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DHW



# New Hampshire Fish and Game Department

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Glenn Normandeau  
Executive Director

January 10, 2014

Her Excellency, Governor Margaret Wood Hassan  
and the Honorable Council  
State House  
Concord, New Hampshire 03301

### REQUESTED ACTION

Authorize the New Hampshire Fish and Game Department (NHFG) to enter into a SOLE SOURCE Cooperative Project Agreement with University of New Hampshire (vendor code 177867) to continue research using nano-tag telemetry to investigate foraging behavior for common terns, for a total of \$74,292.00 from the date of Governor and Council approval through January 1, 2016. Funds are 65% federal and 35% Conservation License Plate.

Pending budget approval, funding is available for these services and will be expended as follows, with authority to adjust encumbrances in each of the State fiscal years through the Budget Office if needed and justified:

#### **03-75-75-751520-2139 WILDLIFE PROGRAM – Conservation License Plate**

|  | <u>FY14</u> | <u>FY15</u> | <u>FY16</u> |
|--|-------------|-------------|-------------|
| 20-07500-21390000-304-500841 Research and Management | \$18,573.00 | \$37,146.00 | \$18,573.00 |

### EXPLANATION

The purpose of this agreement is to improve our understanding of common tern foraging behavior and energetics through the implementation of combined tagging, feeding and chick growth studies, which are part of continued monitoring and management efforts of the endangered Seabird Restoration Project at the Isles of Shoals.

Since 1997 Fish and Game has partnered with agencies and organizations to secure a thriving colony of common, roseate and arctic terns. These endangered seabirds continue to successfully nest and raise young on Seavey Island. Nevertheless, young birds, especially federally endangered roseate terns, are not returning from migration and wintering areas in sufficient numbers to prevent the population from declining. This proposed research is an important step to determine what factors affect their survival once they leave the nesting Island.

We will assess foraging trip duration, and the directionality of the major feeding areas for common terns nesting on White and Seavey Islands. A total of 15 Lotek® NanoTags (NTQB-4-2, 0.29g) will be attached to common terns at the onset of egg hatch. In addition, five GPS tracking tags (Lotek® PinPoint-50) will be deployed on common terns throughout the chick rearing stage to obtain more accurate movement data than the NanoTag technology provides. The two tagging technologies will be compared to identify the most effective approach for furthering our understanding of tern foraging behavior and post-breeding habitat use and migration. In conjunction with the two tagging techniques, an observational feeding study will occur on the tagged birds. Prey composition of chick diets will be determined in order to distinguish important fish species to these birds.

Her Excellency, Governor Margaret Wood Hassan  
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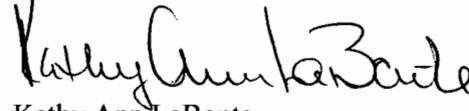
All state funds for this project are from the Conservation License Plate Program. The U.S. Fish and Wildlife Service will provide 65% matching funds for all eligible activities. These federal funds are currently budgeted in the Conservation License Plate operating budget.

Upon Governor and Council approval, the University of New Hampshire will be reimbursed according to completion of tasks that are detailed in exhibits A and B of the Cooperative Project Agreement.

Respectfully submitted,



Glenn Normandeau  
Executive Director



Kathy Ann LaBonte  
Chief, Business Division

**COOPERATIVE PROJECT AGREEMENT**

between the

**STATE OF NEW HAMPSHIRE, Fish and Game Department**

and the

**University of New Hampshire** of the UNIVERSITY SYSTEM OF NEW HAMPSHIRE

- A. This Cooperative Project Agreement (hereinafter "Project Agreement") is entered into by the State of New Hampshire, **Fish and Game Department**, (hereinafter "State"), and the University System of New Hampshire, acting through **University of New Hampshire**, (hereinafter "Campus"), for the purpose of undertaking a project of mutual interest. This Cooperative Project shall be carried out under the terms and conditions of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, except as may be modified herein.
- B. This Project Agreement and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire approve this Project Agreement ("Effective date") and shall end on **1/31/16**. If the provision of services by Campus precedes the Effective date, all services performed by Campus shall be performed at the sole risk of Campus and in the event that this Project Agreement does not become effective, State shall be under no obligation to pay Campus for costs incurred or services performed; however, if this Project Agreement becomes effective, all costs incurred prior to the Effective date that would otherwise be allowable shall be paid under the terms of this Project Agreement.
- C. The work to be performed under the terms of this Project Agreement is described in the proposal identified below and attached to this document as Exhibit A, the content of which is incorporated herein as a part of this Project Agreement.

Project Title: **Regional Tern Research and Conservation Initiative**

- D. The Following Individuals are designated as Project Administrators. These Project Administrators shall be responsible for the business aspects of this Project Agreement and all invoices, payments, project amendments and related correspondence shall be directed to the individuals so designated.

**State Project Administrator**

Name: Kathy Ann LaBonte  
 Address: NH Fish and Game Dept  
11 Hazen Drive  
Concord, NH 03301  
 Phone: 603-271-2741

**Campus Project Administrator**

Name: Dianne Hall  
 Address: University of New Hampshire  
Sponsored Programs Administration  
51 College Rd. Rm 116  
Durham, NH 03824  
 Phone: 603-862-1942

- E. The Following Individuals are designated as Project Directors. These Project Directors shall be responsible for the technical leadership and conduct of the project. All progress reports, completion reports and related correspondence shall be directed to the individuals so designated.

**State Project Director**

Name: John Kanter  
 Address: NH Fish and Game Dept  
11 Hazen Drive  
Concord, NH 03301  
 Phone: 603-271-2461

**Campus Project Director**

Name: Dr. Erik Chapman  
 Address: 131 Main Street  
University of New Hampshire  
Durham, NH  
03833  
 Phone: 603-862-1935

F. Total State funds in the amount of \$74,292 have been allotted and are available for payment of allowable costs incurred under this Project Agreement. State will not reimburse Campus for costs exceeding the amount specified in this paragraph.

Check if applicable

Campus will cost-share \_\_\_\_\_ % of total costs during the term of this Project Agreement.

Federal funds paid to Campus under this Project Agreement are from Grant/Contract/Cooperative Agreement No. T2-3-R-1 from U.S. Fish and Wildlife Service under CFDA# 15.634. Federal regulations required to be passed through to Campus as part of this Project Agreement, and in accordance with the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, are attached to this document as Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

G. Check if applicable

Article(s) \_\_\_\_\_ of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002 is/are hereby amended to read:

H.  State has chosen **not to take** possession of equipment purchased under this Project Agreement.  
 State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's end-date. Any expenses incurred by Campus in carrying out State's requested disposition will be fully reimbursed by State.

This Project Agreement and the Master Agreement constitute the entire agreement between State and Campus regarding this Cooperative Project, and supersede and replace any previously existing arrangements, oral or written; all changes herein must be made by written amendment and executed for the parties by their authorized officials.

IN WITNESS WHEREOF, the University System of New Hampshire, acting through the **University of New Hampshire** and the State of New Hampshire, **Fish and Game Department** have executed this Project Agreement.

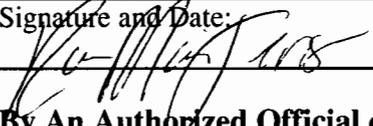
**By An Authorized Official of:**

**University of New Hampshire**

Name: Karen M. Jensen

Title: Manager, Sponsored Programs Administration

Signature and Date:

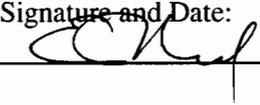
 1/7/14

**By An Authorized Official of: the New Hampshire Office of the Attorney General**

Name: Evan J. Mulholand

Title: Assistant Attorney Dept. of Justice

Signature and Date:

 1-14-14

**By An Authorized Official of:**

**NH Fish and Game Department**

Name: Glenn Normandeau

Title: Executive Director

Signature and Date:

 1/13/2013

**By An Authorized Official of: the New Hampshire Governor & Executive Council**

Name:

Title:

Signature and Date:

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## EXHIBIT A

**A. Project Title:** Regional Tern Conservation Initiative: Common and Roseate terns at Isles of Shoals Reproductive Energetics, Post-Breeding Migration, and Regional Program Assessment

**B. Project Period:** January 31, 2014 to January 31, 2016

**C. Objectives:**

- 1) Improve our understanding of common tern foraging behavior and energetics through the implementation of combined tagging, feeding, and chick growth studies.
- 2) Improve understanding of tern post-breeding and non-breeding habitat use and migration.
- 3) Investigate the effectiveness of Lotek® NanoTag and Lotek® GPS PinPoint tag technologies for improving our understanding of tern foraging behavior and post-breeding habitat use and migration. This research will initially be conducted on common terns and will be critical to informing future work with roseate and arctic terns.
- 4) Conduct a regional assessment of the current status of tern conservation and monitoring with a particular emphasis on developing a strategic, targeted plan that takes into consideration funding constraints and aims for a sustainable business plan for operations.

**D. Scope of Work:**

Because breeding common terns significantly outnumber roseate terns at Isles of Shoals, and are of less management concern, research will target common tern ecology with the intention that methods can inform future roseate tern research.

Action 1: Radio-tag common terns to improve our understanding of common tern foraging behavior on the New Hampshire coast.

We will assess foraging trip duration, and the directionality of the major feeding areas for common terns nesting on White and Seavey Islands. A total of 15 Lotek® NanoTags (NTQB-4-2, 0.29g) will be attached to common terns at the onset of egg hatch. The relatively new, lightweight NanoTag technology allows for multiple detections of numerous tagged birds on one frequency while weighing significantly less than 5% of the bird's body weight, (Cochran 1980). The birds will be captured by placing a wire cage over the nest and upon arrival of the target adult bird; the trap will be tripped. The tags will be distributed evenly across sexes on the monitored nests for productivity. Tags will be sutured onto the back of the terns with veterinary grade suture kits. Prior to tag suturing, biological measurements will be collected (culmen, wing bar, weight, etc.) to determine status of the bird prior to tagging. Protocols for attaching tags to birds are to be reviewed and approved by the UNH Institutional Animal Care and Use Committee (IACUC). Two antennae and receivers stations will be setup to track bird movements. The radio telemetry antennae will be setup on a tower on Appledore Island which is located north of White and Seavey Islands. The tower will consist of four, 9-element, directional Yagi antennae and will be used to assess foraging trip direction-of-travel. One omni-directional antennae will be placed within the colony on Seavey Island to measure foraging trip duration, and both antennae will be equipped with an automated Sensorgnome® receiver.

Action 2: GPS tag common terns to identify important foraging areas on the New Hampshire coast as well as identity migration routes. Concurrent diet studies, chick-weight, and productivity studies will be conducted to assess reproductive energetics and success.

Five GPS tracking tags (Lotek® PinPoint-50) will be deployed on common terns throughout the chick rearing stage to obtain more accurate movement data than the NanoTag technology provides. These tags weigh between 1 and 2.5g, again well below 5% of the body weight of common tern adults. From these deployments, definitive feeding hot spots near coastal New Hampshire will be identified. Each tag is capable of storing 50 data points of location at a designated interval. Deployments of 1 to 2 days will be used in order to provide fine-scale temporal and spatial resolution of foraging bird behavior. The bird must be recaptured in order to download the data. Tags will be transferred 3-times between birds, for a total of 15 deployments over the incubation and chick-rearing period. Before the terns leave the island for their migration, the tags will be deployed, with 50 locations distributed over the subsequent 11 month period to track non-breeding movements. The birds will be trapped in the same manner and tags will be attached as described in Action 1.

In conjunction with the two tagging techniques, an observational feeding study will occur on the tagged birds. Prey composition of chick diets will be determined in order to distinguish important fish species to these birds. The feeding study will also be compared to the productivity information collected through TERNS LLC to determine how prey composition and foraging duration affect productivity each year. In order to ground truth fish identifications made by observers, video cameras (courtesy of UNH) will be camouflaged and placed by the monitored nests. Observers will not know when the cameras are recording. Fish identifications from the video recording will be compared to observer fish identifications. Common tern fledging mass will be measured through during the chick-rearing period with 10 chicks each weighed 5 times during the chick-rearing period.

Action 3: Examine the effectiveness of Lotek NanoTag and Lotek GPS PinPoint tag technologies for improving our understanding of tern foraging behavior and post-breeding habitat use and migration

The two tagging technologies will be compared to identify the most effective approach for furthering our understanding of tern foraging behavior and post-breeding habitat use and migration. Results will be assessed using a trade-off table that weighs their costs, ease-of-use, as well as accuracy, and precision of foraging behavior data. Once the technologies have successfully been deployed on common terns, the tags could be utilized on roseate terns to investigate their foraging behavior and migration routes.

Action 4: Collaborate with the Northeast Regional Migration Monitoring Network to collect data that will assess post-breeding movement of Isles of Shoals and other terns banded in the Gulf of Maine region.

Antennae and receiver stations are setup in Massachusetts off Cape Cod, Petit Manan Island, Maine, Country Island, Nova Scotia, and Sable Island, Nova Scotia as part of a collaborative effort to monitor common tern movement in the Gulf of Maine. The regional component involves coordination with tern breeding colonies on abovementioned islands. The receivers located on each of the islands are programmed to read Lotek® NanoTags from the participating colonies in the region. This information will be useful as it will track the bird's movements during their post-breeding migration as well as quantify trip duration to/from each island. Antennae and receiver stations in New Hampshire, described previously in Action 1, will remain active until November 1 of each year in order to pick up transmitters from other states.

Action 5: Conduct a regional assessment of the current status of tern conservation and monitoring with a particular emphasis on developing a strategic, targeted plan that takes into consideration funding constraints and aims for a sustainable business plan for operations

An initial meeting will be held with Fish and Wildlife Service Biologists from Massachusetts, Maine and New Hampshire in the winter of 2014. This meeting will be used to set priorities and a time-line for a document that will identify accomplishments, opportunities and needs for regional tern conservation and management. Population status, an inventory of available and ongoing data-

collection projects, research priorities, and identification of barriers and opportunities for sustained funding for conservation work will be a focus of this document. This document will be produced by Fall, 2015.

**E. Deliverables Schedule:**

Research Progress Report - Spring 2015

Ms Thesis to be submitted - and subsequent manuscripts in preparation by Fall, 2015

Regional Tern Conservation and Research Program Assessment - Fall, 2015.

**F. Budget and Invoicing Instructions:** Campus will submit invoices to State on regular Campus invoice forms no more frequently than monthly and no less frequently than quarterly. Invoices will be based on actual project expenses incurred during the invoicing period, and shall show current and cumulative expenses by major cost categories. State will pay Campus within 30 days of receipt of each invoice. Campus will submit its final invoice not later than 60 days after the Project Period end date.

| Budget Items                | State Funding | Cost Sharing<br>(if required) | Total  |
|-----------------------------|---------------|-------------------------------|--------|
| 1. Salaries & Wages         | 21,378        | 0                             | 21,378 |
| 2. Employee Fringe Benefits | 10,155        | 0                             | 10,155 |
| 3. Travel                   | 3,500         | 0                             | 3,500  |
| 4. Supplies and Services    | 29,500        | 0                             | 29,500 |
| 5. Equipment                | 0             | 0                             | 0      |
| 6. Facilities & Admin Costs | 9,759         | 0                             | 9,759  |
| Subtotals                   | 74,292        | 0                             | 74,292 |
| <b>Total Project Costs:</b> |               | <b>74,292</b>                 |        |

