2004-2005 U.S. Longline Fishery Statistics for Submission to the Inter-American Tropical Tuna Commission[1]

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In 2006, the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) will formally submit to the Inter-American Tropical Tuna Commission (IATTC) for the second year statistics for U.S. fisheries operating in the eastern Pacific Ocean. IATTC Resolution C-03-05 and results of the first IATTC Meeting for the Review of Fishery Statistics in April 2005 provide guidance for this submission. To accomplish this task, the Pacific Islands Fisheries Science Center (PIFSC) provides in this report updated 2004 and preliminary 2005 estimated annual catches in weight by species and 2005 size composition statistics by selected species for the Hawaii-based longline fishery[2]. Also provided are updated 2004 and preliminary 2005 catch and effort (or logbook) statistics for the combined American Samoa, Hawaii, and California based fleets at Level 3 (IATTC Resolution C-03-05), the international standard for such data. The Southwest Fisheries Science Center will combine these statistics with comparable annual catch estimates and size composition statistics for the U.S. West Coast-based longline and other fisheries for submission to the IATTC.

For the compilation of these statistics, the eastern Pacific Ocean (EPO) is defined as the Pacific Ocean from 150º W longitude eastward to the American coast, without northern or southern boundaries. This report includes statistics on the Hawaii-based tuna longline fishery only. The American Samoa-based purse seine fishery is the only other Pacific Island-based fishery that fishes in the EPO, and the IATTC monitors that fishery directly. The methods used in compiling the three categories of fishery statistics are described below. All statistics were compiled by the year in which the catch was landed (2004 and 2005) regardless of the year the gear was set.

These statistics were prepared by Russell Ito, Frederick Dowdell, and Craig Graham in the Fishery Monitoring and Socio-Economics Division and by Karen Sender in Information Technology Services at the PIFSC and by Al Coan and staff at the Southwest Fisheries Science Center.

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[1] PIFSC Data Report DR-06-004
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[2] With regard to compilation of these statistics, if a U.S. domestic vessel lands its harvest in American Samoa, California, or Hawaii, it is deemed to be American Samoa-based, California-based, or Hawaii-based, respectively, regardless of where the fishing trip started. Some vessels change their base of operation frequently.

Annual Catch Statistics

As last year, the "catch" statistics reported are actually landings statistics because they refer only to the fish retained by the vessels. We have not developed a procedure for estimating the weights of fish reported as discarded in the longline logbooks. In the future, we hope to be able to do so. The annual catch estimates for each species are the product of the number of fish caught and kept (from NMFS logbooks; see Data Sources below) and average weights of fish landed (from Hawaii State Dealer landings data; see Data Sources below). However, no attempt was made to adjust the reported logbook catches using observer data. As noted above, these statistics are only for the Hawaii-based longline fishery. No other commercial or recreational fishery based in the Pacific islands is known to operate in the EPO.

The data sources used are as follows.

NMFS Western Pacific Daily Longline Fishing Log (NMFS logbook)
Contain information on area of capture and numbers of fish caught.
Lacks information on size of all fish caught (kept plus released).
Date used was Begin Set Date.

State of Hawaii Division of Aquatic Resources Commercial Marine Dealer Data (Hawaii State Dealer)
Contain data on the weights of individual fish or similarly-sized lots of fish sold.
Weights are recorded to the nearest half pound.
Lacks information on the area of capture.

Briefly, the computational procedure is as follows. Hawaii longline trip summaries were compiled from NMFS logbook data. To enable later use for estimation of total species catch in weight, each logbook trip summary was classified to east (EPO) or west (Western Central Pacific Ocean (WCPO)) of 150˚ W longitude based on Begin Set Position. For each of the two years, the total number of each species caught in the EPO was computed. The PIFSC generally uses Begin Set Position because that position has been available since the inception of the NMFS logbook program. To compute average species weight, each trip summary was also classified to having fished exclusively east or west of 150˚ W longitude based on Begin Set, End Set, Begin Haul, and End Haul positions or whether the trip straddled 150˚ W longitude. Trips from the NMFS logbook data were matched with Hawaii State Dealer data, thus classifying the dealer data exclusively east or west of 150˚ W longitude, or straddling 150˚ W longitude. If the fish in the State Dealer Data were noted as having been processed, then the nominal weights were raised to estimate whole weight (see the Notes sheet in the file "Catches US 2004&5 EPO.xls"). The number of pieces and pounds sold in the State Dealer data were summed by species for east of 150˚ W longitude and average species weights computed (and converted to kilograms). The mean weight of blue shark was set at 45 kg (100 lbs).

The average species weights were then multiplied times the numbers of fish caught in the EPO to estimate the total weight of each species caught in the EPO.

Size Composition Statistics

Size frequency statistics (whole weight to the nearest half pound converted to kilograms) were compiled from the State Dealer data from those vessel-trips that fished exclusively east of 150˚ W longitude (as described above) in landing year 2005. While the PIFSC has collaborated with HDAR in improving the dealer reporting system, PIFSC has no control over the quality of these data. Weight intervals vary from 1 kg to 5 kg depending on the size range of each species. Size frequency statistics were compiled for albacore, bigeye tuna, yellowfin tuna, and swordfish.

Catch and Effort Statistics

Three longline data sets were used, all with catches in number of fish by species, effort in sets and hooks, and location. These data are for landing years 2004 and 2005. United Nations Food and Agriculture 3-alpha species codes are used to identify species. The largest data set by far derives from the mandatory submission of the NMFS Western Pacific Longline Fishing Log by Hawaii-based fishers. A rigorous quality control process is followed, including a quick review conducted with the provider when the logs are picked up from the vessels, later a visual inspection of the logs, and a computer-based error checking algorithm. The second data derives from the mandatory submission of the NMFS Western Pacific Longline Fishing Log by American Samoa-based fishers. The logs are collected by Department of Marine and Wildlife Resources for NMFS, digitized, and processed similarly to the Hawaii-based data. The third data set derives from the mandatory submission of logbooks under the High Seas Fisheries Compliance Act and later under a Pacific Region fishery management plan by West Coast (mostly California)-based longline vessel operators. The standard HSFCA longline logbook was used initially, but later the Western Pacific Longline Fishing Log came into use. The Southwest Fisheries Science Center processes these logs and conducts all the quality control of them. These three data sets were merged into one data set.

These combined logbook data, therefore, represent the entire operations of the American Samoa, California, and Hawaii-based longline fleets in the Pacific Ocean , not just the operations taking place in the EPO. While only those fishing trip records with landing year 2004 or 2005 were selected for compilation, as mentioned above, the data were aggregated by the begin set year and month. In addition, the data were aggregated by so-called 5x5 blocks of longitude and latitude. For example, one such block would be from -180º to < -175º W longitude and 0º to < 5º N latitude. Southern latitudes are negative. Thus, the data within each of the three data sets were aggregated by, in the vernacular, 5x5xMon, within begin set year. The three data sets were then merged into a single data set. The PIFSC provides the same aggregated catch and effort longline data set to the IATTC, the International Scientific Committee, and the Western and Central Pacific Fisheries Commission.

In order to meet the data confidentiality requirements in NOAA Administrative Order 216-100, a 3-boat filter was applied to each 5x5xMon block of data, i.e. those blocks with 2 or fewer boats fishing were deleted.

Data File Names

Annual Catches:	Catches US 2004&5 EPO.xls
Size Composition:	Hawaii longline size frequency 2005 EPO.xls
Logbook:	LL_04&05_5x5Xm_nonconf.lxs