JIMAR – PFRP ANNUAL REPORT FOR FY 2005

P.I./Sponsor Name: William A. Walsh (JIMAR/PFRP) and Keith A. Bigelow (NMFS).

Samuel G. Pooley (NMFS) contributed to the development of this project, but has not been actively involved in it since assuming the directorship of the NMFS Honolulu Laboratory (subsequently re-designated the Pacific Islands Fisheries Science Center).

Project Proposal Title: Comparisons of Catch Rates for Target and Incidentally Taken Fishes in Widely Separated Areas of the Pacific Ocean

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)

This project has continued and expanded upon an earlier Pelagic Fisheries Research Program project (Distributions, Histories, and Recent Catch Trends with Six Fish Taxa Taken as Incidental Catch by the Hawai'i-based Commercial Longline Fishery, by William A. Walsh and Samuel G. Pooley). It has two general aims: the practical goal is to assess and improve the accuracy of longline logbook data for several pelagic fishes (e.g., striped marlin, shortbill spearfish, albacore, bigeye tuna, wahoo), while the more conceptual goal is to elucidate variation in catch per unit effort (CPUE) for these fishes across wide spatial scales in the Pacific Ocean. Regarding the latter, the specific intention is to determine whether, and if so, to what extent, intra- and interspecific CPUE values for the several species are correlated throughout the Pacific Ocean. The work has entailed (or will entail) analyses and comparisons of fish catch and operational data gathered by the Hawai'i Longline Observer Program of the National Marine Fisheries Service (NMFS), longline logbook records submitted by the Hawai'i-based fleet, data from mainland US fisheries and US possessions, and western Pacific fisheries.

2. Progress during FY 2005 (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):

This project was initially funded in November 2002, with a scheduled two-year duration. There have not been any specific conceptual problems per se. Although this project has not yet yielded peer-reviewed publications, there has been substantial progress toward its practical goals. Generalized additive models have been fitted to observer data for both striped marlin and shortbill spearfish. This represents a logical succession to previous work with blue marlin, with improvements. Specifically, these models have fewer degrees of freedom allotted to predictor variables that appeared to exert minor effects on catch rates; as a result, the likelihood of overparameterization has been reduced with little loss of explanatory power. In addition, substitution of an overdispersed Poisson distribution for an ordinary Poisson distribution as the error structure has improved the fit of these models, which were then applied to logbook data to identify likely errors and thereby improve accuracy. In this context, logbook data for black marlin and sailfish have also been examined and corrected because the billfishes catch data from the Hawaii-based longline fishery tend to exhibit "intermingled" patterns of misidentifications. Thus, it was considered appropriate to evaluate the four remaining istiophorid species together.

This project has also contributed to improvements in both the electronic archival of logbook data at the Pacific Islands Fisheries Science Center and the linkage between logbook data and fish auction sales records provided by the United Fishing Agency, Ltd., Honolulu, HI. Concerning the former, a corrected 100-month data set for blue marlin (March 1994-June 2002) is presently in the ORACLE electronic archive, and corrected data for black marlin and sailfish will be ready for inclusion therein in the very near future (within approximately one month). In this context, Ms. Karen Sender of the Pacific Islands Fisheries Science Center Information Technology Program and Mr. Lee Weinberger from the Southeast Fisheries Center have been very helpful and informative. It is their professional judgment that the availability of these corrected data sets should permit whatever "fine-tuning" may prove necessary to enhance the usefulness and accuracy of the logbook data archived at the Pacific Islands Fisheries Science Center. Improved linkage between logbook and auction data is important because the latter have been used extensively to verify statistical results and thereby correct billfish catch data. Mr. Dios Gonzales of the Pacific Islands Fisheries Science Center Fishery Monitoring and Economic Performance Division has been most helpful in this regard.

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

Four types of work are planned for FY 2006. The first set of tasks will consist of evaluation and correction as necessary of the logbook catch data for striped marlin, shortbill spearfish, sailfish, and black marlin for the 10-year period March 1994-February 2004 (the earlier date corresponds to the establishment of the NMFS

Observer Program in Hawaii). Results so obtained will then be described for publication in a peer-reviewed journal. Because the methodology to be employed is largely identical to that used previously with blue marlin, it is expected that citations and cross-referencing should permit brevity in this section of a paper. This, in turn, may permit writing a paper that is of a reasonable length but contains a substantial results section and a comparative discussion of biases and other aspects of the catch data. The third set of tasks will consist of evaluation and correction of logbook data for target species. This is expected to be relatively easy because experience has shown that logbook data for the tunas, in particular, are much more accurate than billfishes catch data. The final set of tasks will entail using the corrected data sets in inter- and intraspecific comparisons of catch per unit of effort.

4. List of papers published in refereed journals during FY 2005.

None

The FY 2005 progress report for another project ("Distributions, Histories, and Recent Catch Trends with Six Fish Taxa Taken as Incidental Catch by the Hawaii-based Commercial Longline Fishery") lists a peer-reviewed paper in press (Fisheries Research).

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

Recent Progress in Logbook Data Quality Control Studies with Istiophorid Billfishes; 2004 PFRP semiannual meeting, Honolulu, HI (PowerPoint presentation).

6. Graduates (Names of students graduating with MS or PhD degrees during FY 2005. Provide titles of their thesis or dissertation):

None

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

None

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		
	FY03	FY04	FY05	FY03	FY04	FY05	FY03	FY04	FY05
Peer-reviewed	0	0	0						
Non-peer reviewed									

The FY 2005 progress report for another project ("Distributions, Histories, and Recent Catch Trends with Six Fish Taxa Taken as Incidental Catch by the Hawaii-based Commercial Longline Fishery") lists a non-peer reviewed paper presented to the Interim Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC), 26 January-4 February, 2004, Honolulu, Hawaii, USA.

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):

None

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):

This grant provided salary support for William A. Walsh (PFRP, Assistant Researcher, c/o Pacific Islands Fisheries Science Center).

(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.

Not applicable