NUNAVUT WILDLIFE RESEARCH TRUST FUND FINAL PROJECT REPORT - 2018/2019

NWRT PROJECT NUMBER: 3-18-03

PROJECT TITLE: Sylvia Grinnell Arctic Char (*Salvelinus alpinus*): Stock, Creel Survey and DIDSON Sonar Assessments

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SUMMARY

The main purpose of this research is to directly contribute to the conservation and sustainable management of the Sylvia Grinnell River Arctic Char stock. Specifically, this project aims to continue to monitor biological characteristics for Sylvia Grinnell River Arctic Char, record migration patterns, determine an estimate for the number of fish that migrate upstream in the Sylvia Grinnell River and document harvesting activity and quantity. The information collected in this study will continue to increase public awareness regarding the importance of this system and furthermore, allow co-managers to ensure that this stock remains a sustainable resource for Nunavummiut.

This research has four components within the study design: Biological Sampling (Experimental Gillnet Survey), DIDSON Sonar, Environmental Data Collection, and Creel Survey. The experimental gillnet survey will allow for better comparison of the current stock status to historic levels. The DIDSON Sonar will continue to be tested for utility in determining an abundance estimate of the annual migrating portion of the population. The collection of environmental data will allow us to correlate environmental variables with the migration patterns of

Arctic Char in the Sylvia Grinnell River. The creel survey will give current estimates of harvest (subsistence and recreational) that will be used to determine the impacts of various fishing methods on Sylvia Grinnell Arctic Char.

PROJECT OBJECTIVES

The objectives of this study are to:

1) Determine the current stock status of Arctic Char in the Sylvia Grinnell River in comparison to historic levels;
2) Collect two hundred Arctic Char biological samples to provide biological population characteristics for the migrating portion of the stock;
3) Determine the feasibility of using the DIDSON Sonar to determine an annual estimate of the number of fish that migrate up the Sylvia Grinnell River;
4) Collect environmental data from the Sylvia Grinnell River during the monitored migration; and,
5) Initiate a creel survey during the summer fishery to update estimates of subsistence and recreational harvests and methods.

UPDATE on objectives:

1) We are currently still in the process of collecting samples to address this objective. This funding cycle we successfully completed the data collection of year 4 out of 5;
2) We caught and sampled 156 Arctic Char to add to the data set for addressing this objective;
3) We ran the DIDSON sonar for 8 weeks from the end of July to the end of September to cover as many high tide events as possible. Due to the abnormal amount of rain that fell in August we were not able to place the DIDSON in the same location as 2016 and 2017. We will not know how this will affect data collection until the footage is analyzed, this is planned for 2019;
4) We collected base line environmental data and tried out some new water velocity sampling equipment. We are working on proposing an updated plan for the next funding cycle for environmental and habitat data collection; and
5) We focused a lot of efforts on the creel survey in 2017 and heard back from the community and Amaruq HTO that it might have been too much, so we scaled back significantly this year with only a few days of creel surveying. We will resume a more intensive creel survey program next funding cycle so as not to overwhelm the community and fishers.

MATERIALS AND METHODS

Biological Sampling – Experimental Gillnet Survey (Year 4 of 5):
Multi-mesh gillnets were used to collect catch-effort information and biological samples of Arctic Char near the mouth of the Sylvia Grinnell River in summer 2018. The use of multi-mesh gillnets permitted sampling of Arctic Char of all sizes and ages. Location data such as position (determined by GPS), time of year, time of day, net depth, water temperature, weather and other environmental conditions were recorded for each net set. To estimate catch effort, the net type, set time, lift time and soak time was recorded. The fork length (mm), round weight (g), gonad weight (g), sex and maturity stage, ovaries from mature females, tissue samples, structures for determining the age and stomach contents of each fish were collected.

DIDSON Sonar:
The DIDSON sonar was setup to monitor and video-record high-tide events on the Sylvia Grinnell from end of July until end of September 2018, attempting to capture all upstream Arctic Char migration events. The DIDSON station was approximately 6 km upstream from the Sylvia Grinnell Falls. At the same time that the DIDSON sonar was operating we collected environmental data. The DIDSON data is currently being processed by an expert. We expect to gain the following information from the data: timing of migration (day and hour), characteristics of the migration (individual fish or large schools), and a count of individual fish migrating past by the DIDSON sonar. All decisions and uses of the DIDSON have been and will continue to be determined in consultation with the Amaruq Hunters and Trappers Organization. This technology is a non-invasive method that can be used to count fish without handling them.

Creel Survey:
The creel survey was a volunteer questionnaire that was fully implemented in summer 2017. The intent of the survey was to determine catch effort of the harvester (how long have they been out and how many fish have they captured), frequency of their harvesting, method of harvesting, location of harvesting and any other information or concerns the fisher wishes to share. We reduced our efforts on the creel survey this year (2018) to address concerns that fishers, the community and the HTO had from 2017. They stated that “they were tired of answering our questions while fishing” in 2017. We will resume creel survey efforts in 2019 to make sure we have a few years of data for the final report.

Training:
This research program hired five (5) Inuit and provided them with written and hands-on training for all components of the data collection. Four of the five hires were students in the Environmental Technology Program.

PROJECT SCHEDULE

Field work for 2018 has been completed. We were successful in collecting catch and effort data along with biological samples from 156 fish. We deployed the DIDSON for 8 weeks from end of July until end of September but we were not able to place the DIDSON in the preferred location due to substantial rainfall and river swelling throughout August. We will not know how this will affect DIDSON data collection until the footage is analyzed. We reduced our creel survey efforts this year in response to community comments. Lastly, we collected baseline environmental data during the migration of Arctic Char.

Data entry and analysis steps are currently underway and we are on schedule to compete this research in the next funding cycle.

PRELIMINARY RESULTS/DISCUSSION

Biological Sampling – Experimental Gillnet Survey (Year 4 of 5):
Multi-mesh gillnets were used to collect catch-effort information and biological samples of Arctic Char near the mouth of the Sylvia Grinnell River between July 15 and August 17, 2018. A total of 156 fish were sampled.

DIDSON Sonar:
The DIDSON sonar was setup to monitor and video-record the Sylvia Grinnell Arctic Char migration for 8 weeks from July 25 to September 25, 2018. The DIDSON recorded approximately 1000 hours of footage during this time. The 2016 and 2017 data are currently being analyzed and the 2018 data analysis will commence afterwards. The preliminary results look promising.

Water temperature, air temperature, and some water velocity measurements were recorded during the DIDSON camp.

Creel Survey:
The creel survey was a volunteer questionnaire that was implemented in July 2018 and then suspended for one year due to community feedback. We surveyed a total of 3 fisher in summer 2018.

REPORTS TO COMMUNITIES/RESOURCE USERS

The 2018 project results were communicated back to the Amaruq HTO informally while the research took place and in person at an HTO Board meeting in October 2018. Furthermore, an English and Inuktitut newsletter will be prepared for the HTO Board and their membership in December 2018. Formal consultations will take place again in early 2019 at an HTO Board Meeting where we will provide another in-person summary of the 2018 project for the sake of new Board members and discuss plans for 2019 (proposed final year of data collection for this research).