



ENVIRONMENT AND CLIMATE CHANGE CANADA

ARCTIC COASTAL BIRDS & ECOSYSTEMS

2025 FIELD SEASON AND RESEARCH REPORT

FIELD SEASON OVERVIEW

Each spring, following the retreat of snow and ice, Arctic coastal regions transform into bustling breeding grounds for millions of migratory birds that flock to tundra ecosystems. Shorebirds make up the majority of these seasonal migrants to the northern breeding areas and play a key ecological role as insect consumers and as prey for other wildlife. Currently, many shorebird species are experiencing significant and rapidly accelerating population declines, raising serious conservation concerns. Our research focuses on understanding how shorebird populations nesting in Arctic coastal habitats are affected by climate change, interactions with other species and predators, and various environmental factors, both biotic and abiotic. By monitoring shorebirds, we gather essential long-term data that helps explain population trends and identify the causes behind declines, whether those factors originate in the Arctic or elsewhere during the birds' migratory cycle. We work closely with researchers worldwide to gain deeper insights into the challenges these birds face throughout their extraordinary, continent- and hemisphere-spanning migrations.

In 2025, we conducted fieldwork at two of our long-term research sites: The East Bay Mainland camp at Qaqsauqtuuq on Southampton Island, NU, and our field site on Prince Charles Island in the Foxe Basin, NU (Figure 1). East Bay Mainland is one of the longest running monitoring sites in Arctic North America, with continuous datasets on Arctic-breeding bird communities, vegetation and climate that span a quarter century. At Prince Charles Island, 2025 marked our eighth field season operating the camp, which was established in 2016 as a mid-Arctic research site for studying shorebirds and geese. Our work builds on studies conducted in the 1990s, providing valuable long-term insights into ecological trends. Prince Charles Island is a strategic location for monitoring environmental changes in the Foxe Basin because it lies in a remote area expected to experience increased marine shipping traffic under future development scenarios. This site offers a unique opportunity to evaluate how climate change and other forms of environmental change may affect mid-Arctic ecosystems. Already, we have observed notable changes, including expanding populations of Snow and Ross's Geese. This year, in collaboration



Left: A White-rumped Sandpiper incubates its nest.

with the Canadian Wildlife Service, we concentrated field efforts on retrieving geolocator tracking tags from Arctic Terns that had been deployed in 2023 and 2024.

In addition to East Bay and Prince Charles Island, our research continues to utilize long-term data from the Coats Island shorebird site and the southern James Bay migration monitoring sites (Figure 1), even though we did not conduct fieldwork at these locations in 2025. The datasets amassed from these sites continue to be valuable reference points amongst a network of shorebird breeding and migration monitoring sites, and we are optimistic that future studies will build on the valuable contributions these sites have made to understanding shorebird breeding ecology and demography in years to come.

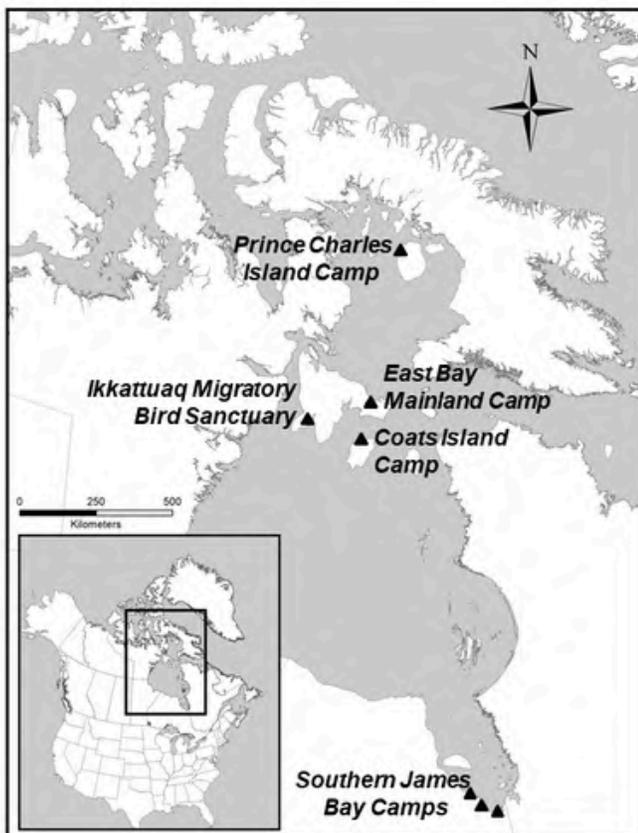


Figure 1. Map of ECCC shorebird research sites in the eastern Canadian Arctic and Subarctic James Bay.

EAST BAY MAINLAND

Spring came early to Southampton Island this year, and much of the snowpack had already melted by the time the crew opened the camp in early June. This was a sharp contrast to 2024, when snow persisted in the study plot well into late June and we observed the latest melt date on record at East Bay Mainland. While some year-to-year variation is expected, recent seasons show increasingly unpredictable spring onset, consistent with climate change projections for Arctic regions. These shifts may affect birds' ability to time their arrival and breeding at nesting sites. Despite the early spring weather, 2025 was an average year for shorebird nesting density, with a total of 75 shorebird nests compared to a mean of 78 nests per year since the start of monitoring. The 2025 season brought the total number of shorebird nests monitored at East Bay to 1888 since 1998, an impressive number that highlights the importance of this long-term monitoring site.

Of the shorebird nests monitored at East Bay this year, we observed above average numbers of Red Phalarope nests (26 compared to a mean of 15 per year) and Dunlin nests (6 compared to a mean of 2-3 per year), and the highest number of Semipalmated Sandpiper nests (3) that we have recorded in a single season since the start of monitoring. In early years of monitoring, Semipalmated Sandpiper were only occasional nesters at East Bay despite being prevalent elsewhere on Southampton Island and on nearby Coats Island. However, in recent years, we have observed a more consistent presence of this species at the East Bay Mainland site, possibly as a result of northward shift in breeding range for this species due to climate change effects, or as a

result of the regeneration of sedge meadows creating more attractive local habitat conditions for this grass-loving concealed nester following the dispersal of the nesting snow goose colony at East Bay.

Hatch rates in 2025 were similar to 2024 (17% in both years); this is below the average nest success rate of 25% since the start of monitoring. While there is considerable variability from year to year, the long-term trend in lower nest success over time appears to be more pronounced for certain species than others. We have noticed that biparental species such as the Ruddy Turnstone, in addition to a decline in numbers of nesting pairs at East Bay, have experienced a steeper decline in annual hatch rates compared to uniparental species such as Red Phalaropes and White-rumped Sandpipers. For uniparental species, we have observed a lower, but relatively stable, hatch rate over time. We are currently studying these trends in greater detail to place them in the context of overall species population trends, changes in climate and migration timing, as well as local weather and predation pressure during the breeding season. Long-term monitoring of reproductive success plays a crucial role in understanding the conservation status of these declining species.

In addition to shorebird monitoring, this summer we accomplished several other scientific objectives at East Bay. We deployed 11 light-level geolocators on Arctic Terns, a seabird species for which many Inuit communities have expressed concern. We were also able to recapture 8 geolocators deployed in previous years to contribute to SeaTrack, an international migration tracking initiative for this wide-ranging species. Data from these tracking devices at East Bay and other breeding sites have contributed to the identification of shared migration pathways and marine stopover sites for this species, and continued tracking will improve our understanding of Arctic Tern migration ecology. Additional species nesting in the study plots this year included Sabine's Gulls, a large number of Cackling Geese, fewer Snow Geese than past years, and a similar number of Brant compared to recent years. For the second year in a row, we observed nesting pairs of Sandhill Cranes on the plot, including a successful nest that produced a chick. Over the years, Sandhill Cranes have been observed at East Bay Mainland in low numbers foraging within the plot; however, no nests were observed prior to 2024. The recent presence of nesting cranes at East Bay Mainland is likely indicative of ongoing population increases for this species, which has more than doubled in the past two decades.

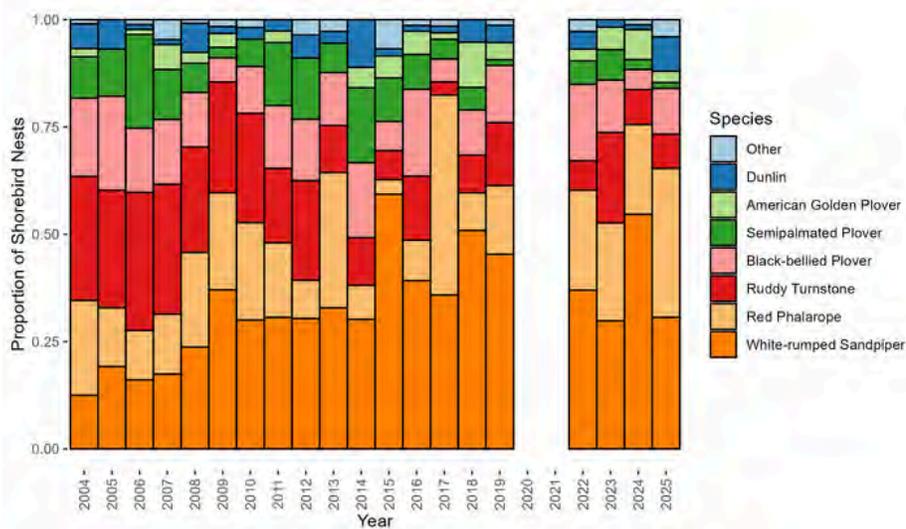


Figure 2. Summary of species composition monitored at East Bay in a 3 km by 4 km survey area between 2004 and 2025. No data were collected in 2020 and 2021.

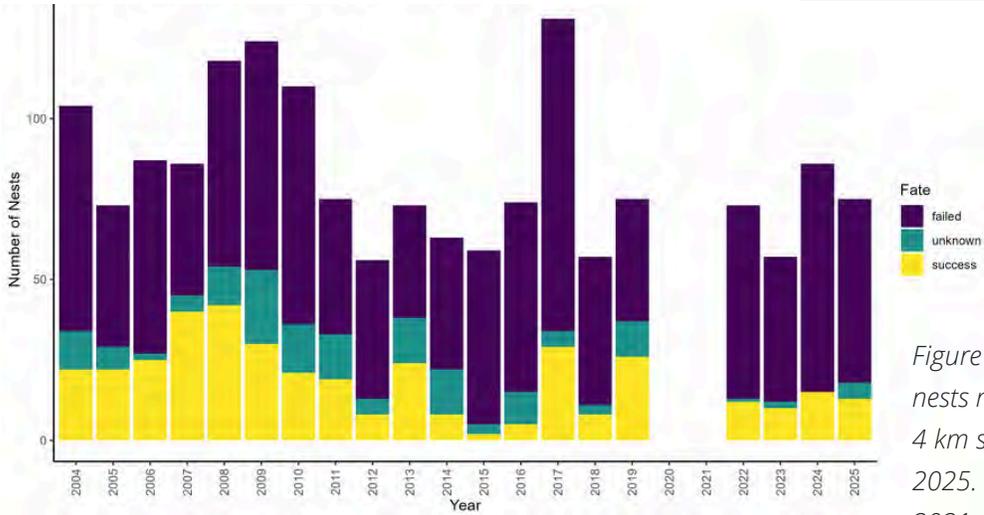


Figure 3. Number and fate of shorebird nests monitored at East Bay in a 3 km by 4 km survey area between 2004 and 2025. No data were collected in 2020 and 2021, due to COVID restrictions.

Overall, 2025 was a successful field season at East Bay. We look forward to continuing the long-term monitoring work at this important site in future years and to working with partners in Coral Harbour to address community research priorities. Our work at this site contributes to a better understanding of Arctic-nesting shorebird ecology, and supports international collaborations aimed at conserving shorebird populations throughout their ranges.

collected at this site since 1996 has resulted in a valuable dataset to help understand changes in Arctic bird communities at mid-Arctic latitudes. We aim to secure funding to continue work at this site in collaboration with partners who are interested in the ecological significance and sensitivity of the site for breeding birds, and the potential effects of increased shipping traffic through Foxe Basin related to mining activity on Baffin Island.

PRINCE CHARLES ISLAND

2025 marked the third year of monitoring within the 6 km by 6 km permanent sampling area at Prince Charles Island. Field work in 2025 was led by our collaborators in the Northern Region of the Canadian Wildlife Service. The shorebird camp at Prince Charles Island was designated as a Program for Regional and International Monitoring (PRISM) "Tier II" site in 2023, though the earliest surveys at this site took place in 1996 and 1997. This year, field activities at the Prince Charles Island camp were condensed due to budget constraints; however, the monitoring data

Right: ECCC biologist Kristen Lalla holds an Arctic Tern prior to release during geolocator retrieval at East Bay Mainland.



During a short 3-week field season this year, the Prince Charles Island field crew focused on retrieving geolocators from Arctic Terns that had been deployed in 2023 and 2024 and monitoring shorebird nests to the extent possible in the time available. A total of 35 shorebird nests were monitored; however, comparison to previous years is difficult due to a reduced nest searching effort that took place later in the incubation stage and therefore likely missed some nests that had already failed. Despite less time in the field to monitor survival and hatch rates, we still made many interesting observations, including the first record of Baird's Sandpiper breeding on Prince Charles Island. As in 2023 and 2024, we observed few Red Phalaropes and recorded only one nest in 2025. Red Phalaropes were formerly abundant breeders in 1996 and 1997 surveys at the site, but have been uncommon in our surveys since 2022, possibly in relation to arrival of breeding Snow Geese and the subsequent transformation of wet sedge habitat – which is preferred breeding habitat for Red Phalaropes – to moss, by grazing geese. The full extent and mechanism for declines in Red Phalarope remain poorly understood as these birds spend most of the non-breeding season offshore, unlike other shorebird species that migrate over land and along coastal areas where migration monitoring surveys can be conducted. Ruddy Turnstones were once again the most common nesting shorebird species (14

of 35 nests), and in addition to Baird's Sandpiper and Red Phalarope, other shorebird species observed nesting at Prince Charles Island include White-rumped Sandpiper, Black-bellied Plover, and American Golden-plover.

Due to the remote nature of the Arctic, the migratory pathways for birds breeding there are poorly known. Since 2023, we have operated a VHF receiver at Prince Charles Island and deployed nanotags on shorebirds to collect radiotelemetry data for these birds via the Motus tracking system. Data collected will help understand migration routes, timing of key events throughout the annual cycle, and stopover areas for tagged individuals. In 2025, we also retrieved 5 geocator tags from Arctic Terns nesting at Prince Charles Island that were deployed in 2023 and 2024 as part of a collaboration with the international tracking study SeaTrack to help understand the migration habits of this species (with the longest-distance migration of any bird in the world, and an annual round trip from pole to pole and back measuring up to 70,000 km!). The devices retrieved from this site in 2024 and 2025 will provide the first-ever tracking data for terns nesting on Prince Charles Island, providing insight into migration routes and stopover areas, and allowing us to compare the routes to those used by birds that breed at other locations.



Left: A Red Phalarope dries off while foraging in Qaqsauqtuuq Migratory Bird Sanctuary.

INUIT FIELD TRAINING PROGRAM

This year, the Inuit Field Training Program (IFTP) took place at the East Bay Mainland research station in Qaqsauqtuuq Migratory Bird Sanctuary. The ten-day program was held in late July, and was led by ECCC biologists Bronwyn Harkness, Alannah Kataluk, and Joshua Komangapik, with Josiah Nakoolak joining as a senior Inuk mentor. Local steering committees in Sanirajak and Coral Harbour selected seven Inuit youth to participate in the program, and, in response to feedback from previous programs, the IFTP was timed to share the camp with the ECCC field crew at the site, providing a unique opportunity to learn hands-on from biologists conducting research on shorebird breeding ecology. Participants learned about the skills and techniques required to work in a northern research camp, and were mentored by biologists from Nunavut and southern Canada about the opportunities available for employment or further education.

The IFTP was first delivered in 2018 and continues to be a priority for us as a platform to work alongside Inuit co-leaders to provide mentorship and training opportunities for more young people in the years to come. The program is a unique and ambitious initiative aimed at bridging the knowledge, enthusiasm, and traditions of the Inuit community with the demands and opportunities of environmental monitoring in Nunavut. The approach we have taken, to work directly with communities and bring Inuit mentors and scientists together, offers Inuit youth a comprehensive introduction to field camp operations in a hands-on experience that encourages knowledge sharing and relationship building, covering an array of topics including practical field skills, sampling techniques, safety, and teamwork. We have found that delivering this program in the context of a working field camp has added enormous value for participants, offering land-based learning opportunities delivered by a diverse team of field technicians, Inuit mentors, and biologists, within the safety and comfort of a well-equipped field station.

IFTP participants, leaders, and shorebird technicians prepare to leave camp at the end of the 2025 season



PROJECT HIGHLIGHTS

Much of the work at our field sites is done in partnership with universities and other organizations and through collaboration with other researchers. We present a selection of highlights from ongoing research projects below, with emphasis on student roles, partnerships to address local research priorities, and monitoring long-term changes in the Arctic ecosystem.



Above: 2025 field crew members at East Bay Mainland: Doug MacNearney, Mark Dodds, Mark Eetuk, Sara Bellefontaine, Caitlin Lewis, H  l  ne Avignaq-Choquette, Kristen Lalla, and Josiah Nakoolak.

Multi-species hierarchical modeling to predict distributional changes in Arctic-breeding bird communities

Caitlin Lewis – MSc candidate, Carleton University

North American shorebird populations are declining at an alarming rate. Arctic-breeding species are particularly vulnerable to climate change and habitat loss throughout their extensive migratory ranges. Indeed, Arctic Canada is warming at four times the global average, and, in response, some taxa have already begun shifting their ranges northward. Given this changing ecological landscape, understanding how environmental conditions and interspecies

interactions affect where shorebirds choose to nest can help us make informed conservation decisions in their breeding grounds. Expanding the traditional single species model to include community-level data can improve our estimations of species distributions. Caitlin's MSc project applies hierarchical community modeling techniques to twenty years of Program for Regional and International Shorebird Monitoring (PRISM) data. By including 17 shorebird species in a joint species distribution model (jSDM), they will test the hypothesis that Arctic shorebird distributions are influenced by both interactions with their environment, and sympatric breeding birds.



Left: Eggs in a Black-bellied Plover nest at East Bay.

Using variance partitioning, preliminary results suggest that climate and habitat are primary contributors to variation in shorebird abundance between sites, but that interspecies associations at the plot level are also important (Figure 4).

Caitlin is currently in their second year of study as a MSc candidate supervised by Dr. Paul Smith and Dr. Rachel Buxton at Carleton University. They completed their second field season at East Bay Mainland this year, during which they were thrilled to participate in the Inuit Field Training Program as a shorebird technician. After their MSc, Caitlin hopes to pursue a PhD at Carleton University using tracking data to look at the effects of climate change on shorebird migrations.

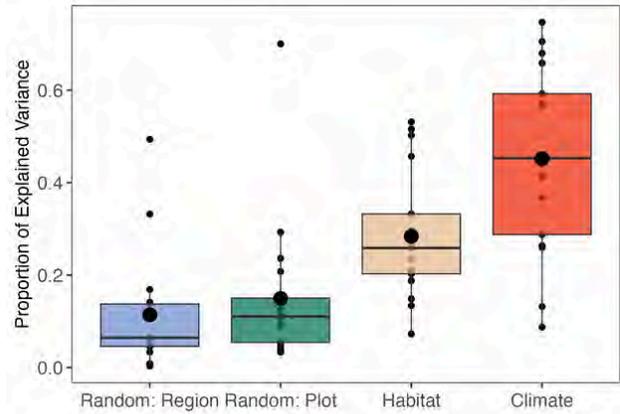


Figure 4. The proportion of variance explained by environmental predictors (habitat and climate), and random effects (at the level of sampling unit and region) for preliminary joint species distribution modeling. Potential biotic interactions between species are represented by the plot-level random effect.

Assessing changes to a Snow Goose nesting colony at Qaqsauqtuuq following a period of decline and redistribution

Environment and Climate Change Canada, Ken Abraham, Christopher Sharp

The breeding colony of snow geese in the Qaqsauqtuuq Migratory Bird Sanctuary was one of the original justifications for designating the protected area in the 1950s. Since that time, the colony has been studied over several decades, contributing valuable data to our understanding of goose population dynamics across North America. This includes the exponential growth observed in the 1990s, the subsequent expansion of the Ross's Goose breeding range, and a decline in Brant populations due to apparent competition and poor juvenile recruitment. In recent years, researchers across the Arctic have reported collapses and redistributions of other goose colonies, linked to overgrazing and other density-dependent effects. However, the most recent

nesting data for the East Bay goose colony dates to 2015—prior to these reported collapses—so the current status of the colony, both in comparison to previous years and to other Arctic sites, remains unknown.



Right: A Cackling Goose nest at East Bay. Whereas Snow Geese were formerly the most abundant nesting species at the goose colony in Qaqsauqtuuq, presently the majority of observed nests are those of Cackling Geese.

Accessing the goose colony at Qaqsauqtuuq from the East Bay Mainland camp requires a dedicated effort, as it is situated 7 km to the west of the camp over rough terrain. Therefore, we cannot undertake projects to monitor the colony every year, but rather plan periodic monitoring efforts to track the size and status of the colony. In 2024 and 2025, we collaborated with goose researchers Dr. Ken Abraham and Dr. Christopher Sharp to conduct a survey of the Qaqsauqtuuq breeding colony to determine the number of nests for each of the four goose species (Snow, Ross', Cackling, and Brant) that breed there. During the 2024 and 2025 field seasons, our field crew conducted ground surveys covering approximately 60% of the core breeding area of the goose colony, recording the locations of nests to compare to previous years. Quantitative analyses are ongoing, but preliminary results indicate that Snow and Ross' Goose, historically the primary species breeding at Qaqsauqtuuq, are hardly present in

the colony, accounting for only 2% of recorded nests in 2024 and completely absent in 2025. Over 90% of the recorded nests in both years were Cackling Goose, and Brant made up 8% of recorded nests in 2024 and 5% in 2025. Previous studies in Qaqsauqtuuq have indicated extensive damage to nesting habitat from overgrazing by geese, the effects of which appear to be evident in the reduced number of breeding geese in the historic core area of the colony. However, it is unclear how the degraded habitat might recover if the density of breeding geese declines and reduces the grazing pressure. We hope to answer these questions through continued monitoring and research, with the study area at Qaqsauqtuuq providing a rich dataset to help understand how dynamics in goose breeding populations can impact ecosystems, and how the coastal Arctic landscape and the wildlife using it will respond to changes in the local goose population.

Below: Unmanned aerial vehicles can help us identify goose nests, such as this Cackling Goose, to improve survey efficiency.



Abundance and distribution of birds from comprehensive surveys of the Canadian Arctic

Paul A. Smith, Jonathan Bart, Victoria H. Johnston, Yves Aubry, Stephen C. Brown, Charles M. Francis, Guy Morrison, Lisa D. Pirie, Jennie Rausch

In a recent publication in the journal *Ornithological Applications*, Dr. Paul Smith and co-authors synthesized the data from the first large-scale survey effort to cover the entire Canadian Arctic, spanning 24 years between 1994 and 2018, to estimate the abundance and distribution of 61 species of birds, including 24 shorebirds, throughout Arctic Canada. Abundance and distribution are critical metrics of population status and foundational information for conservation. However, even these basic metrics have been difficult to obtain for birds in the Canadian Arctic, where costs are high and access is difficult. This study is the culmination of the first round of data collection under PRISM, the Program for Regional and International Shorebird Monitoring, during which ground surveys were conducted at 2,528 plots covering more than 750,000 hectares between 1994 and 2018. The

survey design selected plots by stratified random sampling, within wet, moist, or dry habitat categories defined based on satellite remote sensing, and double sampling was used to determine detection rates and correct the estimates to reflect birds breeding within the plots. As this was the first survey effort to encompass the entirety of Arctic Canada, it is not surprising that many of the results provide new insights with conservation implications. Nearly all estimated population sizes for shorebird species exceed prior estimates, many by several fold. The 6 most abundant shorebird species were Semipalmated Sandpiper, Red Phalarope, White-rumped Sandpiper, Pectoral Sandpiper, American Golden-Plover, and Red-necked Phalarope, all with estimated population sizes exceeding 3 million (coefficients of variation for these species ranged from 0.12 to 0.24). Although shorebird densities were much higher in wet and moist habitats, the large areal extent of dry habitats meant that 42% of all shorebirds were estimated to occupy these dry areas, previously considered to be of marginal importance. The estimates of abundance and distribution for the 37 non-shorebird species are, in many cases, the first ever estimates of population size from the Arctic breeding grounds. This new understanding of population sizes will have important implications for several current conservation programs, such as those where areas are identified as key habitat based on the proportion of the population using them.

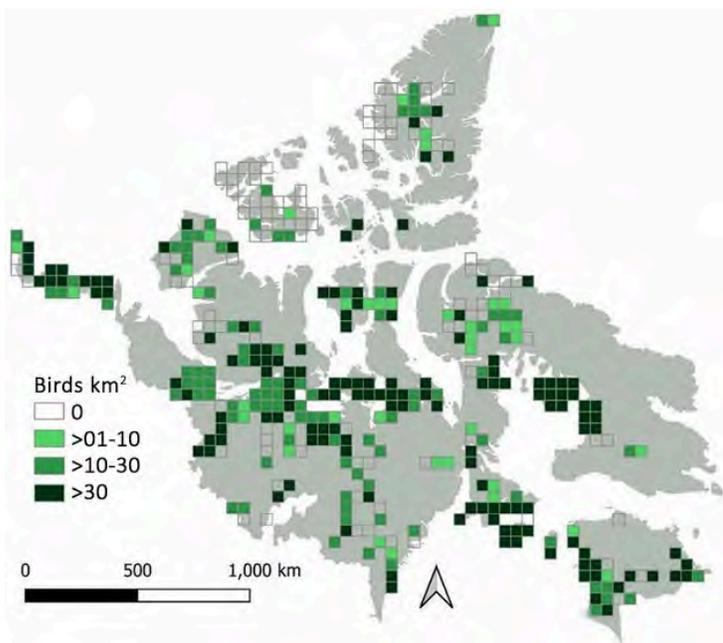


Figure 5. Estimated density of all shorebirds combined, within 25 km × 25 km blocks with survey coverage, across the study area in Arctic Canada.

Mobilizing tracking data to identify Arctic shorebird coastal hotspots

Environment and Climate Change Canada, Smithsonian Institution Shorebird Conservation Collective

Arctic-breeding shorebirds are in steep decline, with 20 species under consideration for Species at Risk listing. These birds migrate from Canada's Arctic to regions as far south as South America, relying on key stopover sites to rest and refuel. While major staging areas in temperate North America are well documented, including staging areas as far north as James Bay and Southern Hudson Bay, Arctic stopover sites remain poorly understood. As shipping traffic grows in the Arctic, identifying these critical sites is essential for assessing habitat vulnerability and planning for environmental emergencies.

Advances over the past decade in avian tracking technology towards smaller, more affordable devices have resulted in tracks being collected from over 3500 individual birds of 36 species, with many of these individuals either tagged in or migrating to Arctic regions. In partnership with the Smithsonian Institution's Shorebird Conservation Collective, we have initiated a project to leverage these data to identify the location and timing of aggregations of shorebirds in Arctic coastal habitat. Using the tracking data, and techniques to reconstruct presence/absence such as Spatial Hidden Markov Models, this project will quantify use of coastal habitats by post-breeding birds, and will identify areas of importance and network connectivity for multiple bird species. By analyzing the duration of stay and subsequent movement patterns, we will attempt to determine whether these Arctic coastal sites function as critical staging areas essential for refueling and preparation for migration, or if they serve as brief stopover locations of more limited ecological importance.

Current progress on this project has produced an initial set of maps summarizing data availability and use of sites in the Arctic at a coarse scale. As Arctic-breeding shorebirds progress through the COSEWIC evaluation process, this information could play an important role in defining critical habitat. In a future phase of the project, we will conduct field-based surveys of important sites during the post-breeding period, to understand the magnitude of aggregations, as well as collect baseline data on habitat characteristics and prey availability, including assessments of aquatic macroinvertebrate and benthic fauna communities that support shorebird foraging, to fully understand the ecological role for aggregations of shorebirds at Arctic post-breeding sites.

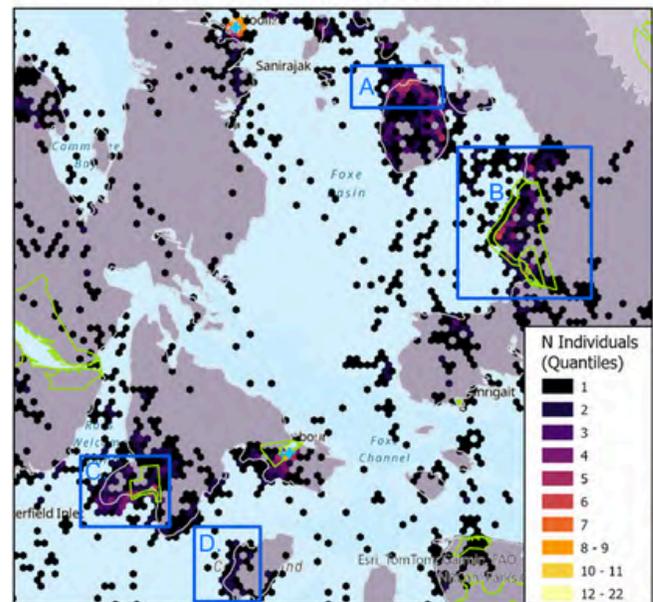


Figure 6. Number of shorebirds tracked by Argos or GPS tags around Foxe Basin, Nunavut, summarized in 10 km x 10 km hexagonal grid cells. Blue rectangles indicate notable areas where multiple individuals were tracked, including (A) Prince Charles Island, (B) Dewey Soper Migratory Bird Sanctuary, (C) Ikkattuaq Migratory Bird Sanctuary, and (D) Coats Island. Courtesy of Smithsonian Institution.

INUIT PARTICIPATION

Josiah Nakoolak has been a part of Environment Canada research teams at East Bay and Coats Island every year since 1997. His wisdom and knowledge is essential to the safe operation of the field camps. Josiah also acts as a mentor for younger field assistants. This year, in addition to spending time at the East Bay Mainland camp in June at the start of the field season, Josiah returned during the IFTP as a senior mentor to share his knowledge and experience with the participating youth.

Mark Eetuk was a keen participant in the Inuit Field Training Program in 2018, and has subsequently worked at East Bay as a research assistant since 2019. Mark returned to join the team again in 2025, working at the East Bay Mainland camp in June to start the field season, and then moving to the Coats Island seabird camp to work at the thick-billed murre colony in July and August.

Hélène Avingaq-Choquette worked as a shorebird field technician in 2025 at East Bay Mainland through the Inuit Field Research Assistant program. Hélène's positive attitude and enthusiasm for spending time on the land and learning about birds made her an excellent fit with the team. We look forward to working with Hélène again in the future. Hélène is currently a post-secondary student at Nunavut Sivuniksavut in Ottawa.

Marvin Shimout worked at East Bay for the first time in 2024, and participated in the Inuit Field Training Program later in the summer field season. In 2025, Marvin joined the Coats Island seabird research team.

Adamie Samayualie works at Prince Charles Island as a guide and research assistant. Adamie started working at Prince Charles Island in 2016 and 2017 when the camp was established, and his enthusiasm and work ethic are an important part of the field team. In 2025, in addition to working at Prince Charles Island, Adamie worked in his home community of Kinngait with ECCC Research Scientist Dr. Grant Gilchrist on a project studying common eider nesting on islands in Hudson Strait.

Paolassie Ottokie works at Prince Charles Island as a guide and research assistant. Paolassie has worked with us since 2017 during the first full field season at this site, and his knowledge, sense of humour, and hard work make him a great asset to have as part of our field team. This year, Paolassie worked in his home community of Kinngait with ECCC Research Scientist Dr. Grant Gilchrist studying common eider nesting on islands in Hudson Strait.



Right: Hélène Avingaq-Choquette (left) and Josiah Nakoolak (right) during fieldwork at Qaqsauqtuuq in 2025.

RECENT SCIENTIFIC PUBLICATIONS

- Anderson, C.M., L. Fahrig, J. Rausch, and P.A. Smith. 2024. **Unexpected sources of uncertainty in projecting habitat shifts for Arctic shorebirds under climate change.** *Diversity and Distributions* 30(6):DOI: 10.1111/ddi.13829
- Binley, A. D., L. Haddaway, R. Buxton, K.M. Lalla, D. Lesbarreres, P.A. Smith, and J.R. Bennett. 2025. **Endangered species lack research on the outcomes of conservation action.** *Conservation Science and Practice*, e13304. <https://doi.org/10.1111/csp2.13304>
- Carter, N.A., L.M. Martinez-Levasseur, V. Johnston, P.A. Smith, A. Irkok, B. Saviakjuk, L. Emiktaut, Salliq Project Management Committee, Arviat Project Management Committee, B. Chaudhary, G. Ljubicic, R.T. Alisauskas, F. Baldwin, P.B.Y. Wong, and D.A. Henri. 2025. **Braiding Inuit knowledge and Western science to understand light goose population dynamics under a changing climate.** *Ecology and Society* 30(2):17. <https://doi.org/10.5751/ES-16079-300217>
- Chagnon-Lafortune, A., E. Duchesne, P. Legagneux, L. McKinnon, J. Reneerkens, N. Casajus, K.F. Abraham, [...] and J. Bêty. 2024. **A circumpolar study unveils a positive non-linear effect of temperature on Arctic arthropod availability that may reduce the risk of warming-induced trophic mismatch for breeding shorebirds.** *Global Change Biology* 30(6):DOI: 10.1111/gcb.17356
- English, W.B., B. Lagassé, S. Brown, M. Boldenow, J. Burger, B. Casler, A.D. Dey, S. Feigin, S. Freeman, H. R. Gates, K.E. Iaquinto, [...] and P.A. Smith. 2025. **The influence of migration timing and local conditions on reproductive timing in Arctic-breeding birds.** *Ecology and Evolution* 15:e70610.
- Gauthier, G., D. Ehrich, M. Belke-Brea, F. Domine, R. Alisauskas, K. Clark, F. Ecke, N.E. Eide, E. Framstad, J. Frandsen, [...], and N.M. Schmidt. 2024. **Taking the beat of the Arctic: are lemming population cycles changing due to winter climate?** *Proceedings of the Royal Society B* 291:DOI: 10.1098/rspb.2023.2361
- Gilchrist, H.G., H. Hennin, E.I. Buttler, J.F. Provencher, J. Nakoolak, P.A. Smith, M. Janssen, M.R. Forbes, C.A.D. Semeniuk, K. Allard, J. Bety, N. Clyde, S. Descamps, F. Jean-Gagnon, D.A. Henri, P. Legagneux, C. Macdonald, F.R. Merkel, A. Mosbech, E. Richardson, C. Soos, C. Sonne, M. Wayland, O.P. Love. 2025. **Long-term monitoring of Arctic birds at the East Bay Island Field Station, within the Qaqsauqtuuq Migratory Bird Sanctuary, 1996–2023.** *Arctic Science* 11: 1-33. DOI: <https://doi.org/10.1139/as-2025-0040>
- Holmes, G.I., E. Nol, and P.A. Smith. 2024. **Deterrents intended to mitigate mining effects mostly fail to change nesting behavior of Arctic breeding birds.** *Avian Conservation and Ecology* 19(2):DOI: 10.5751/ACE-02714-190217
- Lemieux, T.A., J.D.R. Coles, A.L. Haley, M.L. LaFlamme, S.K. Steel, K.M. Scott, J.F. Provencher, C. Price, J.R. Bennett, I.C. Barrio, H.S. Findlay, S.J. Goodman, B. Matthews, J. Näslund, D.A. Pearce, R.D. Hollister, M.L. Mallory, P.A. Smith, G. Schaepman-Strub, and S.J. Cooke. 2025. **Persistent and emerging threats to Arctic biodiversity and ways to overcome them: A horizon scan.** *Arctic Science*. DOI: 10.1139/as-2024-0035
- MacNearney, D., E. Davis, J. Rausch, E. Nol, G. Gilchrist, J. Nakoolak, K.F. Abraham, K. Allard, S. Bellefontaine, N. Clyde, L. Docken, D.B. Edwards, W. English, S.A. Flemming, A. Hargreaves, C. Macdonald, H. Mariash, D.E. Perkins, I.J. Stenhouse, P.A. Smith. 2025. **Long-term monitoring of Arctic coastal ecology at the East Bay Mainland Research Station, in Qaqsauqtuuq Migratory Bird Sanctuary, Nunavut.** *Arctic Science* 11:1-18. DOI: <https://doi.org/10.1139/as-2025-0013>

Nyboer, E.A., A.N. Kadykalo, N. Young, V.M. Nguyen, T. Rytwinski, J.-F. Lane, J.R. Bennett, N. Harron, S.M. Aitken, G. Auld, D. Browne, A.L. Jacob, K. Prior, P.A. Smith, K.E. Smokorowski, S. Alexander, S.J. Cooke. 2025. **What is 'good evidence' for environmental decision making? Insights from professionals working at the science-policy interface.** *Environmental Science & Policy* 171:104176. DOI: <https://doi.org/10.1016/j.envsci.2025.104176>

Pollet, I.L., S.E. Gutowsky, R.T. Alisauskas, W. Harvey, D.K. Kellett, K.M. Lalla, J. Lefebvre, J. Russell-Mercier, J.F. Provencher, E.D. Silverman, P.A. Smith, and M.L. Mallory. 2024. **Trends in Arctic-nesting loon (*Gavia* spp.) populations in North America.** *Polar Biology* 47:1001-1012. DOI: 10.1007/s00300-024-03277-2

Saalfeld, S.T., M. Valcu, S. Brown, E. English, M.-A. Giroux, A.-L. Harrison, J. Krietsch, K. Kuletz, J.-F. Lamarre, C. Latty, N. Lecomte, R. McGuire, M. Robards, A. Scarpignato, S. Schulte, P.A. Smith, B. Kempnaers, R.B. Lanctot. 2024. **From land to sea: the fall migration of the Red Phalarope through the Western Hemisphere.** *Marine Ecology Progress Series* 729:1-29. DOI: 10.3354/meps14531

Smith, P.A., J. Bart, V.H. Johnston, Y. Aubry, S.C. Brown, C.M. Francis, R.I.G. Morrison, L.D. Pirie, J. Rausch. 2025. **Abundance and distribution of birds from comprehensive surveys of the Canadian Arctic, 1994–2018.** *Ornithological Applications* duaf050

Tavera, E.A., D.B. Lank, D.C. Douglas, B.K. Sandercock, R.B. Lanctot, N.M. Schmidt, J. Reneerkens, D.H. Ward, J. Bêty, E. Kwon, N. Lecomte, C. Gratto-Trevor, P.A. Smith, W.B. English, [...], and K.E.B. Gurney. 2024. **Why do avian responses to change in Arctic green-up vary?** *Global Change Biology* 30(5):DOI: 10.1111/gcb.17335

Ziegenhorn, M.A., R.B. Lanctot, S.C. Brown, M. Brengle, S. Schulte, S.T. Saalfeld, C.J. Latty, P.A. Smith, N. Lecomte. 2025. **ArcticSoundsNET: BirdNET embeddings facilitate improved bioacoustic classification of Arctic species.** *Ecological Informatics* 90:103270. DOI: <https://doi.org/10.1016/j.ecoinf.2025.103270>

Ziegenhorn, M.A., R.B. Lanctot, S.C. Brown, S.T. Saalfeld, P.A. Smith, and N. Lecomte. 2025. **Source amplitude increases with body-mass across avian genera.** *Ibis*. DOI: <https://doi.org/10.1111/ibi.13447>

Below: While in the field, all wildlife sightings are recorded to document trends in observations over the years. Following the sea ice break up in East Bay, beluga are frequently observed in the shallow waters.





Above: a midnight sunset from the East Bay Mainland camp ridge.

RESEARCH PARTNERS AND FINANCIAL SUPPORT

The research projects described in this report are a combined effort of many people and organizations. Dr. Paul Smith (Environment and Climate Change Canada, ECCC) leads the program together with key collaborators Dr. Erica Nol (Trent University), Jennie Rausch (Canadian Wildlife Service, CWS), Dr. Grant Gilchrist (ECCC), Lisa Pirie-Dominix (CWS), Dr. Lenore Fahrig (Carleton University), Dr. Joe Bennett (Carleton University), Dr. Rachel Buxton (Carleton University), Christian Friis (CWS), Dr. Jean-Louis Martin (CNRS), Dr. Tanguy Daufresne (INRAE), Dr. Elodie Courtois (ENIA), Dr. Oliver Love (University of Windsor), Dr. Christina Semeniuk (University of Windsor), Paul Woodard (CWS), Larry Niles (Wildlife Restoration Partnerships; WRP), Stephanie Feigin (WRP), and Wendy Walsh (USFWS). Technical leadership and coordination is provided by Doug MacNearney, Holly Hennin, and Kristen Lalla (ECCC).

These projects are logistically complicated and labour intensive, requiring a large, dedicated crew of students and biologists. In 2025, our field crews at East Bay Mainland and Prince Charles Island included Gianco Angelozzi-Blanco, Helene Avingaq-Choquette, Sara Bellefontaine, Don Cecile, Mark Dodds, Mark Eetuk, Kristen Lalla, Caitlin Lewis, Doug MacNearney, Josiah Nakoolak, Adamie Samayualie, Paul Smith, and Paul Woodard.

Research in Canada's north is expensive and funding for this work was provided by a network of partnerships that includes but is not limited to: Environment and Climate Change Canada Wildlife Research Division, the Canadian Wildlife Service – Northern Division, the Natural Sciences and Engineering Research Council, Trent University, Carleton University, University of Windsor, Polar Continental Shelf Program, ArcticNet, the Nunavut Wildlife Management Board via the Nunavut Wildlife Research Trust, Baffinland Iron Mines, Northern Scientific Training Program, United States Fish and Wildlife Service, Institut Polaire Français Paul-Émile-Victor (IPEV), and the W. Garfield Weston Foundation.

CONTACT INFORMATION

If you have questions or comments, or to obtain a translated version of this report, please contact:

Paul Smith

National Wildlife Research Centre
Environment and Climate Change Canada
Telephone: 613-790-0534
Email: paulallen.smith@ec.gc.ca

Doug MacNearney

National Wildlife Research Centre
Environment and Climate Change Canada
Telephone: 343-572-0561
Email: douglas.macnearney@ec.gc.ca