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Draft Environmental Assessment

Experimental Fishing Permit Application

Access to the American Samoa Large Vessel Prohibited Area by an American Samoa Longline Limited Entry Permitted Vessel Greater Than 50 ft in Length to Fish Around Drifting FADs

Western Pacific Regional Fishery Management Council

June 3, 2014

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Draft Environmental Assessment

Responsible Agency

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Abstract:
This draft Environmental Assessment (EA) analyzes the potential impacts of authorizing an Experimental Fishing Permit(EFP) to conduct pelagic longline and handline fishing operations in the American Samoa Large Vessel Prohibited Area with a vessel over 50 ft. Under the EFP, the vessel would be fishing with longline and handling gear around drifting Fish Aggregation Devices (FADs) set by purse seine vessels operating outside the exclusive economic zone around American Samoa. It is believed that FADs from US and foreign purse seine vessels regularly drift into the EEZ around American Samoa. The EFP would be valid for a period of one year.

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1.1 Responsible Agency[1]

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1.2 Background Information

On March 6, 2014, Longline Services, Inc. submitted an Experimental Fishing Permit (EFP) application pursuant to 50 CFR 665.17 to the National Marine Fisheries Service (NMFS) Pacific Islands Regional Office (PIRO) (see Appendix 1). In summary, their EFP application requests access to fish within the LVPA with a vessel 67.5 foot (98 gross tons) vessel with longline and handline gear to harvest pelagic management unit species (PMUS). Under existing Pelagics FEP regulations (50 CFR Part 665) vessels over 50 ft in length are prohibited from fishing in the LVPA.[2]

Using longline and handling fishing gear, the applicant has also identified that the proposed fishing operation would be in association with drifting Fish Aggregation Devices (FADs; also referred to as "rafts" herein) deployed by US purse seiners in the Western and Central Pacific Ocean. Drifting FADs are commonly deployed by tuna purse seine vessels — some purse seine vessels deploy up to 100 FADs per trip. These FADs sometimes drift into areas that are not fishable by purse seine vessels, such as Exclusive Economic Zones of countries in which owner of the FAD does not have authorized access to retrieve or fish around the FAD.[3]

The applicant has indicated that the raft-associated fishing within the LVPA would include two gear types. During the day, the vessel would deploy a deep-set (below 100 m) partial longline set of around 1600-1800 hooks approximately 3-4 miles from raft and retrieve the fishing gear later the same day. During the early morning hours, the vessel would conduct vertical handline operations within 500 ft of the raft, using 4 manual reels, each with 12 baited 14/0 circle hooks, to fish a depths between 80-120 fathoms. Target species for both types of fishing include albacore, yellowfin, bigeye, skipjack, mahimahi, wahoo (ono), swordfish, and marlins.

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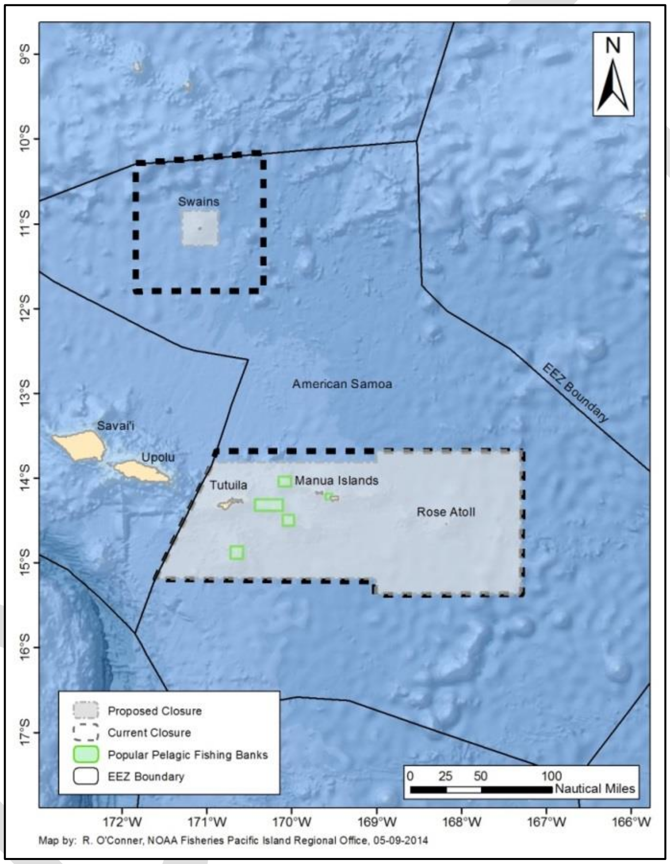
[1] This Draft Environmental Assessment was prepared by the Western Pacific Regional Fishery Management Council and has yet to be approved by the National Marine Fisheries Service.

[2] In the development of the LVPA under the Pelagics FEP, two longline permits were grandfathered with access to fish within the LVPA with vessels over 50ft. Currently, only one such permit is actively fishing in American Samoa.

[3] Not all US purse seine vessels are allowed to fish within the US EEZ. Of the 40 licensed US purse seine vessels fishing the WCPO, 12 are authorized to fish in the US EEZ. US Coast Guard regulations pertaining to coast wide trade and fishery endorsements require that US vessels meet certain criteria to receive fishery endorsements to fish in the US EEZ. For example, vessels cannot be built overseas or stretched overseas to levels beyond a certain standards.

The LVPA was established by the Western Pacific Regional Fishery Management Council in 2002 through a framework measure to the Pelagics Fishery Management Plan (67 FR 4369; see Figure 1). The purpose of establishing the LVPA was to prevent potential gear conflict and catch competition between large scale fishing vessels and small scale fishing vessels. At the time (2002), there were approximately 40 active small (less than 50 ft) longline vessel operating. Currently, there is only 1 vessel less than 50 ft in length actively longline fishing in American Samoa.

Figure 1: Map of American Samoa LVPA showing potential spatial exceptions for permitted longline vessels under consideration at the Council's 160th meeting



Source: WPRFMC 2014

1.3 Purpose and Need

The purpose of the experimental fishing is to determine whether diversified pelagic fishing operations including longline and handline fishing around drifting Fish Aggregation Devices (FADs) can improve harvest efficiency, increase catch rates of pelagic management unit species, and improve the ability to harvest optimal yield. To support this experimental fishing, the applicant has stated a need to conduct this activity closer to port within the Large Vessel Prohibited Area (LVPA) , thereby reducing transit time and allowing more time to be spent on fishing (instead of transit), thus minimizing operational expenses (i.e. fuel cost).

1.4. Proposed Action

The proposed action is the Council's consideration of an EFP to conduct pelagic longline and handline fishing operations in association with drifting FADs in the American Samoa Large Vessel Prohibited Area with a vessel over 50 ft. The Council may wish to recommend to NMFS that certain terms and conditions be applied to the EFP if authorized.

1.5 Experimental Fishing Permit Regulations for the Western Pacific Region

Under existing federal regulations applicable to fisheries of the Western Pacific Region, there is section that pertains to EFPs, including the process to follow and information required in an application (see 50 CFR § 665.17). If an EFP application is submitted, and if NMFS Pacific Islands Region Office (PIRO) deems that application to be complete, the Council will consider the information provided in the application and make a recommendation to PIRO to approve or disapprove the EFP.

PIRO has yet to deem that the application is complete. The Council, however, will consider the information provided by the applicant at its 160th meeting occurring in June 2014.

1.5.1 Experimental Fishing Permit Application Process

As outlined in 50 CFR § 665.17, the submission, review, and approval of EFPs consists of the following process:

1) To be considered for an EFP, an application must be submitted to the NMFS PIRO Regional Administrator at least 60 days before the desired date of fishing under the EFP.

2) The application must contain, but not limited to, the following information:
   - (a) The date of the application.
   - (b) The applicant's name, mailing address, and telephone number.
   - (c) A statement of the purposes and goals of the experiment for which an EFP is needed, including a general description of the arrangements for disposition of all species harvested under the EFP.
   - (d) A statement of whether the proposed experimental fishing has broader significance than the applicant's individual goals.

   - (e) For each vessel to be covered by the EFP:
     - (i) Vessel name.
     - (ii) Name, address, and telephone number of owner and operator.
     - (iii) USCG documentation, state license, or registration number.
     - (iv) Home port.
     - (v) Length of vessel.
     - (vi) Net tonnage.
     - (vii) Gross tonnage.
   - (f) A description of the species (directed and incidental) to be harvested under the EFP and the amount of such harvest necessary to conduct the experiment.

(g) For each vessel covered by the EFP, the approximate times and places fishing will take place, and the type, size, and amount of gear to be used.
(h) The signature of the applicant.

3) NMFS review the application, and if it requires all the necessary information, NMFS will publish a notice of receipt of the application in the *Federal Register* with a brief description of the proposal and will give interested persons an opportunity to comment.

(a) NMFS will also forward copies of the application to the Council, USCG, and the local government fishery management agency.

Prior providing notice that an application is complete, NMFS can request the applicant provide an environmental analysis or other information that will be used to satisfy NEPA[4], ESA, and other applicable law. It is likely that NMFS will ensure that the action to approve an EFP is consistent with other applicable law prior to notifying Council, local government, and public that application is complete.

4) At a Council meeting following receipt of a complete application, the Regional Administrator will consult with the Council and the Director of the affected state fishery management agency concerning the permit application. The applicant will be notified in advance of the meeting at which the application will be considered, and invited to appear in support of the application, if the applicant desires.

(5) Within 5 working days after the consultation described above, or as soon as practicable thereafter, NMFS will notify the applicant in writing of the decision to grant or deny the EFP and, if denied, the reasons for the denial. Grounds for denial of an EFP include, but are not limited to, the following:

(a) The applicant has failed to disclose material information required, or has made false statements as to any material fact, in connection with his or her application.
(b) According to the best scientific information available, the harvest to be conducted under the permit would detrimentally affect any species of fish in a significant way.
(c) Issuance of the EFP would inequitably allocate fishing privileges among domestic fishermen or would have economic allocation as its sole purpose.
(d) Activities to be conducted under the EFP would be inconsistent with the intent the management objectives of the FEP.
(e) The applicant has failed to demonstrate a valid justification for the permit.
(f) The activity proposed under the EFP would create a significant enforcement problem.

(6) The decision to grant or deny an EFP is final and unappealable. If the permit is granted, NMFS will publish a notice in the *Federal Register* describing the experimental fishing to be conducted under the EFP. The Regional Administrator may

[4] Based on the information provided, NMFS will decide on the level of NEPA documentation required (e.g. Categorical Exclusion, Environmental Assessment, Environmental Impact Statement).

attach terms and conditions to the EFP consistent with the purpose of the experiment including, but not limited to:

(a) The maximum amount of each species that can be harvested and landed during the term of the EFP, including trip limits, where appropriate.
(b) The number, sizes, names, and identification numbers of the vessels authorized to conduct fishing activities under the EFP.
(c) The times and places where experimental fishing may be conducted.
(d) The type, size, and amount of gear which may be used by each vessel operated under the EFP.
(e) The condition that observers be carried aboard vessels operating under an EFP.
(f) Data reporting requirements.
(g) Such other conditions as may be necessary to assure compliance with the purposes of the EFP consistent with the objectives of the FEP.

(7) Unless otherwise specified in the EFP or a superseding notice or regulation, an EFP is effective for no longer than one (1) year from the date of issuance, unless revoked, suspended, or modified. EFPs may be renewed following the application procedures described above.

Chapter 2: Description of the Alternatives

The following describes the alternatives associated with the proposed EFP. Under each alternative, all existing regulations applicable to fishing with an American Samoa limited entry permit continue to apply.

2.1 Alternative 1- No Action, Do not authorize an EFP for Longline Services Inc.

Under this alternative, an EFP would not be provided to Longline Services Inc. Vessels owned by Longline Services that are over 50 ft would continue to be subject to LVPA regulations.

2.2 Alternative 2- Authorize EFP to Longline Services Inc. for a period of one year.

Under this alternative, Longline Services Inc., would receive an EFP to fish within the LVPA with a vessel over 50 ft in length. Authorized operations would include longline and handline gear operated within the LVPA by a vessel longer than 50 ft. Fishing conducted under the EFP would include the following longline and handline fishing in association with drifting purse seine FADs.

During the day, the vessel would deploy a deep-set (below 100 m) partial longline set of around 1600-1800 hooks approximately 3-4 miles from raft and retrieve the gear later the same day. During the early morning hours, the vessel would conduct vertical handline operations within 500 ft of the raft, using 4 manual reels, each with 12 baited 14/0 circle hooks, to fish a depths between 80-120 fathoms. Target species for both types of fishing include albacore, yellowfin, bigeye, skipjack, mahimahi, ono, swordfish, and marlin. After fishing around the raft, the vessel would retrieve the raft from the ocean and take it back to Pago Pago.

2.3 Alternatives Considered But Not Analyzed In Detail

At the time of writing, no alternatives have been identified under this category. The Council may want to consider additional options related the EFP such as requiring terms and conditions on where the fishing under the EFP could occur within the LVPA.

Chapter 3: Affected Environment

3.1 American Samoa

American Samoa is part of the Samoan Islands chain, located west of the Cook Islands, north of Tonga and Niue, south of Tokelau, and east of Samoa (formerly known as Western Samoa).

Approximately 2,610 miles south of Hawaii, American Samoa is the southernmost of occupied U.S. territories. At latitude 169-170 degrees W, longitude 14 degrees S, American Samoa is comprised of seven islands, five of which are inhabited: Tutuila, Aunu`u, Ofu, Olosega and Ta`u. The island of Tutuila is the territory's center of government and business. The territorial capital is Pago Pago, located on Tutuila. In 2008, the population was estimated at 66,447, 95 percent of whom reside on Tutuila Island. In 2000, 45 percent of the total population of American Samoa was younger than 18. From 1970 to 2008, the population of American Samoa increased by almost 40,000, with the majority of this increase occurring in the western district of Tutuila.

The Council and NMFS, under the Magnuson-Stevens Act, formally designated American Samoa as a fishing community in 1999. However, local dependence on fishing goes back approximately 3,500 years to when the islands of the Samoan archipelago were first inhabited (Sabater and Carroll 2009; Severance and Franco 1989). Many aspects of the culture have changed in contemporary times, but American Samoans have retained a traditional socio-cultural system that is strongly interrelated with fishing. Social values still influence when and why people fish, how they distribute their catch, and the meaning of fish within the society. Fish and other resources may move through a complex and culturally embedded exchange system that supports the food needs of *`aiga* (family), and recognizes the status of both *matai* (chief) and village ministers (Severance et al. 1999). American Samoa, with a population of about 68,000, is about 90 percent indigenous Samoan (AS DOC, 2011) who are descended from the aboriginal people who, prior to European contact, occupied the archipelago and exercised local sovereignty for millennia.

The small economy in American Samoa continues to develop. Its two most important sectors are the American Samoa Government (ASG), which receives income and capital subsidies from the U.S. Government, and tuna canning (BOH 1997). In 2011, total export value of commodities was about $17 million; $13.4 million is attributed to canned tuna (AS DOC 2011). Private businesses and commerce comprise a smaller third sector. Unlike some of its South Pacific neighbors, American Samoa has never had a robust tourist industry.

The excellent harbor at Pago Pago, 390,000 square kilometers of EEZ, and certain special provisions of U.S. law form the basis of American Samoa's decades-old fish processing industry (BOH 1997). The territory is exempt from the Nicholson Act, which prohibits foreign ships from landing their catches in U.S. ports. Canned tuna containing foreign caught fish can be processed in American Samoan enter the United States duty free because it is considered substantially transformed during the canning process (see Headnote 3(a) of the U.S. Tariff Schedule).

Despite recent declines, tuna canning remains an important industry in the territory. In 2012, tuna exports represented more than 99 percent of the $416 million in commodities that American

Samoa exported to the United States. However, the tuna canning industry faces competition from other countries. From 1995 to 2003, the value of canned tuna imported into the United States from American Samoa exceeded that of tuna imported from all other countries combined (GAO 2014). In a recent study, the Government Accountability Office estimated that in 2012 tuna canning was responsible for 2,200 jobs, or about 12% of American Samoa's non-government workforce. While this is a substantial decrease from pre-2010 figures, the job impact of fish processing still extends well beyond direct employment; the industry's operating expenditures create employment opportunities in other parts of the economy. Analysis by McPhee and Associates (2008) found that fish processing accounted for nearly one out of every two jobs in the territory in 2002.

In October 2010, Samoa Tuna Processors (STP), a subsidiary of Tri Marine International, acquired the former Chicken of the Sea tuna processing facility in American Samoa. In 2013, STP completed the construction of a new cold storage facility that has the capacity to store over 5,000 tons of tuna. STP also receives, processes, and exports fresh and frozen tuna by air to Japan and the United States. Plans also are progressing for a new seawall and dock to service the local alia fleet.[5] STP anticipates conducting cannery operations in 2015 has indicated a locally employing approximately 1,200 people (GAO, 2014).

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3.1.1 U.S. EEZ Waters around American Samoa

Spanning between 10° S to 17° S, the EEZ waters around American Samoa comprise 390,000 square kilometers and are truncated by the EEZs around the other nearby island nations.

The islands of American Samoa are in an area of modest oceanic productivity relative to areas to the north and northwest. To the south of American Samoa lie the subtropical frontal zones consisting of several convergent fronts located along latitudes 25°- 40° N and S often referred to as the Transition Zones. Between the latitudes 15° N -15° S, lies the equatorial current system consisting of alternating east and west zonal flows with adjacent fronts; the southern branch of the South Equatorial Current (SEC) flows westward from June to October and the South Equatorial Counter Current (SECC) flows eastward from November to April.

Domokos et al. (2007) have investigated the oceanography of the waters surrounding American Samoa and noted the impact of the SEC and SECC on the productivity of the longline fishery. They note that the American Samoa fishing ground is a dynamic region with strong mesoscale eddy activity and temporal variability on scales of less than one week. Seasonal and interannual variability in eddy activity, induced by baroclinic instability that is fueled by horizontal shear between the eastward-flowing SECC and the westward-flowing SEC, seems to play an important role in the performance of the longline fishery for albacore.

Mesoscale eddy variability in the EEZ around American Samoa peaks from March to April, when the kinetic energy of the SECC is at its strongest. Longline albacore catch tends to be highest at the eddy edges, while albacore catch per effort (CPUE) shows intra-annual variability with high CPUE that lags the periods of peak eddy activity by about 2 months. When CPUE is highest, the values are distributed toward the northern half of the EEZ, the region affected most

[5] http://www.trimarinegroup.com/news/press/STP_Project_Update_Press_031212.html

by the SECC. Further indication of the possible importance of the SECC for longline performance is the drop in eddy variability in 2004 when compared with that observed in 2003 – resulting from a weak SECC – which was accompanied by a substantial drop in albacore CPUE rates and a lack of northward intensification of CPUE.

3.1.2 American Samoa-based Pelagic Fisheries

In 1995, small-scale longline fishing began in American Samoa following training initiated by the Secretariat of the Pacific Community (SPC; Chapman 1998). Commercial ventures are diverse, ranging from small-scale vessels having very limited range to large-scale vessels catching tuna in the EEZ and distant high seas waters, and then delivering their catches to the cannery based in American Samoa. Currently the pelagic fisheries of American Samoa rely on supplying frozen albacore, and small amounts of other pelagic fish directly to a large cannery in Pago Pago. These fisheries include small and large-scale longlining, and a pelagic trolling fishery. Regulations require all owners and operators of American Samoa longline vessels to obtain a federal permit and to submit logbooks containing detailed data on each of their sets and the resulting catch. Boat-based creel surveys, a Commercial Purchase System, and Cannery Sampling Forms are also used to collect fishery information for all fishing activity. Additional historical and recent data can be found in the Council’s 2011 Pelagic Fisheries Annual Report (WPFMC 2012).

More than $7.3 million worth of pelagic species were landed in American Samoa during 2011 (WPFMC 2012). Longline fishing dominated (98.8%) the value of pelagic landings during 2011. Over $5 million worth of albacore dominated (70%) the value of longline caught pelagic species during 2011 followed by yellowfin (~ $1.2 million), bigeye (~$378,000), and skipjack (~$244,000) tunas. Wahoo (~$282,000) and mahimahi (~ $19,300) were the top-value non-tuna species during 2011 (WPFMC 2012).

3.1.2.1 Small-Scale Longline and Troll

Historically, most participants in the small-scale domestic longline fishery had been indigenous American Samoans with vessels under 50 ft in length, most of which were alia; locally-built fiberglass or aluminum catamaran boats under 40 ft in length. In the mid-1990s, American Samoa’s commercial fishermen shifted from troll gear to longline gear largely based on the fishing success of 28-ft alia vessels that engaged in longline fishing in the EEZ around Samoa. Following this example, the alia fishermen in American Samoa began deploying short monofilament longlines with an average of 350 hooks per set from hand-operated reels. Their predominant catch was albacore tuna, which they marketed to the tuna cannery (DMWR 2001). By 1997, 33 alia vessels received general longline permits from NMFS to fish in federal waters around American Samoa, although only 21 were actively fishing at that time. However, since 2008, only one alia vessel has been actively longline fishing (Table 1), and NMFS cannot report its landings due to data confidentiality rules.

Troll fishers land relatively small amounts of pelagic MUS (yellowfin, skipjack) with just over 33,000 lb reported in 2011. The average number of vessels participating in the troll fishery from 1982-2011 is 28; only 10 vessels participated in trolling in 2011 (WPFMC 2012). The reduction in vessel participation in the pelagic trolling fishery is due to high fuel prices and vessels switching to bottomfish fishing. Trolling does occur while fishermen move between bottomfish fishing locations or transitioning to and from port, which creates large apparent fluctuations in CPUE for pelagic species. When fishing, trollers will sometime transit to offshore banks within the LVPA such as "South Bank."

3.1.2.2 Large-Scale Longline

In 2000, the American Samoa longline fishery began to expand rapidly with the influx of large (≥50 ft) conventional monohull vessels similar to the type used in the Hawaii-based longline fishery, including some vessels from Hawaii. These vessels were larger, had a greater range, and were able to set more hooks per trip than the average alia vessel. The number of permitted and active longline vessels in this sector increased from three in 1997 to 31 in 2003. Of these 31 vessels, 10 permits were believed to be held by indigenous American Samoans as of March 21, 2002 (P. Bartram, pers. comm., March 2002). Economic barriers, such as the capital needed to purchase and operate a large vessel, are believed to have prevented more substantial indigenous participation in the large-scale sector of the longline fishery. In 2012, there were 22 active Class C and D (large) vessels in the fishery (Table 1).

Vessels over 50 feet can set from 1,500 to over 4,000 hooks per day, have a greater fishing range, and have greater capacity for storing fish (8-40 metric tons (mt)) compared to small-scale vessels (0.5-2 mt). Large vessels are outfitted with hydraulically powered reels to set and haul mainline, and with modern electronic equipment for navigation, communications, and fish finding. Most vessels operate to freeze albacore onboard, rather than to land chilled fish. Some vessels are capable of doing fresh and frozen operations. Based on logbook data from 2002-200, the average number of hooks per set used by the longline fleet steadily increased from 1,905 to 3,070 (WPacFIN[6]; Table 1), but has since declined to 2,877 in 2012. Observed effort for 2012 was 2,877 hooks per set.[7]

Table 1: Logbook Effort in the American Samoa Longline Fishery from 2008-2011

Year	Average Hooks per Set	Number of Sets	1000s of Hooks
2008	3,038	4,754	14,444
2009	3,070	4,910	15,074
2010	2,906	4,534	13,174
2011	2,851	3,776	10,767
2012	2,877	4,068	11,702

Source: http://www.pifsc.noaa.gov/wpacfin/index.php. and WPRFMC unpublished data from draft American Samoa Pelagics Annual Report module.
Note: Data presented for 2008-2011 because it captures predominantly Class C and D vessels; only one Class A vessel was active and zero Class B vessels were active.

As of October 2012, 18 of the American Samoa longline limited access permit holders also hold Hawaii longline limited access permits for the Hawaii-based fisheries (W. Ikehara (c), NMFS, pers. comm., Oct. 2012). Of those, three were Class B, five were Class C, and 10 were Class D.

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[6] Found at: http://www.pifsc.noaa.gov/wpacfin/index.php
[7] 2012 data from draft 2012 Pelagics Annual Report Module

3.1.2.3 Effort and Catch

Effort

Since 2001, the number of American Samoa troll and longline vessels landing pelagic species has decreased from a high of 80 vessels to 34 in 2011 (Table 2). Effort is dominated by large longline vessels (Class D) as there is only active small longline vessel in 2012 and the troll fleet continues to decrease in numbers of vessels and trips.

Table 2: Number of Vessels Using Different Fishing Methods, 1996-2010

Year	Number of Vessels		
	Longline	Trolling	Total
1996	12	37	49
1997	21	32	53
1998	26	24	50
1999	29	36	65
2000	37	19	56
2001	62	18	80
2002	58	16	74
2003	50	20	70
2004	41	18	59
2005	36	9	45
2006	31	9	40
2007	29	19	48
2008	28	16	44
2009	27	10	36
2010	26	7	33
2011	24	10	34
2012	22	9	31

Note: The number of vessels does not reflect the number of permits. The number of vessels can be higher if a permit transfer occurred within a year. WPacFIN program uses vessel number as a proxy for permit number when analyzing data. Source: WPRFMC 2013 and WPRFMC unpublished data from draft American Samoa Pelagics Annual Report module.

Fishing power[8] is clearly distinct between the different size classes of vessel, and separate catch statistics are compiled. The alia vessels use manually powered mainline drums that hold about four miles of monofilament line. The boats make single day trips with a crew of three, setting around 300 – 350 hooks per set and keep their catch on ice. Large monohull vessels in the

[8] Fishing power provides a measure of vessel efficiency. Full explanation may be found on FAO website at: http://www.fao.org/DOCREP/003/X2250E/x2250e0f.htm

fishery are typically steel-hulled vessels of around 20 – 25 m operating hydraulically driven mainline reels holding 30 – 50 miles of monofilament, setting around 3,000 hooks per day with crews of 5 – 6. They are also likely to be well equipped with marine electronics and have refrigeration systems to freeze catch onboard for extended trips. Therefore, the larger vessels can range out to the outer portions of the EEZ and, in the past, some have negotiated fishing access with neighboring states. The large monohull vessels are, in some cases, the same vessels that have engaged in the Hawaii longline fisheries.

Recent fishing effort has occurred in EEZ waters surrounding American Samoa (excluding existing large vessel prohibited areas) and some foreign EEZ waters surrounding American Samoa where vessels have fishing access agreements, including the Cook Islands, Samoa, Tokelau, and others, as well as all four high seas areas (NW, NE, E, and S) giving an operational area roughly 155° W to 180°, and from 3° to 32° S from 2000 through 2009 (NMFS 2010a)

Individual vessels have negotiated access agreements with the neighboring countries surrounding American Samoa. Most agreements have been made with the Cook Islands, whereby U.S. vessels fishing in the Cook Island's EEZ do not have to re-flag their vessels to the Cook Islands. A limited number of permits exist for these arrangements in the Cook Islands. Since 2001, American Samoa-based longline vessels have fished in several foreign EEZ waters surrounding American Samoa, such as Samoa, Tokelau, and others. Fishing effort in these countries has ranged from a couple thousand hooks per year to over 2.7 million hooks set in the Cook Islands in 2006.

The number of hooks set by the American Samoa-based longline fleet has varied considerably over time. Data for 2011 indicates 10.9 million hooks were set by the American Samoa longline fishery, down from 15 million hooks set in 2009, and 38 percent less than a high of 17.5 million set in 2007 (WPFMC 2012). Table 3 shows landing and effort statistics for the longline fishery.

Table 3: American Samoa Longline Fishery Landings and Other Statistics, 2002-2012

Item	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Active Vessels	58	49	41	36	30	29	28	26	26	24	22
Hooks Set (millions)	13.1	14.2	11.7	11.1	14.3	17.5	14.4	15.0	13.2	10.8	11.7
Trips	NA	650/282*	430/193*	223/179*	331	377	287	177	264	274	275
Sets Made	6,872	6,220	4,850	4,359	5,069	5,919	4,754	4,910	4,534	3,776	4,068
Total Landings (mt)	7,138	5,173	4,079	3,999	5,401	6,586	4,347	4,787	4,673	3,250	4,022
Albacore Tuna Landings (mt)	5,996	3,931	2,488	2,919	4,104	5,329	3,456	3,910	3,938	2,292	3,092
Yellowfin Tuna (mt)	485	517	890	516	493	620	336	155	445	536	385
Bigeye Tuna (mt)	196	253	226	132	199	199	124	146	178	170	167

Item	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Skipjack Tuna (mt)	244	120	235	141	213	165	163	156	111	109	250
Wahoo (mt)	164	195	215	221	287	198	136	139	131	125	83
Total Ex-vessel Value (adjusted) ($ millions)	$14.1	$10.7	$9.1	$8.0	$11.5	$13.7	$9.4	$10.4	$ 10.4	$7.2	$7.2

Source: WPFMC 2013 and WPRFMC unpublished data
*The first number is trips by alia and the second is by larger monohull vessels. From 2006, three or fewer alia vessels were active and those data are confidential.
Note: all other species (e.g. mahimahi, swordfish, etc.) landed are less than 1 percent of total landings.

Catch

Approximately 8.8 million lb of pelagic species is estimated to have landed by American Samoa vessels (longline and troll) during 2012, an increase of about 1.5 million lb from the 7.4 million lb landed in 2011. Landings of tuna species increased substantially by 1.5 million lb, while non-tuna decreased by about 100,000 lb.

More than 8.5 million lb (96%) of total landings were of tuna species, while the non-tuna landing were roughly 362,000 lb. Albacore dominated tuna species landings at 80 percent and comprised 77 percent of all pelagic species landings; yellowfin (8.7%), bigeye (4%), skipjack (6%), and unknown tunas make up the rest of the tuna landings. Wahoo species dominate the "Non-Tuna and Others" total landings, make up 51 percent of non-tuna landings and 2 percent of all pelagic landings (WPFMC 2012). Class D (>70 feet) longline vessels dominate the American Samoa total pelagic landings and commercial landings.

Catch-Per-Unit Effort

The CPUE of albacore, the main target species of the longline fishery, reached a peak in 2001 at 33 fish per 1,000 hooks and has decreased to approximately 12 fish per 1,000 hooks in 2011 (Table 4).

Table 4: CPUE (catch/1,000 hooks) for All American Samoa Longline Vessels, 2006-2012.

Species	2006	2007	2008	2009	2010	2011	2012
Skipjack	3.2	2.3	2.4	2.3	2.4	2.5	4.3
Albacore	18.5	18.3	14.2	14.8	17.4	12.1	14.9
Yellowfin	1.6	1.9	1	1.1	1.8	2	1.2
Bigeye	1	0.9	0.5	0.6	0.8	0.7	0.7
TUNAS SUBTOTAL	24.2	23.5	18.2	18.8	22.4	17.3	21.1
Mahimahi	0.4	0.1	0.1	0.2	0.2	0.1	0.1
Blue marlin	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Wahoo	1.5	1	0.7	1	1	0.9	0.7
Sharks	0.5	0.4	0.4	0.4	0.4	0.5	0.6
Swordfish	0.1	0	0	0	0	0	

Spearfish	0.1	0	0.1	0.1	0.1	0.1	0.1
Oilfish	0.5	0.5	0.4	0.5	0.6	0.6	0.8
Pomfret	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NON-TUNA PMUS							
SUBTOTAL	3.3	2.4	2	2.5	2.5	2.4	2.4
Pelagic fishes							
(unknown)	0.1	0.2	0.1	0.2	0.3	0.4	0.3
OTHER PELAGICS							
SUBTOTAL	0.1	0.2	0.1	0.2	0.3	0.4	0.3
TOTAL PELAGIC	27.5	26	20.3	21.5	25.2	20	23.8

Source: WPRFMC 2013 and WPRFMC unpublished data from draft American Samoa Pelagics Annual Report module.

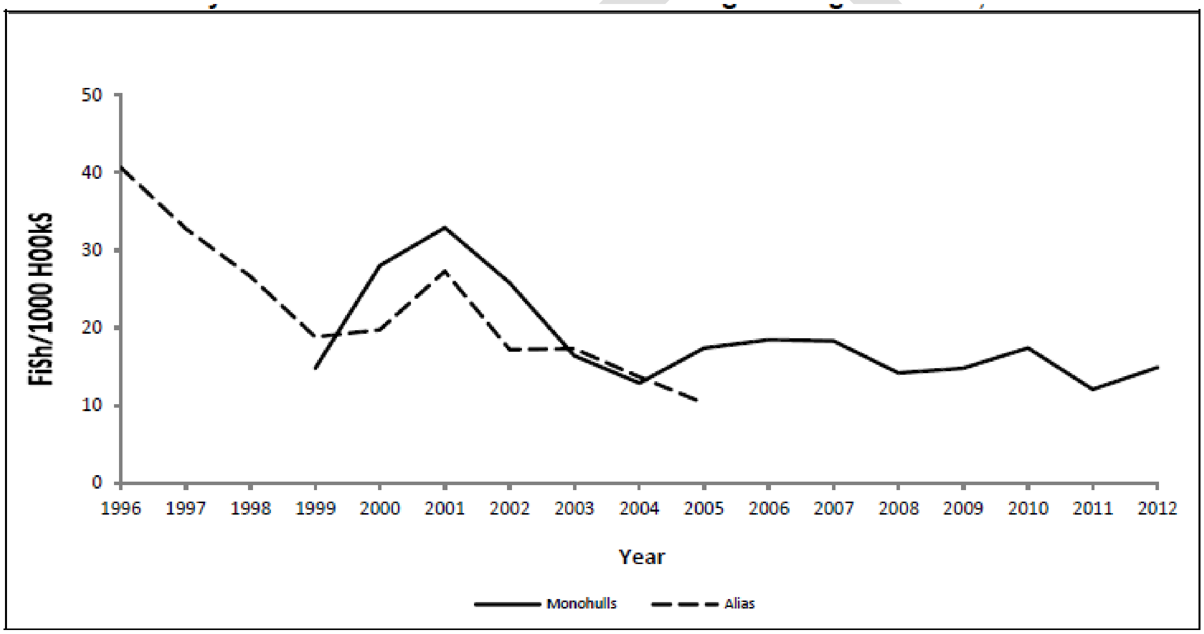

Figure 2. Albacore catch per unit effort (per 1,000 hooks) in the American Samoa longline fishery, 1996-2012

Source: WPRFMC 2013 and WPRFMC unpublished data from draft American Samoa Pelagics Annual Report module.

In addition to tuna species, the American Samoa longline fishery also catch and land various non-tuna PMUS, including wahoo, mahimahi, swordfish, blue marlin, spearfish, striped marlin, and moonfish (Table 5). These landings, however, only represent 6 percent of the total landings and 4 percent of the total landings value in 2011 (WPFMC 2012).

Table 5: 2011 Estimated Total Landings of Pelagic Species by Gear Type.

Species	LongLine Pounds	Troll Pounds	Other Pounds	Total Pounds
Skipjack tuna	551,270	9,703	0	560,973
Albacore tuna	6,815,055	0	0	6,815,055
Yellowfin tuna	768,084	8,479	0	776,564
Kawakawa	0	144	289	433
Bigeye tuna	368,358	0	0	368,358
Tunas (unknown)	1,131	0	0	1,131
TUNAS SUBTOTALS	8,503,898	18,326	289	8,522,514
Mahimahi	22,138	349	0	22,487
Black marlin	4,615	0	0	4,615
Blue marlin	79,927	0	0	79,927
Striped marlin	16,237	0	0	16,237
Wahoo	183,843	597	0	184,440
Sharks (all)	7,085	7	0	7,092
Swordfish	30,033	0	0	30,033
Sailfish	3,262	0	0	3,262
Spearfish	2,806	0	0	2,806
Moonfish	7,409	0	0	7,409
Oilfish	454	0	23	478
Pomfret	942	0	0	942
NON-TUNA PMUS SUBTOTALS	358,749	952	23	359,725
Barracudas	780	73	496	1,349
Rainbow runner	0	10	43	53
Dogtooth tuna	36	151	61	248
Pelagic fishes (unknown)	385	0	0	385
OTHER PELAGICS SUBTOTALS	1,201	233	600	2,034
TOTAL PELAGICS	**8,863,848**	**19,512**	**913**	**8,884,273**

Source: WPRFMC unpublished data from draft American Samoa Pelagics Annual Report module.

Bycatch

Table 6 shows the number of fish kept and released in the American Samoa longline fishery during 2012. Overall, 12 percent of the total catch was released, with skipjack tuna having one of the highest numbers released. Fishermen released nearly all sharks and oilfish. Fish are released for various reasons including quality, size, handling and storage difficulties, and as well as marketing issues. However, it is expected that catch rates and total catches of some pelagic MUS, such as the billfishes and mahimahi that typically occur closer to the surface, would be reduced by fishing with gear at 100 m and deeper, which was mandated in 2011 through gear configuration requirements (50 CFR 665.819).

Table 6: American Samoa Longline Fishery Quantity Kept versus Released, 2012

Species	Number Kept	Number Released	Percent Released
Skipjack tuna	23,160	4,186	15.3
Albacore tuna	129,930	541	0.4
Yellowfin tuna	21,378	450	2.1
Bigeye tuna	7,232	382	5.0
Tunas (unknown)	20	8	28.6
TUNAS SUBTOTALS	181,720	5,567	3.0
Mahimahi	1,055	352	25.0
Black marlin	14	8	36.4
Blue marlin	641	1,020	61.4
Striped marlin	92	196	68.1
Wahoo	7,589	1,609	17.5
Sharks (all)	104	4,720	97.8
Swordfish	213	105	33.0
Sailfish	117	335	74.1
Spearfish	253	976	79.4
Moonfish	119	263	68.8
Oilfish	85	6,394	98.7
Pomfret	121	542	81.7
NON-TUNA PMUS SUBTOTALS	10,403	16,520	61.4
Barracudas	60	187	75.7
Dogtooth tuna	0	1	100
Pelagic fishes (unknown)	19	3,847	99.5
OTHER PELAGICS SUBTOTALS	79	4,035	98.1
TOTAL PELAGICS	192,202	26,122	12.0

Note: Percent released for a species is calculated from the number released for that species divided by the total number of that species caught plus the number of that species released
Source: American Samoa Pelagics Annual Report module

3.1.2.4 Recreational Fishing

Levine and Allen (2009) provide an overview of fisheries in American Samoa, including subsistence and recreational fisheries. Citing a survey conducted in American Samoa by Kilarski et al. (2006), Levine and Allen noted that approximately half of the respondents stated that they fished for recreation, with 71 percent of these individuals fishing once a week or less. Fishermen also fished infrequently for cultural purposes, although cultural, subsistence, and recreational fishing categories were difficult to distinguish as one fishing outing could be motivated by all three reasons.

Boat-based recreational fishing in American Samoa has been influenced primarily by the fortunes of fishing clubs and fishing tournaments. Tournament fishing for pelagic species began in American Samoa in the 1970s, and between 1974 and 1998, a total of 64 fishing tournaments were held in American Samoa (Tulafono 2001). Most of the boats that participated were alia catamarans and small skiffs. Catches from tournaments were often sold, as most of the entrants are local small-scale commercial fishermen. In 1996, three days of tournament fishing contributed about one percent of the total domestic landings. Typically, 7 to 14 local boats carrying a total of 55 to 70 fishermen participated in each tournament, which were held two to five times per year (Craig et al. 1993).

The majority of tournament participants operated 28-foot alia, the same vessels that engage in the small-scale longline fishery. With more emphasis on commercial longline fishing since 1996, interest in the tournaments waned (Tulafono 2001) and pelagic fishing effort shifted markedly from trolling to longlining. Catch-and-release recreational fishing is virtually unknown in American Samoa. Landing fish to meet cultural obligations is so important that releasing fish would generally be considered a failure to meet these obligations (Tulafono 2001).

Table 7 shows a summary of the species composition from fishery tournaments held between 1974 and 2010. The data do not document every tournament held in the four decades since records were kept, but cover 55 individual competitions. Of the nearly 136,000 lb of fish landed in the tournaments, almost two-thirds of the catch comprised equal amounts of skipjack and yellowfin tuna, while blue marlin, wahoo, mahimahi, and sailfish made up the majority of the remaining catch.

Table 7: American Samoa Recreational Fishing Tournaments Catch Composition, 1974 -2010.

Species	Weight (lb)	Percent
Skipjack tuna	40,655.85	29.93%
Yellowfin tuna	39,458.34	29.05%
Blue marlin	21,102.25	15.54%
Wahoo	11,807.25	8.69%
Mahimahi	11,035.20	8.13%
Sailfish	3,215.00	2.37%
Sharks (unknown)	2,805.75	2.07%
Dogtooth tuna	1,786.05	1.32%
Others	3,951.75	2.91%
Total	135,817.44	100.00%

Source: American Samoa Dept. of Marine and Wildlife Resources.

More recently, recreational fishing has undergone a renaissance in American Samoa through the establishment of the Pago Pago Game Fishing Association (PPGFA), founded by a group of recreational anglers in 2003.[9] The motivation to form the PPGFA was the desire to host regular fishing competitions. There are about 15 recreational fishing vessels ranging from 10 feet single engine dinghies to 35-ft long twin diesel engine cabin cruisers. The PPGFA has annually hosted international tournaments in each of the past five years with fishermen from neighboring Samoa and Cook Islands attending.

[9] http://ppgfa.com/page/about-ppgfa.

The recreational vessels use anchored fish aggregating devices (FADs) deployed within 15 nm of shore by the American Samoa government. Recreational vessels also transit to the various outer banks which include the South Bank (35 miles), North East Bank (40 miles NE), South East bank (37 miles SE), 2% bank (40 miles), and East Bank (24 miles East). Several recreational fishermen have aspirations to become charter vessels and are in the process of obtaining captains' (6 pack) licenses. In 2012, PPGFA hosted the 13th Steinlager I'a Lapo'a Game Fishing Tournament in which a total of 2,598 lb of qualifying fish were landed. Species landed during the tournament included barracuda, blue marlin, dogtooth tuna, mahimahi, wahoo, and yellowfin tuna; blue marlin were also tagged and released.[10] Members of the PPGFA fish a few times per week. Not all members go out that frequently, but across the membership, several trips per week are taken. The target species include yellowfin tuna and mahimahi (W. Sword, PPGFA, pers. comm., October 31, 2012).

A charter-for-hire sports fishing fishery is emerging in American Samoa, with at least two boats equipped to take out anglers on daily recreational fishing trips.

Estimation of the volume and value of recreational fishing in American Samoa is not known with any precision. An approximation of the volume of boat based recreational fishing is generated in the Council's Pelagics Annual Report, based on the annual sampling of catches conducted under the auspices of WPacFIN[11]. Boat-based recreational catches have ranged from 2,100 to 6,100 lb between 2006 and 2008, comprising primarily pelagic fish (WPFMC 2007, WPFMC 2010). These catches are unsold, but based on the 2008 average price for pelagic fish ($2.19/lb) (WPFMC 2010) this would be worth $4,600 - $18,360. An additional volume of fish is caught recreationally by fishing tournaments mounted by the PPGFA, but WPacFIN does not monitor these landings.

There is no information on any protected species interactions associated with recreational fishing, but the type gear used is not expected to have large numbers of serious or non-serious interactions with protected species.

3.2 Status of Stocks

3.2.1 Status of Target Stocks

3.2.1.1 South Pacific Albacore Tuna

The most recent assessment of South Pacific albacore was conducted in 2012 by Hoyle et al (2012). The assessment used the integrated stock assessment model known as MULTIFAN-CL (or MFCL), under the assumption that there is a single stock of albacore tuna in the South Pacific Ocean. The model was age (20 age-classes) structured and the catch, effort, size composition and tagging data used in the model were classified by 30 fisheries and quarterly time periods from July 1960 through June 2011. The assessment included a range of model options and sensitivities that were applied to investigate key structural assumptions and sources of uncertainty in the

[10] http://www.ppgfa.com/blog/final-results
[11] http://www.pifsc.noaa.gov/wpacfin/.

assessment. Catches from the American Samoa longline fishery were considered in the assessment, and comprise a small fraction of the total catch of South Pacific Albacore.

Figure 8 is taken from Holye et al (2012) shows a ‘Kobe’ plot of the ratios of current fishing mortality ($F_{current}$) to fishing mortality at the maximum sustainable yield or MSY (F_{MSY}) versus the current biomass ($B_{current}$) to the biomass at MSY (B_{MSY}).

The fishing mortality reference point $F_{current}/F_{MSY}$ has an estimate of 0.21, and there is a low risk that overfishing is occurring. The corresponding biomass-based reference points $B_{current}/B_{MSY}$ is estimated to be above 1.0 and therefore the stock is not in an overfished state. The estimate of MSY (99,085 mt) is comparable to the recent levels of catch[12] from the fishery ($C_{current}$ 78,664 mt, C_{latest} 89,790 mt). There is no indication that current levels of catch are causing recruitment overfishing, particularly given the age selectivity of the fisheries. However, longline catch rates are declining on a region wide basis, and catches over the last 10 years have been at historically high levels and are increasing.

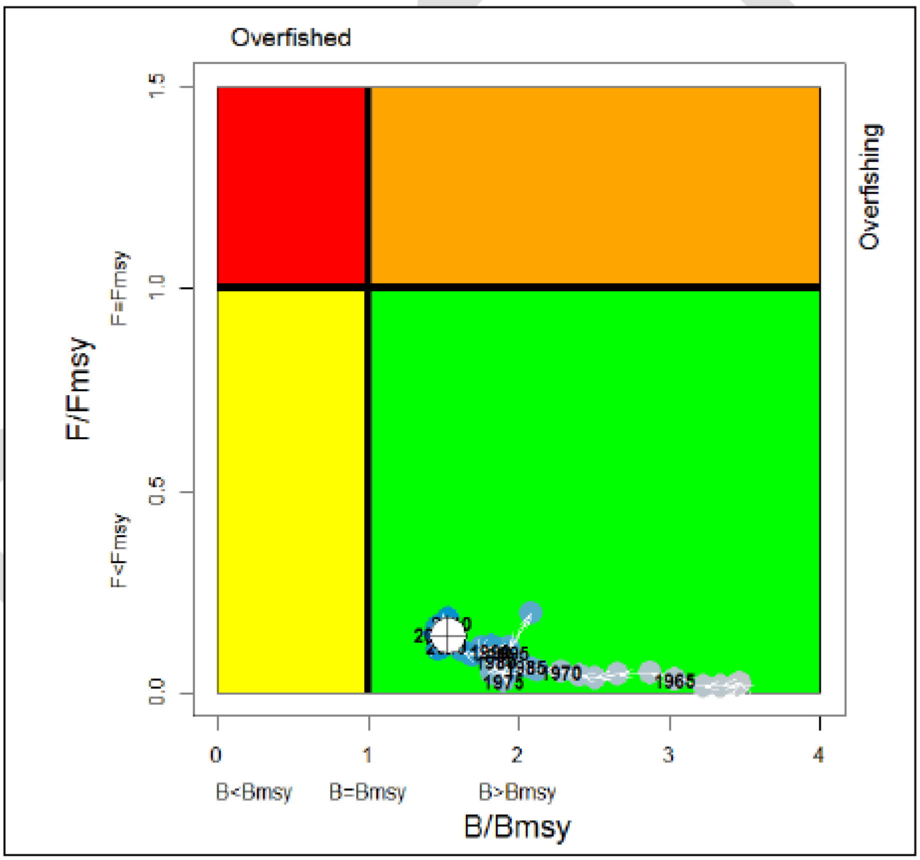

Figure 3. Temporal trend in annual stock status, relative to BMSY (x-axis) and FMSY (y-axis) reference points, for the model period (starting in 1960).

[12] $C_{current}$ = mean catch from June 2007-June 2010, C_{latest} = June 2010-June 2011

Note: The color of points is graduated from lavender (2006) to blue (2009) and white cross (2010), and points are labeled at five-year intervals. The last year of the model (2011) is excluded because it is highly uncertain.

Langley (2006) reported that then levels of fishing effort from all South Pacific albacore fisheries combined reduced the level of biomass available to the Pacific Island nations domestic longline fisheries by approximately 30 percent compared to unexploited levels. Langley predicted that increases in fishing effort in the Pacific Islands longline fisheries would result in declines in CPUE due to a decline in exploitable biomass. Catch rates in domestic longline fisheries exhibit strong seasonal trends due to fluctuations in the oceanographic conditions and inter-annual variation in albacore catch rates are evident in most of the Pacific Island fisheries

Most of the longline albacore catch is taken in a relatively narrow latitudinal band between 10–40° S. The highest catch rates for albacore in the subequatorial area are relatively localized and limited to discrete seasonal periods; possibly associated with the northern and/or southern movements of fish during winter and/or summer. These peaks in seasonal catch rates tend to persist for a couple of months and to extend over a 10° latitudinal range. On this basis, it would appear that most of the longline exploitable biomass resides in a relatively small area, suggesting a modest stock size.

It is believed that regional stock depletion has contributed to catch rate declines, but localized depletion may also have contributed. Observed declines in catch rates from domestic longline fisheries (e.g. Fiji, French Polynesia, and Samoa) — following periods of relatively high albacore catch (3,000–10,000 mt per year) — may indicate localized stock depletion. Strong relationships may occur between catch rates and catches in the preceding 10 day period. Movement rates into and out of EEZ’s may be lower than peak catch levels, and there may be some viscosity (perhaps residency) in the population.

As described in Williams and Terawasi (2012), prior to 2001, South Pacific albacore catches were generally in the range 25,000-44,000 mt, although a peak was attained in 1989 (49,076 mt), when driftnet fishing was in existence. Since 2001, catches have greatly exceeded this range, primarily because of the growth in several Pacific Islands domestic longline fisheries. The South Pacific albacore catch in 2011 (75,258 mt) was the third highest on record (about 12,000 mt lower than the record catch in 2010 of 87,048 mt; Williams and Terawasi 2012). The American Samoa longline fishery accounts for approximately 6 percent of total South Pacific albacore landings (3,890 mt) (WPFMC 2011).

The longline catch of albacore is distributed over a large area of the South Pacific (Figure 9), but concentrated in the west. The Chinese-Taipei distant-water longline fleet catch is taken in all three regions, while the Pacific Island domestic longline fleet catch is restricted to the latitudes 10°–25°S. Troll catches are distributed in New Zealand's coastal waters, mainly off the South Island, and along the SCTZ. Less than 20 percent of the overall South Pacific albacore catch is usually taken east of 150° W (Williams and Terawasi 2012).

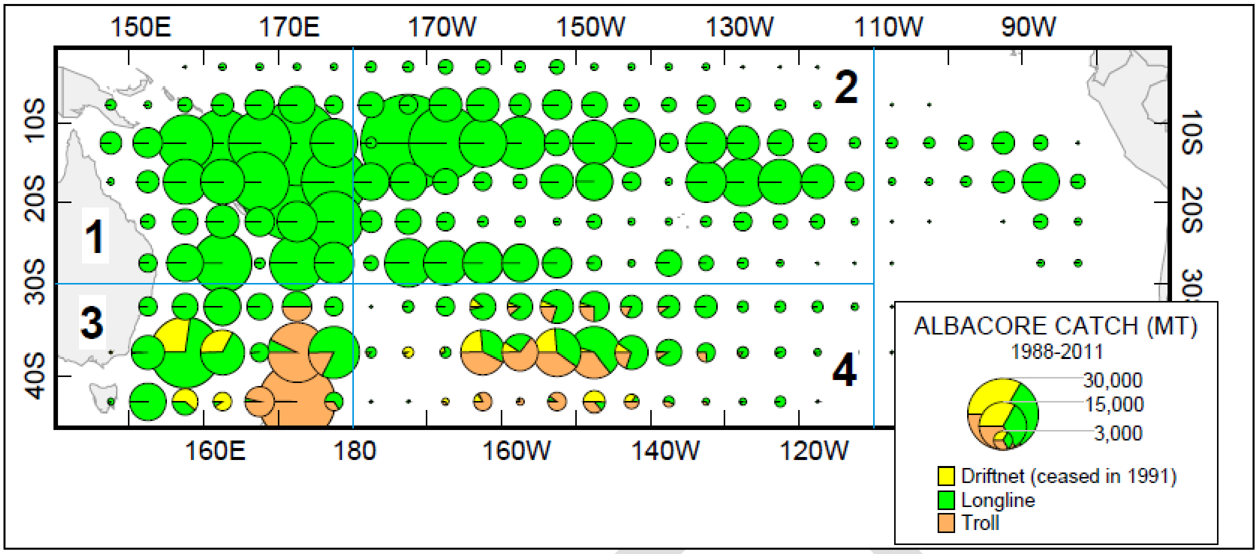

Figure 4. **Distribution of South Pacific albacore tuna catches, 1988-2011.**
Source: Williams and Terawasi 2012.

3.2.1.2 Bigeye Tuna

Bigeye is considered a Pacific-wide stock, but recently has been assessed separately in the WCPO and EPO. The IATTC and Secretariat of the Pacific Community, Oceanic Fisheries Program (SPC-OFP) are considering conducting a Pacific-wide stock assessment in 2014.

WCPO Stock Status
The most recent stock assessment for bigeye tuna in the WCPO by Davies et al. (2011) estimated the ratio of current fishing mortality (F) to fishing mortality at MSY (F_{MSY} ($F_{current}/F_{MSY}$) is 1.46, indicating that overfishing is occurring. In order to reduce fishing mortality to F_{MSY}, the base case indicates that a 32 percent reduction in fishing mortality is required from the 2006-2009 level. The base case assessment indicates that the current total biomass (B) and spawning biomass (SB) are higher than the associated MSY levels ($B_{current}/B_{MSY}$ = 1.25 and $SB_{current}/SB_{MSY}$ = 1.19), so the assessment and NMFS' status determination concluded that the stock is not overfished. An analysis of historical patterns in the mix of fishing gears indicates that MSY has been reduced to less than half its levels prior to 1970 through increased harvest of juveniles. Recent overfishing could result in losses in potential yields in the future if spawning biomass is reduced to levels that cannot support MSY.

Bigeye tuna are incidentally caught by the American Samoa longline vessels while targeting albacore, with landings around 200 mt per year. Bigeye would also be targeted in the proposed EFP operations. While these catches contribute to the overall fishing mortality of bigeye in the WCPO, they are negligible in comparison to the approximately 60,000 mt caught by purse seines and 70,000 mt caught by longliners in total. Moreover, American Samoa and its longline fishery primarily operate in an area to the south of the main concentration of bigeye fishing mortality, which is believed to occur between 10° N and 10° S.

Figure 2 shows the base case model run used by Davies et al. (2011) to represent the temporal trend in annual bigeye tuna stock status, relative to biomass at MSY and fishing mortality at MSY reference points. Figure 2 shows the bigeye tuna stock to be experiencing overfishing in the WCPO, but it is not overfished and not approaching overfished, as defined by the Council and NMFS under the Pelagics FEP. However, other model runs indicate that stock is overfished if using B/B_{MSY} reference point of 1 (Davies et al. 2011). The most recent estimate of MSY for bigeye tuna in WCPO is 74,993 mt (Ibid.).

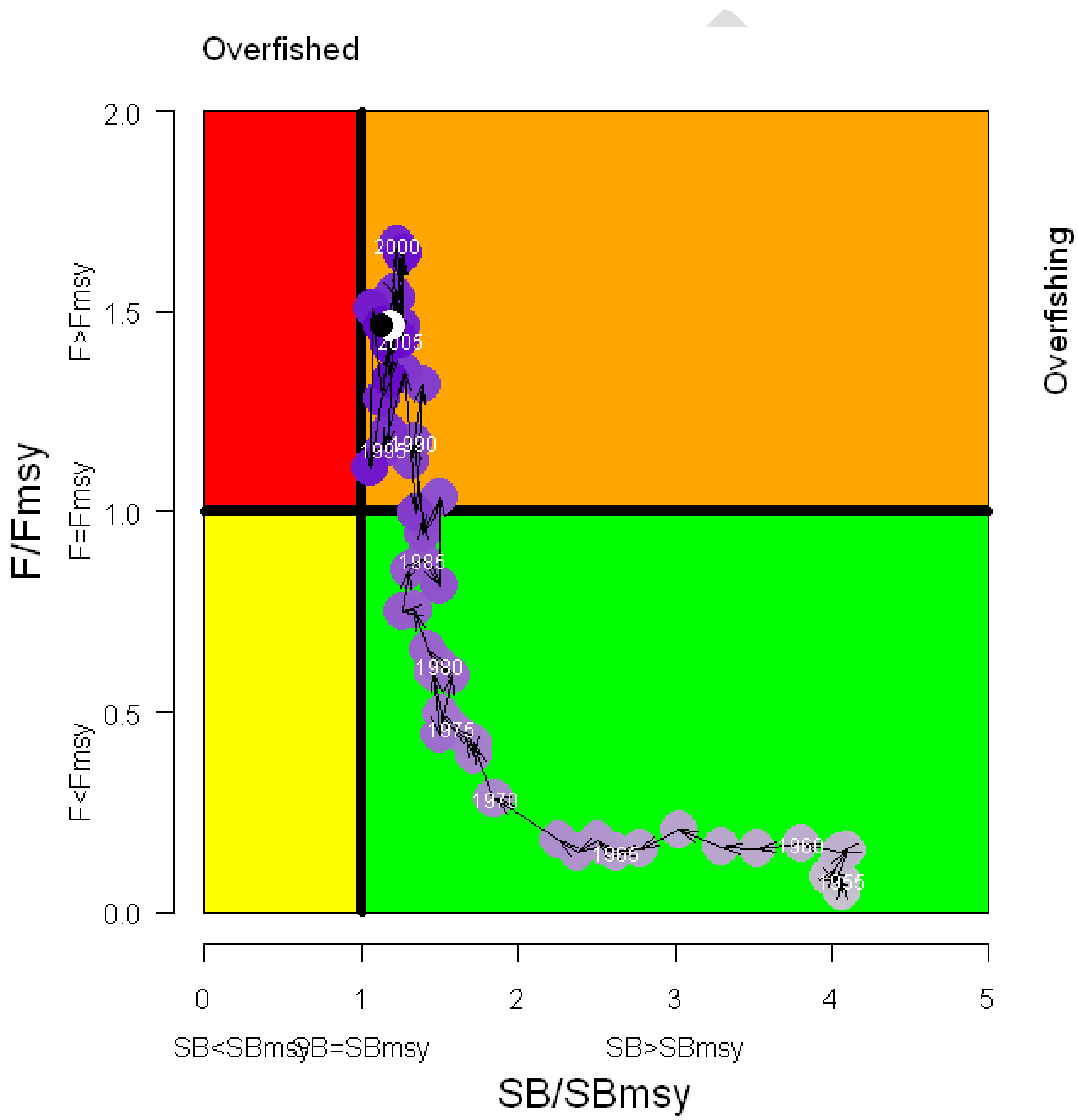

Figure 5: Kobe plot showing the trend in annual stock status for bigeye tuna using spawning biomass for the model period of 1952-2009 from Davies et al. 2011.
Note: Estimated SB/SB_{MSY} is shown on the x-axis, while the estimated F/F_{MSY} is shown on the y-axis. The location of this ratio in the orange box means that overfishing is occurring.

The white circle represents the average for the period 2006-2009 and the black dot represents the 2009 value. MSY is used as the *de facto* limit reference points by the WCPFC, whereas the Pelagics FEP uses a different reference point as its overfished control rule.
Source: Davis et al. 2011.

EPO Stock Status
Aires-da-Silva and Maunder (2013) conducted the most recent stock assessment for bigeye tuna in the EPO. The results indicate a recent recovery trend for bigeye tuna (2005-2010), subsequent to IATTC tuna conservation resolutions initiated in 2004. Recruitment estimates have been variable since 1975. There were very high peaks in recruitment indices corresponding with the major El Niño events in 1983 and 1998. Recent recruitment indices are predominantly below average. Aires-da-Silva and Maunder (2013) conclude that bigeye tuna in the EPO is not overfished ($B/B_{MSY} = 1.02$), and overfishing is not occurring ($F/F_{MSY} = 0.97$). The 2013 IATTC stock assessment for bigeye tuna in the EPO concludes overfishing is not occurring; however, at the time of writing, NMFS has not changed its status determination, based on the previous stock assessment, of subject to overfishing. The current status in the EPO is considerably more pessimistic if a stock recruitment relationship is assumed, if a higher value is assumed for the average size of the older fish, and if lower rates of natural mortality are assumed for adults (WCPFC 2013a). The most recent estimate of MSY for bigeye tuna in the EPO is 106,706 mt (Aires-da-Silva and Maunder 2013).

3.2.1.3 Yellowfin Tuna

The most recent stock assessment of yellowfin in the WCPO by Langley et al. (2011) using data up to 2010 concluded that for the most plausible range of models, the fishing mortality based reference point ($F_{current}/F_{MSY}$) is estimated to be 0.56-0.90, and on that basis, it is concluded that overfishing is not occurring. The corresponding biomass based reference points, current biomass to biomass at MSY ($B_{current}/ B_{MSY}$) and current spawning biomass to spawning biomass at MSY ($SB_{current}/SB_{MSY}$) were estimated to be above 1.0 (1.25-1.60 and 1.34-1.83, respectively) and, therefore, the stock is not in an overfished state. Langley et al. (2011) estimate MSY at 538,800.

Yellowfin is second to albacore in terms of the amount landed by American Samoa longline vessels. Annual landings are approximately range between 200 and 500 mt in recent years (See Table 5)

3.2.1.4 Skipjack Tuna

The most recent assessment of skipjack tuna in the WCPO was conducted in 2011 (Hoyle et al. 2011) using data up to 2010. The estimates of current fishing mortality to fishing mortality at MSY ($F_{current}/F_{MSY}$) indicate that overfishing of skipjack is not occurring in the WCPO, nor is the stock in an overfished state. Fishing pressure and recruitment variability (which is influenced by environmental conditions) will continue to be the primary influences on stock size and fishery performance. Hoyle et al. (2011) estimate MSY at 1,503,600 mt.

The American Samoa longline fishery lands approximately 200 mt of skipjack annually (see Table 5).

3.2.1.5 Blue Marlin

A 2013 stock assessment by the ISC Billfish Working Group concluded Pacific blue marlin is not experiencing overfishing and is not overfished relative to MSY-based reference points. However, the stock is nearly fully exploited. Stock biomass has declined since the 1970s and has been stable since the mid-2000s with a slight recent increase. (WCPFC 2013a).

The American Samoa longline fishery lands approximately 40 mt of blue marlin annually (NMFS 2013).

3.2.2 Status of Non-target Shark Stocks

The only shark species that shows up in American Samoa landings data is blue shark, of which the fishery lands less than 3 tons on annual basis. The status of other sharks are provided below.

3.2.2.1 Shortfin Mako Shark

Recent abundance indices and median size analyses for shortfin mako in the WCPO have shown no clear trends; therefore, there is no apparent evidence of the impact of fishing on this species in the WCPO. Most previously published stock status studies are also inconclusive. Ongoing issues of concern for the WCPO are: 1) a previously published study suggesting stock reduction in the northwest Pacific using virtual population analysis; 2) the high vulnerability of shortfin mako to longline fishing; and 3) the potential for collateral targeting in directed fishing for blue sharks in the North Pacific.

3.2.2.2 Oceanic Whitetip Shark

A recent stock assessment for oceanic whitetip shark indicates that it is likely overfished and experiencing overfishing (Rice and Harley 2012a). Recent analysis of four different datasets for the WCPO oceanic whitetip sharks show clear, steep and declining trends in abundance indices for this species. Analysis of two of these datasets for median lengths confirmed that oceanic whitetip sizes decreased substantially until samples became too scarce for meaningful analysis. Given the strong evidence for the depleted state of the oceanic whitetip population in the WCPO, stock assessment studies may clarify but will not alter the case for further conservation and management action. The assessment by Rice and Harley (2012a) conclude that current catches are lower than the MSY (2,001 mt versus 2,700 mt), but this is not surprising given the estimated stock status and fishing mortality. The greatest impact on the stock is attributed to bycatch from the WCPO longline fishery, with lesser impacts from the target longline activities and purse seining in the WCPO.

Despite the data limitations, model runs indicate that the WCPO oceanic whitetip shark stock is currently overfished and overfishing is occurring relative to commonly used MSY-based reference points and depletion-based reference points. Management measures to reduce fishing mortality and to rebuild spawning biomass through non-retention have been agreed to under CMM 2011-04, but mitigation to avoid capture was not recommended.

3.2.2.3 Silky sharks

Silky sharks have a restricted habitat range compared to the other WCPFC key species but within this range, they dominate both longline and purse seine catches. The assessment by Rice and Harley (2012b) conclude that current catches are higher than the MSY (5,950 mt versus 1,885 mt), further catch at current levels of fishing mortality would continue to deplete the stock below MSY. The greatest impact on the stock is attributed to bycatch from the longline fishery, but there are also significant impacts from the associated purse seine fishery, which catches predominantly juvenile individuals, the fishing mortality from the associated purse seine fishery is above F_{MSY}. Given the bycatch nature of fishery impacts, mitigation measures provides the best opportunity to improve the status of the silky shark population. The stock assessment of silky shark in the WCPO (Rice et al 2012b) was presented to the 8th WCPFC Science Committee. Due to concerns over the data conflict and potential biases in the silky shark assessment, it was not possible to provide management advice based on the assessment. However, noting that some basic fishery indicators (e.g., mean lengths and some CPUE series) are showing declines in recent years, the Science Committee recommended no increase in fishing mortality on silky sharks.

3.3 Protected Species

3.3.1 Sea Turtles

The Endangered Species Act (ESA) lists all Pacific sea turtles as either threatened or endangered, with the exception of the flatback sea turtle found on the continental shelf around Australia. The ESA lists the green sea turtle (*Chelonia mydas*) as threatened, except for the endangered nesting population on the Pacific coast of Mexico. Hawksbill (*Eretmochelys imbricata*) and leatherback sea turtles (*Dermochelys coriacea*) are listed as endangered. The ESA lists the South Pacific loggerhead (*Caretta caretta*) distinct population segment (DPS) as endangered and breeding populations of olive ridley sea turtles (*Lepidochelys olivacea*) Mexico's Pacific coast are listed as endangered, while all other ridleys are listed as threatened. These five species of sea turtles are highly migratory, or have a highly migratory phase in their life history (NMFS 2001). For more detailed information on the life history of sea turtles, see the Council's Environmental Impact Statement on Amendment 18 to the Fishery Management Plan for Pelagic Fisheries of the Western Pacific Region (WPFMC 2008).

3.3.1.1 Green Sea Turtles

Green sea turtles are the primary species documented to interact with the American Samoa longline fishery, and all green turtles caught thus far have been juveniles. Although only juvenile green turtles have been observed captured in the fishery, it is likely that adults do occur in the area (NMFS 2010a).

General Distribution

Green turtles are found throughout the world, occurring primarily in tropical, and to a lesser extent, subtropical waters. The species occurs in the western, central, and eastern Atlantic, the Mediterranean, the western, northern, and eastern Indian Ocean, southeast Asia, and the western, central, and eastern Pacific (NMFS & USFWS 2007). The American Samoa longline fishery affects green turtles from the nesting aggregations in Oceania (Polynesia, Micronesia, Melanesia, and eastern Australia).

Based on the best information currently available, about 18,000 to 38,000 green turtles nest annually in Oceania (NMFS 2010b). However, about 90 percent of nesting takes place among two Australian nesting aggregations (Northern Great Barrier Reef (GBR) and Southern GBR, which includes the Coral Sea Platform), with over half of all the nesting occurring on a single island; Raine Island in the Northern GBR (Chaloupka et al. 2008, Limpus 2009). Nesting trends appear to be stable at Raine Island and are increasing at Heron Island in the Southern GBR, as well as at Chichi-jima in the Ogasawara Islands (Chaloupka et al. 2008).

Seven green turtles outfitted with satellite tags on Rose Atoll (the easternmost island of the Samoan Archipelago) traveled on a southwesterly course to Fiji, a distance of approximately 1,500 km (Craig et al. 2004). Tag returns of eastern Pacific green turtles establish that these turtles travel long distances between foraging and nesting grounds. In fact, 75 percent of tag recoveries from 1982-1990 were from turtles that had traveled more than 1,000 kilometers from Michoacán, Mexico.

Sub-adult and adult green turtles occur in low abundance in nearshore waters around the islands of American Samoa. Population trend data are not available, but anecdotal information suggests major declines over the last 50 years (Tuato'o-Bartley et al 1993, Utzurrum 2002). Genetics samples have been collected from stranded or foraging green turtles around Tutuila. To date, four samples have been analyzed: two samples from stranded green turtles in Pago Pago Harbor had a haplotype known from nesting green turtles in American Samoa, Yap, and the Marshall Islands. However, since many green turtle nesting aggregations in the Pacific still have not been sampled, it is possible that this haplotype occurs at more than these three sites. In addition, two samples have been analyzed from foraging green turtles at Fagaalu, American Samoa, but the haplotype is of unknown nesting origin (Peter Dutton, Southwest Fisheries Science Center, pers. comm., 2010).

Identification and Size

Green turtles are distinguished from other sea turtles by their smooth carapace with four pairs of lateral scutes, a single pair of prefrontal scales, and a lower jaw-edge that is coarsely serrated. Adult green turtles have a light to dark brown carapace, sometimes shaded with olive, and can exceed one meter in straight carapace length (SCL) and 100 kilograms (kg) in body mass. Females nesting in Hawaii averaged 92 cm in SCL, while at the Olimarao Atoll in Yap females averaged 104 cm in curved carapace length (CCL) and approximately 140 kg. In the rookeries of Michoacán, Mexico, females averaged 82 cm in CCL, while males averaged 77 cm CCL (in NMFS and USFWS 1998a).

Growth and Age at Maturity

Green turtles exhibit a slower growth rate than other sea turtles, and age to maturity appears to the longest. Based on age-specific growth rates, green turtles are estimated to attain sexual maturity beginning at age 25 to 50 years (Limpus and Chaloupka 1997, Bjorndal et al. 2000, Chaloupka et al. 2008, Seminoff 2002, Zug et al. 2002). The length of reproductivity has been estimated to range from 17 to 23 years (Carr 1978, Fitzsimmons et al. 1995 *in* Seminoff 2002).

Diet

Although most green turtles appear to have a nearly exclusive herbivorous diet, consisting primarily of sea grass and algae (Wetherall et al. 1993; Hirth 1997), those along the east Pacific coast seem to have a more carnivorous diet. Analysis of stomach contents of green turtles found off Peru revealed a large percentage of mollusks and polychaetes, while fish and fish eggs, and jellyfish and commensal amphipods comprised a lesser percentage (Bjorndal 1997). Foraging studies of green sea turtles in Mexico found the turtles to have consumed primarily algae with small amounts of squid, sponges, tube worms, and other invertebrates in their diet (Seminoff 2000). A later study, however, documented a number of deep water invertebrate prey in the diet of local green turtles in Bahia de los Angeles, Mexico, suggesting that green turtles forage in offshore regions as well (Seminoff et al. 2006). Seminoff and Jones (2006) suggest that green sea turtles also exhibit offshore resting activity and they cite studies in the Caribbean where greens showed predictable diel movement patterns with turtles feeding on grass flats in mid-morning and mid-afternoon and moving into deeper water during midday hours. In the Hawaiian Islands, green turtles are thought to be site-specific and consistently feed in the same areas on preferred substrates, which vary by location and between islands (Landsberg et al. 1999).

Global Status

Green turtles were listed as threatened under the ESA on July 28, 1978, except for breeding populations found in Florida and the Pacific coast of Mexico, which were listed as endangered. Using a conservative approach, Seminoff (2004) analyzed subpopulation changes at 32 index sites, and estimated that globally the number of nesting female green turtles has declined by 48 to 67 percent over the last three generations (approximately 107 to 149 years). Causes for this decline include harvest of eggs, subadults and adults, incidental capture by fisheries, loss of habitat, and disease. The degree of population change was not consistent among all index nesting beaches or among all regions. Some nesting populations are stable or increasing. A 2007 study looked at global green sea turtle seasonal nesting activity data from all reliable available long-term datasets and found that rates of nesting population increase in the six main rookeries ranged from 4-14 percent per year over the past twenty to thirty years (Chaloupka et al. 2007). In the Pacific, the only major (> 2,000 nesting females) populations of green turtles occur in Australia and Malaysia. Smaller colonies occur in the insular Pacific islands of Polynesia, Micronesia, and Melanesia (Wetherall 1993) and on six small, sand islands at French Frigate Shoals, a long atoll situated in the middle of the Hawaii Archipelago (Balazs et al. 1995).

Green Sea Turtles in American Samoa

In Samoan folklore, green sea turtles, known in Samoan as *I`a sa* (sacred fish)*, laumei ena'ena* or *tualimu* were believed to have the power to rescue fishermen lost at sea (Craig 2002). The life cycle of the green sea turtle involves a series of long-distance migrations back and forth between their feeding and nesting areas (Craig 2002). In American Samoa, green turtles nest at Swains Island, Rose Atoll, and Tutuila (NMFS 2010a).When they finish laying their eggs there, the green turtles leave and migrate to their feeding grounds somewhere else in the South Pacific. After several years, the turtles will return to nest again. Every turtle returns to the same nesting and feeding areas throughout its life, but that does not necessarily mean that all turtles nesting in American Samoa will migrate to exactly the same feeding area.

Following hatching from their natal beaches, green turtle life history is characterized by early development in the pelagic zone followed by development in coastal areas where post-recruitment juveniles and adults forage in shallow coastal areas, primarily on algae and seagrasses. Upon maturation, adult greens typically undertake long migrations between their resident foraging grounds and their natal nesting areas (NMFS 2010a). From 1971-1996, 46 adult female turtles were flipper tagged at Rose Atoll with only three ever recaptured; two in Fiji and one in Vanuatu, all dead. A satellite tagging study, conducted in the mid-1990s tracked seven tagged green sea turtles by satellite telemetry from their nesting sites at Rose Atoll to Fiji (Balazs et al. 1994). Most of the recovered tagged turtles migrated westward to Fiji perhaps for better feeding opportunities in Fiji's abundant, shallow seagrass and algae habitats (Craig et al. 2004). Of 513 greens tagged in French Polynesia between 1972 and 1991, six were recovered in Fiji, three in Vanuatu, two in New Caledonia, and one each were recovered at Wallis Island, Tonga, and the Cook Islands (NMFS 2010a).

Green Sea Turtle Interactions with the American Samoa-based Longline Fishery

The sea turtle interactions that have occurred in waters around American Samoa have been with juvenile green sea turtles. Because the interactions resulted in mortalities (Table 1010), tissue samples for genetic analysis were obtained from several of the turtle specimens. The first sample was collected in 2006, and was identified as being a haplotype consistent with the northern Australian stock that include nesting populations in the Northern and Southern GBR and Coral Sea and in New Caledonia. This is quite different from the haplotypes of the few samples obtained from nesting females in American Samoa (NMFS PIRO, pers. comm.). The second sample collected in 2007 is a haplotype that researchers have only found in Micronesia, the Marshall Islands and in American Samoa (NMFS PIRO, pers. comm.).

NMFS and other regional partners including the Southwest Fisheries Science Center (SWFSC) are continually working together to obtain better information on the status and stock structure of the western and central Pacific populations.

3.3.1.2 Hawksbill Sea Turtles

The hawksbill turtle is listed as endangered under the ESA throughout its range. The primary global threat to hawksbills is habitat loss of coral reef communities. In the Pacific, the primary threat is the harvesting of the species for its meat, eggs, and shell, as well as the destruction of nesting habitat by human occupation and disruption (NMFS and USFWS 1998b). Along the eastern Pacific Rim, hawksbill turtles were common to abundant in the 1930s, but by the 1990s, the hawksbill turtle was rare to absent in most localities where it was once abundant (Cliffton et al. 1982).

Hawksbills are circumtropical in distribution, generally occurring from latitudes 30° N to 30° S within the Atlantic, Pacific, and Indian Oceans and associated bodies of water (NMFS and USFWS 1998b). Within the Central Pacific, nesting is widely distributed, though scattered and in very low numbers with the largest concentrations of nesting hawksbills in the Pacific occurring on remote oceanic islands of Australia and in the Indian Ocean. Foraging hawksbills have been reported from virtually all of the island groups of Oceania and from the Galapagos Islands in the eastern Pacific to the Republic of Palau in the western Pacific (Witzell 1983, Pritchard 1982a, b).[13]

Research indicates adult hawksbill turtles are capable of migrating long distances between nesting beaches and foraging areas, which are comparable to migrations of green and loggerhead turtles. Hawksbills have a unique diet comprised primarily of sponges (Meylan 1985, 1988). While data are somewhat limited on their diet in the Pacific, it is well documented that in the Caribbean hawksbill turtles are selective spongivores, preferring particular sponge species over others (Dam and Diez 1997). Foraging dive durations are often a function of turtle size, with larger turtles diving deeper and longer. As a hawksbill turtle grows from a juvenile to an adult, data suggest that the turtle switches foraging behaviors from pelagic surface feeding to benthic reef feeding (Limpus 1992). Within the Great Barrier Reef of Australia, hawksbills move from a pelagic existence to a “neritic” life on the reef at a minimum CCL of 35 cm. The maturing turtle establishes foraging territory and will remain in this territory until it is displaced (Limpus 1992). As with other sea turtles, hawksbills will make long reproductive migrations between foraging and nesting areas (Meylan 1999), but otherwise they remain within coastal reef habitats. In Australia, juvenile turtles outnumber adults 100:1. These populations are also sex-biased, with females outnumbering males approximately 2.5:1 (Limpus 1992).

Throughout the far western and southeastern Pacific, hawksbill turtles nest on the islands and mainland of southeast Asia, from China to Japan, and throughout the Philippines, Malaysia, Indonesia, Papua New Guinea, the Solomon Islands (McKeown 1977), and Australia (Limpus 1982). The largest nesting population of hawksbills appears to occur in Australia. Approximately 2,000 hawksbills nest on the northwest coast of Australia and about 6,000 to 8,000 off the Great Barrier Reef each year (Spotila 2004). Additionally, about 2,000 hawksbills nest each year in Indonesia and 1,000 in the Republic of Seychelles (Spotila 2004).[14]

Hawksbill Sea Turtles in American Samoa

Hawksbill turtles are known in Samoan as *laumei uga or laumei ulumanu*. Hawksbills are solitary nesters, and are most commonly found at Tutuila and the Manua Islands, and are also known to nest at Rose Atoll and Swains Island (Utzurrum 2002). In October 2007, a nest was found containing 167 shells, of which there were 142 live baby turtles, four of which died, and 25 unhatched eggs were located. Students from the village of Amanave where the nest was found

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[13] From NMFS website at: http://www.nmfs.noaa.gov/pr/species/turtles/hawksbill.htm

[14] “

assisted and kept the hatchlings safe overnight until DMWR staff arrived the next morning when they all let the hatchlings free at Amanave Beach. DMWR believes it is the largest group of hawksbill hatchlings to have been found in American Samoa.[15] In the Samoan Archipelago (Samoa and American Samoa), fewer than 30 hawksbills are estimated to nest annually, and the nesting trends are declining (NMFS & USFWS 2007). There are no documented interactions with hawksbill sea turtles in the American Samoa longline fishery (Table 10).

3.3.1.3 Olive Ridley Sea Turtles

Olive ridleys lead a highly pelagic existence (Plotkin 1994). These sea turtles appear to forage throughout the eastern tropical Pacific Ocean, often in large groups, or flotillas. Olive ridleys generally have a tropical range; however, individuals do occasionally venture north, some as far as the Gulf of Alaska (Hodge and Wing 2000). The post-nesting migration routes of olive ridleys, tracked via satellite from Costa Rica, traversed thousands of kilometers of deep oceanic waters ranging from Mexico to Peru and more than 3,000 kilometers out into the central Pacific (Plotkin 1994). Stranding records from 1990–1999 indicate that olive ridleys are rarely found off the coast of California, averaging 1.3 strandings annually (J. Cordaro, NMFS, pers. comm., 2004). At least one olive ridley was reported in Yap, Micronesia in 1973 (Falanruw et al. 1975).

The olive ridley turtle is omnivorous, and identified prey include a variety of benthic and pelagic prey items such as shrimp, jellyfish, crabs, snails, and fish, as well as algae and seagrass (Marquez 1990). It is also not unusual for olive ridley turtles in reasonably good health to be found entangled in scraps of net or other floating synthetic debris. Small crabs, barnacles, and other marine life often reside on debris and are likely to attract the turtles. Olive ridley turtles also forage at great depths; a turtle has been sighted foraging for crabs at a depth of 300 meters (Landis 1965 *in* Eckert et al. 1986).

Olive Ridley Sea Turtles in American Samoa

Olive ridley turtles are uncommon in American Samoa, although there have been at least three sightings. A necropsy of one recovered dead olive ridley found that it was injured by a shark, and may have recently laid eggs, indicating that there may be a nesting beach in American Samoa (Utzurrum 2002). Fishery observers recorded interactions with olive ridleys in 2010 and 2011; both turtles were released injured (Table 10) [16]. Two further interactions were observed in 2012 and 2013 with both turtles released dead (Table 10).

3.3.1.4 Leatherback Sea Turtles

Leatherback turtles (*Dermochelys coriacea*) are widely distributed throughout the oceans of the world, and are found in waters of the Atlantic, Pacific, and Indian Oceans; the Caribbean Sea; and the Gulf of Mexico (Dutton et al. 1999). Increases in the number of nesting females have been noted at some sites in the Atlantic (Dutton et al. 1999), but these are far outweighed by local extinctions, especially of island populations, and the demise of once-large populations throughout the Pacific, such as in Malaysia (Dutton et al. 1999) and Mexico (Sarti et al. 1996;

[15] From an article by Tina Mata'afa in the Samoa News. October 2007.
[16] http://www.fpir.noaa.gov/OBS/obs_as_ll_rprts.html

Spotila et al. 1996). In other leatherback nesting areas, such as PNG, Indonesia, and the Solomon Islands, there have been no systematic, consistent nesting surveys, so it is difficult to assess the status and trends of leatherback turtles at these beaches. In all areas where leatherback nesting has been documented, current nesting populations are reported by scientists, government officials, and local observers to be well below abundance levels of several decades ago. The collapse of these nesting populations was most likely precipitated by a tremendous overharvest of eggs coupled with incidental mortality from fishing (Sarti et al. 1996).

Leatherback turtles lead a mostly pelagic existence, foraging widely in temperate waters, except during the nesting season when gravid females return to tropical beaches to lay eggs. Males are rarely observed near nesting areas, and it has been proposed that mating most likely takes place outside of tropical waters, before females move to their nesting beaches (Eckert and Eckert 1988). Leatherbacks are highly migratory, exploiting convergence zones and upwelling areas in the open ocean, along continental margins, and in archipelagic waters (Eckert 1998). In a single year, a leatherback may swim more than 10,000 kilometers (Eckert 1998).

Satellite telemetry studies indicate that adult leatherback turtles follow bathymetric contours over their long pelagic migrations and typically feed on cnidarians (jellyfish and siphonophores) and tunicates (pyrosomas and salps), and their commensals, parasites, and prey (NMFS 1998). Females are believed to migrate long distances between foraging and breeding grounds, at intervals of typically two or four years (Spotila et al. 2000). In the western Pacific, nesting peaks on Jamursba-Medi Beach (Papua, Indonesia) from May to August, on War-Mon Beach (Papua) from November to January (Starbird and Suarez 1994), in peninsular Malaysia during June and July (Chan and Liew 1989), and in Queensland, Australia in December and January (Limpus and Reimer1994).

Migratory routes of leatherback turtles originating from eastern and western Pacific nesting beaches are not entirely known. However, satellite tracking of post-nesting females and genetic analyses of leatherback turtles caught in U.S. Pacific fisheries or stranded on the west coast of the U.S. presents some strong insights into at least a portion of their routes and the importance of particular foraging areas.

Leatherback Sea Turtles in American Samoa

In 1993, the crew of an American Samoa government vessel engaged in experimental longline fishing pulled up a small freshly dead leatherback turtle about 5.6 kilometers south of Swains Island. This was the first leatherback turtle seen by the vessel’s captain in 32 years of fishing in the waters of American Samoa. A fisherman also reported catching a leatherback in their longline logbook in 2009. Fishery observers recorded two interactions with leatherbacks in 2011. One turtle was released injured, and one turtle was dead and returned to port as a specimen (Table 10). A single leatherback was released dead in 2012 and one leatherback was released alive and one dead in 2012 (Table 10).

3.3.1.5 Loggerhead Sea Turtles

The loggerhead sea turtle is listed as threatened under the ESA throughout its range, primarily due to direct take, incidental capture in various fisheries, and the alteration and destruction of its habitat. There are nine distinct population segments, including the South Pacific and North Pacific, and the Southeast Indo-Pacific Ocean, among others. In the South Pacific, Limpus (1982) reported an estimated 3,000 loggerheads nesting annually in Queensland, Australia during the late 1970s. However, long-term trend data from Queensland indicate a 50 percent decline in nesting by 1988-1989 due to incidental mortality of turtles in the coastal trawl fishery. This decline is corroborated by studies of breeding females at adjacent feeding grounds (Limpus and Reimer 1994). Approximately 300 females nest annually in Queensland, mainly on offshore islands (Capricorn-Bunker Islands, Sandy Cape, Swains Head; Dobbs 2001). In southern Great Barrier Reef waters, nesting loggerheads have declined approximately 8 percent per year since the mid-1980s (Heron Island), while the foraging ground population has declined 3 percent and comprised less than 40 adults by 1992. Researchers attribute the declines to recruitment failure due to fox predation of eggs in the 1960s and mortality of pelagic juveniles from incidental capture in longline fisheries since the 1970s (Chaloupka and Limpus 2001).

Loggerhead Sea Turtles in American Samoa

There are no known reports of loggerhead turtles in waters around American Samoa (Tuato'o-Bartley et al. 1993), nor reports of fishery interactions (Table 10).

3.3.2 Threatened and Endangered Marine Mammals

Cetaceans listed as threatened or endangered under the ESA and that have been observed in the waters around American Samoa include the humpback whale (*Megaptera novaeangliae*), sperm whale (*Physeter macrocephalus*), and sei whale (*Balaenoptera borealis*).

3.3.2.1 Humpback Whales

The humpback whale is known in Samoan as *tafola* or *ia maanu*. These whales can attain lengths of 50 ft (16 m) and winter in nearshore waters of usually 600 ft or shallower. Mature females are believed to conceive on the breeding grounds one winter and give birth the following winter. At least six well-defined breeding stocks of humpback whales occur in the Southern Hemisphere. In Fagatele Bay National Marine Sanctuary, southern humpback whales mate and calve from June through September. Humpbacks arrive in American Samoa from the south as early as July and stay until as late as December (Reeves et al. 1999). They are most common around Samoa during September and October. They occur in small groups of adults or in mother-calf pairs. Humpbacks have been sighted around all seven of the islands in American Samoa, but it is unknown how many spend time in the area.

The appearance of humpbacks around American Samoa is an important segment of their migration north and south in the South Pacific Ocean.[17] During the warm months of the southern hemisphere, they feed in Antarctica's waters, about 3,200 miles to the south. When Antarctic's winter sets in, these whales seek warmer waters by migrating northward, with some going towards Australia and others migrating towards Tonga. According to the Natural History Guide

[17] See http://www.nps.gov/archive/npsa/5Atlas/parts.htm#top

to the National Park of American Samoa most of this latter group remains near Tonga, but at least some migrate onward to Samoa, however, one whale seen in Samoan waters was sighted near Tahiti, so their migration patterns are not entirely predictable.[18] No humpback whale interactions have been observed in the American Samoa longline fishery.

3.3.2.2 Sperm Whales

The sperm whale is the most easily recognizable whale with a darkish gray-brown body and a wrinkled appearance. The head of the sperm whale is very large, making up to 40 percent of its total body length. The current average size for male sperm whales is about 15 meters, with females reaching up to 12 meters.

Sperm whales are found in tropical to polar waters throughout the world (Rice 1989). They are among the most abundant large cetaceans in the region. Historical observations of sperm whales around Samoa occurred in all months except February and March (Reeves et al. 1999). Sperm whales are occasionally seen seaward of Fagatele Bay Sanctuary, Tutuila.[19]

The world population of sperm whales had been estimated to be approximately two million. However, the methods used to make this estimate are in dispute, and there is considerable uncertainty over the remaining number of sperm whales. The world population is at least in the hundreds of thousands, if not millions. No sperm whale interactions have been observed in the American Samoa longline fishery.

3.3.2.3 Sei Whales

Sei whales are members of the baleen whale family. There are two subspecies of sei whales recognized, *B. b. borealis* in the Northern Hemisphere and *B. B. schlegellii* in the Southern Hemisphere. They can reach lengths of about 40-60 ft (12-18 m) and weigh 100,000 lb (45,000 kg). Sei whales have a long, sleek body that is dark bluish-gray to black in color and pale underneath. The body is often covered in oval-shaped scars (probably caused from cookie-cutter shark and lamprey bites) and sometimes has some mottling, i.e., has spots or blotches of different color or shades of color.[20]

Sei whales have a worldwide distribution but are found mainly in cold temperate to subpolar latitudes rather than in the tropics or near the poles (Horwood 1987). They are distributed far out to sea and do not appear to be associated with coastal features. In the South Pacific most observations have been south of 30° S (Reeves et al. 1999). No sei whale interactions have been observed in the American Samoa longline fishery.

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[18] Ibid
[19] See http://sanctuaries.noaa.gov/science/condition/fbnms/history.html
[20] From: http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/seiwhale.htm

3.3.3 Other Marine Mammals

Other marine mammals that occur in the western Pacific region and have been recorded as being sighted in American Samoa waters (SPREP 2007) are shown in Table 8. Observers have recorded fishery interactions with small cetaceans on an infrequent basis since regular observer coverage started in 2006. No large whale interactions have been observed in the American Samoa longline fishery. See Table 10 for observed interactions with marine mammals in the fishery.

Table 8: Non ESA-listed Marine Mammals Occurring Around American Samoa.

Common Name	Scientific Name	Common Name	Scientific Name
Blainville's beaked whale	*Mesoplodon densirostris*	**Melon-headed whale**	*Peponocephala electra*
Bottlenose dolphin	*Tursiops truncatus*	**Minke whale**	*Balaenoptera acutorostrata*
Bryde's whale	*Balaenoptera edeni*	**Pygmy sperm whale***	*Kogia breviceps*
Common dolphin	*Delphinus delphis*	**Risso's dolphin**	*Grampus griseus*
Cuvier's beaked whale	*Ziphius cavirostris*	**Rough-toothed dolphin**	*Steno bredanensis*
Dwarf sperm whale*	*Kogia simus*	**Short-finned pilot whale**	*Globicephala macrorhynchus*
False killer whale	*Pseudorca crassidens*	**Spinner dolphin**	*Stenella longirostris*
Fraser's dolphin	*Lagenodelphis hosei*	**Spotted dolphin**	*Stenella attenuata*
Killer whale	*Orcinus orca*	**Striped dolphin**	*Stenella coeruleoalba*

Sources: SPREP 2007 and PIFSC unpublished.
Note: * these are unconfirmed SPREP records. Marine mammal survey data are limited for this region. This table represents likely occurrences in the action area.

3.3.4 ESA-listed Seabirds

Newell's shearwater (*Puffinus auricularis newelli*), has been documented in American Samoa and is listed as threatened under the Endangered Species Act. Newell's shearwater generally known with other shearwaters as ta`i`o in Samoan, has been identified as a 'seabird visitor' to Tutuila by the National Park Service.[21]

A recent publication prepared for the WCPFC 2009 Scientific committee meeting presents distribution maps of seabirds in the WCPO and shows this seabird's distribution as being north of American Samoa (Waugh et al. 2009). There is one documented case of a single bird from American Samoa. The specimen appeared to be sick (Grant et al. 1994). Local biologists have not documented any other Newell's shearwater in American Samoa (J. Seamon, National Park Service, pers. comm., Nov. 2009). Therefore, Newell's shearwater is very rare in the archipelago and should be considered an accidental visitor to American Samoa. In a letter sent May 19, 2011,

[21] Bird Checklist for American Samoa found at: http://www.nps.gov/archive/npsa/5Atlas/partzj.htm

the U.S. Fish and Wildlife Service (USFWS) concurred with the NMFS determination that the American Samoa longline fishery, as modified by Pelagics FEP Amendment 5, is not likely to adversely affect the Newell's shearwater. [22] Since its inception in 2006, the American Samoa Observer Program has not documented any sightings or interactions between the longline fishery and Newell's shearwaters.

3.3.5 Other Seabirds

Other seabirds not listed under the ESA found in American Samoa are listed in Table 9. There have been two unidentified shearwaters released dead in the American Samoa longline fishery, one each in 2007 and 2011.

Table 9: Seabirds Occurring in American Samoa

Residents (i.e., breeding)		
Samoan name	English name	*Scientific name*
ta'i'o	Wedge-tailed shearwater	*Puffinus pacificus*
ta'i'o	Audubon's shearwater	*Puffinus lherminieri*
ta'i'o	Christmas shearwater	*Puffinus nativitatis*
ta'i'o	Tahiti petrel	*Pterodroma rostrata*
ta'i'o	Herald petrel	*Pterodroma heraldica*
ta'i'o	Collared petrel	*Pterodroma brevipes*
fua'o	Red-footed booby	*Sula sula*
fua'o	Brown booby	*Sula leucogaster*
fua'o	Masked booby	*Sula dactylatra*
tava'esina	White-tailed tropicbird	*Phaethon lepturus*
tava'e'ula	Red-tailed tropicbird	*Phaethon rubricauda*
atafa	Great frigatebird	*Fregata minor*
atafa	Lesser frigatebird	*Fregata ariel*
gogouli	Sooty tern	*Sterna fuscata*
gogo	Brown noddy	*Anous stolidus*
gogo	Black noddy	*Anous minutus*
laia	Blue-gray noddy	*Procelsterna cerulea*
manu sina	Common fairy-tern (white tern)	*Gygis alba*
Visitors/vagrants:		
ta'i'o	Short-tailed shearwater	*Puffinus tenuirostris*
ta'i'o	Mottled petrel	*Pterodroma inexpectata*
ta'i'o	Phoenix petrel	*Pterodroma alba*
ta'i'o	White-bellied storm petrel	*Fregetta grallaria*
ta'i'o	Polynesian storm petrel	*Nesofregetta fuliginosa*
-----	Laughing gull	*Larus atricilla*
gogosina	Black-naped tern	*Sterna sumatrana*

Source: WPFMC 2009.

[22] The USFWS is the primary federal agency with authority and responsibility to manage ESA listed seabirds.

3.3.6 Impacts to Protected Species from American Samoa fisheries

The American Samoa longline fishery interacts on low levels with protected species, including sea turtles, marine mammals, and seabirds.

Table 10: Number of Sea Turtle Interactions by Species Observed in the American Samoa Longline Fishery from 2006-2012.

				Turtles									
Year	Sets	1000s Hooks	Observer Coverage (%)	Green Turtle		Olive Ridley		Loggerhead		Leatherback		Hawksbill	
				Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
2006	287	797	8.1	-	3	-	-	-	-	-	-	-	-
2007	410	1,260	7.1	-	1	-	-	-	-	-	-	-	-
2008	379	1,194	6.4	-	1	-	-	-	-	-	-	-	-
2009	306	881	7.7	-	3	-	-	-	-	-	-	-	-
2010	798	2,301	25	1	5	1	-	-	-	-	-	-	-
2011	1,257	3,605	33.3	1	10	1	-	-	-	1	1	-	-
2012	284	829	18.4	-	-	-	1	-	-	-	1	-	-
2013	585	1,690	19.4	-	2	-	1	-	-	1	1	-	-

Source: http://www.fpir.noaa.gov/OBS/obs_as_ll_rprts.html

Table 11: Number of Marine Mammal and Seabird Interactions by Species Observed in the American Samoa Longline Fishery from 2006-2012.

	Marine Mammals								Seabirds			
Year	Unidentified Whale		False Killer Whale		Cuvier's Beaked Whale		Rough Toothed Dolphin		Unidentified Shearwater		Unidentified Frigatebird	
	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
2006	-	-	-	-	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-	-	1	-	-
2008	-	-	1	1	-	-	1	-	-	-	-	-
2009	-	-	-	-	-	-	-	-	-	-	-	-
2010	-	-	-	-	-	-	-	-	-	-	-	-
2011	2	-	3		-	1	-	5	-	1	-	-
2012	-	-	-	-	-	-	-	-	-	-	-	-
2013	-	-	-	-	-	-	1	1	-	-	-	1

Source: http://www.fpir.noaa.gov/OBS/obs_as_ll_rprts.html

The estimated number of sea-turtles taken in the American Samoa longline fishery is given in Table 11. Estimates are extrapolated based observed interactions and post-hooking condition multiplied by a factor based on observer levels in the fishery. Prior to September 2011, the fishery operated without any specific turtle mitigation measures other than those to promote the safe handling and release of captured turtles. After September 2011, vessels were required to ensure that all hooks were set at a minimum depth of 100 m in order to reduce the likelihood and severity of interactions with sea turtles. In 2011, there were an estimated 33 green sea turtle interactions in the fishery. In 2012, no green turtle interactions were observed or reported by the fishery.

Table 12: Estimated sea-turtle interactions from observer data in the American Samoa longline fishery.

Green	**Observed Interactions**	**Observer Coverage**	**Expansion Factor**	**Estimated Interactions**	**Condition Released**	
2006	3.00	8.10	12.35	37.04	3 dead	
2007	1.00	7.10	14.08	14.08	1 dead	
2008	1.00	6.40	15.63	15.63	1 dead	
2009	3.00	7.70	12.99	38.96	3 dead	
2010	6.00	25.00	4.00	24.00	5 dead	1 injured
2011	11.00	33.30	3.00	33.03	10 dead	1 injured
2012	0.00	19.80	5.05	0.00		
2013	2.00	19.40	5.15	10.31	2 dead	
2014	no data					
Leatherback	**Observed Interactions**	**Observer Coverage**	**Expansion Factor**	**Estimated Interactions**	**Condition Released**	
2006	0.00	8.10	12.35	0.00		
2007	0.00	7.10	14.08	0.00		
2008	0.00	6.40	15.63	0.00		
2009	0.00	7.70	12.99	0.00		
2010	0.00	25.00	4.00	0.00		
2011	2.00	33.30	3.00	6.01	1 dead	1 injured
2012	1.00	19.80	5.05	5.05		1 injured
2013	2.00	19.40	5.15	10.31	1 dead	1 injured
2014	no data					
Olive Ridley	**Observed Interactions**	**Observer Coverage**	**Expansion Factor**	**Estimated Interactions**	**Condition Released**	
2006	0.00	8.10	12.35	0.00		
2007	0.00	7.10	14.08	0.00		
2008	0.00	6.40	15.63	0.00		
2009	0.00	7.70	12.99	0.00		
2010	0.00	25.00	4.00	0.00		
2011	1.00	33.30	3.00	3.00		1 injured
2012	1.00	19.80	5.05	5.05	1 dead	
2013	1.00	19.40	5.15	5.15		1 injured
2014	no data					

Source NMFS PIRO based on data in Table 10.

3.4 Essential Fish Habitat

Essential fish habitat (EFH) is defined as those waters and substrate as necessary for fish spawning, breeding, feeding, and growth to maturity. This includes the marine areas and their chemical and biological properties that are utilized by the organism. Substrate includes sediment, hard bottom, and other structural relief underlying the water column along with their associated biological communities. In 1999, the Council developed and NMFS approved EFH definitions for management unit species (MUS) of the Bottomfish and Seamount Groundfish FMP (Amendment 6), Crustacean FMP (Amendment 10), Pelagic FMP (Amendment 8), and Precious Corals FMP (Amendment 4) (74 FR 19067, April 19, 1999). NMFS approved additional EFH definitions for coral reef ecosystem species in 2004 as part of the implementation of the Coral Reef Ecosystem FMP (69 FR8336, February 24, 2004). EFH definitions were also approved for deepwater shrimp through an amendment to the Crustaceans FMP in 2008 (73 FR 70603, November 21, 2008).

Ten years later, in 2009, the Council developed and NMFS approved five new archipelagic-based fishery ecosystem plans (FEP). The FEP incorporated and reorganized elements of the Councils' species-based FMPs into a spatially-oriented management plan (75 FR 2198, January 14, 2010). EFH definitions and related provisions for all FMP fishery resources were subsequently carried forward into the respective FEPs. In addition to and as a subset of EFH, the Council described habitat areas of particular concern (HAPC) based on the following criteria: ecological function of the habitat is important, habitat is sensitive to anthropogenic degradation, development activities are or will stress the habitat, and/or the habitat type is rare. In considering the potential impacts of a proposed fishery management action on EFH, all designated EFH must be considered.

The designated areas of EFH and HAPC for all FEP MUS by life stage are summarized in Table 13.

Table 13: EFH and HAPC designations in Western Pacific Region

SPECIES GROUP (FEP)	EFH (juveniles and adults)	EFH (eggs and larvae)	HAPC
Pelagic	Water column down to 1,000 meters (m) depth from shoreline out to EEZ boundary	Water column down to 200 meters depth from shoreline out to EEZ boundary	Water column down to 1,000 m that lies above seamounts and banks.
Bottomfish and Seamount Groundfish	Water column and all bottom from shoreline down to 400 m deep	Water column down to 400m depth from shoreline out to 200-nm EEZ boundary	All escarpments and slopes between 40-280 m, and three known areas of juvenile opakapaka habitat

SPECIES GROUP (FEP)	EFH (juveniles and adults)	EFH (eggs and larvae)	HAPC
	(adults only): Water column and bottom from 200-600 m deep, bounded by 29°-35° N and 171° E-179° W	(including juveniles): Water column down to 200 m depth of all EEZ waters bounded by 29°-35° N and 171° E -179° W	Not identified
Precious Corals	Known precious coral beds in the Hawaiian Islands located at: Keahole, Makapuu, Kaena, Wespac, Brooks, and 180 Fathom gold/red coral beds, and Milolii, S. Kauai, and Auau Channel black coral beds		Makapuu, Wespac, and Brooks Bank beds, and the Auau Channel
Crustaceans	Lobsters/crab: Bottom from shoreline down to 100 m deep Deepwater shrimp: Outer reef slopes between 550-700 m deep	Lobsters/crab: Water column down to 150 m deep from shoreline out to EEZ boundary Deepwater shrimp: outer reef slopes between 300-700 m deep	All banks within the Northwestern Hawaiian Islands with summits less than 30 m
Coral Reef Ecosystems	Water column and benthic substrate to a depth of 100 m from shoreline out to EEZ boundary		All MPAs identified in FEP, all PRIAs, many specific areas of coral reef habitat (see FEP)

Chapter 4: Environmental Impacts

4.1 Impacts to Physical Environment and Habitat

Pelagic fishing usually occurs in deep water environments (greater than 1,000 m) and does not typically make contact with coral or rock substrate; thus, not altering or substantially impacting EFH, HAPCs or other marine habitats. Fishing under the alternatives involves pelagic longline and handline hook and line gear deployed in deep waters. All hook-and-line fishing occasionally loses hooks and other gear while fishing. Fishermen try to recover all gear and are normally successful. Lost hooks are unlikely to have a major impact to the physical environment, being composed of steel. Depending on quality, the hooks will corrode, although hooks on the deep set bed in water just above freezing will corrode more slowly, and stainless steel hooks will corrode at a slower rate than non-stainless steel hooks. Monofilament longline gear sinks and because pelagic longline and handline fishing would occur in deep waters, the rare loss of longline and handline gear is not believed to impact EFH, HAPC, or other sensitive habitats.

In addition, the applicant has stated that the authorized vessel would pick up the rafts when they are done fishing and bring them to Pago Pago. This activity would remove potentially derelict rafts in the American Samoa EEZ that otherwise could drift into nearshore areas and impact, or other sensitive habitats.

4.2 Impacts to Target and Non-Target Fish Species

Under the status quo alternative, catches of target and non-target species by the American Samoa longline fishery are considered to be sustainable in terms of the fisheries impact to the status of stocks (see Section 3.1.1). The main target stocks are S. Pacific albacore, yellowfin, skipjack, and bigeye. Of these species, only bigeye is experiencing overfishing within the WCPO, and the American Samoa longline vessels typically land around 200 mt of bigeye into Pago Pago each year. In contrast, total catches of bigeye in the WCPO was approximately 157,000 mt in 2012 (SPC 2013). Under Amendment 7 to the Pelagics FEP, a bigeye limit of 2,000 mt is established for the American Samoa longline fishery.

The action alternative would provide authorization of one vessel fishing within the LVPA with longline and handline gear. However, one vessel authorized under the EFP is unlikely to have catches that affect the total catch of the other 20 active vessels. Preliminary information suggests that catches from longlining and handlining in association with rafts in the American Samoa results in total trip catches similar to that of regular longline operations. Therefore, catches of target and non-target stocks from authorized longline and handline associated fishing within the LVPA with a vessel greater than 50 ft are not expected to result in any additional impacts in comparison to the status quo.

4.3 Impacts to Protected Species

Table 10 shows the number of protected species interactions observed in the American Samoa longline fishery. In 2011, Amendment 5 to the Pelagics FEP established gear configuration modifications to result in longline hooks to be fished at depths below 100 meters, which was intended to reduce the likelihood and severity of the interactions with sea turtles. Since the regulations took effect, observed green sea turtle interactions in the American Samoa longline fishery have declined. The authorized level of impacts from the American Samoa longline fishery to protected species have been found to be not jeopardizing the continued existence of any protected species.

Under the action alternative, current levels of impacts to protected species would be expected to continue. Existing interaction levels are not jeopardizing the continued existence of any protected species. However, the equatorial Pacific purse seine fishery is known to catch more sea turtles when setting on drifting FADs than compared with fishing on free swimming tuna schools. Therefore, longline and handline associated fishing may potentially result in higher interaction rates with sea turtles than versus the status quo. This is because sea turtle densities are believed to be are greater around FADs when compared to open ocean sea turtle densities. When longline fishing in proximity to the raft, the EFP authorized vessel would be subject to gear requirements to ensure hooks being fished below 100 m, to reduce potential interaction rates with sea turtles. Handline operations will involve actively tended fishing gear. Any interactions with protected species would be immediately mitigated by fishermen.

The proposed action may have some benefits to sea turtles as fishermen would be actively fishing gear in close proximity to drifting FADs. These FADs are commonly constructed out of purse seine netting and bamboo or plastic framing. The authorized activity under the EFP could result in fishermen encountering entangled sea turtle in the FAD and their subsequent release by the crew of the vessel. Proper protected species handling techniques are required and taught to captains during mandatory protected species workshops.

4.4 Impacts to Public Health and Safety

The alternatives do not pose any additional risks to public health or safety as the fishing to be conducted is not new, but rather it involves commonly used fishing gear (longline and handline). The action alternative may improve safety at sea as it would allow a vessel greater than 50 ft to operate within the LVPA. The presence of a large active vessel fishing within the LVPA could enhance search and rescue for smaller vessels (e.g. alia) in distress. This is important as there are no US Coast Guard search and rescue assets based in Pago Pago. The EFP authorized vessel operating within the LVPA could respond quicker to distress calls than if operating outside of the LVPA.

4.5 Impacts to Fishing Community

The American Samoa longline fishery is facing economic collapse. In 2013, statistics indicated that the fishery operated at a loss on a fleet wide basis. The cause is due to low catch rates of albacore, coupled with low albacore prices and high operating costs. There is a need for participants in the American Samoa longline fishery to diversify their operations in order to withstand conditions experienced in 2013 and to allow for greater operational flexibility. Under the status quo, the experimental fishing proposed would be conducted outside the LVPA which reduces the potential number of raft associated fishing trips, thereby reducing the amount experimental fishing that could be conducted. It is believed that there are several rafts within the LVPA at any given time.

Under the action alternative, allowing longline fishing within the LVPA may lead to greater potential for gear conflict and catch competition between the large longline vessel and smaller troll vessels. However, there is one active large longline vessel fishing within LVPA that was grandfathered in under the existing regulations. Anecdotal information form the permit holder indicates that the active large vessel rarely sees small vessels out fishing in the LVPA and gear conflict is not an issue (Krista Corry, pers. comm. May 2014). As indicated in Table 2, the number of troll vessels operating (9 vessels) is at lower end of the in the reported time series (1996-2012).

If the experimental fishing proves effective, the applicant has indicated that they would like to share the fishing techniques with alia fishermen in American Samoa. Therefore, fishing under the EFP may lead to opportunities for alia fishermen that do not have longline permits, to access drifting FADs and fish using handline gear for large yellowfin, albacore, and bigeye. Handline fishing for export quality tuna is commonly practiced by artisanal fishermen in Indonesia and Philippines. Therefore, positive community benefits may occur as a result of the EFP.

4.6 Impacts to Management and Enforcement

The alternatives do not pose new burdens management and enforcement with respect to committing agency funding. The alternatives would maintain existing fisheries data collection programs (logbook) and monitoring (VMS). The Council in coordination with NMFS may develop a separate logbook form for the experimental fishing, but since the EFP only involves one vessel, the amount of data and resources to collect and analyze the data would not be substantial a work burden.

The EFP would involve a US vessel with an American Samoa longline permit, which is required to be largely marked with its call sign and equipped with a working VMS unit that tracks the vessel's movement in near real time. The rafts that will be fished will most likely to have been deployed by a US purse seine vessel. The applicant has indicated that no money will be exchanged for FAD locations.

4.7 Cumulative Impacts

Cumulative impacts must be considered pursuant to the Council of Environmental Quality (CEQ) regulations 40 CFR 1508.7, which define cumulative impacts as the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

There are wide-ranging factors (that change over time) that affect fishing participants as well as fishing communities. Current factors in American Samoa include high fuel costs, increased seafood imports and restricted access to traditional fishing grounds (e.g. prohibition on commercial fishing within the Rose Atoll Marine National Monument which represents a large portion of American Samoa EEZ). High fuel costs affect fishing participants in that it is simply increasingly expensive to go fishing. The effect is that fishery participants reduce fishing trips, switch to less fuel-intensive fisheries or simply do not go fishing at all.

As previously mentioned, the American Samoa longline fishery is facing potential economic collapse. The catch of south Pacific albacore has doubled in last 10 years and there has been a major influx of subsidized foreign vessels operating in the EEZs of south Pacific nations and on the high seas targeting albacore. The cumulative impact of this situation is negatively effecting the potential long-term continuity of the American Samoa longline fishery, which is the second largest fishery managed by the Council in the Western Pacific Region. There is a need to diversify the American Samoa longline to ward off potential devastating effects from increased competition for south Pacific albacore, variable catch rates, and market volatility for cannery grade albacore tuna.

Reasonably foreseeable regulatory actions include the implementation of Amendment 7 to the Pelagics FEP, which as approved by the Secretary of Commerce in March 2014. Amendment 7 will allow unused portions of American Samoa WCPFC-established catch or effort limits to be transferred to FEP permitted vessels in support of fisheries development. The following Council actions are still in development: modifying the American Samoa limited entry longline permit system to establish to two vessel size classes (small and large) instead of four; restrictions on shallow-water longline gear setting to reduce accidental interactions with protect green sea turtles; and temporary exemption to fish in the LVPA by American Samoa longline limited entry permit holders with certain spatial restrictions. All of the above mentioned actions are anticipated to have benefit impacts on American Samoa longline fishery participants and local fishing community.

The stocks of target and non-target species caught by the longline fishery are generally in good condition (with the exception of bigeye tuna). The small amount pelagic management unit species fish to be harvested under the EFP would be negligible when added to the catches by other fisheries targeting the same HMS stocks. There is low bycatch of sharks in the American Samoa longline fishery, and in handline fisheries in general.

Protected species impacts are not expected to increase as a result of the EFP authorization, thus existing impacts added to exogenous factors affecting protected species are not expected to result in cumulative impacts.

The American Samoa fishing community may benefit if the type of fishing under the EFP is successful and transferred to other fisheries participants in American Samoa. However, given that the fishing under the EFP would involve knowing the location of the FADs or the opportunistic encounter with FADs, this makes it operationally difficult. Thus, large beneficial impacts to the American Samoa fishing community are not expected result.

Overall, the action alternative to allow one vessel to fish inside the LVPA under an EFP is not expected to result in any negative cumulative impacts to any resource category.

4.7.1 Climate Change Impacts

The Intergovernmental Panel on Climate Change (IPCC) states that: "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level (IPCC 2007)." Climate change and potential sea level rise may affect target and non-target fish species, protected species, human communities, marine ecosystems, essential fish habitat and other habitats found in and around American Samoa.

Fish stocks and sea turtle populations would continue to be monitored in American Samoa through logbook reports and longline vessel observer coverage, as well as through international efforts to monitor some marine populations. Neither of the alternatives will result in a change to the fishery that would affect climate change by substantially altering the consumption of energy or release of greenhouse gases by the fishery participants. The major ways climate change will affect marine life and habitats are; 1) changes in reproductive potential; 2) loss of habitat due to sea level rise; 3) alterations to foraging habitats and prey resources; 4) changes in phenology and reproductive capacity that correlate with fluctuations in sea surface temperature; and 5) potential changes in migratory pathways and range expansion.

Climate change resulting in sea level rise may affect some marine populations, however many species have survived differing climactic conditions through the course of history. Other potential impacts could be a shift in nesting beaches of sea turtle populations with sea level rise, changes in food distribution (though not readily understood) due to acidification of seawater; and changes in ocean currents that could affect foraging or migratory activities. Under natural conditions, beaches can move landward or seaward with fluctuations in sea level. Contamination from effluent discharges and runoff has degraded some shallow marine habitats. It may not be possible to distinguish climate change impacts on marine life.

The action alternative may allow for shorter trips lengths and less time transiting, which translates to potentially less fuel consumed and less fossil fuel emissions. The difference, however, between the no action and action alternative in terms of carbon emissions is negligible.

4.8 Other Resource Categories and Issues

Regulations implementing the National Environmental Protection Act (NEPA) indicate that the following additional issues are considered when evaluating impacts of a proposed action:

Degree to which effects on the human environment are highly controversial

The effects of the alternatives are not controversial. The fishing gear to be used is commonly in Western Pacific Region fisheries and there is no reason to believe that the operations conducted under the EFP would have effects on the human environment that controversial.

Degree to which effects are highly uncertain or involve unique or unknown risks

The commonly used type of fishing gear to be deployed under the EFP is not believed to result in effects that are highly uncertain or involve unique or unknown risks.

Degree to which proposed action affects unique areas, historic and cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

The authorized fishing activity under the EFP would be in the deep-water pelagic environment of the US EEZ around American Samoa. This oceanic environment is not believed represent ecologically critical areas or an area of unique characteristics. The fishing authorized under the EFP would not be conducted in the American Samoa National Marine Sanctuary or Rose Atoll Marine National Monument.

Degree to which proposed action affects districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places.

The authorized fishing activity under the EFP would be in the pelagic environment of the US EEZ around American Samoa and not involve and listed items on the National Register of Historic Places.

Degree to which proposed action could be expected to result in the introduction or spread of a nonindigenous species.

Authorizing the EFP may reduce the potential for the spread or introduction of nonidigenous species as the EFP permitted vessel would retrieve drifting FADs that may be carrying non-native species. Removal of the rafts at sea would reduce the potential introduction into the nearshore environment of non-native species that hitch a ride on the rafts.

Degree to which proposed action is likely to establish precedent for future actions with significant effects or represent a decision in principle about a future consideration.

EFP applications are issued on a case by case basis. Therefore, authorizing the EFP application does not establish precedent for future EFP applications.

4.9 Reasons for Choosing the Preferred Alternative

At this stage, no preferred alternative has been identified.

Chapter 5: References

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Chapter 6: Preparers

This Environmental Assessment was prepared by following:

Eric Kingma, WPFMC, NEPA Coordinator. B.A. Biology. 1999. Lewis and Clark College. M.P.A. 2003. University of Hawaii- Manoa. 10 years in current position.

Appendix 1- Longline Services, Inc. EFP Application and Additional Information

P. O. Box 997423 Pago Pago , American Samoa 96799
Telephone: (684) 633-7675 - Facsimile: (684) 633-7673
Cellular(s): (684) 258-1234 & (684) 252-2222
Email: longlineservices@gmail.com

March 6, 2014

Mr. Michael Tosatto
Regional Administrator
NOAA/NMFS Pacific Islands Region
1845 Wasp Boulevard, Building 176
Honolulu, Hawaii 96818
Facsimile: 808-973-2941

RE: Application for an experimental fishing permit (EFP)

Dear Mr. Tosatto:

We respectfully request your consideration and approval of our attached application for an experimental fishing permit (EFP).

As you are fully aware, our entire region is struggling to survive the disaster experienced by all local longline fleets. This economic crisis is very real for the American Samoa longline fleet. We have sought assistance from the local government, from the Western Pacific Region Fishery Management Council (WPRFMC) and others to support the fleet to keep it afloat. In the meantime, our company has continued our efforts to address this crisis by trying alternate methods of fishing and improving efficiency of our operations. We have been in close contact with the WPRFMC staff regarding our efforts, and we are appreciative of their attention and support given to us thus far.

We appreciate your time and consideration of our attached application. As this is our first application for such a permit, we hope that there will be an opportunity to add information as needed for this application by your staff. Thank you for your time and attention.

Sincerely,

CHRISTINNA S. LUTU-SANCHEZ
For Longline Services, Inc.

Att:
Cc: Executive Director Kitty Simonds, WPRFMC
ASG DMWR Director Ruth Matagi, WPRFMC Member
ASG Port Administration Director Clair Tuia-Poumele, WPRFMC Member
HTC Taulapapa Wil Sword, WPRFMC Member

APPLICATION FOR EXPERIMENTAL FISHING PERMIT (EFP)

DATE: March 6, 2014

APPLICANTS NAME: Longline Services, Inc.
P. O. Box 997423
Utulei Tramway Road
Pago Pago, American Samoa 96799

STATEMENT OF PURPOSE:
The purpose of this application for an EFP is to allow a larger size (>50 ft.) fishing vessel to fish within the American Samoa prohibited areas (LVPA). Having the identified larger vessel to fish in the closed areas will allow us to conduct exploratory fishing while reducing operating costs by accessing closer fishing grounds.

BACKGROUND INFORMATION & GENERAL DESCRIPTION:
Permitted longline Vessels longer than 50 feet are not allowed to fish within a closed area that is more or less equivalent to 50 miles from shore. Since this prohibition has been in place, the number of alias (or smaller longliners) have decreased dramatically to only 1 – 2. In essence, there has not been any longlining within this closed area for many years, and there is a lack of data to show the impact of this regulation and how the management of these areas can be improved.

As a result of the economic disaster faced by the American Samoa longline fleet, Longline Services, Inc. has taken the lead in experimenting with alternatives to continue fishing and continue to survive. To date, three (3) of Longline Services, Inc.'s vessels have each completed an exploratory fishing trip based on moon phases, using vertical hand lines, fishing around identified rafts and also allowing for fresh fish to be delivered back to port. There has been mixed results, and while the first trips overall were not profitable, many mistakes were identified and incorporated in the plans to improve the next set of trial trips.

Every effort has been made to have the least operating costs for the trial trips. Two of the vessels realized losses, however the data that was collected helped to make the decisions for the next set of trips. The highest direct cost aside from labor is fuel for the vessels. Having access to closer fishing grounds will allow the vessel less operating expenses and more time to try different times and locations using these exploratory fishing techniques in the American Samoa longline and pelagic fisheries.

CONCEPT:
The identified larger vessel will be used to experiment different techniques and methods of longlining, specifically around rafts or FADs. If there are any identified rafts within the closed areas, the larger vessels will test different fishing techniques such as vertical lines, hand lines, different types of lures and baits, etc… while there is an opportunity to do in the vicinity of fish (assuming there is an abundance of fish aggregated at such a device). The permit requested will allow us to explore different options and methods at a low cost to our company, and the results will be beneficial to the entire American Samoa longline fleet.

GOALS:
In the long term, it is our hope that the data collected from these experiments will be used by the WPRFMC and NMFS to make better and informed management decisions not only for conservation purposes of our resources but also to address the needs of the fishermen of American Samoa – present and future.

In the short term, we hope for success in certain types of fishing methods so that we can share any success with our colleagues or other ASLL permit holders so that the fleet will continue to survive.

VESSELS COVERED:

FV PRINCESS YASMINNA
USCG Documentation Number: 507268
Home Port: Utulei, American Samoa
Length of Vessel: 67.5
Net Tonnage: 67 NRT
Gross Tonnage: 98 GRT

DESCRIPTION OF SPECIES:
Target species will be Yellowfin, Bigeye, Albacore with bycatch that will also be kept such as Swordfish, Wahoo, Marlin, Skipjack.

REQUESTED TERM OF EXPERIMENT:
To be able to access the prohibited large vessel area for a time period of twelve (12) months. Gear that will be used is longline, vertical lines and hand lines.

SUBMITTED BY:

____
CHRISTINNA S. LUTU-SANCHEZ
For Longline Services, Inc.

P. O. Box 997423 Pago Pago , American Samoa 96799
Telephone: (684) 633-7675 - Facsimile: (684) 633-7673
Cellular(s): (684) 258-1234 & (684) 252-2222
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May 1, 2014

Mr. Michael Tosatto
Regional Administrator
NOAA/NMFS Pacific Islands Region
1845 Wasp Boulevard, Building 176
Honolulu, Hawaii 96818
Facsimile: 808-973-2941

RE: Addendum to application for an experimental fishing permit (EFP)

Dear Mr. Tosatto:

Thank you for your letter to us acknowledging our application and the opportunity for us to submit an addendum with more information and details to complete our application.

Attached is additional information requested via writing and phone conference with your staff to complete our application before you considering our request. Again, please let us know if you require anything else from us in reference to our request.

Thank you for your time and attention.

Sincerely,

CHRISTINNA S. LUTU-SANCHEZ
For Longline Services, Inc.

Att:
Cc: Executive Director Kitty Simonds, WPRFMC
ASG DMWR Director Ruth Matagi, WPRFMC Member
ASG Port Administration Director Clair Tuia-Poumele, WPRFMC Member
HTC Taulapapa Wil Sword, WPRFMC Member

ADDENDUM TO THE
APPLICATION FOR EXPERIMENTAL FISHING PERMIT (EFP)

ORIGINAL SUBMISSION DATE: March 6, 2014

ADDENDUM SUBMITTED: May ___, 2014

APPLICANTS NAME: Longline Services, Inc.
P. O. Box 997423
Utulei Tramway Road
Pago Pago, American Samoa 96799

ADDITIONAL DETAILS FOR APPLICATION SUBMITTED:

VESSELS COVERED:
FV PRINCESS YASMINNA
USCG Documentation Number: 507268
Home Port: Utulei, American Samoa
Length of Vessel: 67.5
Net Tonnage: 67 NRT
Gross Tonnage: 98 GRT

- Additional Information for Purpose of Request:

  Our objective is to allow a larger size fishing vessel to fish within the American Samoa prohibited areas (LVPA) to conduct exploratory fishing with alternate methods such as vertical longlining and/ or FADs that may be located during the fishing season so that the American Samoa longline fleet can better understand and be better prepared with alternate options with possible alternate markets (i.e. fresh fish) for the fleet to survive during the off-season months (January to May).

- Description of Project (overview):

  Since the submission of our original application, we have had the chance to experience limited FAD fishing at different time periods. This experience has given us more information and has allowed us to provide more information about what we hope to do with this experimental fishing permit if granted.

Specifically, with the assistance of some U.S. purse seine captains/ boat owner(s), we were able to identify a few rafts that drifted into the American Samoa EEZ that supposedly had fish. Although it was difficult to locate the rafts with limited equipment on our longliners, we did manage to locate some of them. Our experiences thus far has taught us several facts that still remain to be reconfirmed, and these are:

- Fish is more likely to accumulate under the raft between 1:30am – 7:00 am;
- After this time, they tend to scatter around the raft, and it has been beneficial for us to set a partial longline set in a horse-shoe shape about 3-4 miles from the raft. The line is set taking into consideration the wind direction and current so that the nets from the raft are drifting away from the line and not towards our lines to avoid possible tangling.
- We have been using small manual reels that are hauled by hand, and to learn about the different species and what is available, we have marked our vertical lines with different fathom depths starting from 80 fathoms to 120 fathoms. Typically, we put 12 circle 14/0 hooks per line and drop them fast into the water with the intent to pick them up within approximately ½ hour with hooks starting at 100m and one every 20 fathoms.
- This vertical LL takes place at night when the fish is congregating under the raft from approximately 1:30 to 6-7:00am. At the end of this process, our vessels have moved out and set the LL as described above (1600-1800 hooks). The crew rests until evening when the LL is picked up again and then starts the process of vertical LL again.
- We have experiences that fish starts biting before the full moon and also after the full moon. Last year, we produced more a week before the full moon (first quarter). This year it has been more after the full moon.
- We also have experienced very bad weather and have learned that we should not get too close to the raft. The best distances are still yet to be determined. However, during bad weather, it is very difficult to stay afloat with the raft, and if we tie up to the raft, the vessel ends up destroying the raft.
- In two of our trips with FADs, we had NMFS observers on board, and they were also able to witness the different options that we were trying. One of the most apparent observations is the limited marine protected species observed. We expected to find a lot more birds, etc..

at the rafts, but this is not the case here in American Samoa waters as compared to such countries like Ecuador, Costa Rica, Solomon Is., etc… An important note is that the method of vertical LL and also regular longlining is very selective where we are setting at certain depths to target certain species specifically for us, the larger tuna.

- Description of Species:

  Target species will be Yellowfin, Bigeye, Albacore with bycatch that will also be kept such as Swordfish, Wahoo, Marlin, Skipjack.

  As our trips have been redesigned to be shorter and only closer to full moon (more cost efficient), we have estimated that these trips would cost between $25,000 to $30,000. In consideration of costs, we would need to have fish valued at this amount to be able to break-even. At current fish prices, this would be equivalent to a delivery of approximately 15,000 to 20,000 lbs of fresh fish or 15,000 to 20,000 lbs of frozen albacore or approximately 40,000 lbs of frozen yellowfin.

- Approximate times and places fishing will take place, the type, size and amount of gear to be used:
  - Fishing trips will be once a month – around the full moon time between the first quarter and last quarter.
  - Gear used: Longline Reels (standard) for regular longlining and Manual LL reels for the vertical lines to be hauled by hand.
  - Gear:
    - Vertical LL:
      - Manual LL reels to be hauled by hand
      - Lines are marked at lengths from 80 fathoms to 120 fathoms
      - 14/0 Circle Hooks
    - Longline (partial set – if around a raft):
      - LP Longline Reel (hydraulic-motor driven)
      - LP Shooter
      - 14/0 Circle Hooks (approximately 1500 – 1800 hooks per set)
      - Mackerel Bait
    - Longlining (full set – if no raft):
      - LP Longline Reel (hydraulic-motor driven)
      - LP Shooter

        - 14/0 Circle Hooks (approximately 3000 hooks per set)
        - Mackerel Bait
    - Market for fish caught:
        - Frozen albacore, tuna: to be delivered to AS canneries;
        - Fresh Fish: to be delivered to Samoa Tuna Processing for fresh fish processing or local market. Other option for processing and marketing fresh fish in Honolulu and Los Angeles is being explored by Tautai-O-Samoa Fishing Association members.

    - FADs:
        - For previous trips, we have received information from the US seiner Daniela as well as Trimarine owned vessels. These are FADs that are no longer reachable by them and had floated into the American Samoa EEZ. These are FADs (rafts) that we tried to follow and locate. During the last trips also, we ran into a raft that was owned by a Chinese vessel. We do not have contact with foreign owned FADs, and they would not give us any information, however, we have found them during our fishing trips. Longline Services, Inc. at this time does not have the resources to deploy our own rafts, and as we are limited to the AS EEZ, we would need to have rafts that are anchored so they don't drift outside the EEZ. However, our experiences have taught us that the rafts that are floating and have aggregated fish over months produce a lot more fish and safer to fish on. The anchored rafts do not produce as much and can pose a hazard not only to the environment but possibly the vessels.

- Other Community Benefits:
    - The alia longline fleet has all but diminished. We think that data collected from this experiment can also help the alia fleet to identify another way of bottomfishing (i.e. vertical) as the highest cost is to locate the fish. However, if they have access to information of where some rafts are located, they can go there directly, and we are learning how we can catch that fish around FADs.

****

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
Daniel K. Inouye Regional Center
1845 Wasp Blvd. Bldg.176
Honolulu, Hawaii 96818
(808) 725-5000 • Fax (808) 973-2941

March 20, 2014

Christinna S. Lutu-Sanchez
Longline Services, Inc.
P.O. Box 997423
Pago Pago, AS 96799

Dear Ms. Lutu-Sanchez:

Thank you for application dated March 6, 2014, for an experimental fishing permit to conduct exploratory longline and vertical handline fishing around rafts and fish aggregation devices (FAD) within the large vessel area closure around American Samoa.

The National Marine Fisheries Service (NMFS) has reviewed your application and determined that it is not yet complete. Consideration of your proposed experimental activity requires a comprehensive assessment of the potential environmental impacts (direct, indirect, and cumulative). To complete this assessment, NMFS will need additional information including, but not limited to, comprehensive description of the rafts and FADs, the size and amount of longline and handline gear to be used, the number of trips to be taken, and the amount of fish harvest necessary to conduct the experiment.

We would like to set up a telephone meeting with you to discuss the additional information needed to complete your application and conduct the necessary analyses. Please contact Bob Harman at (808) 725-5170 or *bob.harman@noaa.gov* to arrange this call.

Sincerely,

Michael D. Tosatto
Regional Administrator

cc: Kitty Simonds, Western Pacific Fishery Management Council
Ruth Matagi-Tofiga, American Samoa Dept. of Marine & Wildlife Resources
Claire Tuia-Poumele, American Samoa Port Administration
Taulapapa William Sword, Western Pacific Fishery Management Council