

JIMAR ANNUAL REPORT FOR FY 2008

P.I./SPONSOR NAME: John Sibert

NOAA OFFICE (Of the primary technical contract): PIFSC

PROJECT PROPOSAL TITLE: Integrative modeling in support of the Pelagic Fisheries Research Program: spatially disaggregated population dynamics models for pelagic fisheries

FUNDING AGENCY: NOAA

NOAA GOAL (Check those that apply):

- To protect, restore, and manage the use of coastal and ocean resources through ecosystem-based 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

PURPOSE OF THE PROJECT (One paragraph): The general objective of this research is to integrate the results of different components of the Pelagic Fisheries Research Program into a consistent framework that integrates knowledge of fish movement and population dynamics, the fishing process, economics and oceanography. The primary focus is the development of spatial models of pelagic fish population dynamics that explicitly include movement, mortality, and fisheries. The work emphasizes collaboration with other PFRP projects.

PROGRESS DURING FY 2008:

Various state-space models developed by the PFRP for reconstructing tracks of animals tagged with electronic devices have been very well received by workers in this field. This success is an important achievement of PFRP modeling efforts.

Progress on goals from FY 2007:

Post-doctoral researchers, Senina and Nielsen both left the PFRP at the end of 2007, and attempts to recruit a new post-doctoral research were not successful. Consequently some of the project goals were not fully completed.

Conclude work on the an algorithm based on the theoretical analysis of geolocation errors for application in cases where light data from tags are not available.

This work is completed and a preliminary report will be published in the proceedings of the Second International Symposium on Tagging and Tracking Marine Fish with Electronic Devices, 8-11 October 2007, Donostia-San Sebastian, Spain.

Complete the initial modeling phases for combining individual and population based estimation of migration patterns.

Supporting the PFRP state-space models during their initial adoption by the electronic tagging community required a major time commitment from PFRP post-doctoral researcher Anders Nielsen in 2007 leaving little time for work on this project.

Begin a comparison of movement parameter estimates across species of pelagic fish derived from different tagging methods.

The tag diffusion model developed for basin scale analysis of populations of tagged fish was implemented as an ADMB application. This is a major achievement that will allow more rapid future development and ease its application to new situations.

Implement an optimized SEAPODYM model for yellowfin tuna (*T. albacares*) across the Pacific basin. The variable spatial resolution capabilities of SEAPODYM will be used to implement a model at 1/3 degree spatial resolution around the main Hawaiian islands for use in the Hawaii-Pacific Ocean Observing and Information System project at SOEST.

This work was not completed because of difficulties recruiting a post-doctoral researcher.

PLANS FOR THE NEXT FISCAL YEAR (One paragraph):

Continue work to implement an optimized SEAPODYM model for yellowfin tuna (*T. albacares*) across the Pacific basin. Use the variable spatial resolution capabilities of SEAPODYM to implement a model at 1/3 degree spatial resolution around the main Hawaiian islands for use in the Hawaii-Pacific Ocean Observing and Information System project at SOEST.

Begin a collaboration with scientists from the Secretariat of the Pacific Community on joint analysis of tagging data from Hawaii and the equatorial fisheries in the Pacific.

Develop statistical models of data from VR2 arrays to describe residency and exchange rates of tunas in networks of anchored FADs.

LIST OF PAPERS PUBLISHED IN REFERRED JOURNALS DURING FY 2008

OTHER PAPERS, TECHNICAL REPORTS, ETC.:

Nielsen, Anders, and John Sibert. A holistic approach to light based geolocation. Presentation at the 2nd International Symposium on Tagging and Tracking Marine Fish with Electronic Devices, October 8-11, 2007, Donostia-San Sebastian, Spain.

Nielsen, Anders. A mosaic of models for light-based geolocation: How to choose, what to be careful about, and future directions. Presentation at the PFRP Principal Investigators Meeting, Nov. 13-14, 2007, Honolulu, HI.

Sibert, John, and Anders Nielsen. Systematic errors in estimating latitude for solar irradiance time series: causes and possible remedies. Presentation at the 2nd International Symposium on Tagging and Tracking Marine Fish with Electronic Devices, October 8-11, 2007, Donostia-San Sebastian, Spain.

Sibert, John, and Johnnoel Ancheta. Electronic Tagging Data Repository, <https://www.soest.hawaii.edu/tag-data/>. Poster presentation at the 2nd International Symposium on Tagging and Tracking Marine Fish with Electronic Devices, October 8-11, 2007, Donostia-San Sebastian, Spain.

GRADUATES (Names of students graduating with MS or PhD degrees during FY 2008; Titles of their Thesis or Dissertation):

AWARDS (List awards given to JIMAR employees or to the project itself during the period):

PUBLICATION COUNT (Total count of publications for the reporting period and categorized by NOAA lead author and Institute (or subgrantee) lead author and whether it was peer-reviewed or non peer-reviewed (not including presentations):

	JI Lead Author	NOAA Lead Author	Other Lead Author
Peer Reviewed			
Non-Peer Reviewed			

PERSONNEL:

For projects that awarded subcontracts in the fiscal year, please provide the number of supported postdocs and students from each subgrantee.

IMAGES AND CAPTIONS (We will also be including images for the annual report.

Please send two of your best high-resolution, color images (photo, graphic, schematic) as a **JPEG or TIFF (300 dpi)** with a caption for each image. If you do not have an electronic version of the image, a hardcopy version may be dropped off at the JIMAR office located in the Marine Sciences Building, Room 312):