N.H. Sea Grant Development Project Completion Report

Today's date: February 26, 2015

Project number: M/D-1205

Project title: Isles of Shoals Sea Bird study

Project initiation date: May, 2012

Project completion date: September, 2012

N.H. Sea Grant funds: $3024

Principal investigator: Erik Chapman

Affiliation: N.H. Sea Grant/UNH Cooperative Extension

Associate investigator(s) and affiliation(s):
Dr. Julie Ellis, Tufts University
Dan Hayward, Terns LLC

Technicians and affiliations: Tom Staley, UNH Undergraduate ('13)

Partner(s) and affiliation(s): New Hampshire Fish and Game (State, Government), Terns LLC (Regional, non-profit), Gulf of Maine Seabird Working Group ( Regional, non-profit), Shoals Marine Lab/UNH/Cornell (local, academic institution), Tufts University (regional, Academic institution)

Brief project overview/abstract:
This project was intended to engage with seabird researchers at Isles of Shoals in order to assess and build connections among ongoing seabird research programs to facilitate growth of individual and complementary programs while exploring opportunities to integrate programs into a seabird-based, long-term ecological monitoring program at the Isles of Shoals.

Objectives:
• To gain knowledge in the use of seabird reproductive biology and diet studies as an indicator of marine ecosystem structure and function – and as providing a signal for ecosystem adjustment to climate change and/or fishing activities.
• To also gain knowledge about seabirds that currently breed at the Shoals in NH and ME.
• To assess feasibility of an integrated seabird ecosystem monitoring program by becoming familiar with ongoing seabird studies at the Shoals and by exploring new, complementary projects.
• Provide recommendations for developing an integrated seabird marine ecosystem monitoring program at Shoals.
• Complete Tom Staley’s Undergraduate Senior Project (UNH Dept of Biological Sciences).
Project findings:

- The project identified opportunities to develop research as part of the ongoing tern research program, currently funded by NH Fish and Game with the goal of meeting conservation goals for common and roseate terns.
- There is a general interest among researchers studying black-backed and herring gulls to develop diet protocols in coordination with ongoing tern research at Isles of Shoals.
- There is opportunity to develop double-crested cormorant diet studies at Shoals Marine lab (private land owners are amenable to such work and their permission is required).
- Shoals Marine Lab is amenable to supporting a developing and integrated seabird research program.
- At Shoals, opportunities exist for building seabird research program that combines research opportunities within a complex set of land ownership and management goals.

Accomplishments:

- 3 meetings were held among seabird researchers to discuss complementary research opportunities.
- Research priorities were identified among the group with action-items linked to future proposal writing.
- An intern was imbedded within the Tern research program at White/Seavey Island. He provided observations and insight into data collection within the tern research program that currently measures breeding activity, productivity and feeding studies that identify prey fed to developing chicks.
- 3 visits were made to a double-crested cormorant colony on Lunging Island that has not recently been the included in seabird research. The landowner has agreed to allow future research on the island.
- The funded intern also spent time with the gull research program at Isles of Shoals during their field studies collecting information on diets and tracking breeding activity and success.

Impacts:

- This work led directly to two funded projects through NH Fish and Game to explore the reproductive energetics of common and roseate terns using two methods of tracking foraging behavior.
  - 2013 - New Hampshire Fish and Game – Common and Roseate terns at Isles of Shoals; Piloting Telemetry Effort and Developing the Research Program (Chapman Lead PI) - 22K
  - 2014 - New Hampshire Fish and Game – Regional Tern Conservation Initiative (Chapman Lead PI, funding a MS Student at UNH) - 84K
- The work laid the foundation for continuing discussions among seabird research projects at Shoals, culminating in a meeting in February of 2015 entitled the ‘Shoals Seabird Summit’ where research priorities were identified.

Tools, technologies or information services resulting from this project that are being used to improve ecosystem-based management:
Informing a comparison of two alternatives for improving our understanding of movement patterns (critical gap in knowledge) for Federally and State protected tern species.

Related grants and contracts (Other grants and contracts that funded this project or that were obtained as a result of this project):

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- 2013 - New Hampshire Fish and Game – Common and Roseate terns at Isles of Shoals; Piloting Telemetry Effort and Developing the Research Program (Chapman Lead PI) - 22K
- 2014 - New Hampshire Fish and Game – Regional Tern Conservation Initiative (Chapman Lead PI, funding a MS Student at UNH) - 84K

Students Supported (see next page) All fields are required
## Students Supported  *All fields are required*

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Institution</th>
<th>Where is he/she now?</th>
<th>Dates of support</th>
<th>Type of degree:</th>
<th>Year degree awarded</th>
<th>Title of thesis (if supported by N.H. Sea Grant)</th>
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<tbody>
<tr>
<td>Tom Staley</td>
<td>UNH</td>
<td>MA – pursuing a career in physical therapy.</td>
<td>May to September, 2012</td>
<td>BS</td>
<td>2013</td>
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