JIMAR – PFRP ANNUAL REPORT FOR FY 2006

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

Project Proposal Title: Evaluation of Data Quality for Catches of Several Pelagic Management Unit Species by Hawaii-based Longline Vessels and Exploratory Analyses of Historical Catch Records from Japanese Longline Vessels

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 two earlier Pelagic Fisheries Research Program projects (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; Comparisons of Catch Rates for Target and Incidentally Taken Fishes in Widely Separated Areas of the Pacific Ocean, by William A. Walsh and Samuel G. Pooley). This project was intended to provide well-documented and verified catch data sets for Pelagic Management Unit Species. The data sets so generated are expected to prove suitable for use in stock assessments or multispecies modeling in the context of ecosystem-based management. In addition, the project was intended to improve understanding of longline catch data from Japanese vessels in the post-World War II period.

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):

This project was funded in November 2004, with a scheduled two-year duration. Progress during FY 2006 resulted from continuation of earlier work with istiophorid billfishes (marlins) as the species of primary interest. Specifically, logbook data quality control studies in the aforementioned earlier projects included blue marlin, striped marlin, and shortbill spearfish as species of interest. Results from the current project have demonstrated that all of these species are at times misidentified as black marlin or sailfish (or vice versa). The latter

two species are the remaining istiophorids taken by the Hawai'i-based longline fishery and were listed as species of interest for this project. Results have demonstrated that species misidentifications have greatly inflated the nominal catches of black marlin and sailfish in the commercial logbooks from this fishery for the 10-year period March 1994 through February 2004 (black marlin: > +700%; sailfish: > +66%). The corrected data have verified that these species are rare (black marlin) and not common (sailfish) in the catch of this fishery. It was noteworthy that the high rates of sailfish misidentifications were unexpected because this species is quite distinctive in appearance. The evaluations of logbook accuracy and associated corrections for the five billfishes from March 1994 through February 2004 have been completed and the corrected data with full documentation archived at the NOAA Fisheries Pacific Islands Fisheries Science Center. A summary of results was presented at the 57th International Tuna Conference (see below); full results, including corrected catch estimates with prediction intervals, descriptions and estimates of logbook reporting bias, evaluations of under- and non-reporting, and standardized CPUE trends are being prepared for submission to the peer-reviewed journal Fisheries Research. This manuscript will serve as a sequel to a recently published blue marlin paper (Walsh et al. 2005; see below). Finally, corrected catch data for striped marlin have already been used in the stock assessment conducted at the Pacific Islands Fisheries Science Center in November 2005.

There were two impediments to progress encountered during FY 2006. The first was that the patterns of species misidentifications were more complex than expected. In many instances, Species A was logged as Species B, which was logged in turn as Species C, etc. However, these multiple errors often involved fractions of the fish, so that it was not possible to assign all A as B or B as C. As such, the need to identify misidentified fractions of the catch made the task of logbook corrections rather tedious and time-consuming. The second impediment to progress was analytical in nature. The statistical models initially used in the logbook evaluations were updated from Walsh et al. (2005). It became apparent, however, that these models were overparameterized and the resulting bias introduced into their predictions approximated the magnitude of the original logbook reporting bias. This problem required simplification of the statistical models used, but the results obtained after doing so appeared promising in that the revisions yielded improved accuracy, precision, and comprehensibility of results. This work was presented at the Fourth International Billfish Symposium and submitted for publication in the Bulletin of Marine Science (see below). The consequence of these impediments was that little progress was achieved with respect to analysis of the Japanese longline data. A new PFRP proposal has been submitted and we hope to pursue this area if the project is accepted and time permits.

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

The intentions for FY 2007 are to complete the manuscript related to the five billfishes (blue marlin, striped marlin, shortbill spearfish, black marlin, sailfish) for the 10-year period March 1994-February 2004 planned for submission to *Fisheries Research* and to revise (as necessary) and publish the paper submitted to the *Bulletin of Marine Science*.

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

Analysis of logbook accuracy for blue marlin (*Makaira nigricans*) in the Hawaii-based longline fishery with a generalized additive model and commercial sales data. William A. Walsh, Russell Y. Ito, Kurt E. Kawamoto and Marti McCracken. 2005. *Fisheries Research* 75: 175-192

Analyses of observed longline catches of blue marlin, *Makaira nigricans*, by use of generalized additive models with operational and environmental predictors. William A. Walsh, Evan A. Howell, Keith A. Bigelow and Marti McCracken. In press, *Bulletin of Marine Science*.

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

U.S. Commercial Fisheries for Marlins in the North Pacific Ocean. R.Y. Ito and W.A. Walsh. Working Paper to the ISC Working Group (Technical Report)

PFRP Semiannual meeting (November 2005): Recent Progress in Analyses of Catch Data from Fishery Observers and in Logbooks. William A. Walsh and Keith A. Bigelow (Presentation)

Fourth International Billfish Symposium (November 2005): Analyses of Observed Longline Catches of Blue Marlin, *Makaira nigricans*, by use of Generalized Additive Models with Operational and Environmental Predictors. William A. Walsh, Evan A. Howell, Keith A. Bigelow and Marti L. McCracken (Presentation)

57th International Tuna Conference (May 2006): CPUE Trends for Billfishes (Istiophoridae) in the Hawai'i-based Longline Fishery. William A. Walsh and Keith A. Bigelow (Presentation)

Journal Reviewer: Fisheries Research, ICES Journal of Marine Science, Bulletin of Marine Science

6. Graduates (Names of students graduating with MS or PhD degrees during FY 2006. 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):

	JI Lead Author			NOAA Lead Author			Other Lead Author		
	FY04	FY05	FY06	FY04	FY05	FY06	FY04	FY05	FY06
Peer-	0	0	2						2
reviewed									
Non-peer									1
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): 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, 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.

(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

12. For multi-year projects, provide budget for the next year on a separate page. Contact Dodie Lau to confirm whether or not your project is to receive continuation funds (e.g., year 2, year 3), and for budget preparation assistance, <u>lau@hawaii.edu</u>

Not applicable. There will be no further funding requests for this project.