

**Southwest Nova Scotia Habitat Conservation Strategy
Summary Report January 2017**

Habitat Conservation Priority – Beaches and Dunes

The following represents one of a series of summary documents that have been developed to aide in the dissemination of information presented in the *Southwest Nova Scotia Habitat Conservation Strategy*. For more detailed information, please see the final report, Farrow & Nussey 2015.

Beaches and dunes in the Southwest Nova Scotia (SWNS) bioregion are ecologically significant ecosystems as they host a number of rare and at risk species including Piping Plover, Red Knot, and Savannah Sparrow. They provide critical nesting habitat for a number of bird species, including plovers and terns, which lay eggs in shallow scrapes on exposed sand and cobble and rely on isolation to reduce the likelihood of predation by mammals and other birds. Many of these species are in decline, partly due to loss or degradation of breeding habitat and anthropogenic disturbances. In Nova Scotia, Piping Plovers nest on fewer than 30 beaches, with about two-thirds of the province's Piping Plovers breeding on the Atlantic Coast in the SWNS bioregion, mostly within the boundaries of established IBAs. The Atlantic Coast may be particularly important for this species, as banding studies have shown that individuals breeding in SWNS demonstrate strong site fidelity for beaches in the region and represent a subpopulation that is reproductively isolated from the rest of the Eastern Canadian population (Amirault-Langlais 2014). Threats to Piping Plovers in the region include habitat loss and degradation, predation pressures, and human disturbance during the breeding season. Beaches in the bioregion are also important for a number of congregatory shorebirds, including the Semipalmated Sandpiper, Black-bellied Plover, Killdeer, Sanderling, and Dunlin; as a group, shorebirds have been exhibiting major declines across North America (NABCI 2012). Conservation of beach and dune habitat within the SWNS bioregion will contribute to the conservation of at least 26 priority species.

Nested Conservation Priority Species

- Piping Plover (EN)
- Red Knot (EN)
- Savannah Sparrow (SC)
- Black-bellied Plover
- Killdeer
- Sanderling
- Dunlin
- Semipalmated Plover

Landscape context assessment of beaches and dunes: Good

The majority of beach and dune habitat in the SWNS bioregion, including almost all of the NAAP critical occurrences of beaches and dunes, are scattered along the south-facing shorelines with the Atlantic Ocean and Gulf of Maine, making up 0.1% of the total area of the bioregion (Figure 1). Development within the bioregion is concentrated along the coastlines; nonetheless approximately 80% of the land adjacent to the coast is classified as undeveloped (CBCL Ltd. 2009). A high percentage of the coastline is under private ownership, so there is considerable potential for increased coastal development. The sensitivity of the coastline to sea-level rise and coastal erosion is moderate to high along the Atlantic Coast (Shaw *et al.* 1998). Shoreline hardening and associated loss of sediment may further compound the impacts of sea-level rise by limiting the landward migration of beaches and dunes. The average Landscape Context Index¹ for beaches and dunes in the SWNS bioregion is 12.54, which is considered to be an indication that, on average, the habitat conservation priority is surrounded primarily by natural cover and has good landscape context that will contribute toward the long term viability of the ecosystem type (calculated using NAAP data). In total 353 ha (14.6%) of beach and dune habitat in the bioregion are currently under protected or conservation status.

Condition assessment of beaches and dunes: Fair

Beaches and dunes face growing pressures from development, recreational activities, and climate change effects. The largest area of protected beaches within the SWNS bioregion is within Kejimikujik National Park Seaside Adjunct, which contains St. Catherine's River Beach and Little Port Joli Beach, both critical sites for nesting Piping Plover (S. Abbott, per. comm.). These two extensive beaches have minimal infrastructure and are partially closed to public access during the April to August nesting period for Piping Plover. Five beaches are located in provincial parks within the bioregion – Rissers, Summerville, Sand Hills, Port Maitland and Mavillette. Though provincial park designation provides a measure of protection for these beaches, this may also contribute to their degradation through the development of infrastructure, such as roads, parking lots, and trails established to address increased use. Such infrastructure, accompanied with increased use, can alter the dynamics of beach and dune ecosystems, resulting in semi-permanent to permanent conversion of

¹ *Landscape Context Index is a measure that refers to the relative amount of development, agriculture, quarries, roads, and other fragmenting features directly surrounding ecosystem occurrences. It provides an estimate of isolation of occurrence as well as potential future encroachment. An LCI below 30 for coastal ecosystems indicates that the habitat conservation priority is surrounded primarily by natural cover with higher LCIs indicating increasing amounts of development directly surrounding ecosystem occurrences. An LCI above 50 is considered to be high, with individual occurrences usually rejected as critical (Anderson et al. 2006).*

habitat and associated losses for the species they support.

The anticipated increase in the frequency and intensity of storms in relation to climate change may further impact the condition of beaches and dunes in the bioregion (US CCSP 2009). There are 18 additional beaches designated as protected beaches under the *Nova Scotia Beaches Act*, providing for their protection as significant and sensitive environmental and recreational resources, although the Act is designed primarily to prevent the removal of sand and other aggregate material.

Beaches and dunes can be heavily impacted by human activities, particularly off-highway vehicle use and other recreational activities. Off-highway vehicles are damaging to dune systems and the associated species that they host through the degradation of dune structure, destruction of stabilizing dune vegetation, as well as alteration of wildlife activity patterns and destruction of shorebird nests. Recreational beach users may disturb breeding shorebirds, which can result in changes in normal nesting or feeding behaviour, and ultimately nest failure (Environment Canada 2012). These activities include pedestrian traffic, unleashed dogs, camping and campfires, and the collection of shells or wrack (Environment Canada 2012). Human activities can also result in artificially high predator populations of opportunistic native species (e.g., crows, gulls, racoons) and predation by these species has been identified as one of the most important factors limiting populations of Piping Plover across their North American breeding range (Goossen *et al.* 2002). Many beaches used traditionally for breeding by Piping Plovers within the bioregion have been abandoned due to natural and human-induced changes.

There is little information on the impact of invasive species on beaches and dunes in the SWNS bioregion, however *Rugosa Rose* is an emerging invasive that has been documented in Digby County and elsewhere in the region (S. Basquill, per. comm.). Once established on sandy coasts, this dense shrub out-competes most native vegetation species (MTRI 2012). Hill *et al.* 2012 surveyed beach and dune systems on Cape Breton Island and northern mainland Nova Scotia and found some dune systems on Cape Breton Island to be heavily colonized by *Rugosa Rose* with negative impacts on native dune communities, and a further two of nine systems surveyed in northern mainland Nova Scotia had *Rugosa Rose*.

Size assessment of beaches and dunes: Fair

In total there are 2421 ha of beaches and dunes, making up 0.1% of the total area of the SWNS bioregion. Of this area, 920 ha were identified as critical in the NAAP, representing 44% of the critical occurrences of beaches and dunes in Nova Scotia (note that the bioregion contains 29.3% of the total area of the province). The screening criterion for the minimum size of critical occurrences of beaches and dunes in the NAAP was 8 ha (Anderson *et al.* 2006). The average size of beach and dune complexes in the SWNS bioregion is 6 ha, which is less than the NAAP minimum size criteria for critical occurrences; however, throughout the Northern Appalachian-Acadian Ecoregion, contiguous examples of beach and dune complexes are generally small, with 82% of occurrences less than the 8 ha minimum size criteria.

Current threats to beaches and dunes

- 1.1 Cottage and residential development
- 1.3 Beach/recreational development
- 2.4 Marine shellfish and finfish aquaculture
- 4.3 Shipping activity oil spills & discharges
- 6.1 Recreational beach use (Threat status: High)
- 6.1 Off-highway vehicle use
- 8.1 Invasive plants
- 8.2 Problematic native species



Figure 1. Beach and dune habitat within the Southwest Nova Scotia bioregion.

Emerging threats to beaches and dunes

- 11.1 Sea-level rise and coastal erosion
- 11.5 Storm-induced coastal erosion (Threat status: High)

Overall assessment of beach and dune habitat in the Southwest Nova Scotia bioregion: Fair

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Southwest Nova Scotia Beaches and Dunes

Table 1. Conservation actions related to beaches and dunes for conservation partners in the Southwest Nova Scotia bioregion.

Conservation Actions¹ Description of related action (specific and measurable if possible)	Collaborators	Importance²	Date for Completion	Priority Habitat(s)³	Primary Related Threat(s)
1. Land/Water Protection					
1.1 Site/Area Protection Contribute to Marine Protected Area planning within the Scotian Shelf marine bioregion, and the identification and description of Ecologically and Biologically Significant Areas and other habitat classification schemes that contribute towards the protection of 10% of coastal and marine areas by 2020.	DFO, EC, PC	Necessary	2020	Beaches and Dunes, Tidal Marshes, Tidal Flats, Coastal Islands	
1.1 Site/Area Protection Secure 500 ha of priority 1 and priority 2 coastal habitat to protect them from development.	NCC	Necessary	2025	Beaches and Dunes, Tidal Marshes, Tidal Flats, Coastal Islands	1.1 Cottage and residential development
1.1 Site/Area Protection Acquire priority coastal habitat and priority habitat for ACPF as opportunities arise.	NSNT	Necessary	2025	Beaches and Dunes, Tidal Marshes, Tidal Flats, Coastal Islands	
2. Land/Water Management					
2.1 Site/Area Management Implement management plans for Sand Pond National Wildlife Area and Sable River, Port Joli, Haley Lake, and Port Hebert Migratory Bird Sanctuaries.	EC	Necessary	Ongoing	All	
2.1 Site/Area Management Complete ecological risk assessments to assess threats to species and ecosystems within existing and proposed protected areas. Create a spatial layer of sensitive habitats and ecosystems to aid in planning and an action plan for protected area managers.	Province of NS	Beneficial		All	
2.1 Site/Area Management Continue ecological integrity monitoring to assess the state of forest, freshwater, wetland, and coastal ecosystem health in Kejimikujik National Park through the monitoring, analysis, and reporting of approximately 30 measures (e.g., forest birds, salamanders, water quality, soft-shell clams, Eelgrass) and by summarizing these findings in the <i>State of the Park Report</i> .	Parks Canada through collaboration with many partners	Necessary	Ongoing	All	
2.2 Invasive/Problematic Species Control Establish a structure to facilitate collaboration and strategic decision making regarding invasive species control techniques.	NCC, MTRI	Beneficial	2020	All	8.1 Invasive/ alien species/ diseases

¹ Categories based on IUCN – CMP Unified Classification of Conservation Actions Needed (Version 2.0). Actions are meant to be specific and measurable if possible, and are not listed in order of importance.

² CRITICAL: Conservation actions that, without implementation, would clearly result in the reduction of viability of a biodiversity target or the increase in magnitude of a critical threat within the next 5-10 years. Also includes research information that is needed before key decisions can be made on the management of biodiversity targets. NECESSARY: Conservation actions that are needed to maintain or enhance the viability of biodiversity targets or reduce critical threats. Also includes research that will assist in decisions on management of biodiversity targets. BENEFICIAL: Conservation actions that will assist in maintaining or enhancing viability of biodiversity targets and reducing threats.

³ Priority Habitats: Beaches and dunes, tidal marshes, tidal flats, coastal islands, freshwater wetlands, Acadian forest mosaic, riparian and floodplain systems, grasslands/agro-ecosystems, barrens.

Southwest Nova Scotia Beaches and Dunes

Conservation Actions ¹ Description of related action (specific and measurable if possible)	Collaborators	Importance ²	Date for Completion	Priority Habitat(s) ³	Primary Related Threat(s)
2.2 Invasive/Problematic Species Control Raise awareness of invasive species in Nova Scotia and the role they play in ecosystems through the Backyard Biodiversity project.	PC, MTRI	Beneficial	Ongoing	All	8.1 Invasive / alien species/ diseases
3. Species Management					
3.1 Species Management Continue to work together through the coordination of volunteers and partners in Piping Plover monitoring (e.g., breeding success, threats), breeding habitat protection (e.g., on-beach signage, fencing), and stewardship on beaches in SWNS, including monitoring collaborations, outreach, and volunteer celebration events.	BSC, EC, PC	Necessary	Ongoing	Beaches and Dunes	6.1 Recreational beach use
3.1 Species Management Engage with international (U.S. and Caribbean) partners in Piping Plover conservation to improve information sharing.	BSC	Beneficial	Ongoing		
3.2 Species Recovery Engage and consult with all partners in the development of SAR recovery documents, and support the activities described within recovery documents for the schedule of studies for SAR and the identification of their critical habitat within the SWNS bioregion.	EC, NSDNR, Academic Institutions, NSNT, NCC, MTRI	Necessary	Ongoing	All	
4. Education and Awareness					
4.2 Training Continue to facilitate opportunities for volunteers to engage in regional SAR and conservation programs in the Southwest Nova Biosphere Reserve through the Kejimkujik Southwest Nova Volunteer Program. Stewardship tools and guides will be developed and distributed, including <i>Species at Risk in Nova Scotia</i> , <i>Healthy Beaches and Dunes</i> , and <i>Invasive Alien Species in Nova Scotia</i> .	PC, Friends of Keji, MTRI, BSC, Acadia University	Beneficial	Ongoing	All	
4.3 Awareness and Communications Address habitat threats through the education and engagement of stakeholders, landowners, and landusers.	NSNT	Beneficial	Ongoing		
5. Law and Policy					
5.1.2 Legislation (National level) <i>Implement the Migratory Bird Convention Act, Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act, Species at Risk Act, Canadian Environmental Protection Act, Canada Wildlife Act, Environmental Enforcement Act, Canadian Environmental Assessment Act, Fisheries Act.</i>	EC, DFO	Necessary	Ongoing		
5.4 Compliance and Enforcement Undertake wildlife and environmental enforcement activities (EC Wildlife Enforcement, Environmental Enforcement); address illegal hunting and disturbance, illegal activities and habitat destruction	EC, Province of NS	Necessary	Ongoing	All	

Southwest Nova Scotia Beaches and Dunes

Conservation Actions ¹ Description of related action (specific and measurable if possible)	Collaborators	Importance ²	Date for Completion	Priority Habitat(s) ³	Primary Related Threat(s)
6. Livelihood, Economic, and Other Incentives					
6.4 Conservation Payments Implement and encourage the use of EC Ecological Gifts (Ecogifts) program.	EC, NCC, NSNT	Necessary	Ongoing	All	
7. External Capacity Building					
7.2 Alliance and Partnership Development Provide EC-CWS input into: Staying Connected Initiative, Western Hemispheric Shorebird Reserve Network, and Important Bird Areas.	EC through collaboration with many partners	Beneficial	Ongoing	All	
7.3 Conservation Finance Communicate, inform, and increase awareness related to funding opportunities for conservation: <i>North American Wetland Conservation Act</i> (NAWCA)/Eastern Habitat Joint Venture (EHJV), North Atlantic Landscape Conservation Cooperative (NALCC); National Conservation Plan (NCP): Atlantic Ecosystems Initiative (AEI), Habitat Stewardship Program (HSP), Aboriginal Fund for Species at Risk (AFSAR), National Wetland Conservation Fund (NWCF).	EC, US Federal and State partners	Necessary	Ongoing	All	
7.3 Conservation Finance Continue to engage longstanding/key funding partners to support conservation work in the SWNS bioregion.	NCC, MTRI, NSNT, ENGOS	Necessary	Ongoing	All	