

A photograph of an Arctic landscape. In the background, there are snow-covered mountains under a blue sky. In the foreground, there is a body of water with small waves. The text is overlaid on the top left of the image.

Community-based study of under-ice benthic assemblages in the Arctic (BenthArctic)

Annual Summary Report

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BenthArctic project

This project is focused on scientific advancement, resource assessment and community engagement. The data gathered are expected to help co-develop knowledge on an economically and ecologically important species (*Cucumaria frondosa*), providing foundational data for protecting this resource throughout its range. Our team also aims to co-produce key information on all key benthic resources in the Arctic. The hope is that this approach will support Inuit autonomy and governance, build capacity, and promote a sustainable approach to the use of marine resources.

Summary of activities in 2023 and future plans

In 2023, we conducted two research activities in Sanikiluaq, Nunavut, Canada, focused on studying sea cucumbers and other benthic organisms, and their potential for fisheries development.

- Field work and workshop/meeting completed in May 2023 by Jean-Francois Hamel (scientist, co-PI); Kevin CK Ma (Postdoc); Sophie Wolvin (MSc student)
- Field work and workshop/meeting completed in November 2023 by Jean-Francois Hamel (scientist, co-PI), Kevin CK Ma (Postdoc), Sara Jobson (PhD student).

Accompanied by local guides/participants, the team collected samples of sea cucumbers, mussels, and other invertebrates, and conducted various analyses of these samples. They also used equipment such as ROV (remotely operated vehicle) and multi-probe to gather data on water parameters and plankton. All field activities were recorded on the SIKU.org application. The team also conducted activities in the laboratory and in the field with about 40 students from the Paatsaali high school. They demonstrated tools and the group collected samples together. Discussions on traditional community winter activities were held to provide an opportunity for cultural exchange and learning. Overall, the social and scientific interactions with the community and HTA were positive, with discussions on integrating Inuit and scientific knowledge, the potential fishery, and marine conservation measures.

Major outputs of the BenthArctic project for this year

1. Field work and data collection: data gathered on under-ice benthic assemblages, videos from ROV, samples of phytoplankton, seawater, and seafloor animals.
2. Community engagement: collaboration with the HTA and local community members. Workshops and meetings with students at the Paatsaali high school, demonstrations and activities related to the project.
3. Presentations and publications: The project team delivered presentations at regional and international conferences to share their findings and future directions. Some of the information was also synthesized in a technical report and a guide to northern sea cucumbers. These publications provide valuable information on the biology and management of economically and ecologically important marine species.
4. Donation of equipment: The team donated a dehydrator oven to the HTA, which would enable them to continue testing processing methods for sea cucumber resources.

Overall, the project was successful and we were invited to continue our work in 2024. Two similar activities are planned to solidify the results and continue the discussion and knowledge exchange.