

**Port of Saint John Waterbird Survey
Guidelines & Lessons Learned Report**



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1.0 Background & History

Nature NB works to celebrate, conserve, and protect New Brunswick's natural heritage through education, networking, and collaboration. One approach Nature NB takes to achieve this mission is through contributing to biodiversity monitoring and citizen science across the province.

The Port of Saint John Waterbird Survey program began in 2018 with support from Fisheries and Oceans Canada, the NB Wildlife Trust Fund, and Environment and Climate Change Canada. The goal of this project is to establish a long-term waterbird dataset for the Port of Saint John region. This data will help support future oil spill preparedness, research on population trends, as well as information that can be integrated into future environmental impact assessments and conservation plans.

From 2018-2021, Nature NB hired a technician to complete surveys at over thirty sites throughout the Port of Saint John (see Map 1 below). These survey sites were identified in coordination with provincial and national ENGOs, local naturalists, and government partners. In 2021, the project began a transition from a staff led survey to a citizen science initiative. Volunteers have been recruited by Nature NB staff through the local Saint John Naturalists' Club, Nature Trust of New Brunswick nature preserve stewards, and other local connections.

2.0 Purpose

This manual outlines the history and establishment of the Port of Saint John Waterbird Survey as well as information on how a similar project could be developed in other regions. The manual is divided into four sections for project managers to consider. These include: project planning, monitoring protocol, citizen science, and data management.

This manual considers guidance for similar programs conducted in other parts of Canada (e.g. British Columbia Coastal Waterbird Survey), as well as our own experience at Nature NB with the Port of Saint John Waterbird Survey.

3.0 Planning

3.1 Site Selection

Nature NB worked with the Nature Trust of New Brunswick, Saint John Naturalists' Club, Birds Canada, and other local birders and nature organizations to complete site selection for the Port of Saint John Waterbird Survey in 2018-19. Additionally, Nature NB used data sources and resources such as [eBird](#), [Important Bird & Biodiversity](#) Areas boundaries, nature preserve boundaries, municipal parks, and a [local birding guide](#) to help guide site selection. Care was taken to select sites within the project boundary for the Port of Saint John as identified by Fisheries and Oceans Canada. After compiling an initial list of sites, each location was reviewed to ensure they were publicly accessible (or permission from landowner was received). A description was then prepared for each site to summarize key information such as access points, parking, distance to point count site, etc. This document can be found [here](#). Over the course of the first year of the project sites were added and removed from the survey in order to account for changes in access/permission, seasonal challenges (e.g. ice covered in winter), presence of waterbirds, etc.

Once survey sites had been selected, each site was vetted by Nature NB's Bird Survey Technician to confirm details and plan survey routes. This was an important step in the site

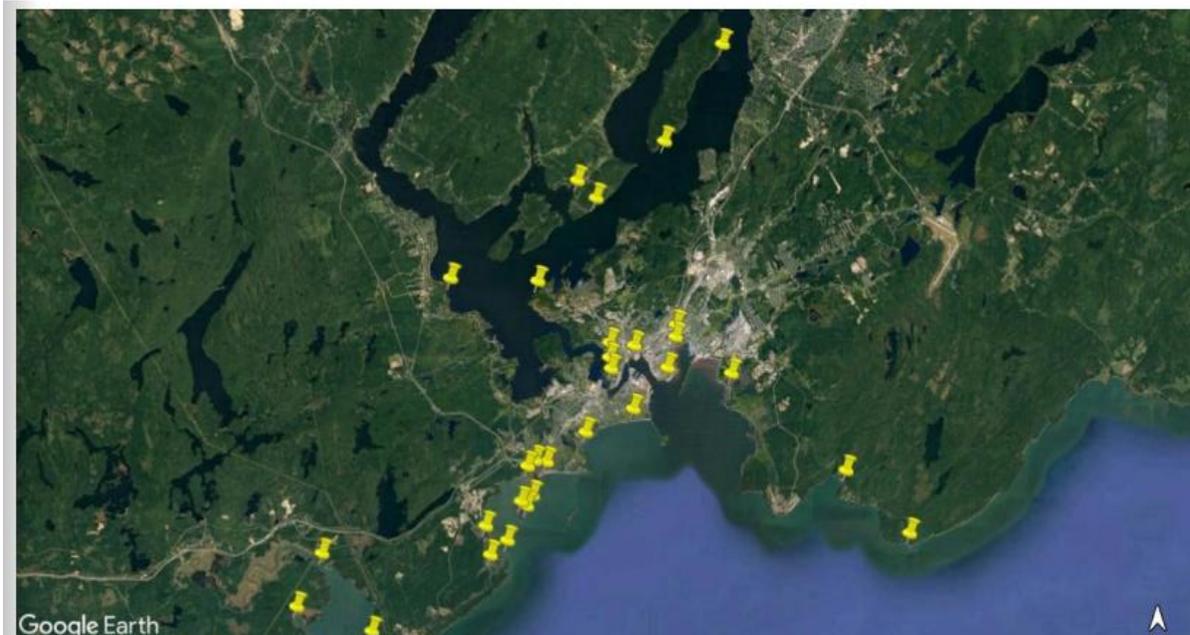


Figure 1: Map of survey sites for Port of Saint John Waterbird Survey

selection process as it helped to eliminate sites that posed challenges (e.g. access, sightlines, etc.) and also provided opportunities to scout out different sites that were eventually added to the survey. A final map of survey sites was produced to visually display sites using Google Earth (see Figure 1 above).

3.2 Monitoring Protocol

Nature NB reviewed various bird monitoring protocols with government and NGO partners to set up the Port of Saint John Waterbird Survey. This review resulted in an adapted version of the [Atlantic Canada Waterbird Survey protocol](#) being used for the program. Most notably, data on bird behaviour (e.g. feeding, fly over, etc.) and disturbances (e.g. predators, shipping route) were added to the protocol to better understand how birds interact with each site in the Port of Saint John area. This section will break down the key aspects of the Monitoring Protocol used in the project:

- **General Information:** Prior to beginning the survey, surveyors fill out the Site Name, season, date, surveyor/assistant Information, weather condition data, and start time.
- **Survey Windows:** Surveys are completed during a continuous 30 minute period on a single day, once per season, during the each seasonal survey window (Winter, Spring, Summer, Early Fall, Late Fall). Five surveys are completed each year at most sites. The survey windows include:
 - Winter: January 18 - February 28
 - Spring: April 14 - May 28
 - Summer: June 15 - July 31
 - Early Fall: August 1 - October 15
 - Late Fall: November 1 - December 15

- **Timing:** Spring, Summer, and Early Fall surveys are conducted during the day at high tide (± 2 hours of highest point of tide at closest tidal station). Surveys in the Late Fall and Winter are conducted during daylight hours at any tidal cycle, due to shorter daylight hours.
- **Weather Conditions:** Temperature, wind, fog, etc. are recorded for each site. See datasheet in Appendix 1 for details.
- **Species Identification:** Birds are identified to the species level, where possible (e.g. Semipalmated Sandpiper, American Black Duck). If individuals are too distant or move too quickly to identify accurately, surveyors identify to the closest family/genus/subfamily (e.g., Gull spp., Sandpiper spp., Tern spp.).
- **Offshore Distance:** For each bird/group of birds, surveyors record the approximate location of the birds. Coastal locations are classified as follows:
 - OS – offshore, >500m from high tide line;
 - NS – nearshore, from high tide mark to 500m offshore;
 - IN – inshore, from high tide mark to coastline

For sites with complex, inshore systems the following codes are used:

- IN-L – inshore, on land,
- IN-M – inshore, in marsh,
- IN-W – inshore, in water (excluding marsh).
- **Behaviour :** Surveyors indicate the behaviour of individual birds and/or groups of birds. Behaviour allows us to understand how birds are using the site. The classifications are as follows:
 - FE – feeding
 - RE – resting/roosting,
 - FL – flying (as well as direction e.g. N, S, E, W),
 - D – disturbed, or;
 - O – other.
- **Disturbance :** Surveyors note a disturbance if something is directly affecting birds. For instance, if there is a person walking on the beach the protocol asks that surveyors only record it as a disturbance should the person's presence disturb the birds. Disturbances include:
 - Walkers;
 - Swimmers;
 - Commercial Boat;
 - Recreational Boat;
 - Dog/pet disturbance;
 - Noise pollution;
 - Non-motorized Boat;
 - Predator;
 - Other species interaction (e.g., seal);
 - Other (please specify)

More detail on these parameters can be found in the sample datasheet included in Appendix 1.

3.3 Key Considerations

The Port of Saint John Waterbird Survey protocol aims to collect information on a variety of parameters to best understand abundance, distribution, and bird behaviour. These parameters are all uniquely important in the context of complex challenges industrial and port sites face, such as increased oil spill risk. Information on abundance, distribution, and behaviour can all help to inform activities like oil spill response, how safeguards for specific species are integrated into future development proposals, how shipping routes are planned, etc.

4.0 Citizen Science

In 2020, Nature NB began efforts to transition the Port of Saint John Waterbird Survey from a staff-led to volunteer-led initiative. This decision was made in order to reduce staff time requirements and to further engage the local community in the project

4.1 Volunteer Recruitment

Volunteers have been recruited in using various strategies since the outset of the project. This includes direct one-on-one outreach to local birders and naturalists, engagement with key groups such as the Saint John Naturalists' Club and University of New Brunswick, as well as online channels (e.g. social media, enews, etc.). A project [webpage](#) and [brochure](#) were also developed to share information about the project. Each of these methods has helped to recruit volunteers who survey one or more sites.

To help facilitate volunteer training, particularly during the COVID-19 pandemic, Nature NB developed a [Citizen Science Guide](#), which outlines information on the survey protocol, datasheets, as well as key links to help volunteers with their identification skills.

Reminder notices are emailed to volunteers 1-2 weeks before the start of each survey window and one-on-one support is provided to volunteers who have questions or would like additional training. Nature NB and the Nature Trust of NB have also led volunteer workshops to educate new and existing volunteers about the monitoring protocol and to offer tips on identification. While these outreach efforts have required staff time to continually engage volunteers, we believe these efforts have helped to support volunteer retention and data quality.

4.2 Data Management

Once datasheets have been completed and submitted to Nature NB, they are saved on a shared Google Drive. Twice per year, staff format the data sheets into a MS Excel file which is submitted to the Saint Lawrence Global Observatory (SLGO) for storage. The SLGO is an open access, web-based data platform that stores data from a variety of environmental projects, including Fisheries and Oceans Canada's Coastal Environmental Baseline Monitoring Program. Port of Saint John Waterbird data can be downloaded or reviewed on their site here: <https://catalogue.ogsl.ca/en/organization/naturenb>.

The data on SLGO can be sorted to explore observations by survey site, bird species, etc. Each year, summary statistics are also produced to help inform data users what sites have the highest and lowest diversity, seasonal differences, etc.

5.0 Lessons learned: Developing a bird survey program in coastal and industrial sites

There are a number of unique aspects of the Port of Saint John Waterbird Survey that come as a result of conducting a bird survey program at both a coastal and industrial site. This section summarizes some lessons learned that may be useful for others planning a similar survey.

- *Key sites may be in unexpected places.* Sites with some of the highest species richness in the Port of Saint John Waterbird Survey can be found in the urban core of Saint John. These sites would not have been identified without the help of local naturalists who know the Port and surrounding area. Nature NB would encourage those setting up a coastal, industrial bird survey program to contact local nature clubs, birding groups, explore eBird, etc. for input into where unique hotspots might be.

- *Recording behaviour and seasonality.* During the protocol development phase of the project, Nature NB was encouraged to include both bird behaviour and seasonal monitoring into the survey. This data has proven to be interesting and useful in better understanding when and how birds use each site. Recording when and how birds use coastal habitats can help inform oil spill preparedness and other industrial activities. For instance, if a site has a high number of birds during fall migration, but limited use in the winter, spill preparedness groups can plan their response accordingly. Similarly, if birds typically fly over a site it may be of less concern than a site where birds roost or feed. Given this context, Nature NB would recommend monitoring seasonally and ensuring behaviour of birds are captured at each site.

- *Data management systems.* Having a platform to easily share results from surveys with potential data users is key to ensuring citizen science programs have an impact on decision-making. In particular, Nature NB has found great value in having access to an open source, web-based portal, like SLGO, to easily share survey results. Nature NB would recommend groups interested in starting a similar program invest time and effort into the development of a data management plan in order to make it easy for volunteers to collect and submit data, while facilitating opportunities for results to be used broadly by decision-makers and other data users.

- *Outreach to data users.* Nature NB is prioritizing outreach to potential data users in and around the Port of Saint John in order to ensure data collected as part of the project is incorporated into future development projects, oil spill preparedness, conservation projects, as well as research initiatives. This is an important consideration to ensure the data collected as part of this program is more likely to be used regularly by end users. Nature NB would encourage others interested in establishing similar programs to identify industry, NGO, government, academic, and other partners and regularly engage them to increase the likelihood that data will be used in the future.

6.0 Conclusion

The Port of Saint John Waterbird Survey continues to transition to a citizen-science based program. Nature NB is pleased to share information on this program through this manual to support other conservation groups interested in creating a baseline monitoring program for waterbirds in other regions. Please don't hesitate to get in touch with us should you have any

questions or would like to discuss how to set up a monitoring protocol in your area by emailing info@naturenb.ca or calling 506-459-4209.

Appendix 1: Sample Data Sheet

Select the link below to gain access to the Port of Saint John Waterbird Survey datasheet. If you have any trouble accessing please email adam.cheeseman@naturenb.ca

<https://drive.google.com/file/d/16rd1S9SgA2pM5TQgOZdKW5fI6wgxoR6n/view?usp=sharing>