

NUNAVUT WILDLIFE RESEARCH TRUST FUND FINAL PROJECT REPORT - 2017/2018

NWRT PROJECT NUMBER: 3-17-05

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

PROJECT LEADER(s): Dr. Ross Tallman (DFO Winnipeg)
Fisheries and Oceans Canada
Freshwater Institute
501 University Cres.
Winnipeg, MB R3T 2N6
Ph: (204) 983-3362
Fax: (204) 984-2403
E-mail: Ross.Tallman@dfo-mpo.gc.ca

Chris Lewis (DFO Iqaluit)
Fisheries and Oceans Canada
Northern Operations
PO Box 358
Iqaluit, NU X0A 0H0
Ph: (867) 979-8002
Fax: (867) 979-8039
E-mail: Christopher.Lewis@dfo-mpo.gc.ca

SUMMARY

The main purpose of this research is to directly contribute to the conservative 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.

MATERIALS AND METHODS

Biological Sampling – Experimental Gillnet Survey (Year 3 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 2017. 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 the Sylvia Grinnell Arctic Char migration during the late August 2017 high-tide (for approximately 10 days of intensive field work). 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.

Training:

This research program hired two (3) Inuit and provided them with written and hands-on training for all components of the data collection.

PROJECT SCHEDULE

Field work for 2017 has been completed, DIDSON footage analysis is underway. We are preparing to start aging otoliths in 2019 to be prepared for a Science Report in 2019-2020.

PRELIMINARY RESULTS/DISCUSSION

Biological Sampling – Experimental Gillnet Survey (Year 3 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 11 and August 14, 2017. Gillnet sampling took place for a total of 10 days. A total of 211 fish were sampled. Length and weight frequency histograms are presented for these samples (Figures 1 and 2).

DIDSON Sonar:

The DIDSON sonar was setup to monitor and video-record the Sylvia Grinnell Arctic Char migration from August 18 to August 28, 2017. A total of 239 hours of footage was recorded during this time. The 2016 data is currently being analyzed and the 2017 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 and August 2017. A total of 121 fisher surveys were completed in summer 2017.

REPORTS TO COMMUNITIES/RESOURCE USERS

The 2017 results have been reported back to the Amaruq HTO via e-mail, at an HTO Board meeting in September 2017 and through an English and Inuktitut newsletter that was provided to the Board in October 2017. We also continued to stay in close contact with the HTO and community during this past summer's research. Formal consultations took place again in January or February 2018 at an HTO Board Meeting where we provided another in-person summary of the 2017 project for the sake of new Board members and discuss plans for 2018.

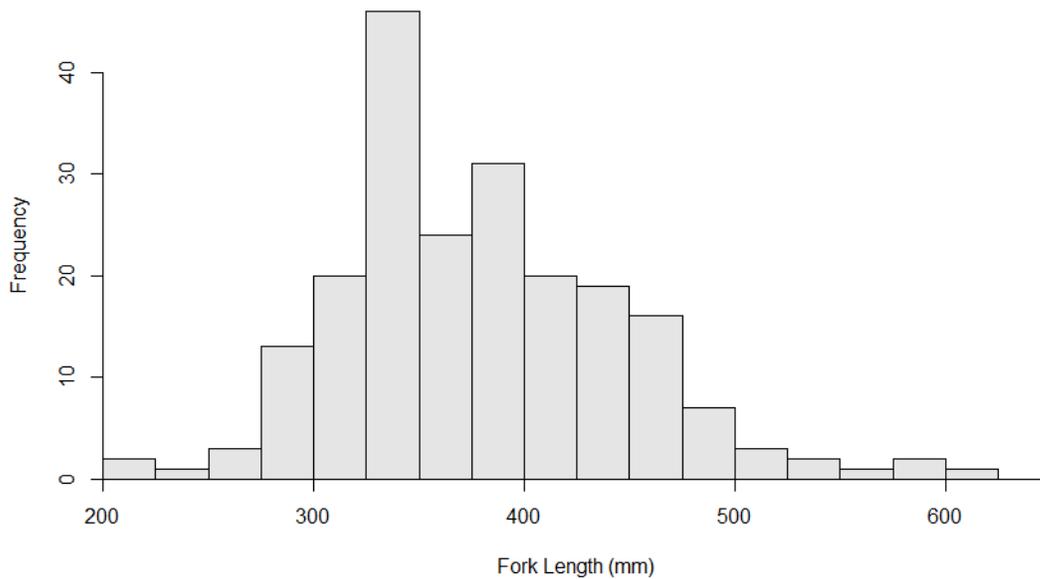


Figure 1. Length frequency histogram of Sylvia Grinnell River Arctic Char collected from multi-mesh gillnet surveys in July and August 2017 (n=211).

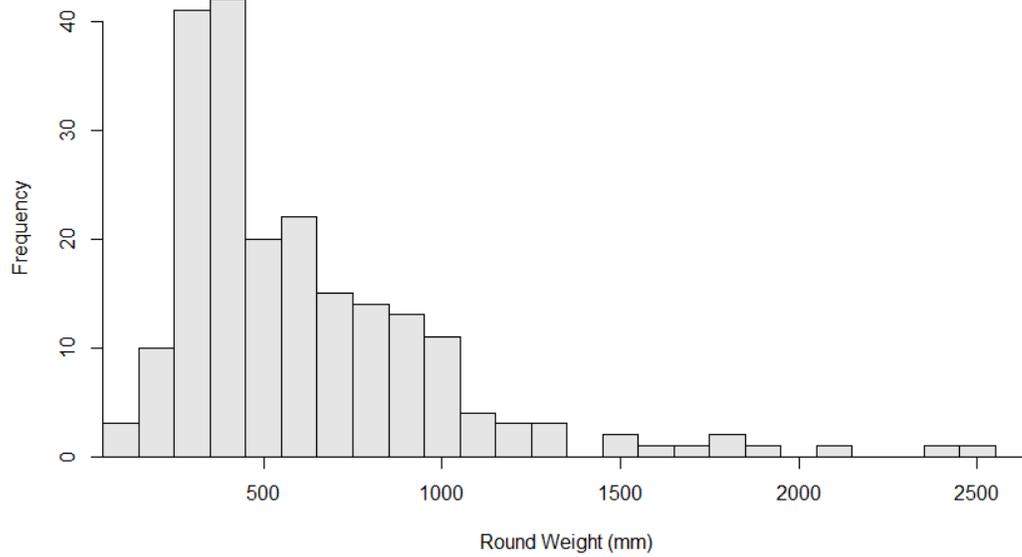


Figure 2. Weight frequency histogram of Sylvia Grinnell River Arctic Char collected from multi-mesh gillnet surveys in July and August 2017 (n=211).