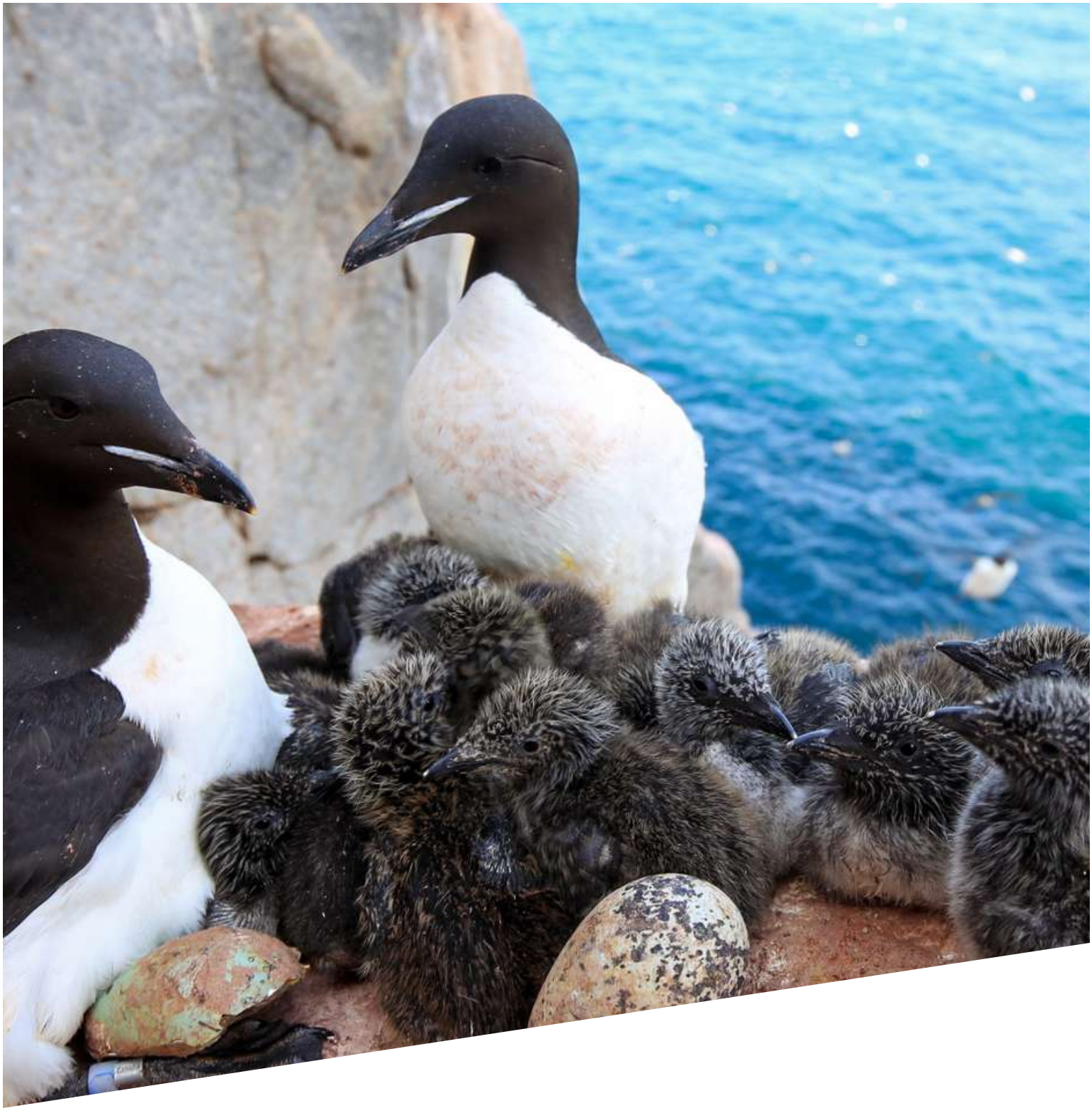


COATS ISLAND

2019 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.

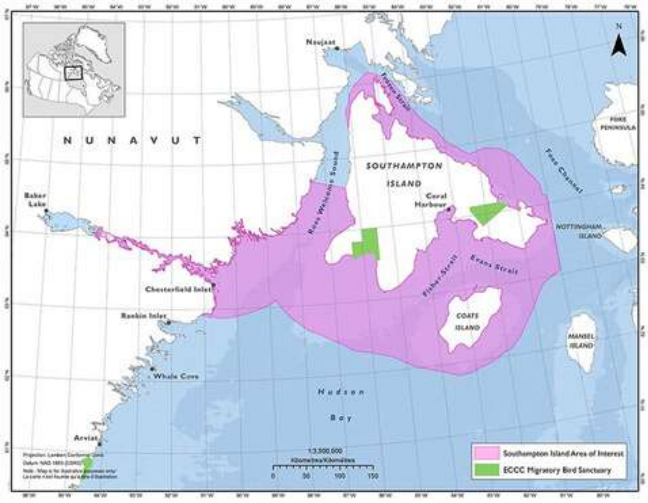
Research efforts in 2019 were concentrated at Coats Island where Environment and Climate Change Canada has been researching thick-billed murres since 1981. This long term data set, paired with new tracking technologies and physiological approaches, enables us to establish an ecological baseline to assess potential impacts of planned shipping activity and projected changes in climate on populations and individual seabirds in the region.

CONTRIBUTING TO MARINE PROTECTED AREAS

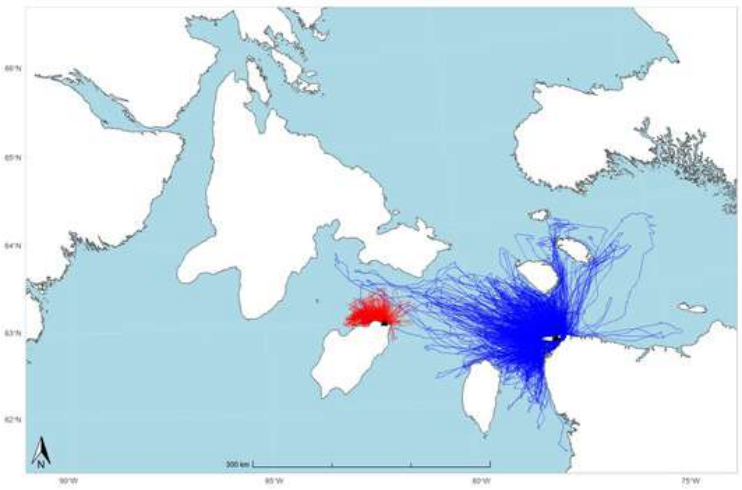
The formal protection of the Marine Environment is a national priority. In the Arctic, Government Departments and local communities are working together to identify areas worthy of protection. The spatial use of the ocean by wildlife is one element that considered when designing marine protected areas.

Our team is contributing seabird spatial tracking information that is 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 93000 km2 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.



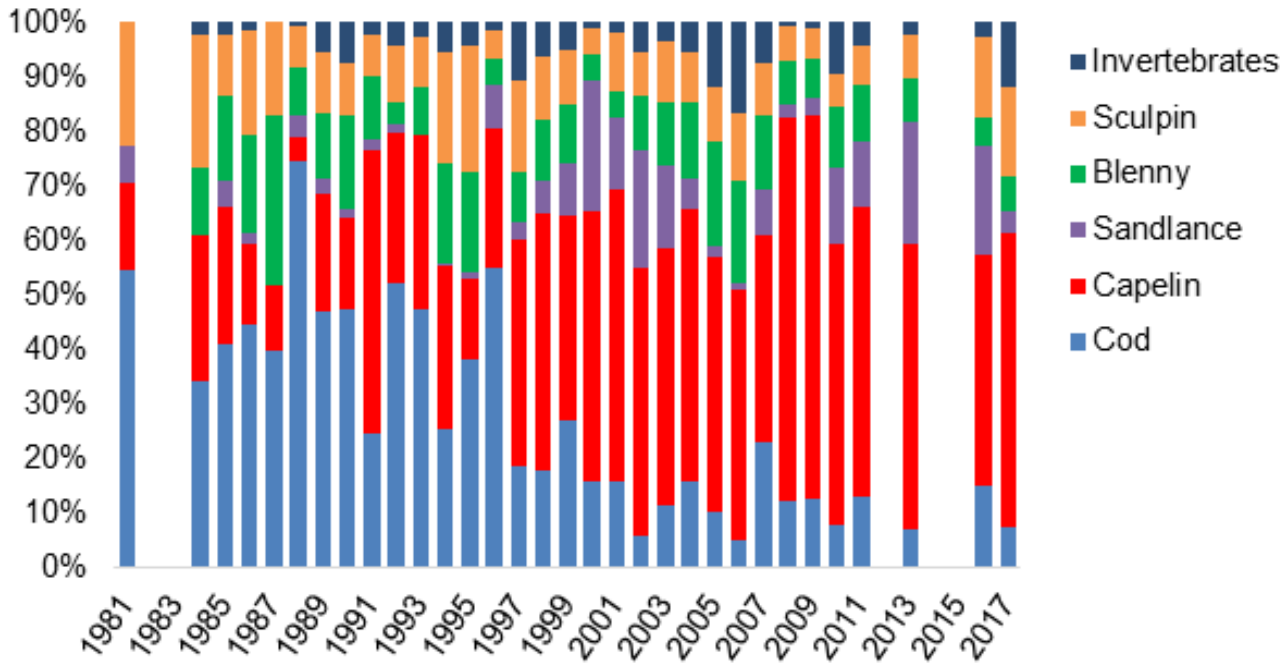
Thick-billed murre foraging tracks.

LONG-TERM POPULATION MONITORING

We have been collecting data on the timing of breeding, nestling diet and growth, and population size of thick-billed murres at Coats Island since 1981. Beginning in 2010 the counts of birds have been lower than the long term average suggesting a decline. A similar decline has been observed at the Digges Island colony, 200 km to the east suggesting similar factors may be negatively influencing both of these thick-billed murre colonies in Hudson Strait.

One possible explanation 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.



Thick-billed murres prey species over time at Coats Island.

NEW TO THE CREW

We are very excited to announce that Dr. Holly Hennin has recently taken the position as the Wildlife Research Technician of the marine bird program with Environment and Climate Change Canada. She joins the team at the National Wildlife Research Centre on the campus of Carleton University in Ottawa.

Holly is very well known and respected from her contributions to the marine bird program as a graduate student, Post Doctoral research associate, and most recently as the Wildlife Technician over the course of nearly a decade. If we were to add up all of the months she has spent in the field over the years, she has lived on East Bay Island for over 13 months.

Holly has published many articles in top scientific journals, represented the program nationally and internationally at conferences, and has won awards for her scientific findings and presentations. Her years of experience leading field teams in the Arctic as well as her contributions to delivering the complex and varied administrative tasks throughout the year, are a tremendous asset. More importantly, Holly brings a wonderful, energetic enthusiasm to everything she does which is greatly appreciated when you're sitting in the freezing rain waiting for eider ducks to arrive from the floe edge. Holly has recently moved to Ottawa with her family; Eric and son, Rowan (aged 1!).

RESEARCH PARTNERS AND FINANCIAL SUPPORT

Our research at Coats Island is a combined effort of many people and organizations. Dr. Kyle Elliot (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, Shannon Wheelan, Sam Richard, Emily Choy, Sarah Poole, Russell Turner and Douglas Noblet. Logistical support and local expertise was provided by Jupie Angootealuk and Josiah Nakoolak from Coral Harbour. Pictures were provided by Douglas Noblet, Alyssa Eby, Russell Turner and Sarah Poole.

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.

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