

**Piping Plover Beach Report Card:  
Evaluating recovery progress on NS beaches  
Final Report to  
NS Species at Risk Conservation Fund**



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**Project Goal:**

Understand the health of NS beaches upon which endangered Piping Plover and other sensitive species depend and prompt actions that celebrate successes and address top human-caused threats.

**Project Objectives:**

1. Complete a comprehensive analysis of threats, stewardship and Piping Plover population and productivity for 40 coastal beaches in NS using five years of survey data.
2. Synthesize top threats, stewardship outcomes, and plover occupancy and breeding success for each beach using a clear, plain language report card format.
3. Celebrate successes and spur targeted actions that address challenges at specific beaches by communicating beach report card results with key stakeholders: NS Environment and Natural Resource' habitat managers, NS Regional and Species at Risk biologists, private and municipal landowners, volunteers and community groups engaged in recovery, and beachgoers.
4. Share project methods with provincial and regional recovery partners to foster discussions and guide similar efforts in other jurisdictions.

**Work Completed:**

We successfully achieved our project objectives and produced a clear and concise document, titled ***Beach Report Card for Nova Scotia***, to present a synthesis of key results and recommendations for 43 Piping Plover nesting beaches around the province. We also identified important next steps for communicating report card results.

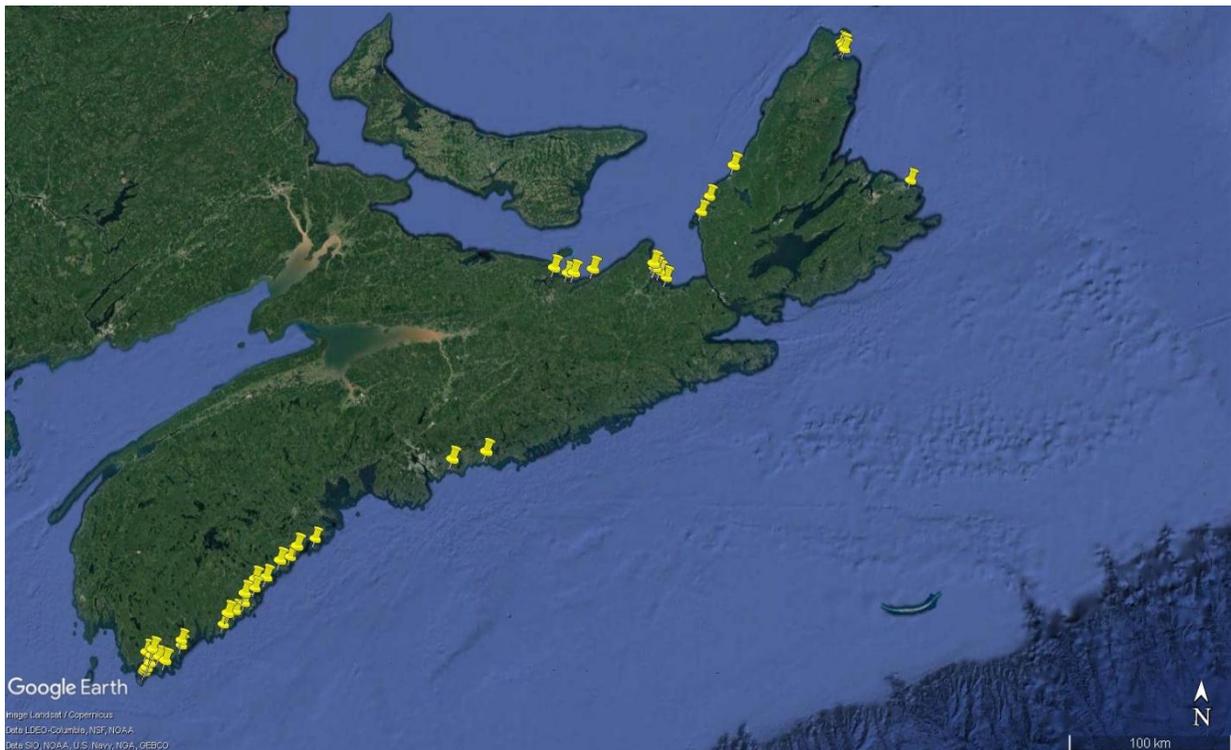
Objective 1 & 2

The ***Beach Report Card for Nova Scotia*** completes a comprehensive analysis of threats, stewardship and Piping Plover population and productivity for 43 coastal beaches in NS using five years of survey data (2012-2016). We assessed top human-caused threats identified in the *Recovery Strategy for the Piping Plover in Canada*: recreational beach use, motorized vehicles and human disturbance. BSC quantified threats on beaches during regular spring/ summer surveys, including numbers of beachgoers, vehicles, dogs (on and off-leash) and nests lost due to human disturbance; stewardship indicators (e.g., beachgoer behaviour around signed nesting areas); and plover population and breeding outcomes.

In 2017, BSC initiated analysis of trends for a sub-set of sites from southwestern NS to the Eastern Shore. This project expanded the analysis with the aim to understand the health or state of beaches in Nova Scotia and to prompt management and stewardship actions. We selected 43 beaches that have been occupied by one or more pairs of Piping Plover in one or more years from 2006-2016 and that have adequate suitable habitat with the potential to support at least one pair (Figure 1). Of the 43 sites, 27 were in southern NS and 16 in northern NS. A full list of sites organized by county can be found in the attached *Beach Report Card for Nova Scotia*.

To hone the concept and layout of the beach report cards, we consulted several provincial staff directly engaged in beach management in Nova Scotia. In particular, Carrie Drake, a Senior Parks Planner with Lands & Forestry, provided valuable feedback on the format, which greatly informed the final layout.

**Figure 1. Map showing locations of 43 Nova Scotia beaches assessed.**



This *Beach Report Card for Nova Scotia* synthesized data on top human-caused threats, stewardship outcomes, and Piping Plover occupancy and breeding success and identified key indicators for scoring each indicator (Table 1). We developed standardized measures for each indicator and categorized scores with a condition of poor, fair or very good (Table 2). To further enhance clarity, we colour coded each condition - red for poor, yellow for fair and green for very good – and added symbols representing each indicator. All threat scores were categorized as very good if they were zero with the exception of intensity of beachgoer use, which is due to

**Table 1. Rationale for selection of threat, stewardship and Piping Plover indicators assessed at each beach**

Threat indicators	Can damage habitat	Can disturb or harm Piping Plovers, eggs and chicks	
Motorized vehicles	X	X	
Dogs off-leash	X	X	
Intensity of beachgoer use	X	X	
Human disturbances to Piping Plover nests	X	X	
Stewardship indicators	Keeps habitats safe for plovers and other wildlife	Prevents disturbance and harm to wildlife	Fosters stewardship among other beachgoers
Respect for signed nesting areas	X	X	X
Volunteer involvement	X	X	X
Respect for dog leashing	X	X	X
Piping Plover indicators	Indicates suitability of beach for Piping Plovers	Indicates a healthy, functioning beach for Piping Plovers and other coastal wildlife	
Piping Plover pair presence	X		
Piping Plover productivity rate	X	X	

**Table 2. Beach Report for Nova Scotia indicators, measures and condition scores**

Report Card Indicator	How indicator is measured	Condition		
		Poor	Fair	Very good
<b>Human-caused Threat</b>				
Motorized vehicles	Mean vehicles and new vehicle tracks observed on beach	≥0.5	0.01 - 0.4	0
Dogs off-leash	Mean dogs off-leash observed on beach	≥1	0.1 - 0.9	0
Intensity of beachgoer use	Mean maximum people observed using beach per km	≥5	2 - 4.9	<2
Human disturbance to Piping Plover nests	Total Piping Plover nests lost due to human activities in all five years	≥1	N/A	0
<b>Stewardship</b>				
Respect for nesting area signs	Percent walkers observed on wet sand around signed nesting areas	<80%	80-99%	100%
Volunteer involvement	Total volunteers engaged with BSC's NS Piping Plover Conservation Program in all years	0	1	>1
Respect for dog leashing	Percent dogs observed on-leash in all five years	<50%	50 - 99%	100%
<b>Piping Plovers</b>				
Piping Plover pair presence	Mean annual number of Piping Plover pairs on beach	0	0.2 - 1.9	≥2
Piping Plover productivity rate	Mean annual number of Piping Plover fledglings produced per monitored pair	<1.5	1.5-1.64	≥1.65*

the fact that beaches are important spaces for people and light human use does not pose a serious threat to the recovery of plovers. In fact, the presence of people on beaches may reduce the likelihood of motorized vehicle activity. Previous findings examining vehicle use and presence of people on SW NS beaches found that vehicle use significantly declined during summer when numbers of people significantly increased.

**Objective 3 & 4**

For each beach, we identified recommendations for actions based on scores (see Figure 2). These recommendations will allow stakeholders to take specific actions to address challenges. Recommendations included sites where targeted strategies are needed to address threats associated with motorized vehicles, dogs off-leash, intense beachgoer use, and human disturbance to nesting plovers. Natural coastal processes, particularly overwash areas of sandy gravel deposits caused by storm events, are vital to ensuring both quantity and quality of nesting habitat. Thus, the recommendation to allow natural beach processes to occur

**Figure 2. Sample report card for West Mabou Beach Provincial Park from *Beach Report Card for Nova Scotia***

**West Mabou Beach Provincial Park**

Report Card Indicator	Condition		
	Poor	Fair	Very good
<i>Threat</i>			
Motorized vehicles 			0
Dogs off-leash 		0.4	
Intensity of beachgoer use 	7.0		
Human disturbance to Piping Plover nests 			0
<i>Stewardship</i>			
Respect for nesting area signs 		98%	
Volunteer involvement 		1	
Respect for dog leashing 	37%		
<i>Piping Plover</i>			
Piping Plover pair presence 		0.4	
Piping Plover productivity rate 			2.3

**Key ways to improve or maintain health of beach**

- Reduce number of off-leash dogs and work with Provincial Park staff to implement strategies for promoting leashing among dog walkers.
- Celebrate threat reduction and stewardship successes with beachgoers.
- Increase community involvement by recruiting new volunteers: Contact [nsplovers@gmail.com](mailto:nsplovers@gmail.com)
- Given high mean annual Piping Plover productivity but low Piping Plover presence, assess quality of nesting habitat to ensure beach is attractive to plover pairs.
- Allow natural beach processes to occur, such as creation of open sand areas during storm events, to enhance habitat quality for nesting Piping Plovers.

was included for each beach. Celebrating successes is an important aspect of fostering stewardship and engagement of managers and beachgoers, hence, we included this recommendation as a key way to improve or maintain the health of the beach for each site.

In March 2019, we shared the ***Beach Report Card for Nova Scotia*** with provincial beach managers and conservation officers at NS Environment and Lands & Forestry; species at risk biologists with Canadian Wildlife Service and NS Lands & Forestry; and wildlife enforcement officers with Environment and Climate Change Canada. There are many other stakeholders we plan on engaging in conversations about the ***Beach Report Card for Nova Scotia***, for example:

- NS Piping Plover Working Group annual meeting – April 2019
  - Nova Scotia recovery practitioners, land managers/ stewards, regional biologists
- Eastern Canada Piping Plover Working Group annual meeting – Nov 2019
  - Recovery/ stewardship practitioners from Atlantic Canada and Quebec; provincial species at risk biologists
- Lands & Forestry Regional Services offices - spring/ summer 2019 (Piping Plover breeding season)
  - NS Lands & Forestry's Regional Services play an important role in managing beaches around the province, thus, we will conduct targeted meetings with Regional Biologists, Park Technicians and other core staff engaged in management and monitoring activities at beaches during spring/ summer 2019.

#### **Lessons Learned & Next Steps:**

The funds received from NS Species at Risk Conservation Fund allowed us to initiate this important project to evaluate the state of beaches, most of which are identified as critical habitat for the recovery of Piping Plovers, and to inform site-level management. This project also initiated first steps towards communicating key information and recommendations about the state of Nova Scotia beaches to key stakeholders in a clear and concise format. We look forward to sharing the ***Beach Report Card for Nova Scotia*** more broadly throughout the province, including at Regional Services offices of Lands & Forestry, and also with recovery practitioners at annual meetings in fall 2019.

Given the spatial nature of the ***Beach Report Card for Nova Scotia***, we see exciting potential in communicating report card results online using an interactive format, such as Esri Story Maps, and we hope to find additional financial resourcing to pursue this in 2019. Such a project could also be an excellent opportunity for an undergraduate student. Finally, we hope to repeat this work through an assessment of NS beaches for the period of 2017-2021 in the ***Second Beach Report Card for Nova Scotia***.