COASTAL SURVEYS IN THE BELCHER ISLANDS

2021 FIELD SEASON REPORT

ENVIRONMENT AND CLIMATE CHANGE CANADA

PROJECT OVERVIEW

The objective of this project was to survey the breeding population of common eider ducks nesting in the Belcher and Sleeper Island Archipelagos, in south eastern Hudson Bay. The results of these new surveys (conducted in 2021, planned for the summer of 2022) will be compared to historical information collected on the same islands. This will contribute to a long-term study quantifying the population size and nesting distribution of eider ducks in the region which has not been assessed since the 1990s.

This survey is timely because there is concern that eiders nesting in the region are experiencing rapid ecological changes that could result in population declines or redistribution. Eiders are known to be sensitive while nesting, and can be impacted by outbreaks of avian disease, human disturbance, or cascading impacts of climate change including higher rates of polar bear nest predation.

Eider ducks are also of considerable economic and cultural importance to Inuit harvesters living in Sanikiluaq, Nunavut. The survey represents a collaborative effort between the local Hunter's and Trappers Association, the Arctic Eider Society, and Environment and Climate Change Canada. In 2021, the survey was led by 23 Inuit from Sanikiluaq, one southern-based Post Doctoral researcher (following Nunavut COVID-19 health guidelines), and one northern-based ECCC employee. Logistical and data management support from the Arctic Eider society and ECCC. Despite challenging sea ice conditions, the team surveyed nearly half the islands in the region, and intends to complete the surveys in the summer of 2022.

ESSENTIAL INUIT LEADERSHIP

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. A key priority for our ECCC science team was to the limit any potential impact of our field-related activities on Northerners. This resulted in the cancellation of all field activities in 2020.

In 2021, after a year of delay, the community of Sanikiluaq and the local Hunters and Trappers Association expressed renewed interest to conduct the eider duck surveys with the support of Environment Canada staff who were working remotely. Virtual planning meetings were held between the Hunter's and Trappers Association, the Arctic Eider Society, and ECCC.

2021 Sanikiluaq Coastal Survey Team

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In June 2021, the boat-based surveys were led by a team of Northern, community-based Inuit from Sanikiluaq (see alphabetical list of team members). Funding and data management was provided by the Nature Fund of Environment Canada, the Canadian Wildlife Service (Northern Region), and the Arctic Eider Society. All agreed that this was an exciting step to grow the research capacity within Sanikiluaq and served as a model example for establishing other community-based environmental monitoring programs in the Canadian Arctic.

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 is considered when designing the scale and location of marine protected areas.

Our team is helping to support the community-based surveys of marine birds in the Belcher Islands as part of our mandate to monitor Canada's populations of migratory birds, but also to help update what is known about the breeding distribution of key species, including common eider ducks. Coastal boat-based surveys were conducted previously in the region during the 1980s and the 1990s. In the period between June 26 and July 14, 2021, a total of 202 islands were surveyed in the Sleeper, South Flaherty, and Avaarviapiit sub-regions (see map on pg. 4), representing 51% of the historically surveyed islands. Survey teams arrived to islands by boat and by walking transects, counted the number of active eider nests, and recorded their clutch sizes. No eiders were captured, nor were any biological samples collected for research purposes during the surveys. In 2022, the team plan to survey 197 islands in the 4 remaining sub-regions that were historically surveyed (see map on pg. 4).

By conducting these new surveys in 2021 and 2022, we will be able to evaluate the continued importance of historic nesting colonies as well as identify new nesting colonies if they exist. This information will be shared with the community to help inform ongoing discussions about establishing a Marine Protected Area in the region.



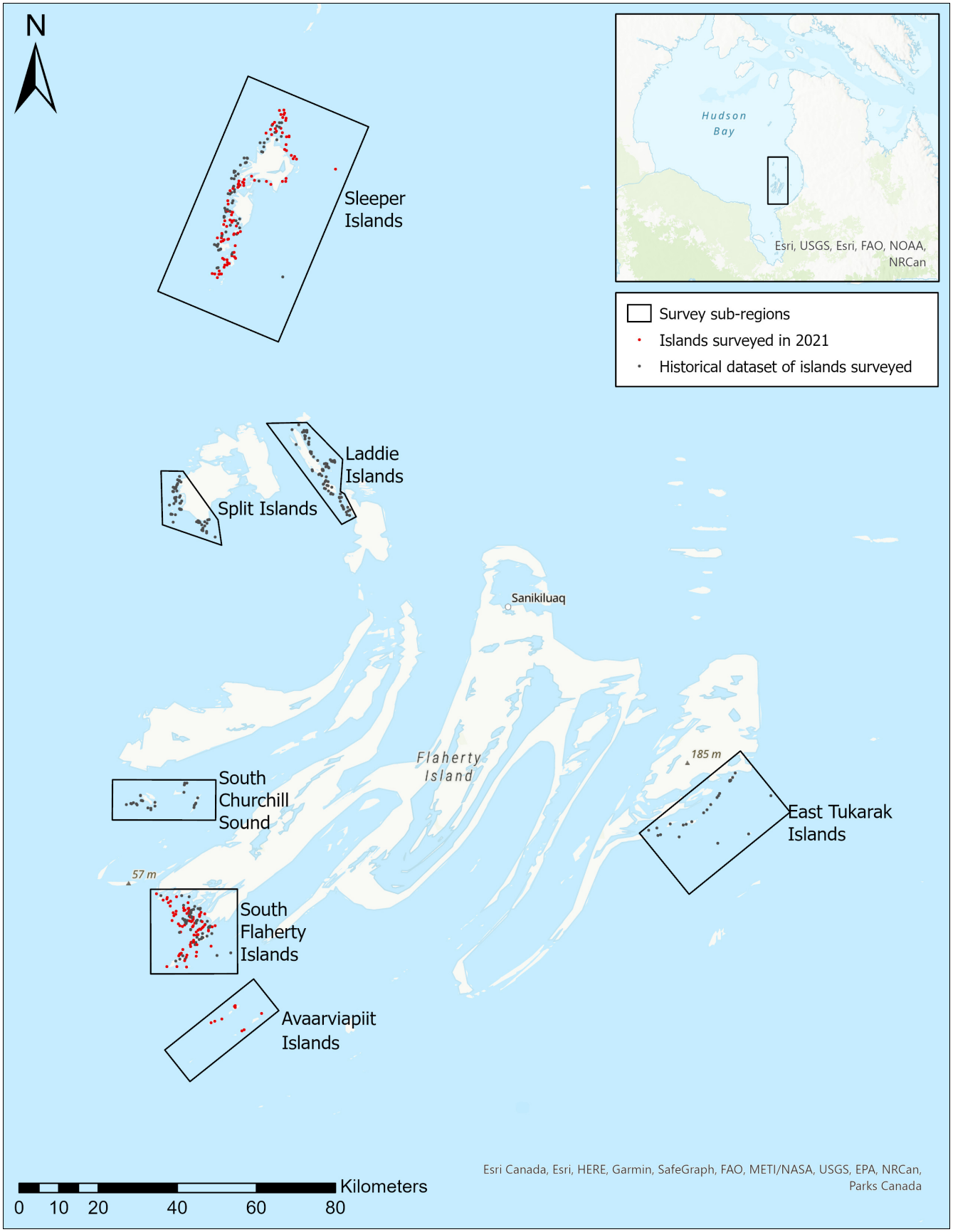

Figure 1 *- Map of the Belcher and Sleeper Islands. Boxes indicate different survey sub-regions. Red dots indicate islands surveyed in 2021. Black dots indicate islands to survey in 2022.*

Trends in demography and breeding distribution of common eiders in the Belcher archipelago

Samuel Richard (M.Sc. Candidate at Carleton University with Drs. Vivian Nguyen and Grant Gilchrist)

This project blends social and natural science approaches to study long-term population trends of nesting common eider ducks and to examine the social aspects underpinning the collaborative work between Inuit and southern-based researchers in environmental monitoring.

In collaboration with Inuit communities, Environment and Climate Change Canada has led coastal surveys of common eider in several coastal regions of the Eastern Canadian Arctic dating back to 1956. This team is compiling all historical coastal survey data to generate one of the largest data sets of its kind in Arctic Canada. The community-led coastal surveys in the Belcher and Sleeper Islands (2021 -2022) will expand this data set further. The team will identify key trends in eider demography and nesting distribution. This information will help inform the development of a Marine Protected Area within the region and establishing a long-term community-led monitoring program.

Collaboration with local Inuit communities has been key to the success of ECCC coastal surveys. Ecological knowledge of eiders, their marine environment, and the navigation skills of Inuit hunters have contributed greatly to the design, safety, productivity, and efficiency of the surveys. This is a key reason why local Inuit made up the majority of the survey field crews over the years.

Using a social science paradigm, this study also aims to identify key areas of misalignment in expectations and ways of doing between Inuit and government scientists when conducting collaborative research. Looking at these points of disagreement and perspectives from both Inuit and government research partners, the team wants to present practical lessons learned over decades of eider monitoring partnerships. By reflecting on and sharing what was learned over more than 60 years of collaboration, we hope to strengthen collaborative efforts related to environmental monitoring in the North.

RESEARCH PARTNERS AND FINANCIAL SUPPORT

The research conducted in the Belcher and Sleeper Islands is a combined effort of many people and organizations. The project is co-led by Grant Gilchrist (Environment and Climate Change Canada; ECCC-S&T, Ottawa), Lucassie Arragutainaq (Sanikiluaq HTO), Joel Heath (Arctic Eider Society), and Lisa Pirie (ECCC-CWS, Iqaluit). Support in Sanikiluaq is provided through the Sanikiluaq Hunters and Trappers Organization, and especially by Lucassie Arragutainaq. Thanks to the survey team (listed on Page 2), and to Andrew Barnas (University of Windsor) and Kirsten Wilcox (ECCC-CWS) who participated directly in the surveys and who provided photos for this report. Holly Hennin (ECCC-S&T) and Sam Richard (Carleton University) contributed logistical and administrative support to the project from Ottawa, Ontario. Greg Robertson (ECCC-S&T), Vivian Nguyen (Carleton University), and Dominique Henri (ECCC-S&T) contributed to survey design and community partnerships.

Research in Canada's north is expensive and funding for this work is provided by a network of partnerships that included the Canada Nature Fund, Environment and Climate Change Canada (ECCC; Canadian Wildlife Service and Wildlife Research Division), Arctic Eider Society, ArcticNet, Carleton University, and the Polar Continental Shelf Program (PCSP).

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