



## **Post-doctoral research opportunity linking sea-ice and physical ocean conditions to climate-change responses in Arctic marine fish diets, biomass, and habitat use**

### *Government of Canada Postdoctoral Research Program*

Fisheries and Oceans Canada (DFO) is seeking an enthusiastic, team oriented, and self-motivated candidate for a 2-year Postdoctoral Fellowship leading a research project to identify environmental drivers of biomass, diet, and habitat use in Arctic marine fishes by linking modelled sea-ice and physical ocean conditions to time series of fish biomass estimates and trophic biotracers data. This is an exciting opportunity to work within a cross-disciplinary team to integrate biological time-series data (up to 10 years) with modelled physical data describing both hindcasted and forecasted environmental conditions. The successful candidate will work closely with [Dr. Andrea Niemi](#) and [Dr. Ashley Ehrman](#) at the Freshwater Institute (biological team leaders, DFO Winnipeg), and [Dr. William Perrie](#), [Dr. Minghong Zhang](#), and [Dr. Zhenxia Long](#) from the Bedford Institute (modelling team leaders, DFO Dartmouth). They will also work with a team of collaborators from DFO Winnipeg, DFO Iqaluit, DFO Inuvik, and the University of Waterloo.

The over-arching project objective is to improve understanding of how fish biomass, diets and habitat use respond to large-scale oceanographic processes that connect coastal and offshore domains. Co-occurring long-term field programs have and will continue to collect fish samples, biomass estimates, and habitat information from adjacent coastal and offshore ecosystems using a combination of net-sampling, mark re-capture, and moored acoustic methods in two Arctic ecosystems, the Canadian Beaufort Sea and Frobisher Bay. Fish tissues have/will be analysed to build time series of biotracer data to infer diets (fatty acids, stomach contents analyses) as well as trophic positions, habitat use, and basal carbon sources (stable isotope ratios, with potential for new analyses of highly branched isoprenoids). Present and future climate scenarios will be simulated with the NEMO-LIM3 model by experts at the Bedford Institute, downscaled to the study area, producing environmental datasets that match the spatial and temporal scope of field programs.

The core research questions are:

1. Are shifts in forage fish biomass, diets, and/or habitat use associated with large-scale environmental variables?
2. If so, are fish in coastal and offshore areas responding to similar or different environmental drivers?
3. Can responses of forage fish biomass, diets, and/or habitat use be predicted under future sea-ice and physical ocean conditions?

**Essential Qualifications:** Applicants must have graduated within the last three years with a doctoral degree (PhD) from a recognized post-secondary institution in a field of natural sciences, with a specialization in: ecology, biology, physiology, statistics, or a related discipline. Candidates must also possess the following experience criteria and key competencies:

- Official Language Requirement: English Essential
- Experience in planning and conducting research.
- Experience in working with a team of researchers and support staff.
- Productivity/Recognition: Refers to recognized achievement in the form of authorship and editorship of published or unpublished reports, books, papers, peer-reviewed scientific journals, or other communications resulting from:
  - Research, experimental development, or tasking associated with operational equipment and problems; OR
  - Operational research and scientific analysis; OR
  - Planning, analysis, and evaluation of Canadian and foreign programs in research and development; OR
  - Developmental work leading to the issue of patents, copyrights, or the creation of improved varieties, functions, or designs, and/or recognition by the professional community of the research environment.
- Key Competencies:
  - Adaptability
  - Initiative
  - Judgment
  - Teamwork
  - Interactive Communication
  - Uphold Integrity and Respect

**Asset Qualifications:**

- Experience with the R programming language
- Experience in advanced statistical analyses related to ecological studies or food web modelling
- Experience working with physical climate or ocean models or model output data
- Experience working with trophic biotracer data in aquatic systems (For example: stable isotope ratios, fatty acid profiles, stomach contents)
- Experience working with Arctic marine ecosystems data

**Who Can Apply:** Canadians and non-Canadians. Preference will be given to veterans and to Canadian citizens, in that order.

**Location:** The position is based out of DFO's Freshwater Institute in Winnipeg, Manitoba.

**Funding:** This is a 2-year position that is available to start as early as September, 2021, and will be completed no later than March 31, 2023. Funding includes a salary starting at ~\$61,000–\$67,000 per year depending on experience (see [SE-RES-1](#) Step 1–3 pay scales), medical and dental benefits, and travel and equipment support. Salary and associated laboratory analyses are funded through DFO’s Competitive Science Research Fund. The [Canadian Government Postdoctoral Research Program](#) is administered by Natural Resources Canada (NRC). We are committed to employment equity and encourage applications from women, visible minorities, Aboriginal people, and persons with disabilities.

**Contact:** For more information, candidates can contact the project leads. Interested candidates should submit their application through the [Canadian Government Postdoctoral Research Program](#) and notify Dr. Ashley Ehrman ([ashley.ehrman@dfo-mpo.gc.ca](mailto:ashley.ehrman@dfo-mpo.gc.ca)) of their submission.