YFWET Final Report – Submitted February 15 2022

Project name: Lhù'ààn Mân (Kluane Lake) Water Temperature Monitoring Program

Submitted by: Kluane First Nation with assistance from Ellorie McKnight and additional support form EDI Environmental Dynamics Inc. and Dan Ke'yi Renewable Resources Council

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Project Activities

The 2021 objectives for the Kluane Lake Water Temperature Monitoring Program were to:

- Continue the monitoring program at Lhù'ààn Mân to ensure there are no data gaps in long term monitoring
- Update preliminary analysis of thermal dynamics of Kluane Lake
- Provide opportunity for community members to guide and participate in project activities
- Identify and secure a long term solution to ensure the continuation of the program

The first three objectives listed above were fully met during 2021. In June 2021, Ellorie McKnight and 2 staff from EDI spent nearly a week at Kluane conducting fieldwork. This fieldwork involved visiting each of the four mooring sites on Kluane Lake, retrieving moorings, downloading data, and redeploying the moorings for another year of data collection. The 2021 fieldwork went very smoothly, all moorings were retrieved and redeployed successfully.

Unfortunately, a rise in COVID cases prevented the fieldwork crew from inviting community members to participate in fieldwork. While Ellorie was able to have outdoor visits with community members during the field week, no youth or community members were able to join on the boat, which is usually a highlight each year for the project.

The data collected in 2021 has allowed for an updated analysis of thermal dynamics. Since the moorings began collecting data in spring 2017, the project now has four complete open water seasons of data (2017,2018,2019,2020). These four years of data provide insight into how the 2016 diversion of the A'ay Chu may be impacting lake thermal dynamics. Preliminary analysis suggests that the southern end of Kluane Lake may be warming, but not the northern arms of the lake. Continued long term monitoring is critical to continue investigating this hypothesis.

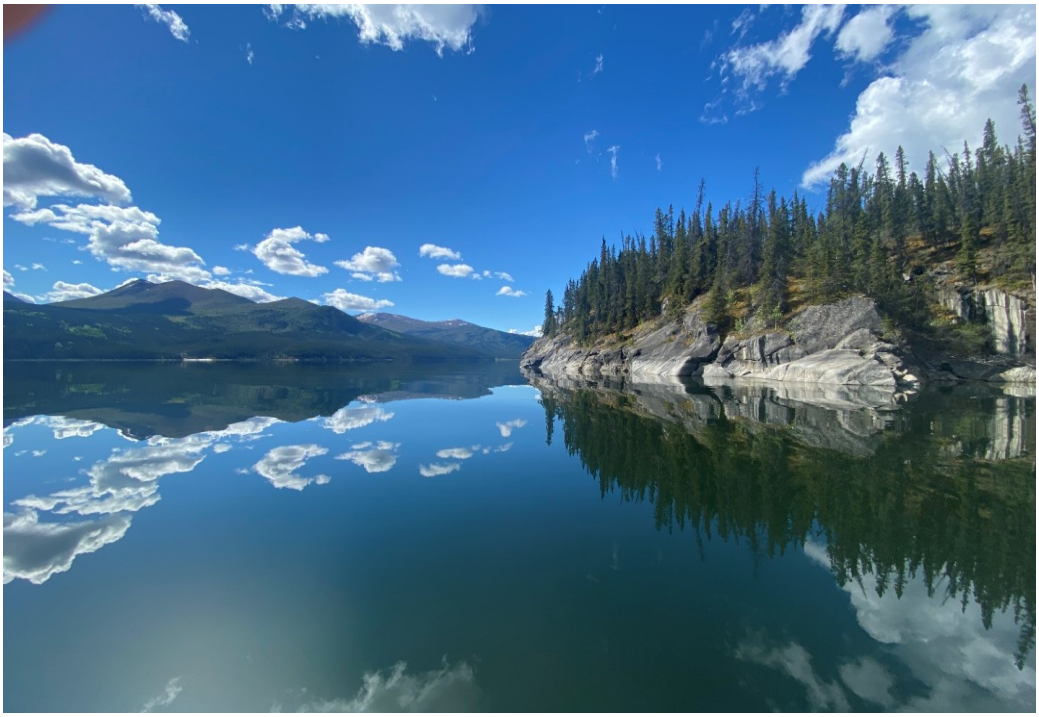
The project partners have not yet identified a long term solution for the management and operations of the program, but continue to be in conversation with Yukon Government and other potential partners. These conversations are anticipated to continue into 2022 and project partners

remain optimistic that a solution can be identified, especially given the preliminary data analysis showing likely change in southern end lake thermal dynamics and emphasizing the importance of continued monitoring. Because thermal dynamics are a critical component of fish habitat, continued monitoring would directly contribute to the protection of fish habitat. If thermal trends continue and thresholds are reached for certain species, this monitoring would provide the evidence required to implement the required protection measures.

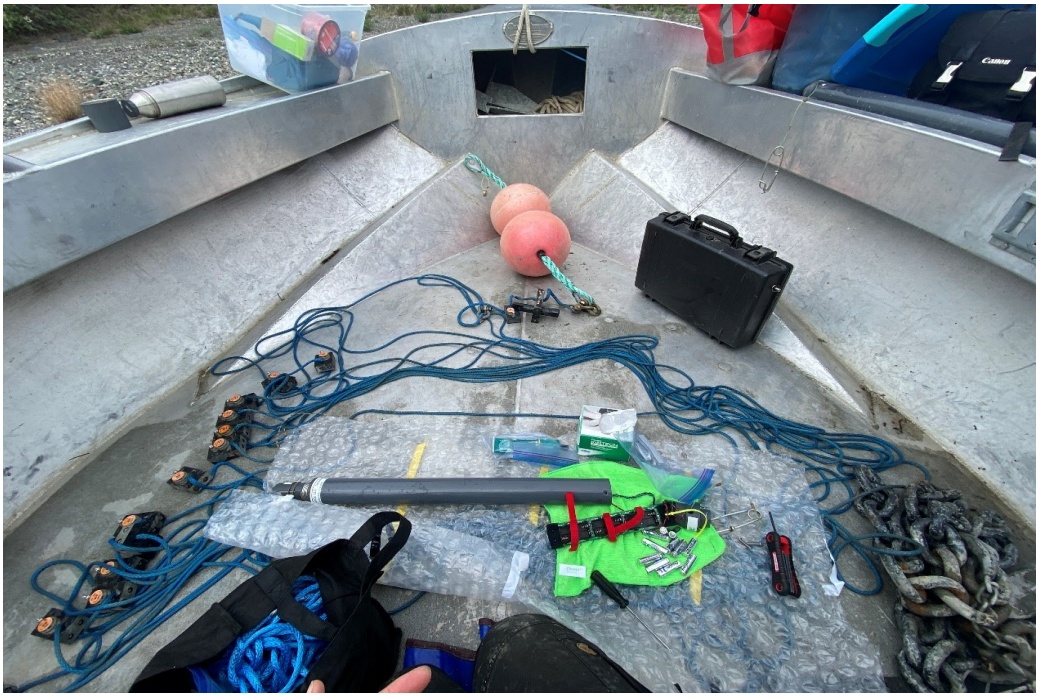
Communications

The 2020 open water season data is currently being added to the 2017-2019 dataset for updated analysis and in preparation for sharing with all project partners and relevant entities. Once the data is processed, it will be shared through a variety of avenues (both raw data as well as summaries of data analysis). These include community newsletters, social media, possibly academic publication, and at community events. This project prides itself on communication and ensures that every year a fieldwork update is provided to community members along with any data analysis updates. These updates are shared via the Dan Keyi Renewable Resources Council Annual (usually end of year) newsletter, Kluane First Nation website and facebook page, Kluane Research Network Facebook page. In the past, project partners have also given Yukon ScOPE talks regarding the project and project updates, as well as communicated at community events (when Covid has allowed) such as the Kluane Research Summits and Kluane Fishing Derbies. All communication providing update on the 2021 field season will acknowledge fiscal support from YFWET, and emphasize the importance of monitoring lake thermal dynamics to ensure healthy fish habitat.

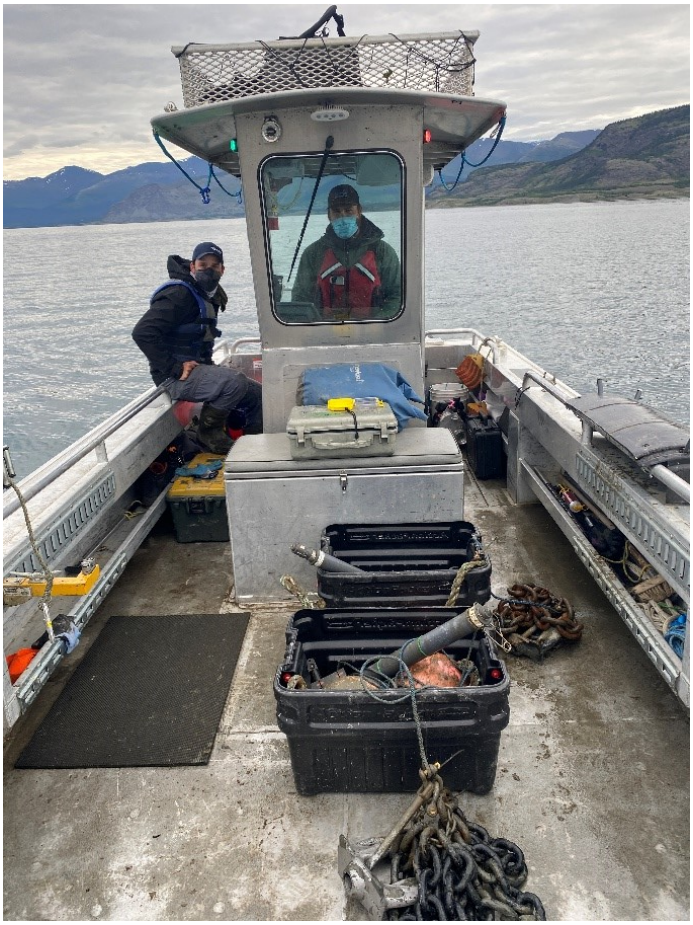
Photos from 2021 fieldseason at Kluane Lake:



A rare calm day on Kluane Lake.



One of the moorings being cleaned and downloaded before being put back into the lake.



EDI staff on the boat with two moorings freshly retrieved and ready for cleaning and downloading.