NPC 150687: Movement and chemical ecology of fishes in Hudson Bay

Close

Proposal Status: Conformity Determination Issued

Overview Documents Questionnaire

Project Overview

Type of application: New

Proponent name:

Connor Faulkner

Proponent company:

Fisheries and Oceans Canada

Project Description:

Arctic char, a culturally and economically vital species, is the most harvested species of wildlife in Nunavut, serving both subsistence and commercial needs for Inuit. Despite this importance, many knowledge gaps remain with respect to Arctic char biology and ecology, especially regarding movements and habitat use in both freshwater and marine environments. To address these knowledge gaps, we are continuing a 2023 project using acoustic telemetry to study the migratory ecology of sea-run Arctic char in Rankin Inlet, Kivalliq region, Nunavut. Specifically, we will continue acoustically tagging and subsequently tracking Arctic char from two river systems (Diana and Meliadine) using a fixed-acoustic array in Rankin Inlet to address key questions regarding the migration, dispersal, home ranges, and habitat use of this species. These results will provide critical insights into key marine habitats and migration timing, all of which will provide important baselines for future monitoring as habitats in the area continue to be influenced by climate change. Further, we will continue to study the migratory ecology of biologically important marine fish species, including Greenland cod, marine sculpins, lumpfish, and capelin within the area to examine critical marine habitats and movement patterns within Rankin Inlet and along western Hudson Bay more generally to assess how these species may be influenced by climate change. All told, these results may have important implications for informing management strategies pertaining to assessing the mixing of Arctic char populations harvested at discrete locations in the region, and furthering our understanding of marine and freshwater movements and habitat use by these species, including areas critical for feeding, spawning and overwintering. Additionally, microplastic pollution is a contaminant of emerging Arctic concern. These small particles (<5 mm) have been

identified in environmental compartments ranging from glacier ice to the stomachs of Arctic fishes. While it is clear microplastics are present in the Arctic, it is unclear which organisms are most susceptible, and whether ingested microplastics can expose organisms to toxic plastic additives. This is of concern for Northern communities given their reliance on traditional country food sources and the environment. Therefore, our team has worked closely with the Kivalliq Wildlife Board and the communities of Rankin Inlet and Sanikiluaq to better understand the burden of microplastics and plastic additives in the Hudson Bay marine food webs. Here, we build on existing work in the area to better understand the prevalence of microplastics and their additives as co-contaminants in Arctic marine fishes in Rankin Inlet (northwestern Hudson Bay) and Sanikiluaq (southeastern Hudson Bay). We propose to conduct field sampling of Arctic char, Greenland cod, marine sculpins, capelin, and zooplankton in collaboration with northern partners to help address these questions.

Project Schedule

Start Date:

2025-06-04

End Date:

2035-03-31

Project Map

List of project geometries:

Id

Geometry

Location Name

15610

polygon

Location where sampling with occur in the large lake in the Sanikiluaq area.

15611

polygon

Location where sampling with occur in the southern extent of the Sanikiluaq area.

15612

polygon

Location where sampling with occur in the northern extent of the Sanikiluaq area.

15613

polygon

Location where sampling with occur in the northern extent of the Belcher Islands.

15614

polygon

Location where sampling with occur in the Rankin Inlet area.

NPC Planning regions:

No Approved Plan

Keewatin

Project Land Use and Authorizations

Project Land Use:

Scientific Research

Scientific Research

Licensing Agencies:

Government of Canada - Fisheries and Oceans Canada

Government of Canada - Fisheries and Oceans Canada

Material Use

Equipment:

Type

Quantity

Type

Use

ATV

4

83 in. (L) x 48 in. (H) x 47 in. (W)

ATV's will be used to transport the research team from town to the location of field work within Rankin Inlet and/or Sanikiluaq.

Boat and motor

1

22 feet (L) x 10 feet (W)

Boat and motor will be used to transport the research team from town to the location of field work within Rankin Inlet and/or Sanikiluaq.

Fuel Use:

Type

Container

Capacity

Use

Gasoline

10

5

Gasoline will be carried on the boat while completing field work within Rankin Inlet and/or Sanikiluaq as backup fuel reserves due to long distances travelled between field work study sites.

Hazardous Material and Chemical Use:

Type

Container

Capacity

Use

Ethanol

1

1

Ethanol vials will be carried to store and preserve fish fin clips for genetic analysis.

Water Consumption:

Daily Amount (m^2)

Retrieval Method

Retrieval Location

0

N/A.

N/A.

Waste and Impacts

Environmental Impacts:

No environmental impacts of undertaking are anticipated stemming from this scientific research.

Waste Management:

Waste Type

Quantity Generated

Treatement Method

Disposal Method

Non-Combustible wastes

10 lb

N/A.

Food/beverage and miscellaneous waste generated throughout the duration of our field work will be brought back to town and disposed of in municipal landfills.