

# QuickNotes

## Science Summaries from fRI Research

### Improving Stream Temperature Data and Monitoring in Alberta's East Slopes

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The fRI Research Water and Fish Program has taken on the lead role in collating existing water temperature data for the province of Alberta and collecting new data with the goal of producing predictive water temperature models for Alberta's East Slopes. This work is being conducted to provide fisheries managers and resource users outputs that can be used to compare available thermal habitat for cold water species among watersheds. This is important as three cold water species (bull trout, westslope cutthroat trout, and Athabasca rainbow trout) are federally listed under the Species at Risk Act. Here, findings will help identify which watersheds have the most thermally suitable habitat for these cold water species and forecast which watersheds would be most vulnerable to warming temperatures from climate change. Results from these models will assist resource managers in selecting areas for recovery actions and protection.

This work is highly collaborative and involves data collection and submission by numerous organizations. In addition, MacDonald Hydrology Consultants Ltd. (MacHydro) is taking the lead on the model creation and has developed a web-based platform for creating their models and outputs (Figure 1) that, when finished, will be publicly accessible. MacHydro and fRI Research worked together in spring 2023 to identify data gaps in the model as depicted in Figure 1. Based on this initial analysis, nearly all watersheds could benefit from additional sampling. We also noted that mainstem rivers and areas in the National Parks were lacking the most data as of spring 2023.

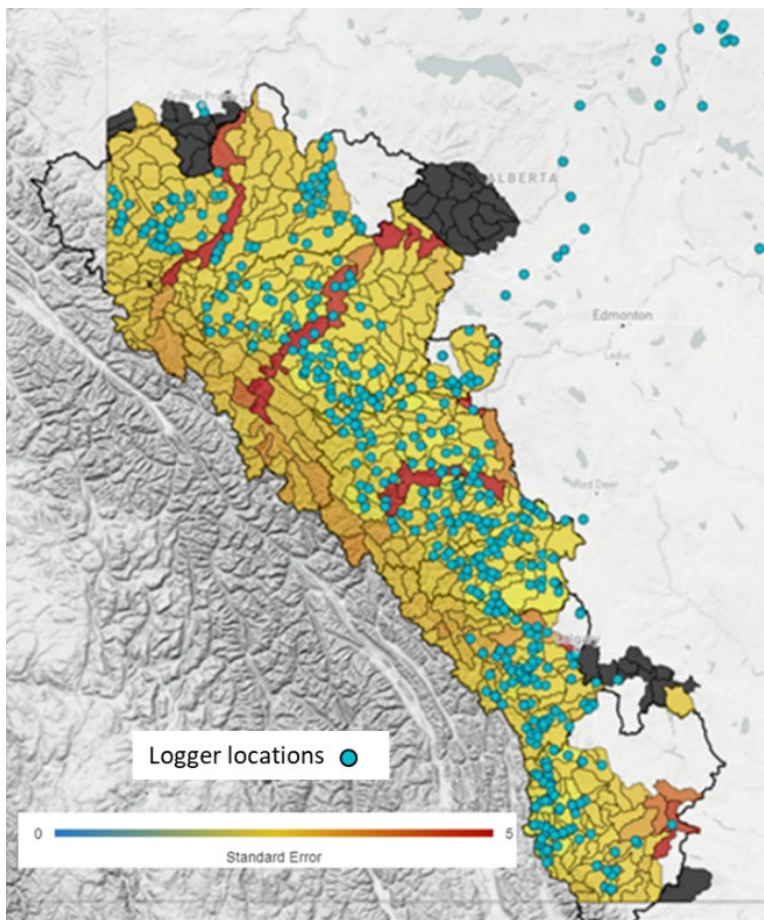


Figure 1. Water temperature model standard error by HUC 10 along Alberta's East Slopes as of spring 2023. Areas that are black were not modelled. The figure was produced by MacHydro.

In 2023, we added data from approximately 1,000 new locations to the dataset (Figure 2).

- fRI Research directed the deployment and collection of 376 temperature loggers throughout Alberta's East Slopes, focusing on road-accessible sites outside of National Parks. To complete this work, Trout Unlimited Canada, Poseidon Environmental Ltd., and Aseniwuche Environmental Corporation Ltd. conducted the deployment and recovery of temperature loggers.
- We also found and incorporated into the dataset 302 locations from various organizations.
- An additional ~300 locations were deployed in the National Parks and will be incorporated into this dataset.

Through the winter of 2023/2024, fRI Research is QA/QCing the data and actively working with MacHydro and partners to combine new (Figure 2) and existing data (Figure 1) into an updated model to aid in site selection for summer 2024. In summer 2024 we are planning to continue expanding this sampling to fill data gaps and improve model fit. If you are interested in supporting this program or have historic temperature data, please reach out to Ben Kissinger ([bkissinger@friresearch.ca](mailto:bkissinger@friresearch.ca)).

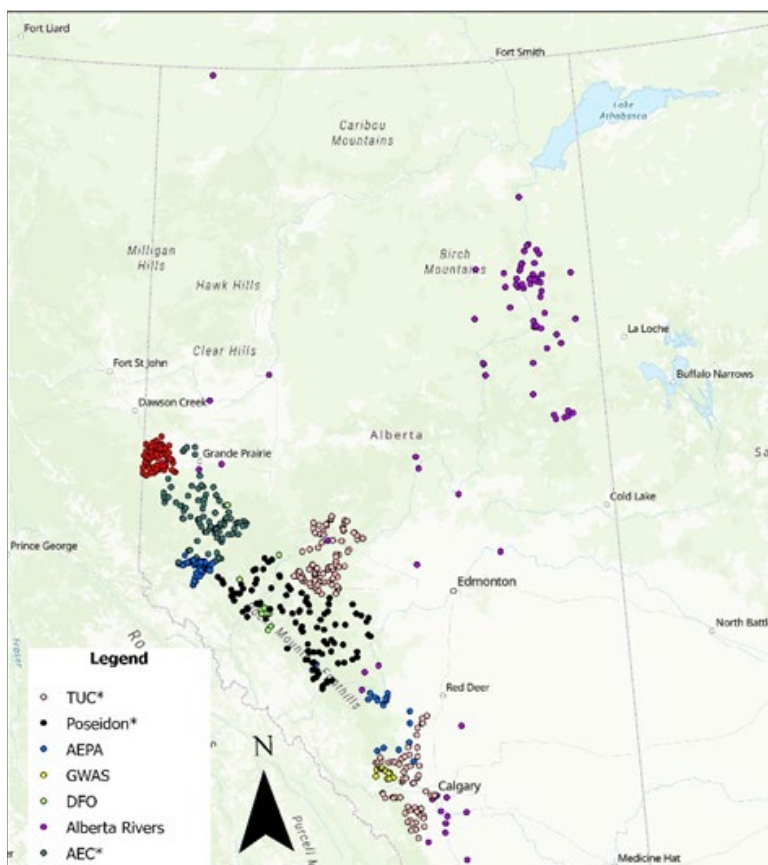


Figure 2. New water temperature logger locations added to the model in 2023. TUC = Trout Unlimited Canada, AEPA = Alberta Environment and Protected Areas, GWAS = Ghost Watershed Alliance Society, DFO = Fisheries and Oceans Canada, Alberta Rivers = [www.rivers.alberta.ca](http://www.rivers.alberta.ca), AEC = Aseniwuche Environmental Corporation, ACA = Alberta Conservation Association. \* indicates partners that were subcontracted under grants through fRI Research in summer 2023.

