

**NUNAVUT WILDLIFE RESEARCH TRUST FUND
FINAL PROJECT REPORT
2023/2024**

1.NWRT PROJECT NUMBER: NWRT-2023-0000000012

2. PROJECT TITLE: Pond Inlet Arctic Char Fishery Development
Research Program

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4. SUMMARY

The community of Pond Inlet has been trying to redevelop their Arctic Char fisheries over the past few years. The local fishers have put in great efforts to collect biological samples in accordance with their exploratory fishing licence. Data the fishers have collected will be used in a stock assessment analysis to provide managers, the MHTO and the community with a stock status update. To support the fishers' data and provide a complete and well executed stock assessment analysis fishery independent baseline biological data is required. This research aims to work with the community of Pond Inlet to collect baseline biological data from two (2) Arctic Char stocks in the Pond Inlet Area, as well as, local knowledge and fishing practices on these stocks. Collectively this information will fill knowledge gaps on Pond Inlet Arctic Char fisheries and provide managers more information to inform their future decisions.

5. PROJECT OBJECTIVES

The main purpose of this study is to develop and implement a fishery enhancement research project in the community of Pond Inlet. Over the next few years we are looking to provide stock status updates, document current

fishing practices and document the local knowledge of the Arctic Char fisheries. For this project year (2023-24) we are looking at collecting baseline data from two stocks (Saatut and another stock to be determined by the HTO) and juveniles from their proposed natal stocks that will meet the following objectives:

SPECIFIC OBJECTIVES:

- 1) Continue data collection that will be used to compare current data to historical data to determine the current status of the stocks. This data will support the already existing fishers' data and not be a duplicate effort;
- 2) Continue data collection for abundance estimate analysis (e.g. CPUE and catch information);
- 3) Continue gathering local knowledge on Arctic Char fisheries in the Pond Inlet area (interviews and consults from past research will continue to be used as well);
- 4) Continue community sampling at Koluktoo to monitor Arctic char nearest to Mary River development and shipping; and
- 5) Collect juvenile Arctic Char from natal lakes or rivers to begin baseline data collection to determine mixed stock fishery input.

6. MATERIALS AND METHODS

This project includes five (5) components within the research design: Field Data Collection, Local Knowledge Gathering, Laboratory Processing and Data Analysis, Natal Stock Juvenile Data Collection, and Community Based Sampling. Each method is presented individually for clarity and then followed by an explanation to illustrate how all of the components fit together to achieve the overall research objective.

Field Data Collection: The collection of biological data from Pond Inlet Arctic Char stocks will be conducted on Saatut exploratory stock and another stock that will be selected with direction from the HTO Board. From each site two hundred (200) Arctic Char will be sampled using multi-mesh gillnets (VanGerwen-Toyne and Tallman 2011). The use of multi-mesh gillnets will permit sampling of Arctic Char of all sizes and ages. *Local Knowledge Gathering:* Interviews of local fishers designed to be open format with guiding questions relating to the Pond Inlet Arctic Char fisheries. All questionnaires will be approved by the Mittimatalik HTO and conducted in a face-to-face format in both Inuktitut and English.; *Laboratory Processing and Data Analyses:* Ages of sampled fish will be determined by embedding, sectioning and reading the aging structures (pelvic fins and otoliths). Preserved eggs will be measured and counted to determine egg size and fecundity.

Natal Stock Juvenile Data Collection: Juvenile Arctic Char from proposed natal stocks will be collected to determine baseline genetic structure of

each stock. *Community based sampling at Koluktoo Bay:* Fishery independent sampling at Koluktoo Bay has concluded with 2021 providing the fifth year of data collection. This stock remains an important focus for Pond Inlet, as the Mittimatalik HTO has been concerned with this stock given it's close proximity to Mary River Mine and its shipping corridor. To assist with continued monitoring of this stock, DFO is working with the HTO to complete community based sampling during the winter of 2022 at the Arctic char's overwintering location of Robertson Lake.

Collectively, all the components of this research along with the fishers' data will feed directly into a stock assessment analysis which should provide managers knowledge on the current stock status, analysis of mixed-stock fishery inputs, document current fishing practices in the area and document local knowledge of the fisheries. Since managers will be asked to make decisions on these stocks in the near future, filling these knowledge gaps is important.

7. PROJECT SCHEDULE

- Research project schedule			
Identify the dates for beginning and completing each step in the study design. Provide enough details so the NWMB can effectively evaluate the appropriateness of the research schedule.			
Output or step	Start date (dd/mm/yyyy)	End date (dd/mm/yyyy)	Status
Meeting and Workshop with Mittimatalik HTO, elders and Community of Pond Inlet	20/04/2023 (Virtual)	22/04/2023	Completed
Data Collection (Field Work)	25/07/2023	15/09/2023	Completed but see below for details
Laboratory Analysis	15/09/2023	15/11/2023	In process
Data Analysis	15/11/2023	15/12/2023	In progress
Progress Report	15/12/2023	15/12/2023	In progress

Meeting with Mittimatalik HTO and Community of Pond Inlet	15/02/2024	17/02/2024	In progress

8. Preliminary results/discussion:

Field Data Collection:

Summer sampling at Saatut was not fully accomplished due to problems with ice packing in the area which prevented getting to the sampling location. Juvenile sampling was also not as successful as we hoped due to problems with the helicopter. The Local Knowledge Gathering and community based sampling has proceeded on schedule. With the Stock Assessment Research, Traditional Knowledge and the Mixed-Stock Fishery Analysis we aim to provide a complete picture of the fishery as it currently stands.

Local Knowledge Gathering:

DFO met with the MHTO in July of 2023. The MHTO was happy with our research plans and asked that we keep them updated by email. They were not interested in annual meetings; they have enough meetings at the moment and are happy with this research project. We have been in contact with the MHTO by email on an almost monthly basis and in person when field work is being conducted. We plan to meet with the MHTO and the community in the next funding year.

Laboratory Processing and Data Analysis:
Ongoing

Natal Stock Juvenile Data Collection
As noted above there were difficulties in getting field sites due to equipment failures

Community Based Sampling.
The community undertook sampling in March on *Koluktoo Bay*.

9. REPORTS TO COMMUNITIES/RESOURCE USERS

Schedule for consultations and reporting of results

Indicate the approximate date for all current or planned consultations and reporting of results, as well as type of consultation (e.g. email correspondence, in-community consultation, teleconference, etc.).

Community / HTO	Before research	During research	Completion of research
Pond Inlet, Mittimatalik HTO	Date: <u>Annually</u> May Type: Face-to-face meetings, consultations and a workshop.	Date: <u>Annually</u> On-going Type: Emails and phone calls prior to arriving for research. While in the community weekly or daily updates to the HTO about field work progress	Date: <u>Annually</u> February Type: Email update as per the HTO request.

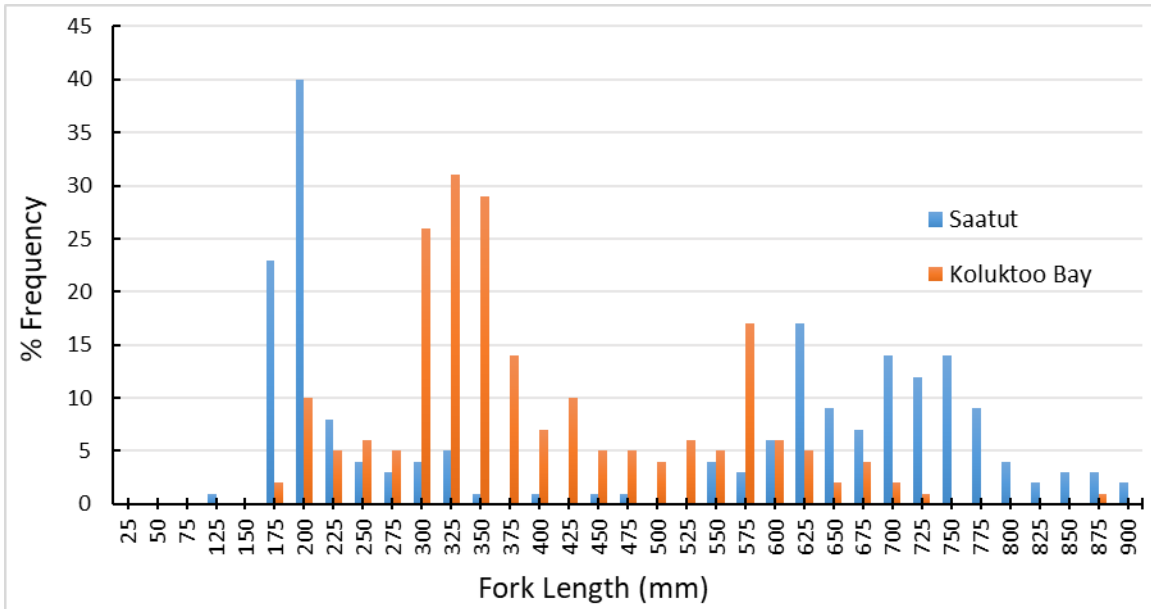


Figure 1. Length frequency distribution of Arctic Char caught at Koluktoo Bay and Saatut fishing locations. Note the distinct bi-modal pattern Saatut. This suggested that there could be two morphotypes in the system

Table 1. Maximum, minimum, and average lengths of Arctic Char caught.

	<u>Maximum Fork Length</u>		<u>Minimum Fork Length</u>		<u>Average Fork Length</u>	
	(in)	(mm)	(in)	(mm)	(in)	(mm)
Saatut	35.1	892	4.8	122	18.5	470
Koluktoo	33.7	856	6.5	165	15.2	387

Table 2. Maximum, minimum, and average weights of Arctic Char caught.

	<u>Maximum Round Weight</u>		<u>Minimum Round Weight</u>		<u>Average Round Weight</u>	
	(lbs)	(g)	(lbs)	(g)	(lbs)	(g)
Saatut	15.7	7112	0.1	39	4.6	2064
Koluktoo	12.6	5693	0.1	48	2.0	929