

BEAVER RESEARCH BARIN NEWSLETTER

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BARIN BEAVER PROJECT: UPDATE

By Helen Wheeler (on behalf of the BARIN Team)

Thanks to everyone for another very enjoyable summer for the BARIN team in the ISR. As BARIN is now in its final year, we particularly welcome feedback on how things have gone and what our next steps should be and how things have been going so far.

Over the summer we participated in the filming of an episode of *The Nature of Things* with the Imaryuk monitors and others and it was nice to show aspects of the coproductive research that we have been doing together. In December we will be attending the Canada Inuit-Nunangat UK program meeting in Ottawa then on to ArcticNet and we hope to see people and connect further there.

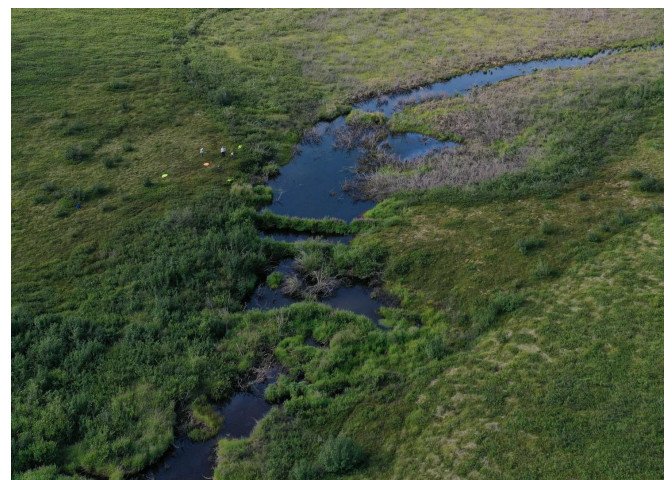
It has been great to see all the different activities happening this summer and thanks to everyone for their ongoing support.



Helen Wheeler



Drone image of a beaver lodge
(photo by Georgia Hole)



Drone image of beaver dams
(photo by Georgia Hole)

BEAVER IMPACTS ON LAKE CHEMISTRY

By Katie Bennett (University of Montreal)

This spring and summer I have been working on data analysis. I presented some of the preliminary results at the International Conference on Permafrost held in June in Whitehorse, YT, on the traditional territories of the Ta'an Kwäch'an Council and the Kwanlin Dün First Nation.

Also in June, I traveled to Inuvik, NT, and the Trail Valley Creek Research Station to prepare equipment and train undergraduate student Rémi for lake sampling later in the summer (see Rémi's article below). I was amazed to see the large snowdrifts remaining on the tundra in early June after the high snowfall in the ISR this winter! For the remainder of the summer I worked on data analysis from my office in Montreal. I am looking forward to adding the samples that Rémi and Megan collected to my dataset and compiling my results this fall!

In August, I visited Inuvik and Tutoyaktuk again to assist the CBC film crew visiting to film an episode for *The Nature of Things*. I had an incredible trip visiting our partners at the Joint Secretariat, the Fisheries Joint management Committee, the Imaryuk Monitors, and other members of the BARIN team to visit dam and lodge locations across the ISR. It was a great week of knowledge sharing and fun while we introduced the film crew to the ISR.



Katie at Miles Canyon, Whitehorse, whilst attending the International Conference on Permafrost



Filming of BARIN research for CBC's *The Nature of Things* (photo by Katie Bennett)



Rémi Lord-Quintric and Megan Cullen sampling lakes in ISR.



View of lake from helicopter in ISR (photo by Rémi Lord-Quintric)

RESEARCHING BEAVERS AND LAKE BIOGEOCHEMISTRY

By Rémi Lord-Quintric (University of Montreal)

I'm Rémi Lord-Quintric, an undergraduate geography student at the University of Montreal. This summer, I helped the University of Montreal team study lake biogeochemistry with beaver activity. I went out in a helicopter to sample multiple lakes around the Trail Valley Creek area. I was joined by a fellow BARIN collaborator, Megan Cullen, so we could help each other with our respective sampling.

At each lake, we measured water chemistry and collected both water and gas samples for lab analysis in Montréal. Those samples will allow us to determine both gas and nutrient quantity in each lake and relate it with beaver activity. To see if there is a relationship, we sample lakes with both beaver activity and no beaver activity. We also take into account other types of disturbance such as permafrost thaw to better understand gas dynamics in tundra lakes. My favorite part of doing the lake sampling was being able to admire the tundra landscape and its wildlife (we saw moose, caribou, beavers and a variety of birds) from above, something I never thought I would have the chance to do.

BEAVER IMPACTS ON STREAM DIVERSITY AND FOOD WEBS

By Mathew Mervyn (Wilfrid Laurier University)

This summer, I have been analyzing the data for my master's thesis and I started the writing process. We are hopeful that my work will be complete by the end of the year. My results aren't quite ready to share, but don't worry, things are coming together quite nicely. By the next newsletter, I'll be able to share how beavers are impacting stream diversity and food webs.

I also had the opportunity to travel to Kuujuaq, Quebec to help Katelyn Gao, a master's student at the University of Waterloo, with her research in the eastern Canadian Arctic. Her project is comparing the ecology of beaver ponds to a downstream reach. Similar to my work, we collected fish, insects, and plants to plot the food web, measure stream diversity and quantify mercury bioaccumulation. Working in the eastern Canadian Arctic on similar protocols was a worthwhile experience, and I hope to be able to integrate all that I've learned to my project.



Sampling team collecting fish via backpack electrofishing (photo by Paul Sanders)



Norman Tukkiapik, Mathew Mervyn, Katelyn Gao, Paul Sanders (left to right) after a day of dam sampling (photo by Peter Duncan)



TVC dam in 2023, which appears abandoned (photo by Jackson Seto)



TVC Dam in 2024, with evidence of fresh beaver cuttings (photo by Jackson Seto)

BEAVER IMPACTS ON HYDROLOGY

By Jackson Seto (Wilfrid Laurier University)

In July, I was able to get back into the field to do some more fieldwork for the BARIN project. We reinstalled water level sensors at approximately forty different lakes. Water levels in the region can vary, as seen in the images of 2023 vs 2024 of a creek.

The rest of the summer focused on continuing to monitor and collect data from the beaver dam locations which I had found during the previous year. Previously measured dams, which could be considered old/abandoned in the summer of 2023, when observed again in summer 2024 have certain locations which have been recolonized with evidence of fresh cuttings.

All dam locations were classified again and had their dam dimensions measured. Streamflow discharge was also measured above and below dams. I ended my field season by getting a chance to participate with some of the other BARIN members in show-casing the project at a community science event in Tuktoyaktuk.

BEAVER POPULATIONS AND TREE RINGS

Georgia Melodie Hole (Anglia Ruskin University)

Since the last newsletter I have spent another few weeks of summer in the Inuvialuit Settlement Region, undertaking some further data collection and monitoring, working with the Imaryuk Monitors and Community Researchers, engaging with the local community, and taking part in a documentary highlighting the project.

While based in Inuvik and Tuktoyaktuk, it was great to catch up with and work again with community researchers such as Camellia Gray, and the Imaryuk Monitors Max Kotokak Sr., Kevin Arey, Lennie Emaghok, and Joshua Teddy. We undertook further sample collection and drone surveys of beaver dams and lodges between Inuvik and Tuktoyaktuk. We were also able to join the Tuktoyaktuk community research forum and present some of the BARIN project work to the local community. In August, a film crew producing a documentary came to capture some of the project and the work of the Imaryuk monitors.

Now back in the UK, research outputs are coming together. The willow and alder shrubs with beaver browsing scars continue to undergo dendrochronological analysis, with the growth ring chronologies being formed and cross-dated with the regional reference chronology data. This will first be for a select few lodge and dam sites to form a proof of concept of this novel method for investigating past beaver occupancy.



Conducting drone surveys with the Imaryuk Monitors. Left to right: George Harrison, Kevin Arey, Georgia Melodie Hole. Photo by Max Kotokak Sr.



On the Inuvik Tuktoyaktuk Highway heading to lodge and dam sites. Left to right: Camellia Gray (Community Researcher), Miles Dillon (Wildlife Monitor), Georgia Melodie Hole. Photo by Camellia Gray



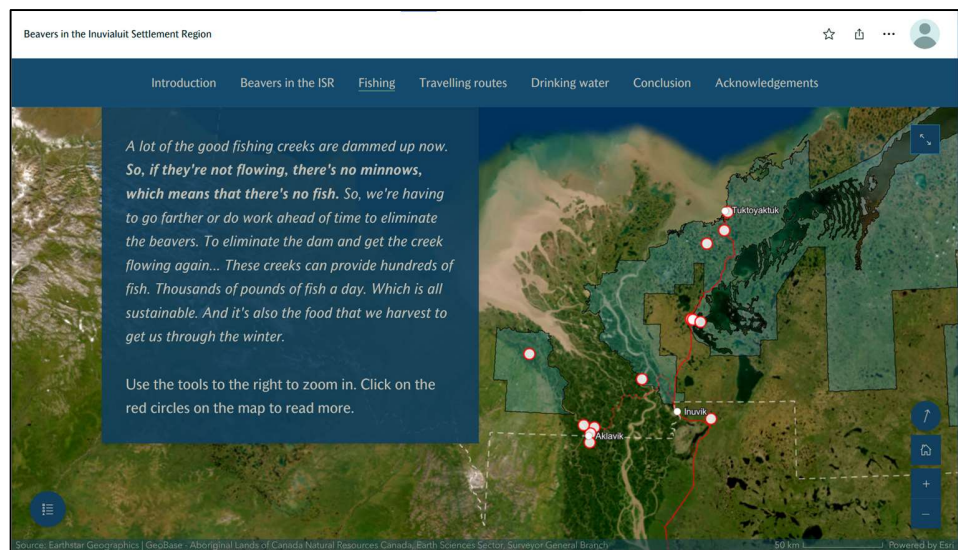
Presenting the BARIN project at a Tuktoyaktuk community research forum. Left to Right: Georgia Melodie Hole, Jackson Seto, Helen Wheeler, Joshua Teddy, Levi Raddi-Kuiksak, Borge Arey. Photo by Georgia Melodie Hole.

BEAVER IMPACTS ON COMMUNITIES

By Callum Pearce (Anglia Ruskin University)

Recently, I put together an online story map drawing on knowledge shared in interviews in Inuvik, Aklavik, and Tuktoyaktuk. This will be publicly available, showing why beavers are such a big issue and hopefully sharing Inuvialuit knowledge on a wider scale. The draft story map can be viewed online at this link: <https://arcg.is/D1zPL0>. It covers some of the main issues linked to beavers: their impacts on fishing, on travelling routes, and on drinking water. It includes quotes from interviews, photographs and video of the lower Mackenzie Delta, and interactive maps. If you have any comments or concerns about the story map, please contact me at callum.pearce@aru.ac.uk.

Over the past few months, I have been presenting on BARIN research at conferences in Europe: at Arctic Congress in Norway in May, and at the conference of the European Association of Social Anthropologists (EASA) in Spain in July. These offered the opportunity to discuss the relationship between beavers and people in the ISR with people working on similar issues in Canada, Alaska, and Arctic Europe (including researchers who know the Mackenzie Delta much better than I do). I am now writing up this research as journal articles. These will be built around quotes from interviews, summarising the beaver situation in the ISR and talking about why it is significant for understanding how environmental change can affect Indigenous communities. I will send drafts of these written pieces to the three HTC's for comments before publication.



Screenshot from the online story map with a quote from Brian Wade.

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The BARIN Newsletter is edited by Jennifer Ramsay. Please send any contributions or suggestions to jennifer.ramsay@aru.ac.uk