

**JIMAR, PFRP ANNUAL PROGRESS REPORT  
FY 2002**

**PI Names:** William A. Walsh and Samuel G. Pooley

**Project Proposal Title:** Distributions, Histories, and Recent Catch Trends with Six Fish Taxa Taken as Incidental Catch by the Hawai'i-based Commercial Longline Fishery

**Funding Agency:** National Oceanic and Atmospheric Administration / National Marine Fisheries Service

**Project Purpose and Indicative Results:** This project involves statistical research into catch trends with several types of marine fishes that are sometimes characterized as non-target or incidental catch in the Hawaii-based commercial longline fishery, with the intention of providing the most accurate histories possible. This is considered important because these fishes in combination represent a large fraction of the entire catch of this fishery, and because the individual species may be economically, ecologically, recreationally important. The work utilizes data gathered by the Hawai'i Longline Observer Program of the National Marine Fisheries Service (NMFS), logbook records submitted to NMFS by the Hawai'i-based longline fleet, and sales records from public fish auctions at the United Fishing Agency, Honolulu, Hawaii (UFA). The objectives are to develop statistical models of catch rates for the fishes of interest, which will in turn be used to evaluate logbook accuracy and reporting behavior, to generate corrected fishery-wide catch statistics, and to investigate geographical distributions. This project is also expected to contribute to improved linkage of the observer and logbook data sets with that from the United Fishing Agency, Ltd., public fish auction, which should facilitate comparison of the condition and composition of the catch to its economic value.

This project is expected to generate two major types of results. The statistical analyses mentioned previously as objectives are expected to yield useful information in finished form; e.g. identification of environmental or technical factors that affect catch rates may suggest ameliorative measures to reduce bycatch, and improved knowledge of geographic distributions should contribute to greater insight into actual or potential management measures such as area closures. The second type of results are the corrected data sets to be made available to other PFRP-funded investigations of biology, population dynamics, and fisheries economics, which should then be able to produce their own analyses with the minimum possible effects of data error problems.

Indicative results have been presented in Walsh and Kleiber (2001), which described the fitting of two statistical models to observer data for blue shark catch rates, and in Walsh (2002), which demonstrated that blue marlin catch data can be corrected by fishery-wide application of a statistical model similar to that described by Walsh and Kleiber (2001).

**Project Activities and Progress during FY 2002:** This project, which was funded in October 2000, had four major project activities conducted during FY 2002. These included verbal presentations, usable statistical analyses, data quality control work, and preparation of a proposal for a related, follow-on project.

The work on oral presentations consisted of preparation, delivery, or both. The first presentation (by Walsh) to the December PFRP meeting in Honolulu provided ongoing results as well as a preliminary description of ideas developed in response to the December 2001 Request for Proposals. The second presentation at the Tuna Conference provided ongoing results that focused on the importance of discards in this fishery. This topic was chosen because discards appear to account for significant fractions of the underreporting by this fleet, although except for blue shark, the data indicate that this fishery has rather low discard rates. Presentations to the Standing Committee on Tuna and Billfish (SCTB) to be delivered in Honolulu in July, and to the national meeting of the American Fisheries Society to be delivered in Baltimore, MD, in August, have been accepted and preparation is in progress.

Usable analyses focused on correction of blue marlin catches and on model development for the other species of interest. The logbook data correction work, in particular, reflected the recent availability of sales data from the auction at the United Fishing Agency, Ltd. Use of the latter represented progress toward the objective of linking the observer, logbook, and auction data sets more effectively.

A major activity consisted of checking four large batches of NMFS Observer data prior to its incorporation into the electronic archives of the NMFS Honolulu Laboratory. These checks were performed because it was deemed necessary to have the data examined by a familiar user to ensure that any problems or inaccuracies were identified and corrected as promptly as possible. These checks identified several substantial errors in the observer data, which were then documented by Walsh and Skillman (2001). A suite of appropriate corrective actions was then taken by the NMFS Observer Program in collaboration with the NMFS Honolulu Laboratory.

Proposal preparation was conducted in accordance with the theme of “Ecosystem-based fisheries management” that was the basis of the PFRP meeting in December and the Lake Arrowhead meeting in May. The proposed work will extend and enhance the current project by incorporating remotely sensed oceanographic data as predictors in order to develop more useful and comprehensible statistical models, by extending the species of interest to include some targets, and by comparing the results from Hawai’i to trends elsewhere in the Pacific.

**Planned Project Activities for FY 2003:** The major planned activity for FY 2003 is to conduct the definitive analyses with the species of interest and then describe the findings. It is expected that manuscripts will present both the statistical models (analogous to Walsh and Kleiber 2001) and their fishery-wide applications (analogous to Walsh et al., in press).

**Paper(s) Published in Journals during FY 2002:**

Generalized additive model and regression tree analyses of blue shark (*Prionace glauca*) catch rates by the Hawai'i-based commercial longline fishery, by Walsh, W.A. and Kleiber, P. *Fisheries Research* 53:115-131.

**Paper(s) in Press at Refereed Journals as of FY 2002:**

Comparison of logbook reports of incidental blue shark catch rates by Hawai'i-based longline vessels to fishery observer data by application of a generalized additive model, by Walsh, W.A., Kleiber, P., and McCracken, M. Accepted for publication in *Fisheries Research*. Expected publication date: September 2002.

**Other Papers, Reports, and Presentations during FY 2002:**

Incidental catches of fishes by Hawai'i longliners. Walsh, W.A. Pelagic Fisheries Research Program Newsletter 7:1-4.

Comparisons of fish sales data gathered by National Marine Fisheries Service or Hawaii Division of Aquatic Resources personnel to electronic sales data submitted by the United Fishing Agency, Ltd. Walsh, W.A. Unpublished internal report. NMFS Honolulu Laboratory, Fishery Monitoring and Economics Program.

Comparisons of fish catch data reported by fishery observers and in commercial logbooks to sales records from the United Fishing Agency Ltd., Honolulu, Hawaii. Walsh, W.A. and Skillman, R.A., NMFS Honolulu Laboratory, Southwest Fisheries Science Center, Manuscript Report File 002-2001H-MRF.

Discards of target and incidentally caught fishes by the Hawai'i-based longline fishery. Walsh, W.A. Presentation to the Scientific and Statistical Committee, Western Pacific Fishery Management Council, May 2002.

*Presentations Accepted during FY 2002:*

Development and application of generalized additive models to correct incidental catch rates in the Hawai'i-based longline fishery. Walsh, W.A. and Pooley, S.G. Accepted for presentation to the Standing Committee on Tuna and Billfish, July 2002.

Development and application of generalized additive models to correct incidental catch rates in the Hawai'i-based longline fishery. Walsh, W.A. and Pooley, S.G. Accepted for presentation to the national meeting of the American Fisheries Society, August 2002.

**Graduating Students with M.S. or Ph.D. Degrees During FY 2002:** None.

**Budget:** This project has used its allotted funding.