

## JIMAR ANNUAL REPORT FOR FY 2010

P.I./SPONSOR NAME: Kevin Weng, Bert Kikkawa

NOAA OFFICE: NOAA Fisheries Pacific Islands Fisheries Science Center (PIFSC)

**PROJECT PROPOSAL TITLE:**

Rescue, Compilation, and Statistical Characterization of Historic Longline Data, Pacific Oceanic Fisheries Investigation, 1951-73.

**FUNDING AGENCY:**

NOAA Fisheries

**NOAA GOAL (Check those that apply):**

- To protect, restore, and manage the use of coastal and ocean resources through ecosystem-based 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.
- Mission Support

**PURPOSE OF THE PROJECT:**

This report describes work performed as a continuation of "Rescue, Compilation, and Statistical Characterization of Historic Longline Data, Pacific Oceanic Fisheries Investigation, 1951-1973" (PFRP Project 657356). This portion of the project involved careful examination of 'rescued' data (i.e., data quality control) from three large foreign fleets, followed by preparation and formatting of the data into a Geographical Information Systems (GIS) database. The GIS will be used to characterize and visualize the data in the form of maps that depict spatiotemporal patterns in the distributions and relative abundances of the major tunas, billfishes, and sharks caught by pelagic Pacific longline fisheries. The corrected catch data will be archived by the Scientific Information Services group at the PIFSC.

**PROGRESS DURING FY 2010:**

During FY 2010, Samoa Cannery Tuna Catch Data (Logbooks), referred to henceforth (and at the PIFSC) as FC003, were carefully evaluated for accuracy, organized and then depicted in several ways. A text file FC003 contains catch (counts, as catches per set) and operational information from Japanese, Taiwanese and Korean fleets (Japanese:1963-

1972; Taiwanese: 1964-2000; Korean: 1964-1992). These dates differ from those in the project title because additional records from years after 1973 became available after the original project approval, whereas data from the 1950s data were not available.

The text file FC003 was prepared by importing the original data into an Excel spreadsheet and then formatting the latter into headers and catch and effort information as specified by a key created earlier in this project. The data from FC003 were checked for various problems (e.g., missing values, duplicate records, typographical errors, etc.) and corrected as necessary. These exploratory analyses indicated that there were insufficient numbers of measurements for most species to detect and estimate trends in sizes. There were, however, sufficient size data for albacore *Thunnus alalunga*, so this became the species of primary interest regarding sizes of fish caught at various times and in various places.

FC003 was next entered into a GIS database. This involved opening the Excel table in ArcGIS, and converting the coordinate information in the table to an XY format. In order to center the dataset onto the Pacific Ocean, the projection was set at PDC Mercator, WGS 84, meridian -150. The points were then examined for their distributions. All outlier points were either deleted or corrected for location based on octant code and other relevant information available in the dataset. The ArcGIS database (FC003 Historical Longline Fishery.dbf) is comprised of multiple point feature class files, raster files, Dbase tables, and metadata files written in conformity with NOAA Fisheries and spatial metadata standards.

The data were next subdivided further by fleet and set year, and whenever possible, by quarter. Point feature class files were created to show the geographic distribution of these subsets. Descriptive statistics (e.g., CPUE) were added to the associated database tables. Graphs, histograms, and density maps were created using GIS tools to summarize the findings.

The only major project objective not attained was preparation of a PowerPoint presentation suitable for viewing by fishery scientists and managers. This aspect of the intended work was not performed because Mr. Kikkawa has been ill. In lieu of the PowerPoint presentation, animations were prepared to depict changes in the locations and levels of fishing activity by major foreign fleets over several decades. This departure from the original work plan was discussed with and approved by Mr. Kikkawa.

#### PLANS FOR THE NEXT FISCAL YEAR:

This project has been concluded. No additional work is planned for FY 2011.

LIST OF PAPERS PUBLISHED IN REFEREED JOURNALS DURING FY 2010: None

OTHER PAPERS, TECHNICAL REPORTS, ETC.: None

GRADUATES: None

AWARDS: None

PUBLICATION COUNT:

	JI Lead Author	NOAA Lead Author	Other Lead Author
Peer Reviewed	0	0	0
Non-Peer Reviewed	0	0	0

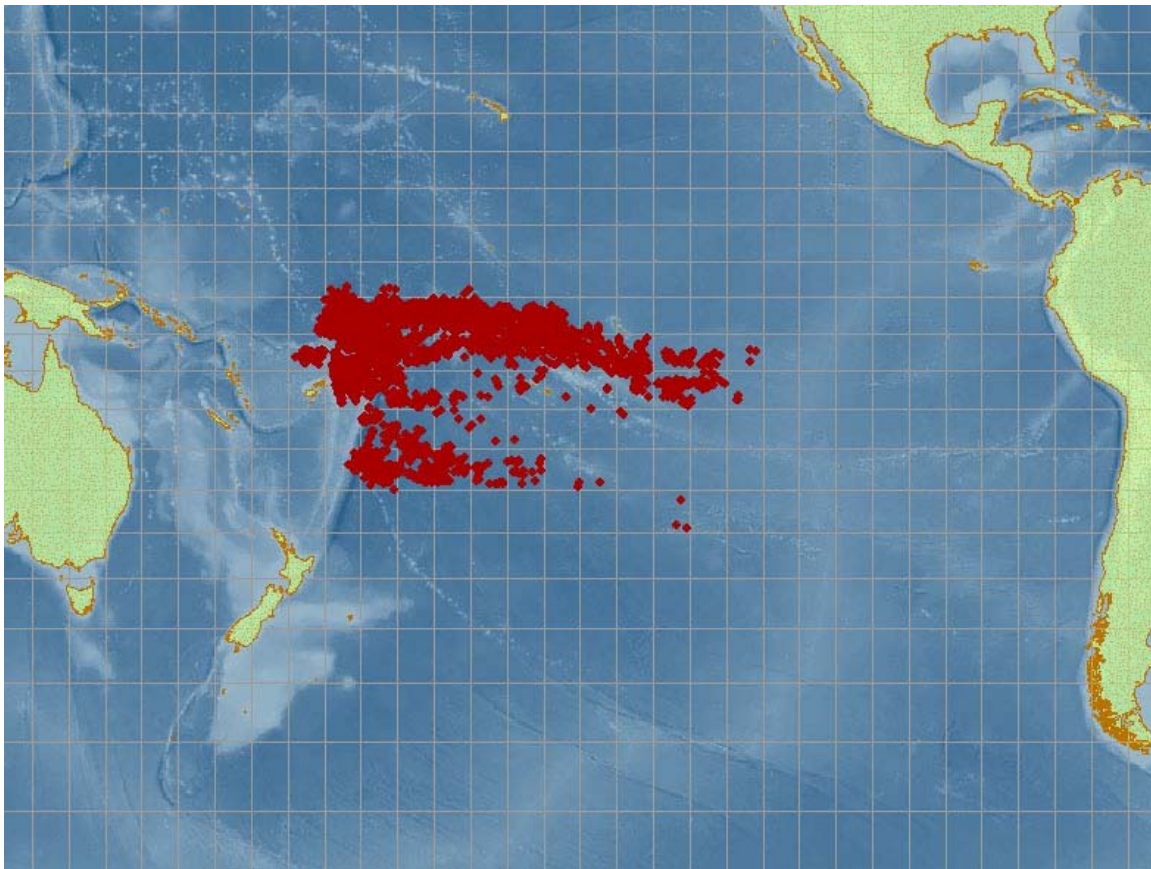
PERSONNEL (on Subcontracts):

Ms. J.M. Otineru performed this work (RCUH Purchase Order Z944256). There were no students or postdoctoral researchers involved.

### IMAGES AND CAPTIONS

The maps presented below are representative output from this project. Both the effort distribution maps and CPUE plots were created in ArcGIS and then exported into the Adobe Professional Workshop before being incorporated into this Word document.

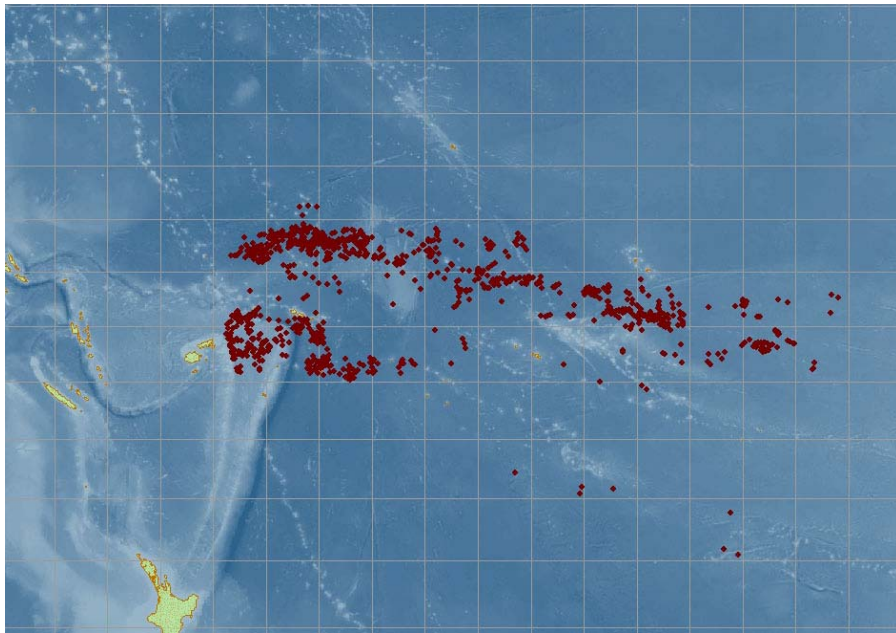
- Figure 1. Distribution of Japanese longline effort throughout 1964.



- Figure 2. Albacore *Thunnus alalunga* CPUE density plot throughout 1964.



- Figure 3. Distribution of Japanese longline effort during the first quarter of 1964.



ACRONYMS:

PIFSC: NOAA Fisheries Pacific Islands Fisheries Science Center (PIFSC)

GIS: Geographical Information Systems

WGS 84: World Geodetic System 1984

PDC Mercator: Pacific Disaster Center Mercator (a Pacific-centric map projection created by the Pacific Disaster Center).

CPUE: Catch per unit effort

ASSISTANCE:

William A. Walsh of the PFRP, located at the PIFSC, assisted Ms. J.M. Otineru in the preparation of this report with the knowledge and permission of Mr. Bert Kikkawa and Drs. Gerard DiNardo and Christofer Boggs.