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Kitikmeot Region Marine Science Study	Marine Based Activities	Marine	Oceanographic exploration and monitoring of the marine areas of the Kitikmeot Region.	None.	Kugluktuk, Bathurst Inlet, Umingmaktok, Cambridge Bay, Gjoa Haven, Taloyoak

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Information is not available			

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Kitikmeot

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ship, the maximum capacity of the ship is 12 persons. 4. The ship operates in the open water season which currently spans approximately August 1 to September 20 in the Kitikmeot Region, supporting various programs. 5. A route map has been provided in other sections of this application. 6. The vessel's home station is Cambridge Bay, Nunavut, where all resupply, ship repair, fueling, and docking takes place. The ship has used Cambridge Bay dock as home base since 2011 and has operated in the same way annually since then. The ship may stop at Gjoa Haven or in Bathurst Inlet as required for personnel exchanges, usually science crew changes of up to 7 people. The crew typically remain aboard the ship, but may purchase some (minimal) provisions from the community stores if required. 7. Waste management is as follows: the ship does not use ballast, bilge water is treated with a biodegrader and pumped overboard while underway as per Transport Canada regulation and crew are very careful with ship oil product which is not dispensed into the bilge, scuppers drain any water from the deck off the ship and there are no contaminants on board the deck, grey water is macerated and treated with a biodegrader before being released while in transit and black water is stored and pumped off the ship, solid garbage waste is bagged and disposed at the Cambridge Bay landfill, waste oil is stored and disposed in Cambridge Bay at the used oil waste facility, there are no hazardous or toxic wastes aboard. Quantities are provided in section 1 of this application. 8. The Research Ship Martin Bergmann complies with applicable Transport Canada regulations within its size and class range, including Regulations for the Prevention of Pollution by Garbage from Ships, Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals (Oil Pollution Prevention Regulations), Air Pollution Regulations, Pollutant Discharge Reporting Regulations and the Arctic Waters Pollution Prevention Act. 9. Spill Response Plan, Emergency Response Plans and Waste Management Plans are attached. 10. An Arctic Pollution Prevention Certificate is not applicable for the size and class of this vessel. However, the crew of the Research Vessel Martin Bergmann have considered this and adhere to a high standard when considering pollution prevention in their plans. 11. Fresh and Potable Water is made on board, converted from seawater by a Reverse Osmosis system. Water is also obtained from the Cambridge Bay water services, loaded at the dock via truck, occasionally during the season when required, approximately 5 loads per year. 12. Icebreaking is not required. The vessel operates in open water only. 13. The vessel operates in the Kitikmeot region only. 14. Fisheries and Ocean scientists are on board as science clients and responsible for all scientific activities. Their activities include a marine mammal observing checklist which they have provided to the crew. Wildlife observations are provided to DFO who provide reports to the local Land Claim organizations. 15. The research will help better understand the significance of the region's physical environment to biological richness, to help understand the future consequences of climate change. The Research Ship Martin Bergmann is small relative to larger science icebreakers, with a single engine as opposed to 4-5 engines on larger science icebreakers, and therefore more quietly operates scientific activities. The ship operates only in open water season when risk to hunting and subsistence activities is low. 16. None of the activities are outside of the Nunavut Settlement Area.

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The Kitikmeot Region physical marine environment is less salty than the neighbouring ocean due to the enormous inflow of river water from the southern mainland and restriction of deep salty water at Dolphin and Union Strait, Victoria Strait and James Ross Strait. The restriction of salty water from outside the region also results in restriction of dissolved nutrient which leads to low overall biological productivity in the region. Tidal flows are generally weak but are significantly enhanced in narrow straits between islands, where tidal mixing may lead to a greater input of dissolved nutrients to the surface of the ocean and greater, localised, biological production. The Kitikmeot Region Marine Science Study aims to better describe the both the large scale oceanography and the local importance of tidal straits. Proximity to protected areas: i. We have permission from the Canadian Wildlife Service to sample in the Queen Maud Gulf Migratory Bird Sanctuary at the Ellice River. ii. Marine heritage sites of the HMS Erebus and Terror are excluded from this study.

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The overall very low biological productivity of the marine area of the Kitikmeot Region, appears to lead to an ecosystem dominated by char with fewer polar bears and seals than the marine areas to the north (Larsen Sound) or west (Amundsen Gulf). Our study, aims to evaluate the narrow and shallow straits within the region as biological hotspots for marine life due to increased tidal mixing increasing the availability of dissolved nutrients in these locations.

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Proximity to communities: We currently sample close to Cambridge Bay, Kugluktuk, Gjoa Haven, Umingmaktok and Bathurst Inlet. Archeological and significant cultural sites: There are many of these sites in the Kitikmeot. The marine archeological sites of the HMS Erebus and Terror are current no-go zones. Paleontological value: Not applicable. Land and resource use: The summertime marine is used for travel, tourism and subsistence harvesting of char fish. Local and regional traffic patterns: The marine of the Kitikmeot Region contains the southern/western portion of the Northwest Passage and so is used as a shipping corridor.

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1. See impacts tab 2. Impacts: Negative impacts are expected to be very small, limited to the normal operation of the RV Martin Bergmann and collection of small oceanographic samples of seawater, marine sediment and zooplankton, and deployment of small anchors for oceanographic moorings. 3. Socio-economic impacts: Postive, see 'Workforce and Human Resources/Socio-Economic Impacts' section. 4. Transboundary effects: None. 5. SARA: None 6. Mitigation: Not applicable.

1. Cumulative environmental effects are also anticipated to be very small, limited to the annual operation of the RV Martin Bergmann in the Kitikmeot Region during August and September, its annual oceanographic sampling for small volumes of sediment, zooplankton and seawater, and deployment/recovery of subsurface oceanographic moorings.

Project Map



