JIMAR – PFRP ANNUAL REPORT FOR FY 2007

P.I./Sponsor Name: Selina Heppell (OSU), Molly Lutcavage (UNH), John Sibert (UH)

Project Proposal Title: Pacific/ Atlantic Sea Turtle Assessment (PASTA)

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 2007 (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):

PASTA II met in San Diego August 22-25, 2006. Day one was a meeting of the original PASTA attendees, who presented findings and discussed synthesis. Day 2 included additional invitees from sea turtle and oceanographic fields to critically evaluate and contribute to our assessment. A full report from PASTA II is forthcoming. New participants in PASTA II included: Bryan Wallace from Duke University, Irene Kinan from the WPRFMC, Shaleyla Kelez, also from Duke University, Andy Meyers at the University of New Hampshire Large Pelagics research center, Mark Maunder from the IATTC, and Jennifer Purcell, a gelatinous zooplankton biologist from Western Washington University.

At PASTA II we discussed progress made on 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. We also discussed movement models, specifically for hatchling dispersal, that utilize nesting distributions, remotely sensed data, current maps and satellite tracking information to determine likely overlaps for turtles and various fisheries. Prior to the PASTA II meeting, we created a series of large maps of nesting beaches. During the meeting we invited participants to add the locations of recently discovered nesting beaches and foraging grounds to these maps. These were helpful in compiling our maps of nesting beach trends and in determining which beaches were on our list of index beaches for both species and both basins.

In addition to the PASTA II meeting in San Diego, we convened the majority of PASTA participants at the International Sea Turtle Symposium in Myrtle Beach, SC this February. At this "PASTA 2.5" meeting we focused on the best way to publish the work we've done as the PASTA group. Specifically, the group discussed ideas for a Bioscience review paper, a NCEAS working group, and presenting PASTA conclusions at the ClioTop meeting in December.

Anticipated products include a report that provides descriptions and results of demographic models, preliminary results from a hatchling dispersal model, and maps that show the trends in nesting beach numbers for both species in both basins over the time period for which those data are available. The conservation efforts made in those same locations will also be included on those maps, as well as the coastal and pelagic fisheries near nesting beaches. We are also completing an analysis of the reproductive values of sea turtles caught in various fisheries in each ocean basin (manuscript complete, will be submitted to Journal of Applied Ecology). We have also generated 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.

3. Plans for the next fiscal year (one paragraph):
Our project is ending Dec. 31, 2007, following a no-cost extension

4. List of papers published in refereed journals during FY 2007.
Manuscripts are in prep

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

In Prep. for submission June 2007. Defining Habitat Preferences of Pelagic Loggerhead Sea Turtles (*Caretta caretta*) in the North Atlantic through Analysis of Track Sinuosity. McCarthy, A. L., Heppell, S.S., Royer, F., Dellinger, T. For submission to JEMBE.

In Prep. for submission July 2007. Pelagic fisheries interactions with *Caretta caretta*: Chlorophyll a as an important predictor of by-catch. McCarthy, A. L., Heppell, S.S., Lutcavage, M. For submission to Fisheries Oceanography.

In Prep. for submission July 2007. Reproductive values of loggerhead turtles in fisheries bycatch worldwide. Wallace, B., Heppell, S.S., Lewison, R., Kelez, S., Crowder, L.

In Prep. for submission June 2007. Application of diffusion approximation for risk assessments of sea turtle populations. Snover, M.L., Heppell, S.S. For submission to Ecological Applications

6. Graduates (Names of students graduating with MS or PhD degrees during FY 2007. Provide titles of their thesis or dissertation):

Abigail McCarthy, MS. Defining Habitat Preferences of Pelagic Loggerhead Sea Turtles (*Caretta caretta*) in the North Atlantic Through Analysis of Behavior and Bycatch.

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): not sure what to do here – leave it blank.

	JI 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):   1 - Abigail McCarthy, MSc student

    (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:
        1 – Abigail McCarthy