

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

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**Project Proposal Title:** Hawaii Regional Tuna Tagging Project

**Funding Agency:** NOAA/JIMAR

**1. Purpose of the project and indicative results.**

The purpose of the project is to better define the movement patterns and exploitation rates of yellowfin and bigeye tuna around the Hawaii region with particular reference to natural and man-made aggregations. Field work for the project has produced a release dataset of 9537 bigeye 8449 yellowfin tuna (17986 total) with recapture numbers to the end of the fiscal year amounting to 12.6% for both species (2266 total recaptures). Patterns of tag recaptures highlight the overwhelming importance of aggregation to tuna vulnerability in Hawaiian fisheries, with approximately 93% of all recaptures reported from tuna caught in association with seamounts and fish aggregation devices.

Yellowfin movements from releases made within two hundred miles of the main Hawaiian Islands have generally remained within this region, with only a few long-distance movements noted. However, yellowfin recaptures from fish tagged near Midway Atoll at the northwest end of the Hawaiian Island have shown considerable movement: southeast to the main Hawaiian Islands, south towards Palmyra Atoll and westward to Japan. Bigeye movements have for the most part concentrated in the offshore waters of the Hawaii EEZ with some recaptures reported outside the zone with increasing size and age of the fish.

Quantitative analyses of the larger recapture datasets estimate that the average residence time of bigeye at the offshore seamounts are twice as long as for yellowfin. This observation suggests there may be a basic difference between the aggregation behavior and motivations between the species, which is currently being investigated by another PFRP funded project to examine the trophic dynamics of bigeye and yellowfin tuna in relation to aggregation behavior.

Although overall fishing mortality on both species at the offshore seamounts and FADs was considered moderate, the estimated transfer rates suggest that these catches are not adversely impacting local populations of tuna in the offshore areas or their recruitment to inshore fisheries. However, these catches are likely to be under-reported due to some non-reporting and mis-recording of bigeye as yellowfin. Due to the importance of bigeye to the Hawaii longline fishery and their vulnerability to simple gear types on seamounts and FADs, the investigators recommend the offshore handline fishery should be closely monitored. However, further discussions of local management in this fishery should focus on social and economic considerations related to the various user groups and fisheries, which is the emphasis of another recently funded PFRP project.

Also, the researchers caution that these results and robust local fisheries for bigeye tuna depend on continued recruitment of bigeye tuna from other areas, presumably from the south where bigeye tuna are known to spawn. Increasing concern over bigeye stock condition of central and western Pacific bigeye stress the importance of improved catch and effort monitoring of our local fisheries.

## **2. Progress during FY 2002**

Field work for the project concluded during FY 2001, with the last tagging cruise conducted in January 2001. Project related activities during FY 2002 consisted primarily of work related to publications, reporting and representing the results of analyzed data to various meetings. A small number of tag recaptures and related data were received and logged into the tagging database.

These recaptures were reported from fish at liberty for relatively long periods and had grown to larger size, with most being caught by Hawaii based longline vessels. However, two recaptures were reported from Japanese longliners; one east of the Big Island and one from Japanese coastal waters.

Tag recapture and reward activities continued throughout FY 2002. The Charter Desk in Honokohau Harbor remained as a potential collection point for tags and distribution center for tag rewards on the island of Hawaii, but saw little activity. Most tags were reported to the project by the United Fishing Agency in Honolulu or through National Marine Fisheries Service personnel who continued to provide excellent collaboration and data at no cost to the project.

Preliminary results and status of the project were reported to international and domestic fisheries meetings as listed in section 5 below. Work toward final publication of a paper describing movement patterns, residence times with estimates of natural and fishing mortality of bigeye and yellowfin in the Hawaii area was conducted during the fiscal year. The paper was in final review at the end of FY 2002.

No significant problems were encountered during FY 2001.

## **3. Plans for the next fiscal year.**

During FY 2003, there will be no work directly funded by this project as funding for the project terminated at the end of FY 2002. However, tagging related projects funded by the PFRP will continue to benefit from the tag return and reward mechanisms and positive rapport with the fishing community that has been established by the project. It is possible that some tag returns and related data will be received during FY 2003 and will be handled by existing mechanisms within the UH. The valuable recapture data deriving from this project will be incorporated into a Pacific-wide stock assessment model for bigeye tuna being jointly developed by the Secretariat of the Pacific Community, the National Research Institute of Far Seas Fisheries and the Inter-American Tropical Tuna Commission.

## **4. List of papers published in refereed journals during FY 2002.**

No publications were published in refereed journals during FY 2002. The following paper was submitted to Fisheries Bulletin and was thoroughly reviewed and modified during FY 2002 for publication during FY 2003: Dynamics of bigeye and yellowfin tuna in Hawaii's pelagic fisheries: analysis of tagging data using a bulk transfer model incorporating size specific attrition (M.S.Adam, J.R. Sibert, D. Itano and K. Holland)

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

Indian Ocean Tuna Commission: Working Party on Tagging, Victoria, Seychelles. 28 June, 2001.

Size-Specific Tag Attrition in Bulk Transfer Models: Analysis of Hawaii Tuna Tagging Project Data. SCTB 14 Working Paper YFT-6. 14<sup>th</sup> Meeting of the Standing Committee on Tuna and Billfish, Noumea, New Caledonia. 9-16 August, 2001.

Pelagic Fisheries Research Program: Principal Investigators Workshop, Honolulu, Hawaii. December 4 – 6, 2001. Tagging Tuna in the Central Pacific: Ecological and management related issues.

53<sup>rd</sup> Annual Tuna Conference, Lake Arrowhead, California. May 20 – 23, 2002. Hawaii Tuna Tagging – Analyses and results (poster presentation).

**6. Names of students graduating with MS or Ph.D. degrees during FY 2002.**

No students graduated on this project during FY 2002.

**7. Proposed FY 2003 budget.**

Funding for this project was fully utilized and closed out at the end of FY 2002.