JIMAR – PFRP ANNUAL REPORT FOR FY 2007

P.I./Sponsor Name: David Itano and Kim Holland

Project Proposal Title: The Associative Dynamics of Tropical Tuna to a Large-scale Anchored FAD Array

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 purpose of this project is to apply sonic tagging and tuna monitoring techniques developed in Hawaii on a small-scale anchored FAD array to a larger system exploited by industrial-scale fisheries. The project was designed as an integral component of a medium-scale tuna tagging/assessment project of the Secretariat of the Pacific Community in conjunction with the National Fisheries Authority of Papua New Guinea. The overall project used a combination of tag types to address several critical issues of tuna movement and behavior in the Papua New Guinea EEZ that is being heavily exploited by domestic purse seine effort on a large-scale array of anchored FADs. The PFRP portion of the PNG Tagging Project funded sonic tagging of skipjack, yellowfin and bigeye tuna to examine fine scale behavior of tuna resources aggregated to this large number of anchored FADs useful for management purposes.

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):

Two tagging cruises totaling six months of sea time were conducted in PNG waters between August 2006 – May 2007. Seven groups of FADs were equipped with Vemco VR2 automated fish monitoring receivers as per the funding proposal protocols in the Bismarck and Solomon Seas of PNG. Vemco V9 and V9P sonic tags were surgically implanted and released in association with monitor-equipped FADs (69 skipjack, 135 yellowfin, 18 bigeye tuna). Monitors on five FAD groups were

recouperated by the tagging vessel before the end of the tagging charter with data successfully downloaded. Two monitored FAD groups were left to collect additional data and will be recovered in the third quarter of 2007.

The overall tag releases were in line with proposed objectives but the project was not able to tag adequate numbers of bigeye tuna in concurrent FAD residence with skipjack and yellowfin tuna. This was a general shortcoming of all tag release types during the overall Project (conventional, archival and sonic) due to an apparent low abundance and realized low availability of bigeye tuna to the project vessel. However, adequate numbers of yellowfin and skipjack were released with sonic tag. In some cases the time span of monitored FADs may not be sufficient for an examination of long-term residence and movement patterns. This could not be avoided due to the logistical considerations of recovering the receivers during the charter period of the vessel.

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

Sonic data will be analyzed to examine aspects of time-residence, inter-FAD movement and vertical behavior of tropical tuna in close association with a large number of anchored FADs. This data will be combined with results from archival tagging data for publication and presentation at relevant meetings and conferences. Due to the low numbers of bigeye releases, the PIs are in collaboration with the National Fisheries Authority (NFA) to continue sonic tagging work in PNG, targeting bigeye tuna using domestic handline vessels. The PIs have supplied the PNG counterparts with basic tagging equipment and VR2 receivers. The NFA will separately fund all costs for sonic tags, personnel, travel and vessel time.

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

Dagorn, Laurent, Kim Holland, and David Itano. Behavior of yellowfin (Thunnus albacares) and bigeye (T. obesus) tuna in a network of fish aggregating devices (FADs). *Marine Biology* 151(2): 595-606, April 2007.

Holland, Kim, and David Itano. First Succesful Surgical Internal Implantation of Electronic Tags in Marlin. *Bulletin of Marine Science*, 79(3): 871–874, 2006

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

The project objectives and preliminary results have been presented to three meetings of the Western Pacific Regional Fishery Management Council: the Pelagic Plan Team, the Scientific and Statistical Committee and the 138th Meeting of the WPRFMC (June 19-22, 2007) and to the 58th International Tuna Conference (May 21-24, 2007). Summary reports and abstracts were generated and distributed to these meetings. A popular article describing the project was published in the periodical Niugini Blue and online on the ATUNA.COM site to promote tag recovery awareness.

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

None

7. Awards (List awards given to JIMAR employees or to the project itself during the period): The Executive Director of the Western Pacific Regional Fishery Management Council commended the PIs and the PFRP study in writing and supported further research along these lines.

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		
	FY05	FY06	FY07	FY05	FY06	FY07	FY05	FY06	FY07
Peer-reviewed			1					2	1
Non-peer reviewed			1					3	

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):
Two

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, BS. 1, PhD

(ii) Number of employees/students that received 100% of their funding from an OAR laboratory and/or are located within that laboratory. None.

(iii) Number of employees/students that were hired by NOAA during the past year: None.

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 of 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. Crew of the *Soltai 6* supporting PFRP funded sonic tagging of tuna in Papua New Guinea

Caption 2. A yellowfin tuna about to be tagged for movement and behavior studies around FADs in Papua New Guinea