

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

Final Report NSHCF: Year 2  
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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:**

1. Estimate population size of Leach's Storm Petrels nesting in islands of the Eastern Shore Islands Wildlife Management Area (ESI WMA), using capture/recapture techniques;
2. Erect nest shelters for eiders on islands in the ESI WMA where eiders used to nest in abundance but have declined, to determine if this attracts birds back to these sites;
3. Collect voles on Country Island and nearby sites on the mainland and assess for stable isotopes, to determine marine signatures and thus influence of marine items (Leach's Storm Petrel eggs) on island-nesting vole diets;
4. Complete analyses and, in collaboration with NS DNR personnel, identify management considerations for these two species at these sites.

**Planned project outcomes:**

1. We were unable to complete the Leach's Storm Petrel project, in large part due to weather issues with getting to the islands at the proper time in August and adjustments to research schedules both by ourselves and NS DNR staff.
2. We purchased materials for and constructed the nest shelters. However, at the time that we planned to deploy them, the weather was unfavourable. This was deferred to 2015.
3. Voles were collected on Country Island and in 2015 voles were being collected on the mainland nearby for this work.
4. NS DNR staff have been kept updated on the results of this work as we have proceeded. Already they have adjusted the timing of their surveys to ensure that they gather information on eiders on all islands in relation to the adjustments in breeding that we have noted.

**Additional Work Completed:**

1. The biggest adjustment to the work plan for the ESI WMA was that we obtained funding just prior to the field season which enabled us to deploy satellite transmitters on common eiders, a key management need that had not been possible prior to this. Consequently, our field plans changed quite dramatically during the season, and we (along with NS DNR) adjusted our objectives and put in a team to capture nesting female eiders and deploy transmitters on them. This was highly successful.



Figure 1 Capturing common eiders in nest shelters



Figure 2 Surgery to implant transmitters in eiders



Figure 3 Releasing a common eider with a satellite transmitter

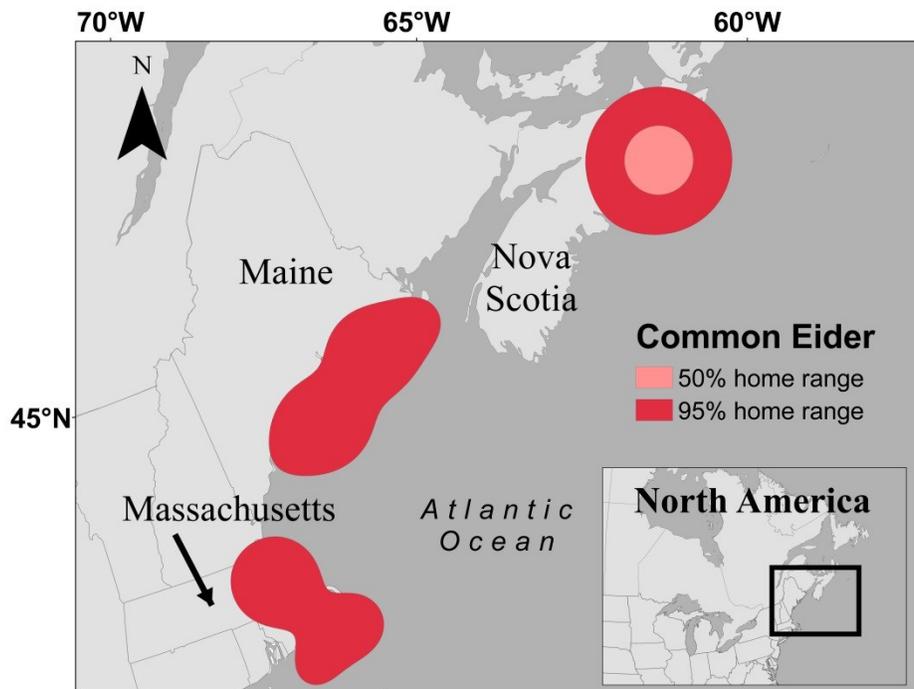


Figure 4 Annual movements of common eiders from the ESI WMA

2. The information from satellite tracking will link closely with disease and threat monitoring for common eiders, and in 2015 we have merged data from this study to that of research in the northeastern USA to map broadscale movements of the *Somateria mollissima dresseri* population. This will have major management implications for Nova Scotia common eiders.

3. Additionally, we completed the analysis and write up of a study showing that marine birds in the ESI WMA were concentrating and moving non-essential trace elements to the soils of the ESI WMA. This paper is cited as: Mallory, M. L., L. Mahon, M. D. Tomlik, C. White, G. R. Milton, and I. Spooner. 2015. Colonial marine birds influence island soil chemistry through biotransport of trace elements. *Water, Air and Soil Pollution* 226: 31.
4. Analyses of this work are underway, and preliminary results were presented to the NS DNR's Wildlife Division, the Atlantic Migratory Game Birds Technical Committee Meeting, and the Black Duck and Sea Duck Joint Venture meetings in 2014 and 2015. A poster was also presented at the Nova Scotia Federation of Anglers and Hunters Annual General Meeting in March of 2015.

### **Achievements and Lessons Learned:**

The most surprising finding was that breeding common eiders from the ESI WMA were leaving the eastern coast of Nova Scotia as early as August, and moving to (what we presume to be) a moulting area in the Gulf of Maine/Bay of Fundy. Once we gathered tracking data from researchers in the USA, it appears that this region (Fig. 4 above) is an important moulting site for birds from other breeding locales as well. Other birds also moved south through the fall, but one common eider remained in the ESI WMA for the entire winter.

Consequently, a key “lesson learned” here was that undertaking a challenging but “cutting edge” project, even if the sample size was small, immediately paid big dividends. The student support from the Nova Scotia Habitat Conservation Fund (contributions from hunters and trappers), along with the continuing support (logistic or otherwise) from NS DNR, as well as EC CWS allowed Acadia to co-ordinate the veterinary procedures (effectively the key element of this season's work). With the satellite transmitters working, the results immediately linked to NS DNR's ongoing working Wellfleet and disease transmission in eiders, and the NS DNR and EC CWS concerns over moulting locations and mixing of *S. m. dresseri* subpopulations. Although challenging (and Mallory is likely grayer after the administrative challenges), the pay offs from this work were huge.

### **Next Steps:**

In addition to placing nest shelters in 2015, we plan to conduct a detailed, multi-agency analysis of common eider tracking data to identify key marine habitats for the Eastern Shore breeding population. This should help us identify if there are threats away from the breeding area (e.g. wind power) that could be influencing these birds, or if declines are really due to local factors such as predation.



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