

Submission of 2016-2017 U.S. Fishery Statistics for the Western and Central Pacific Ocean and Other Areas to the Western and Central Pacific Fisheries Commission¹

National Oceanic and Atmospheric Administration National Marine Fisheries Service
Pacific Islands Fisheries Science Center² 1845 Wasp Boulevard, Bldg. #176
Honolulu, Hawaii 96818

This is the Fourteenth submission of annual U.S. and Territorial fishery statistics by the NOAA's National Marine Fisheries Service (NMFS) to the Western and Central Pacific Fisheries Commission (WCPFC). The submission consists of preliminary 2017 fisheries data for highly migratory species (HMS) in the Pacific Ocean, and updated data for 2016, unless otherwise indicated. Annual catch and effort estimates are included for fisheries of the U.S. and Participating Territories of American Samoa and Guam, as well as the Commonwealth of the Northern Mariana Islands.

Three categories of fisheries data are provided: 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, and skipjack pole-and-line); Category II – catch (in number and weight of fish) and effort data in aggregated form for purse seine and longline fisheries; and Category III – size (length or weight) composition of catch data for key species caught by the purse seine, longline, tropical troll, and handline fisheries. The methods used in compiling the three categories of fishery statistics are described below.

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 (DAR) Commercial Fisherman's Catch Reports (catch data)
 - b. DAR 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 from U.S. Pacific coast States (landings data)
 - b. NMFS federal Pacific albacore logbook (catch and effort data)
 - c. NMFS federal longline logbook (catch and effort data)
 - d. Recreational Fisheries Information Network (RecFIN)
 - e. California Department of Fish & Wildlife (CDFW) Commercial Passenger Vessel (CPFV) logbook
 - f. Oregon Department of Fish & Wildlife (ODFW) (albacore port sampling)
 - g. Washington Department of Fish & Wildlife (WDFW) (albacore port sampling)
 - h. NMFS and IATTC recreational port sampling for bluefin tuna

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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 data (commercial sales receipts)
 - e. U.S. South Pacific Tuna Treaty purse seine logbook, unloading reports, and cannery final outturn data
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, dealer 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 (Category I data) are based on kept catch only; however, for longline fishery catch and effort (Category II data), the reported aggregate catch includes information on both kept catch and discards (numbers kept and released).

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 tropical 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. and various Pacific Island countries. The tropical pole-and-line, tropical troll, and tropical handline fisheries are small-scale fisheries operating primarily in nearshore waters within the U.S. and Territorial EEZ.

The south Pacific albacore troll fishery operates in temperate waters, mostly in the western Pacific. It catches almost exclusively albacore and is distinguished from the tropical troll fishery which uses island-based small vessels and different fishing gear and catches almost no albacore.

In data submissions from 2008 and onward, fishery catch and vessel count statistics have been listed separately for tropical troll, tropical handline, and tropical pole-and-line fishing.

Category I: Statistics on Annual Catch and Active Vessels

Catch estimates as whole weight in metric tons of fish, by species and fishery, as well as numbers of active vessels by fishery, were summed in the WCPFC Statistical Area (<http://www.wcpfc.int/doc/scientific-data-be-provided-commission-revised-wcpfc4-2007>), and in the Pacific Ocean north of the Equator. They are provided for the 5-year period of 2013-2017 for convenient reference. Estimates for 2017 are considered preliminary, based on database entries as of March 15, 2018 [database “freeze date”]. Estimates for 2016 are updated and estimates for prior years remain unchanged from last year’s data submission except for noted corrections.

Catch estimates were provided for tunas (albacore, bigeye, Pacific bluefin—*Thunnus thynnus*, skipjack, yellowfin, and other tuna), billfishes (black marlin—*Istiompax indica*, blue marlin—*Makaira nigricans*, sailfish—*Istiophorus platypterus*, spearfish—*Tetrapturus angustirostris*, striped marlin—*Kajikia audax*, swordfish and other marlins), sharks (blue—*Prionace glauca*, mako—*Isurus oxyrinchus*, thresher—*Alopias spp.*, and other sharks), and other pelagic fish (dolphinfish—*Coryphaena hippurus*, moonfish—*Lampris spp.* oilfish—Gempylidae, pomfrets—Bramidae, wahoo—*Acanthocybium solandri*, and other fish). United Nations Food and Agriculture Organization 3-character alpha species codes are also provided as species labels.

Numbers of active vessels were provided by gear type, and by gross registered ton categories for purse seine, longline, albacore troll, and tropical pole-and-line vessels.

Longline

Longline fishery statistics are provided for the U.S. in the western and central Pacific Ocean (WCPFC Statistical Area), American Samoa in the north Pacific Ocean waters of the WCPFC Statistical Area, American Samoa in the south Pacific Ocean waters of the WCPFC Statistical Area, Guam in the north Pacific Ocean waters of the WCPFC Statistical Area, Commonwealth of the Northern Mariana Islands in the north Pacific Ocean waters of the WCPFC Statistical Area, Pacific Ocean north of the Equator, and in the eastern Pacific Ocean (considered to be waters east of the 150° meridian of west longitude). For 2013–2017, U.S. longline catches in the eastern Pacific Ocean are also further divided into catches by vessels equal to or greater than 24 meters in length and less than 24 meters.

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 longline fishery (NMFS longline logbook data) are tabulated separately. No tabulation is provided for the small longline fishery based in CNMI, as the entire fishery consisted of less than three participants in 2013–2017. Note that because the California permitted fishery consisted of a single vessel in 2005–2017, and its catches are reported in combination with the Hawaii-based catches, neither fishery can be reported separately without revealing fisheries-confidential data (by difference).

Retained catches were assigned to the fisheries of the United States, American Samoa, Guam or the CNMI based on the port of landing, the types of permits registered to the vessel, and, during different periods (Table 2) pursuant to the Consolidated and Further Continuing Appropriations Act (CFCAA) of 2011 (Pub. L. 112-55, 125 Stat. 552 et seq.) and NMFS regulations under 50 *CFR* 300.224, if the U.S. vessel landing the fish was included in a valid arrangement under Sec. 113(a) of the CFCAA or Amendment 7 of the Pelagics Fishery Ecosystem Plan, its catch during those periods was attributed to the fishery of American Samoa in the NPO from 2011 to 2012 and 2017, to CNMI during 2013 through 2017, and to Guam in 2015 and 2016. Under the Amendment 7 arrangements (2014 through 2017 only bigeye tuna were attributed to the participating territory and all other incidental catch was attributed to the Hawaii-based fishery). Specifically, if a fish (all species) was landed in one of the three territories (provided it was not caught in the portion of the EEZ surrounding the Hawaiian Archipelago and it was landed by a vessel permitted under the Pelagics FEP), it was assigned to the fishery of that territory; if the fish was landed by a vessel with an American Samoa Longline Limited Access permit (provided it was not caught in the portion of the EEZ surrounding the Hawaiian Archipelago and it was landed by a vessel permitted under the Pelagics FEP), the fish was assigned to the fishery of American Samoa; and if, during the periods of transfer agreements (Table 2) the vessel landing the fish was included in a valid arrangement (as described above) and the arrangement provided for bigeye tuna (or all species prior to 2014) to be assigned to the fishery of one of the three territories, the fish was assigned to the fishery of that territory. Otherwise, the fish was assigned to the fishery of the United States.

For the Hawaii-based component of the U.S. longline fishery statistics, final estimates of kept catch for each species were derived as the product of the number of fish kept (as reported in logbook data) and a mean whole fish weight estimated from Hawaii DAR Commercial Marine Dealer Reports (landings and size composition data). For each species where size data were available by trip, a trip-specific mean weight was calculated and applied. For species where size data were not available by trip, mean weights were estimated separately by area (WCPO and EPO), month of landing, and fishery sector (deep-set sector (≥ 15 hooks between floats) and shallow-set sector (< 15 hooks between floats)), as long as weights were available from at least 20 fish of that species within the area-sector-month category of interest. If fewer than 20 fish were available in an area-sector-month category for a species, the quarterly average, annual average, average across area-sectors, or other proxy mean weight was applied.

Although mean weights were computed by fishery sector when sufficient data were available, the Category I longline statistics in this report are reported for both sectors combined, not separately for deep-set and shallow-set sectors. However, Category II data described below are segregated by deep-set and shallow-set fishery sectors.

For the American Samoa-based longline fishery statistics, estimates of landed weight were derived similarly from NMFS American Samoa cannery sampling data; and for the California-based component of the U.S. longline fishery statistics, estimates of landed weight were derived from size data from observed trips and Hawaii landings for catches in the eastern Pacific Ocean (EPO).

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, unloading reports, and cannery final outturn data. The cannery final outturn weights by species in metric tons are used for each trip, except for a few cases where they were not provided. In those cases, vessel unloading data reported by fishing captains were used. Catches from trips that begin in one year and finish in the next are split using the RPL catch data. As final outturn reports were not yet available for 2014–2017, those estimates were based on vessel RPL catch data. Until a new algorithm is developed to incorporate the port sampling data, these estimates by species are not adjusted.

Albacore Troll

Albacore troll fishery statistics are provided separately for the WCPFC Statistical Area, the overlap area between the WCPFC statistical area and the area covered by the Antigua convention, the eastern Pacific Ocean (east of 130° W. longitude), and the Pacific Ocean north of the Equator. For the albacore troll fishery in the south Pacific Ocean waters of the WCPFC Statistical Area, data are provided by fishing season (November of year x through April of year $x+1$).

Season, catch and number of active vessels estimates are compiled from the U.S. Pacific Albacore Logbook data, the PacFIN database system, cannery reports from American Samoa, and reports provided by industry and foreign fisheries agencies of countries where U.S. albacore troll vessels may unload their catches. Landings coverage rates from both north and south Pacific albacore troll fisheries that operate in the WCPFC statistical area are considered to be 100%.

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 the main Hawaiian Islands and offshore Hawaii fisheries.

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. Recreational catches of albacore and Pacific bluefin caught by commercial passenger vessels and private vessels off the U.S. west coast are included in the total annual catch estimates. Estimates of number of vessels in west coast recreational fisheries are not available since they are not estimated for private vessels. Catches of swordfish and Pacific bluefin tuna from the large mesh drift gillnet fishery, catches of swordfish from the harpoon fishery and catches of albacore, Pacific bluefin tuna, swordfish and striped marlin caught incidentally in fisheries that don't target HMS and that operate off the west coast of the United States, are included in the total annual catch estimates.

Landings from a relatively new fishery (HMS Hook and Line) were added to CAT I tables starting in 2015. This fishery is composed of small catches of tunas and sharks from vessels that mostly use rod-and-reel to catch HMS tunas and sharks.

There was no effort in the WCPO by north Pacific Albacore Troll and Pole-and-Line vessels in 2017.

Category II: Catch and Effort (Logbook) Statistics

Aggregated catch and effort statistics by species and fishery were compiled for 2016- 2017 in the WCPFC Statistical Area and in the eastern Pacific Ocean (area designated as IATTC-N) east of the 150° meridian of west longitude.

Longline

NMFS longline logbook data from U.S.-based (Hawaii and California) and American Samoa-based fisheries are combined into a single data set and aggregated statistics are calculated for each stratum defined by month and 5° latitude × 5° longitude block (5° square). The statistics include total catch in numbers of fish and estimated weight of retained (kept) catches for tunas, billfishes, and other pelagic species; nominal effort in numbers of boats, sets, and hooks; and average number of hooks per float. The aggregated results are provided for several sub-divisions of U.S.-based and American Samoa-based fisheries (Hawaii, designated as LL_HI; California combined with Hawaii, designated as LL_CH; American Samoa, designated as LL_AS; Commonwealth of the Northern Mariana Islands, designated as LL_CNMI; Guam, designated as LL_Guam), and also stratified by sector (D = deep-set or ≥ 15 hooks per float, S = shallow-set or < 15 hooks per float). United Nations Food and Agriculture Organization 3-character alpha species codes are used as species labels.

To meet domestic and WCPFC fisheries data confidentiality requirements, within each stratum a 3-boat filter was applied to each 5° square by month sub-stratum of summarized data. Data in cells 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. or territorial longline fisheries operating east of 150° W and south of the equator in 2016–2017. 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.

Data from the single longline vessel permitted in California for the eastern Pacific Ocean in 2016–2017 are included in annual quad summaries in combination with data from Hawaii-based vessels in the same quad (designated as LL_CH).

Operational data from logbooks of the U.S. and American Samoa longline fisheries have been submitted to WCPFC annually since 2011. Daily kept catches and discards of tunas, billfish, sharks, and other pelagic fish are provided as numbers of fish. Coverage rates are 100%.

Purse Seine

The Pacific Community (SPC) purse seine logbook data and South Pacific Tuna Treaty purse seine data are used to calculate aggregated catch and effort statistics for each stratum defined by month and 1° latitude × 1° longitude block (1° square). For each stratum, the statistics include total numbers of fish and estimated weight for retained (kept) catches of tunas, billfishes, and other pelagic species; and nominal effort in numbers of vessels and trips. United Nations Food and Agriculture Organization 3-character alpha species codes are used as species labels. To meet domestic and WCPFC fisheries data confidentiality requirements, within each stratum a 3-boat filter was applied to each 1° square of summarized data.

Albacore Troll

NMFS albacore troll logbook data are used to calculate aggregated catch and effort statistics by month and 1° square block for the north Pacific troll fishery, and by month and 5° square block for the south Pacific troll fishery. These Category II data include number of albacore and other species caught and effort in numbers of vessels and vessel-days fished. Category II data are not available for 2017.

Logbook coverage rates from the north Pacific albacore fishery are less than 100% but coverage rates from vessels fishing in the WCPFC convention area from both the north Pacific and south Pacific fisheries are considered to be 100%. Where logbook coverage rates are less than 100%, the Category II estimates are expanded based on total landings and catch per unit effort (CPUE) estimates.

To meet domestic and WCPFC fisheries data confidentiality requirements, a 3-boat filter was applied to each 1° and 5° square by month stratum of summarized data. Data in strata with fewer than 3 boats fishing were aggregated into larger time-area strata.

Operational level data from the Pacific albacore troll fisheries are not available for 2017.

Catches and discards of albacore and incidentally caught species are usually provided in numbers of fish. Category II and operational level data from the South Pacific Albacore Troll and the north Pacific Albacore Troll and Pole-and-Line fisheries include expanded weight estimates of catch. Average weights that were reported by captains in the logbooks or average weights from a port sampling program were used to convert numbers of fish to weight and then pro-rate trip landing weights over daily catches (sets) using proportions of catch for each day of fishing.

For 2017, other west coast fisheries catches have not been expanded in Category II data.

Category III: Size Composition Statistics

Size composition statistics by species and fisheries were compiled in the WCPFC Statistical Area for 2016–2017.

Longline

For the Hawaii permitted longline fishery, individual fish weights (whole weight to the nearest half pound converted to kilograms) are provided for bigeye tuna, yellowfin tuna, albacore, blue marlin, striped marlin, and swordfish. The size data are compiled from the Hawaii DAR Commercial Marine Dealer Reports database by linking records from that database with those in the NMFS logbook database for each longline trip, taking into consideration dates of landing and matching commercial marine license numbers in the two data sources. Size data are provided by year, quarter, month, and longline set depth (deep-set = D, shallow-set = S). When fish were landed in processed form (e.g., gilled and gutted), conversion factors were used to estimate the whole weight. Note that the summed Category III weight data will not match the estimated weight of the catch provided in Categories I and II.

For the American Samoa longline fishery in 2016, individual fork lengths (to the nearest cm) were measured by the NMFS port sampling program for bigeye tuna, yellowfin tuna, and albacore and converted to whole weight using length-weight formulas. A maximum of 50 fish were measured from each longline vessel off-loading at the canneries in American Samoa. Fork length data, as well as converted weights, are provided by year and month. For the 2017 American Samoa longline fishery and the California permitted longline fishery, there was no port sampling for size composition data.

Purse Seine

Size composition statistics by tuna species are collected by NMFS samplers in American Samoa. NMFS compiled and submitted size data for 2010–2013 in February 2015; size data for 2014–2016 were submitted in April 2017. While in the past, the species-composition of these size data have been used to adjust the bigeye and yellowfin catch estimates, the annual catch estimates have not been adjusted since 2009.

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, bigeye tuna, blue marlin and striped marlin for 2016–2017. The size data are compiled from the Hawaii DAR Commercial Marine Dealer Reports database and are provided by year and month. These data are not separated between tropical troll and handline fisheries. 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 DAR dealer data do not identify area of catch.

Albacore Troll

Individual albacore fork length measurements (to the nearest cm) for the albacore troll fishery in the north Pacific were collected in 2017 by port samplers (trained scientific technicians) as vessels unloaded in Washington and Oregon ports, however these data are not currently available for 2017.

For the albacore troll fishery in the South Pacific, there was no port sampling in 2007–2017.

Table 1. Names and contents of data files provided to WCPFC.

Data	Contents	File Name
Category I:	Estimated Annual Catches and Numbers of Active Vessels	
	For: Longline Purse Seine Albacore Troll Tropical Troll Tropical Handline Tropical Pole-and-line	CAT_I_WCPFC_US_2013-2017_4-27-2018.xlsx
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 2016-2017_LLnc.xlsx
	Purse Seine: South Pacific Tuna Treaty (non-confidential strata only)	CAT_II_WCPFC_US_2014-2017_PS_SPTT.xlsx
Category III:	Size Composition:	
	Longline: Am. Samoa Port Sampling (lengths)	CAT_III_AS_LL_ALB-BET-YFT_2016_FINAL.xlsx
	Longline: Hawaii State Division of Aquatic Resources Dealer Data (weights)—inferred to be from deep-set or shallow-set longline landings	CAT_III_HI_LL_BET_2016_FINAL.xlsx CAT_III_HI_LL_BET_2017_PRELIM.xlsx CAT_III_HI_LL_ALB-YFT-BUM-MLS-SWO_2016_FINAL.csv CAT_III_HI_LL_ALB-YFT-BUM-MLS-SWO_2017_PRELIM.csv
	Tropical Troll and Handline: Hawaii State Division of Aquatic Resources Dealer Data (weights) inferred to be from non-longline landings	CAT_III_HI_T-HL_SKJ-YFT-BET_2016_FINAL.xlsx CAT_III_HI_T-HL_BUM-MLS_2016_FINAL.xlsx CAT_III_HI_T-HL_SKJ-YFT-BET_2017_PRELIM.xlsx CAT_III_HI_T-HL_BUM-MLS_2017_PRELIM.xlsx
	Purse Seine: Observer collected sampling lengths	CAT_III_US_PS_SPTT_2014-2017_PRELIM.xlsx

Data	Contents	File Name
Operational Level	Catch and Effort Data	
	Longline: Hawaii	US_OPERATIONAL_HI_LL_2017.csv
	Longline: American Samoa	US_OPERATIONAL_AS_LL_2017.csv
Metadata Document:	This Data Report	DR-18-nnn.pdf

Table 2. Beginning and ending attribution dates for bigeye tuna catch to one or more American territories (Guam, American Samoa, and CNMI).

Year	Dates of attribution to territories
2011	November 19–December 31
2012	November 20–December 31
2013	December 5–December 31
2014	November 8–December 31
2015	October 9–December 31
2016	September 9–December 31
2017	September 1–December 31