

JIMAR – PFRP ANNUAL REPORT FOR FY 2006

P.I./Sponsor Name: Selina Heppell/Molly Lutcavage/John Sibert

Project Proposal Title: **Comparing sea turtle distributions and fisheries interactions in the Atlantic and Pacific**

Funding Agency: NOAA

NOAA Goal (Check those that apply):

- ☒ To protect, restore, and manage the use of coastal and ocean resources through ecosystem-base management
- ☐ To understand climate variability and change to enhance society's ability to plan and respond
- ☐ To serve society's needs for weather and water information
- ☐ To support the nation's commerce with information for safe, efficient, and environmentally sound transportation

1. Purpose of the Project (one paragraph)

We are conducting quantitative and qualitative analyses of existing data on the ecology, distribution and fishery interactions of leatherback and loggerhead sea turtles in the North Pacific and North Atlantic oceans. Our primary goal is to use a comparative approach to determine why populations of sea turtles in the Atlantic appear to be stable or increasing, while populations of the same species in the Pacific are declining, even though fisheries interactions occur in each ocean basin. Because of great concerns for turtle survival, and their protected status under the Endangered Species Act, sea turtle take in pelagic fisheries has resulted in complete closures (e.g., Hawaii, Grand Banks) or major restrictions on effort and area for the US fleet (e.g., NE Distant Sector, Atlantic). Scientific understanding of the extent and nature of world-wide take patterns in pelagic and inshore fisheries, and impacts on stock rebuilding, is incomplete, at best. Our PASTA research project is now comprised of an interdisciplinary group of sea turtle biologists, fisheries scientists, demographers, and oceanographers from federal and international agencies and academia.

Steering Committee: Molly Lutcavage, Selina S. Heppell, Tomo Eguchi, David Kirby, Rebecca Lewison, Abigail McCarthy, Melissa Snover, Yonat Swimmer

2. Progress during FY 2006 (One-two paragraphs, including a comparison of the actual accomplishments to the objectives established for the period, and the reasons for slippage if established objectives were not met):

The PASTA (Pacific-Atlantic Sea Turtle Assessment) team met for 2.5 days in La Jolla, CA in August 2005. Our first meeting resulted in a plan for analysis that includes a spatially-explicit hazard assessment through GIS mapping of coastal and pelagic fisheries, relative risk assessment based on individual-based movement models, and life history assessment through age-structured modeling. Stressors that will be qualitatively assessed both spatially and temporally include mortality from fisheries bycatch, egg harvest, adult harvest, beach development, and climate change that affects the amount and distribution of forage in pelagic habitats. Our group is also working on new modeling tools that may allow for improved monitoring and status assessment. Our primary goals are to identify viable hypotheses for observed population change and to determine what primary data gaps are hindering assessment.

List of Attendees:

Molly Lutcavage, Selina Heppell, Francisco Chavez (MBARI), Tomo Eguchi (NMFS), Martin Hall (IATTC), Simon Hoyle (IATTC), David Kirby, Rebecca Lewison (San Diego State U.), Kate Mansfield (VIMS), Yoshi Matsuzawa (Japanese Sea Turtle Society), Abigail McCarthy (OSU), Francois Royer (UNH), Vince Saba (VIMS), Jeffrey Seminoff (NMFS), Melissa Snover (NMFS), Yonat Swimmer (NMFS), Jason Vaughan (OSU), Jeanette Wyneken (Florida Atlantic U.)

3. Plans for the next fiscal year (one paragraph):

PASTA II will convene in San Diego August 22-25, 2006. Day one will be a meeting of the original PASTA attendees, to present findings and discuss synthesis. Day 2 will include additional invitees from sea turtle and oceanographic fields to critically evaluate and contribute to our assessment. Day 3 will focus on synthesis and development of products. Prior to the PASTA II meeting, we will complete a series of GIS MAPS of nesting beaches, foraging grounds, oceanographic zones and fisheries distribution over time, STATISTICAL ANALYSIS of population trends in time and space to determine the scale of population-level impacts and detect spatial correlations. LIFE HISTORY MODELS that incorporate age structure (time lags) and changes in vital rates for each species and are then compared with nesting beach trends and size distribution data, and MOVEMENT MODELS that utilize nesting distributions (to map possible dispersal routes), remotely sensed data, current maps and satellite tracking information to determine likely overlaps for turtles and various fisheries. ANTICIPATED PRODUCTS include a series of GIS maps that show the distribution of turtles, nesting beach status, oceanographic features, and fisheries in each ocean basin, concentrating on Northern Hemisphere waters, a list of alternative hypotheses for population differences, along with their predicted effects on age/size structure, population growth, and/or population distribution, a list of critical research needs (data gaps), and prototypes of new, integrated assessment models. We anticipate 1 overview paper of our approach and findings for

publication in a peer-reviewed journal, plus 2-4 papers authored by PASTA attendees that contribute to the effort.

4. List of papers published in refereed journals during FY 2006.
none

5. Other papers, technical reports, meeting presentations, etc.

HIGH-USE PELAGIC ZONES: THE OVERLAP OF LOGGERHEAD (CARETTA CARETTA) FORAGING AREAS AND LONGLINE FISHERIES BYCATCH IN THE NORTH ATLANTIC OCEAN

Abigail L. McCarthy, Selina S. Heppell, Thomas Dellinger, Molly E. Lutcavage, and Scott S. Heppell. Oral presentation at the Annual Symposium on Sea Turtle Conservation and Biology.

PASTA: THE PACIFIC-ATLANTIC SEA TURTLE ASSESSMENT PROJECT

Molly Lutcavage, Selina S. Heppell, and Abigail McCarthy. Poster presentation at the Annual Symposium on Sea Turtle Conservation and Biology.
Also presented to the Lake Arrowhead Tuna Symposium, May, 2006.

6. Graduates (Names of students graduating with MS or PhD degrees during FY 2006. Provide titles of their thesis or dissertation):

Abigail McCarthy, MSc, Oregon State University. Analysis of habitat preference and movement patterns of loggerhead sea turtles (*Caretta caretta*) foraging in the North Atlantic

7. Awards (List awards given to JIMAR employees or to the project itself during the period):
8. Publication Count (Total count of publications for the reporting period and previous periods categorized by NOAA lead author and Institute (or subgrantee) lead author and whether it was peer-reviewed or non peer-reviewed (not including presentations):

	JL Lead Author			NOAA Lead Author			Other Lead Author		
	FY04	FY05	FY06	FY04	FY05	FY06	FY04	FY05	FY06
Peer-reviewed									
Non-peer reviewed									

9. Students and Post-docs (Number of students and post-docs that were associated with NOAA funded research. Please indicate if they received any NOAA funding. For institutes that award subcontracts, please include information from your subgrantees):

Abigail McCarthy, MSc, Oregon State University

Jason Vaughan, MSc, Oregon State University

Francois Royer, post-doc, University of New Hampshire (funded by another NOAA grant).

10. Personnel:

- (i) Number of employees by job title and terminal degree that received more than 50% support from NOAA, including visiting scientists (this information is not required from subgrantees):
- (ii) Number of employees/students that received 100% of their funding from an OAR laboratory and/or are located within that laboratory.
- (iii) Number of employees/students that were hired by NOAA during the past year:

11. Images and Captions. (JIMAR will be including images in the annual report. Please send two of your best high-resolution, color images (photo, graphic, schematic) as a JPEG or TIFF with a caption for each image. Hardcopies of images can be dropped off at the JIMAR office if no electronic versions are available.

- Caption 1:
- Caption 2: