

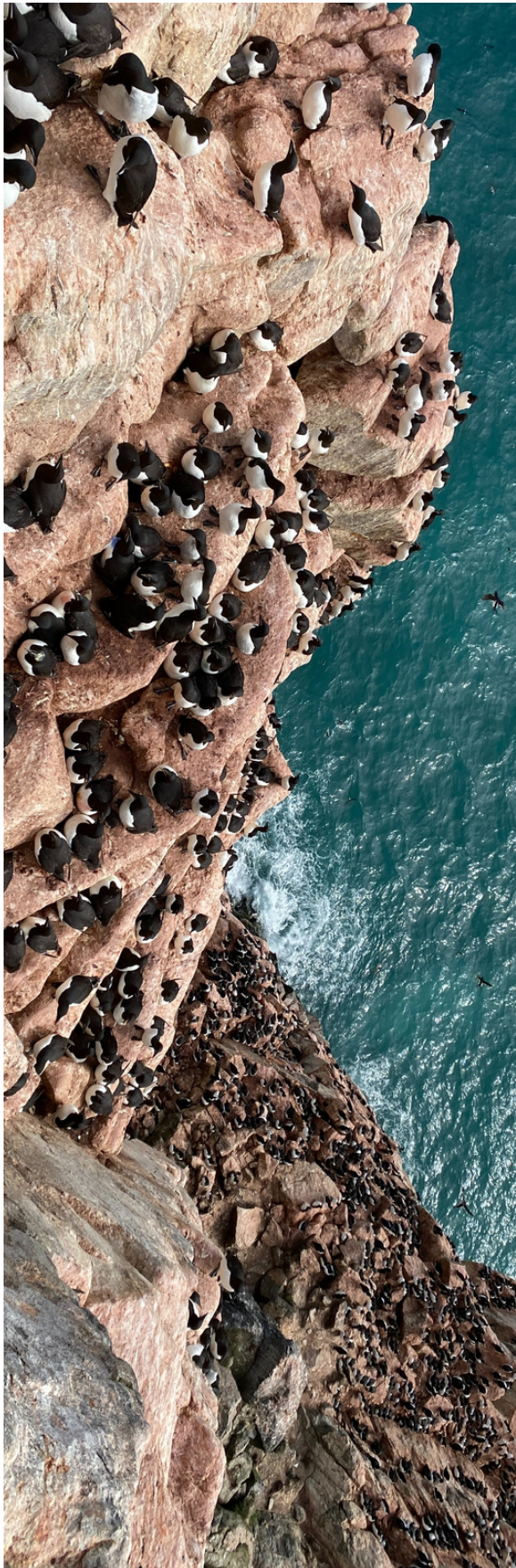


# COATS ISLAND

---

## 2022 FIELD SEASON REPORT

ENVIRONMENT AND CLIMATE CHANGE CANADA



## PROJECT OVERVIEW

---

Recent increases in resource development activities are projected to also increase shipping traffic in Canada's eastern Arctic marine regions. However there is often not enough information to properly assess the potential ecological impacts of year-round shipping lanes on marine wildlife. Our program's goal is to work in collaboration with industry partners to determine the distribution and abundance patterns of seabirds, in an effort to identify their key marine habitats and contribute to the development of protected areas.

Research efforts in 2022 were concentrated at Coats Island where Environment and Climate Change Canada has been researching thick-billed murres since 1981. This long term data set, paired with new tracking technologies and physiological approaches, enables us to establish an ecological baseline to assess potential impacts of planned shipping activity and projected changes in climate on populations and individual seabirds in the region.

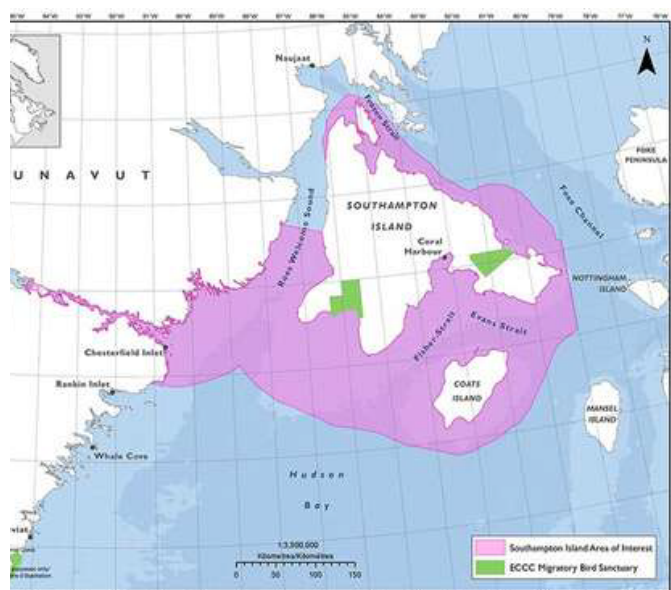


# CONTRIBUTING TO MARINE PROTECTED AREAS

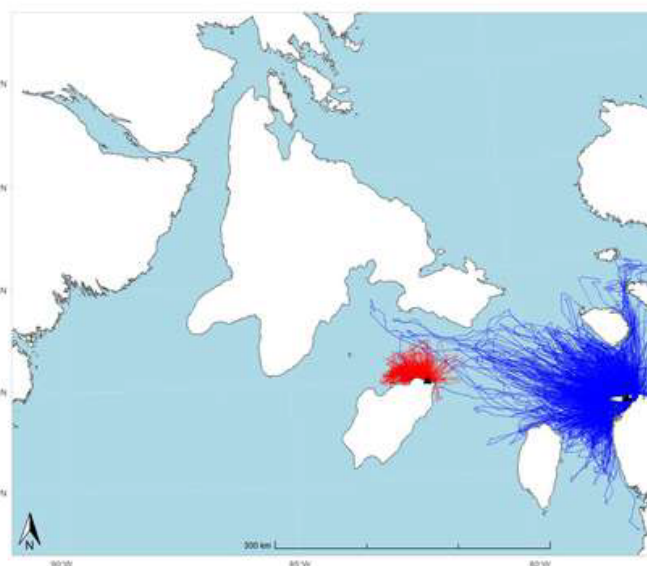
The formal protection of the Marine Environment is a national priority. In the Arctic, Government Departments and local communities are working together to identify areas worthy of protection. The spatial use of the ocean by wildlife is one element that considered when designing marine protected areas.

Our team is contributing seabird spatial tracking information which will be useful in the design of 'The Southampton Island Area of Interest'. This area encompasses the nearshore waters around Southampton and Coats Island in the Kivalliq Region of Nunavut. This site comprises 93,000 km<sup>2</sup> within the Hudson Bay Complex Marine Bioregion, and is approximately 1.6% of Canada's ocean territory.

Southampton Island is the largest island in Hudson Bay, near the confluence of Hudson Bay and Foxe Basin waters; making it an area of high marine productivity. The area is important for key marine species including narwhal, beluga whales, and bowhead whales. It also contains walrus haul-out sites, polar bear dens, and foraging habitats of seabirds. This new protected area will encompass two Environment and Climate Change Canada (ECCC) Migratory Bird Sanctuaries: The Harry Gibbons (Ikkattuaq) Migratory Bird Sanctuary, and the East Bay (Qaqsauqtuuq) Migratory Bird Sanctuary.



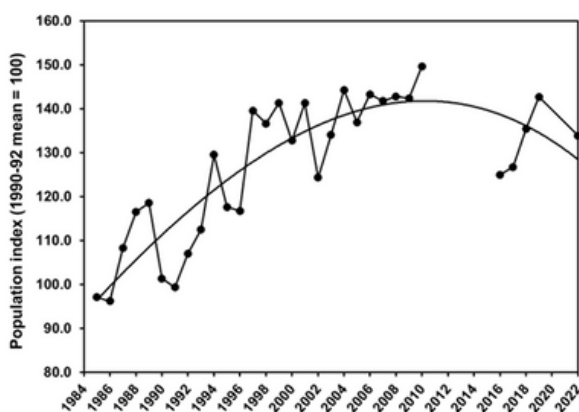
*Proposed marine protected area.*



*Thick-billed murre foraging tracks*

# LONG-TERM POPULATION MONITORING

Thick-billed murres (*Uria lomvia*), known as akpa in Inuktitut, are the most abundant seabird in the Canadian Arctic, and one of the most abundant by mass in the global Arctic. Their meat is an important source of protein in winter in Newfoundland, Labrador and Nunatsiavut, and their eggs are an important source of late-spring protein for some communities. Moreover, murres are an ice-associated, Arctic species that act as important indicators for the entire Arctic ecosystem. This is particularly useful given that we are able to easily monitor population and reproductive trends in murres that are difficult for many other Arctic animals, such as marine mammals and fish.



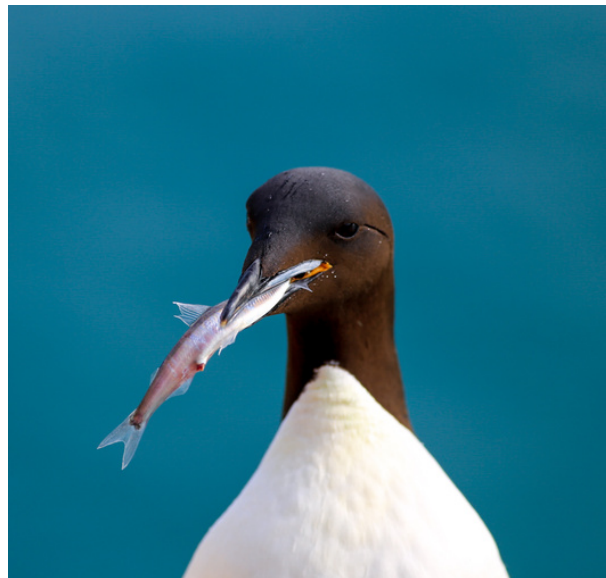
*Change in population size index of Coats Island murres over time.*

At the Coats Island murre colony, we have been recording long-term changes in the timing of breeding, nestling diet and growth, and population size since the 1980's. This long term data set allows us to piece together what may cause changes in population sizes. This is the only such ongoing study for any seabird in the Canadian Arctic, and the only one of its duration for thick-billed murres in the entire Arctic. Therefore, if we begin to see population declines in Canada, we are in a strong position to identify the causes, and to inform hunting quotas, shipping lanes, and other management protocols.

Beginning in 2011 the counts of murres at Coats Island were lower than the long term average suggesting a population decline. A similar decline has been observed at the Digges Island colony, 200 km east of Coats Island, indicating that similar factors may be resulting in the declines of these colonies in Hudson Strait. Interestingly, in 2018 and 2019, numbers have rebounded to those of the late 1990s and 2000s. Although a slight population decline occurred from 2019 to 2022, the population still remains at comparable levels to the late 1990s and 2000s.

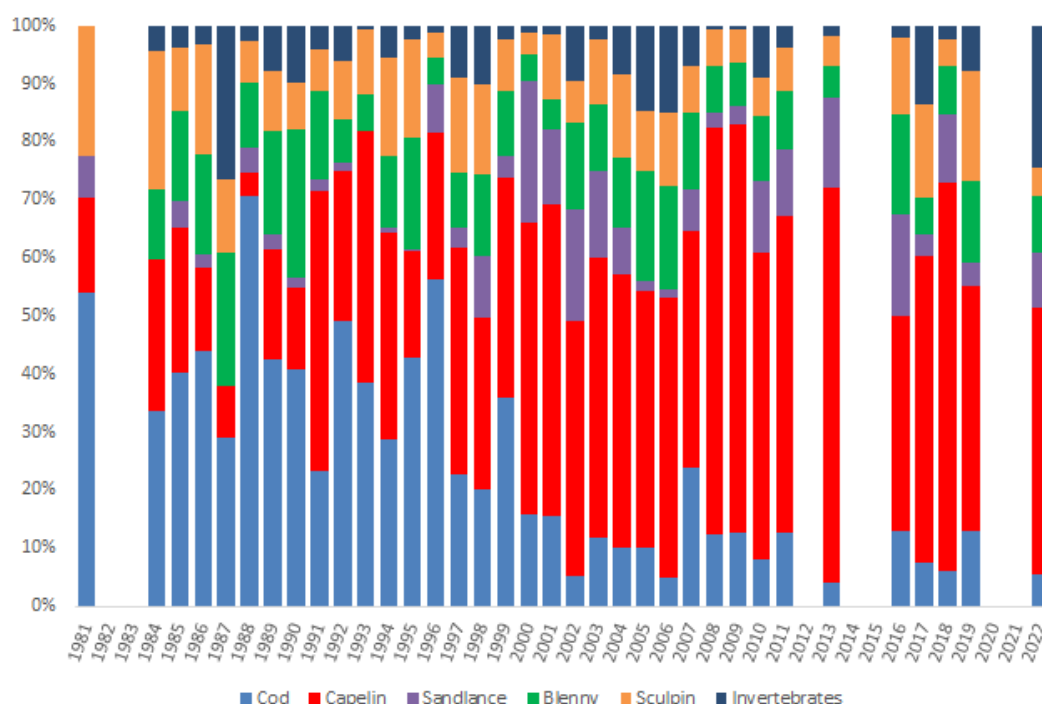


One possible explanation for population declines is a change in diet. We have seen a shift in the main prey species brought to chicks at Coats Island, with capelin replacing Arctic cod as the primary prey species. We suspect this is due to reduced summer ice cover that began in the mid 90's. However, this has not affected nestling growth, suggesting that adult murres are able to compensate for the shifts in prey species.



With the change in prey, these novel conditions could potentially lead to more interspecific competition. For example, razorbills typically out-compete murres and they have now been observed at the Coats Island colony in years when sandlance were more abundant.

Chick diet in recent years showed high proportions of capelin, with 2018 having the highest proportion except for 2008-09 and 2013. Additionally, chick diet in 2022 showed higher proportions of invertebrates, with 2022 having the highest proportion second to 1987, and a lower proportion of sculpin.



*Thick-billed murre prey species delivered to chicks over time at Coats Island*

## BACK IN ACTION

It became clear early in 2020 that the impact of the COVID-19 pandemic would have profound and widespread impacts for everyone across Canada, and particularly those living in remote Northern communities. An important priority for our team was to the limit the impact of our field related activities on Northerners. In consultation with the community of Coral Harbour, Nunavut, our team decided to cancel the 2020 and 2021 field seasons.

In 2022 we were able to return in full swing and were happy to once again be back in the field with our northern field colleagues, Jo and Jupie. Despite a two-year fieldwork pause the camp was still in good working condition upon our arrival and the 2022 field season ran smoothly. Everyone was happy to be back on the cliffs surrounded by murres.



The 2022 season boasted great weather with hardly any rain, meaning we had a jam-packed season of science, with many new student projects, new technology to deploy, long-term colony monitoring to conduct, and a visit to the shorebird camp by Jo and Jupie to map the camp and record GPS co-ordinates



As much of our 2022 season focused on returning to the science, the beginning of the 2023 field season will focus on camp renovations, with plans to move the solar panels inside the bear fence and swap out some of the older bird blinds with new ones.





## RESEARCH PARTNERS AND FINANCIAL SUPPORT

---

Our research at Coats Island is a combined effort of many people and organizations. Dr. Kyle Elliott (McGill University) leads the project together with Dr. Grant Gilchrist (Environment and Climate Change Canada (ECCC)). Dr. Kim Fernie (ECCC) co-leads a project on the effects of contaminants on the resilience to climate change in seabirds. Dr. Oliver Love (University of Windsor) is a key collaborator and co-leads projects involving physiology. We particularly thank Dr. Tony Gaston whose helpful insights continue to benefit the Coats Island program.

Remote research is logistically complicated and labour intensive. Our work would not be possible without our extensive crew of climbers, students, biologists and local guides. This year's Coats Island crew included Allison Patterson, Alyssa Eby, Marianne Gousy-Leblanc, Fred Tremblay, Éliane Miranda, Kyle Elliott, Douglas Noblet, and Jesse Percival. Logistical support and local expertise was provided by Jupie Angootealuk and Josiah Nakoolak from Coral Harbour. Photos in this report provided by Douglas Noblet, Alyssa Eby and Eliane Miranda.

Research in Canada's North is expensive and funding for this work is necessarily provided by a network of partnerships that includes but is not limited to: Environment and Climate Change Canada Wildlife Research Division, Canadian Wildlife Service, Baffinland Iron Mines Corporation, Carleton University, the PEW Charitable Trusts, Oceans North, Mitacs, Polar Knowledge Canada, ArcticNet, Polar Continental Shelf Program (PCSP), University of Windsor, McGill University, Natural Sciences and Engineering Research Council of Canada, Bird Studies Canada, Wildlife Habitat Canada Murre Fund, The Weston Foundation, and the Northern Contaminants Program.

## CONTACT FOR MORE INFORMATION

---

Grant Gilchrist  
National Wildlife Research Centre  
Environment and Climate Change  
Canada  
Tel: (613) 998-7364  
Email: [grant.gilchrist@ec.gc.ca](mailto:grant.gilchrist@ec.gc.ca)

Holly Hennin  
National Wildlife Research Centre  
Environment and Climate Change  
Canada  
Tel: (613) 991-9973  
Email: [holly.hennin@ec.gc.ca](mailto:holly.hennin@ec.gc.ca)

Kyle Elliott  
Natural Resources Sciences  
Department  
McGill University  
Tel: (514) 398-7907  
Email: [kyle.elliott@mcgill.ca](mailto:kyle.elliott@mcgill.ca)