

JIMAR – PFRP ANNUAL REPORT FOR FY 2006

P.I./Sponsor Name: Mark Maunder
(Main Collaborator: Simon Hoyle)

Project Proposal Title: A general model for protected species

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)

The objective of the project is to generate a general Bayesian integrated modeling framework for protected species modeling that can be applied to multiple species and used to provide management advice. Models will be developed based on the general framework and used to estimate the effect of fisheries on the protected species populations.

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 research in the second year and third year of the project was delayed due to staffing changes. In these years the main collaborator, SH, reduced his time spent on the project. Therefore, the contract was extended.

SH developed the preliminary AD model builder code for an integrated analysis of black-footed albatross population dynamics. The final effort data required for the model were obtained in December 2005. Mark-recapture analysis results and capture histories, after the difficult processes of data preparation and model selection to achieve 'goodness-of-fit', were provided by Sophie Veran in October 2005. We were not able to apply MULTIFAN-CL to this population as the required modifications to the software are yet to be implemented. SH met with Kim Rivera, National Seabird Coordinator for the US National Marine Fisheries Service, in May 2006 and discussed black-footed albatross

data availability. SH attended a symposium for the Pacific-Atlantic sea turtle assessment (PASTA) project in La Jolla, August 2005. He participated in discussions on methods for assessing sea turtle stocks, and presented an outline of the integrated analysis approach and its potential for use in sea turtle assessment. SH is a collaborator on the PASTA project. MM acquired additional funding from the New Zealand Ministry of Fisheries for the project “Assessment to risk of yellow-eyed penguins *Megadyptes antipodes* from fisheries incidental mortality in New Zealand fisheries and definition of information requirements for managing fisheries related risk” with NIWA and apply the general fisheries model CASAL to yellow-eyed penguins.

MM investigated the use of general fisheries stock assessment models for modeling protected species and presented a summary at the Workshop on Stock Assessment Methods, La Jolla. MM visited Panagiotis T. Besbeas at the University of Kent and worked on methods to integrate data into models. MM attended the AFS Conference and taught a course based on the general framework and give a presentation in the Bayesian section of the conference. MM also taught a course in AD Model Builder at the University of Kent. MM attended the objective Bayes conference in Missouri and gave a poster describing aspects of the general framework. MM was an invited discussant at the Workshop on Uncertainty in Ecological Analysis run by the Mathematical Biosciences Institute, Ohio State University. MM attended a workshop at the Centre for Ecological and Evolutionary Synthesis, University of Oslo, on the project “Integrated statistical analysis based on likelihood and confidence: applications to the hare-lynx population cycles and the status and structure of bowhead whales”. Mark visited New Zealand and worked with Alistair Dunn on this project. SH attended the tuna conference and PI meeting. MM attended the PFRP Research Priorities Workshop and PI meeting in Hawaii.

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

The applications of the general framework to the Tern Island population of black footed albatross and the yellow-eyed penguin will be completed, the results presented at the EURING conference and a manuscript submitted for publication. An ADMB course will be taught in Seattle and MM will attend the NMFS stock assessment methods workshop in Seattle to evaluate the use of Stock Synthesis II for protected species. MM will attend the PFRP PI meeting in Hawaii. We will carry out further investigation into appropriate methods to include information in models of protected species and to estimate uncertainty. MM will continue his collaboration with Tore Schweder at the Centre for Ecological and Evolutionary Synthesis, University of Oslo and Jaume Forcada at the British Antarctic Survey.

4. List of papers published in refereed journals during FY 2006.

NA

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

Hoyle, S.D. (presentation) Potential for modeling turtle population dynamics using integrated analysis, Pacific-Atlantic Sea Turtle Assessment Symposium, La Jolla, CA, August 2005.

Hoyle, S.D. (presentation) Modeling for protected species: structure and complexity, Workshop on Prediction for Marine Resources, Institute of Statistical Mathematics, Tokyo, Japan, January 13, 2006.

Maunder, M.N. (presentation). Invited discussant in the Population Dynamics session at the Workshop on Uncertainty in Ecological Analysis run by the Mathematical Biosciences Institute, Ohio State University, April 3-7, 2006.

Maunder, M.N. (presentation). Review of integrated analysis in fisheries stock assessment. Integrated statistical analysis based on likelihood and confidence: applications to the hare-lynx population cycles and the status and structure of bowhead whales, the Centre for Ecological and Evolutionary Synthesis, University of Oslo, October, 19-21, 2005.

Maunder, M.N. (presentation). Incites into Bayesian analysis (misspelling intentional). Integrated statistical analysis based on likelihood and confidence: applications to the hare-lynx population cycles and the status and structure of bowhead whales, the Centre for Ecological and Evolutionary Synthesis, University of Oslo, October, 19-21, 2005.

Maunder, M.N. and Besbeas, P.T. (presentation). Incites into Bayesian analysis: data based priors (misspelling intentional). 135th American Fisheries Society Annual Meeting, Anchorage, Alaska, 11-15 September, 2005.

Maunder, M.N. (presentation). Lessons from an adventure into protected species modeling, PFRP Principal Investigators Workshop, University of Hawaii at Manoa, Hawaii, USA, November 14 -15, 2005

Maunder, M.N. (presentation). Report of the Workshop on Stock Assessment Methods, PFRP Research Priorities Workshop, University of Hawaii at Manoa, Hawaii, USA, November 16 -18, 2005

Maunder, M.N. (presentation). Can general fisheries stock assessment models be used for protected species? Workshop on stock assessment methods, La Jolla, California, USA, 7-11 November 2005.

Maunder, M.N. (presentation). Incites into Bayesian analysis (misspelling intentional). University of Kent, Canterbury, October 25, 2005.

Maunder, M.N. and Besbeas, P.T. (poster). Data-based priors for objective Bayes methods. The Fifth International Workshop on Objective Bayes Methodology, Branson, Missouri, USA, 4-8 June, 2005.

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

NA

7. Awards (List awards given to JIMAR employees or to the project itself during the period): NA

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								3	
Non-peer reviewed								1	

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):

NA

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): 0

(ii) Number of employees/students that received 100% of their funding from an OAR laboratory and/or are located within that laboratory. 0

(iii) Number of employees/students that were hired by NOAA during the past year: 0

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: