WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

Draft

Regulatory Amendment

Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region

Approval of an exemption for large (>50ft LOA) longline vessels to fish in the Large Vessel Prohibited Areas (LVPA) in American Samoa

Including a Draft Environmental Assessment

March 5, 2015

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Fishery Ecosystem Plan for
Pelagic Fisheries of the Western Pacific Region

Approval of an exemption for large (>50ft LOA) longliners to fish in the Large Vessel Prohibited Areas (LVPA) in American Samoa

Including a Draft Environmental Assessment

1.0 Document Overview and Preparers

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1.1. Executive Summary

The Council proposes to provide exemptions to large (greater than 50 ft longline vessels to fish within the Large Vessel Prohibited Area (LPVA) around American Samoa (Figure 1). These longline vessels fish primarily for albacore tuna which is sold to one of the canneries in American Samoa. The exemption would include only these vessels and no other large pelagic fishing vessels such as purse seiners.

The LPVA was established in 2002, when the American Samoa longline fishery comprised about 40 small alia catamarans (< 50 ft) and 30 large conventional monohull longline vessels. The Council established the LVPA of approximately 50 nm around the islands of the American Samoa Archipelago to separate small and large longline vessels to reduced gear conflict and catch competition.

By 2009, only 1 alia catamaran was operating on a regular basis and none operated in 2014. There is no longer any need for the LVPA to separate the small and large longline vessels as there are no small vessels operating.

Since 2001, the large conventional longline fishery has faced declining catch per unit of effort (CPUE) and increased costs partially due to displacement from the LPVA, i.e. farther to begin fishing, such that by 2009 incomes had declined by 90% and in 2013 and 2014 fishing yielded negative net return to owners. The economic situation facing the existing longline fleet is difficult, and several vessels have left the fishery in recent years.

An exemption to fish in all or part of the LPVA may assist the large longline vessels by spreading the fleet over a larger fishable area, thereby reducing catch competition among remaining large vessels, promoting economic efficiency, improving profits and reducing transit costs.

As the longline fishery targets albacore, it does not represent a threat to small-scale bottomfishermen or commercial and non-commercial trollers which target skipjack, yellowfin and billfish. Moreover, the period when the large longline vessels are exempted from fishing in the LVPA would provide an opportunity for the small vessel alia fleet to rebuild. Under alternatives all monitoring measures such as logbooks, dockside inspections by the USCG and NMFS Office of Law Enforcement, Vessel Monitoring Systems, observer placement and catch and release protocols for turtles, seabirds, cetaceans and sharks would continue

Experience from one large longline vessel grandfathered to fish in the LPVA would suggest that fishing conditions are better than outside this zone, in addition to reducing fuel consumption and fishing time. While fish are not always guaranteed to be found in the LPVA, once found, they

can be followed in or out of the LPVA, thus allowing good catch rates and improving fishing efficiency.

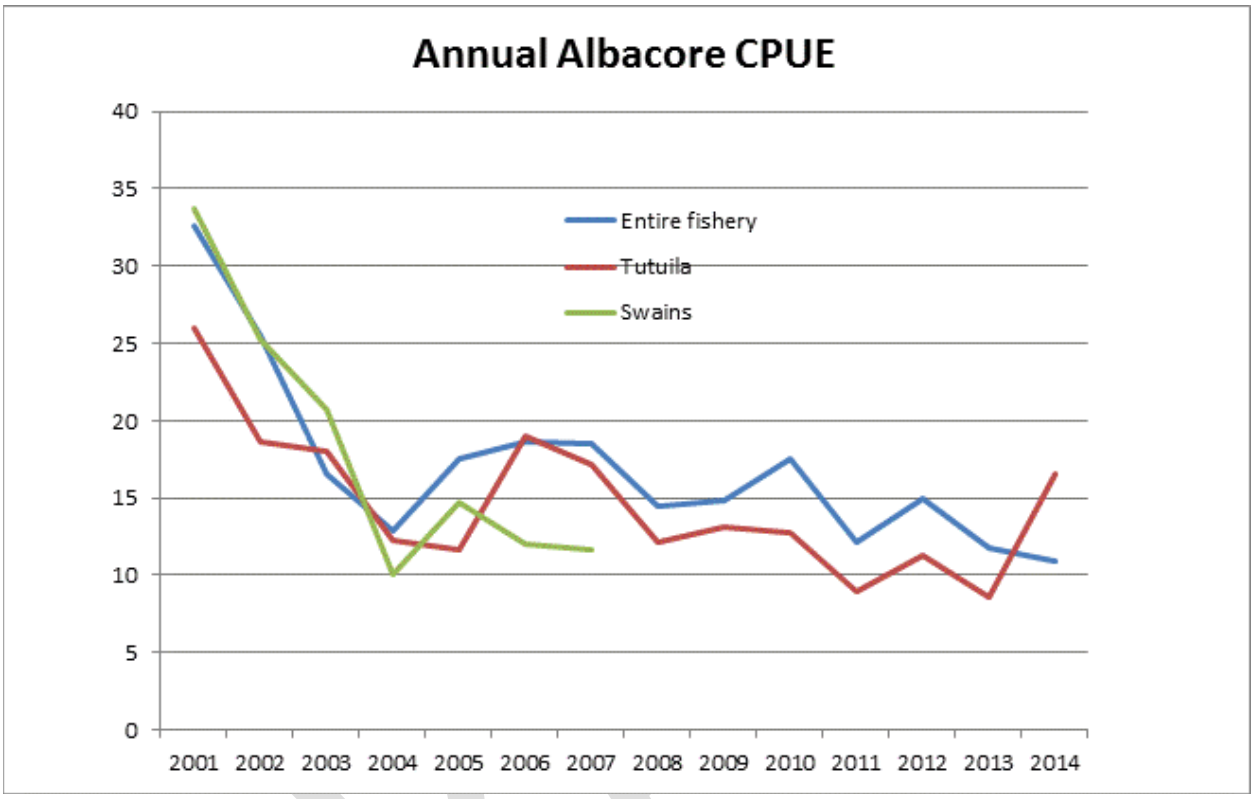


Figure ES-1: Annual albacore CPUE for the entire American Samoa longline fishery, for the large vessel prohibited area around Tutuila, the Manua Islands, and Rose Atoll ("Tutuila"), and for the area around Swains Island.
Source: PIFSC unpublished data;
Note: Data for LVPA around Swains beyond 2007 not presented due to data confidentiality procedures. 2014 data does not include October-December.

There are times during the year that catch rates for albacore may be much greater inside the LVPA than outside (Figure 15).

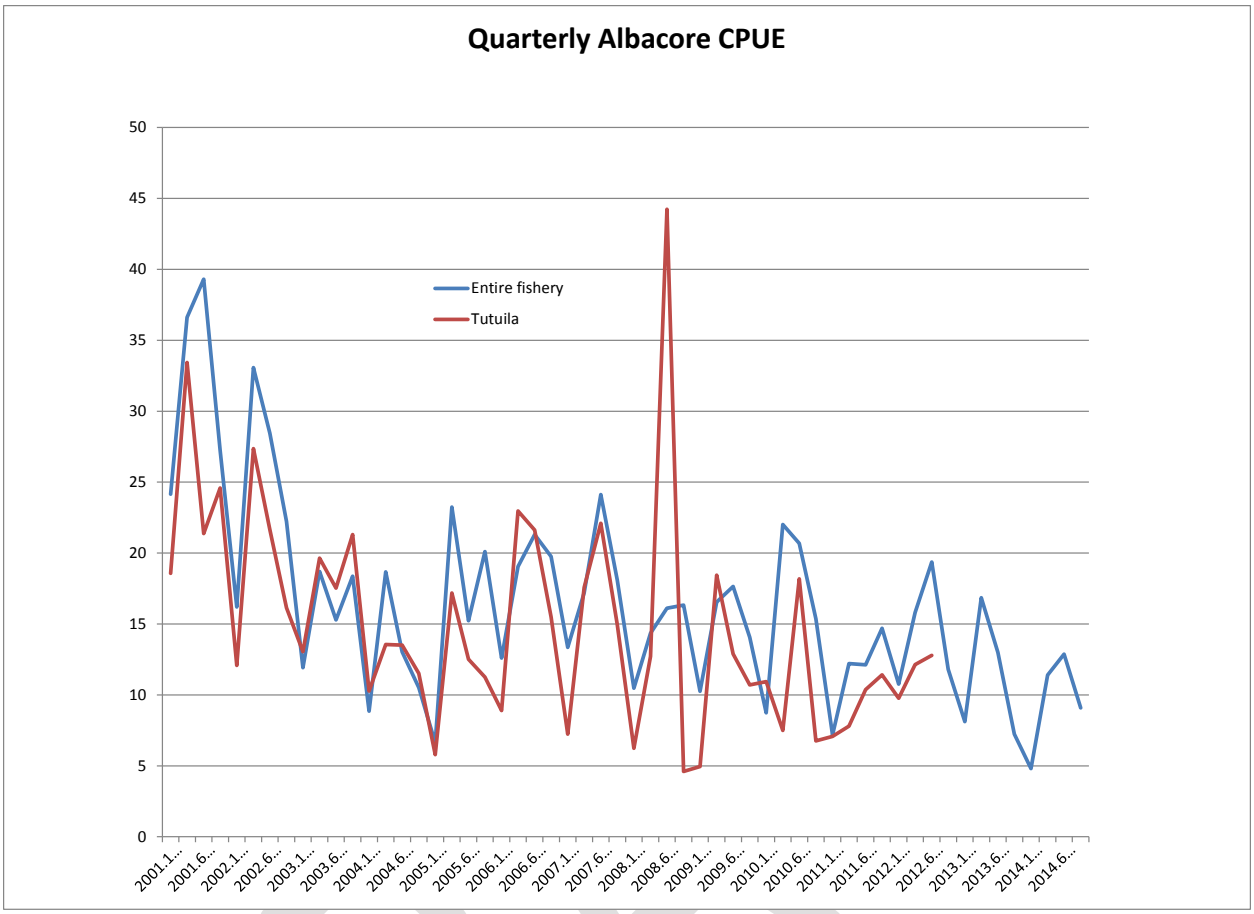
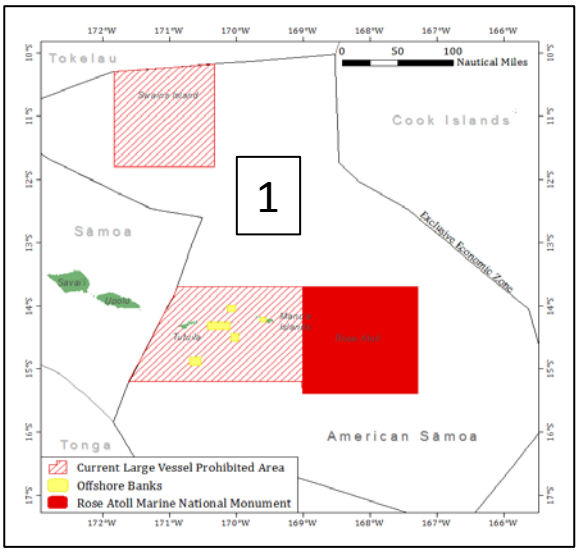
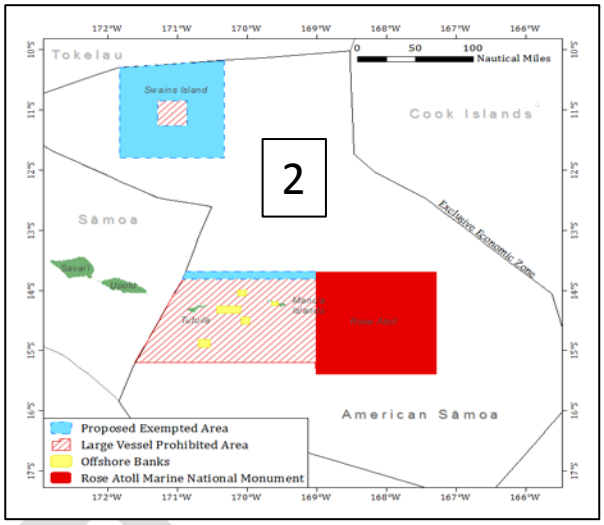
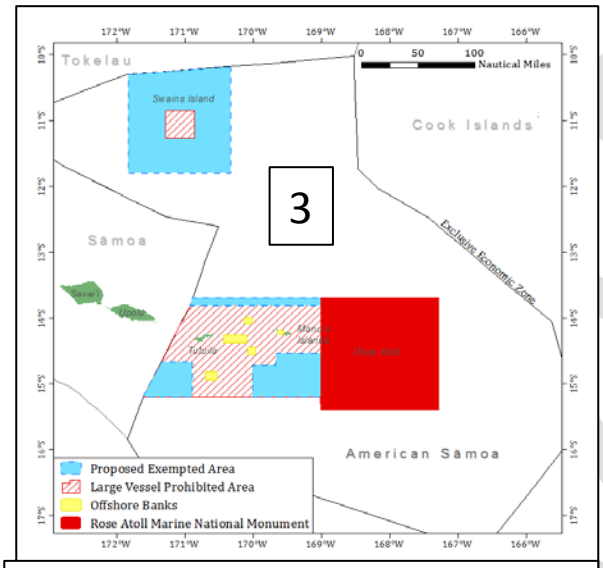


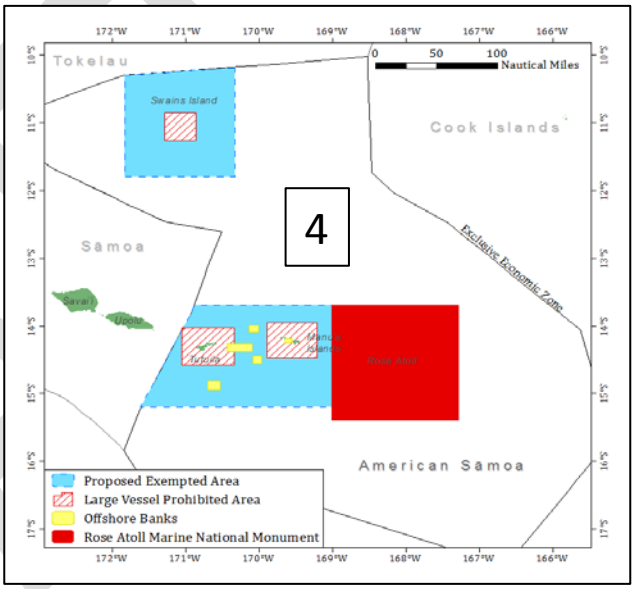
Figure ES-2: Quarterly albacore CPUE for the entire American Samoa longline fishery, and for the LVPA around Tutuila, the Manua Islands, and Rose Atoll ("Tutuila").
Source: Source: PIFSC unpublished data
Note: Fishing inside LVPA beyond 2011 not shown due to less than 3 vessels fishing. Swains Island not shown because in many quarters there was no fishing, or fishing was conducted by fewer than 3 vessels.

A range of possible exemptions may be implemented for one year, three years or a longer time period, but with periodic review by the Council. This supports an adaptive management framework that can respond to changing fishing conditions and fisheries development. There is interest in reviving the small vessel fleet, but this will take time, in which the large longline vessels could make efficient use of the waters currently off limits to them in the LPVA.









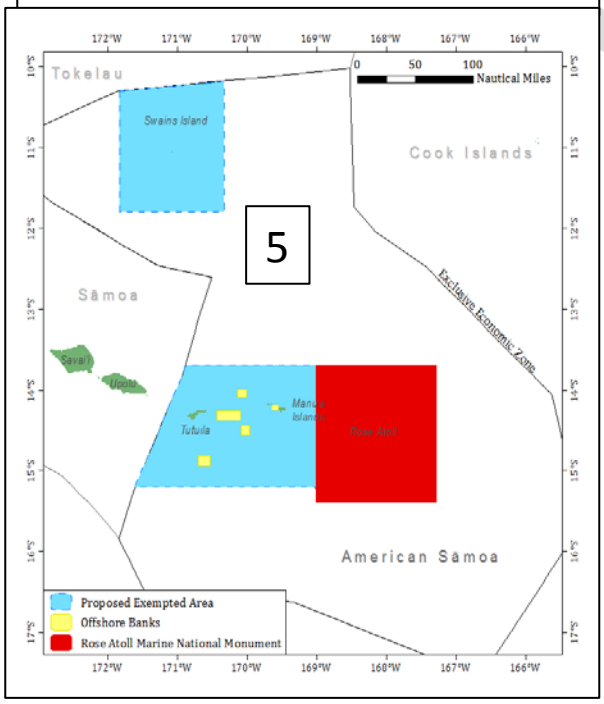


Figure ES-1: Summary figure showing the No Action Alternative (1) and four exemption permutations for large longline vessels to fish within the LPVA

2.0 Table of Contents

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2.3 List of Acronyms and Abbreviations

ASG	American Samoa Government
CMM	conservation and management measure
CPUE	catch per unit of effort
Council	Western Pacific Fishery Management Council
DMWR	American Samoa's Department of Marine and Wildlife Resources
EA	environnemental assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EPO	eastern Pacific Ocean
ESA	Endangered Species Act
FAD	fish aggregating device
FEP	fishery ecosystem plan
FMP	fishery management plan
FR	Federal Register
HAPC	Habitat Areas of Particular Concern
IATTC	Inter-American Tropical Tuna Commission
ITS	Incidental Take Statement
MMPA	Marine Mammal Protection Act
MSY	maximum sustainable yield
MUS	management unit species
NMFS	National Marine Fisheries Service
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
PIFSC	Pacific Islands Fisheries Science Center
PIRO	Pacific Islands Regional Office
RFMO	regional fishery management organization
SEC	South Equatorial Current
SECC	South Equatorial Counter Current
SSC	Scientific and Statistical Committee
SPC	Secretariat of the Pacific Community
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
VMS	vessel monitoring system
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	western and central Pacific Ocean

3.0 Introduction

3.1 Background Information

In the early 1990s, longline fishing technology in what was then Western Samoa (now simply Samoa) was imported to American Samoa. This method of fishing utilized a locally manufactured outboard powered aluminum catamaran of about 30 ft in length and a hand operated monofilament longline with between 200 to 300 hooks suspended from a mainline with floats. The principal target of this fishery was albacore tuna which was marketed to the StarKist cannery in Pago Pago. This method of fishing expanded rapidly due the relatively inexpensive start-up and running costs (WPRFMC 2000).

After this small vessel 'alia' fishery had begun to develop, longline vessels greater than 50 feet in length overall (>50ft) began entering the fishery. The reaction from the alia fishermen was to request that the Council implement and area closure around the islands of American Samoa for pelagic fishing vessels > 50ft. Then alia fishermen were concerned that because the larger longline vessels were deploying as many as 3,000 hooks in a set, these larger operations might outcompete the smaller alia fishing operations. The limited range of the alia fishermen meant that they were essentially coastal vessels enduring whatever the fishing conditions persisted around Tutuila. The large longline vessels could range out into the US EEZ around American Samoa and even into waters beyond, either onto the high seas or into the EEZs of neighboring countries through licensing agreements.

The Council initially recommended a 100 nm closure for pelagic fishing vessels > 50 ft, but this was disapproved by the National Marine Fisheries Service in March 1999. The Council later recommended establishing prohibited fishing areas for vessels greater than 50 feet long in certain parts of the US EEZ around American Samoa. The Council's recommendation was implemented by NMFS in early 2002[1].

The alia fishery reached its zenith in 2001 and by 2002 had begun to decline (see Figure 16 in Section 8.2.3) such that by 2007 fewer than three vessels were operating in the fishery, and none fished in 2014. As such, the need to keep the large and small longline vessel fleets separate became increasingly called into question by operators of the large longline vessels in American Samoa.

The large vessel fishery expanded rapidly after 2000 and reached a peak of about 30 vessels in 2004, after which it declined to 19 vessels in 2014. The large vessel component of the American Samoa longline fishery has endured a prolonged period of poor economic conditions. In 2013, longline vessels based in American Samoa recorded their lowest annual catch in the past decade. The catch of the American Samoa longline fleet reached a maximum of about 6,000 mt (more than 300,000 fish) in 2002, and catches have declined since 2007. The catch per unit of effort (CPUE) has declined by 40% on average, and the 2013 catch rate is a record low and 70% less than the highest catch rate, recorded in 1996 (Figure 1).

[1] Federal Register Vol. 67, No. 20, 4369-4372, January 30, 2002

A low of about 2000 mt (~117,000 fish) was caught by longline in 2013, and there is no prospect that there will be a rapid improvement in fishing conditions in 2014 (Figure 2).

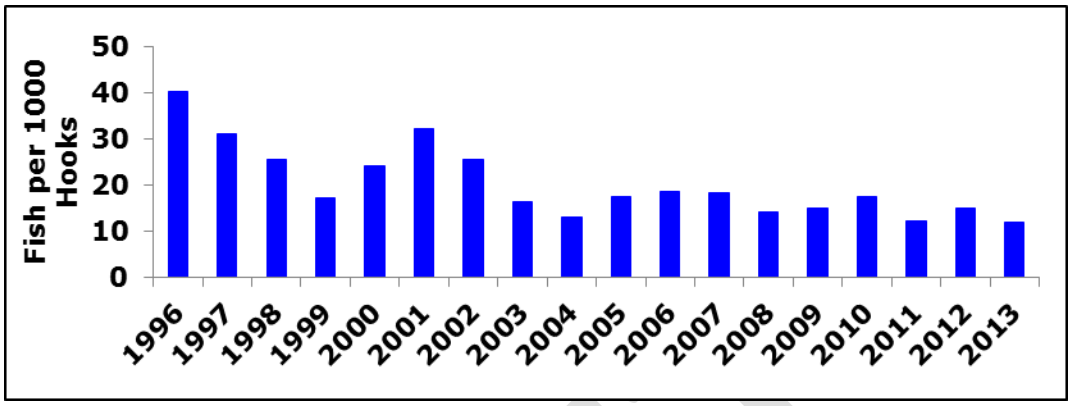

Figure 1. Time series of albacore CPUE in the American Samoa longline fishery 1996-2013
Source: NMFS WPacFIN[2] plus unpublished data

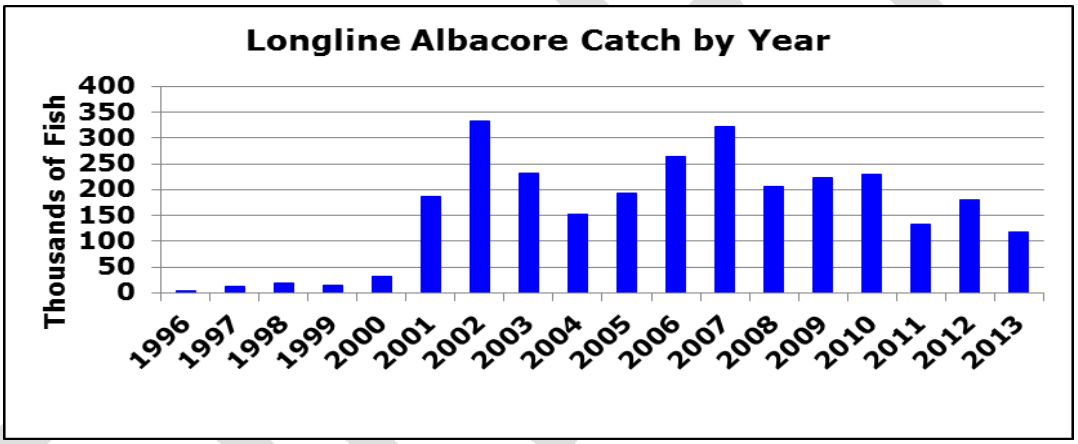

Figure 2. Time series of albacore landings by the American Samoa longline fishery 1996-2013
Source: NMFS WPacFIN plus unpublished data

The fishery is strongly seasonal with a low period in the Austral summer between December and April. Typically, vessels experience lower catches in these months and fishing effort is much lower than the rest of the year (Figure 3). However, even the peak of the fishing season in 2013 has failed to yield sufficient catches to cover fishing expenses. Most longline vessels ceased fishing by the start of 2014 since catches were insufficient to cover operating costs.

A study by NMFS PIFSC showed that a vessel operator could expect to clear $100,000 from the fishery in 2001 (Arita & Pan 2013). In 2009, this net revenue had fallen by 94%, to $6,000, and has worsened since then (see Appendix 1). A sensitivity analysis which showed that due to a very thin profit margin, small declines in CPUE or fish price would yield a negative net return to owners. An update of this study in 2015 (See Appendix 1) showed that the fishery had indeed

[2] http://www.pifsc.noaa.gov/wpacfin/as/Pages/as_data_2.php

worsened in 2013 compared to 2009. There were further declines in CPUE, possibly due to localized depletion, lower fish prices and higher fuel costs with the expected negative net returns to owners. The situation became so dire that in February 2014, American Samoa-based owners en-masse offered their vessels for sale (Figure 4) as a gesture of their desperation and frustration. The economic downturn in the fishery continued and three vessels stopped fishing altogether and were offered for sale

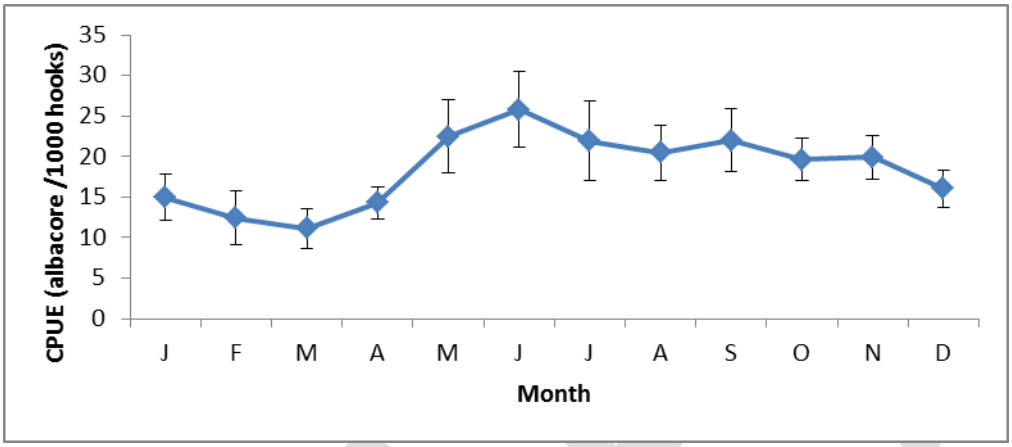

Figure 3. Seasonality of albacore catch per unit of effort (CPUE)
Source: NMFS WPacFIN

Figure 4. Longline vessels for sale in American Samoa in February 2014.
Source: Nate Ilaoa, Council Staff

This collapse of the longline fishery which targets albacore is not confined to American Samoa; it has also been documented across the Central South Pacific – from Fiji (Fiji Sun, Thursday January 16), Samoa (John Luff, Apia Export Fish Packers Ltd, Samoa, pers. comm.) Tonga

(Charles Hufflett, Pacific Islands Tuna Industry Association, pers. comm.) and the Cook Islands (Josh Mitchell, Ministry of Foreign Affairs, pers. comm.) However, the fishery in French Polynesia is being maintained by government subsidies (C. Daxboeck, pers. comm.)

Anecdotal information from longline fishermen in American Samoa, Fiji, Samoa and other Pacific Islands indicates a shared perception that an influx of Chinese longline vessels across the region is mostly responsible for the collapse. The Chinese government has encouraged and facilitated substantial longline vessel construction in recent years and Chinese vessels enjoy generous subsidies on fuel, licensing, freight costs, exports, tax, loans and labor. This can be seen as an unfair advantage in that the government subsidies allow the Chinese longline vessels to fish heavily, even on fish species that may not be plentiful in a particular area at a particular time; in other words, this foreign fleet is not dependent on high catch rates (CPUE) to continue to fish.

This influx of these vessels that has caused the South Pacific albacore catch to double from around 40,000 mt in 1990 to over 80,000 mt in 2012 (Figure 5). Most of this catch is taken in the EEZs of Pacific Island Countries (PICs) through access agreements for foreign longline vessels. These large catches by foreign vessels in areas outside of the U.S. EEZ around American Samoa are believed to be depressing CPUE in the U.S. EEZ around American Samoa. Low CPUE and low prices for fish that are caught are making it difficult for the American Samoa longline fishery to continue fishing for albacore.

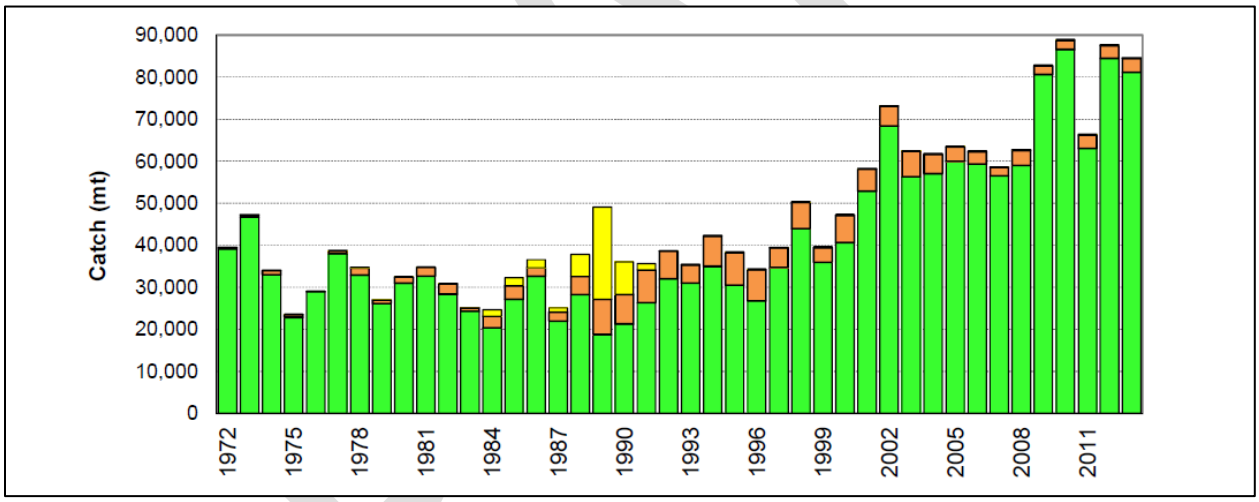

Figure 5. Time series of South Pacific albacore catch for all countries combined. Longline catches are shown in green
Source Williams & Terawasi 2013

4.0 Purpose and Need

The purpose of this proposed action is to improve the efficiency of the American Samoa longline fleet in order to promote its economic viability. The LVPA was implemented in 2002, when there were nearly 40 alia and other small vessels and 24 large vessels operating in the local longline fleet. The LVPA was established to minimize catch competition and gear conflict between small (e.g. alia) and large longline vessels. The LVPA prohibits longline vessels 50 ft or

greater from operating within 50 nm of Swains Island and generally within 50 nm around Tutuila and the Manua Islands (the northern boundary of the LVPA around Tutuila and Manua is approximately 32 nm).[3]

In 2014, zero small longline vessels (e.g alia) operated; whereas there were 19 large longline vessels that fished outside the LVPA. The number of large longline vessels was 10 fewer than at its peak in 2004. While there were 12 small troll vessels that were reported to catch pelagic species in 2013,[4] there is less reason than in the past to maintain separation between the large and small longline vessel fleets, and thus to maintain the current LVPA.

The objective for this amendment is to provide temporary relief to large longline vessels by reducing the cost of trips and increasing catches. This is expected to boost the likelihood for long-term viability of the fishery while maintaining sustainability of fish stocks. The American Samoa longline fishery has endured several years of poor fishing where the profitability of the fishery is zero or even in negative territory. Providing longline vessels > 50ft temporary access to portions of the US EEZ around American Samoa would disperse the large monohull longline fishing fleet over a wider area, reduce catch competition between vessels and improve fishery efficiency, while not having a large adverse effect on the alia and small vessel longline and troll fleet. There is also a need to provide a continued supply of sustainably caught, high quality albacore to the Pago Pago based canneries. Further, access to LVPA waters may reduce trip times, and thus reduce trip costs, and promote the potential for vessels to diversify from just supplying cannery albacore but also increasing marketing of fresh fish.

Due to the low level of fishing in the LVPA by alia and other small vessels, the larger longline vessels are being precluded from opportunities to operate more efficiently within the EEZ around American Samoa. Opening up additional areas for large vessels active in the fishery is not anticipated to lead to overfishing of South Pacific albacore or any other pelagic management unit species occurring in the EEZ around American Samoa.

5.0 Initial Actions

The state of the American Samoa longline fishery, and the issues described in Section 3.1 were discussed by the Council at its 159th Meeting in March 2014 held in Guam. At that meeting the Council made the following recommendation:

> The Council directed staff to prepare a draft regulatory/FEP amendment/Framework measure to the Pelagics FEP to modify the Large Vessel Prohibited Area (LVPA) and identify options to reduce, for a period of one year, the northern boundary of the LVPA

[3] When implemented in 2002, the northern boundary of the LVPA was approximately 45 nm north of Tutuila and the Manua Islands. The LVPA was modified in the 2012 to make the boundaries of the LVPA and the Rose Atoll Marine National Monument congruent, and in doing so, the northern boundary was shifted south approximately 12 miles, and the eastern boundaries were shifted east and south.

[4] 2014 data for troll vessels was unavailable at time of writing. Troll vessel data is collected by AS Department of Marine and Wildlife's creel survey program. Longline vessels of any size are required to obtain a federal permit and are required to submit catch logbooks, among other requirements.

around Tutuila, Manua, and Rose to 25 nautical miles and to reduce the LVPA around Swains to 12 nautical miles, as preliminarily preferred.

At the 160th and 161st Council Meetings the Council did not take additional action but made the following recommendation at the 160th Meeting:

> Regarding exemption to fish within the American Samoa LVPA, the Council:
> 1. Supported all forms of pelagic fishing in American Samoa and the need to balance existing fishing activity and fishery development aspirations.
>
> 2. Recommended deferring action at this time until further discussions and public meetings with representatives of the American Samoa government, Swains Island, Tutuila, Manu'a Islands and American Samoa fishermen.
>
> 3. Directed staff to work with Council members and advisors to coordinate the various discussions and public meetings.

Public meetings were also held in American Samoa outside of Council meetings in May 2014 and January 2015, comments were recorded on the public's perspective about modifications to the LPVA. There appeared to be more support for the reduction of the LPVA at the 2015 meetings, given that the longline fishermen were for the most part local American Samoans.

5.1. Recently Implemented Measures

A. Gear modifications. Completed in May 2011 and final rule published in August 2011
Amendment 5 implemented gear requirements for American Samoa longline vessels to ensure that all hooks are set below 100 m to reduce interaction with between the American Samoa longline fishery and green sea turtles. The amendment also set a trip retention limit of ten swordfish per longline fishing trip (WPRFMC 2011a).

B. Modification of the boundaries of the southern large vessel (> 50 ft) area closure for congruency with the Rose Atoll Marine National Monument boundary. Completed in April 2011 and final rule published in April 2012

This amendment modified the boundaries of the southern portion of the LVPA implemented around the American Samoa Archipelago. The establishment of the Rose Atoll MNM by Presidential Proclamation in 2011 had the net result that the 50 nm monument boundary did not overlap congruently with the large vessel closure boundary. The modification was to make boundaries more congruent to enhance the ability of longline fishermen to comply with the LVPA. The LVPA around Tutuila and Manua became smaller in some areas which was expected to benefit the LL vessels (WPRFMC 2011b) .

5.2. Measures adopted by the Council but yet to be transmitted to NMFS

A. Modification of the American Samoa Limited Entry Permit Program. Final Action Taken at 150th Council Meeting in March 2011

Large vessels, 50 ft and longer comprise > 95% of the American Samoa longline fishery in 2011. The lack of small vessel participation in the longline fishery is of concern to the Council, because this fleet, when active, is believed by the Council to provide a primary pathway for sustained community and indigenous American Samoan participation in the fishery. If approved, the proposed amendment combines the four vessels size classes into just two classes A (vessels < 50f) and B (vessel > 50ft), reduces the minimum landing requirement for vessel size class A from 1000 lbs to 500 lbs per three year period, and permit eligibility would be limited to U.S. citizens and nationals, with no other qualifying criteria (i.e., documented history in the fishery would no longer be required). The prior history ranking system is maintained if there are two or more applications for the same available permit.

B. American Samoa Shallow-Set Longline Fishery for Swordfish, Final Action at 153 CM, March 2102, Sent to NMFS-PIRO for Review in May 2012 (requires an Environmental Impact Statement and separate Biological Opinion)

The final rule implementing gear modifications to minimize sea turtle interaction for the American Samoa longline fishery (see 1. A) requires all hooks set by the fishery to be deeper than 100 m. This eliminates the possibility of shallow-set targeting of South Pacific swordfish, which was conducted on a limited scale in 2006 and 2007, prior to the management action. One of the main concerns about shallow-set longlining is its potential to interact with protected species of sea turtles and seabirds, resulting in bycatch and unintentional mortality. The preferred alternative would amend the PFEP to permit the use of shallow-set longline fishing to target swordfish employing the full suite of mitigation measures required for sea turtle mitigation in the Hawaii shallow set fishery, but without the interaction limits for loggerhead and leatherback turtles, and no specific seabird mitigation measures.

C. American Samoa Longline Swordfish Trip Limit, Preliminary Action June 2013

The final rule implementing gear modifications to minimize sea turtle interaction for the American Samoa longline fishery requires all hooks set by the fishery to be deeper than 100 m. Part of that measure was to implement a trip limit of 10 swordfish that may be retained per trip as a disincentive for fishermen to set hooks shallower than 100 m. The limit was adopted directly from the Hawaii longline fishery as a disincentive for fishermen to surreptitiously switch from deep setting to shallow setting on unobserved trips and thus maximize swordfish catches. American Samoa fishermen have asked that the current trip retention limit of 10 swordfish be increased, as it was in the Hawaii deep set longline fishery once that fishery was required tom use only circle hooks. American Samoa longline fishermen are suffering economic hardship from an economic downturn in the albacore longline fishery and do not want to discard economically important species which could be sold locally.

5.3 Related Council and NMFS Action

Establishment of American Samoa Large Pelagic Fishing Vessel Prohibited Areas

The final rule implementing the LVPAs in American Samoa was published on January 2, 2002. The purpose of the LVPAs was to prevent the potential for gear conflict and catch competition between large fishing vessels and locally based small fishing vessels. Such conflicts and competition could lead to reduced opportunities for sustained participation by residents in American Samoa. The LVPA was modified in 2011.

US Territorial Catch and Fishing Effort Limits

On October 28 2014, NMFS published the final rule for Amendment 7 to the Pelagics FEP which implements a management framework for specifying catch and effort limits and accountability measures for pelagic fisheries in the U.S. Pacific territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI). Using the established framework, NMFS also specified a catch limit of 2,000 metric tons (mt) of longline-caught bigeye tuna for each territory for 2014. A territory may allocate up to 1,000 mt of that limit to eligible U.S. longline fishing vessels.

6.0 Description of Alternatives

6.1 Alternative 1

No Action (Status Quo).

Under this alternative the areas closed to longline fishing by vessels > 50ft overall length would remain unchanged. American Samoa longline vessels > 50 ft that had been grandfathered into the fishery prior to March 1, 2002, will continue to be able to fish within the LVPAs around American Samoa. Figure 7 shows the current LVPAs in American Samoa. Under the no-action alternative, the America Samoa longline fishery is not expected to experience any relief from current LVPA requirements. Under the No Action alternative, 30,204 sq nm, or 25.5% of the EEZ would continue to be closed to the large vessel longliners.

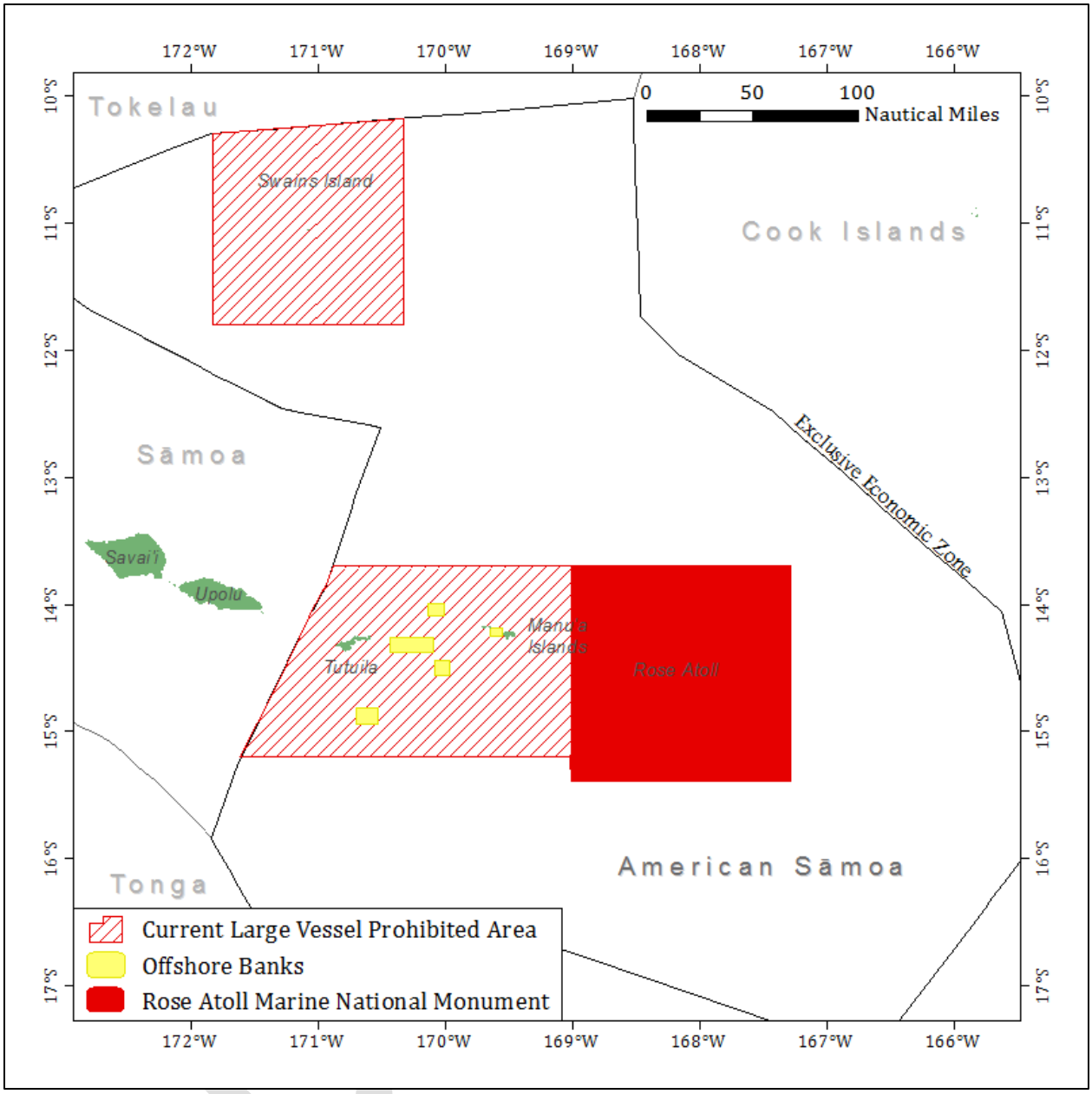

Figure 6. Map of the US EEZ around American Samoa showing current large vessel prohibited area (LVPA) under Alternative 1 and offshore banks used by the American Samoa troll fishery. Also shown is the boundary of the Rose Atoll Marine National Monument in which all commercial fishing is prohibited.

6.2 Alternative 2

Temporary exemption for longline vessels longer than 50 ft holding an American Samoa longline limited entry permit to be able to fish seaward 25 nm to the north of Tutuila and Manua Islands and seaward from 12 nm around Swains Island (Figure 8) for a period of:

Alternative 2a. One year for permitted large longline vessels (Preliminary Preferred)

Alternative 2b. Three years for permitted large longline vessels

Alternative 2c. No sunset on the exemption for permitted large longline vessels but with periodic review and re-evaluation by the Council

Under this alternative, vessels longer than 50 ft holding American Samoa longline limited entry permits would receive an exemption to allow them to fish within the LVPA to a distance of 25 nm to the north of Tutuila and Manua Islands, and from 50 nm to within 12 nm of Swains Island for a period of one year (Alternative 2a), for a longer period of three years (Alternative 2b) or no time limit, subject to Council periodic re-evaluation (Alternative 2b). The exemption would permit the vessels to fish over an additional 8,401 sq nm of ocean, thereby reducing the area closed to large longliners to 18.4% of the US EEZ around American Samoa and providing a 9.5% increase in fishable area. Alternative 2a, a one year exemption is the Council's preliminary preferred alternative.

Under Alternative 2, the American Samoa longline fishery would experience some relief in terms of opening more areas to longline fishing including areas closer to Tutuila. The relief would be for a year (Alternative 2a), or up to 3 years (Alternative 2b) or for a longer time period (Alternative 3b). These alternatives would have the effect of spreading fishing density over a wider area within the U.S. EEZ around American Samoa and could provide more stability to the American Samoa longline fishery and the cannery.

Under this and all subsequent alternatives all monitoring measures such as logbooks, dockside inspections by the USCG and NMFS Office of Law Enforcement, Vessel Monitoring Systems, observer placement and catch and release protocols for turtles, seabirds, cetaceans and sharks would continue.

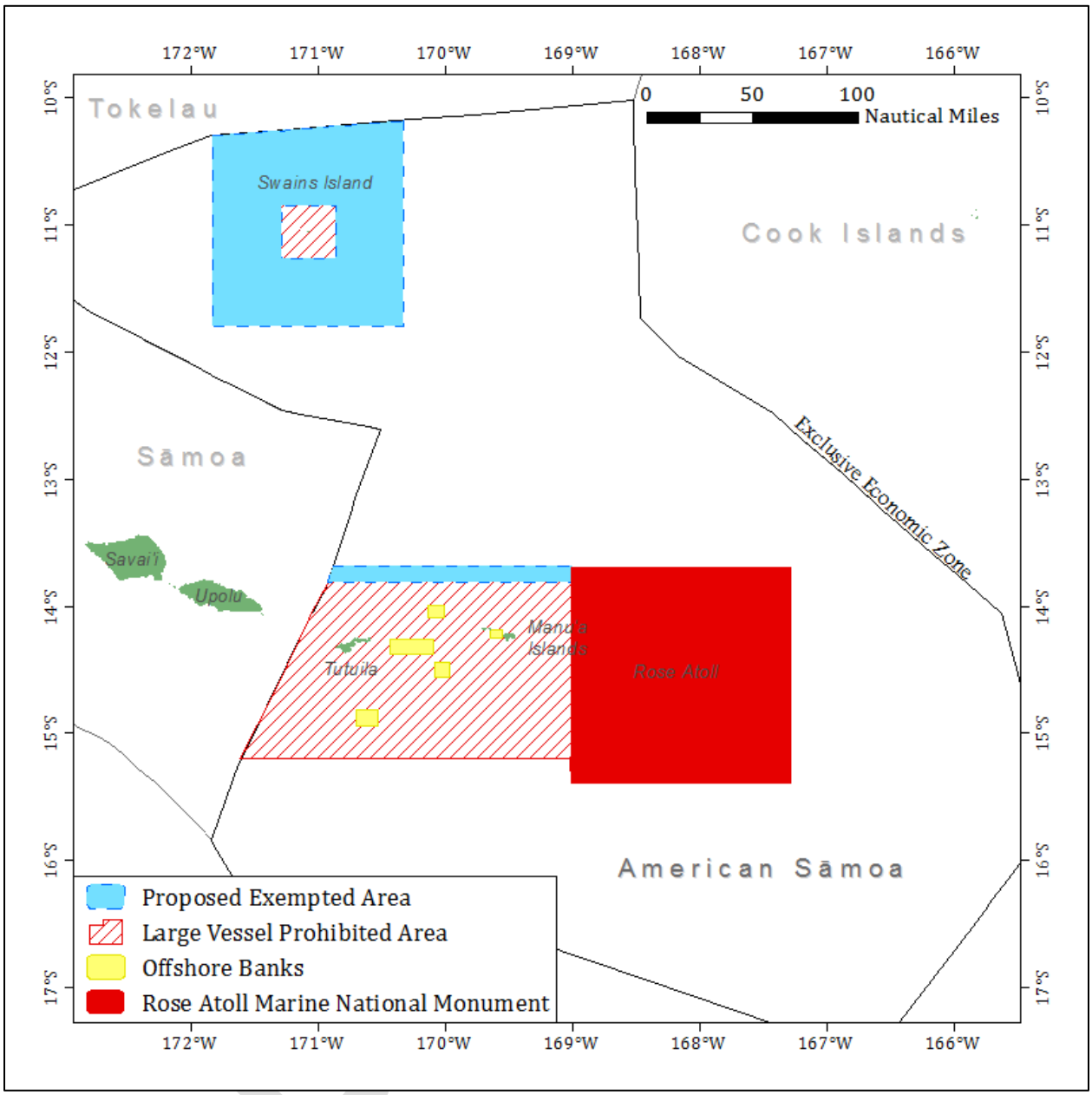

Figure 7. Map of American Samoa showing the current LVPA boundaries, exempted areas under Alternative 2 to 25 nautical miles of the LVPA boundary north of Tutuila and Manua Islands and 12 nautical miles around Swains, and commonly fished banks and seamounts between Tutuila and Manua Islands

6.3 Alternative 3

Temporary exemption for longline vessels longer than 50 ft holding an American Samoa longline limited entry permit to be able to fish in waters of the LVPA:

i. seaward of 25 nm to the north of Tutuila and Manua Islands;
ii. seaward from 12 nm around Swains Islands; and,
iii. within designated waters south of Tutuila and Manua (Figure 9) for a period of:

Alternative 3a. One year for permitted large longline vessels

Alternative 3b. Three years for permitted large longline vessels

Alternative 3c. No sunset on the exemption for permitted large longline vessels but with periodic review and re-evaluation by the Council

Under this alternative, large vessels holding American Samoa longline limited entry permits would receive an exemption to allow them to fish within the northern boundary of the LVPA around Tutuila and Manua, to from 50 nm to within 12 nm of Swains Island. There would also be two exempted areas the south of Tutuila and Manua Islands. The first area would extend 20 nmi south of Tutuila and approximately 33 nm from the western boundary of the EEZ. The second area would extend 16 miles south of Manua and 58 nm to the western boundary of the Rose Atoll Marine National monument. These exemptions would be for a period of one year or for a period of three years or for a longer time period.

Under Alternative 3, the American Samoa longline fishery would experience some relief in terms of opening more areas to longline fishing including areas closer to Tutuila. This amounts to 11,601 sq. nm in total thereby reducing the area of the US EEZ around American Samoa closed to large longliners to 15.7% and providing a 13.2% increase in fishable area. The relief would be for a year (Alternative 3a), up to 3 years (Alternative 3b) or a longer time period (Alternatively 3c). This alternative would have the effect of spreading fishing density over a wider area within the U.S. EEZ around American Samoa and could provide more stability to the American Samoa longline fishery and the cannery.

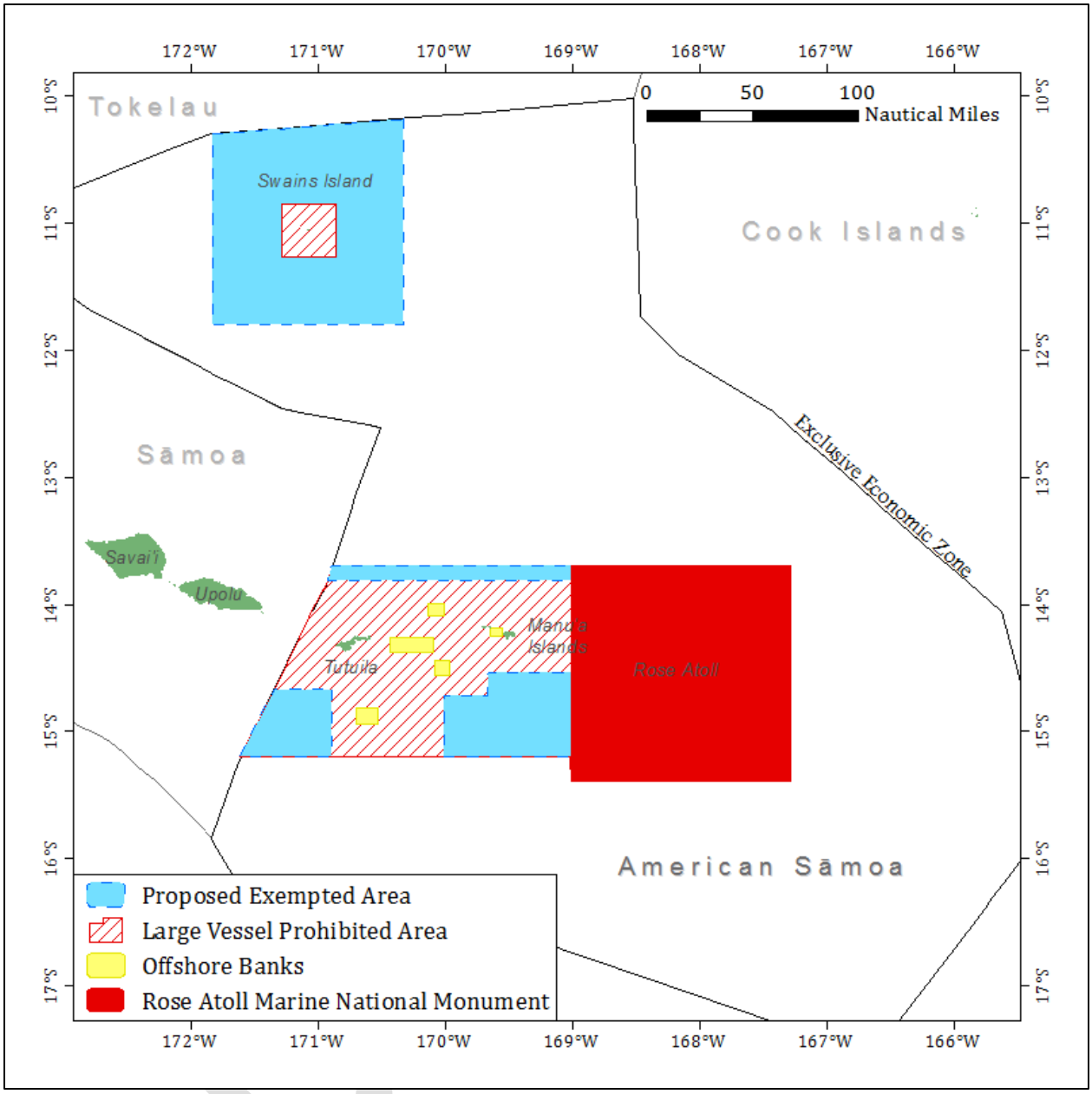

Figure 8. Map of American Samoa showing the current LVPA boundaries, proposed exempted areas under Alternative 3 to 25 nautical miles of the LVPA boundary north of Tutuila and Manua Islands, 12 nautical miles around Swains, and areas south of Manua and Tutuila. Commonly fished banks and seamounts between Tutuila and Manua Islands are also shown

6.4 Alternative 4

Temporary exemption for longline vessels longer than 50 ft holding an American Samoa longline limited entry permit to be able to fish in waters of the LVPA:

i. Seaward from 12 nm around Swains Islands Tutuila and Manua Islands (Figure 10) for a period of

Alternative 4a. One year for permitted large longline vessels

Alternative 4b. Three year for permitted large longline vessels

Alternative 4c. No sunset on the exemption for permitted large longline vessels but with periodic review re-evaluation by the Council

Under this alternative, a one of three year exemption would be provided to allow permitted vessels longer than 50 ft to fish from 50 nm to within 12 nm of Swains Tutuila and Manua.

Under Alternative 4, the American Samoa longline fishery would experience additional relief in terms of opening more areas to longline fishing including areas closer to Tutuila. This amounts to 16,817 sq nm in total thereby reducing the area of the US EEZ around American Samoa closed to large longlining to 11.3% and providing a 19.1% increase in fishable area. The relief would be for a year (Alternative 4a), up to 3 years (Alternative 4b) or a longer time period (Alternative 4c). This alternative would have the effect of spreading fishing density over a wider area within the U.S. EEZ around American Samoa and could provide more stability to the American Samoa longline fishery and the cannery.

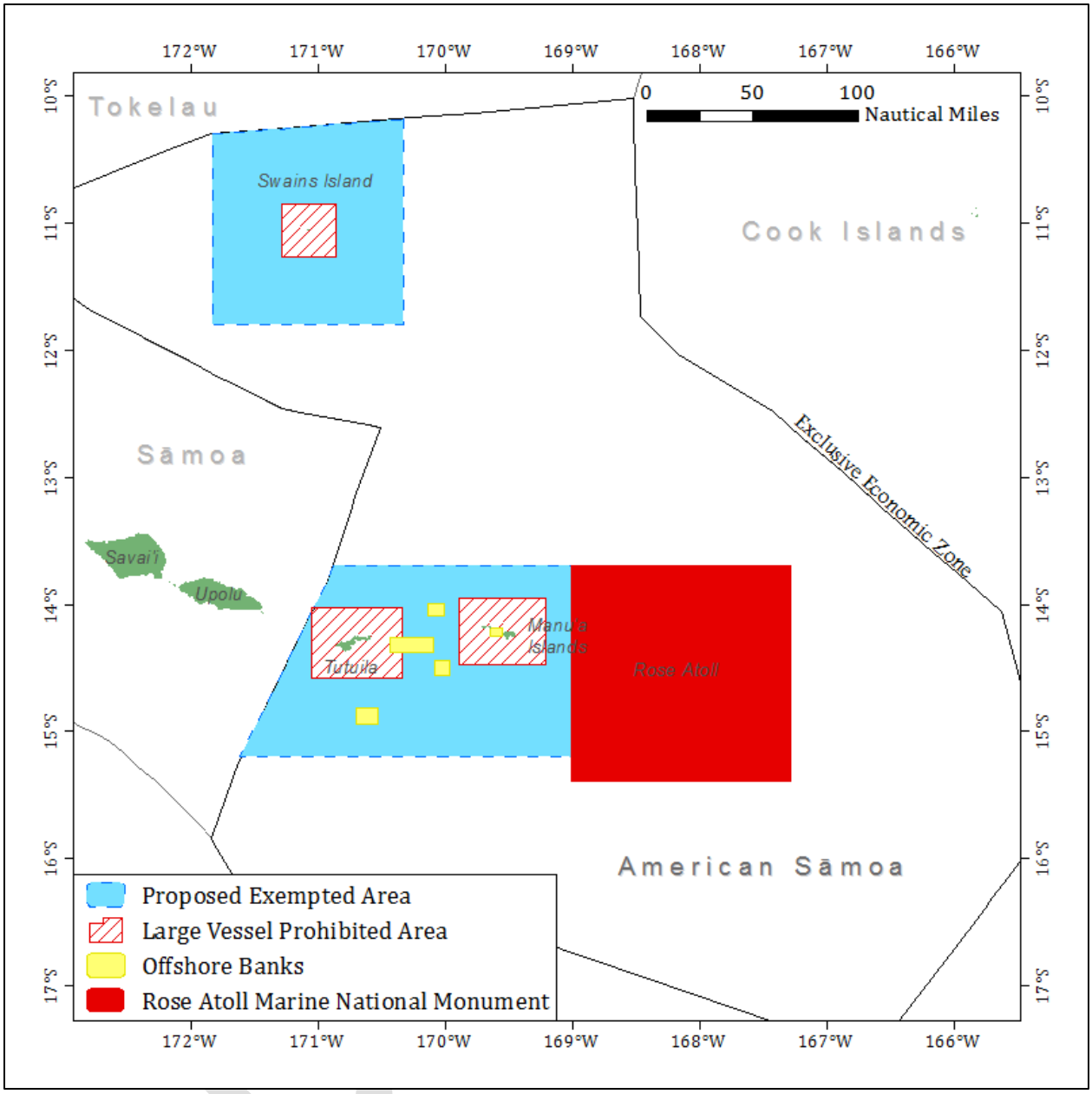

Figure 9. Map of American Samoa showing the current LVPA boundaries and proposed 12 nautical mile boundaries around Swains, Manua and Tutuila under Alternative 4. Commonly fished banks and seamounts between Tutuila and Manua Islands are also shown.

6.5 Alternative 5

Temporary exemption for longline vessels longer than 50 ft holding an American Samoa limited entry permit to fish in waters of the LVPA for a period of:

Alternative 5a. One year for permitted large longline vessels

Alternative 5b. Three year for permitted large longline vessels

Alternative 5c. No sunset on the exemption for permitted large longline vessels but with periodic review and re-evaluation by the Council

Under this alternative, a temporary exemption to fish in the entire LVPA would be implemented.

Under Alternative 5, the American Samoa longline fishery would experience the maximum relief in terms of opening more areas to longline fishing including areas closer to Tutuila. This amounts to 20,061 sq. nm in total or thereby reducing the area closed to large longliners (and all commercial fisheries) to 8.6% of the US EEZ around American Samoa and providing a 22.7% increase in fishable area. The relief would be for a year (Alternative 5a), up to 3 years (Alternative 5b) or a longer specified time period (Alternative 5c). This alternative would have the effect of spreading fishing density over a wider area within the U.S. EEZ around American Samoa and could provide more stability to the American Samoa longline fishery and the cannery.

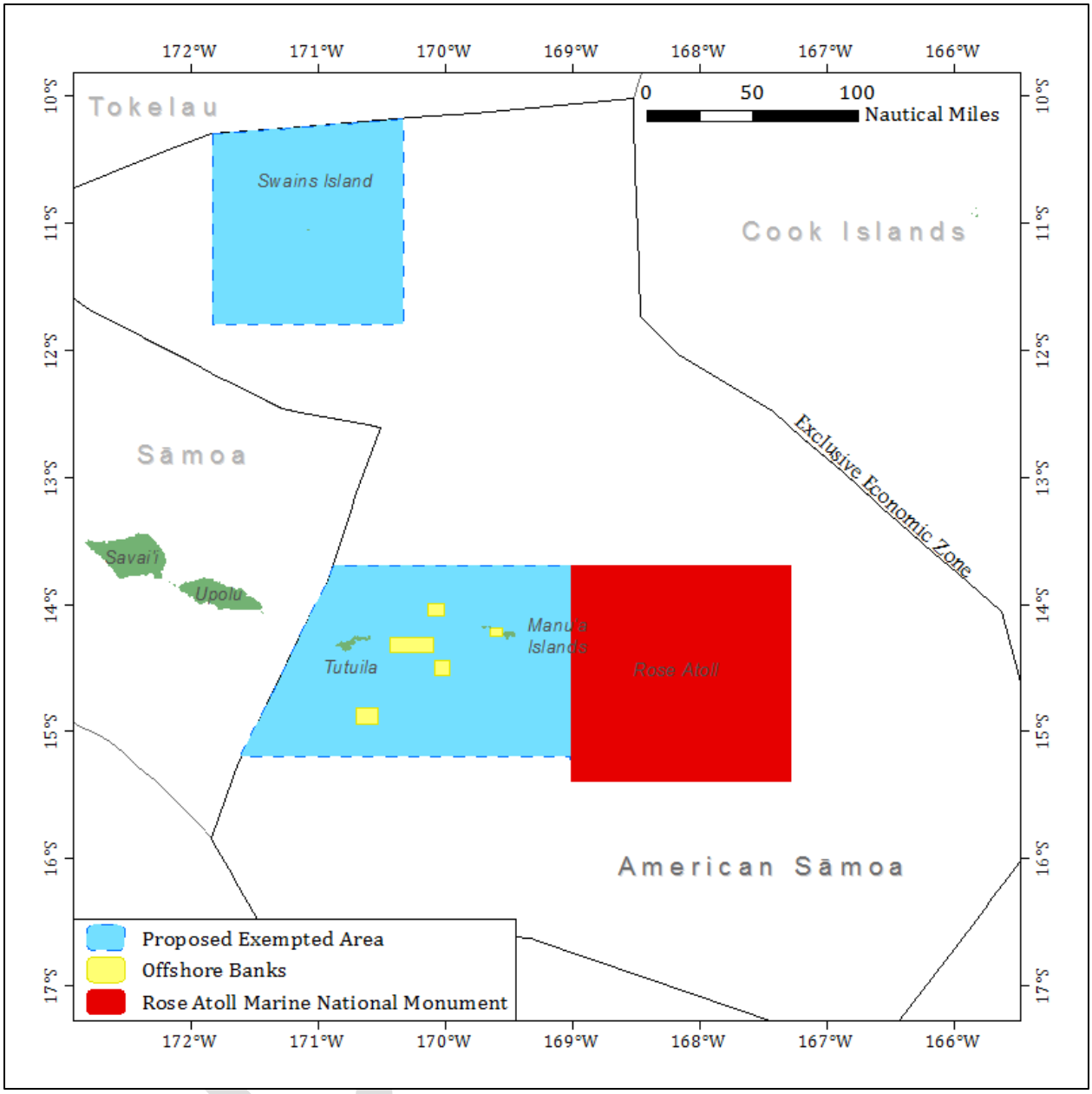

Figure 10. Map of American Samoa showing no LVPA under Alternative 5. Commonly fished banks and seamounts between Tutuila and Manua Islands are also shown

6.5. Alternatives considered but not analyzed in detail

The Council considered but did not take action on removing the restrictions and conditions for holding an American Samoa longline limited entry permit in order to fish in the LVPA.

The American Samoa limited entry program was designed to maximize American Samoan participation in the longline fishery based out of Pago Pago. The permit system was designed for maximum stability at a time when all longline vessels were expanding rapidly. It has an overall limit of 60 permits which are spread between four size classes of vessels, namely 30-40 ft, 40-50 ft, 50-70 ft and >70 ft. Holders of an American Samoa permit must land a minimum volume of fish in order to renew their permits. Further, permits are tied to fishing vessels so a permit holder must surrender their permit to NMFS if they lose or sell their boat and do not replace it. By contrast, Hawaii longline permit holders may renew their permits without vessel ownership and have no landing requirements to maintain permit ownership

The Council recognized that the American Samoa limited entry program may be acting as a disincentive for participation in the fishery. At its 150th meeting (March 2011; American Samoa), the Council took final action and recommended to:

- **Combine A and B permits and C and D permits into new Small class (vessels up to 49.9 ft) and Large class (vessels 50 ft and above)**
- **Reduce landing requirements for Small class from 1000 lb to 500 lb/3yrs. Maintain 5000 lb/3yrs landing requirement for Large class**
- **Modify eligibility criteria to US Citizen or US National without prior participation in fishery (fishing history to apply in the event of multiple applications)**

If this recommendation is implemented, it too, is expected to provide more incentive and a more stable operating environment for the Am. Samoa longline fishery.

7.0 Impacts of the Alternatives

The following section describes the potential direct, indirect, and cumulative impacts, which may stem from implementation of the alternatives under detailed consideration. A summary of the of features of the alternatives and duration options is given in Table 1

Table 1. Summary of Features of the Alternatives and Duration Options.

Alternative: Feature:	Alt. 1 (Fig 6)	Alt. 2 (Fig 7)	Alt. 3 (Fig 8)	Alt. 4 (Fig 9)	Alt. 5 (Fig 10)
Duration of the exemption allowing large longline vessels to fish in portions of the LVPA	Status quo.	Option a: 1 yr Option b: 3 yrs Option c: longer time period (Council's Preferred Alt)	Option a: 1 yr Option b: 3 yrs Option c: longer time period	Option a: 1 yr Option b: 3 yrs Option c: longer time period	Option a: 1 yr Option b: 3 yrs Option c: longer time period
Location of LVPA around Swains Atoll:	0-50nm	0-50nm	0-50nm	0-50nm	0-50nm
Area around Swains Atoll where longline vessels larger than 50 ft may currently not fish	Within 50nm of the atoll.	Within 12 nm	Within 12 nm	Within 12 nm	Large longline vessels could fish in areas open to longline fishing in the U.S. EEZ around American Samoa for 1 or 3 years, or longer
General location of LVPA around Tutuila & Manua	Extends to ~32 nm to the North of Tutuila and ~50nm to the South.	No change	No change	No change	No change
Area around Tutuila and Manua where longline vessels larger than 50' may not fish	~32nm to the North of Tutuila and ~50nm to the South	~25nm to the North of Tutuila and no change to the South.	~25nm to the North of Tutuila and within about 20 nmi south of Tutuila; about 16 nmi south of Manua Islands	12 nm around Tutuila and Manua Islands.	Large longline vessels could fish in areas open to longline fishing in the U.S. EEZ around American Samoa for 1 or 3 years

Alternative: Feature:	Alt. 1 (Fig 6)	Alt. 2 (Fig 7)	Alt. 3 (Fig 8)	Alt. 4 (Fig 9)	Alt. 5 (Fig 10)
Estimated amount of additional fishing area large longline vessels may fish in.	n/a	8,412 square miles (9.8%) more fishable area	11,569 square miles (12%) more fishable area	16,677 square miles (20%) more fishable area	19,905 square miles (22.6%)more fishable area
Amount of regulatory and economic relief to large vessels in the American Samoa longline fleet	n/a	Option a: substantial benefit, limited time. Option b: substantial benefit and duration.	Option a: substantial benefit, limited time. Option b: substantial benefit and duration	Option a: substantial benefit, limited time. Option b: substantial benefit and duration benefit	Option a: substantial benefit, limited time. Option b: substantial benefit and duration
Potential for longline fishing by large vessels in proximity of banks preferred by troll fleet:	No overlap	No change.	No change.	Substantial overlap.	Substantial overlap.
Change to areas that may be fished by large purse seine vessels	n/a	No change.	No change.	No change.	No change.
Areas that may be fished by troll, recreational, and bottomfish fishers	Participants in these fisheries may fish throughout the U.S. EEZ except commercially in Rose Atoll.	No change.	No change.	No change.	No change.
Areas fished by large longline fishing vessels	Outside the LVPAs, focusing on areas between Swains Island and Tutuila and Manua Islands.				

7.1 Alternative 1

No Action

A summary of the shapes of the various implemented and proposed managed areas within the US EEZ around American Samoa is given in Table 2.

Table 2. Implemented and proposed managed areas in the US EEZ around American Samoa

Spatial management unit	Area (sq nmi)	Percent of EEZ
American Samoa EEZ	118,438	100
Current Swains LVPA closure	8,266	7.0
Current Southern Closure (Tutuila, Manua, Rose)	21,938	18.5
Current Closure Total	30,204	25.5
Rose Atoll Marine National Monument	10,146	8.6
Swains proposed 12 nm square	649	0.5
Swains proposed open	8,266	7.0
Small strip north of Tutuila and Manua proposed open	784	0.7
South of Manua Island proposed open	2132	1.8
South of Tutuila proposed open	1068	0.9
Total Southern Closure areas proposed open, Alt 3	3,984	3.4
Proposed new exempted fishable area under Alt 2	8,401	7.1
Proposed new exempted fishable area under Alt 3	11,601	9.8
Proposed new exempted fishable area under Alt 4	16,817	14.2
Proposed open fishable area under Alt 5 (all exempt except Rose)	20,061	16.9
Total fishable area in EEZ under Alt 2	96,636	81.6
Total fishable area in EEZ under Alt 3	99,838	84.3
Total fishable area in EEZ under Alt 4	105,051	88.7
Total fishable area in EEZ under Alt 5 (all exempt except Rose)	108,296	91.4

Areas are approximate and were calculated in ArcGIS 10.2. Areas may vary.

7.1.1 Impacts of the No Action Alternative on Target and Non-Target Stocks

Under the No Action Alternative, LVPA would not be changed and thus the American Samoa longline fishery would not radically depart from its current patterns of fishing activity. The fishery would continue operating within those parts of the US EEZ around American Samoa that remain open to longline fishing by large longline vessels. In addition, the fishery would either operate on the high seas areas to the north of American Samoa, or fish under access agreements with neighboring South Pacific countries. Most fishing effort in the longline fishery is conducted between the southern islands of American Samoa and Swains Island (see Figure 12). The troll fishery would remain unaffected.

Under the No Action Alternative, impacts to target and non-target stock status would remain largely unchanged, and may even be reduced, due to the lower levels of longline fishery participation during a prolonged period of low catch rates of albacore, the primary target of the fishery.

It is not anticipated that catch rates of albacore would improve significantly in the short-term other than expected seasonal fluctuations. Declines in island-based domestic fisheries might be expected to lead to better fishing conditions in the long term if some participants drop out of the fishery. Conversely, entry of additional foreign longline vessels fishing on the high seas and in neighboring country EEZs may offset any gains to target and non-target stocks from reduced participation by domestic island fisheries.

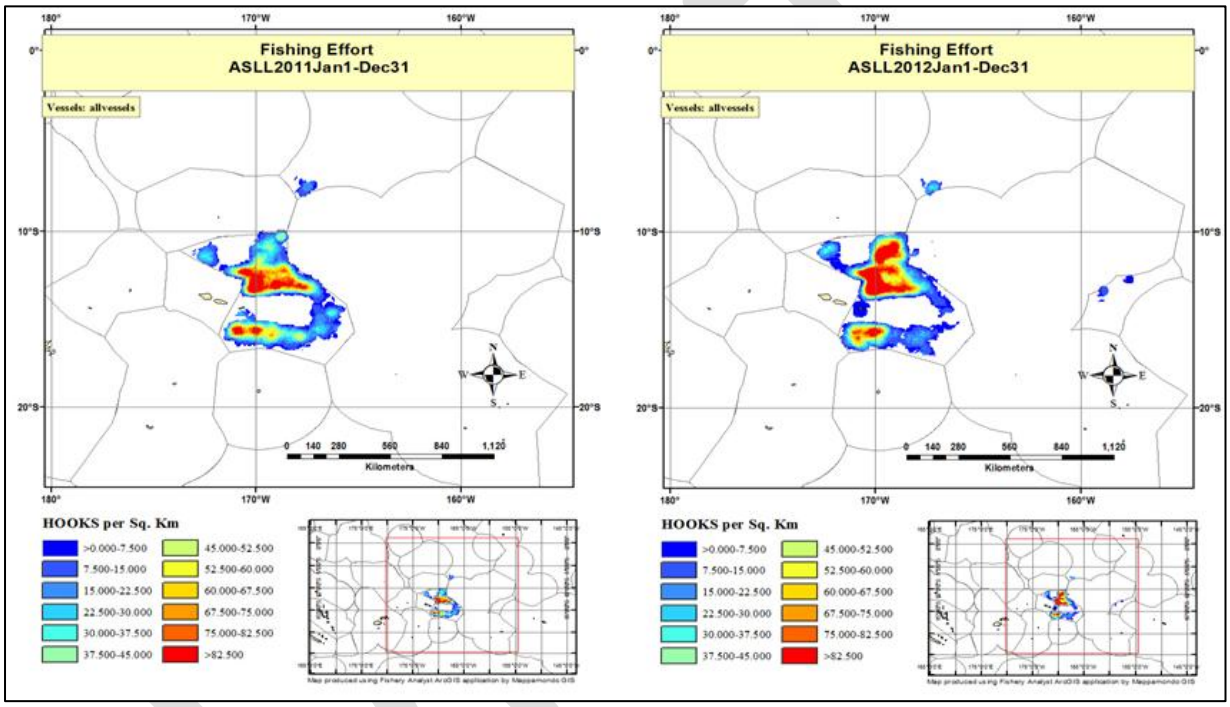

Figure 11. Location of longline fishing effort within and beyond the US EEZ around American Samoa in 2011.

Impacts of the No Action Alternative are likely to be sustainable for albacore, notwithstanding the impacts of higher recent overall catch on the CPUE and the price of albacore as noted in Section 3. The impacts of the No Action Alternative on catches of skipjack tuna, bigeye tuna and yellowfin tuna are also likely to be sustainable, as these are only minor components of the overall catch by American Samoa longline vessels. Catches of bycatch species such as sharks are also likely to be sustainable as they are discarded alive for the most part.

Impacts to the target species and bycatch species caught by troll fishing are highly likely to remain unchanged under the No Action Alternative. The same separation would be maintained between troll vessels and the longline fishery, with only one vessel grandfathered to fish within the LVPA.

7.1.2 Impacts of the No Action Alternative to Protected Species and Habitat

A summary of sea-turtle and marine mammal interactions with the American Samoa longline fleet is shown in Figure 13. The distribution of interactions broadly conforms to the pattern of fishing effort in the US EEZ around American Samoa (Figure 13). Under the No Action Alternative the fishery would not greatly change its patterns of fishing and the potential for interactions with seabirds, sea turtles and marine mammals would remain unchanged. Annual total numbers of seabirds, sea turtles and marine mammals may indeed be reduced if fleet-wide effort remains constrained by the persistence of poor fishing conditions.

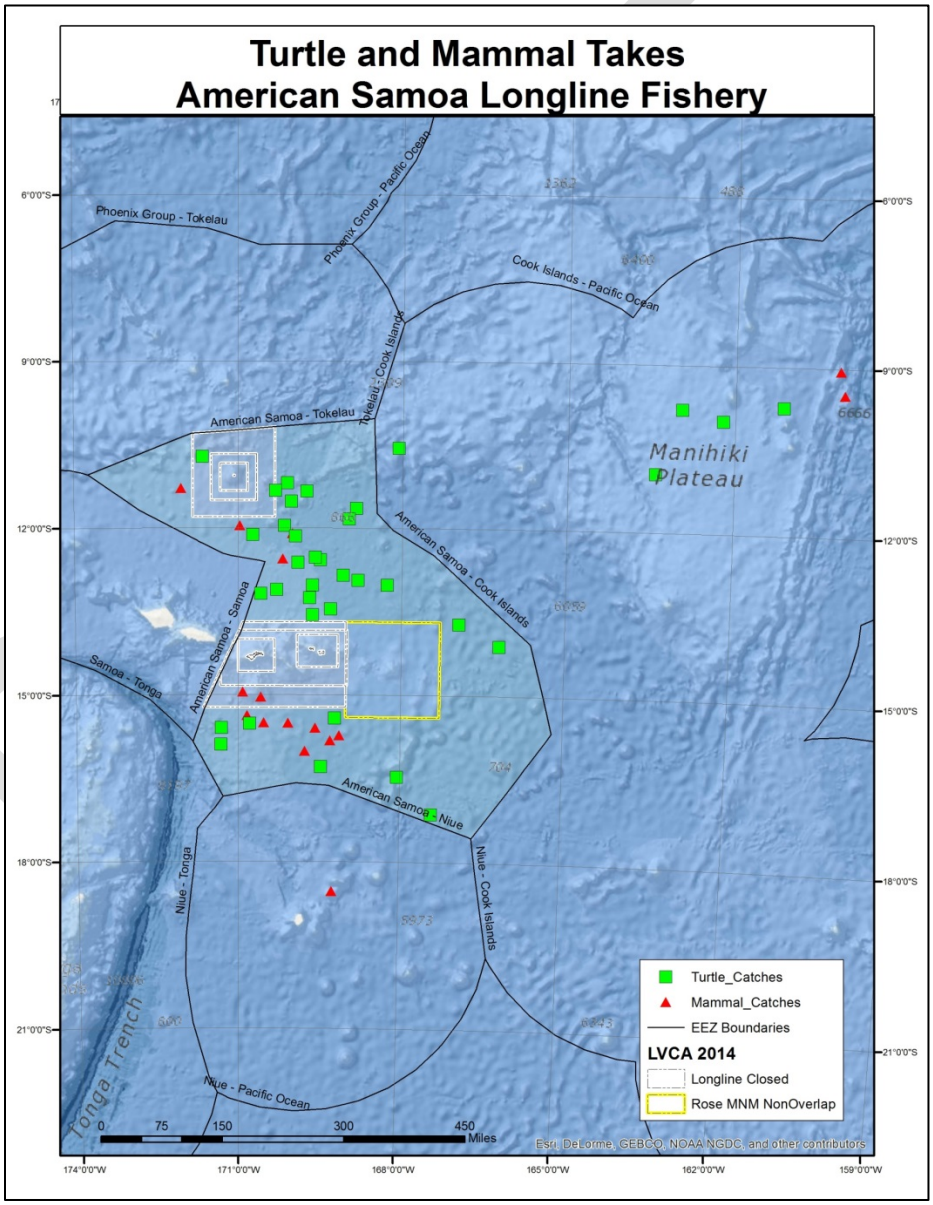

Figure 12. Cumulative observed sea-turtle and marine mammal interactions with the American Samoa longline fleet, 2006-2013.
Source NMFS PIRO Observer Program

The impact of the No Action Alternative on seabirds would likely not change. The American Samoa longline fishery has had only two documented interactions with seabirds. The American Samoa longline fishery catches very few sharks (

Table **13**) and this small volume is unlikely to be affected by the No Action Alternative.

Pelagic longline gear by virtue of its fishing in the water column and not on a substrate and its construction from largely chemically inert materials means it has little impact on seawater. Under the No Action alternative, the fishery would continue to operate away from areas of shallow seamounts such as South Bank and Northeast Bank where longline gear might come into contact with the benthic substrate. Thus the No Action Alternative is highly unlikely to have any impacts on coral reefs or on corals listed under the Endangered Species Act Further, longline fishing is not having any discernable impact on resources in the American Samoa National Marine Sanctuaries or the Rose Atoll Marine National Monument, nor having an adverse impact on essential fish habitat (EFH) or habitat areas of particular concern (HAPC).

In addition, the regulations for the American Samoa longline fishery require all hooks to fish below a minimum depth of 100 m to minimize turtle interactions, and thus beyond the range of most reef building corals, including the six species listed as threatened under the ESA (WPRFMC 2014).

7.1.3 Impacts of the No Action Alternative to Fishery Participants and Fishing Communities

Potential Impacts to Larger Longline Vessels

Under the No Action Alternative the American Samoa fishery would not change its patterns of fishing and large longline vessels would have to continue fishing predominantly within the open areas inside the US EEZ around American Samoa. The fishery would thus have to continue to deal with any adverse impacts of the fishery within the current fishing grounds, including potential for catch competition between longlines and low catch rates, increased travel and operating costs, thus prolonging the period of low economic returns from the fishery.

Personal communications from two skippers that has fished on the single vessels grandfathered to fish inside the LVPA states that fishing in ‘the box’ has some advantage like fuel and fishing time. Fishing in the box can be easy if the fish are there, but if not then like other vessels fishing must be conducted outside the LVPA. On advantage is that if there are fish that move through the LPVA, they can be pursued to maintain good catches. Both skippers worried that if all longline vessels were allowed to fish inside the LVPA then the area could become overfished.

The No Action Alternative would maintain most longline fishing outside of the LVPA which means that large longline vessel hook densities within the available fishing grounds are high with the inevitable potential for gear conflict and catch competition. Under the No Action alternative, therefore, there may continue to be a reduction of participation in the domestic longline fleet in American Samoa, with concomitant negative impacts to the incomes and livelihoods of vessels crew and owners.

This in turn may affect supply of albacore to the fish processing sector in American Samoa. While it might be argued that the Canneries buy fish from all over the Pacific, any reduction in supplies of albacore to the StarKist cannery from the American Samoa fleet may create problems. StarKist has contracts to supply the US Military with light meat (albacore) tuna and part of the contract stipulations are that the fish must be caught by US vessels.

Potential Impacts to Smaller Longline Vessels

The volume of longline fishing within the LVPA would remain unchanged, i.e 1-2 alias and one grandfathered large longline vessel. Even with the large preserve of the LVPA the alia catamarans have proven to be largely uneconomic as evinced by the decline in the fleet to where there were no alias fishing in 2014. Based on the current performance of the alia caternarans it will likely take several years for the alia fleet to rebuild to their former fleet size (Fa'asili 2014).

Potential Impacts to Commercial Troll, Charter and Recreational Pelagic Vessels

The No Action Alternative would not have any impacts to the troll fisheries of Tutuila or Manua. The LVPA would maintain protection for the stocks of pelagic fish on the banks and seamounts that are fished by the troll vessels as well as the stocks of fish close to the islands of Tutuila and Manua

7.1.4 Impacts of the No Action Alternative to Enforcement and Administration

Under the No Action Alternative there would be no increase to the existing enforcement and administration burden. There may, however, be issues with respect to the placement of observers to obtain random non-biased samples if fleet size declines or participation in the fishery fluctuates. This is due to the placement of observers on vessels following a randomized sampling scheme established in the expectation of a given number of vessels operating in the fishery. If the fleet size contracts or fluctuates markedly from month to month then the randomness of the observer placement sampling design will break down.

7.2. Alternative 2

Temporary exemption for longline vessels holding an American Samoa longline limited entry permit to be able to fish seaward 25 nm to the north of Tutuila and Manua Islands and seaward from 12 nm around Swains Island for a period of:

Alternative 2a. One year exemption for permitted large longline vessels (Preferred)

Alternative 2b. Three year exemption for permitted large longline vessels

Alternative 2c. No sunset on the exemption for permitted large longline vessels but with periodic re-evaluation by the Council

Under Alternatives 2a, 2b and 2c vessels larger than 50 feet in length could fish in areas closer to Tutuila and the Manua Islands (to within 25nm north of these areas, and closer to Swains Island (to within 12nm). The expected fishery outcome is that the level of fishing would not dramatically increase within one or three years; longline vessels are expected to be able to be more spread out, reducing the intensity of fishing in any given area. The number of vessels and number of hooks set are not expected to increase substantially; however CPUE of target South Pacific Albacore could increase slightly by allowing longline vessels to fish in areas that have been prohibited since 2011. There could be an increase in the number of trips if vessels are able to fish closer to port. Both alternatives 2a and 2b would be limited in impact because the duration of the change in prohibited areas would be limited to up to either one or three year**s.** Under Alternative 3c, the exemptions would not have a sunset period, but would be re-evaluated periodically by the Council in case there were unforeseen problems or issues.

7.2.1 Impacts to Target and Non-Target Stocks under Alternatives 2a, 2b and 2c

The exemption that would allow longline vessels longer than 50 ft to fish within LVPA up to 25 nm to the north of Tutuila and Manua and within 12 nm of Swains would result in more fishable area within the US EEZ around American Samoa (see). The net effect of this on target stocks, however, is unlikely to readily detectable unless there are accumulations of unfished stocks, especially albacore, within the previously closed portions of the LVPA. Any accumulations of target and non-target stocks within the LVPA are not expected to have any discernable influence on stock status, nor as noted in Section 8.1.1 would this be affected by fishing any such accumulations. South Pacific albacore stock status (Figure 21) indicates that it continues to be neither overfished nor subject to overfishing. Any improvements of the performance of the American Samoa longline fishery are going to be localized to the US EEZ around the Territory, and within the levels of catch already observed in the fishery. Thus any improvements to the American Samoa fishery are unlikely to alter the overall stock status of South Pacific albacore.

Similarly, unless there are accumulations of non-target species within the LVPA, bycatch is not expected to increase appreciably under Alternative 2a, 2b and 2c.

Figure 14 shows the albacore CPUE time series for the entire American Samoa fishery and from aggregated CPUE for vessels permitted to fish within the LVPA around Swains and the southern islands of the archipelago. The data, though incomplete for the LVPA around Swains shows a clear correspondence of the CPUE trends in all three time series, with the fishery as a whole having on average a higher CPUE than the two closed areas, with the exception of 2014, where the LVPA around Tutuila saw higher albacore catch rates.

Thus improved CPUEs by fishing within the previously closed zones may not be long lasting; however, the greater separation of the fleet over the larger area of the fishing ground may reduce the potential for catch competition between longline vessels in the future. All fish in a given population are exposed to an equal probability of capture by a fishery whose units of gear are scattered randomly over the fishing grounds (Ricker 1975). Further, at low densities the units of gear do not interfere with each other in respect to the mechanics of their operations. In such a situation, catches by any additional new unit of gear may reduce the potential catch of all vessels.

The competition takes the form of a faster reduction in the size of the population as a whole. As the fishing season progresses, each unit may catch fewer and fewer fish, and the more gear present, the more rapid is this decrease in catch.

Ricker (1975) states that if fishing gear is dispersed unequally over the population, its action tends to produce local reductions in abundance greater than what the population experiences as a whole, leading to a different type of competition. This may be the case in American Samoa, with the LVPA and Rose Atoll MNM crowding the fishing fleet into the remaining EEZ waters. In such an instance fishing may produce a local depletion of the supply; additional hooks set in the same region increase the local depletion and catch per unit effort will fall off in proportion to the local abundance. The magnitude of this fall will be cushioned if some fish from the rest of the stock migrate into the fishing area and so keep the supply there from dropping as far as it otherwise would. However, competition between units of gear is intensified because catch per unit effort reflects the size of only the immediately available restricted portion of the stock, rather than the stock as a whole.

Reduction in catch competition by providing more fishable area of ocean may lead to better catch rates, especially of the target species, albacore. This in turn should lead to shorter fishing trips and improvements to the economic performance and efficiency of the fishery. Any such benefits will be cumulatively greater for a three year period than a one year period and thus Alternative 2b would have a greater cumulative impact on the longline fishery, but the impact would not be large given the limited time period of the benefit

In summary, beyond potential benefits to fishermen, the impacts to target and non-target stocks of this alternative is unlikely to be distinguishable from the No Action Alternative.

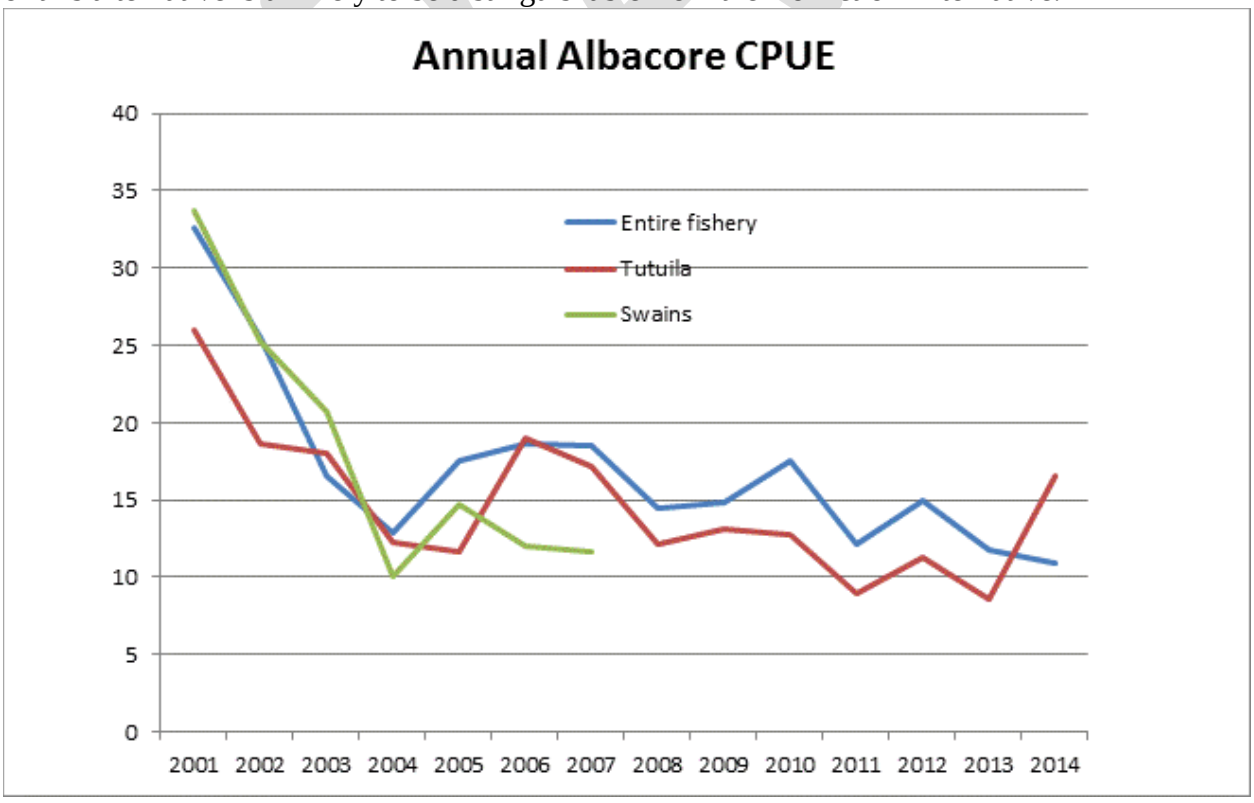

Figure 13: Annual albacore CPUE for the entire American Samoa longline fishery, for the large vessel prohibited area around Tutuila, the Manua Islands, and Rose Atoll ("Tutuila"), and for the area around Swains Island.
Source: PIFSC unpublished data; Note: Data for LVPA around Swains beyond 2007 not presented due to data confidentiality procedures.

There are times during the year that catch rates for albacore may be much greater inside the LVPA than outside (Figure 15).

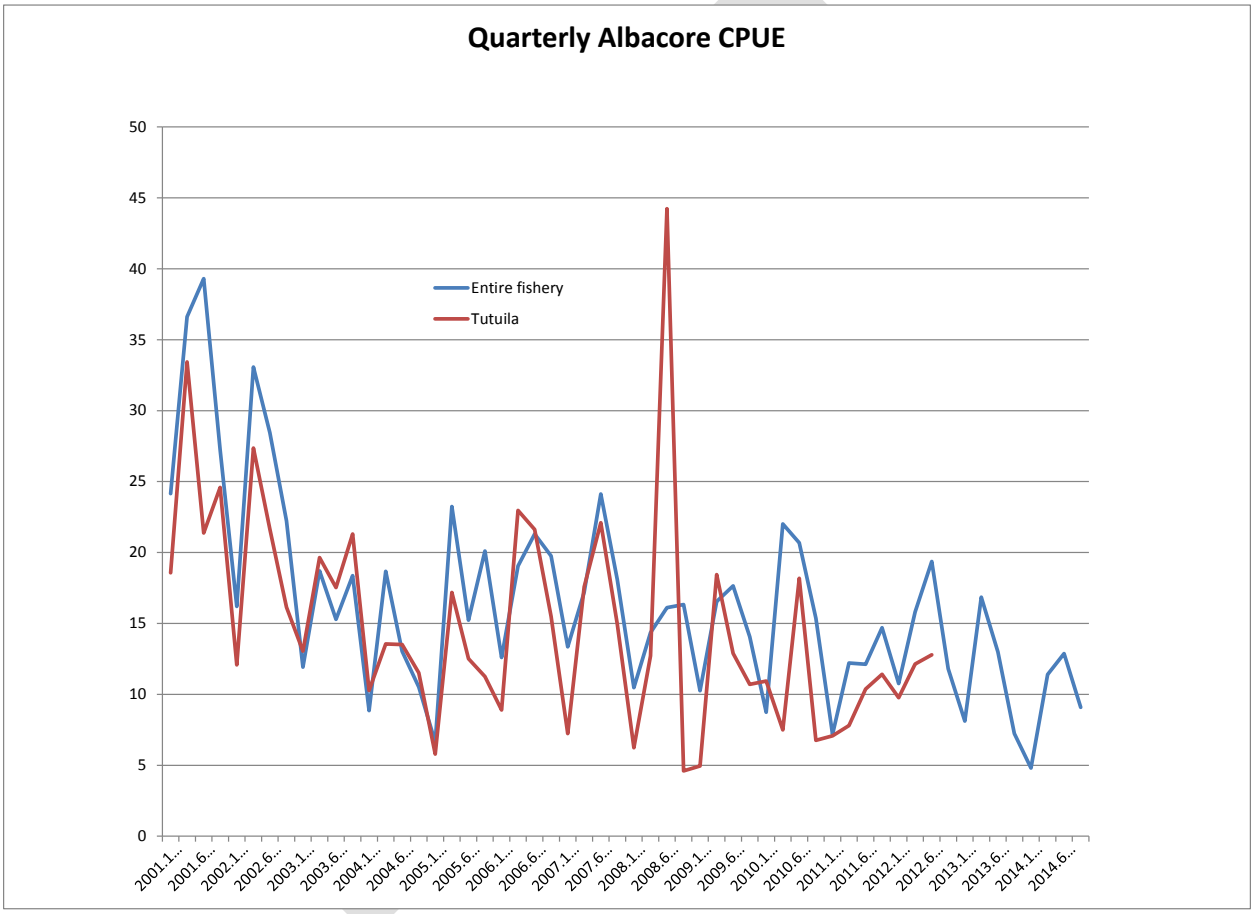

Figure 14: Quarterly albacore CPUE for the entire American Samoa longline fishery, and for the LVPA around Tutuila, the Manua Islands, and Rose Atoll ("Tutuila").
Source: Source: PIFSC unpublished data
Note: Swains Island not shown because in many quarters there was no fishing, or fishing was conducted by fewer than 3 vessels.

7.2.2 Impacts to Protected Species and Habitat under Alternatives 2a, 2b and 2c

The exemptions to the current LVPA boundaries would result in more fishable area within the US EEZ closer to the islands of the archipelago. The net impacts from this alternative may be to spread out the existing longline effort over a wider area, especially around Swains Island, thus reducing hook densities and decreasing potential interactions with protected species when considered in the EEZ as a whole. Figure 13 shows the distribution of interactions with marine mammals and sea-turtles and these correspond with the distribution of fishing effort in the US EEZ around American Samoa. The exemption to the LVPA to fish from 25 nm seaward to the northern boundary of the southern segment of the LVPA is unlikely to have any major impacts on sea-turtle and marine mammal interactions in this part of the EEZ.

The ability of longline vessels to fish within 12 nm of Swains could mean that there is an increased potential for longline gear to interact with those species which are more island associated, such as hawksbill turtles, green sea turtles and cetaceans such as rough toothed dolphins, beaked whales and false killer whales.

However, hawksbill turtles are strongly associated with coral reefs, where they forage on sponges. Thus even a reduced barrier of 12 nm should be sufficient to minimize any potential interactions between hawksbill turtles and longlines, and it should be noted that to date there have been no interactions with longlines reported for hawksbill turtles in American Samoa. Moreover the longline fishery is subject to regulations to require deep setting of fishing gear to reduce the likelihood of and severity of interactions with green sea turtles. These measures have reduced green sea turtle interaction rates from 0.0025 turtles/1000 hooks (in 2007; prior to new regulations) to 0.0005 turtles/1000 hooks (from 2012 and 2013; after the regulations were implemented, a reduction of 80%[5]. The increase in areas in which large longline vessels may fish (up to a year under Alternative 2a, up to 3 years under Alternative 2b and no specified time period under Alternative 3c) is not expected to result in large increases in interactions with green turtles, olive ridley turtles or leatherback turtles. There is not expected to be any increase in loggerhead sea turtle interactions (zero reported to date) which are found in cooler waters at higher latitudes.

Unlike Hawaii, there is no data for American Samoa to indicate that there are any island associated marine mammal stocks. Further, the South Pacific has many archipelagos in proximity to one another and has a different ecology compared to a remote archipelago like Hawaii. It is therefore assumed that fishing closer to Swains would not have any substantial impact on encounter rates and hence interactions.

Impacts to marine mammals from opening up the LVPA to fishing by large longline vessels is not expected to result in large increases in fishing intensity or in number of hooks so no large

[5] Based on mean of sea turtle interaction rates from 2007-2007 versus mean rate from 2012-2013, NMFS PIRO observer annual reports: http://www.fpir.noaa.gov/OBS/obs_as_ll_rprts.html

change to interaction rates. Observer data will allow fishery managers and scientists to continue to monitor interactions.

As noted above, pelagic longline gear by virtue of its fishing in the water column, is not deployed on a substrate and comprised of largely chemically inert materials, means it has little impact on seawater habitat. Further, as noted in Section 8.1.2, the fishery would continue to operate away from areas of shallow seamounts such as South Bank and Northeast Bank where longline gear might come into contact with benthic substrate. Thus the this Alternative is highly unlikely to have any impacts on coral reefs or on coral proposed for listing under the Endangered Species Act Further, longline fishing is not having any discernable impact on resources in the American Samoa National Marine Sanctuaries or the Rose Atoll Marine National Monument, nor having an adverse impact on essential fish habitat (EFH) or habitat areas of particular concern (HAPC).

In addition, the regulations for the American Samoa longline fishery require all hooks to fish below a minimum depth of 100 m to minimize turtle interactions, and thus beyond the range of most reef building corals, including the six species listed as threatened under the ESA (WPRFMC 2014).

With no large changes to the way in which the longline fishery is conducted, and with the only fishery outcome being a potential reduction in crowding among longline fishermen, no changes are expected to occur with respect to continued low interaction rates with seabirds. The American Samoa longline fishery has had only two documented interactions with seabirds in the American Samoa longline fishery.

The American Samoa longline fishery is not having a large adverse effect on ecosystem processes, such as fish diversity or predator prey relationships. The ability for large longline vessels to fish in areas closer to Tutuila and the Manua Islands, and closer to Swains Island would not result in a large change of fishing intensity in any area, so ecosystem processes would not be affected.

A change to the location in which fishing by large longline vessels may take place would not increase catches of any shark species because Alternatives 2a, 2b and 2c are expected to spread fishing out within the U.S. EEZ around American Samoa. Catches of sharks are not having an adverse impact on shark populations and this would not change under either Alternative 2a or 2b. The American Samoa longline fishery catches very few sharks (

Table **13**) and this small volume is unlikely to be affected by this Alternative.

Under Alternatives 2a, 2b and 2c, large longline vessels could fish closer to Tutuila and Manua Islands (within 25 nm in the north) and within 12nm from Swains Island for up to one year (Alternative 2a) three years (Alternative 2b) or no specified time period (2c). Longline fishing in these areas is not expected to have an adverse impact on special areas including the National Marine Sanctuaries because the special coral reef resources would be 12 nm from where longliners may fish. In the past, when the waters around Swains Island were open to longline fishing, there were no known accidents with longline fishing that affected these areas.

Thus impacts to protected species and habitat would likely be no greater than the No Action Alternative, whether the exemption was for one year or three years.

7.2.3 Impacts to Fishery Participants and Fishing Communities

The current area closures in American Samoa amount to about 25.6% of the US EEZ around the territory. The reductions in the LVPA area closures under Alternatives 2a, 2b and 2c would amount to 18.3% of the EEZ area or a 7.3% increase in waters available to the longline fishery.

Potential Impacts to Larger Longline Vessels

The exemption to be able to fish seaward from 25 nm to the north of Tutuila and Manua Islands is relatively small, amounting to 1,117 sq nm. However, the exemption to fish seawards of 12 nm around Swains makes available an additional 6,660 sq. nm of fishing grounds. As the American Samoa longline fishery operates predominantly in waters to the north of Tutuila, the freeing up of fishing grounds around Swains should reduce competition for fish between longlines set in this area. It is expected to improve CPUE by allowing longline fishermen to access fishing areas that may harbor stocks of South Pacific albacore in the US EEZ around American Samoa

The LVPA imposed some economic costs on large vessels that were excluded from fishing for pelagic species within 50 nm of the shore. For example, to fish outside the LVPA, more fuel is now necessary to make fishing trips, then would have been requires prior to the establishment of the LVPA around Tutuila and Manua islands. Fuel prices have increased (Figure 16) and this portion of the trip cost has become a much more important consideration.

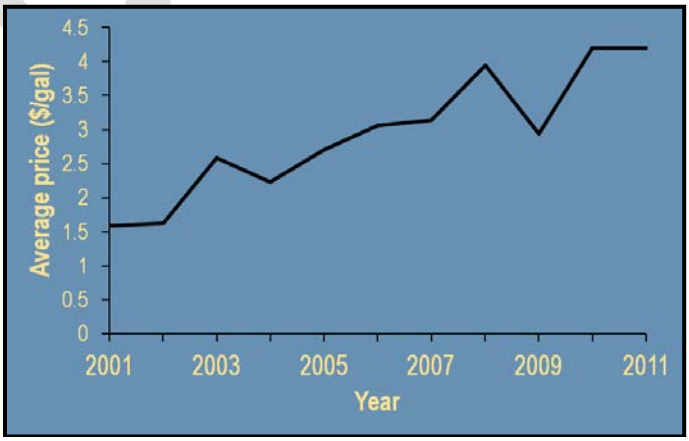

Figure 15. Average annual fuel price in American Samoa, 2001-2011
Source: American Samoa Government

Under Alternatives 2a, 2b and 2c, some larger longline vessels could see a reduction in the amount required to be spent on fuel, if they choose to fish in areas to the north of Tutuila and Manua Islands. Allowing large vessels (> 50 ft) to spread fishing effort over wider areas may reduce catch competition as noted above in Section 8.1.1 and thus would reduce the length of fishing trips if vessels can fill their fish holds more rapidly. Shorter duration fishing trips would enable vessels to make more frequent fishing trips with potentially lower operating costs.

It is believed that minimal improvements to the economic efficiency of longline vessels may have larger positive effects, including the ability to amass revenue for the diversification of fishing operations. For example, American Samoa pelagic fishermen have recently been discussing innovations to their fishing techniques. However, the difficult economic conditions in the fishery may be dissuading them from trying anything new or different.

Any such benefits are more likely to be realized for a three year period than a one year period and thus Alternative 2 would have a greater cumulative economic impact on the longline fishery. A three year time horizon would provide more opportunity to evaluate the impact of the LVPA boundaries under a variety of different environmental and socio-economic conditions.

Potential Impacts to Smaller Longline Vessels

The impetus for creating the LVPA was to provide a buffer between American Samoa's large and small-scale longline fisheries. The measure intended to maintain the potential for economically viable catches of pelagic fish in those fisheries, by disallowing larger vessels from fishing around some known banks and seamounts which are likely to aggregate tuna. In doing so, it avoided gear conflicts between large and small vessels and encouraged domestic harvest of underutilized pelagic fishery resources at a small scale.

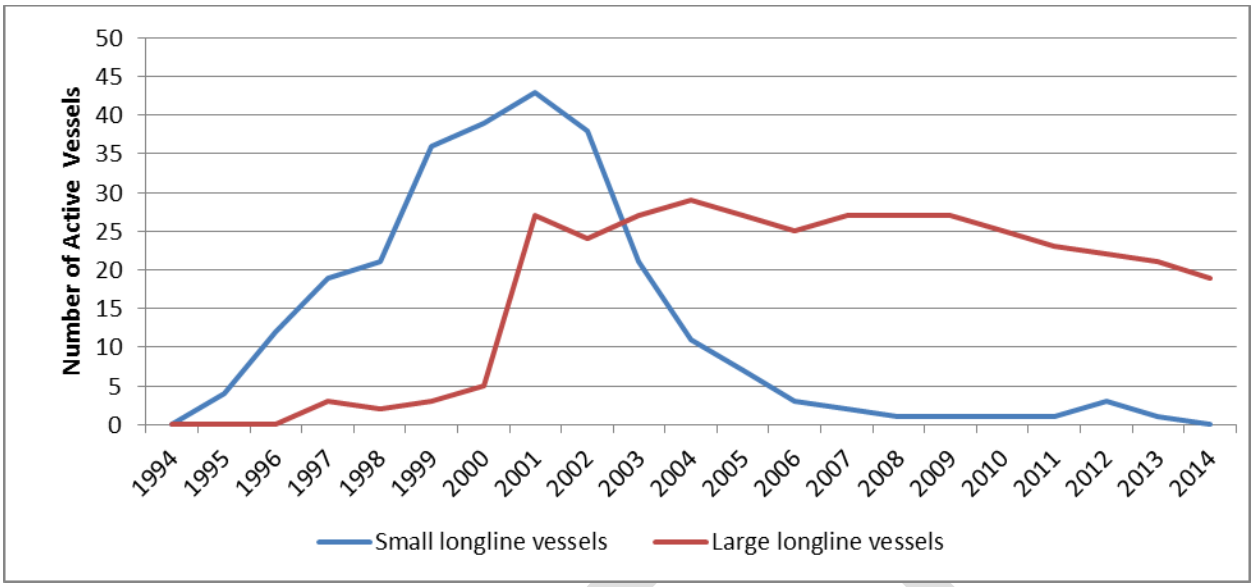

Figure 16. Fleet size of Class A and Class B longline vessels (alia catamarans) in American Samoa
Source WPRFMC 2013 and unpublished data

However, small-scale longline fishing in American Samoa has declined dramatically since its peak in 2001 (Figure 177), while the large vessel fleet peaked at about 30 vessels and now is reduced to 19 vessels. Currently, there are no active participants in the fishery and it is unlikely that additional participants will enter the fishery in the near term (e.g. during the period of the LVPA exemption). Thus, there is little potential for gear conflict or catch competition between the two fishery sectors under the preliminary preferred alternative. Moreover, the purpose and need for the action that established the LVPA was to keep catch competition minimized between large and small longline vessels, which this proposed alternative would do by maintaining the longline fleet at a minimum of 25 nm from Tutuila and Manua Islands

The 50-nm area LVPA closure around Swains Island, located 210 miles north of Tutuila was established to support the development of a small-scale pelagic fishery. However, prior to the closure, the island was devastated by Hurricane Tusi in 1987 and Hurricane Val in 1991 which reduced the Swains population to about 33 families. In February 2005, Cyclone Percy struck the island, causing widespread damage and virtually destroying the village of Taulaga. Although the majority of the 200 Swains islanders living elsewhere in American Samoa wished to return home, some of them to become involved in small-scale fisheries on Tutuila and other cottage industries. As such, resettlement never occurred. Only seven people were on the island at the time of Cyclone Percy, and a Coast Guard visit in March 2007 listed 12 to 15 inhabitants. Currently, Swains continues to be inhabited by a few people throughout the year and therefore, there is no basis to consider potential impacts to a small-scale pelagic fishery around Swains Island.

Finally, based on the current performance of the alia caternarans it will likely take several years for the alia fleet to rebuild to their former fleet size (Fa'asili 2014).

Potential Impacts to Commercial Troll, Charter and Recreational Pelagic Vessels

In scoping meetings with recreational fishery participants in February 2014, commercial troll, charter and recreational troll fishermen expressed apprehension at reducing the size of the closed area. Data from WPacFIN surveys indicates that about 40% of the troll pelagic catch comes from fishing on the banks, although about a fifth of this catch is generated from fishing around East Bank (3). In order to reduce the potential for gear and catch competition with larger longline vessels, the proposed Alternatives 2a, 2b and 2c leaves in place the larger vessel prohibited area around the southern banks, which are important grounds for recreational and charter fishing.

Table 3. Troll catches in American Samoa from the entire fishery and from the offshore banks. Approximately 20% of the bank troll catch comes from East Bank

Year	Total Troll Catch (lbs)	Total Troll Catch from Banks	Troll catch from the banks as % of total troll catch
2004	28,598	21,611.86	75.57%
2005	13,094	11,565.19	88.32%
2006	27,412	14,557.29	53.11%
2007	24,688	12,035.17	48.75%
2008	38,215	20,134.09	52.69%
2009	9,867	2,862.02	29.01%
2010	4,599	3,462.14	75.28%
2011	35,205	13,634.08	38.73%
2012	17,856	8,552.34	47.90%
2013	16,764	7,864.87	46.92%
Average	21,630	11,628	55.63%

An exemption to fish within the LVPA to seaward from 25 nm north of Tutuila and Manua means that longline vessels will continue to be unable to fish at Northeast Bank. It might be argued that the reduction in the northern boundary of the LVPA would reduce the area of buffer between large and small pelagic vessels and which could potentially have some impact on catch rates at Northeast Bank. However, the potential negative impacts of this alternative to the small-boat pelagic fisheries in American Samoa are not likely to be substantial, since there are no records of troll fishing at Northeast Bank as opposed to fishing on East Bank and South Bank (Figure 188). Details on the structure and depths of the banks is given in Table 4.

Table 4. Details on the American Samoa seamounts and banks
Source (Ralston & Goolsby 1986)

Bank	Extent (nm)	Depth (m)
South Bank	4.5	40
East Bank	20	200-500
Southeast Bank	Not available, comprises several small pinnacles	200

Bank	Extent (nm)	Depth (m)
Northeast Bank	Flat topped guyot with top of 3 nm^2	100
Manua Bank	Not available, comprises several small pinnacles	100-600

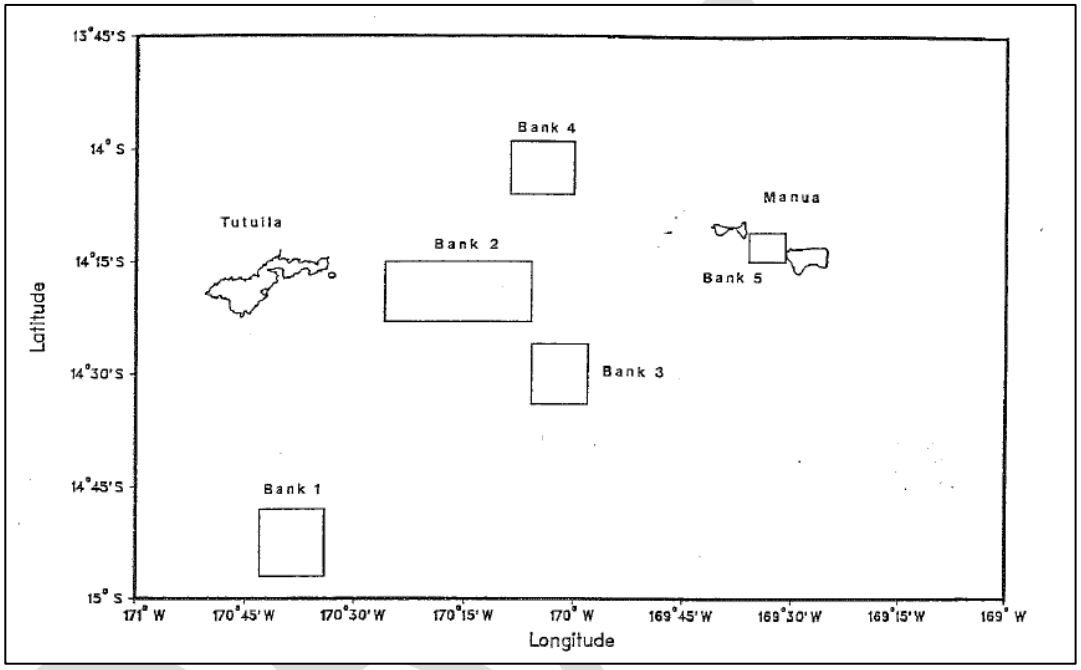

Figure 17. Locations of banks and seamounts around Tutuila and Manua Islands. Bank 1 = South Bank, Bank 2 = East Bank, Bank 3 = Southeast Bank, Bank 4 = Northeast Bank, Bank 5 = Manua Bank.
Source: Ralston & Goolsby (1986)

Skipjack and yellowfin tunas are the major components of the troll catch (see Table **12**) accounting for over 90% of the troll catch. However, no interactions have been documented from the longline catch data and troll CPUE in Table 5. Regressions were conducted of skipjack and yellowfin troll CPUE on skipjack and yellowfin longline catch based on the data in Table 5 to determine whether longline fisheries were affecting troll fishery catches. The regressions were not significant, but all had positive slopes, suggesting that increased longline catches of skipjack and yellowfin are coincident with higher CPUEs of the same two species in the troll fishery. This suggests that the CPUEs for both fisheries are dependent on regional availability of skipjack and yellowfin tuna. Studies from other parts of the region (Skillman et al 1993; He & Boggs 1996) showed no evidence of interactions and catch competition between troll and longline vessels.

Table 5. Summary of longline skipjack and yellowfin catches and skipjack and yellowfin troll CPUE in the American Samoa EEZ

Year	Longline Catches (mt)			Troll cpue (lb/hr)		
	Skipjack	Yellowfin	Skipjack & Yellowfin	Skipjack	Yellowfin	Skipjack & Yellowfin
1997	1.15	22.04	23.19	10.10	7.19	16.57
1998	18.43	41.97	60.40	10.80	4.89	15.36
1999	25.41	63.27	88.68	18.40	5.62	23.59
2000	14.63	86.46	101.09	14.90	4.61	18.22
2001	66.14	187.91	254.05	11.40	4.44	12.47
2002	244.27	485.41	729.69	9.03	9.83	16.40
2003	119.63	496.86	616.48	19.80	7.10	25.30
2004	234.64	889.85	1,124.49	18.20	5.10	21.91
2005	141.54	522.09	663.63	13.30	9.25	23.20
2006	213.25	496.99	710.23	15.40	10.80	32.28
2007	165.66	633.37	799.03	18.20	13.40	32.05
2008	163.14	340.21	503.35	21.50	26.90	45.03
2009	155.89	393.16	549.05	11.70	14.00	13.11
2010	111.42	445.68	557.11	8.78	9.23	13.30
2011	110.38	540.67	651.05	30.50	19.10	45.35
2012	289.23	374.06	663.29	29.50	23.20	46.74
2013	63.71	414.18	477.90	13.00	11.40	22.19
mean	125.79	378.51	504.28	16.14	10.94	24.89

7.2.4 Impacts to Enforcement and Administration

There would be some additional administrative burden to NMFS since the longline fleet would operate under an exemption for the LVPA as specified i.e. seawards of 25 nm to the north of Tutuila and Manua, and seawards 12 nm from Swains. This would require to modifications to the current regulations to allow those vessels with an American Samoa limited longline limited entry

permit to fish within the newly opened areas within LVPA. Moreover regardless of whether the Council decides after one year or three years to terminate the exemption then this will also incur an additional administrative burden. This alternative will necessitate coordination between the Council, NMFS, NMFS OLE and the USCG to ensure that the new exemption boundaries are understood by both the regulatory agencies and fishermen.

All vessels > 50ft in the American Samoa longline fleet must carry a VMS beacon so that there would likely be little extra enforcement burden, other than noting the exemption boundaries within the VMS monitoring program. In addition, under this and all subsequent alternatives all monitoring measures such as logbooks, dockside inspections by the USCG and NMFS Office of Law Enforcement, observer placement and catch and release protocols for turtles, seabirds, cetaceans and sharks would continue.

The administrative burden of providing a temporary exception from the LVPA to large longline vessels are not considered large. However, there would be little benefit to making the exemption for a one year period only. Any economic benefits to the longline fishery from the exemptions are more likely to be realized cumulatively over a three year or longer period than a one year period or no specified time period. A three year or longer time horizon provides more opportunity to evaluate the economic impact of the LVPA boundaries under a variety of different environmental and socio-economic conditions.

Another aspect of the exemption process to consider is if the Council decides it would like to maintain the exemptions for longliners within the LVPA. If the exemptions are for one year only then it is highly unlikely that the requisite documentation and rulemaking would be completed so that there would be a seamless transition from the initial sunset date and the new period for exemption. Further, even with an initial three year exemption, there is no guarantee that such a seamless transition would happen. As such Alternative 2c which has no sunset provision may be the most optimal for the he Council to review all information available, conduct public hearings prior to additional documentation and rulemaking.

7.3. Alternative 3

Temporary exemption for longline vessels holding an American Samoa longline limited entry permit to be able to fish in waters of the LVPA:

i. seaward of 25 nm to the north of Tutuila and Manua Islands;
ii. seaward from 12 nm around Swains Islands; and,
iii. within designated waters south of Tutuila and Manua:

Alternative 3a. One year exemption for permitted large longline vessels (Preferred)

Alternative 3b. Three year exemption for permitted large longline vessels

Alternative 3c. No sunset on the exemption for permitted large longline vessels but with periodic re-evaluation by the Council

7.3.1 Impacts to Target and Non-Target Stocks

Under Alternative 3, the total new area opened to fishing would amount to 12,263 sq. nm with 17,947 sq. nm or 15.2% of the US EEZ waters around American Samoa still closed to fishing.

The impacts to target and non-target stocks from modifying the LVPA boundaries under this alternative with respect to the longline fishery are similar to those described under Section 7.2.1. However, a greater area of the LVPA may be fished by the longline fishery due to exemptions to fish to the east and west of South Bank, up to the boundaries of the EEZ in the west and the Rose Atoll MNM in the east. Given the greater area of the LVPA that may be fished, then this alternative should have the greater potential to minimize catch competition between the vessels of the longline fleet.

As noted in Section 7.2.1, the impacts to target stocks are likely to be indistinguishable to those under the No Action Alternative. However, any benefits from the LVPA boundary modifications will be greater for a three year period than a one year period, and probably more so without any sunset provisions.

7.3.2 Impacts to Protected Species and Habitat

The modification of the LVPA would result in more fishable area within the US EEZ closer to the islands of the archipelago and adjacent to the offshore banks. The net impacts from this alternative may be to spread out the existing longline effort over a wider area, especially around Swains Island, and in the southern portions of the LVPA to the east and west of South Bank. The decrease in hook densities may have the potential to decrease interactions with protected species. The impacts to protected species are likely to be similar to those described in section 8.2.2.

As noted above, however, it may be argued that the ability of longline vessels to fish within 12 nm of Swains and with greater proximity to the offshore banks could mean that there is an increased potential for longline gear to interact with those species which are more island associated, such as hawksbill turtles, green sea turtles and cetaceans such as rough toothed dolphins, beaked whales and false killer whales.

However, as noted previously, hawksbill turtles are strongly associated with coral reefs, where they forage on sponges and there have been no interactions with longlines reported for hawksbill turtles in American Samoa. Thus even a reduced barrier of 12 nm should be sufficient to minimize any potential interactions with longlines, and the recent regulations to require deep setting of fishing gear has appeared to reduce interactions with green sea turtles.

Unlike Hawaii, there is no data for American Samoa to indicate that there are any island associated marine mammal stocks. Further, the South Pacific has many archipelagos and banks and seamounts in proximity to one another and has a different ecology compared to a remote archipelago like Hawaii. It is therefore assumed that fishing closer to Swains would not have any substantial impact on encounter rates and hence interactions.

As noted above, pelagic longline gear by virtue of its fishing in the water column, is not deployed on a substrate and comprised of largely chemically inert materials, means it has little impact on seawater habitat. Further, as noted in Section 8.1.2, the fishery would continue to operate away from areas of shallow seamounts such as South Bank and Northeast Bank where longline gear might come into contact with benthic substrate. Thus the this Alternative is highly unlikely to have any impacts on coral reefs or on coral proposed for listing under the Endangered Species Act. Further, longline fishing is not having any discernable impact on resources in the American Samoa National Marine Sanctuaries or the Rose Atoll Marine National Monument, nor having an adverse impact on essential fish habitat (EFH) or habitat areas of particular concern (HAPC).

In addition, the regulations for the American Samoa longline fishery require all hooks to fish below a minimum depth of 100 m to minimize turtle interactions, and thus beyond the range of most reef building corals, including the six species listed as threatened under the ESA (WPRFMC 2014).

As noted earlier with no large changes to the way in which the longline fishery is conducted, and with the only fishery outcome being a potential reduction in crowding among longline fishermen, no changes are expected to occur with respect to continued low interaction rates with seabirds. The American Samoa longline fishery has had only two documented interactions with seabirds in the American Samoa longline fishery.

The American Samoa longline fishery is not having a large adverse effect on ecosystem processes, such as fish diversity or predator prey relationships. The ability for large longline vessels to fish in areas closer to Tutuila and the Manua Islands, and closer to Swains Island would not result in a large change of fishing intensity in any area, so ecosystem processes would not be affected.

A change to the location in which fishing by large longline vessels may take place would not increase catches of any shark species because Alternatives 3a, 3b and 3c are expected to spread fishing out within the U.S. EEZ around American Samoa. Catches of sharks are not having an adverse impact on shark populations and this would not change under either Alternative 3a or 3b. The American Samoa longline fishery catches very few sharks (

Table 13) and this small volume is unlikely to be affected by this Alternative.

Under Alternatives 3a, 3b and 3c large longline vessels could fish closer to Tutuila and Manua Islands (within 25 nm in the north and within 20 miles to the south of Tutuila and within16 miles south of Manua) and within 12nm from Swains Island for up to one year (Alternative 2a) three years (Alternative 2b) or no specified time period (Alternative 3c) . Longline fishing in these areas is not expected to have an adverse impact on special areas including the National Marine Sanctuaries because the special coral reef resources would be 12 nm from where longliners may fish. In the past, when the waters around Swains Island were open to longline fishing, there were no known accidents with longline fishing that affected these areas.

Thus impacts to protected species and habitat would likely be no greater than the No Action Alternative, whether the exemption was for one year or three years.

7.3.3 Impacts to Fishery Participants and Fishing Communities

The impacts to fishing participants and communities will be largely similar to those described in section 8.2.3.

Potential Impacts to Larger Longline Vessels

Having a wider area (96,331 sq nm) over which to fish for three years may be of benefit to the longline fleet, if the ability to fish in the exempted segments of the LVPA minimizes catch competition between longline vessels and thereby reducing trip lengths and minimizing costs. This alternative also frees up three bodies of water that are much closer to Tutuila than the larger fishing area around Swains. Thus this alternative has the potential to reduce travel times and trip length that would have a beneficial impact to reducing costs.

Potential Impacts to Smaller Longline Vessels

Given the factors that led to the decline of the small alia longline fleet, it is unlikely that the opening of portions of the southern LVPA would affect this fleet, especially given its lack of operations in 2014. Further, based on the current performance of the alia caternarans it will likely take several years for the alia fleet to rebuild to their former fleet size (Fa'asili 2014). It might be argued that having the larger longline fleet operating portions of the southern LVPA might act as a disincentive for the revival of an alia or similar small vessel fleet. However, the alia fleet had over a decade of protection from competition from large longline vessels during which time it went into irrevocable decline. Further, the data in
Figure 14 suggests that catch rates throughout the US EEZ around American Samoa are broadly similar, and this alternative still includes buffers between the large longline vessel fleet and any potential fishing by the alia fleet.

Potential Impacts to Commercial Troll, Charter and Recreational Pelagic Vessels

Having a three year opening may be perceived as being too onerous for troll vessels if they experience poor fishing conditions, regardless of whether this is from opening up of the LVPA or for other reasons. However, as noted in Section 8.2.3 there is little evidence that longline vessels directly compete with non-longline troll vessels based on data from American Samoa (Table 5) and studies in Hawaii (Skillman et al 1993; He & Boggs 1996). Moreover, this alternative still maintains buffers between the main islands of American Samoa and the banks and seamounts important to the commercial and recreational troll fisheries.

7.3.4 Impacts to Enforcement and Administration

There will be some additional administrative burden to NMFS since new temporary boundaries will need to be established in the regulations for the LVPA (Appendix 2), i.e. seaward of 25 nm north from Tutuila and Manua, south of Tutuila and Manua, and seaward from 12 nm around Swains for one or three years. This alternative will necessitate coordination between the Council,

NMFS, NMFS OLE and the USCG to ensure that the new exemption boundaries are understood by both the regulatory agencies and fishermen.

All vessels > 50ft in the American Samoa longline fleet must carry a VMS beacon so that there would likely be little extra enforcement burden, other than noting the exemption boundaries within the VMS monitoring program. In addition, under this and all subsequent alternatives all monitoring measures such as logbooks, dockside inspections by the USCG and NMFS Office of Law Enforcement, observer placement and catch and release protocols for turtles, seabirds, cetaceans and sharks would continue.

The administrative burden of providing a temporary exception from the LVPA to large longline vessels are not considered large. However, there would be little benefit to making the exemption for a one year period only. Any economic benefits to the longline fishery from the exemptions are more likely to be realized cumulatively over a three year or longer period than a one year period or no specified time period. A three year or longer time horizon provides more opportunity to evaluate the economic impact of the LVPA boundaries under a variety of different environmental and socio-economic conditions.

Another aspect of the exemption process to consider is if the Council decides it would like to maintain the exemptions for longliners within the LVPA. If the exemptions are for one year only then it is highly unlikely that the requisite documentation and rulemaking would be completed so that there would be a seamless transition from the initial sunset date and the new period for exemption. Further, even with an initial three year exemption, there is no guarantee that such a seamless transition would happen. As such Alternative 3c which has no sunset provision may be the most optimal for the he Council to review all information available, conduct public hearings prior to additional documentation and rulemaking.

7.4. Alternative 4

Temporary exemption for longline vessels holding an American Samoa longline limited entry permit to be able to fish in waters of the LVPA:

i. Seaward from 12 nm around Swains Islands Tutuila and Manua Islands:

Alternative 4a. One year exemption for permitted large longline vessels

Alternative 4b. Three year exemption for permitted large longline vessels

Alternative 4c. No sunset on the exemption for permitted large longline vessels but with periodic re-evaluation by the Council

7.4.1 Impacts to Target and Non-Target Stocks

The reduction of the LVPA to a uniform 12 nm around Swains, Tutuila and the Manua Islands frees up 104,595 sq nm of fishable waters for the large longline vessels. As noted above there is no guarantee that large volumes of albacore have accumulated within the LVPA. However, the measure should increase the efficiency of the American Samoa longline fleet by allowing it to range more freely over the waters within the US EEZ around American Samoa.

The ability to fish in closer proximity to Pago Pago may also reduce costs and possibly offer the alternative for targeting fish for a fresh fish fishery as opposed to cannery sales. Further, other longlining nations in the South Pacific such as Samoa, Fiji, Cook Islands, Tonga and Niue have 12 nautical mile longline area closures for both foreign and domestic vessels.

7.4.2 Impacts to Protected Species and Habitat

The modification of the LVPA would result in more fishable area for large longline vessels within the US EEZ closer to the islands of the archipelago for a one or three year period, or no specified time period, and adjacent to the offshore banks. The net impacts from this alternative may be to spread out the existing longline effort over a wider area, around Swains Island, Tutuila and the Manua Islands. The decrease in hook densities may have the potential to decrease interactions with protected species. The impacts to protected species are likely to be similar to those described in section 8.2.2.

As noted above, however, it may be argued that the ability of large longline vessels to fish within 12 nm of Swains, Tutuila and Manua and with greater proximity to the offshore banks could mean that there is an increased potential for longline gear to interact with those species which are more island associated, such as hawksbill turtles, green sea turtles and cetaceans such as rough toothed dolphins, beaked whales and false killer whales.

However, as noted previously, hawksbill turtles are strongly associated with coral reefs, where they forage on sponges and there have been no interactions with longlines reported for hawksbill turtles in American Samoa. Thus even a reduced barrier of 12 nm should be sufficient to minimize any potential interactions with longlines, and the recent regulations to require deep setting of fishing gear has appeared to reduce interactions with green sea turtles.

Unlike Hawaii, there is no data for American Samoa to indicate that there are any island associated marine mammal stocks. Further, the South Pacific has many archipelagos and banks and seamounts in proximity to one another and has a different ecology compared to a remote archipelago like Hawaii. It is therefore assumed that fishing closer to Tutuila, Manua and Swains would not have any substantial impact on encounter rates and hence interactions.

The regulations for the American Samoa longline fishery require all hooks to fish below a minimum depth of 100 m to minimize turtle interactions, and thus beyond the range of most reef building corals, including the six species listed as threatened under the ESA (WPRFMC 2014). Under this alternative there is greater potential for longline gear to drift and come into contact with the offshore banks. In the case of South Bank, which rises to 37 m this may include coral reef habitat. Longline operators would clearly want to avoid the problems associated with

longlines becoming entangled with demersal substrate, but it is important to note that this alternative removes any buffer between the banks and the longline fishery.

In addition, the regulations for the American Samoa longline fishery require all hooks to fish below a minimum depth of 100 m to minimize turtle interactions, and thus beyond the range of most reef building corals, including the six species listed as threatened under the ESA (WPRFMC 2014).

As noted earlier, with no large changes to the way in which the longline fishery is conducted, and with the only fishery outcome being a potential reduction in crowding among longline fishermen, no changes are expected to occur with respect to continued low interaction rates with seabirds. The American Samoa longline fishery has had only two documented interactions with seabirds in the American Samoa longline fishery.

The American Samoa longline fishery is not having a large adverse effect on ecosystem processes, such as fish diversity or predator prey relationships. The ability for large longline vessels to fish in areas closer to Tutuila and the Manua Islands, and closer to Swains Island would not result in a large change of fishing intensity in any area, so ecosystem processes would not be affected.

A change to the location in which fishing by large longline vessels may take place would not increase catches of any shark species because Alternatives 4a and 4b are expected to spread fishing out within the U.S. EEZ around American Samoa. Catches of sharks are not having an adverse impact on shark populations and this would not change under either Alternative 4a or 4b. The American Samoa longline fishery catches very few sharks (

Table 13) and this small volume is unlikely to be affected by this Alternative.

Under Alternatives 4a, 4b and 4c large longline vessels could fish to within 12 nm of Tutuila, Manua Islands and Swains Island for up to one year (Alternative 4a), three years (Alternative 4b) or no specified time period (4c). Longline fishing in these areas is not expected to have an adverse impact on special areas including the National Marine Sanctuaries because the special coral reef resources would be 12 nm from where longliners may fish. In the past, when all the waters around Tutuila, Manua Islands Swains Island were open to longline fishing, there were no known accidents with longline fishing that affected these areas.

Thus impacts to protected species and habitat would likely be no greater than the No Action Alternative, whether the exemption was for one year or three years.

7.4.3 Impacts to Fishery Participants and Fishing Communities

The impacts to fishing participants and communities will be largely similar to those described in section 8.3.3.

Potential Impacts to Larger Longline Vessels

Having a wider area (104,595 sq nmi) over which to fish for one to three years may be of benefit to the large vessel longline fleet, if the ability to fish in the exempted segments of the LVPA

minimizes catch competition between longline vessels and thereby reducing trip lengths and minimizing costs. This alternative also frees up water that is much closer to Tutuila than the larger fishing area around Swains. Thus this alternative has the potential to further reduce travel times and trip length that would have a beneficial impact to reducing costs.

If the longline fishery improves then local processors such as StarKist will have less difficulty in fulfilling contracts with the US military that require light meat tuna be caught by US fishing vessels.

Potential Impacts to Smaller Longline Vessels

This measure still maintains the separation of the smaller alia longliners and the conventional larger than 50ft monohull longliners. Further, most of the arguments made under Section 8.3.3 still pertain, and that there appears to be little justification for the persistence of the LVPA in its present form when the alia fleet is entirely moribund as of 2014. Further based on the current performance of the alia caternarans it will likely take several years for the alia fleet to rebuild to their former fleet size (Fa'asili 2014).

Potential Impacts to Commercial Troll, Charter and Recreational Pelagic Vessels

Under this alternative, the larger longline vessels would be able to fish in proximity to the seamounts and banks used by troll fishermen. However, there is the disincentive of longline gear being snagged on the seabed of the banks that would maintain the longline vessels from fishing too close to these submarine structures. Moreover, as noted in Section 8.2.3 there is little evidence that longline vessels directly compete with non-longline troll vessels based on data from American Samoa (Table 5) and studies in Hawaii (Skillman et al 1993; He & Boggs 1996).

7.4.4 Impacts to Enforcement and Administration

There will be some additional administrative burden to NMFS since new temporary boundaries will need to be established in the regulations for the LVPA (Appendix 2), i.e. seaward from 12 nm around Swains Manua and Tutuila for one or three years. This alternative will necessitate coordination between the Council, NMFS, NMFS OLE and the USCG to ensure that the new exemption boundaries are understood by both the regulatory agencies and fishermen.

All vessels > 50ft in the American Samoa longline fleet must carry a VMS beacon so that there would likely be little extra enforcement burden, other than noting the exemption boundaries within the VMS monitoring program. In addition, under this and all subsequent alternatives all monitoring measures such as logbooks, dockside inspections by the USCG and NMFS Office of Law Enforcement, observer placement and catch and release protocols for turtles, seabirds, cetaceans and sharks would continue.

The administrative burden of amending the FMP to provide the American Samoa longline fishery is significant and the same regardless of the time period selected. Thus there would be little benefit to making the exemption for a one year period only. As argued above, any benefits are more likely to be realized for a three year or longer period than a one year period and thus would have a greater cumulative impact on the longline fishery. A three year or longer time

horizon provides more opportunity to evaluate the impact of the LVPA boundaries under a variety of different environmental and socio-economic conditions.

7.5. Alternative 5

Temporary exemption for longline vessels holding an American Samoa limited entry permit to fish in waters of the LVPA

Alternative 5a. One year exemption for permitted large longline vessels

Alternative 5b. Three year exemption for permitted large longline vessels

Alternative 5c. No sunset on the exemption for permitted large longline vessels but with periodic re-evaluation by the Council

7.5.1 Impacts to Target and Non-Target Stocks

Under this alternative the LVPA is removed altogether and provides the large vessel longline fleet the maximum extent possible over which to fish, with the exclusion of waters around Rose Atoll Marine National Monument. It is not anticipated that the volume of fishing will expand much beyond current limits, but that this fishing effort will be more diffuse within the US EEZ around American Samoa.

It is unlikely that impacts to target stocks will be markedly affected. Increased catch rates for albacore may occur with reduced inter-vessel competition for fish. However, the impacts to South Pacific albacore stock wide (Figure 22) are a function of the cumulative catches of many island based and distant water longline fleets. The same is broadly true for the other tunas and tuna like species captured by longliners in the South Pacific.

7.5.2 Impacts to Protected Species and Habitat

The removal of the LVPA would result in more fishable area for large longline vessels within the US EEZ closer to the islands of the archipelago for a one or three year period or no specified time period, and adjacent to the offshore banks. The net impacts from this alternative may be to spread out the existing longline effort over a wider area, around Swains Island, Tutuila and the Manua Islands. The decrease in hook densities may have the potential to decrease interactions with protected species. The impacts to protected species are likely to be similar to those described in section 8.2.2.

As noted above, however, it may be argued that the ability of large longline vessels to fish close to Swains, Tutuila and Manua and with greater proximity to the offshore banks could mean that there is an increased potential for longline gear to interact with those species which are more island associated, such as hawksbill turtles, green sea turtles and cetaceans such as rough toothed dolphins, beaked whales and false killer whales.

However, as noted previously, hawksbill turtles are strongly associated with coral reefs, where they forage on sponges, and in waters not associated with longline fishing and there have been no interactions with longlines reported for hawksbill turtles in American Samoa. Further, recent regulations to require deep setting of fishing gear has appeared to reduce interactions with green sea turtles.

Unlike Hawaii, there is no data for American Samoa to indicate that there are any island associated marine mammal stocks. Moreover, the South Pacific has many archipelagos and banks and seamounts in proximity to one another and has a different ecology compared to a remote archipelago like Hawaii. It is therefore assumed that fishing closer to Tutuila, Manua and Swains would not have any substantial impact on encounter rates and hence interactions.

The regulations for the American Samoa longline fishery require all hooks to fish below a minimum depth of 100 m to minimize turtle interactions, and thus beyond the range of most reef building corals, including the six species listed as threatened under the ESA (WPRFMC 2014). As noted for Alternative 4, under this alternative there is greater potential for longline gear to drift and come into contact with the offshore banks. In the case of South Bank, which rises to 37 m this may include coral reef habitat. Longline operators would clearly want to avoid the problems associated with longlines becoming entangled with demersal substrate, but it is important to note that this alternative removes any buffer between the banks, coastal reefs and the longline fishery.

In addition, the regulations for the American Samoa longline fishery require all hooks to fish below a minimum depth of 100 m to minimize turtle interactions, and thus beyond the range of most reef building corals, including the six species listed as threatened under the ESA (WPRFMC 2014).

As noted earlier, with no large changes to the way in which the longline fishery is conducted, and with the only fishery outcome being a potential reduction in crowding among longline fishermen, no changes are expected to occur with respect to continued low interaction rates with seabirds. The American Samoa longline fishery has had only two documented interactions with seabirds in the American Samoa longline fishery.

The American Samoa longline fishery is not having a large adverse effect on ecosystem processes, such as fish diversity or predator prey relationships. The ability for large longline vessels to fish in areas closer to Tutuila and the Manua Islands, and closer to Swains Island would not result in a large change of fishing intensity in any area, so ecosystem processes would not be affected.

A change to the location in which fishing by large longline vessels may take place would not increase catches of any shark species because Alternatives 5a and 5b are expected to spread fishing out within the U.S. EEZ around American Samoa. Catches of sharks are not having an adverse impact on shark populations and this would not change under either Alternative 5a, 5b or 5c. The American Samoa longline fishery catches very few sharks (

Table **13**) and this small volume is unlikely to be affected by this Alternative.

Under Alternatives 5a, 5b and 5c, large longline vessels could fish closer to Tutuila, Manua Islands and Swains Island for up to one year (Alternative 5a) or three years (Alternative 5b) or no specified time period (5c) . In the past, when all the waters around Tutuila, Manua Islands and Swains Island were open to longline fishing, there were no known accidents with longline fishing that affected these areas.

Thus impacts to protected species and habitat would likely be no greater than the No Action Alternative, whether the exemption was for one year or three years.

7.5.3 Impacts to Fishery Participants and Fishing Communities

The impacts to fishing participants and communities will be largely similar to those described in section 8.3.3.

Potential Impacts to Larger Longline Vessels

Having a the widest area possible (107,823 sq nmi) over which to fish for one year, three years or no specified time period may be of benefit to the large vessel longline fleet, if the ability to fish in the exempted segments of the LVPA minimizes catch competition between longline vessels and thereby reducing trip lengths and minimizing costs. This alternative also frees up water that is much closer to Tutuila than the larger fishing area around Swains. Thus this alternative has the potential to further reduce travel times and trip length that would have a beneficial impact to reducing costs.

If the longline fishery improves then local processors such as StarKist will have less difficulty in fulfilling contracts with the US military that require light meat tuna be caught by US fishing vessels.

Potential Impacts to Smaller Longline Vessels

This measure maintains no separation of the smaller alia longliners and the conventional larger than 50ft monohull longliners. However, most of the arguments made under Section 8.3.3 still pertain, and that there appears to be little justification for the persistence of the LVPA in its present form when the alia fleet is entirely moribund as of 2014. Further, based on the current performance of the alia catamarans it will likely take several years for the alia fleet to rebuild to their former fleet size (Fa'asili 2014).

Potential Impacts to Commercial Troll, Charter and Recreational Pelagic Vessels

Under Alternative 5 as with Alternative 4, the larger longline vessels would be able to fish in proximity to the seamounts and banks used by troll fishermen. However, there is the disincentive of longline gear being snagged on the seabed of the banks that would maintain the longline vessels from fishing too close to these submarine structures. Moreover, as noted in Section 8.2.3 there is little evidence that longline vessels directly compete with non-longline troll vessels based on data from American Samoa (Table 5) and studies in Hawaii (Skillman et al 1993; He & Boggs 1996).

7.5.4 Impacts to Enforcement and Administration

Removal of the LVPA in its entirety would reduce the administrative and enforcement burden, since the only closed area would be the Rose Atoll Marine National Monument. Longliners would be free to fish at liberty in all other parts of the US EEZ around American Samoa. The administrative burden of amending the FMP to provide the American Samoa longline fishery is significant and the same regardless of the time period selected. Thus there would be little benefit to making the exemption for a one year period only. As argued above, any benefits are more likely to be realized for a three year or longer period than a one year period and thus would have a greater cumulative impact on the longline fishery. A three year or longer time horizon provides more opportunity to evaluate the impact of the LVPA boundaries under a variety of different environmental and socio-economic conditions.

There would be some administrative costs, however, associated with changing the regulations, even if only for a limited time, and then re-implementing the LVPA when that time period has expired. All vessels > 50ft in the American Samoa longline fleet would continue carry a VMS beacon so that there would likely be little extra enforcement burden, other than noting the exemption boundaries within the VMS monitoring program. In addition, under this and all subsequent alternatives all monitoring measures such as logbooks, dockside inspections by the USCG and NMFS Office of Law Enforcement, observer placement and catch and release protocols for turtles, seabirds, cetaceans and sharks would continue.

7.6 Cumulative Effects

The MSA and NEPA require analysis of the potential cumulative effects of a proposed action, as well as the cumulative effects of the alternatives to the proposed action. Under NEPA, cumulative effects are defined as those combined effects on the human environment that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what Federal or non-Federal agency or person undertakes such other actions (40 CFR 150.8.7). The following cumulative effects analysis is organized by the following issues: target and non-target species, protected species, fishery participants and communities.

7.6.1 Target and Non-Target Species

7.6.1.1 Past, Present, and Reasonably Foreseeable Management Actions

Pelagics FEP

The Fishery Management Plan (FMP) for Pelagic Fisheries in the Western Pacific Region was approved by the Secretary of Commerce in 1987. In 2009, the Secretary of Commerce approved the Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region, which replaced the FMP and establishes the framework for an ecosystem approach to manage pelagic fisheries. The American Samoa longline fishery was first managed under the FMP through federal permit and catch reporting regulations that were in effect at the time of the FMP's approval. In 2002, the large vessel prohibited are was implemented that restricts vessels larger

than 50 ft from fishing for pelagic MUS within approximately 50 nm around Tutuila, the Manua Islands, Rose Atoll, and Swains Island. In 2005, the American Samoa longline limited entry program was implemented and initial permits were awarded in late 2005/early 2006. Longline fisheries under the FEP are comprehensively managed through the use of observers, vessel monitoring system (VMS), gear restrictions and other management measures, which allow the Council and NMFS to monitor the fishery and its impacts to target and non-target species. In 2011, the large vessel prohibited areas were modified slightly to line up the boundaries with the Rose Atoll MNM boundary.

At its 159th Meeting, the Council Directed staff to prepare a draft regulatory/FEP amendment/Framework measure to the Pelagics FEP to modify the Large Vessel Prohibited Area (LVPA) and identify options to reduce, for a period of one year, the northern boundary of the LVPA around Tutuila, Manua, and Rose to 25 nautical miles and to reduce the LVPA around Swains to 12 nautical miles, as preliminarily preferred.

In 2013, the Council recommended establishing catch limits for Territorial catches of bigeye tuna. While not implemented at this time, this could occur in the future. If so, American Samoa longline catches of BET could be limited to 2,000 mt, including up to 1,000 mt that could be transferred to the U.S. longline fleet fishing around Hawaii. The recent catches of bigeye tuna by American Samoa longline fleet are indicative of what would continue to occur even under the action alternatives (see
Table **12**), with catches of about 160-200 mt.

Therefore, even if a catch limit were to be specified annually, the limit would not constrain the American Samoa longline fishery much. Nor would any of the alternatives likely result in the American Samoa longline fishery exceeding the 2,000 mt catch limit within the near future.

The Council is aware of an application for an experimental fishing permit that would allow a fisherman proposes to use a large longline vessel to fish near a fish aggregating device (FAD) in the LVPAs around American Samoa. Although the proposal has not been submitted, this document considers whether that action the proposed alternatives would result in cumulative effects if this permit were to be issued. The permit would be for a single longline fishing vessel. If the permit were issued, and if any of the action alternatives were implemented, there could be other longline fishing vessels in the LVPA. This might affect the experimental results the applicant hoped to study; however, the two longline fishing activities are not expected to result in cumulative impacts to any resource because the amount of fishing that would be done under an experimental fishing permit is expected to be well within the levels analyzed in this document..

Western and Central Pacific Fisheries Commission

The Western and Central Pacific Fisheries Commission (WCPFC) was established by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPF Convention) which entered into force on 19 June 2004. Members of the Commission include: Australia, China, Canada, Cook Islands, European Union, Federated States of Micronesia, Fiji, France, Japan, Kiribati, Korea, Republic of Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Philippines, Samoa, Solomon

Islands, Chinese Taipei, Tonga, Tuvalu, United States of America, Vanuatu. Participating Territories of the Commission include: American Samoa, Commonwealth of the Northern Mariana Islands, French Polynesia, Guam, New Caledonia, Tokelau, Wallis and Futuna. Cooperating non-members include: Belize, Indonesia, Senegal, Mexico, El Salvador, Ecuador, and Vietnam. The WCPFC area of competence is shown in Figure 199.

In 2005, the WCPFC agreed on a conservation and management measure for South Pacific albacore whereby Commission Members, Cooperating Non-Members, and participating Territories (CCMs) are to not increase the number of their fishing vessels actively fishing for South Pacific albacore in the Convention Area south of 20°S above current (2005) levels or recent historical (2000-2004) levels (CMM 2005-02). The conservation and management measure also includes a provision whereby the requirement to cap the level of fishing vessels described above shall not prejudice the legitimate rights and obligations under international law of small island developing State and Territory CCMs in the Convention Area for whom South Pacific albacore is an important component of the domestic tuna fishery in waters under their national jurisdiction, and who may wish to pursue a responsible level of development of their fisheries for South Pacific albacore.

WCPFC has also agreed on conservation and management measures for Southwest Pacific swordfish, bigeye and yellowfin, Southwest Pacific striped marlin, bluefin, sea turtles, seabirds, and sharks. See http://www.wcpfc.int/conservation-and-management-measures for more information.

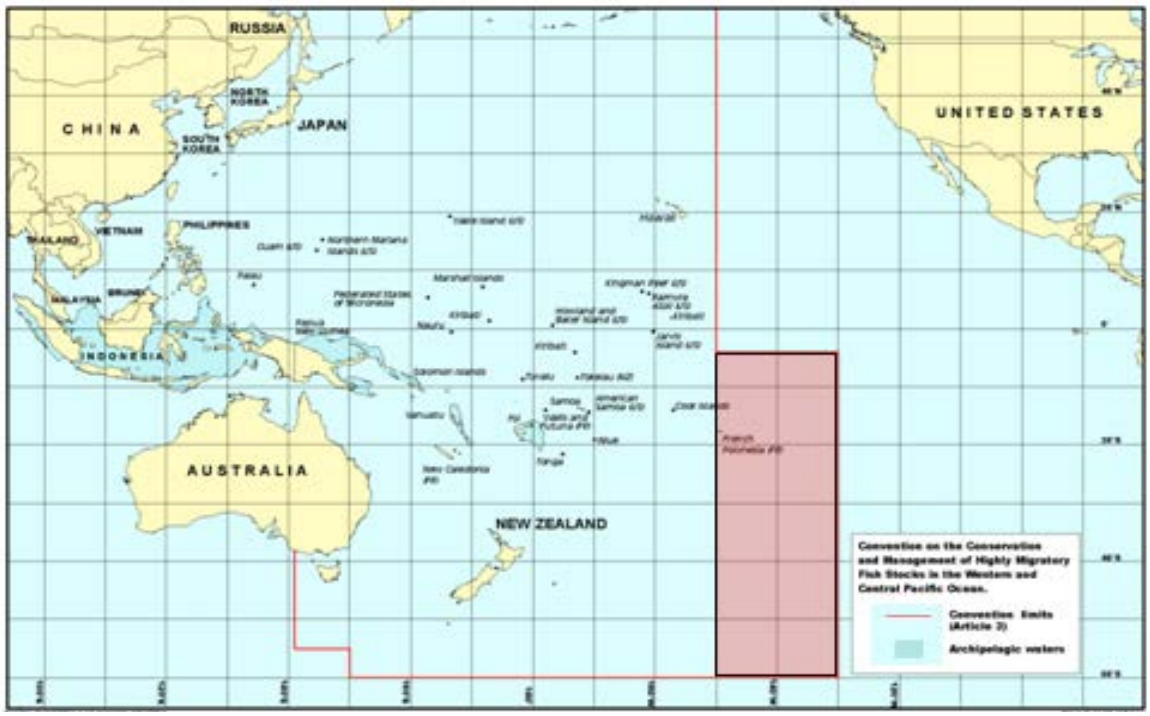

Figure 18: Map of the WCPFC Area of Competence.

7.6.1.2 Exogenous Factors Affecting Target Species and Non-Target Species

Fluctuations in the pelagic ocean environment

Catch rates of pelagic fish species fluctuate in a time and space in relation to environmental factors (e.g. temperature) that influence the horizontal and vertical distribution and movement patterns of fish. Cyclical fluctuations in the pelagic environment affect pelagic habitats and prey availability at high frequency (e.g., seasonal latitudinal extension of warm ocean waters) and low-frequency (e.g., ENSO-related longitudinal extension of warm ocean waters). Low or high levels of recruitment of pelagic fish species are also strongly related to fluctuations in the ocean environment.

The effects of such fluctuations on the catch rates of pelagic MUS obscure the effects of the combined fishing effort from Pacific pelagic fisheries. During an El Niño, for example, the purse seine fishery for skipjack tuna shifts over 1,000 km from the western to central equatorial Pacific in response to physical and biological impacts on the pelagic ecosystem (Lehodey et al. 1997). Future ocean shifts are likely to cause changes in the abundance and distribution of pelagic fish resources, which could contribute to cumulative effects. For this reason, accurate and timely fisheries information is need to produce stock assessments that allow fishery managers the ability to regulate harvests based on observed stock conditions.

Ocean productivity related to global climate change

The global mean temperature has risen 0.76° C over the last 150 years, and the linear trend over the last 50 years is nearly twice that for the last 100 years (IPPC 2007a). Climate change effects are already being observed on a wide range of ecosystems and species in all regions of the world (Walther et al, 2002; Rosenzweig et al., 2007). There is a high confidence, based on substantial new evidence, that observed changes in marine systems are associated with rising water temperatures, as well as related changes in ice cover, salinity, oxygen levels, and circulation. These changes include shifts in ranges and changes in algal, plankton, and fish abundance (IPPC 2007b).

The seasonal north-south movements of many large pelagics appear to track the similar peak migration of primary productivity. Using remotely-sensed chlorophyll[6] concentrations from satellite observations, Polovina et al. (2008) found that over the past decade, primary productivity in the North Pacific Subtropical Transition Zone has declined an average of 1.5% per year, and a 3% per year decline occurring at the southern limit of the transition zone. The expansion of the low chlorophyll waters is consistent with global warming scenarios based on increased vertical temperature stratification of the world's oceans in the mid-latitudes. Expanding oligotrophic[7] portions of large subtropical gyres, will in time lead to a reduction in chlorophyll density and carrying capacity in these oceanic features, which will impact the abundance of pelagic species.

[6] Chlorophyll is the green pigment found in phytoplankton that absorbs light energy to initiate the process of photosynthesis.

[7] Meaning waters where relatively little plant life or nutrients occur, but are rich in dissolved oxygen.

A recent study using an the spatial ecosystem and population dynamics model[8] (SEAPODYM), suggests that by the end of this century, ocean temperatures in the WCPO will increase to levels that will not support bigeye populations in the WCPO (J. Sibert, PFRP, pers. comm. July 2008). An international program called CLIOTOP (climate impacts on oceanic top predators) is currently gathering information on climate change and its effects on pelagic ecosystems. Within this group, the SEAPODYM model is being applied to investigate the future management of tuna stocks and other highly migratory species in the context of climate and ecosystem variability, as well as to investigate potential changes due to greenhouse warming.

Regardless of which alternative is selected by the Council to recommend to NMFS for implementation, international and domestic fishery managers will continue to obtain and consider impacts of climate change on fish stocks under its management purview and will include consideration of these impacts in stock assessments and fishery management actions. For these reasons, climate change impacts are not expected to increase impacts of the proposed alternatives on fish stocks caught by any fishery in American Samoa.

Catches of South Pacific Albacore

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 assessment.

The estimated stock status was similar to 2009 and 2011 estimates. The fishing mortality reference point $F_{current}/F_{MSY}$ had a median estimate of 0.21, (90% CI 0.04-1.08) and on that basis it was concluded that there is low risk that overfishing was occurring. The corresponding biomass-based reference points, $B_{current}/B_{MSY}$ and $SB_{current}/SB_{MSY}$, were estimated to be above 1.0 (median 1.6, 1.4-1.9, and median 2.6, 1.5-5.2 respectively), and therefore the stock is not in an overfished state.

The median estimate of MSY from the structural sensitivity analysis (99,085 mt, 46-560 – 215,445) was comparable to the recent levels of (estimated) catch from the fishery ($C_{current}$ = 78,664 mt, C_{latest} = 89,790 mt).

There was 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, and catches over the last 10 years have been at historically high levels and are increasing. These trends may be significant for management.

[8] The model based on advection-diffusion-reaction equations explicitly predicts spatial dynamics of large pelagic predators, while taking into account data on several mid-trophic level components, oceanic primary productivity and physical environment.

7.6.1.3 Cumulative Impacts to Target and Non-Target Stocks

The American Samoa longline fishery is capped at 60 vessels under the limited entry program, but only 28 vessels (mostly in Classes C and D) have been active. The action alternatives considered in this document are not expected to change any fishery substantially, however, under the 3-year alternatives (Alternatives 2 and 3), it is expected that longline fishing vessels would be more spread out and could benefit from increased CPUEs of Albacore. No large changes are expected for the American Samoa troll fishery.

However, given that the stocks of target and non-target species caught by the longline fishery are generally in good condition (with the exception of bigeye tuna and striped marlin), the small increase in effort as a result of the alternatives would be negligible even when added to impacts by other fisheries and the environment on the stocks.

The potential additive impacts of the alternatives in combination with the impacts past, present, and future actions as well as exogenous factors are not expected to result to any significant cumulative impacts on target and non-target stocks.

7.6.2 Protected Species

7.6.2.1 Past, Present, and Reasonably Foreseeable Management Actions

ESA and MMPA

In the late 1970's, NMFS and the USFWS listed all five sea turtles species that occur in the U.S. EEZ as either threatened or endangered pursuant to the ESA (43 FR 32800). The ESA offers Federal protection to species that are displaying population trends that make them vulnerable to extinction.

The Marine Mammal Protection Act (MMPA) requires FMP-regulated fisheries be evaluated by NMFS for impacts on marine mammals and be designated as Category I, II, or III (with Category III having the lowest impact). The fishery classification criteria consist of a two-tiered, stock-specific approach that first addresses the total impact of all fisheries on each marine mammal stock, and then addresses the impact of individual fisheries on each stock. Under existing regulations (Appendix 2), all fishers participating in Category I or II fisheries must register under the MMPA, obtain an Authorization Certificate, pay a fee of $25, and report any interactions with marine mammals. Additionally for Category I fisheries, fishers may be subject to a take reduction plan and requested to carry an observer (68 FR 20941). The American Samoa longline fishery is classified as Category II fishery.

Pelagics FMP/FEP

The implementation of the Pelagics FMP and FEP may have some limited benefits for protected species through the management measures applicable to the longline fishery including: large vessel prohibited area, limited entry program, observers, logbooks, and VMS requirements. In

September 2011, the Council's recommendation came into effect that required that American Samoa longline fishing vessels fishing in the EEZ around American Samoa follow gear modification requirements ensure that longline gear is fished at depth below 100 meters. This measure is expected to reduce sea turtle interactions (primarily green sea turtles) with the longline fishery, as compared to prior to the gear modification requirement being implemented in the American Samoa fishery.

7.6.2.2 Exogenous Factors Affecting Sea Turtles and Marine Mammals

Existing threats that are common to all species of sea turtles include:

- human use and consumption- legal and illegal harvest of adults, juveniles and/or eggs
- sea turtle nesting and marine environments, including directed takes, predation, and coastal habitat development
- marine debris (entanglement and ingestion)
- incidental capture in fisheries (trawl, gillnet and longline);
- fluctuations in the ocean environment
- climate change

External factors affecting other marine mammals such as whales and dolphins include the following: (a) incidental take in fisheries; (b) collisions with ship traffic, ship disturbance, and ship noise, and (c) marine debris and waste disposal.

7.6.2.3 Cumulative Impacts to Protected Species

The American Samoa longline fishery is capped at 60 vessels under the limited entry program, but only 22 vessels (mostly in Classes C and D) have been active as of 2012 (unpublished 2012 Pelagics Annual Report Module. The impacts of the alternatives when added to the impacts of past, present, and future actions, and exogenous factors are not expected to adversely affect the status of protected species.

No cumulative effects are expected for any of the alternatives. There is no known large adverse impact to these areas from past, present and reasonably foreseeable actions including the alternatives under consideration.

7.6.3 Fishery Participants and Fishing Communities

7.6.3.1 Past, Present, and Reasonably Foreseeable Future Actions

See sections 8.5.1.1 and 8.5.2.1 for description of past, present, future actions by the Council and NMFS that affected and may affect the fishing community of American Samoa.

7.6.3.2 Exogenous factors affecting Fishery Participants and Fishing Communities

There are wide-ranging factors (that change over time) that affect fishing participants as well as fishing communities. Current factors include high fuel costs, increased seafood imports, and

restricted access to traditional fishing grounds. 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. These effects are believed to have resulted in the decline of the small vessel alia fishery in American Samoa.

7.6.3.3 Cumulative Impacts to Fishery Participants and Fishing Communities

The additive effect of alternatives coupled with past, present, and future actions like reducing the large vessel prohibited area may have positive impacts on active longline fishery participants. However, the alternatives would not likely overcome exogenous factors impacting fishery participants such high fuel and other operating costs. There would not be any large adverse environmental impacts from any of the alternatives that would interact with fishing communities to result in a large socio-economic impact on other fisheries or members of fishing communities.

8.0 Description of the Affected Environment

8.1 American Samoa

American Samoa is an unincorporated and unorganized territory of the United States located in the central South Pacific Ocean. It is the only U.S. territory in the southern hemisphere. 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).

The 1899 Tripartite Convention divided the Samoan archipelago between the U.S. and Germany, with the 199 sq km (~ 77 sq mi) of land on the islands of Tutuila, Aunuu, Ofu, Olosega, Tau, Swains, and Rose Atoll in the east coming under U.S. control. A year later, the U.S. and local chiefs signed a Deed of Cession to formally declare American Samoa a U.S. territory. The U.S. and other powers especially prized the deepwater harbor at Pago Pago for its strategic and commercial value. Following World War I, the League of Nations granted New Zealand the responsibility to administer German or “Western” Samoa. In 1962, Western Samoa was granted independence and the country changed its name to Samoa in 1997 (it is also referred to as Independent Samoa). However, the demarcation between Samoa and American Samoa is largely political; many families are cross-related and there is much cultural and commercial exchange between the two. 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). 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. American Samoan products with less than 50 percent market value from foreign sources enter the United States duty free (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.

On October 5, 2010, Tri Marine International acquired the former Chicken of the Sea facility in American Samoa. Tri Marine anticipates processing sashimi-grade tuna in early 2014 and re-opening the cannery in 2015. When the cannery again becomes fully operational, Tri Marine expects to employ 1,200 people (GAO, 2014).

Unfortunately, fish processing has not become widely and deeply integrated within the wider territorial economy; fewer linkages have developed between it and other sectors of the local economy. The multinational corporations that ran the operations supplied a number of raw and finished materials, including shipping services and infrastructure facilities (Schug and Galeai 1987). Even a substantial portion of the raw tuna processed by StarKist Samoa was landed by vessels owned by the parent company. Furthermore, most of the unskilled labor of the canneries is imported (many from nearby Samoa and Tonga), resulting in much of the payroll of the canneries being remitted overseas.

There is currently an effort to promote the export of fresh fish from American Samoa led by Samoa Tuna Processors (STP), a subsidiary of TriMarine. In March 2012, STP signed contracts for the construction of a new cold storage facility that will have the capacity to store over 5,000 tons of tuna. The location and design of the building will allow tuna boats to unload tuna directly into a climate-controlled facility, which will then be transferred to the cannery for processing within the facility. STP also receives, processes, and exports fresh 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[9]. STP potentially could promote the sustainability of the small boat fleet, as well as the large vessel fleet, and contribute significantly to the economy of American Samoa. However, it is too soon for any statistics to be created to substantiate this.

On September 29, 2009, a magnitude 8.0 submarine earthquake south of the Samoan archipelago triggered a tsunami that made landfall in several Pacific island locations, including American Samoa and Samoa. Four tsunami waves 15 to 20 feet (4 to 6 meters) high arrived ashore on American Samoa about 15 minutes after the quake, killing 31 people. Reports indicate that in some areas the waves reached a mile (1.5 kilometers) inland (Sagapolutele 2009). In Pago Pago, near the capital, streets and fields filled with debris, mud, overturned cars and boats. Several buildings in the village were flattened and a primary power generation station was damaged. For a period following the disaster, shelters housed an estimated 2,200 people across the island.

In terms of fish harvesting equipment and fishery management resources, the waves damaged or destroyed all of the American Samoa Department of Marine and Wildlife Resources' floating docks and the first floor of the building. The tsunami also damaged Department equipment, such as vehicles and boats. All ramps in Pago Pago and shipyard dry-docking facilities sustained damage and major boat dock areas was unusable for a time because of the many vessels that were tossed about. A facility and associated equipment located in Pago Pago that was funded by the Community Development Project Program for the Pago Pago Commercial Fishermen Association project was destroyed.

The Council and NMFS' PIRO jointly examined the effects of the tsunami on the territory's fishing fleets. Fortunately, a purse seiner at dry dock was released the day before the tsunami and many longline vessels were out to sea at the time. However, the tsunami destroyed or damaged many alia vessels predominately used in the bottomfish fishery. The U.S. Secretary of Commerce determined a commercial fishery failure occurred for the commercial bottomfish fishery on January 26, 2012, clearing the way for Congress to appropriate relief funds.

8.1.1 U.S. EEZ Waters around American Samoa

The EEZ waters around American Samoa comprise 390,000 square kilometers and are truncated by the EEZs around the other nearby island nations (Figure 1).

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. To the north of American Samoa, spanning 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.

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

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 by the SECC. Further indication of the possible importance of the SECC for longline performance is the significant 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.

From an ecosystem perspective, evidence to support higher micronekton biomass in the upper 200 m at eddy boundaries is inconclusive. Albacore's vertical distribution seems to be governed by the presence of prey. Albacore spend most of their time between 150 and 250 m, away from the deep daytime and shallow nighttime sonic scattering layers, at depths coinciding with those of small local maxima in micro-nekton biomass whose backscattering properties are consistent with those of albacore's preferred prey. Settling depths of longline sets during periods of decreased eddy activity correspond to those most occupied by albacore, possibly contributing to the lower CPUE by reducing catchability through rendering bait less attractive to albacore in the presence of prey.

8.2 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 $6.5 million worth of pelagic species were landed in American Samoa during 2013 (WPFMC unpublished data). Longline fishing dominated (99.2%) the value of pelagic landings

during 2013. Over $5.2 million worth of albacore dominated (80%) the value of longline caught pelagic species during 2013 followed by yellowfin (~ $828,000), bigeye (~$150,000), and skipjack (~$107,000) tunas. Wahoo (~$77,000) and mahimahi (~$68,000) were the top-value non-tuna species during 2013 (WPFMC unpublished data).

8.2.1 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 sold 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 3), and NMFS cannot report its landings due to data confidentiality rules.

Troll fishers land relatively small amounts of pelagic MUS with just over16,764 lb reported in 2013. Trollers fish in the coastal waters of Tutuila and Manua and on offshore banks and seamounts. The average number of vessels participating in the troll fishery from 1982-2013 was 25; though only 10 vessels participated in trolling in 2013 (WPFMC 2014 and unpublished data). 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. However, bottomfish fishers are unlikely to be affected by any of the Alternatives analyzed in Section 7.

8.2.2 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 30-40 miles of longline and 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 2013, there were 23 active Class C and D (large) vessels in the fishery (Table 3).

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. All are presently being operated to freeze albacore onboard, rather than to land chilled fish. 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[10]; Table 6), but has since declined to 2,877 in 2012. Observed effort for 2013 was 2,985 hooks per set.[11]

Table 6. 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
2013	2,985	3,393	10,129

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.

8.2.3 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 36 in 2013 (Table 7). Effort is dominated by large longline vessels (Class D) as there was only one active small longline vessel in 2013 and the troll fleet continues to decrease in numbers of vessels and trips.

Table 7. Number of Vessels Using Different Fishing Methods, 1996-2013

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

[10] Found at: http://www.pifsc.noaa.gov/wpacfin/index.php
[11] 2013 data from draft 2013 Pelagics Annual Report Module

Year	Number of Vessels		
	Longline	Trolling	Total
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
2013	23	13	36

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[12] 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 fishery are typically steel-hulled vessels of around 60 – 80 ft 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 of up to 60 days. 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,

[12] 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

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 2013 indicates 10.1 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 2014). Table 8 shows landing and effort statistics for the longline fishery.

Table 8. American Samoa Longline Fishery Landings and Other Statistics, 2003-2013.

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Active Vessels	49	41	36	30	29	28	26	26	24	22	22
Hooks Set (millions)	14.2	11.7	11.1	14.3	17.5	14.4	15.0	13.2	10.8	11.7	10.1
Trips	650/282 *	430/193 *	223/179*	331	377	287	177	264	274	275	96
Sets Made	6,220	4,850	4,359	5,069	5,919	4,754	4,910	4,534	3,776	4,068	3393
Total Landings (mt)	5,173	4,079	3,999	5,401	6,586	4,347	4,787	4,673	3,250	4,022	2.717
Albacore Tuna Landings (mt)	3,931	2,488	2,919	4,104	5,329	3,456	3,910	3,938	2,292	3,092	2,051
Yellowfin Tuna (mt)	517	890	516	493	620	336	155	445	536	385	414
Bigeye Tuna (mt)	253	226	132	199	199	124	146	178	170	167	85
Skipjack Tuna (mt)	120	235	141	213	165	163	156	111	109	250	64
Wahoo (mt)	195	215	221	287	198	136	139	131	125	83	88
Total Ex-vessel Value (adjusted) ($ millions)	$10.7	$9.1	$8.0	$11.5	$13.7	$9.4	$10.4	$ 10.4	$7.2	$7.2	$6.5

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 6.3 million lb of pelagic species is estimated to have landed by American Samoa vessels (longline and troll) during 2013, a decrease of about 3 million lb from the 9.3 million lb landed in 2012. Landings of tuna species decreased substantially by 3 million lb, while non-tuna decreased by about 12,000 lb.

About 5.9 million lb (94%) of total landings were of tuna species, while the non-tuna landing were roughly 353,000 lb. Albacore dominated tuna species landings at 78 percent and comprised 74 percent of all pelagic species landings; yellowfin (15 %), bigeye (3%), skipjack (2%), and unknown tunas make up the rest of the tuna landings. Wahoo species dominate the "Non-Tuna and Others" total landings, make up 55 percent of non-tuna landings and 3 percent of all pelagic landings (WPFMC 2014). 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 9 & Figure 2020).

Table 9. CPUE (catch/1,000 hooks) for All American Samoa Longline Vessels, 2007-2013.

Species	2007	2008	2009	2010	2011	2012	2013
Skipjack	2.3	2.4	2.3	2.4	2.5	4.3	1.2
Albacore	18.3	14.2	14.8	17.4	12.1	14.9	11.7
Yellowfin	1.9	1	1.1	1.8	2	1.2	1.9
Bigeye	0.9	0.5	0.6	0.8	0.7	0.7	0.4
TUNAS SUBTOTAL	23.5	18.2	18.8	22.4	17.3	21.1	15.2
Mahimahi	0.1	0.1	0.2	0.2	0.1	0.1	0.2
Blue marlin	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Wahoo	1	0.7	1	1	0.9	0.7	0.7
Sharks	0.4	0.4	0.4	0.4	0.5	0.6	0.4
Swordfish	0	0	0	0	0		0
Spearfish	0	0.1	0.1	0.1	0.1	0.1	0.1
Oilfish	0.5	0.4	0.5	0.6	0.6	0.8	0.7
Pomfret	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NON-TUNA PMUS							
SUBTOTAL	2.4	2	2.5	2.5	2.4	2.4	2.3
Pelagic fishes							
(unknown)	0.2	0.1	0.2	0.3	0.4	0.3	0.2
OTHER PELAGICS							
SUBTOTAL	0.2	0.1	0.2	0.3	0.4	0.3	0.2
TOTAL PELAGIC	26	20.3	21.5	25.2	20	23.8	17.7

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

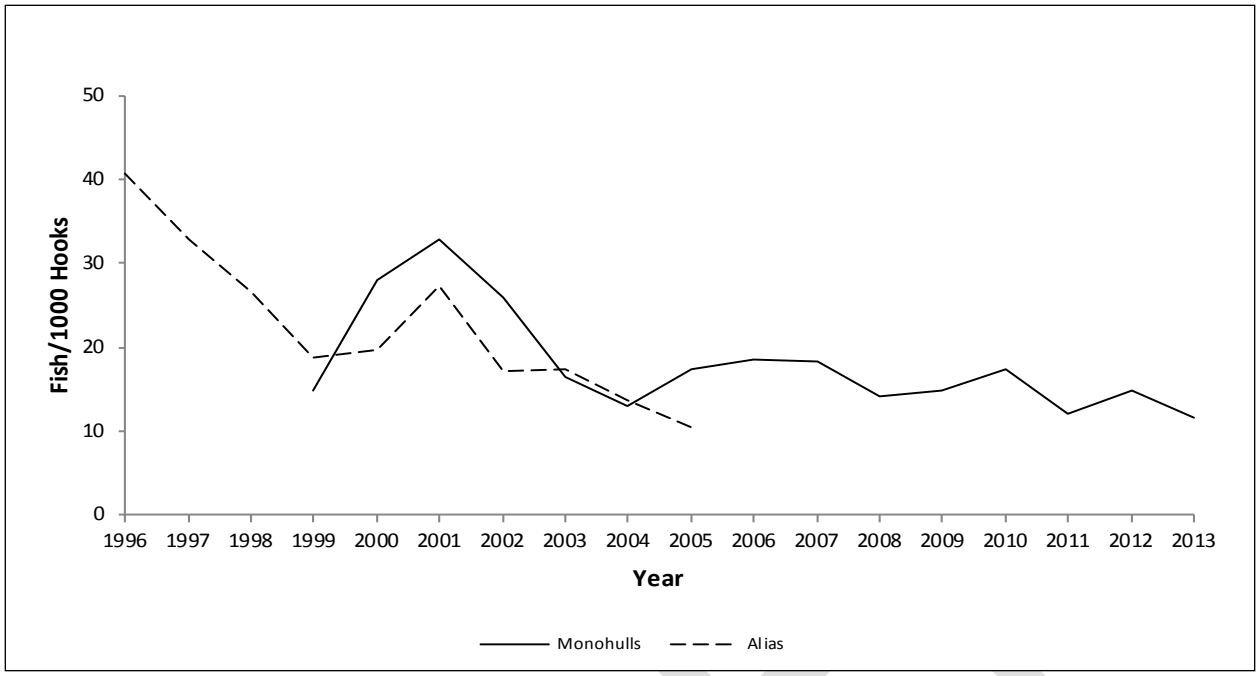

Figure 19. Albacore catch per unit effort (per 1,000 hooks) in the American Samoa longline fishery, 1996-2013

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

8.2.4 Observer Program

NMFS funds fishery observer recruitment, training, and support in the western Pacific region including its observer program in American Samoa. NMFS is in the process of increasing observer coverage in the American Samoa longline fishery. Prior to beginning the mandatory observer program in American Samoa, NMFS conducted a pilot program from August through October 2002. The pilot program observed 76 sets on one Class C and two Class D vessels that set 197,617 hooks; there were no sightings of, or interactions with, any protected species including sea turtles, marine mammals, or seabirds (NMFS 2003). Mandatory observer placement to monitor protected interactions and collect other fishery data on American Samoa longline vessels (longer than 40 ft) began in April 2006. Table 10 shows the level of observer coverage from 2006-2012.

Table 10. American Samoa Longline Observed Fishery Protected Species Interactions, 2006-2013

Year	2006	2007	2008	2009	2010	2011	2012	2013
Number of sets observed	287	410	379	306	798	1,257	662	585
Observer coverage (percent)	8.1	7.1	6.4	7.7	25	33.3	19.8	19.4
Green sea turtles, released dead	3	1	1	2	5	10	0	2
Green sea turtles, released injured	0	0	0	0	1	1	0	0
Marine mammals, released injured	0	0	2	0	0	11	0	1
Marine mammals, released	0	0	1	0	0	1	0	1

Year	2006	2007	2008	2009	2010	2011	2012	2013
dead								
Seabirds, released dead	0	1	0	0	0	1	0	1

Source: NMFS PIRO Observer Program 2006-2011 Status Reports.
http://www.fpir.noaa.gov/OBS/obs_as_ll_rprts.html
Note: The Observer Program Status Reports provide a preliminary summary of observer coverage in the longline fisheries when vessels leave port. The reports display protected species interactions based on the date vessels return to port and may include some data from the prior reporting period, i.e., previous quarter or year, before the specific reporting period. The following reported period may report information that occurred on trips that left port in one reporting period and arrived in another. Contact the Observer Program for more specific information.

8.2.5 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. 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). Nevertheless, some pelagic fishermen who fish for subsistence release fish that are surplus to their subsistence needs (S. Steffany, pers. comm. to P. Bartram, Akala Products Inc., September 15, 2001, Amendment 11).

Table 11 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 11. 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.[13] 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.

The recreational vessels use anchored fish aggregating devices (FADs) extensively, and on tournaments venture 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.[14] 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).

There is no full-time regular charter fishery in American Samoa similar to those in Hawaii or Guam. However, Pago Pago Marine Charters[15], which is concerned primarily with industrial work such as underwater welding, construction, and salvage, also includes for-hire fishing among the services it offers. Pago Pago Charters goes out two to three times a week, many times

[13] http://ppgfa.com/page/about-ppgfa.
[14] http://www.ppgfa.com/blog/final-results
[15] http://pagopagomarinecharters.com/

to fish but other times to go whale watching. The target species are typical pelagic species including yellowfin tuna and mahimahi (W. Sword, PPGFA, pers. comm., October 31, 2012).

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[16]. 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.

8.3 Target Tuna Stocks

8.3.1 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 assessment.

Figure 21 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[17] 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, and catches over the last 10 years have been at historically high levels and are increasing.

[16] http://www.pifsc.noaa.gov/wpacfin/.
[17] $C_{current}$ = mean catch from June 2007-June 2010, C_{latest} = June 2010-June 2011)

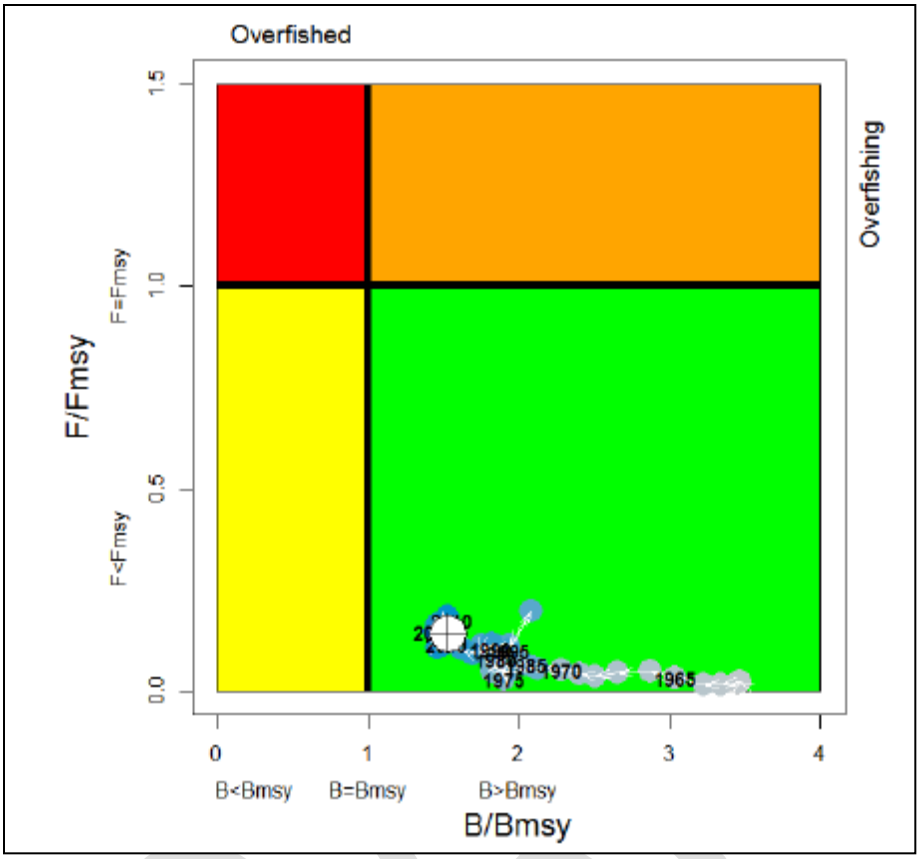

Figure 20. Temporal trend in annual stock status, relative to BMSY (x-axis) and FMSY (y-axis) reference points, for the model period (starting in 1960). The color of points is graduated from lavender (2006) to blue (2009) and white cross (2010), and points are labeled at five-year intervals. The last year of the model (2011) is excluded because it is highly uncertain.

Langley (2006) reported that recent 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.

The results of this assessment suggest that regional stock depletion has contributed to catch rate declines, but localized depletion may also have contributed. Observed declines in catch rates from significant 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 removals 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 (2014), prior to 2001, South Pacific albacore catches were generally in the range 25,000-44,000 mt, although a significant 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 2013 84,698 mt) was the third highest on record. The American Samoa longline fishery in 2013 (2,051 mt) accounted for approximately 2 percent of total South Pacific albacore landings.

The longline catch of albacore is distributed over a large area of the South Pacific (Figure 222), 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 2014).

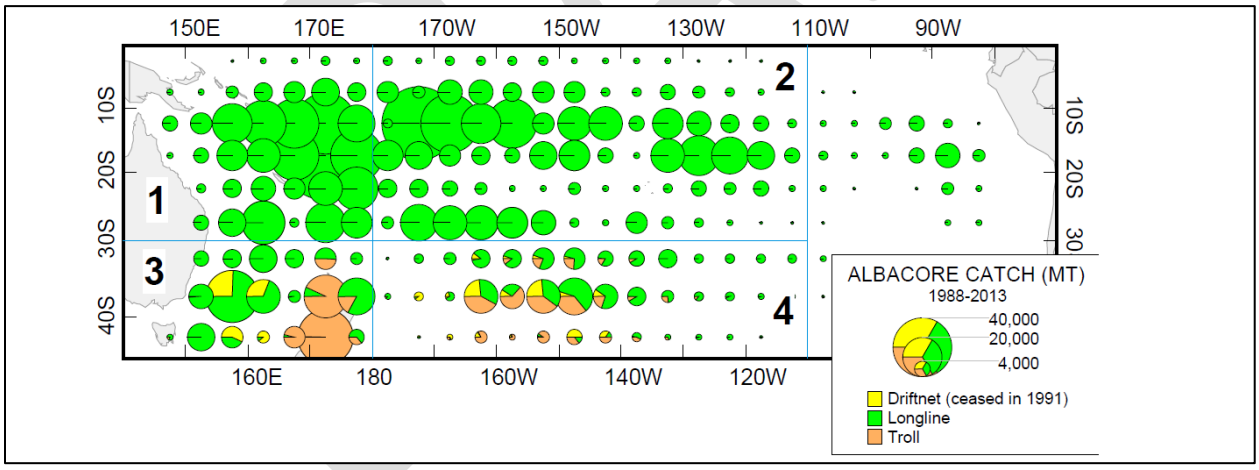

Figure 21. Distribution of South Pacific albacore tuna catches, 1988-2013.
Source: Williams and Terawasi 2014.

8.3.2 Skipjack Tuna

The most recent stock assessment for skipjack tuna in the WCPO was conducted by Rice et al (2014). Latest catches slightly exceed the MSY, while fishing mortality for adult and juvenile skipjack tuna is estimated to have increased continuously since the beginning of industrial tuna fishing, but fishing mortality still remains below the level that would result in the MSY. Recent levels of spawning potential are well above the level that will support the MSY.

8.3.3 Yellowfin Tuna

The most recent stock assessment for yellow tuna in the WCPO was conducted by Davies et al (2014). The main conclusions of the current assessment are consistent with recent assessments presented in 2009 and 2011. Current catches marginally exceed the MSY, while recent levels of fishing mortality are most likely below the level that will support the MSY. Recent levels of spawning potential are most likely above the level which will support the MSY.

8.3.4 Bigeye Tuna

The most recent stock assessment for bigeye tuna in the WCPO was conducted by Harley et al (2014). The main conclusions of the current assessment are consistent with recent assessments presented in 2010 and 2011. Current catches exceed maximum sustainable yield (MSY) and recent levels of fishing mortality exceed the level that will support the MSY, as are levels of spawning potential are most likely at or below the level which will support the MSY.

International Stock Management

As discussed above, the WCPFC adopted CMM 2008-01 for the years 2009-2011, applicable to bigeye and yellowfin tuna catches from the WCPO; the WCPFC extended this measure through February 2013 (CMM 2011-01). The measure includes a phased reduction of bigeye tuna catches for the longline fishery from 2001-2004 or 2004 levels over three years, so that the catch would be reduced 10 percent in 2009, 20 percent in 2010 and 30 percent in 2011. For fresh fish longline fisheries catching less than 5,000 mt annually (such as the Hawaii-based longline fleet), the reduction applies to 2009, with 2010 and 2011 catches to be maintained at the 2009 level, i.e., at a 10 percent reduction. Under CMM 2008-01, the specified bigeye tuna catch limits do not apply to the small island developing State members and participating territories to the WCPFC, including American Samoa, provided they are undertaking responsible development of their domestic fisheries. However, the Council may recommend, and NMFS may implement domestic catch limits for the American Samoa longline fishery through the Magnuson-Stevens Act. Bigeye tuna are retained in the American Samoa longline fishery (Table 15).

American Samoa is not subject to bigeye catch limits for longline fleets under 2013-01. The Council has amended its Pelagics FEP to implement a management framework to establish catch or effort limits applicable to the U.S. Participating Territories that includes the authorization for the U.S. Participating Territories to use, assign, allocate, and manage the pelagic management species catch and effort limits agreed to by the WCPFC through arrangements with U.S. vessels permitted under the Pelagics FEP for the purposes of responsible fisheries development. The Western Pacific Fishery Management Council (Council) could also recommend and the National Marine Fisheries Service (NMFS) could specify catch or effort limits in the absence of such limits or additional or more restrictive limits than the WCPFC for conservation and management purposes. The framework would also provide for consistency review of Territory arrangements with the Pelagics FEP and other applicable laws by the Council and NMFS, as well as annual review and specification recommendations by the Council.

The proposed action also includes the specification of catch limits for bigeye tuna caught by longline of 2,000 metric tons (mt) per year for each of the U.S. Participating Territories, of which 1,000 mt may be transferred annually under agreements consistent with the Pelagics FEP and other applicable laws to eligible U.S. vessels permitted under the Pelagics FEP

8.3.5 MSY of Target Tuna Stocks

MSYs for tuna stocks are as follows: 1,375,600 mt for skipjack (Hoyle et al. 2011); 76,760 mt for WCPO bigeye tuna (Davies et al. 2011); and 85,200 mt for South Pacific albacore- (Hoyle et al. 2012). Langley et al. (2011) estimate MSY of WCPO yellowfin tuna between 480,000-580,000 mt.

8.4 Incidental Catch

In addition to tuna species, the American Samoa longli**ne** fishery also catch and land various non-tuna PMUS, including wahoo, mahimahi, swordfish, blue marlin, **spearfish,** striped marlin, and moonfish **(**
Table 12). These landings, however, only represent 6 percent of the total landings and 4 percent of the total landings value in 2013 (WPFMC unpublished data).

Table 12. Estimated total landings of pelagic fish in 2013 by gear type.

Species	LongLine Pounds	Troll Pounds	Other Pounds	Total Pounds
Skipjack tuna	143,347	8,334	0	151,680
Albacore tuna	4,679,946	0	0	4,679,946
Yellowfin tuna	926,140	7,037	231	933,408
Kawakawa	0	5	0	5
Bigeye tuna	187,277	0	0	187,277
Tunas (unknown)	377	0	0	377
TUNAS SUBTOTALS	5,937,086	15,376	231	5,952,693
Mahimahi	42,529	295	0	42,825
Black marlin	338	0	0	338
Blue marlin	67,557	0	0	67,557
Striped marlin	7,430	0	0	7,430
Wahoo	196,260	1,093	104	197,457
Sharks (all)	2,600	0	0	2,600
Swordfish	23,180	0	0	23,180
Sailfish	3,918	0	0	3,918
Spearfish	2,622	0	0	2,622
Moonfish	4,840	0	0	4,840
Oilfish	1,306	0	78	1,385
Pomfret	756	0	0	756
NON-TUNA PMUS SUBTOTALS	353,337	1,388	182	354,908
Pelagic fishes (unknown)	144	0	0	144
OTHER PELAGICS SUBTOTALS	144	0	0	144
TOTAL PELAGICS	**6,290,567**	**16,764**	**414**	**6,307,745**

]

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

8.5 Bycatch

Table 13 shows the number of fish kept and released in the American Samoa longline fishery during 2013. 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 13. American Samoa longline fishery bycatch in 2013

Species	Number Kept	Number Released	Percent Released
Skipjack tuna	11,230	402	3
Albacore tuna	118,414	335	0
Yellowfin tuna	19,087	232	1
Bigeye tuna	4,181	126	3
Tunas (unknown)	21	0	0
TUNAS SUBTOTALS	152,933	1,095	1
Mahimahi	1,854	598	24
Black marlin	3	8	73
Blue marlin	497	842	63
Striped marlin	108	149	58
Wahoo	5,868	1,235	17
Sharks (all)	40	3,850	99
Swordfish	181	108	37
Sailfish	50	232	82
Spearfish	57	816	93
Moonfish	98	274	74
Oilfish	69	6,762	99
Pomfret	73	767	91
NON-TUNA PMUS SUBTOTALS	8,898	15,641	64
Pelagic fishes (unknown)	3	1,756	100
OTHER PELAGICS SUBTOTALS	3	1,756	100
TOTAL PELAGICS	161,834	18,492	10

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

8.6 Protected Species

The American Samoa longline fishery has the potential to interact with protected species, including sea turtles, marine mammals, and seabirds. The annual levels of observer coverage and related details can be found in Table 14. Table 14 and Table 15 list the observed protected species interactions (hooking and/or entanglements in longline gear) by species. Expanded estimates of seabird takes and marine mammal deaths and serious injury (DSI) are given in Table 16 and Table 17.

Table 14. Number of Sea Turtle Interactions by Species Observed in the American Samoa Longline Fishery from 2006-2013.

				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 15. Number of Marine Mammal and Seabird Interactions by Species Observed in the American Samoa Longline Fishery from 2006-2013.

	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

Table 16. Estimated seabird interactions from observer data in the American Samoa longline fishery.
Source NMFS PIRO based on data in Table 15

Unidentified Shearwater		
Landing Year	**Observed Take**	**Estimated Total Take**
2011	1	2
2012	0	0
2013	0	0
Unidentified Frigate Bird		
Landing Year	**Observed Take**	**Estimated Total Take**
2010	0	0
2011	0	0
2012	0	0
2013	1	5

Table 17. Estimated marine mammal deaths and serious injury (DSI) from observer data in the American Samoa longline fishery.
Source NMFS PIRO based on data in Table 15

False Killer Whale		
Landing Year	**Obs.DSI Monitor**	**DSI Total**
2010	0	0
2011	3	6
2012	0	0
2013	1	9
Unidentified blackfish (undetermined if false killer whale or a shortfisnned pilot whale		
Landing Year	**Obs.DSI Monitor**	**DSI Total**
2010	0	0
2011	1	3
2012	0	0
2013	0	0
Unidentified Cetacean		
Landing Year	**Obs.DSI Monitor**	**DSI Total**
2010	0	0
2011	1	4
2012	0	0
2013	0	0
Rough-toothed dolphin		
Landing Year	**Obs.DSI Monitor**	**DSI Total**
2010	0	0

2011	4	8
2012	0	0
2013	1	4
Cuvier's Beaked Whale		
Landing Year	**Obs.DSI Monitor**	**DSI Total**
2010	0	0
2011	1	4
2012	0	0
2013	0	0

8.6.1 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).

Table 18. Estimated sea-turtle interactions from observer data in the American Samoa longline fishery.
Source NMFS PIRO based on data in Table 14

Green Turtle		
Landing Year	**Observed Take**	**Estimated Total Take**
2010	6	50
2011	11	32
2012	0	0
2013	2	19
Olive Ridley		
Landing Year	**Observed Take**	**Estimated Total Take**
2010	0	0
2011	1	4
2012	1	6

2013	1	4
Leatherback		
Landing Year	**Observed Take**	**Estimated Total Take**
2010	0	0
2011	2	4
2012	1	6
2013	2	13

The estimated number of sea-turtles taken in the American Samoa longline fishery is given in Table 18. 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 2012 no green turtles were taken by the fishery and 10 in 2013. No leatherback or olive ridley turtles were observed taken by the fishery until 2011.

8.6.1.1 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).

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 14), 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.

8.6.1.2 Hawksbill Sea Turtles

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 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.[18] 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 14).

8.6.1.3 Olive Ridley Sea Turtles

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 14) [19]. Two further interactions were observed in 2012 and 2013 with both turtles released dead (Table 14).

8.6.1.4 Leatherback Sea Turtles

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

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 14). A single leatherback was released dead in 2012 and one leatherback was released alive and one dead in 2012 (Table 14). This shows that leatherback turtles are not commonly ecountered by the American Samoa longline fishery

8.6.1.5 Loggerhead Sea Turtles

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 14).

8.6.2 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*).

8.6.2.1 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.[20] 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 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.[21]

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

The worldwide humpback whale population size is unknown. There is currently no estimate of abundance for humpback whales in American Samoan waters (Carretta et al 2014). No humpback whale interactions have been observed in the American Samoa longline fishery.

8.6.2.2 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 Marine Sanctuary, Tutuila (now the National Marine Sanctuary of American Samoa).[22]

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.

8.6.2.3 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.[23]

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.

8.6.3 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 19. Observers have recorded fishery interactions with small cetaceans on an infrequent basis since regular observer

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

coverage started in 2006. No large whale interactions have been observed in the American Samoa longline fishery. See Table 19 for observed interactions with marine mammals in the fishery.

Table 19. 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.

8.6.4 ESA-listed Seabird

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.[24]

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, 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. [25] Since its inception in 2006, the American Samoa

[24] Bird Checklist for American Samoa found at: http://www.nps.gov/archive/npsa/5Atlas/partzj.htm
[25] The USFWS is the primary federal agency with authority and responsibility to manage ESA listed seabirds.

Observer Program has not documented any sightings or interactions between the longline fishery and Newell's shearwaters.

8.6.5 Other Seabirds

Other seabirds not listed under the ESA found in American Samoa are listed in Table 20. There have been two unidentified shearwaters released dead in the American Samoa longline fishery, one each in 2007 and 2011.

Table 20. 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.

8.6.6 Reef Building Corals

In 2014 (NMFS 2014a), NMFS designated 15 Indo-Pacific reef building corals as "Threatened" under the ESA. These include *Acropora globiceps, Acropora jacquelineae, Acropora lokani, Acropora pharaonis, Acropora retusa, Acropora rudis, Acropora speciosa, Acropora tenella, Anacropora spinosa, Euphyllia paradivisa, Isopora crateriformis, Montipora australiensis, Pavona diffluens, Porites napopora,* and *Seriatopora aculeate.* Six of these species (*A. globiceps, A. jacquelineae, A. retusa, A. speciose, E. paradivisa and I. crateriformis)* are found in American Samoa.

Longliners target pelagic fish away from the coastal margin where these corals may be found and thus do not present a significant threat to coral reefs in general nor to the six listed coral species.

8.6.7 Scalloped Hammerhead Shark

In 2014 (NMFS 2014b), NMFS issued a final determination to list the Indo-West Pacific Distinct Population Segment (DPS) of scalloped hammerhead shark (*Sphyrna lewini*) as threatened under the ESA (Figure 233).

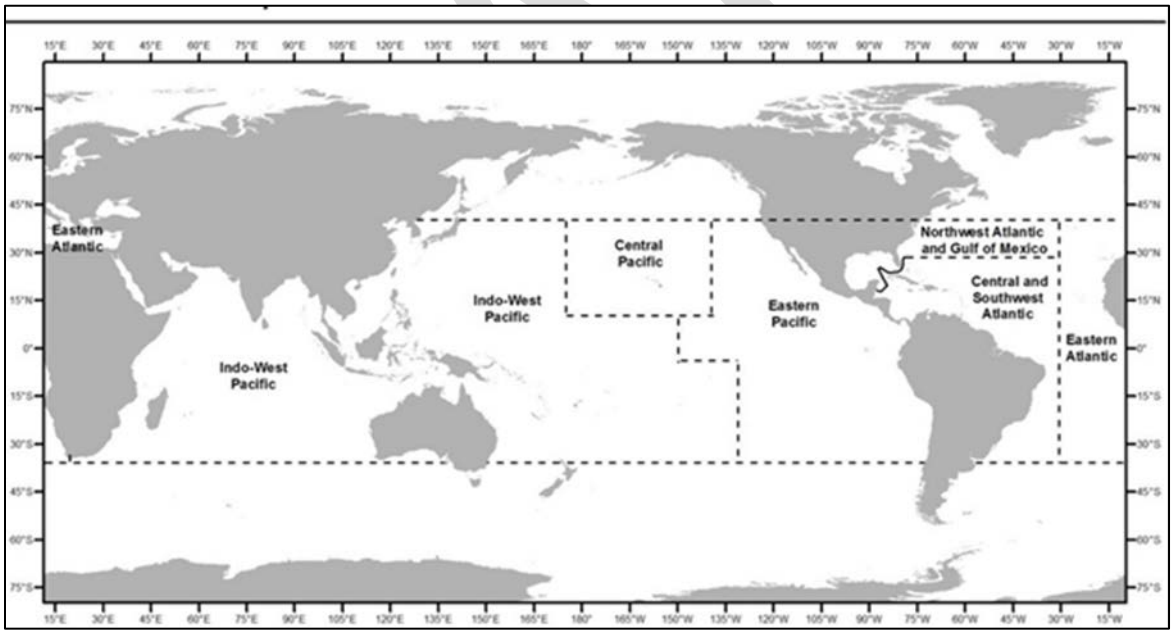

Figure 22. Scalloped hammerhead Discreet Population Segment boundaries
Source: (NMFS 2014b)

The American Samoa longline fishery has incidentally caught very low numbers of scalloped hammerhead sharks. Since mandatory observer coverage of the fishery in 2006 through June 2014, there are records of eight scalloped hammerhead sharks caught, an average of one shark take per year (NMFS Observer Program, unpublished data).

The Shark Finning Prohibition Act stopped shark finning in 2000 and the Shark Conservation Act of 2010 requires all fishermen harvesting sharks to land the carcass intact. In August 2012, the Territory banned shark fishing, including the trade, sale and distribution of sharks or shark parts, including fins, within three nautical miles of the coastline.

9.0 Consistency with the Magnuson-Stevens Act and Other Applicable Law

9.1 Magnuson-Stevens Act National Standards

Section 301 of the Magnuson-Stevens Act requires that regulations implementing any FMP or FMP amendment be consistent with the ten national standards listed below.

National Standard 1 states that conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The preferred alternative is consistent with National Standard (NS) 1 as it will not lead to overfishing of South Pacific albacore nor lead to become overfished. As noted in section X, the problems associated with sub equatorial longline fisheries across the South pacific are due to depletion of adult stocks within EEZs including the US EEZ around American Samoa. The stock status of South Pacific albacore continues to be healthy, with stock-wide fishing mortality at 20% of that generating MSY, while catches are at about the MSY.

National Standard 2 states that conservation and management measures shall be based upon the best scientific information available.

The preferred alternative is based on the best scientific information available, including the most recent stock assessment and information on catches in the American Samoa longline fishery, and observer data on protected species interactions and information obtained from published reports and articles, as well as recommendations from the Council's Scientific and Statistical Committee.

National Standard 3 states that, to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The preferred alternative is consistent with the concept of managing a stock throughout its range. The impact analysis considers stock assessments for the South Pacific Albacore stock, as well as stock status for other target and non-target stocks as a whole.

National Standard 4 states that conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in

such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The preferred alternative is consistent with NS 4 in that it does not discriminate between residents of different states and applies to all American Samoa limited entry permit holders of vessels > 50 ft.

National Standard 5 states that conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

An efficient fishery should harvest the OY with the minimum use of economic inputs such as labor, capital, interest, and fuel. Efficiency in terms of aggregate costs then becomes a conservation objective, where conservation constitutes wise use of all resources involved in the fishery, not just fish stocks. Restrictive measures that unnecessarily raise any of those costs move the regime toward inefficiency.

In this instance the LVPA cuts off substantial areas of water in the US EEZ around American Samoa for no net gain to the majority of the fishing community. Further, the very fishery that led to the creation of the LVPA has become entirely defunct, thus the measure has no purpose. Concerns from the troll fishermen are relatively recent stemming from the request to the Council to let large longline vessels have access to the LVPA. However, as noted in the analysis of the alternatives, there is no evidence that longline vessels would compete with troll vessels for catch.

Further, unless the use of inefficient techniques or the creation of redundant fishing capacity contributes to the attainment of other social or biological objectives, an FMP may not contain management measures that impede the use of cost-effective techniques of harvesting, processing, or marketing. Thus the preferred alternative is consistent with NS 5 since it is intended to promote the continuity of the American Samoa longline fishery and maintain a supply of albacore for the Pago Pago cannery, and fresh fish for domestic markets in American Samoa.

National Standard 6 states that conservation and management action shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources and catches.

The preferred alternative is consistent with NS 6 since it deals with variations and contingencies within the American Samoa longline fishery through modifying the LVPA boundaries, including future boundary changes

National Standard 7 states that conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The preferred alternative is consistent with NS 7 as it is the most practicable and least costly measure that can be conducted, beyond No Action, to promote the continuity of the American Samoa longline fishery. In developing the management option, the Council sought to minimize costs of the regulation for both the agencies and the fishery and avoided unnecessary duplication.

National Standard 8 states that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

The preferred alternative is consistent with NS 8 whereby ensuring the continuity of the American Samoa longline fishery provides for the sustained participation of the American Samoa community attempts to minimize adverse economic impacts on this community

National Standard 9 states that conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided minimize the mortality of such bycatch.

The preferred alternative is consistent with NS 9 in that it will not modify the fishing operations of the American Samoa longline fishery, and should not lead to any dramatic increases in bycatch.

National Standard 10 states that conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The preferred alternative is consistent with NS 10 as it will not lead to any modifications of pelagic longline fishing currently being conducted in the fishery and thus any potential increase in the risks of injury or mortality to longline fishermen.

9.2 Magnuson-Stevens Act Essential Fish Habitat Designations

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 throughout the Western Pacific Region in Table 21.

Table 21: EFH and HAPC for species in American Samoa managed under the Fishery Ecosystem Plans MUS	Species Complex	EFH	HAPC
Bottomfish MUS	American Samoa, Guam and CNMI bottomfish species: lehi (*Aphareus rutilans*) uku (*Aprion virescens*), giant trevally (*Caranx ignoblis*), black trevally (*Caranx lugubris*), blacktip grouper *(Epinephelus fasciatus),* Lunartail grouper *(Variola louti),* ehu (*Etelis carbunculus*), onaga (*Etelis coruscans*), ambon emperor *(Lethrinus amboinensis),* redgill emperor *(Lethrinus rubrioperculatus),* taape (*Lutjanus kasmira*), yellowtail kalekale (*Pristipomoides auricilla*), opakapaka (*P. filamentosus*), yelloweye snapper (*P. flavipinnis*), kalekale (*P. sieboldii*), gindai (*P. zonatus*), and amberjack (*Seriola dumerili*).	Eggs and larvae: the water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fm). Juvenile/adults: the water column and all bottom habitat extending from the shoreline to a depth of 400 m (200 fm)	All slopes and escarpments between 40–280 m (20 and 140 fm)

Table 21: EFH and HAPC for species in American Samoa managed under the Fishery Ecosystem Plans MUS	Species Complex	EFH	HAPC
Crustaceans MUS	Spiny and slipper lobster complex (all FEP areas): spiny lobster (*Panulirus marginatus*), spiny lobster (*P. penicillatus, P.* spp.), ridgeback slipper lobster (*Scyllarides haanii*), Chinese slipper lobster (*Parribacus antarcticus*) Kona crab : Kona crab (*Ranina ranina*)	Eggs and larvae: the water column from the shoreline to the outer limit of the EEZ down to a depth of 150 m (75 fm) Juvenile/adults: all of the bottom habitat from the shoreline to a depth of 100 m (50 fm)	All banks in the NWHI with summits less than or equal to 30 m (15 fathoms) from the surface
	Deepwater shrimp (all FEP areas): (*Heterocarpus* spp.)	Eggs and larvae: the water column and associated outer reef slopes between 550 and 700 m Juvenile/adults: the outer reef slopes at depths between 300-700 m	No HAPC designated for deepwater shrimp.
Coral Reef Ecosystem MUS	Coral Reef Ecosystem MUS (all FEP areas)	EFH for the Coral Reef Ecosystem MUS includes the water column and all benthic substrate to a depth of 50 fm from the shoreline to the outer limit of the EEZ	Includes all no-take MPAs identified in the CREFMP, all Pacific remote islands, as well as numerous existing MPAs, research sites, and coral reef habitats throughout the western Pacific

The alternatives are not expected to have any impacts on essential fish habitat (EFH) or habitat areas of particular concern (HAPC) for species managed under the Western Pacific FEPs. EFH

and HAPC for these species groups has been defined as presented in Table 21: . The alternatives are largely administrative in mature and they would not lead to substantial physical, chemical, or biological alterations to the habitat, or result in loss of, or injury to, these species or their prey. The proposed action would maintain the same level of protection to EFH and HAPC provided under the current Pelagics FEP. Pelagic fishing usually occurs in deep water environments (greater than 1,000 m) and do not typically make contact with coral or rock substrate; therefore, not altering or substantially impacting EFH and HAPCs. For the same reason, the alternatives are not anticipated to cause substantial damage to the ocean and coastal habitats.

9.3 National Environmental Policy Act

This amendment has been written and organized to meet the requirements of the National Environmental Policy Act and thus is a consolidated document including an Environmental Assessment, as described in NOAA Administrative Order 216-6, Section 603.a.2. The relevant NEPA section requirements can be found in this document as follows:

- Purpose and Need, Section 4,
- Proposed Action and Description of Alternatives, Section 6
- Description of Affected Environment, Section 7
- Impacts of Alternatives, Section 8

9.4 Executive Order 12866 – Regulatory Planning and Review

To meet the requirements of Executive Order 12866 (E.O. 12866), NMFS requires that a Regulatory Impact Review (RIR) be prepared for all regulatory actions that are of public interest. This review provides an overview of the problem, policy objectives, and anticipated impacts of regulatory actions, and ensures that management alternatives are systematically and comprehensively evaluated such that the public welfare can be enhanced in the most efficient and cost effective way.

The proposed action will be reviewed and summarized.

In accordance with E.O. 12866, the RIR will evaluate whether the action would have an annual effect on the economy of more than $100 million or to adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety; or state, local or tribal governments or communities; (2) Whether the action is likely to create any serious inconsistencies or otherwise interfere with any actions taken or planned by another agency; (3) whether the action would materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; (4) and whether the action would raise novel or policy issues arising out of legal mandates, or the principles set forth in the Executive Order. Based on the information contained in the final Pelagics FEP amendment, the findings of the action will be evaluated for significance under E.O. 12866.

9.5 Administrative Procedures Act

All federal rulemaking is governed under the provisions of the Administrative Procedures Act (APA) (5 U.S.C. Subchapter II) which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish notification of proposed rules in the Federal Register and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it becomes effective, with rare exceptions. The draft and final amendments will comply with the provisions of the APA through the Council's use of public meetings, requests for comments, and consideration of comments. To implement the proposed amendment, NMFS will publish a proposed rule and request public comments on the rule and environmental assessment.

9.6 Coastal Zone Management Act

The Coastal Zone Management Act requires a determination that a recommended management measure will have no effect on the land, water uses, or natural resources of the coastal zone, or is consistent to the maximum extent practicable with an affected state's enforceable coastal zone management program. The American Samoa longline fisheries primarily occur in Federal waters and on the high seas, although vessels do transit the coastal zone. At this initial stage, the proposed action and alternatives are not expected to result in a large change the any fishery in American Samoa, including the longline fishery. At best, given the economic conditions in the fishery, the fishery could return to the peak years of 2001-2007 and there were no large adverse effects on the coastal zone from the longline fishery in those years. Once the draft Amendment and EA are prepared, NMFS will make prepare a determination and coordinate it with the American Samoa Government, Department of Commerce, and American Samoa Coastal Management Program for review and concurrence.

9.7 Executive Order 12898 – Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898 (E.O. 12898), "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." E.O. 12898 provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." E.O. 12898 also provides for agencies to collect, maintain, and analyze information on patterns of subsistence consumption of fish, vegetation, or wildlife. That agency action may also affect subsistence patterns of consumption and indicate the potential for disproportionately high and adverse human health or environmental effects on low-income populations, and minority populations. A memorandum by President Clinton, which accompanied E.O. 12898, made it clear that environmental justice should be considered when conducting NEPA analyses by stating the following: "Each Federal agency should analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations, low-income populations, and Indian tribes, when such analysis is required by NEPA[26].

[26] Memorandum from the president to the Heads of Departments and Agencies. Comprehensive Presidential Documents No. 279 (February 11, 1994).

9.8 Information Quality Act

The information in this document complies with the Information Quality Act and NOAA standards (NOAA Information Quality Guidelines, September 30, 2002) that recognize information quality is composed of three elements: utility, integrity, and objectivity. National Standard 2 of the Magnuson-Stevens Act states that an FMP's conservation and management measures shall be based upon the best scientific information available. In accordance with this national standard, the information product incorporates the best biological, social, and economic information available to date, including the most recent biological information on, and assessment of, the pelagic fishery resources and protected resources, and the most recent information available on fishing communities, including their dependence on pelagic longline fisheries, and up-to-date economic information (landings, revenues, etc.). The policy choices, i.e., proposed management measures, contained in the information product are supported by the available scientific information. The management measures are designed to meet the conservation goals and objectives of this amendment to the Pelagics FEP and the Magnuson-Stevens Act.

The data and analyses used to develop and analyze the measures contained in the information product are presented in this amendment. Furthermore, all reference materials utilized in the discussion and analyses are properly referenced within the appropriate sections of the environmental assessment. The information product was prepared by Council and NMFS staff based on information provided by NMFS Pacific Islands Fisheries Science Center (PIFSC) and NMFS PIRO. The information product was reviewed by PIRO and PIFSC staff, and NMFS Headquarters (including the Office of Sustainable Fisheries). Legal review was performed by NOAA General Counsel Pacific Islands and General Counsel for Enforcement and Litigation for consistency with applicable laws, including but not limited to the Magnuson-Stevens Act, National Environmental Policy Act, Administrative Procedure Act, Paperwork Reduction Act, Coastal Zone Management Act, Endangered Species Act, Marine Mammal Protection Act, and Executive Orders 13132 and 12866.

9.9 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act (PRA) is to minimize the paperwork burden on the public resulting from the collection of information by or for the Federal government. The PRA is intended to ensure the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501(1)). At the time of this preliminary review, none of the alternatives would establish any new permitting or reporting requirements, and the project would not be subject to the provisions of the PRA.

9.10 Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 et seq.) requires government agencies to assess and present the impact of their regulatory actions on small entities including small businesses, small organizations, and small governmental jurisdictions. The assessment is done by

preparing a Regulatory Flexibility Analysis. An Initial Regulatory Flexibility Analysis will be included in the proposed rule.

9.11 Endangered Species Act

Section 7.6 of this document describes the threatened and endangered species found in the action area of the American Samoa-based longline fishery. The ESA can allow a limited take of listed sea turtles during the otherwise lawful longline fishery through a biological opinion (BiOp) prepared by NMFS pursuant to Section 7 of the ESA,

A BiOp for the American Samoa longline fishery completed on September 16, 2010. The 2010 BiOp considers and analyzes the measures proposed in the Council's preferred alternative in this amendment, intended to reduce the potential for further interactions between longlines and sea turtles. The BiOp concluded that the annual numbers of interactions and mortalities expected to result from implementation of the proposed action for a 3-year period is incidental take of up to 45 green sea turtles over three years (average of 15 interactions per year with 41 mortalities). The occasional hooking and entanglement (no more than 1 every 3 years per species) of hawksbill, leatherback, and olive ridley turtles is also expected (NMFS 2010a). If the total number of authorized sea turtle interactions included in the incidental take statement (ITS) during any consecutive 3-year period is exceeded, re-initiation of consultation will be required (50 CFR 402.16). After implementation of the proposed action and the period of years 1 through 3 has ended, a new 3-year ITS period will begin with years 2 through 4, and so on.

Through Pelagics FEP Amendment 5, approved by the Secretary of Commerce in September 2011, NMFS implemented Council recommended measures anticipated to reduce sea turtle interactions. After gear modifications are made, the Council expects American Samoa longline fishery operations will be consistent with the provisions and conclusions of the 2011 BiOp and will not be likely to jeopardize the continued existence of any listed species or cause any adverse modification to critical habitats.

9.12 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) prohibits, with certain exceptions, the take of marine mammals in the U.S. and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. The MMPA gives the Secretary of Commerce authority and duties for all cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions, except walruses). The MMPA requires NMFS to prepare and periodically review stock assessments of marine mammal stocks.

Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries that classifies U.S. commercial fisheries into one of three categories. These categories are based on the level of serious injury and mortality of marine mammals that occurs incidental to each fishery. Specifically, the MMPA mandates that each fishery be classified according to whether it has frequent, occasional, or a remote likelihood of or no known incidental mortality or serious injury of marine mammals. The American Samoa longline fishery is a Category II fishery (occasional serious injury and mortality) in the 2013 List of Fisheries (78 FR 53336 August 29,

16, 2013) and this amendment makes no changes to allowable amount of fishing except to open a further 7% of the US EEZ around American Samoa to longline fishing. It does not alter the way that fishery is conducted. As noted above, unlike Hawaii, there is no data for American Samoa to indicate that there are any island associated marine mammal stocks. Further, the South Pacific has many archipelagos in proximity to one another and has a different ecology compared to a remote archipelago like Hawaii. It is therefore assumed that fishing closer to Swains would not have any substantial impact on encounter rates and hence interactions. Thus the American Samoa longline fishery does not require an MMPA category re-designation or other action.

Vessel owners and crew that are engaged in Category II fisheries may incidentally take marine mammals after registering or receiving an Authorization Certificate under the MMPA, but they are required to: 1) report all incidental mortality and injury of marine mammals to NMFS, 2) immediately return to the sea with minimum of further injury any incidentally taken marine mammal, 3) allow vessel observers if requested by NMFS, and 4) comply with guidelines and prohibitions under the MMPA when deterring marine mammals from gear, catch, and private property (50 CFR 229.4, 229.6, 229.7). The MMPA registration process is integrated with existing state and Federal licensing, permitting, and registration programs. Therefore, individuals who have a state or Federal fishing permit or landing license, such as the American Samoa limited entry longline permit, are currently not required to register separately under the MMPA.

In addition, fishers participating in a Category I or II fishery are required to accommodate an observer onboard their vessel(s) upon request (50 CFR 229.7); and fishers participating in a Category I or II fishery are required to comply with any applicable take reduction plans. NMFS may develop and implement take reduction plans for any Category I or II fishery that interacts with a strategic stock.

See Sections 7.4.2 and 7.4.3 of this document for descriptions of marine mammals found around American Samoa. Section 9.0 provides an analysis of the anticipated impacts on these species under each of the alternatives considered by the Council. The Council expects that the alternatives would not adversely affect any marine mammal populations or habitat.

9.13 Executive Order 13132 – Federalism

The objective of Executive Order 13132 is to guarantee the Constitution's division of governmental responsibilities between the federal government and the states. Federalism Implications (FI) is defined as having substantial direct effects on states or local governments (individually or collectively), on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. This action does not contain policies with FI under E.O. 13132, as it does not impact or later the relationship between the federal government and the government of the Territory of American Samoa.

10.0 Proposed Draft Regulations

[in prep]

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Appendix 1

Economic Performance and Status of American Samoa Longline Fishery 2014
Internal Report to Council

Minling Pan
Pacific Islands Fisheries Science Center
National Marine Fisheries Service, NOAA

January 22, 2015

Purpose: The purpose of this report is to document the dynamic changes in the economic health of the American Samoa longline fishery. This brief summary includes a comparison of the cost-earnings status for the 2001 operating year vs. the 2009 operating year. In addition, this report presents a long-term trend of net revenues of the fleet for the period from 2006 to 2014. This trend data, collected through a routine data collection program, illustrates the declining trend in net returns to the fishery, offering an insight to the fishery collapse in 2013.

Cost-Earnings Status of 2009 Operations: The cost-earnings study (Arita and Pan, 2013) found that in 2009, the average annual revenue per vessel was $448,817, just slightly higher than total expenditures; and as a result, the average annual cash return (profit) per vessel was $6,379. Table 1 shows the detailed figures of revenue, variable costs, fixed costs, labor costs, and net cash return (profit) for an average vessel of the American Samoa longline fleet operated in 2001 and 2009. Among 23 active vessels surveyed in 2009, 48% suffered net losses from fishing operations. If depreciation of a vessel is considered, the average profit to an owner was negative per vessel. Rising fuel costs, which accounted for approximately 27% of total expenditures, coupled with relatively low revenues (due to lower albacore CPUE), were the major factors leading to poor economic performance.

Comparison with 2001 Cost Earnings Study: In general, the 2009 cost-earnings status was much worse compared to 2001 operations. While the average vessel generated net cash return (profit) to an owner of $177,207 in 2001, the average vessel in 2009 generated only $6,379, a 96% decrease compared to that in 2001. The detailed cost-earnings data of the American Samoa fleet based on 2001 operations (O'Malley and Pooley, 2002) are also listed in Table 1.

Table 1. Cost-Earnings Performance in 2001 and 2009 of the American Samoa Longline Fishery.

	2009	2001	% Change
Average Annual Revenue per Vessel	448,817	657,063	-32%
Average Annual Trip Costs per Vessel	268,016	200,923	33%
Fuel	121,648	73,314	66%

Oil	6,064		5,085	19%
Freezer Operations	8,389		10,090	-17%
Bait	53,312		60,318	-12%
Provisions	20,109		22,739	-12%
Communication	3,846	n/a		
Fishing Gear	22,843		29,378	-22%
Misc. Trip Costs	31,804	n/a		
Average Annual Labor Costs per Vessel	78,167		177,894	-56%
Total Captain Share	30,594		68,421	-55%
Total Crew Payments	47,573		109,474	-57%
Average Annual Fixed Costs per Vessel	96,256		101,039	-5%
Mooring	3,365		6,480	-48%
Bookkeeping	3,467		1,609	115%
Insurance	24,970		26,533	-6%
Loan Payments	19,251		35,578	-46%
Other Fixed Costs	3,413		8,180	-58%
Drydock Costs	16,541		4,077	306%
Overhaul Costs	5,584		1,558	258%
Major Repairs	10,761		3,333	223%
Routine repairs	8,904		13,691	-35%
Average Total Annual Expenditures per Vessel	442,438		479,856	-8%
Average Annual Net Return per Vessel	6,379		177,207	-96%

Data sources: 2001 data are from O'Malley and Pooley (2002), and 2009 data are from (Arita and Pan, 2013)

There are two main changes in the cost-earning status of 2009 vs. 2001. First, average overall revenues in 2009 per vessel fell by 32% compared to 2001. A decline in albacore CPUE was the main factor that contributed to lower revenues in 2009 because albacore was the main component of the catch. In 2009, CPUE was approximately 14.8 fish per 1000 hooks, which was 56% lower than the 2001 CPUE of 34 fish per 1000 hooks. If we measure CPUE by fish per set (as opposed to fish per hooks), CPUE fell from 66.5 fish per set in 2001 to 45.5 fish per set in 2009, a 32% decline.

Second, there was a substantial increase in variable costs. Annual variable costs (trip expenditure) increased by 33%. The substantial increase in fuel expense, 66% more compared to 2001, was the major driver of overall cost increases. On the other hand, annual fixed costs in 2009 were 5% lower than 2001. Annual labor costs per vessel declined 56% compared to 2001. The decline in labor costs implied that crew received lower payments, thus, fishermen's income from fishing operations were greatly reduced in 2009 compared to in 2001.

When comparing the economic statuses of these two years, it is important to note that the O'Malley and Pooley study (2002) estimated revenues based on a subsample of longline vessels, which may not have been a representative sample of all vessel activity. O'Malley and Pooley also indicated that the revenue may have been overestimated because, during the study period, the majority of vessels arrived in midyear. Albacore are more abundant from May to October in American Samoa's waters (Domokos et al., 2007) than in the early months of the year, hence the catch per unit effort (CPUE) figure after midyear is usually higher than the annual average. In contrast, the revenue data used to evaluate the fishery's 2009 economic performance were based on a full year of logbook data for each vessel in the surveyed sample, reflecting a more accurate depiction of vessel performance. As a result of these methodological differences, our ability to meaningfully make comparisons between the two studies has that limitation.

The Fishery Collapse of 2013: At the end of 2013, the majority of the vessels in the American Samoa fleet were tied up at dock, and 18 vessels posted "For Sale" signs, according to the *Samoa News* of December 18, 2013. The collapse of the fishery seems inevitable due to the poor economic performance resulting from the continuous decline in CPUE, increases in fuel prices, and a sharp drop in albacore prices in 2013. The cost-earnings study (Arita and Pan 2013) had already indicated a thin profit margin for the American Samoa longline fleet in 2009.

A sensitivity analysis shows that if CPUE of the main catch species (albacore) is lower than 14.3 fish per 1000 hooks, and the price is $2,200 per metric ton ($1.00/lb), while holding other factors unchanged, the profit (net cash return) for an individual vessel would be negative. In 2009, the albacore CPUE was 14.8 fish per 1000 hooks and the albacore price was $2,200 per metric ton. Therefore, the profit in 2009 was very close to zero. In 2013, the albacore CPUE declined to 11.9 fish per 1000 hooks from 14.8 fish per 1000 hooks in 2012, and albacore prices declined to $2,200 per metric ton from $3,249 per metric ton in 2012. Obviously, the decline of both CPUE and the price of albacore yielded a negative profit.

In addition, the continuous economic data collection program that has monitored the economic performance from 2006 to the present (Pan et al., 2012) showed that fishing costs continued

increasing after 2009. Figure 1 illustrates the revenue and variable costs by fishing set from the period 2006 to 2013. The variable costs presented in the figure include costs of diesel fuel, engine oil, bait, freezer operating costs, gear, provisions, communications, and miscellaneous items, but do not include labor costs. The data were collected on a trip base. However, since the trip length (total days of a fishing trip) for the American Samoa longline fleet varied substantially across years, the cost per set (usually one set a day) is a better index for a cost comparison across years. In 2013, fishing costs exceeded revenues. Obviously, fleet operations cannot be continued with negative cash returns.

The net revenue per set (Figure 2) further illustrates the poor economic performance of the fishery in recent years. During the period 2006 to 2014, net revenue per set fluctuated but in a declining trend. The net revenue in 2011 and 2012 was $244 and $713 per set, respectively, much lower than the net revenue in 2009 ($1,307 per set). Yet, it further declined in 2013 to a negative -$372 per set.

The economic performance of the American Samoa longline fleet in 2014 slightly improved based on the logbook data January 2014 to October 2014 (data for the last two months aren't available yet). Compared to 2013, 2014 revenue per set increased to $1933 per set from $1765 per set in 2013. Variable costs, which mainly included fuel and bait costs but excluded labor cost and fixed costs, were $1553 per set in 2014. Thus, positive trip net revenue yielded in 2014. However, in order for an owner to gain profit from fishing, the net revenue should be about 40%[27] of the trip revenue, thus the owner would have sufficient amount of net revenue to pay for the labor cost and fixed cost (e.g. insurance and major repairs). In other words, for a boat owner to earn profit in 2014 (that were comparable to that in 2009), the net revenue should be at least $761 per set. However, the actual net revenue was $380 per set in 2014.

[27] According to 2009 cost-earnings study (Table 1), for the 100% revenue earned, 60.6% spent on the trip expenditure, 17.7% went to pay for the captain and crew, 21.8% went to fixed costs for repairs and insurances etc., and only 1.5% went to the boat owner.

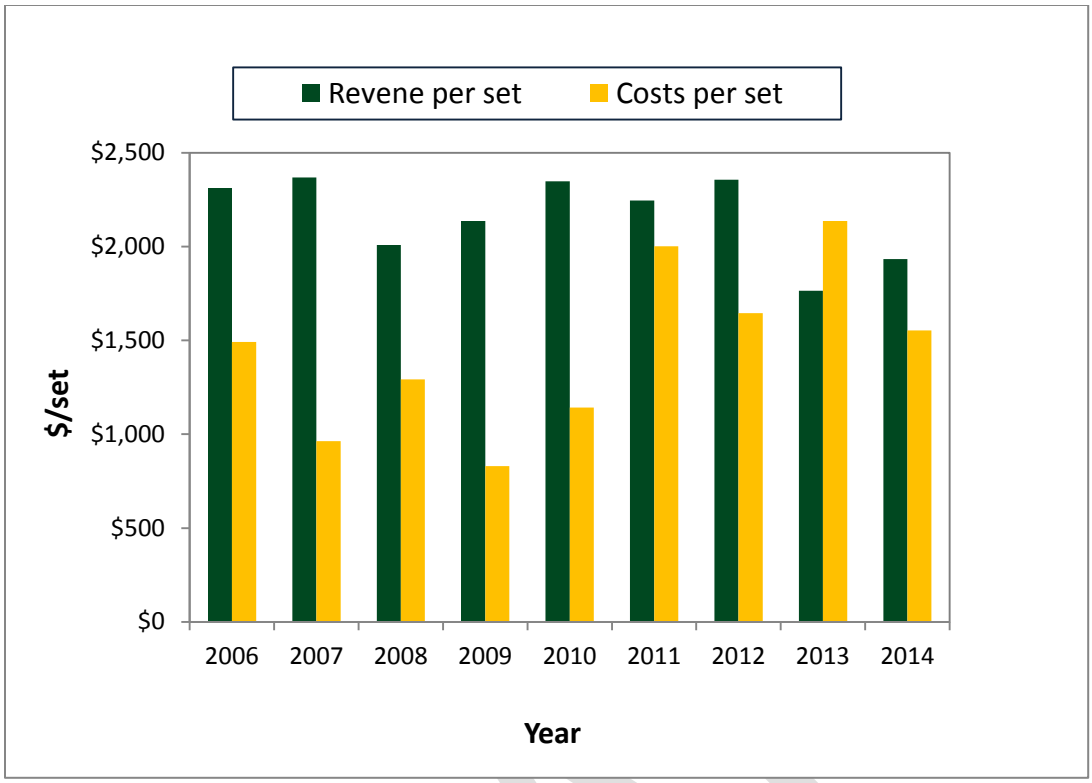

Figure 1. Revenue and cost per set of American Samoa Longline Fishery, 2006-2014.

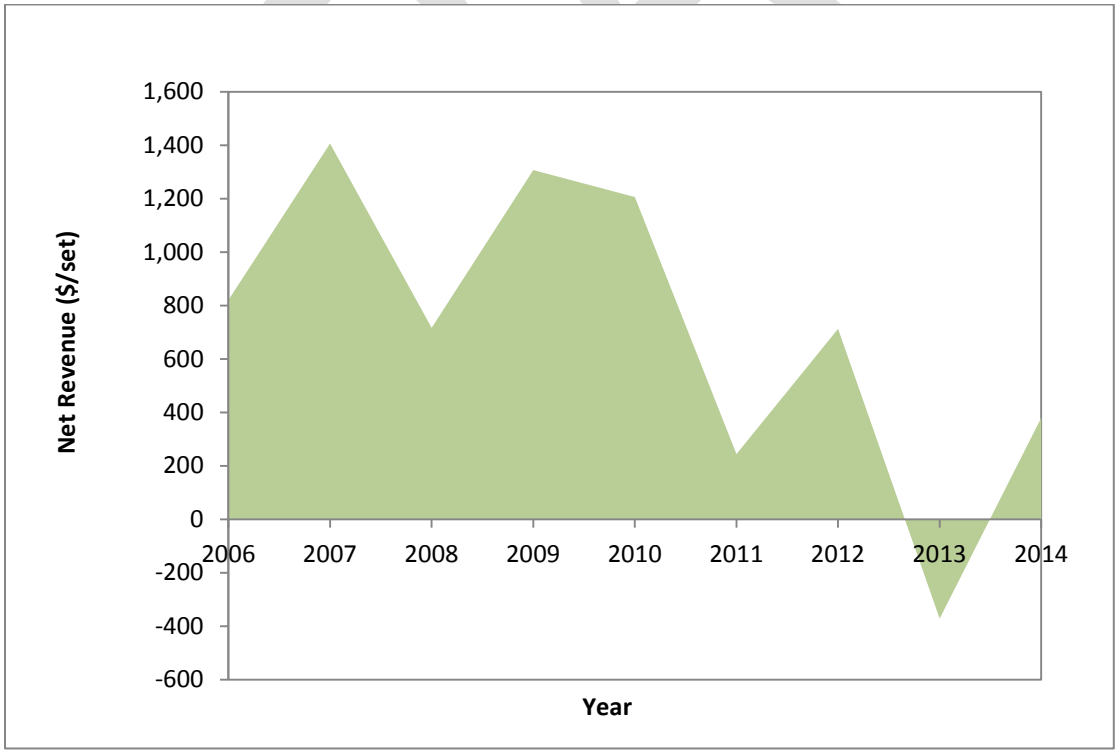

Figure 2. Net Revenue per Set of American Samoa Longline Fishery, 2006-2014.

Data sources for Figures 1 and 2: cost information are from the Continuous Economic data Collection Program from 2006 to 2014 (Pan et al., 2012), and revenue per trip for 2016-2013 are calculated using the annual revenue and the number of sets collected by PIFSC's WPacFIN Program and published at http://www.pifsc.noaa.gov/wpacfin/as/Pages/as_data_5.php. 2014 revenue data were provided by internal request from the FMRD PIFSC

As discussed previously, fixed costs were not included in Figure 2. Figure 3 presents the net revenue trend when fixed costs were considered. In Figure 3, the net revenue was defined as revenue minus variable costs and fixed costs, while net revenue in Figure 2 was defined as revenue minus variable costs. The fixed costs information of the American Longline fleet was available in 2009 and 2001 respectively when cost-earnings studies were conducted based the fishing operations of the two years. The average fixed costs per vessel were $96,000 in 2009, while they were $101,000 in 2001. Compared the cost-earnings tables of 2001 and 2009, the fixed costs between 2001 and 2009 did not show large difference, although variable costs and labor costs experienced significant changes (see Table 1). The previous cost-earnings studies of the Hawaii longline fleet also demonstrated that fixed costs were more stable compared to other cost items. Based on this finding from the cost-earnings studies, we may assume that the fixed cost per set were stable during the period of 2006 to 2014 and similar to the 2009 level. Based on the logbook summary (http://www.nmfs.hawaii.edu/wpacfin/as/Data/Annual_Log/all09catsizemain.htm), the average number of sets per vessel was 189 sets in 2009. Thus, converted the figure from vessel to set, the average fixed costs was $509 per set in 2009. Considering fixed costs, the fishing operations in 2011, 2013, and 2014 suffered negative revenue, as shown in Figure 3.

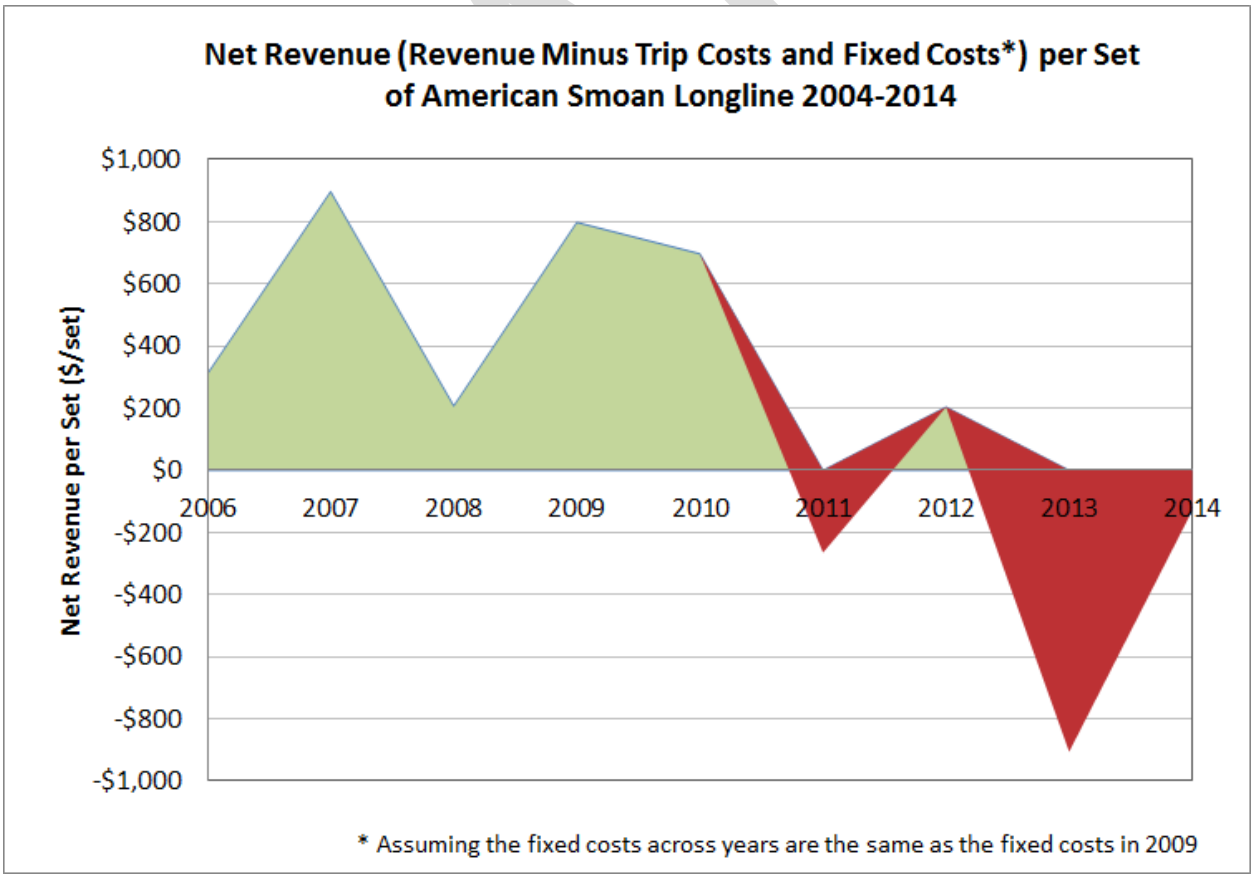

Figure 3. Net Revenue (Revenue minus variable costs and fixed costs per set) of American Samoa Longline Fishery, 2006-2014.

Conclusion: The cost-earnings study shows a thin profit earned in the American Samoa longline fishery in 2009 operations. Earnings to fishermen declined an average 56% for crew and captain, and 96% for a vessel owner. The economic performance became even worse in 2013, showing a negative return (even before charging fixed costs and labor cost) from fishing. The economic performance improved in 2014 over 2013. However, the earnings to the boat owners for the American Samoa fleet in 2014 may still be negative, after subtracting the fixed cost and labor costs. A sensitivity analysis shows that the net return of the fishery is tied to both the CPUE and the price of its main species, albacore. If the CPUE of albacore is lower than 14.3 fish per 1000 hooks (0.5 fish lower than the 2009 CPUE), or the fish price is lower than $0.97/lb (3 cents less than the 2009 reported price), while holding other variables unchanged, the net return for an average vessel will be negative. Therefore, the recovery of the fishery would rely on a significant improvement of either fish catch or price, or a combination of both.

Cited Documents:

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