

Shell Conservation Internship Program

2005

FINAL REPORT

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Johnson's Mills and the Shorebirds



Johnson's Mills Shorebird Centre (D. Roy)

Johnson's Mills Shorebird Interpretive Centre is located approximately 7 km from the village of Dorchester, in Johnson's Mills, New Brunswick. The shorelines of Shepody Bay in the upper reaches of the Bay of Fundy, just south of the confluence of the Memramcook and Petitcodiac Rivers, are host to a massive migration of shorebirds each summer during their fall migration. The Bay of Fundy is home to the highest tides in the world and their movement and ability to deposit fine sediments along its floor has created a unique coastal mudflat ecosystem in which many species of both plants and animals alike are dependent upon for survival.

Thirty-four species of shorebirds have been observed visiting the mudflats found in the upper reaches of the Bay of Fundy. Of these some of the more common species found are: Semipalmated Plover (*Charadrius semipalmatus*), Least Sandpiper (*Calidris minutilla*), White-rumped Sandpiper (*Calidris fuscicollis*), Black-bellied Plover (*Pluvialis squatarola*), Ruddy Turnstone (*Arenaria interpres*), and Short-billed Dowitcher (*Limnodromus griseus*). But by far the most abundant shorebird is the Semipalmated Sandpiper (*Calidris pusilla*), which makes up to 95% of all shorebirds visiting the area.

Due to the vast number of shorebirds that are known to congregate each year, this area gained international significance in 1987 when Shepody Bay was designated under the Ramsar Convention of 1971 as a wetland of international importance and it also became Canada's first Hemispheric Shorebird Reserve under the Western Hemispheric Shorebird Reserve Network (WHSRN). To gain WHSRN status, an area must host over 500 000 individuals or 30% of the world's population of a species annually. For the Semipalmated Sandpiper, up to 95% of the world's population temporarily stops in the Bay of Fundy during their southward migration. As part of the WHSRN Network, the areas are twinned with appropriate counterparts. The Fundy Hemispheric Shorebird Reserve is twinned with three reserves in Suriname; Wia-Wia, Coppename, and Bigi Pan. These northeastern coastal South American partner reserves are the wintering grounds for millions of Semipalmated Sandpipers and together all of these reserves are able to provide much needed shorebird habitat conservation.



Roosting Shorebirds (Photo: E. Walsh)

The Semipalmated Sandpiper, one of the smallest shorebirds found at Johnson's Mills, is named for its partially webbed feet. It has a body length ranging from 15 to 17 cm and is an average of only 22 grams in weight when first arriving to Johnson's Mills. It is characterized by its round-tipped black bill, and its long black legs. As for the majority of shorebirds, the migration of the Semipalmated Sandpiper is very complex, spanning over two continents, and relying on staging areas that are often comprised of unique

habitats/ecosystems. It is for this reason that after their arctic breeding they begin to arrive to various mudflats along the upper reaches of the Bay of Fundy, including those found at Johnson's Mills, while en route to South America.

The females are usually the first to arrive at Johnson's Mills, beginning in mid to late July. They leave behind their precocial offspring very early in life at 11 days of age, leaving the remainder of the brooding to the males. The female has adapted this early desertion as a means to further her survival by migrating to areas where she can forage to regain energy that was lost from egg production. Soon after the juveniles commence fledging (19 days), the males will leave for the Bay of Fundy and will begin to arrive by the first of August, leaving the juveniles to make their first migration by themselves. The juveniles are the last to arrive in mid to late August.

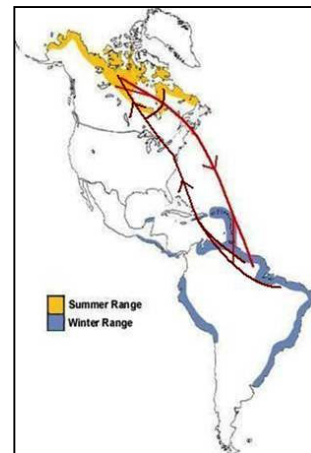


Disturbed shorebirds (Photo: E. Walsh)

In North America, the mudshrimp, *Corophium volutator*, a tiny burrowing amphipod, is only found within the muddy substrate of the Bay of Fundy and the Gulf of Maine. The perfect combination of clay, silt, and fine sand sediments provide the appropriate habitat conditions for the small invertebrate to construct the sturdy u-shaped burrows in which they live. This white-coloured crustacean, measuring an average of 4 to 5 mm, is the sole reason why the Semipalmated Sandpiper

makes its way to the Bay of Fundy each year. The Semipalmated Sandpiper's peak concentrations at Johnson's Mills coincide with the *Corophium*'s population explosion during their breeding period in August. At this time mudshrimp can be found in concentrations of up to 60 000 per square metre. During a single low tide, which occurs twice daily, a sandpiper can eat an average of 14 000 mudshrimp. *Corophium* are a lipid-rich food source for the foraging sandpipers, who probe the mudflats for their fat juicy meal or pierce them as the males emerge from their burrows in search of mating opportunities. In 10-14 days, each sandpiper is able to approximately double their weight from 22 grams to 40+ grams by eating these mudshrimp. For this reason the *Corophium* are an important and critical component for the survival of the Semipalmated Sandpiper. The mudshrimp is the sandpiper's "fuel for flight" and is the keystone species of the Bay of Fundy's mudflat ecosystem, without which the ecosystem could not be sustained.

Once the Semipalmated Sandpipers store enough fat reserves for the remainder of their journey, they will leave the Bay of Fundy for Suriname in South America on a non-stop 3 to 4 day flight over the Atlantic Ocean, covering a distance of more than 3 000 km. Since the last leg of their fall migration is an extensive transatlantic flight, it is extremely important during their stopover that they can remain undisturbed at critical roosting times during high tide.



Migration route (CWS)

These few hours per day are the only chances that the Semipalmated Sandpipers and other shorebirds have to rest along the beaches to conserve newly acquired energy resources. The slightest disturbance from both predators and humans will cause them to burst into flight, wasting precious energy needed for their transatlantic flight. If they are over-disturbed and do not have a chance to rest, they will reduce their energy stores, rendering it more difficult to make it to their wintering grounds.

Working at Johnson's Mills

The Nature Conservancy of Canada (NCC) is an organization committed to the protection of ecologically significant lands. In 1994, NCC began to secure property in the Johnson's Mills area. They, along with many other partners, realized that the need to protect shorebirds due to their complex migration was extremely important. To date NCC has acquired 305.5 acres of land along a 5 km stretch of shoreline in Johnson's Mills with the protection of the shorebirds in mind.



NCC properties at Johnson's Mills



Walsh viewing birds
(Photo: D. Roy)

As part of the stewardship continuum and to deal with the increase in visitors coming to view the large percentage of the world's population of the Semipalmated Sandpiper, NCC opened their first interpretive centre in July 2000. The interpretive centre is open daily in the months of July and August and is staffed by 5 bilingual, well-informed seasonal interpreters each summer. The main focus of the interpreters' work is to ensure that the shorebirds are protected during their short stay in the area. To do so, we educate the public on the life history of the Semipalmated Sandpiper and the need to not disturb them while they are here, particularly when they are trying to save energy during roosting. Also, as part of our job we conduct daily counts of shorebird numbers, species-specific numbers, visitor numbers, Peregrine Falcon, Merlin, and other raptor activity, and any other interesting observations. Our observations are recorded both in a logbook and in an electronic file that is shared daily with such places as the Mary's Point Shorebird Research Station, Nature Conservancy of Canada, Canadian Wildlife Service, and the New Brunswick Federation of Naturalists.

Our work at the centre does not just stop with providing interpretation to the public but we also perform day to day maintenance tasks for our properties. This includes light carpentry work, landscaping, painting, putting up signage, conducting flora and fauna



Walsh working on ID (D. Roy)

inventories, and improving display information at both the centre and observation deck. This past summer saw more information about NCC available to the visitors by creating comprehensive information displays placed both in the centre and at the parking lot to the observation deck. We also provided more information about shorebird viewing tips, high



tide schedules, and when visitors would be able to see the highest concentration of shorebirds. All of this information was located around the newly installed tidal clock (created in summer 2004) which indicates daily the 4-hour period which is the optimal time to view the shorebirds.

Specifically, I was in charge of managing the centre and staff during my 16-week Shell Conservation Internship.

I assisted with conducting staffing interviews and choosing the summer staff for 2005. Once all staff was at the centre, I provided orientation and training about NCC, the shorebirds and Johnson's Mills and supervised day to day operations. My duties entailed handling donation, sale and petty cash funds, completing a flora inventory by pressing and mounting all specimens, increasing the holdings of our reference library by gathering additional journal articles, literature, and videos, and completing a comprehensive employee guidebook to be read by all interpretive staff.

Shell Conservation Internship Program

My experience with the Shell Conservation Internship Program was very positive. During my employment I was able to further enhance my skills in both flora and bird identification, as well as be part of a most incredible partnership that continues between Shell Canada Limited and the Nature Conservancy of Canada. My experience here at Johnson's Mills has given me insight on how rewarding it is to share knowledge on conservation issues and the need to protect ecologically significant



Dorchester Cape (Photo: E. Walsh)

lands and the species use them. I have had the opportunity to meet many people from all corners of the world who share the love of nature on various levels with me. This experience has further assured me that environmental and conservation work is where I



Disturbed shorebirds (Photo: E. Walsh)

want to be because the rewards received from providing protection to something so important to me is far beyond anything that I could imagine. Also, the Shell Conservation Internship Program Calgary wrap-up event was one of the highlights of my work this summer (of course the sandpipers are still number 1!!!). It was incredible to be 1 of 17 young people from coast to coast dedicated to conservation. All though a brief event, the value of what I learned from Shell Canada Limited about their environment efforts and learning more about

NCC was extraordinary.

Most importantly, with the Johnson's Mills Shell Conservation Internship, I had the ability to spend everyday with my little "peeps". No matter how many times I see them, I never tire. Johnson's Mills is perhaps the best place in the world to work because everyday I could see massive flocks of Semipalmated Sandpipers, flying in unison, filling the sky. The protection of these shorebirds is something that I will remain very passionate about and having a hands-on opportunity to keep them safe by sharing my enthusiasm about them with visitors will be something that I keep with me for all of my life.



Holding banded sandpiper
(Photo: E. Walsh)