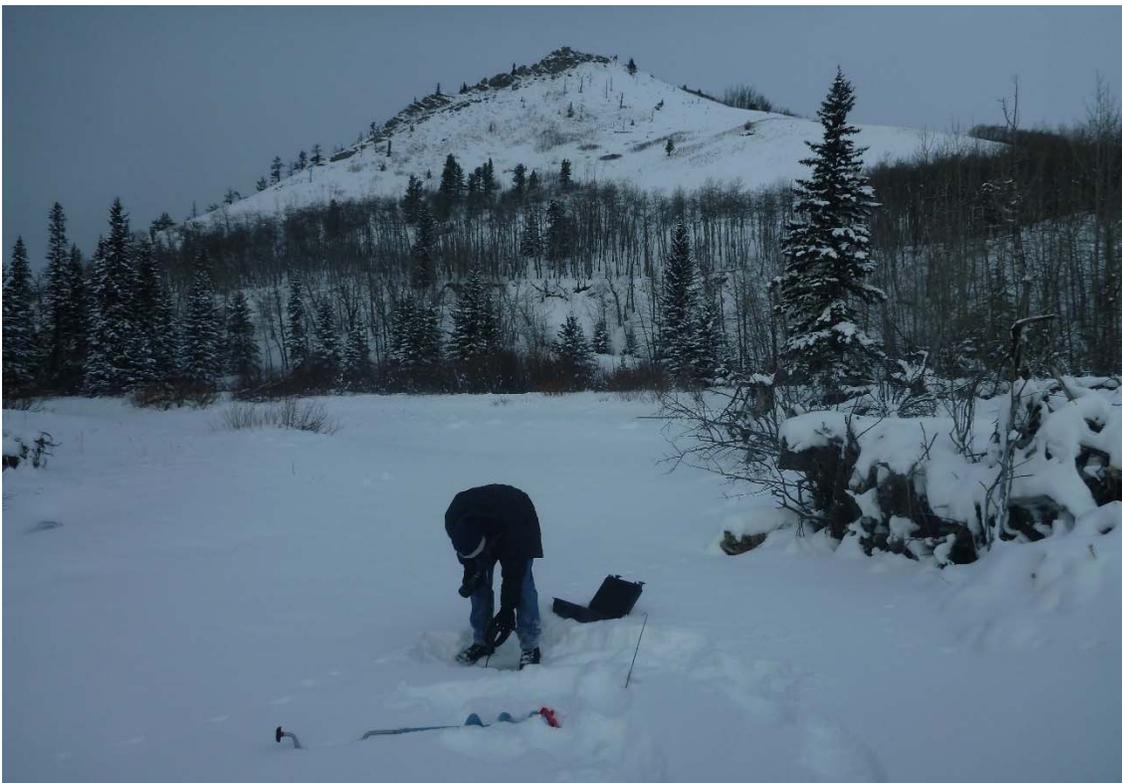
Whitemud River before freeze up. Photo: Nikita Lebedynski



Whitemud River during freeze up. Photo: Nikita Lebedynski



Alberta Conservation Association staff member Jeff Forsyth auguring a hole in Willow Creek. Photo: Brad Hurkett



Alberta Conservation Association staff member Jeff Forsyth taking dissolved oxygen measurements in Willow Creek. Photo: Brad Hurkett