

Factors influencing population decline of marine birds on Nova Scotia's Eastern Shore Islands

Final Report NSHCF: Year 4
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Project Goal:

To determine the possible cause(s) of the decline in breeding marine birds in the Eastern Shore Islands Wildlife Management Area, and to suggest possible means to improve populations and female survival.

Project Objectives:

- a) Assess 2016 breeding occupancy and overwinter survival of new eider nest shelters deployed in 2016 on islands in the ESI WMA, and re-use rates in 2017, to determine if birds return to these sites and if they provide protection from gulls and eagles;
- b) Deploy and recover GPS tracking units on Double-crested and Great Cormorants nesting in the ESI, to assess habitat overlap and foraging range as is relevant to their sensitivities to ships and disturbance;
- c) Collect blood and egg samples of 8 breeding marine bird species in the ESI WMA and examine for stable isotopes, trace elements, and fatty acids, as indices of diet to assess competition and predation among species, and contamination (PhD thesis);
- d) Use multiple years of survey data (fall, winter, spring) and use geographic information system analysis to map key sites and yearly occupation of areas for Purple Sandpiper and Harlequin Ducks.

Planned project outcomes:

1. We worked with Glen Parsons of NS DNR (now DLF) to successfully assess re-use rates of eiders breeding structures in 2017, as well as assessing some design considerations in the nesting structures to improve the protection they provide from gulls. NS DLF has those data. Shelters were re-used in high proportions;
2. We were unable to complete the Double Crested Cormorant project, in large part due to weather issues with getting to the islands at the proper time to deploy and recover tags, and adjustments to research schedules both by ourselves and NS DNR staff.

3. We were able to successfully collect tissue samples from 5 of the 8 possible species from the ESI WMA for the PhD project, and that has proceeded successfully. Those samples have been analysed for trace elements, stable isotopes and fatty acids and the collective dataset is now being analysed.
4. We acquired the data as planned for Harlequin Ducks and Purple Sandpipers and were able to complete the mapping and habitat use as suggested (in collaboration with partners, including NS DLF).



Figure 1 At the Harbour Islands Base Camp, preparing to sample tissues from an eider and several black guillemots



Figure 2 Danielle Fife picking up black guillemots collected as part of tissue sampling efforts

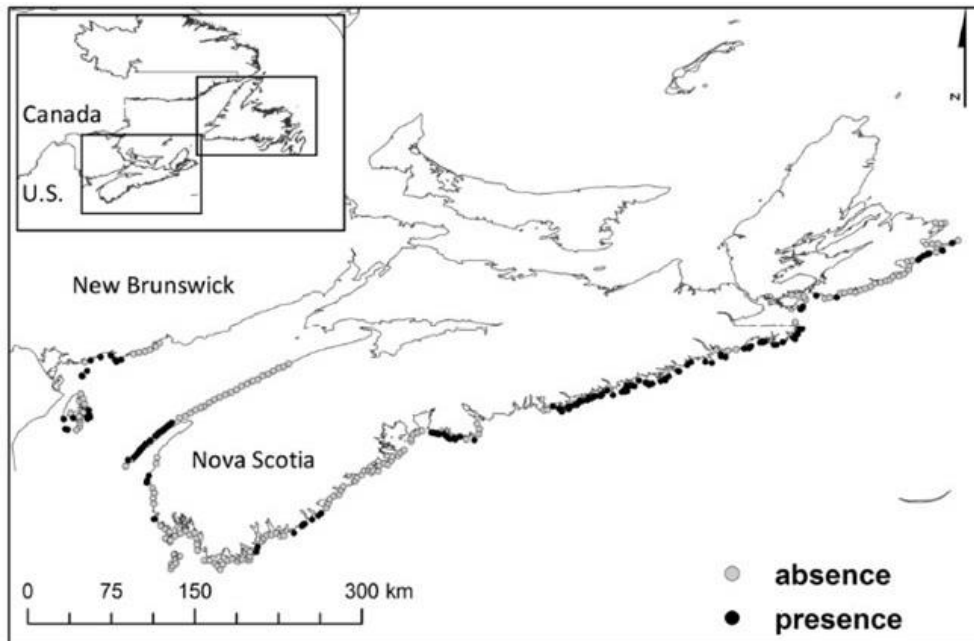


Figure 3 Locations of data for Purple Sandpipers and Harlequin Ducks including the ESI MWA

Next Steps:

Following the 2017 field season, we have worked up the samples and have received the chemical information. We are now analysing those for the PhD project in relation to the structure of the food web in the ESI MWA. We have also started a MSc student to follow up on the work on the eider nest shelters, expanding the project to the South Shore, and in 2020 we hope to undertake more food chain work.



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