CANADIAN WILDLIFE SERVICE, NORTHERN REGION

ARCTIC SHOREBIRD MONITORING PROGRAM and BOREAL SHOREBIRD MONITORING PROGRAM

SUMMARY REPORT FOR THE 2019 FIELD SEASON

Report for the Following Permits:

Canadian Wildlife Service Protected Area Permits: NUN-MBS-17-05, NUN-NWA-17-04 NWT-MBS-17-03

Canadian Wildlife Service Scientific Permits: NWT-SCI-17-01, NUN-SCI-17-03

Environment and Climate Change Canada Western and Northern Animal Care Committee Approval: 19JR01

Bird Banding Permit: 10565N

Government of the Northwest Territories Wildlife Care Committee Approval: NWTWCC 2018-003

Government of the Northwest Territories Wildlife Research Permit: WL500730

Government of Nunavut Wildlife Research Permit: 2019-041

Arctic Shorebird Monitoring Program

The Arctic Shorebird Monitoring Program is studying shorebird populations across the North American arctic as part of a larger program called the Arctic Program for Regional and International Shorebird Monitoring (Arctic PRISM). There are two main components to our work; tier 1 or “rapid” surveys that are conducted over large areas across the Arctic and are visited approximately every 20 years, and tier 2 or “intensive” surveys that focus on smaller areas that are surveyed each year for approximately five consecutive years.

This year, our survey teams consisted of two rapid crews conducting surveys in the Rasmussen Lowlands area of Arctic PRISM Regions 7 and 9 (Figure 1) and within the Foxe Basin (Arctic PRISM Region 3); and one intensive survey crew at the Nanuit Itillinga (formerly Polar Bear Pass) National Wildlife Area on Bathurst Island, NU (Figure 2). The rapid survey plots were accessed via helicopter and conducted on foot, and travel within the Nanuit Itillinga National Wildlife Area was conducted on foot and/or all-terrain vehicle. All work took place during June and July.

Arctic PRISM Tier 1 (“Rapid” Surveys, Regions 3, 7, and 9)

Arctic PRISM Tier 1 (or “rapid”) surveys involve two people walking systematically through a 12 hectare plot (300m x 400m) and recording all the birds and nests they see. We surveyed 62 randomly selected plots (~744 hectares) in the Rasmussen Lowlands area of Arctic PRISM Regions 7 and 9 (Figure 3); and 86 plots (~1032 hectares) in the Foxe Basin area of Arctic PRISM Region 3 (primarily Air Force and Prince Charles Islands; Figure 4).

Rasmussen Lowlands (Arctic PRISM Region’s 7 and 9)

We detected 4154 birds on plot during the surveys within the Rasmussen Lowlands. Of these, 266 were shorebirds of 10 different species (number of birds of each species given in brackets): Red Phalarope (67), Semipalmated Sandpiper (66), White-rumped Sandpiper (40), American Golden-Plover (30), Dunlin (15), Stilt Sandpiper (15), Baird’s Sandpiper (15), Pectoral Sandpiper (13), Black-bellied Plover (4), and Red-necked Phalarope (1).

Additionally, 1457 bird nests were observed. The vast majority of these were Snow Goose nests as several plots fell within Snow Goose colonies. Twenty-three shorebird nests of 7 species were also observed, however. These included White-rumped Sandpiper (7), Semipalmated Sandpiper (5), American Golden-Plover (4), Baird's Sandpiper (4), Black-bellied Plover (1), Red Phalarope (1), and Stilt Sandpiper (1).

Red Phalarope observed in the Rasmussen Lowlands (Photo by Susanne Emond)

Foxe Basin (Arctic PRISM Region 3)

We detected 3538 birds on plot during the surveys within Region 3. Of these, 683 were shorebirds of 9 different species (number of birds of each species given in brackets): Red Phalarope (424), White-rumped Sandpiper (144), Pectoral Sandpiper (28), Ruddy Turnstone (34), Dunlin (27), American Golden-Plover (16), Black-bellied Plover (6), Semipalmated Sandpiper (3).

Additionally, 1264 bird nests were observed. The vast majority of these were waterfowl nests as several plots fell within Snow Goose or Common Eider colonies. Twenty-seven shorebird nests of 6 species were also observed, however. These included Red Phalarope (15), White-rumped Sandpiper (4), American Golden-Plover (3), Dunlin (3), Pectoral Sandpiper (1), and Ruddy Turnstone (1).

In 2020, we plan to conduct rapid surveys in the Queen Maud Gulf area of Arctic PRISM Region 8.

Nanuit Itillinga National Wildlife Area (Tier 2 - Intensive Surveys)

We conducted intensive surveys in the vicinity of the CWS cabin in the Nanuit Itillinga National Wildlife Area on Bathurst Island, NU from June 15 to July 24. Intensive surveys require long hours spent on plots observing shorebirds, monitoring nesting and hatching success, banding birds, deploying tracking devices to monitor migration, and conducting ecological studies. Plots were surveyed regularly throughout our stay. Shorebird nests found in the study area were monitored approximately every five days in order to determine if they hatched successfully.

Nest Monitoring

A total of 26 shorebird nests of 4 species were observed in our study area in 2019. The most common nests found belonged to Black-bellied Plover (11), and White-rumped Sandpiper (6), followed by Red Phalarope (5), and Sanderling (4). Of the 26 nests observed, 6 are known to have hatched, 14 are known to have failed, and for 6 nests it was not clear whether it hatched or failed (fate unknown) or the nest was still active at the time of our departure (fate undetermined). This is the lowest number of nests found, and the lowest rate of nest success of any season during the 5-years of our study (2015-2019). The lower number of nesting birds was likely primarily due to the extensive snow cover that persisted late into the nesting season in 2019. A summary of nest fate by species is included in Table 1. Predation was the primary cause of nest failure for all species.

Table 1. Fate of shorebird nests observed at the Nanuit Itillinga National Wildlife Area during the summer of 2019.

Species	Total Nests	Nest Fate (# nests (%))		
		Hatched	Failed	Unknown / Undetermined
Black-bellied Plover	11	3 (27%)	6 (55%)	2 (18%)
White-rumped Sandpiper	6	0 (0%)	2 (33%)	4 (66%)
Red Phalarope	5	2 (40%)	3 (60%)	0 (0%)
Sanderling	4	1 (25%)	3 (75%)	0 (0%)
Total	**26**	**6 (23%)**	**14 (54%)**	**6 (23%)**

Banding

Effort was also made to capture and band shorebirds with small leg bands. Banding involves fitting birds with a uniquely numbered metal band, as well as a unique combination of coloured plastic bands and a coded leg flag that allow for identification of individual birds at a distance. If that bird is spotted anywhere in the world, other observers can look up the information about when and where that bird was banded and other data such as its age. It can also tell us where that bird spends the winter and the migration route it is using to get there. This is all important information that contributes to bird conservation. Blood and feather samples were also taken from adult birds to be used for additional analysis.

Seventeen adult shorebirds were captured during our banding activities in 2019. Captured birds are banded, have measurements and samples taken, and are then released. Species banded in 2019 included Black-bellied Plover (6), Sanderling (4), White-rumped Sandpiper (4), and Red Phalarope (3). Of the adult birds we captured, 3 were already banded from a previous season.

Migration Monitoring

In an effort to improve shorebird migration monitoring and to determine the migration pathways of specific species, we deployed small tracking devices (radio nanotags or satellite transmitters) on adult shorebirds at Nanuit Itillinga. All birds with a tracking device were also banded with metal and coloured plastic bands.

Radio Nanotags

Radio nanotags are small devices that transmit data via a radio signal that is downloaded remotely once it comes within proximity of a receiving tower. They are much smaller and lighter than other tracking devices (such as satellite transmitters), but because they are small they can only transmit for a short amount of time before running out of battery life (approximately 90 days). They are glued to the feathers on the back of the bird and fall off once the bird moults following migration. A network of automated radio telemetry receiving towers (Motus network) exists along known migration routes throughout Canada and the US, particularly on the east coast and Great Lakes areas. These towers will allow for the monitoring of the timing and location of migratory routes and stopover sites because the information for that bird is downloaded automatically as it comes within the vicinity of a receiving tower. We deployed 9 nanotags at Nanuit Itillinga in 2019: 4 on Sanderling, 3 on Red Phalarope, and 2 on White-rumped Sandpiper. More information about the Motus network can be found at www.motus.org.

Radio nanotag on a Sanderling. The tag will fall off when the bird moults its feathers (Photo by Joel Edwards)

Satellite Transmitters

Satellite transmitters are larger, heavier (5g), “backpack”-mounted devices that provide high quality location data that is uploaded via satellite. They are powered by a small solar panel and can continue to transmit data indefinitely. The data can be downloaded remotely in near real

time, but can only be deployed on larger birds due to their weight. We deployed 4 devices on Black-bellied Plovers in 2019. We also deployed an additional 3 devices on jaegers as part of a collaborative project with researchers from the Smithsonian Institute: 2 on Long-tailed Jaeger, and 1 on a Pomarine Jaeger.

Boreal Shorebird Monitoring Program

The Lesser Yellowlegs is a type of shorebird that nests in boreal areas across North America. It has been identified as a species of concern because of significant population declines observed across its range (~90% decline since 1970). The cause of this decline is not well understood, but may include factors present on the wintering grounds or during migration. In order to better understand the migratory routes and wintering areas being utilized by birds from the NWT, we banded and deployed tracking devices (GPS pinpoint tags) on Lesser Yellowlegs near Yellowknife.

GPS pinpoint tags are small (3.5g) devices that record a set number of waypoints before uploading them to satellite where they can be downloaded remotely by researchers. They allow for more precise tracking than nanotags, but are larger and so they can't be deployed on smaller birds; we only deploy these tags on birds that weigh 80g or larger. Like nanotags, they are limited by battery life and thus only have enough power to record a fixed number of waypoints before uploading the information to satellite.

GPS Pinpoint Tag on a Lesser Yellowlegs near Yellowknife, NT. (Photo by Ross Wood)

We captured and banded fifteen adult Lesser Yellowlegs near Yellowknife during June of 2019. Of these, 12 met our minimum weight threshold of 80g and so we were able to deploy all 10 of our available GPS tags. The location data will not be uploaded to the satellites until the tags have finished recording, so the results of where these birds travelled are not yet available. We are not planning to deploy any more tracking devices on Lesser Yellowlegs in 2020.

If you would like to know more about our programs, or shorebirds in general, please contact Paul Woodard, Shorebird Biologist, Canadian Wildlife Service (paul.woodard@canada.ca).

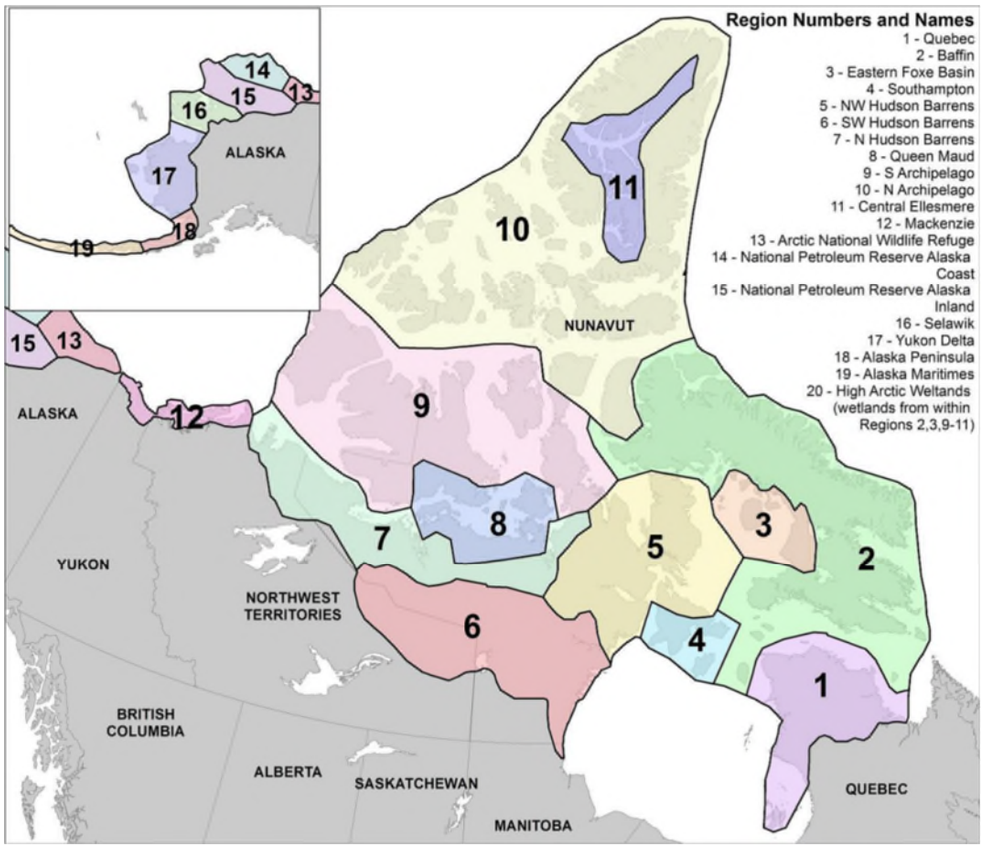

Figure 1. Survey regions and coverage area for the Arctic Shorebird Monitoring Program (Arctic Program for Regional and International Shorebird Monitoring). Rapid Surveys were conducted in Arctic PRISM Regions 3, 7 and 9 in 2019. We plan to conduct additional surveys in the Queen Maud Gulf area of Region 8 in 2020

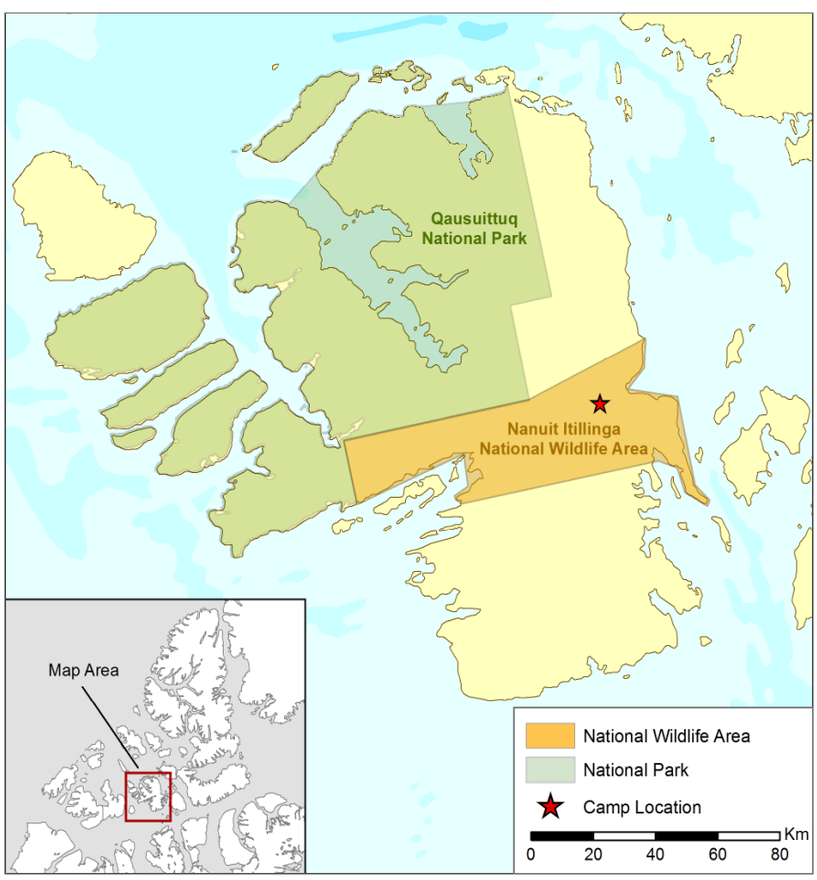

Figure 2. Location of the Nanuit Itillinga (Polar Bear Pass) National Wildlife Area, Bathurst Island NU. Shorebird monitoring activities took place within the vicinity of our base camp, indicated by the red star

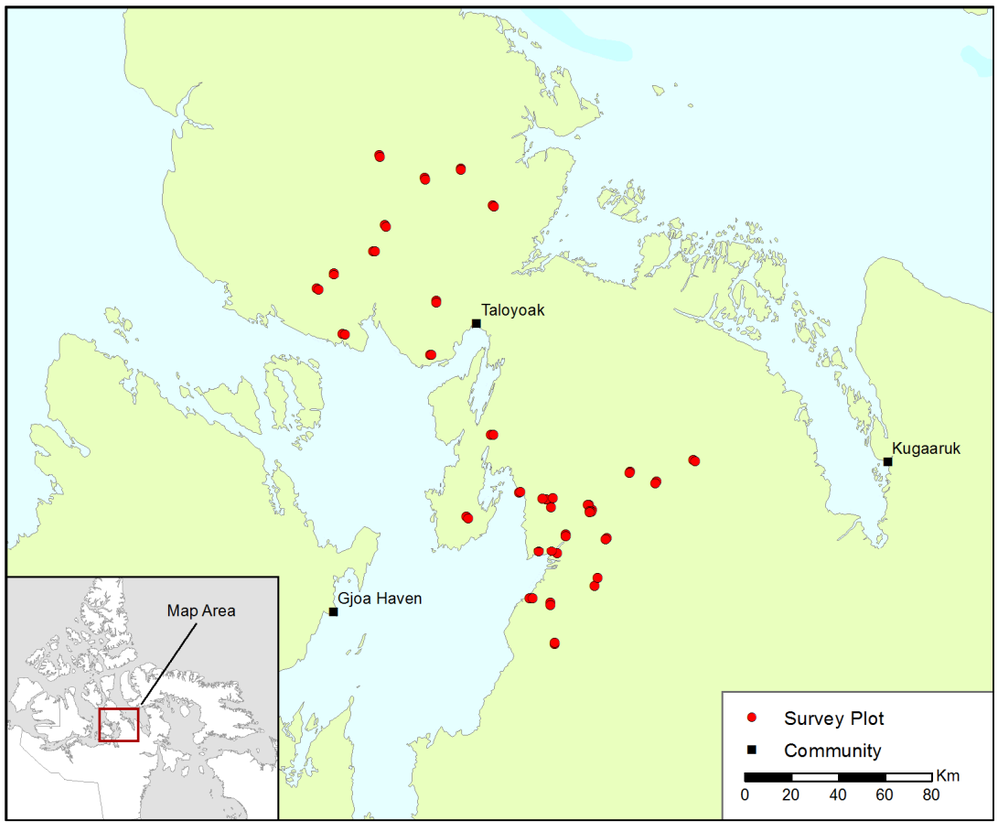

Figure 3. Locations of Arctic PRISM Tier 1, "rapid" survey plots visited in 2019 within the Rasmussen Lowlands area (Arctic PRISM Regions 7 and 9)

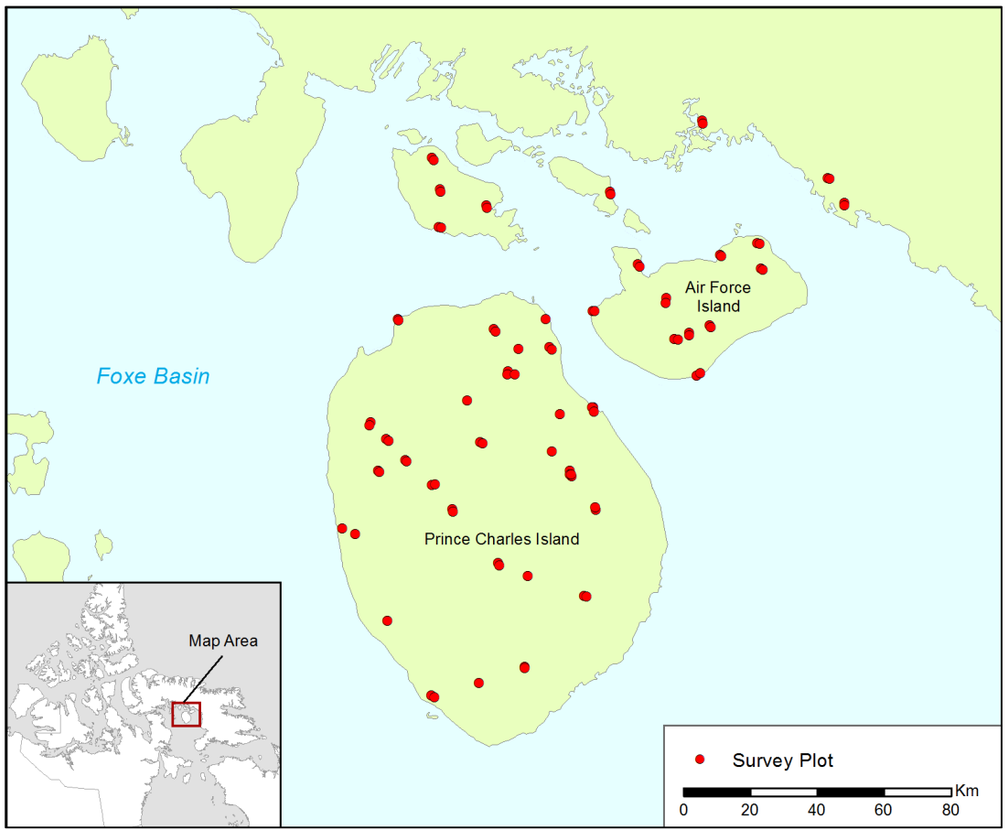

Figure 4. Locations of Arctic PRISM Tier 1, "rapid" survey plots visited in 2019 in the Foxe Basin area (Arctic PRISM Region 3)