Funded PhD opportunity in Arctic pelagic ecology at the polar front

Oceanic fronts are defined by steep gradients in physical properties, but it is unresolved how tightly coupled these gradients are to the pelagic community structure across all size ranges and trophic levels. For many biota, the Barents Sea Polar Front represents a thermal boundary between warm Atlantic and cold Arctic habitats leading to variations in species composition, density, and functional traits (such as size and feeding mode). However, the Front does not constitute an absolute boundary as organisms are subjected to advection and mixing across frontal zones. Particularly on small scales, fronts and their biological manifestations can be highly dynamic and drifting organisms can be either concentrated or dispersed by the physical processes occurring at the Front. Higher densities of specific plankton size-fractions have been observed in frontal zones, with enhanced eddy formation along frontal zones leading to patches of elevated plankton concentrations. The Polar Front has been suggested to be an important feeding area for several fish species, and there is evidence of mammal aggregations in the area. Which species aggregate, where and why they do so, and how this varies seasonally, however, is poorly understood.

We seek a highly motivated PhD student to lead a project on pelagic fish and zooplankton in the Barents Sea. The successful candidate will:

1) Quantify the community structure of plankton and fish in terms of species composition, size structure, abundance, and biomass across the front using fisheries acoustic, nets, optical instruments, and environmental data;

2) Characterize the predator-prey interactions between pelagic zooplankton and fish with lower and higher trophic levels;

3) Participate in the survey design, sampling at sea, and analysis of data collected with both autonomous and ship-based platforms.

These objectives will be supported by both existing datasets and opportunities to collect new data aboard the Norwegian research vessels Kronprins Haakon and Helmer Hanssen. The successful candidate will be registered in the PhD program in Fisheries Sciences offered at the Marine Institute of Memorial University of Newfoundland in St. John’s, Canada www.mi.mun.ca/programsandcourses/programs/fisheriessciencedoctorofphilosophyphd/.

Extended stays and fieldwork activities in Norway are expected. This PhD project will be conducted under the co-supervision of Dr. Maxime Geoffroy (Marine Institute) and Dr. Malin Daase (UiT The Arctic University of Norway).

Interested candidates must meet the prerequisites for admission to the Marine Institute’s Ph.D. program in Fisheries Science and have a background in oceanography, biology, marine ecology or
a related discipline from a recognized institution. Experience in fisheries acoustics, fish ecology, trophic interactions, and spatial dynamics will be considered assets. To apply, please send a cover letter, CV, and copies of university transcripts by email to both Dr. Maxime Geoffroy Maxime.Geoffroy@mi.mun.ca and Dr. Malin Daase malin.daase@uit.no by 31 January, 2022.