

# **Submission of 2009-2010 U.S. Fishery Statistics for the Western and Central Pacific Ocean and Other Areas to the Western and Central Pacific Fisheries Commission<sup>1</sup>**

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This is the seventh submission of annual U.S. and Territorial fishery statistics by the NOAA's National Marine Fisheries Service (NMFS)<sup>2</sup> to the Western and Central Pacific Fisheries Commission (WCPFC). The submission consists of preliminary 2010 fisheries data for highly migratory species (HMS) in the Pacific Ocean, and updated data for 2009, unless otherwise indicated. Annual catch and effort estimates are included for U.S. fisheries, including the Participating Territories of American Samoa and Guam, as well as the Commonwealth of the Northern Mariana Islands.

The U.S. annual fishery statistics submitted with this report (Table 1) were derived from data provided by Federal, State and Territorial fishery agencies in the following areas:

1. Hawaii:
  - a. Division of Aquatic Resources (HDAR) Commercial Fisherman's Catch Reports (catch data)
  - b. HDAR Commercial Marine Dealer Reports (landings and size composition data)
  - c. NMFS federal longline logbook (catch and effort data)
2. California, Oregon, Washington:
  - a. Pacific Fisheries Information Network (PacFIN) landings data from U.S. Pacific coast States
  - b. NMFS federal Pacific albacore logbook [and landing receipts]
  - c. NMFS federal longline logbook (catch and effort data)
  - d. U.S. South Pacific Tuna Treaty purse seine logbook [and landings data]
3. American Samoa:
  - a. Department of Marine and Wildlife Resources (DMWR) boat-based offshore creel surveys (catch, effort, and size composition data)
  - b. NMFS American Samoa longline logbook (catch and effort data)
  - c. NMFS cannery sampling program (size composition data)
  - d. DMWR commercial landings (commercial sales receipts)

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<sup>1</sup> PIFSC Data Report DR-11-006. Issued 31 May 2011.

<sup>2</sup> Prepared in collaboration with the NOAA Fisheries Service Southwest Fisheries Science Center.

4. Guam:
  - a. Division of Aquatic and Wildlife Resources (DAWR) offshore creel surveys (catch and effort data)
  - b. DAWR commercial landings data (commercial sales receipts, invoices)
  
5. Commonwealth of the Northern Mariana Islands (CNMI):
  - a. Division of Fish and Wildlife (DFW) commercial landings data (commercial sales receipts, dealer invoices);
  - b. DFW offshore creel surveys (catch and effort data)

Therefore, the U.S. fishery statistics submitted are nominally a compilation of estimated catches and landings based on a number of fishery data sources. Estimated annual catches are based on kept catch; however, for longline reporting, the numbers of discards are included in the aggregated catch and effort data (Category II below).

The principal U.S. fisheries for HMS are the purse seine fishery that targets skipjack tuna (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*), and bigeye tuna (*T. obesus*); the pelagic longline fishery for large tunas and swordfish (*Xiphias gladius*); the albacore troll fishery targeting albacore (*T. alalunga*); the tropical troll and handline fisheries targeting various tunas, marlins, and other pelagic species; and the pole-and-line fishery for skipjack tuna. The U.S. purse seine, pelagic longline, and albacore troll fisheries are large-scale fisheries operating on the high seas and in the national zones of the U.S. or and various Pacific Island countries. The pole-and-line, tropical troll, and handline fisheries are small-scale fisheries operating primarily in nearshore waters within U.S. and Territorial EEZs.

In reports submitted prior to 2008, the high seas troll fishery for albacore was termed “distant water” troll fishery. Since then it has been termed albacore troll fishery as a large component of this fishery operates close to home ports on the U.S. west coast. The albacore troll fishery which operates in temperate waters and catches almost exclusively albacore is distinguished from the tropical troll fishery which uses tropical island-based small vessels and catches almost no albacore.

In reports submitted prior to 2008, tropical troll fishing, handline fishing, and pole-and-line fishing were combined into a small-scale fisheries category since they comprise a very small fraction of U.S. production. And in some earlier reports, only tropical troll fishing and handline fishing were combined into a small-scale fisheries category. In data submissions from 2008, fishery catch and vessel count statistics have been listed separately for tropical troll, handline, and pole-and-line fishing.

Three categories of fishery data (Table 1) are provided: 1) Category I -- annual catch estimates by species, and numbers of active vessels by vessel size class, in each fishing fleet (purse seine, longline, albacore troll, tropical troll, handline, skipjack pole-and-line, and albacore pole-and-line); 2) Category II -- catch (in number and weight of fish) and effort data in aggregated form for longline, albacore troll, and albacore pole-and-line fisheries; and 3) Category III – size (length or weight) composition data for key species caught by the longline, tropical troll, handline, albacore troll, and albacore pole-and-line fisheries. The methods used in compiling the three categories of fishery statistics are described below.

## Category I: Statistics on Annual Catch and Active Vessels

Catch as estimated whole weights (in metric tons) by species and fisheries, as well as numbers of active vessels by fisheries, were summed in the WCPFC Statistical Area (<http://www.wcpfc.int/doc/scientific-data-be-provided-commission-revised-wcpfc4-2007>), in the Pacific Ocean north of the Equator, in the Pacific Ocean south of the Equator, and in the Pacific Ocean east of the 150 degrees meridian of west longitude. They are provided for the five-year period of 2006-2010 for convenient reference.

Catch estimates were provided for tunas (albacore, bigeye, Pacific bluefin, skipjack, yellowfin, and others), billfishes (black marlin, blue marlin, sailfish, spearfish, striped marlin, and others), sharks (blue, mako, thresher, and others), and other pelagic fish (mahimahi, moonfish, oilfish, pomfrets, wahoo, and others). United Nations Food and Agriculture Organization 3-alpha species codes are used as species labels. Number of active vessels was provided by gear type, and by gross registered ton categories for purse seine, longline, and pole-and-line vessels.

### **Longline**

U.S. longline fishery statistics are provided for the western and central Pacific Ocean, the North Pacific Ocean (NPO), and American Samoa.

NMFS logbook data from Hawaii-based and California-based longline fisheries are combined and provided to represent the U.S.-based longline fishery. Catches for the American Samoa fishery (NMFS longline logbook data) are tabulated separately. No tabulation is possible for the small longline fishery based in Guam, as the entire fishery consisted of less than three vessels in 2007-2009. Note that because the California-based fishery consisted of a single vessel in 2006-2010, and is reported in combination with the Hawaii-based catches, neither fishery can be reported separately without revealing fisheries-confidential data (by difference).

For the Hawaii-based longline statistics, the final estimates of landed weight for each species was derived as the product of number of fish kept (logbook data) and mean whole fish weight from HDAR Commercial Marine Dealer Reports (landings and size composition data). Mean weights were estimated separately by month of landing for both the deep-set ( $\geq 15$  hooks between floats) and shallow-set ( $< 15$  hooks between floats) sectors of the Hawaii-based longline fishery, as long as weights were available from at least 20 fish per sector per month. Otherwise annual averages, averages across sectors, or other proxy mean weights were applied.

The Category I longline statistics presented in this report are not summed separately for deep-set and shallow-set sectors; however, data segregated by deep- and shallow-set fishery sectors are provided in the Category II data described below. Mean weights for bigeye tuna for each sector were estimated in the WCPFC Statistical Area and the EPO separately. Procedures for estimating bigeye tuna weights separately by region were developed to better monitor cumulative landings in relation to catch limits.

The American Samoa-based longline statistics were derived similarly from NMFS American Samoa cannery sampling data; and the California-based longline statistics was derived from other mean weight estimates (e.g., from PacFIN).

### **Purse Seine**

Purse seine fishery statistics for the WCPFC Statistical Area are compiled from U.S. South Pacific Tuna Treaty regional purse seine logbook (RPL) data. Catch estimates are provided for skipjack tuna, yellowfin tuna, and bigeye tuna.

### **Albacore Troll**

Albacore troll fishery statistics are provided separately for the WCPFC Statistical Area and the Pacific Ocean north of the Equator since the range of the fishery in the North Pacific Ocean extends into both the western and central Pacific Ocean and the eastern Pacific Ocean. For the troll fishery in the South Pacific, data are provided by fishing season (July of year x through June of year x+1).

Catch statistics are compiled from NMFS Pacific albacore logbook data, and then converted to weight estimates using landings data obtained from the PacFIN database system, cannery reports from the 2 canneries in American Samoa, and reports provided by industry and foreign fisheries agencies pertaining to other localities where U.S. albacore troll vessels may unload their catches. When size data for 2009 were not available, Category I weight estimates for these fisheries in 2009 were based on 2008 average weights.

### **Other U.S. Fisheries**

Tropical troll catch statistics for the WCPFC Statistical Area are based on fishermen's catch data and market landings data from Hawaii, Guam, CNMI, and American Samoa. Offshore creel survey data are also used for Guam, CNMI, and American Samoa.

Handline catch statistics are based on fishermen's catch data and market landings data, and are presented separately for main Hawaiian Islands and offshore Hawaii.

Recreational catches are not included in the total annual catch estimates for Hawaii or CNMI but are included for American Samoa and Guam, where such data are collected through offshore creel surveys.

### **Category II: Catch and Effort (Logbook) Statistics**

Aggregated catch and effort statistics by species and fisheries were compiled in the WCPFC Statistical Area and in the Pacific Ocean east of the 150 degrees meridian of west longitude EPO (IATTC-N) for 2008-2010.

## **Longline**

NMFS longline logbook data from U.S.-based (Hawaii and California) and American Samoa-based fisheries are combined into a single data set to calculate aggregated statistics by month and 5-degree square strata. Longline data include weight of catches for tunas, billfishes, and other pelagic species, effort in numbers of boats, sets, and hooks, and average number of hooks per float. Data is provided for U.S.-based and American Samoa-based fisheries (Hawaii = HI, California combined with Hawaii = CH, American Samoa = AS), and stratified by number of hooks between floats (D = deep-set or GE 15 hooks per float, S = shallow-set or LT 15 hooks per float). United Nations Food and Agriculture Organization 3-alpha species codes are used as species labels.

To meet domestic and WCPFC fisheries data confidentiality requirements, a 3-boat filter was applied to each 5° latitude x 5° longitude x month block of summarized data, i.e., data in blocks with fewer than 3 boats fishing were further aggregated into annual intervals and larger areas of the Pacific Ocean (termed “quads” in the CAT II longline data files). A simple summary of the results of this data merging or suppression is included in each worksheet of Category II data.

These large areas termed “quads” coincide with RFMO jurisdictions and are labeled WCPFC-N (westward from 150° W and north of the equator), WCPFC-S (westward from 150° W and south of the equator), and IATTC-N (east of 150° W and north of the equator). There were no U.S. longline fisheries operating east of 150° W and south of the equator in 2008-2010. And there were no U.S. fisheries operating in the area of overlap between the WCPFC and IATTC statistical areas, with the exception of the albacore troll fishery in the South Pacific, as indicated in the Category II data (Table 1). Annual catch estimates (Category I) have not yet been provided for that area.

Data from the single longliner operating out of California in the eastern Pacific Ocean in 2008-2010 are included in annual quad summaries, combined with data from Hawaii-based vessels in the same quad (fishery = CH).

## **Albacore Troll**

NMFS albacore troll logbook data are used to calculate aggregated catch and effort statistics by month and 1-degree square strata for the North Pacific and South Pacific troll fishery. Albacore troll data include number of albacore caught and effort in numbers of vessels and days fished. Data on albacore pole-and-line fishing were also provided for 2008-2010 at the same resolution.

To meet domestic and WCPFC fisheries data confidentiality requirements, a 3-boat filter was applied to each 1° latitude x 1° longitude x month block of summarized data, i.e., data in blocks with fewer than 3 boats fishing were suppressed. A simple summary of the impacts of this data suppression is included in each worksheet of Category II albacore troll data.

The summarized data provided for the WCPFC area were for the South Pacific albacore troll fishery only, as fishing in the North Pacific in the WCPFC area was conducted by fewer

than three vessels.

### Category III: Size Composition Statistics

Size composition statistics by species and fisheries were compiled in the WCPFC Statistical Area for 2009-2010.

#### **Longline**

For the Hawaii longline fishery, individual fish weights (whole weight to the nearest half pound converted to kilograms) are provided for bigeye and yellowfin tuna, albacore, blue and striped marlin, and swordfish. The size data are compiled from the HDAR Commercial Marine Dealer Reports database by matching landing dates with vessel-trips and commercial marine licenses from the NMFS longline logbook database. They are provided by year, month and longline set depth (deep-set = D, shallow-set = S).

For the American Samoa longline fishery, individual fork lengths (to the nearest cm) were measured by the NMFS port sampling program for bigeye tuna, yellowfin tuna, and albacore. A maximum of 50 fish were measured from each longline vessel off-loading at the canneries in American Samoa. Fork length data are provided by year and month.

For the California-based longline fishery, size composition data were not provided for last year's report.

The Category I and II estimated longline catch weights are estimated for the month of catch using the average weight from the Category III data for the month of landing of those catches. For this reason and because 100% matching is not possible, the summed Category III weight data will not match the estimated weight of the catch provided in Category I and II. Monthly means of these average weights by set depth were used to estimate the weights of catches (numbers of fish by set depth) based on landing date for the Category I and II data (above). When fish were landed in processed form (e.g., gilled and gutted), conversion factors were used to estimate the whole weight.

#### **Purse Seine**

Size composition statistics by species are collected by NMFS samplers in American Samoa and submitted to FFA and the Commission's data provider directly on a quarterly basis.

#### **Hawaii Tropical Troll and Handline Fisheries**

For Hawaii tropical troll and handline fisheries, individual fish weights (whole weight to the nearest half pound converted to kilograms) are provided for yellowfin tuna, skipjack, blue marlin and striped marlin for 2009-2010. The size data are compiled from the HDAR Commercial Marine Dealer Reports database and are provided by year and month.

These data are not separated between tropical troll and handline. Troll and handline operations cannot be distinguished by license numbers, which may represent both types of fishing.

The requirement to submit size data by area has not been met by the data submitted on the longline, tropical troll, and handline fisheries. The available HDAR dealer data do not identify area of catch. A procedure was developed to link dealer subsets of bigeye tuna weight data to longline trips that fished in the WCPFC Statistical Area and the eastern Pacific Ocean for catch limit monitoring. These data were used to separately estimate bigeye tuna weights for these areas in the Category I and II data, but are combined in the Category III data provided.

### Albacore Troll

Individual fork length measurements (to the nearest cm) for the albacore troll fishery in the North Pacific (2008-2010) and for the albacore pole and line fishery in the North Pacific (2008-2010) were taken by port samplers (trained scientific technicians) as vessels unloaded in California, Washington, and Oregon ports and in Pago Pago, American Samoa.

Table 1. Names and contents of data files provided.

Data Category	Contents	File Name
Category I:	Estimated Annual Catches and Numbers of Active Vessels	
	For: Longline Purse Seine Albacore Troll Tropical Troll Handline Pole-and-line	CAT_I_WCPFC 2006-2010 final may6.xls
Category II:	Aggregated catch and effort (non-confidential strata only)	
	Longline: From U.S.-based and American Samoa-based fleets, separated by deep- and shallow-sets	CAT_II_WCPFC_US 2005-2010_LLnc-v2.csv
	Albacore Troll and Pole-and-line	CAT2outputs_LLCA_2008-2010_20110426.xls
Category III:	Size Composition:	
	Longline:	CAT_III_AM_SAM_LL_ALB-BET-YFT_2009 rev.xlsx
	Am. Samoa Port	CAT_III_AM_SAM_LL_ALB-BET-YFT_2010

Data Category	Contents	File Name
	Sampling (lengths)	rev.xls
	<p>Longline:</p> <p>Hawaii State Division of Aquatic Resources Dealer Data (weights) - inferred to be from deep-set or shallow-set longline landings</p>	<p>CAT_III_HI_LL_BET_2009Q1.csv  CAT_III_HI_LL_BET_2009Q2.csv  CAT_III_HI_LL_BET_2009Q3.csv  CAT_III_HI_LL_BET_2009Q4.csv  CAT_III_HI_LL_BET_2010Q1.csv  CAT_III_HI_LL_BET_2010Q2.csv  CAT_III_HI_LL_BET_2010Q3.csv  CAT_III_HI_LL_BET_2010Q4.csv  CAT III HI LL YFT-ALB-BUM-MLS-SWO_2009.csv  CAT III HI LL YFT-ALB-BUM-MLS-SWO_2010.csv</p>
	<p>Tropical Troll and Handline:</p> <p>Hawaii State Division of Aquatic Resources Dealer Data (weights) inferred to be from non-longline landings</p>	<p>CAT_III_HI_T-HL_TUNAS_2009.xlsx  CAT_III_HI_T-HL_MARLINS_2009.xlsx  CAT_III_HI_T-HL_TUNAS_2010.xlsx  CAT_III_HI_T-HL_MARLINS_2010.xlsx</p>
	Albacore Troll and Pole-and-line	CAT_III_SWFSC_Albacore_2008-2010.xlsx
Metadata Document:	This Data Report	DR-11-006