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James Bay Shorebird Project

2013 Report

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Photo: Longridge Point

Report summarizing 2013 shorebird survey results from three camps on the western James Bay coast.

Land Acknowledgment

We would like to begin by acknowledging that the work carried out and reported upon here was in Treaty 9 territory and the land on which the study sites are located is the traditional territory of Mushkegowuk (Cree), Ojibwe/Chippewa, Oji-Cree, Algonquin, and Métis Peoples.

Introduction

The Hudson Bay Lowlands are the third largest wetland complex on earth and the coastal ecosystems of south-western Hudson Bay and James Bay are a global hotspot for breeding and staging waterbirds, waterfowl, shorebirds and other migratory birds (Manning 1952, Ross *et al.* 2003, Abraham and Keddy 2005, Abraham and McKinnon 2011). For shorebirds, the Lowlands are known or believed to harbour significant proportions of the provincial breeding populations of Hudsonian Godwit (*Limosa haemastica*) and Whimbrel (*Numenius phaeopus hudsonicus*) (Manning 1952, Morrison 1987, Skeel and Mallory 1996, Peck and James 1983, Peck 2007, Peck and Sutherland 2007, Prevett 1987, Walker *et al.* 2011). Several Arctic and sub-Arctic breeding shorebird species stage along the coast to add fat reserves and undertake partial moults (e.g., White-rumped Sandpiper (*Calidris fuscicollis*), Semipalmated Sandpiper (*C. pusilla*)) or complete moults (e.g., Dunlin (*C. alpina*)) in preparation for their migrations (Harrington *et al.* 1991, Parmelee 1992, Warnock and Gill 1996, Hicklin and Gratto-Trevor 2010, Abraham and McKinnon 2011).

Research on shorebirds throughout the Americas in the 1970s led to the establishment of the Western Hemisphere Shorebird Reserve Network (WHSRN) program in 1985 (Morrison 1983, 1984, Myers *et al.* 1987a, b). A site must meet two criteria to be considered for WHSRN designation: demonstrated importance to shorebirds and expressed landowner agreement. Three categories of WHSRN sites are recognised based on peak counts or use by a percentage of a population of a species: Sites of Hemispheric Importance hosting at least 500,000 shorebirds annually, or at least 30% of the biogeographic population for a species; Sites of International Importance hosting at least 100,000 shorebirds annually, or at least 10% of the biogeographic population for a species; and Sites of Regional Importance hosting at least 20,000 shorebirds annually, or at least 1% of the biogeographic population for a species (WHSRN 2009). Landowners must agree in writing to the following three conditions: to make shorebird conservation a priority at the site; to protect and manage the site for shorebirds; and to update WHSRN annually about the status of the site (WHSRN 2009).

During the 1990s, Environment Canada's Canadian Wildlife Service (CWS) compiled an inventory of potential WHSRN sites along the coasts of both Hudson Bay and James Bay (Morrison *et al.* 1991, 1995, Ross *et al.* 2003). Despite meeting criteria demonstrating the importance to shorebirds, efforts to date have failed to secure a WHSRN designation for any of the James Bay sites, leading to a significant and recognized gap in the WHSRN program.

The James Bay shorebird project (hereafter: the project) began when the Royal Ontario Museum (ROM) and the Ontario Ministry of Natural Resources (OMNR) partnered to survey birds at sites along the James Bay coast in 2009. Since then, CWS, Bird Studies Canada (BSC), Nature Canada and the Moose Cree First Nation have joined this partnership in various capacities to continue work on surveys of southbound staging shorebirds. This work initially included bird surveys at sites known to support staging shorebirds, with an emphasis on Red Knot (*C. canutus rufa*) to enable identification of critical habitat, as well as species at risk surveys for Yellow Rail (*Coturnicops noveboracensis*) and Short-eared Owl (*Asio flammeus*). Additional work to collect natural heritage information by staff at the Natural Heritage Information Centre of the OMNR has been conducted in concert with more recent surveys. Currently, the project

involves annual surveys of shorebirds staging at various sites along the south-western coast of James Bay.

Goals of the project are: to increase our ability to estimate population trends of shorebird species staging along the south-western James Bay coast; to understand movement patterns of these birds and their causes (local and flyway scale); and to obtain information that could be used to update the identification of important shorebird staging habitats as potential WHSRN sites based on recent research and traditional ecological knowledge. The intention is to use the results of this project to update information on Important Bird Areas and ultimately to protect habitat for the Endangered Red Knot[1] and other declining shorebird species by the nomination and eventual establishment of WHSRN site(s) for south-western James Bay. The objectives to meet these goals are to estimate variability of migration phenology (both annually and among species) and length of stay of staging shorebirds; to estimate annual variation in abundance of staging shorebirds; to assess habitat and food resource availability for staging shorebirds; and to determine the minimum proportion of the global Red Knot, subspecies *rufa*, population that uses the south-western James Bay coast.

Three field camps operated on the south-western coast of James Bay in 2013; Little Piskwamish Point, Longridge Point, and Hannah Bay – East Point between 16 July and 26 August (see Figure 1). From these field camps, dedicated volunteers and staff counted shorebirds during their southbound migration. The timing of these counts was driven by the tide cycle, in that birds are more easily counted when they concentrate because of the flooding (incoming) and ebbing (outgoing) tides.

Study Areas

The Longridge Point camp (51.798942°N, 080.69204°W) has been surveyed annually since 2009. It is located approximately 60 km northwest of Moosonee (Figure 1). The site is characterised by a prominent point that juts out into James Bay. Sheltered areas have formed on either side of the point, where fresh water tributaries flow out into the bay. These areas provide excellent roosting and feeding opportunities for migrant shorebirds. The gradient of the shoreline is very flat. The spruce forest is close to the high tide line, generally within 1 km, and opens to willow thickets and meadow marsh, eventually grading into brackish and saline tidal marshes. Based upon aerial surveys, and supported by ground surveys of this project, the area is known to host large concentrations of shorebirds (e.g., Semipalmated Sandpiper, Red Knot, Pectoral Sandpiper) during autumn migration.

The Little Piskwamish Point camp (51.683427°N, 080.565783°W) was visited in 2011 and 2012. It is located approximately 45 km northwest of Moosonee, and about 20 km south-east of Longridge Point (Figure 1). The habitat is similar to Longridge, except that there is no prominent point. Based upon aerial surveys, and supported by ground surveys of this project, the area is known to host large concentrations of shorebirds (e.g., Red Knots, Dunlin and White-rumped Sandpiper) during southern migration.

The Hannah Bay – East Point camp (51.381717°N, 079.687417°W) is the most easterly of the project's field camps, and was surveyed for the first time in 2013. It is located adjacent to Hannah Bay about 25 km north of the mouth of the Harricanaw River and about 70 km east-north-east of Moosonee (Figure 1). The site is located within the Hannah Bay Migratory Bird Sanctuary. The spruce forest (e.g., *Picea glauca*, *P. mariana*) begins within 1km inland from the high tide line. Spruce

[1] The Red Knot was listed as Endangered in Ontario in 2008 under the provincial Endangered Species Act *2007*; in 2007 COSEWIC designated the Red Knot as Endangered; and in 2012 the rufa subspecies was listed as Endangered, roselaari subspecies was listed as Threatened, and the islandica subspecies was listed as Special Concern under Schedule 1 of the federal *Species at Risk Act* (SARA).

forest interspersed with *Typha* wetlands give way to willow thickets (*Salix sp.*) transitioning to supratidal graminoid meadow-marsh (*Carex sp.*) interspersed with small pools. This eventually transitions to brackish and saline tidal marsh (e.g., *Hippuris tetraphylla*) interspersed with rocky sections, tidal inlets and exposed mudflats. Previous surveys of this region have shown large concentrations of shorebirds (e.g., Dunlin) during autumn migration (Sinclair 1986).

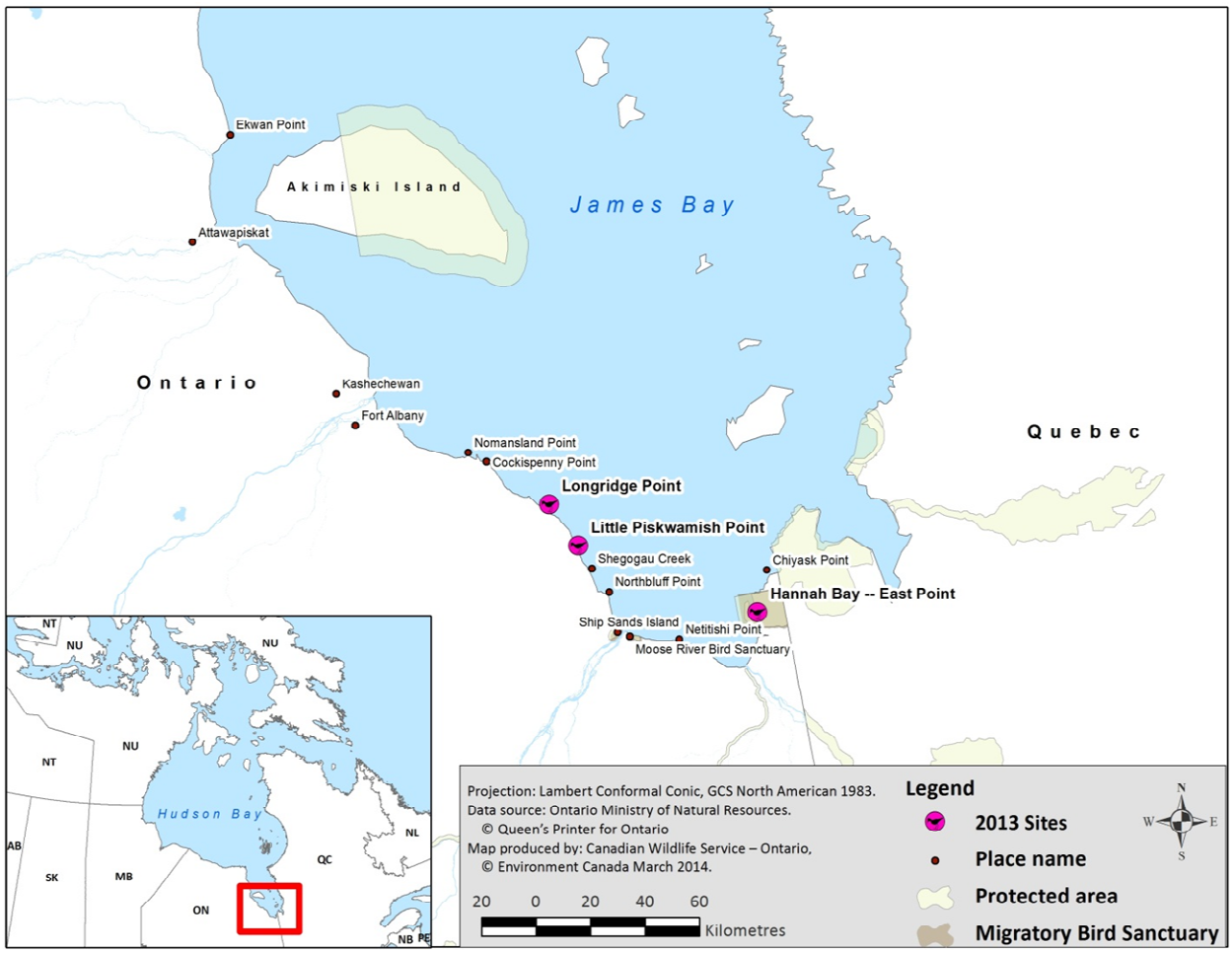
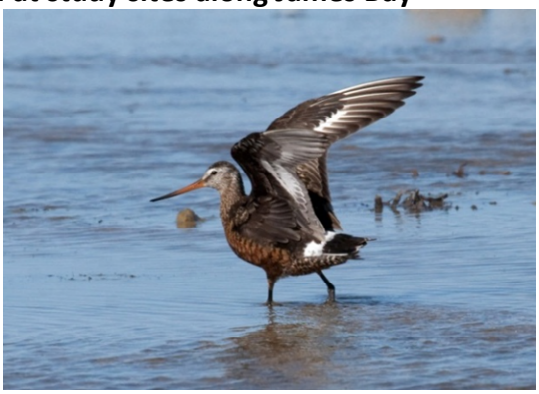


Figure 1. Field camp sites of the James Bay Shorebird Project, 2013.

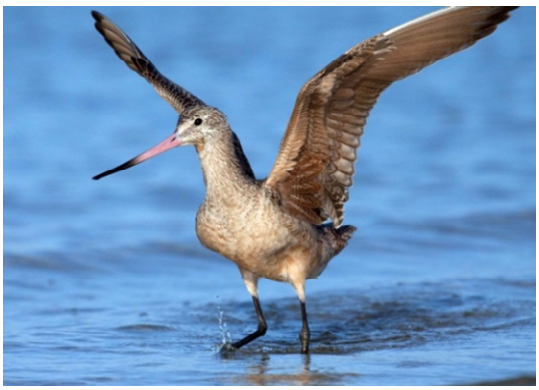
Images of the most commons species encountered at study sites along James Bay

Semipalmated Plover



Hudsonian Godwit

Greater Yellowlegs



Marbled Godwit

Lesser Yellowlegs

Ruddy Turnstone

Red Knot – with individual colour marked flag banded in Argentina

Least Sandpiper

Sanderling

White-rumped Sandpiper

Semipalmated Sandpiper

Pectoral Sandpiper

Dunlin

Results and Discussion

Longridge Point

A maximum of five people were stationed at Longridge Point during the season. During August, 2-3 individuals from Little Piskwamish walked to Longridge Point to survey for 2-3 days. The camp was active from 16 to 29 July, then sporadically: 4-7, 11-13, 18-20, and 24-26 August 2013. Longridge was operated on a sporadic schedule in August due to logistical considerations. The period in July focused on banding Semipalmated Sandpipers and affixing radio tags to these birds. A total of 40 birds was banded during the period. A crew from Mount Allison University, studying Semipalmated Sandpipers in the Bay of Fundy in Atlantic Canada, are interested in determining, among other things, the length of stay of each individual in Fundy. The radio tags send signals to strategically placed towers notifying researchers of each bird's arrival and departure.

During this season at Longridge Point a total of 195 hours was spent in the field, which is 148 fewer hours than in 2012. There were 113 bird species recorded during this time. Tables 1 and 2 show the top ten estimated high counts of bird species and shorebird species, respectively, encountered each month during the survey period. Red Knot numbers were about average at Longridge Point this season (2009-2013 , *unpubl. data*), and rebounding from low 2012 numbers (max=616; Friis et al. 2013). Semipalmated and White-rumped sandpipers continued to be well represented at Longridge Point. Although results are incomplete, two Semipalmated Sandpipers banded and tagged at Longridge Point were recorded by towers in the Bay of Fundy and a number were recorded by towers along the Atlantic Seaboard.

Table 1. Top 10 estimated high counts of bird species encountered on various dates at Longridge Point, 16 July to 26 August 2013. See text for specific periods of coverage.

Common Name	July High Count
Black Scoter	2500
Red Knot	1500
Semipalmated Sandpiper	1100
White-rumped Sandpiper	750
Hudsonian Godwit	400
Canada Goose	300
Pectoral Sandpiper	270
Ruddy Turnstone	209
American Black Duck	200
Common Goldeneye	200

Common Name	August High Count
White-rumped Sandpiper	5950
Black Scoter	5500
Canada Goose	1200
Red Knot	710
Semipalmated Sandpiper	620
Bonaparte's Gull	600
Pectoral Sandpiper	306
Hudsonian Godwit	260
Lesser Yellowlegs	234
Dunlin	225

Table 2. Top 10 estimated high counts of shorebird species encountered on various dates at Longridge Point, 16 July to 26 August 2013. See text for specific periods of coverage.

Common Name	July High Count
Red Knot	1500
Semipalmated Sandpiper	1100
White-rumped Sandpiper	750
Hudsonian Godwit	400
Pectoral Sandpiper	270
Ruddy Turnstone	209
Greater Yellowlegs	147
Lesser Yellowlegs	138
Whimbrel	130
Least Sandpiper	85

Common Name	August High Count
White-rumped Sandpiper	5950
Red Knot	710
Semipalmated Sandpiper	620
Pectoral Sandpiper	306
Hudsonian Godwit	260
Lesser Yellowlegs	234
Dunlin	225
Ruddy Turnstone	139
Black-bellied Plover	89
Least Sandpiper	86

Little Piskwamish Point

A maximum of six people were stationed at Little Piskwamish Point. During their stay, 2-3 individuals from the camp walked to Longridge for 2-3 day surveys. The camp was active from 1-26 August 2013. During this period a total of 131 hours were spent in the field recording a total of 134 bird species. This is four fewer hours but 35 more species than in 2012. Tables 3 and 4 show the top ten estimated high counts of bird species and shorebird species, respectively, encountered each month during the survey period. White-rumped Sandpipers were the most abundant species recorded. This is mainly due to the timing of camp records where it is more likely to capture the peak of White-rumped Sandpiper movement through the area, as compared to records from July.

Table 3. Top 10 estimated high counts of bird species encountered at Little Piskwamish Point, 1 and 26 August 2013.

Common Name	August High Count
White-rumped Sandpiper	19420
Black Scoter	5000
Semipalmated Sandpiper	3045
Red Knot	1679
Northern Pintail	1600
Canada Goose	1219
Dunlin	1200
Red-winged Blackbird	772
Green-winged Teal	509
Hudsonian Godwit	443

Table 4. Top 10 estimated high counts of shorebird species encountered at Little Piskwamish Point, 1 and 26 August 2013.

Common Name	August High Count
White-rumped Sandpiper	19420
Semipalmated Sandpiper	3045
Red Knot	1679
Dunlin	1200
Hudsonian Godwit	443
Lesser Yellowlegs	376
Greater Yellowlegs	317
Pectoral Sandpiper	282
Semipalmated Plover	133
Ruddy Turnstone	119

Hannah Bay – East Point

A maximum of six people were stationed at Hannah Bay – East Point. The camp was active from 16 July to 26 August 2013. During this period, a total of 291 hours was spent in the field. There were 123 bird species observed during this time. Tables 5 and 6 show the top ten estimated high counts of bird species and shorebird species, respectively, encountered each month during the survey period. Semipalmated Sandpiper is the most common species at East Point. Red Knots were only detected in very low numbers and as fly-by observations. Good numbers of waterfowl stage in the area including Canada Goose, Green-winged Teal, American Wigeon and American Black Duck.

Table 5. Top 10 estimated high counts of bird species encountered at Hannah Bay – East Point, 16 July to 26 August 2013.

Common Name	July High Count
Semipalmated Sandpiper	12650
Lesser Yellowlegs	979
White-rumped Sandpiper	558
Greater Yellowlegs	554
Canada Goose	550
Pectoral Sandpiper	489
Hudsonian Godwit	463
Least Sandpiper	425
American Wigeon	271
American Black Duck	245

Common Name	August High Count
Semipalmated Sandpiper	7454
White-rumped Sandpiper	4239
Canada Goose	2912
Hudsonian Godwit	2383
Greater Yellowlegs	513
Green-winged Teal	494
Lesser Yellowlegs	435
American Black Duck	324
Least Sandpiper	270
Pectoral Sandpiper	259

Table 6. Top 10 estimated high counts of shorebird species encountered at Hannah Bay – East Point, 15 July to 16 August 2013.

Common Name	July High Count
Semipalmated Sandpiper	12650
Lesser Yellowlegs	979
White-rumped Sandpiper	558
Greater Yellowlegs	554
Pectoral Sandpiper	489
Hudsonian Godwit	463
Least Sandpiper	425
Semipalmated Plover	118
Marbled Godwit	99
Sanderling	65

Common Name	August High Count
Semipalmated Sandpiper	7454
White-rumped Sandpiper	4239
Hudsonian Godwit	2383
Greater Yellowlegs	513
Lesser Yellowlegs	435
Least Sandpiper	270
Pectoral Sandpiper	259
Black-bellied Plover	101
Semipalmated Plover	53
Red Knot	42

Future Plans

Plans for the next three years include trapping and attaching radio tags to shorebirds at field camps as well as establishing temporary towers with radio receivers at various sites along the coast that will be used to detect marked shorebirds. This project will contribute to a larger North America wide project, Motus. More information can be found at sensorgnome.org.

Work is currently underway to determine the best path forward for continued surveying of staging shorebirds at sites along the western James Bay coast. Part of this work entails drafting a sampling plan by winter 2015. In the meantime, surveys are expected to continue in an effort to maintain annual coverage at core sites, such as Longridge Point, while gaining new or updated information from other survey locations that are either new to the project or have been surveyed historically.

Finally, it is hoped that aerial surveys will be completed in future years following the same methodology as in previous aerial surveys of the James Bay coast.

Acknowledgements

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