

## **Options for the American Samoa longline fishery and long term conservation of South Pacific Albacore**

### **Introduction:**

The American Samoa longline fishery is the second largest US longline fishery in the US in the Pacific. The American Samoa fishery is based almost entirely on fishing for South Pacific albacore (SPALB) caught for the American Samoa canning industry. With only a small domestic market, and limited access to overseas markets SPALB is also important to the central South Pacific countries neighboring American Samoa, who also supply the American Samoa canning industry.

Catches of SPALB by all national fleets south of the equator have more than doubled in the past decade, and are currently about 95% of the MSY (85,200 mt)(SPC-OFP). This is due primarily to the doubling of vessels from China, including Chinese fishing under access agreements with the Solomon Islands, and switching by Taiwanese longliners from targeting bigeye to targeting albacore (WCPFC 2012a).

There is growing concern for the future of the SPALB stock and the South Pacific island-based longline fisheries that are primarily dependant on this stock. As described in more detail below, many FFA member countries seek to see a total allowable catch implemented for SPALB and the establishment of EEZ-based and high seas catch limits for this stock in the Western and Central Pacific Ocean (WCPO) by the Western and Central Pacific Fisheries Commission (WCPFC)<sup>1</sup>.

### **Purpose and need**

The Council needs to examine options and scenarios to conserve SPALB and thus maintain the viability and continuity of the American Samoa longline fishery and the sustained participation of the American Samoa fishing community. Such scenarios must take into account current management measures, SPALB stock status, and regional fishery initiatives and likely adoption of an enhanced conservation and management measures (CMM) for SPALB established by the WCPFC.

### **American Samoa longline fishery**

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<sup>1</sup> FFA member countries have indicated they may establish EEZ limits unilaterally, in advance of anything implemented through a WCPFC conservation and management measure.

The American Samoa longline fishery was pioneered by 30-40 ft outboard powered *alia* catamarans in the early 1990s (WPRFMC 2013). The fishery then rapidly expanded after the year 2000 with the influx of large ( $\geq 50$  ft overall length) conventional monohull vessels similar to the type used in the Hawaii-based longline fisheries. These vessels were larger, had a greater range, and were able to set more hooks per trip than the average *alia* vessel fishing on average as deep as 230 m (Watson & Bigelow in review). SPALB is the target species in the longline fishery with depth distribution ranging from surface down to between 150 and 250 m (Domokos et al 2007). The newer larger vessels over 50 feet can set 1,500 - 4,000 hooks per day and have a greater fishing range and capacity for storing fish (8–40 metric tons) as compared with the traditional *alia*. Larger vessels are also outfitted with hydraulically powered reels to set and haul fishing gear, and with modern electronic equipment for navigation, communications, and fish finding. Most vessels are presently being operated to freeze albacore onboard.

In 2001-2002 American Samoa's active longline fleet increased from about 20 mostly small, *alia*-type vessels to 75 vessels of a variety of sizes with American Samoans mostly owning small vessels and non-American Samoans mostly owning large vessels (WPRFMC 2003). The rapid expansion of longline fishing effort within the EEZ waters around American Samoa prompted the Council to implement a 50 nm large vessel area closure for pelagic fishing vessels  $> 50$  ft, and a limited entry system for the American Samoa pelagic longline fishery.

The purpose of the limited entry system was to: (1) avoid a “boom and bust” cycle of fishery development that could disrupt indigenous community participation in the American Samoa pelagic fishery; (2) establish a framework to adjust regulations for the American Samoa-based longline fishery; (3) reduce the potential for fishing gear conflicts in the EEZ around American Samoa; (4) maintain local catch rates of albacore tuna at economically viable levels; and (5) provide an opportunity for substantial participation by indigenous islanders in the large vessel sector of the fishery. The Council established four vessel size classes, and the limited entry program's regulations were implemented on August 1, 2005 (70 FR 29646).

- Class A Permits—  $\leq 40$  ft LOA
- Class B Permits— 40.1 to 50 ft LOA
- Class C Permits— 50.1 to 70 ft LOA
- Class D Permits—  $> 70$  ft LOA

In developing the American Samoa longline limited entry program, the Council identified 138 individuals who owned a longline vessel at any time prior to March 21, 2002 with 93 individuals owning Class A size vessels, nine owning Class B size vessels, 15 owning Class C size vessels and 21 owning Class D size vessels (WPRFMC 2003). However, upon initiation of the initial permit application and issuance process, only 60 initial permits were approved and issued by NMFS. Of these 60 permits, with fewer than 30 percent of potential Class A size vessel owners

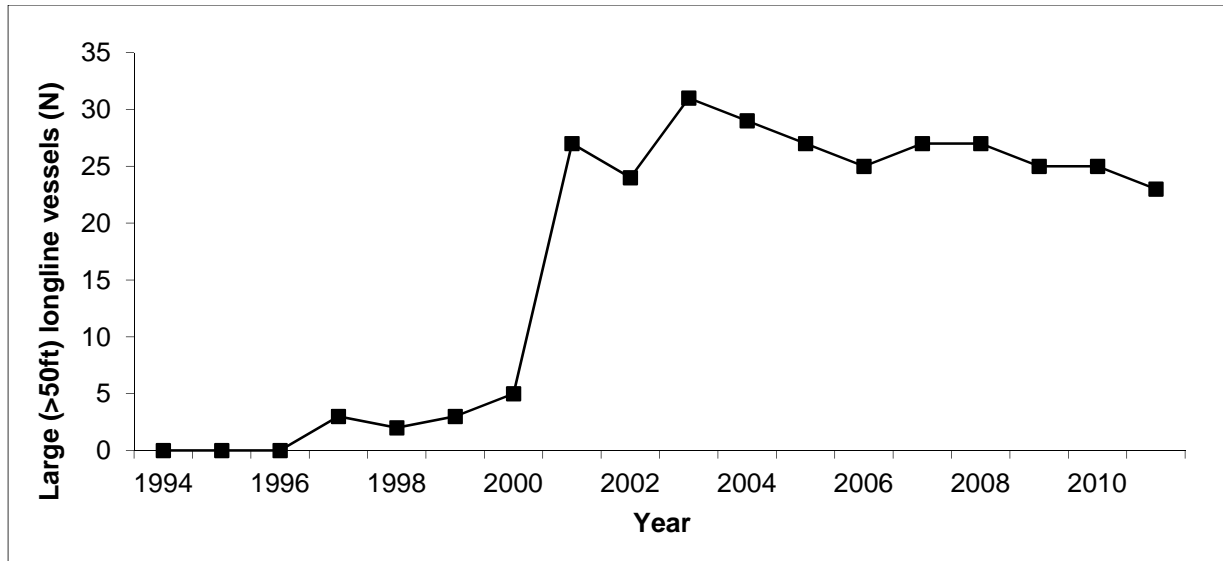
applied for and received permits in comparison to 56 percent of Class B, 75 percent of Class C, and 100 percent of Class D size vessel owners (Table 1).

**Table 1: Longline Vessels Prior to Permit Program and Initial Permit Allocation**

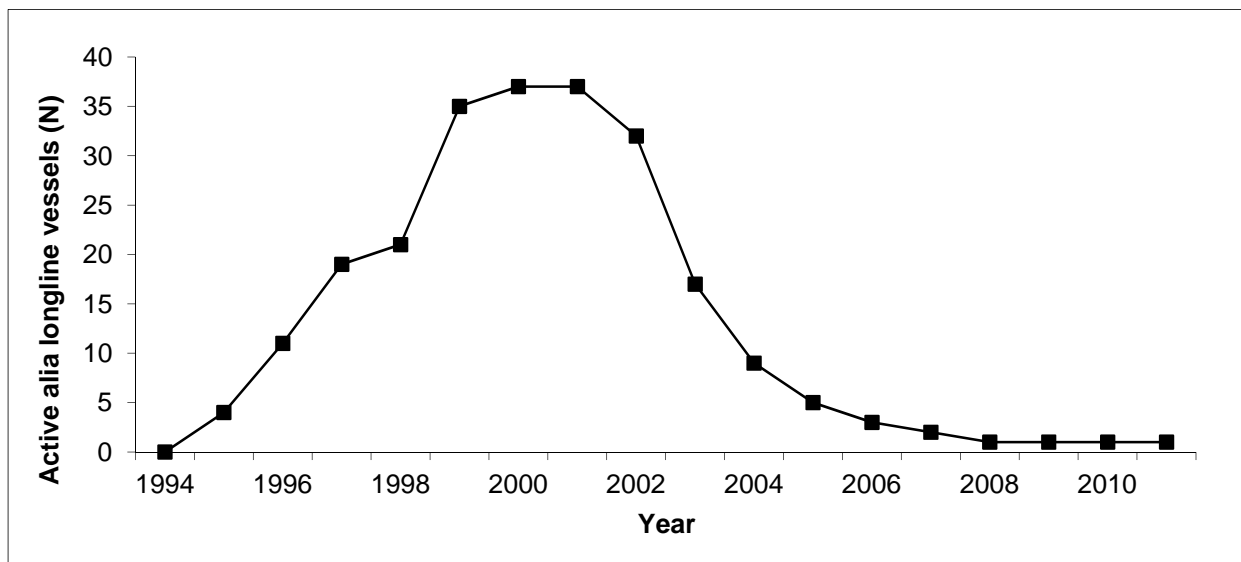
<b>Class Sizes</b>	<b>Number of Vessels in 2002</b>	<b>Initial Permits Issued</b>
A ( $\leq 40$ ft)	93	22
B (40.1 ft to 50 ft)	9	5
C (50.1 ft to 70 ft)	15	12
D ( $> 70$ ft)	21	21

Source: NMFS PIRO

The American Samoa limited entry program is designed to maximize American Samoan participation in the fishery. Further, the limited entry program was established with the intent that the pioneer alia fishermen may be able to upgrade to larger conventional monohull vessels and thus increase benefits from the fishery. However, it appears that active participation in the smaller scale alia longline fishery is now limited to a single vessel, with most of the fleet comprising conventional monohull longliners (Figures 1 and 2). In 2011, the Council recommended amending the Pelagics FEP to modify the longline limited entry permit program to reduce programmatic barriers that may be limiting small vessel participation, which in turn may be affecting sustained community and indigenous American Samoan participation in the longline fishery. Specifically, the Council recommended to replace the four size classes (A,B,C, and D) with two size classes: small (vessels less than 50ft) and large (50 ft or greater), remove the permit eligibility criteria that required past history in the fishery, and reduce the small vessel size class minimum harvest requirement from 1,000 pounds to 500 pounds within three years. This document has yet to be officially transmitted to the Secretary of Commerce for review and approval



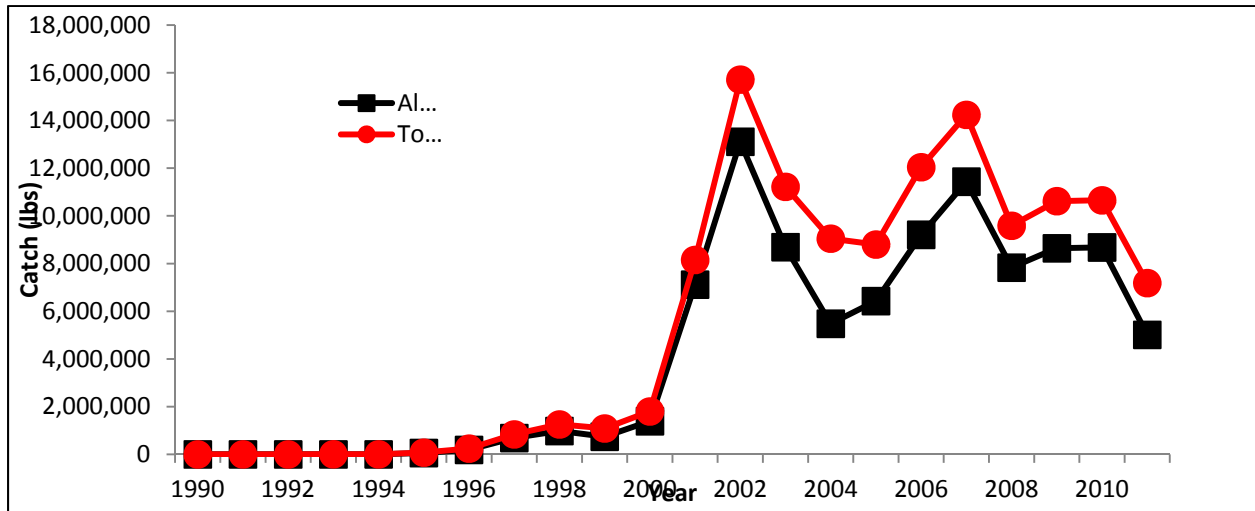
**Figure 2. Time series of the number of active large (>50ft) conventional monohull longline vessels in American Samoa (WPRFMC 2012 & unpublished data)**



**Figure 3. Time series of the number of active small (< 50 ft) alia longline vessels in American Samoa. (WPRFMC 2012 & unpublished data).**

After 2000, when the fishery was still dominated by *alia* vessels, catches rose markedly from about 2 million pounds to about 16 million pounds in 2002. Catches have been variable but continue to be dominated by albacore tuna. The fishery peaked again in 2007 at 14 million pounds but declined thereafter to about half this total or 7 million pounds in 2011 (Figure 3). Albacore forms almost 80% of landings, followed by yellowfin (10%), bigeye (3.6%), wahoo (3.5%) and skipjack (3.2%). Bigeye landings between 2002 and 2011 ranged from about 275,000 pounds to 535,000 pounds (124-243 mt) (WPRFMC unpublished data). A summary of the

longline fishing effort and catch is given in Table 2. There were 23 large longliners operating in 2011, and 25 vessels operating in the first half of 2012 (NMFS PIFSC unpublished data).

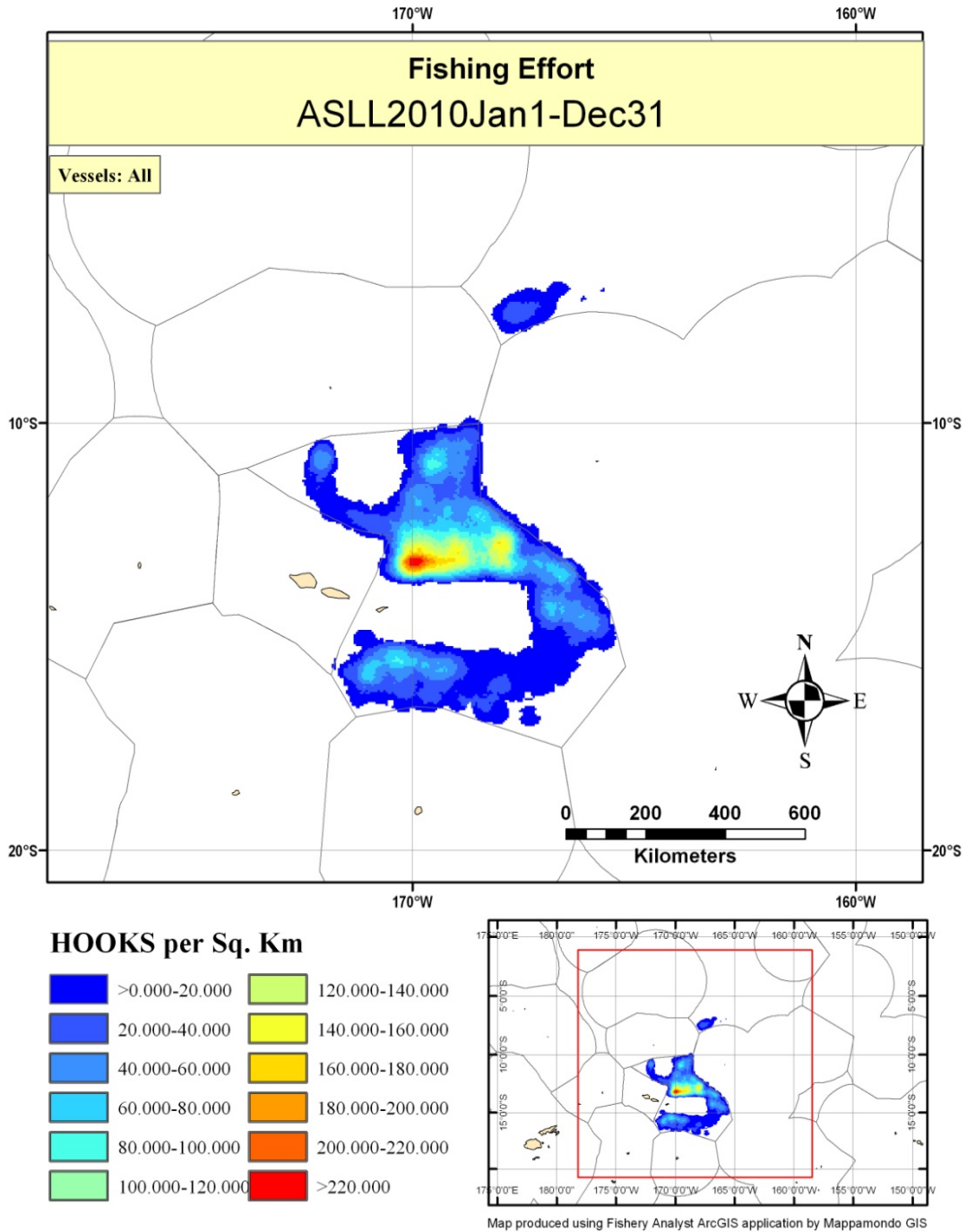


**Figure 3: Time series of albacore and total catches by the American Samoa longline fishery: Source WPRFMC (2012) and unpublished data.**

Currently, the fishery continues to operate mostly in the U.S. EEZ around American Samoa and in a high seas pocket to the northeast of American Samoa (Figure 4 ). Some vessels also have access agreements with the Cook Islands, and occasionally other neighboring countries such as Tonga Samoa and Niue.

**Table 2: Catch and fishing effort for the American Samoa longline fishery, 1990- 2011. Source WPRFMC (2012) and unpublished data**

Year	Catch (lbs)										
	hooks set (x 1000)	Mahi mahi	Wahoo	Blue marlin	Sailfish	Skipjack tuna	Yellowfin tuna	Bigeye tuna	Albacore	Swordfish	Total
1990		0	0	0	0	0	0	0	0		0
1991		61	0	61	0	345	262	0	1,730		2,459
1992		0	0	0	0	0	0	0	0		0
1993		212	1,227	212	618	533	2,632	708	315		6,457
1994		101	0	101	0	103	1,716	0	1,609		3,630
1995		2,373	1,642	2,373	3,078	160	4,052	2,191	58,949		74,818
1996	99	5,395	3,570	5,395	3,130	438	25,662	8,701	190,269	893	243,453
1997	419	33,412	15,807	33,412	6,921	2,546	48,589	8,808	689,397	701	839,593
1998	773	33,484	40,439	33,484	7,191	40,625	92,528	22,291	983,560	3,716	1,257,318
1999	916	35,779	48,181	35,779	7,391	56,014	139,496	19,211	743,038	2,259	1,087,148
2000	1,334	42,857	47,330	42,857	2,257	32,153	190,564	47,710	1,394,011	2,056	1,801,795
2001	5795	87,037	114,219	87,037	5,498	149,565	413,999	165,755	7,120,245	13,091	8,156,446
2002	13,095	84,603	362,689	84,603	6,932	538,700	1,060,315	436,280	13,109,695	32,710	15,716,527
2003	14,165	81,022	431,531	81,022	6,268	264,414	1,096,218	534,903	8,693,212	32,231	11,220,821
2004	11,741	42,718	475,032	42,718	4,598	519,129	1,959,674	502,541	5,480,841	20,195	9,047,446
2005	11,128	53,078	487,394	53,078	4,959	312,055	1,151,375	293,605	6,429,023	16,491	8,801,058
2006	14,262	48,705	630,329	48,705	12,933	470,166	1,095,952	443,042	9,210,565	83,615	12,044,012
2007	17,551	31,415	436,921	31,415	2,167	365,220	1,396,331	509,385	11,438,307	28,287	14,239,448
2008	14,444	28,069	299,481	28,069	1,931	359,568	749,825	274,482	7,831,590	14,889	9,587,904
2009	15,074	36,799	305,835	36,799	4,184	343,586	866,522	353,779	8,644,528	27,615	10,619,647
2010	13,174	18,049	289,545	18,049	3,404	245,572	981,258	392,896	8,680,579	24,816	10,654,168
2011	10,767	21,260	278,228	21,260	6,820	242,595	1,186,777	384,615	5,016,181	26,979	7,184,715
Mean	9,406	31,201	194,064	31,201	4,104	179,249	566,534	200,041	4,350,802	20,659	5,572,221
Percent of mean		0.56%	3.48%	0.56%	0.07%	3.22%	10.17%	3.59%	78.08%	0.37%	100.00%

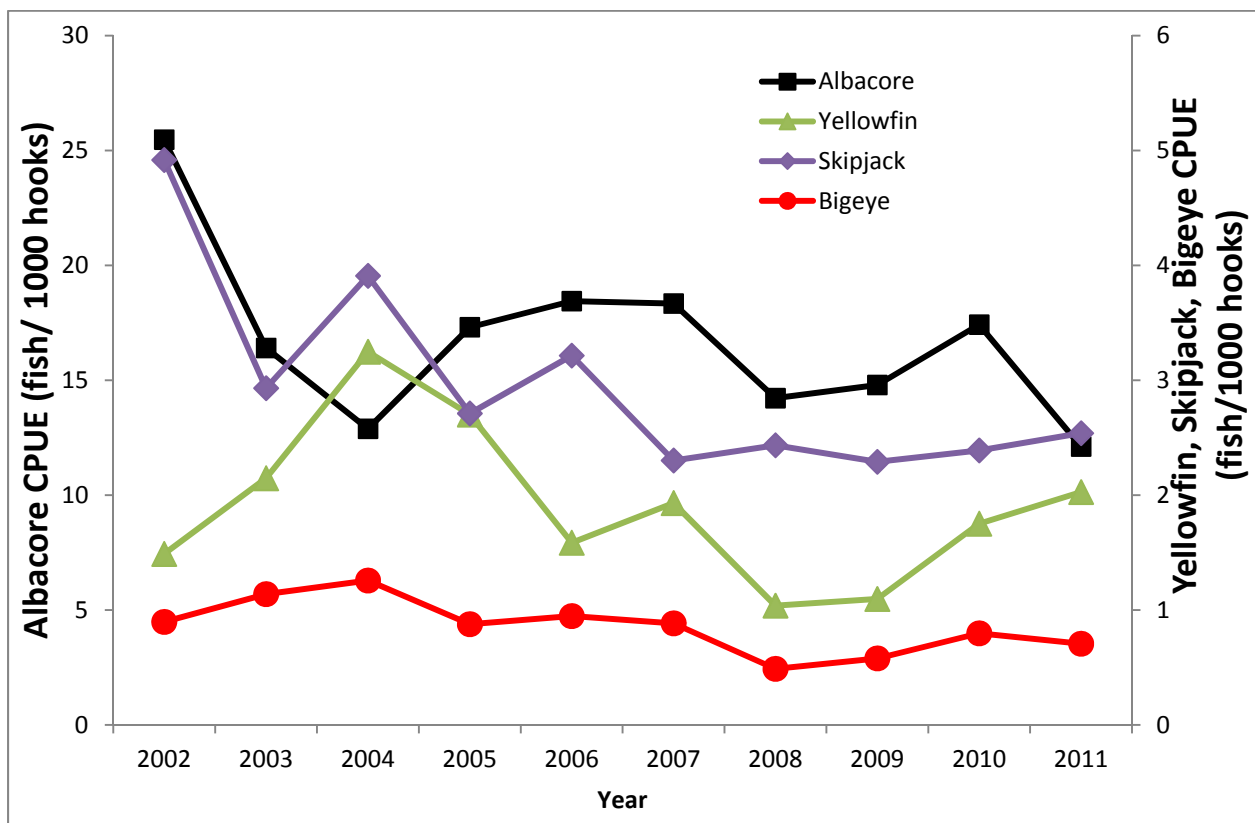


**Figure 4: Distribution of fishing effort within and beyond the U.S. EEZ around American Samoa in 2010.**

Source, NMFS Pacific Islands Fisheries Science Center

Note: Some fishing effort may not be shown due to NMFS confidentiality protocols

Expressing consistent CPUE trends for the American Samoa longline fishery is problematic in that the fishery initially comprised few monohull vessels and many *alia* catamarans<sup>2</sup>. After the year 2000, the number of *alias* declined markedly from 37 in 2000 to 1 by 2011. Figure 5 shows the time series of the aggregate CPUE from all longliners from 2002 onwards, when large conventional monohull longliners were the predominant fishing vessel used in the fishery. Albacore CPUE declined from around 25 fish per 1,000 hooks in 2002, varying from around 12-18 fish per 1,000 hooks thereafter. Skipjack tuna CPUE show a declining trend from a 2002 high of 5 fish per 1,000 hooks, to about 2 fish per 1,000 hooks in recent years. Yellowfin tuna CPUE has been variable, with a peak in 2004 of about 3 fish/1000 hooks and a low of about 1 fish/1000-hooks in 2008. The bigeye tuna CPUE trajectory is similar to that of yellowfin, with a peak in 2004 of about 1 fish per 1,000 hooks, and a low of 0.5 fish per 1,000 hooks in 2008.



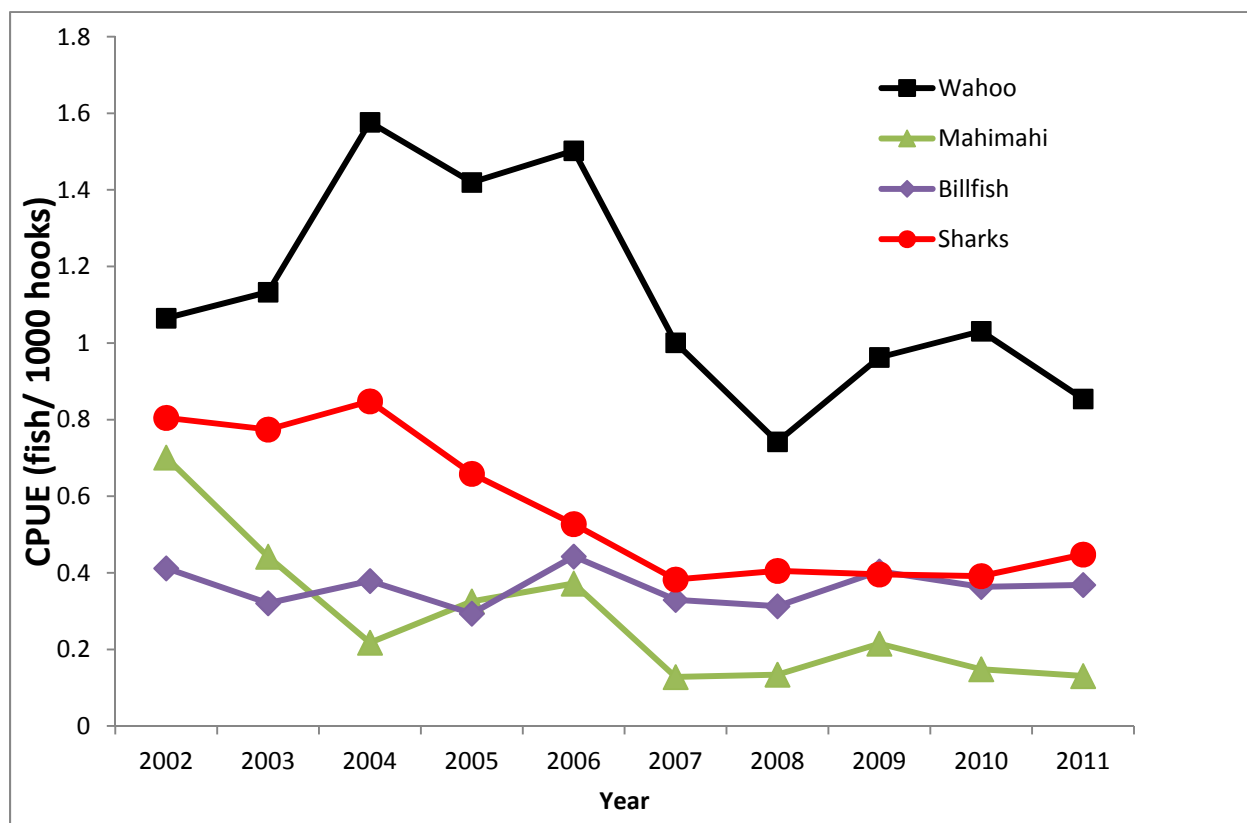
**Figure 5 : CPUE time series for the American Samoa longline fishery. Source: WPRFMC (2012) and unpublished data.**

The CPUEs for non-tuna pelagic species, including sharks, is shown in Figure 6. Sharks and mahimahi CPUEs have exhibited a declining trend since 2002. Wahoo CPUE has been variable, peaking in 2004 at about 1.6 fish per 1,000 hooks and a low in 2008 of 0.8 fish per 1,000 hooks.

<sup>2</sup> The CPUE values are sums of the longline logbook catch (number of fish kept+released) from the longline logs for the two types of longline vessels in Samoa, *alias* and monohulls, divided by the total number of hooks set by each type of vessel.



The wahoo CPUE trend is similar to that of bigeye and yellowfin tunas. Billfish CPUE has shown little variation ranging between 0.3 and 0.5 fish per 1,000 hooks between 2002 and 2011.



**Figure 6: CPUE time series for other pelagic fishes in the American Samoa longline fishery. Source: WPRFMC (2012) and unpublished data.**

### **SPALB stock status and fishery dynamics**

The South Pacific albacore catch in 2010 (81,217 mt) was the second successive record catch, 6.5% higher than the previous record in 2009 (Figure 7) (SPC-OFP 2012). This increase is being driven by increased longline catches. Longline fishing has accounted for most of the catch of this stock (> 75% in the 1990s, but > 90% in recent years), while the troll catch, for a season spanning November to April, has generally been in the range of 3,000–8,000 mt, although it has declined to <3,000 mt in recent years.

Catches by flag are summarized in WCPFC (2012a). China Taiwan have the highest catch estimates of SPALB in 2011 (11,869 mt and 12,483 mt respectively). China has increased its estimated catch of SPALB in recent years, from an average of 4,453 mt in the years 2000 to 2007 (inclusive), to a recent average estimated catch of 14,998 mt, in the years 2008 to 2011. Most of this recent catch was taken on the high seas (WCPFC 2012a).

Taiwan SPALB catch estimates average 10,903 mt from 2000 to 2011, ranging from 16,064 mt in 2002 to 7,609 mt in 2008, with an estimated catch in 2011 of 12,483 mt. Taiwan had historically higher catch estimates on the high seas, taking 14,412 mt in 2002; following a subsequent decline in catches, there has been a recent increase in reported catches to 4,705 mt in 2011. The trends in the SPALB annual catch estimates for China and Taiwanese vessels over the past decade may be influenced by changes in targeting from bigeye tuna to albacore tuna, and vice-a-versa.

The reported catch for SPALB in the Solomon Islands EEZ increased from 12,929 mt in 2009, to 21,938 mt in 2010, but was estimated to be 16,132 mt in 2011; noting the caveat on catch estimates if this 2011 figure holds, it was the largest catch in an EEZ in that year, representing 26% of the total catch and 38% of catches within EEZs. The next highest estimated EEZ catch of 6,475 mt was reported by the Cook Islands. There were no reports of Solomon Islands flag catches of SPALB for the period 2005-2009. In 2010 the estimated catch by the Solomon Islands flagged vessels was 9,391 mt. The main reason for the large catches by this fleet since 2010 is the chartering of vessels from other flags (WCPFC 2012a).

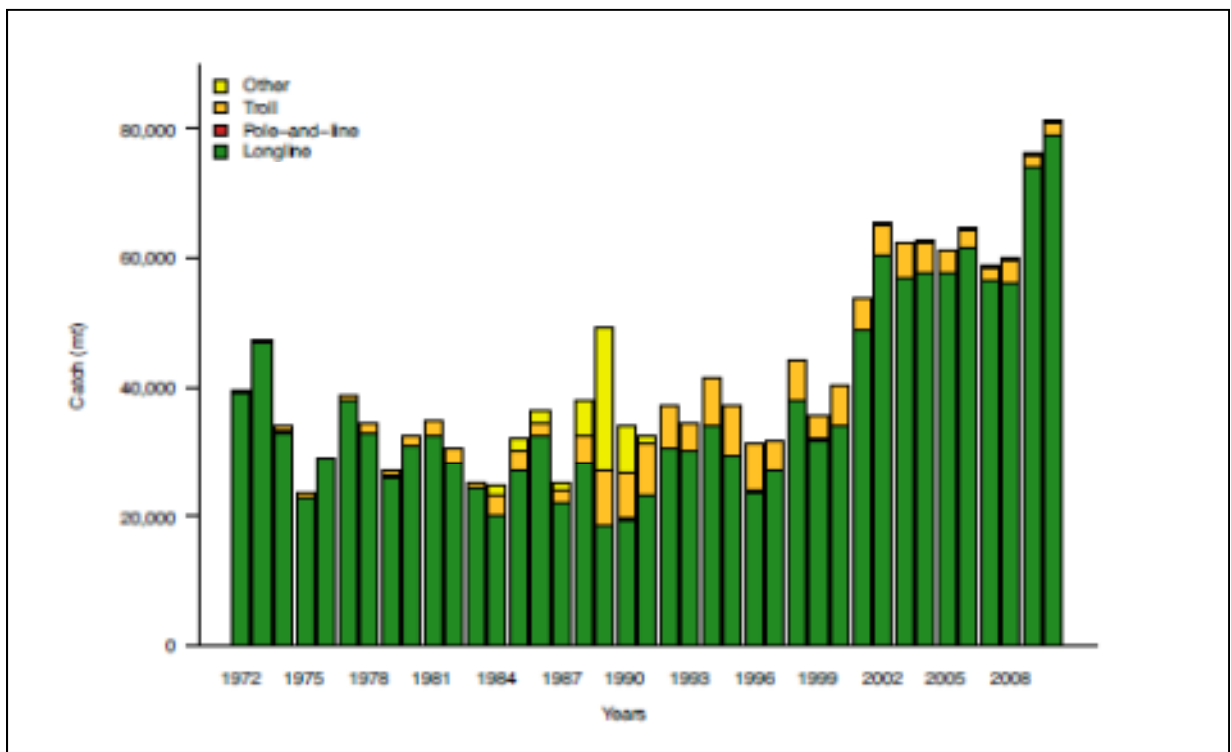
The longline catch is widely distributed in the South Pacific, but with catches concentrated in the western part of the Pacific (Figure 8). The Taiwanese distant-water longline fleet catch is taken in Regions 2, 3 and 4, while the Pacific Island domestic longline fleet catch is restricted to latitudes 10° to 25°S (Regions 1 and 2). Troll catches are distributed in New Zealand's coastal waters, mainly off the South Island, and along the sub-tropical convergence zone (STCZ). Less than 20% of the overall South Pacific albacore catch is usually taken east of 150°W.

The longline fishery takes adult albacore, mostly in the narrow size range 90–105 cm, and the troll fishery takes juvenile fish in the range 45–80 cm (Figure 9). Juvenile albacore also appear in the longline catch from time to time (e.g. fish in the range 60–70 cm sampled in the longline catch during 2004 and 2006).

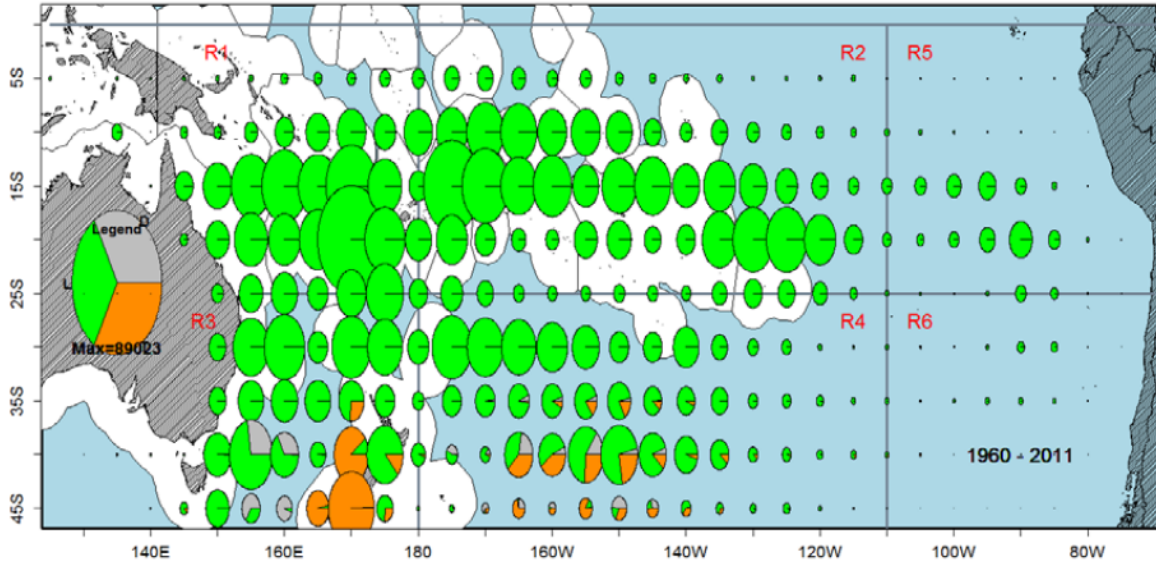
The most recent stock assessment for South Pacific albacore was completed in 2012 (and was based on data from 1960 to 2011). The assessment indicates that fishing mortality on adult fish has increased considerably over the past decade, but that overall estimates of fishing mortality are well below FMSY (Figures 10 and 11). Therefore, it was concluded that overfishing is not occurring. Spawning biomass levels remain well above SBMSY, so the stock is not in an overfished state. Nevertheless, the current level of longline catch is estimated to be having a considerably higher impact on the portion of the stock vulnerable to the longline fishery. The assessment indicates that the current level of impact is about 70% for fish of the sizes taken in the northern longline fisheries, having increased sharply in recent years. From the results of the assessment, the 8<sup>th</sup> WCPFC Scientific Committee (WCPFC 2012b) concluded that the South

Pacific albacore stock is currently not overfished nor is overfishing occurring, and current biomass levels are sufficient to support current levels of catch.

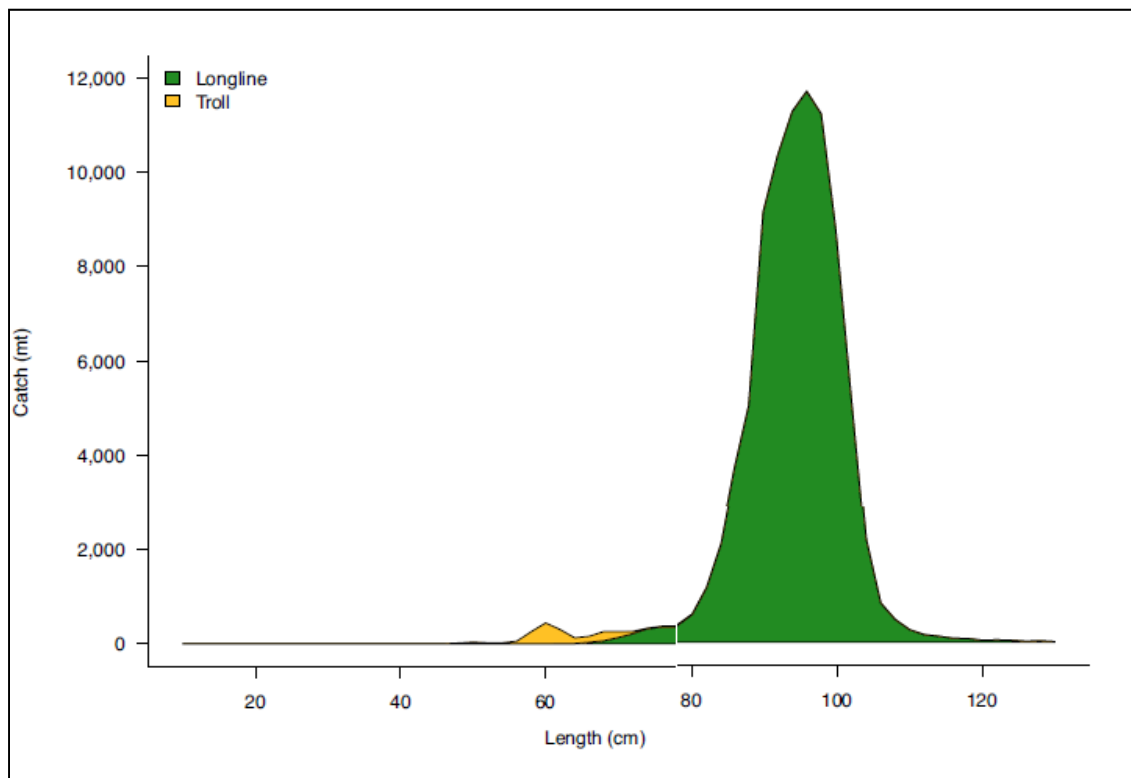
However, for several years, Science Committee has noted that any increases in catch or effort are likely to lead to declines in catch rates in some regions, especially for longline catches of adult albacore, with associated impacts on vessel profitability. The 8<sup>th</sup> Scientific Committee further noted that vessel activity must be managed, as per the requirements of CMM 2010-05. Given the recent expansion of the fishery and recent declines in exploitable biomass available to longline fisheries, and given the importance of maintaining catch rates, 8<sup>th</sup> Scientific Committee recommended that longline fishing mortality be reduced if the Commission wishes to maintain economically viable catch rates.



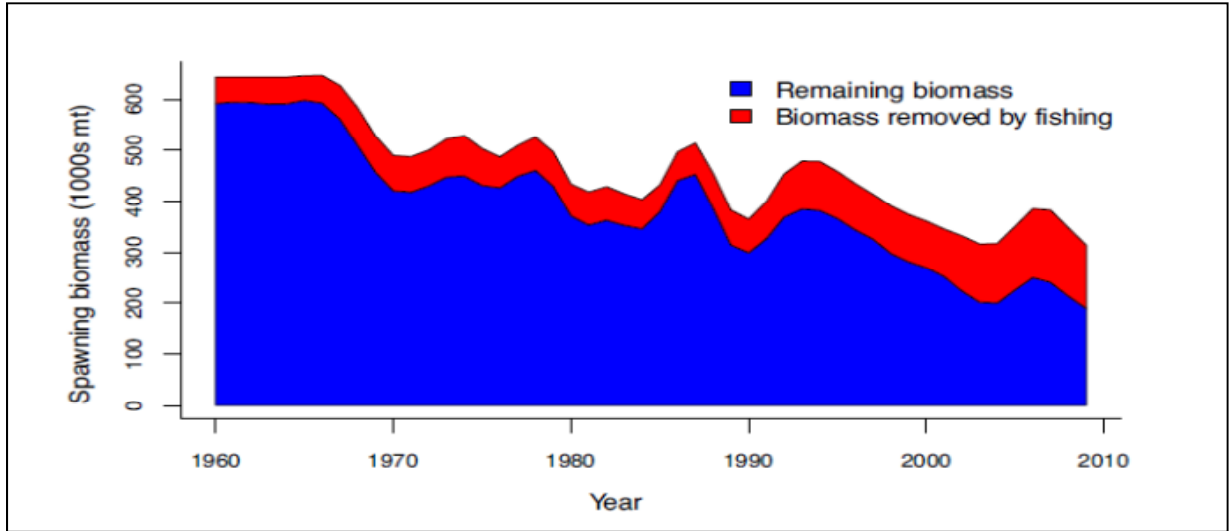
**Figure 7. Catches of SPALB between 1972-2010 by all fishing fleets. Source: SPC-OFP (2012)**



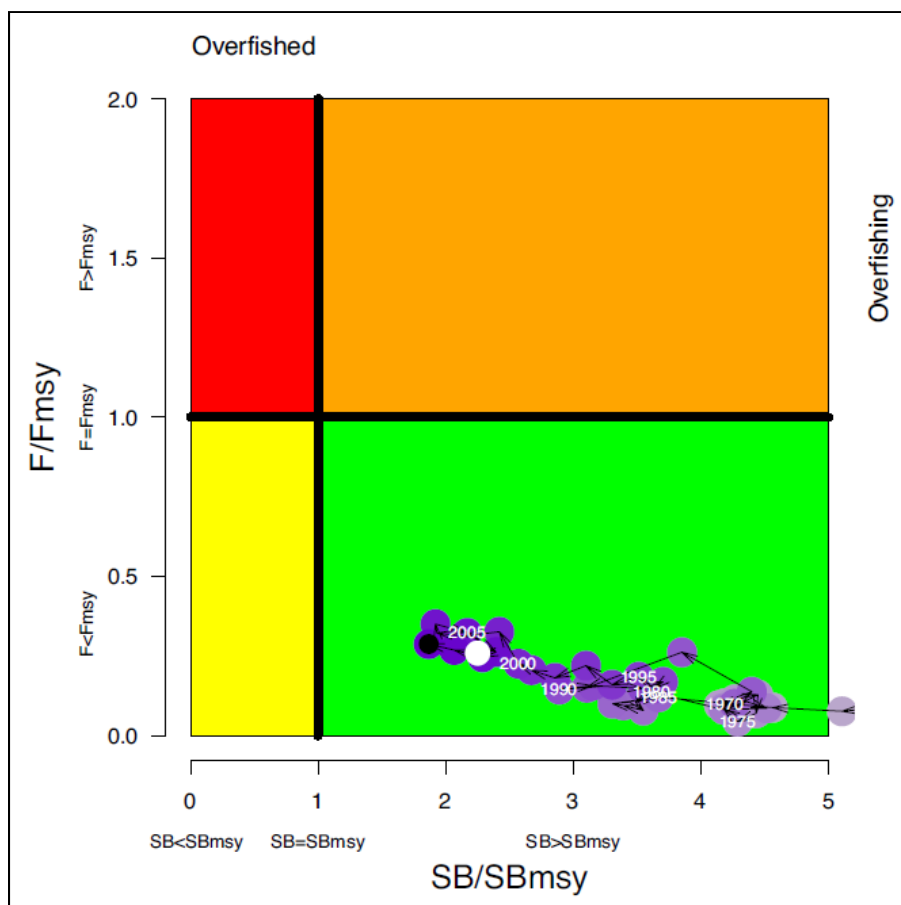
**Figure 8. Map showing model stock assessment regions 1 to 6, and the total catches (1960 to 2011) by 5° squares of latitude and longitude by the longline (green), troll (orange), and driftnet fisheries (Gray). Source: (Hoyle et al 2012)**



**Figure 9. Size frequency of SPALB caught by all fleets in the Western and Central Pacific Ocean. Source: SPC-OFP (2012)**



**Figure 10. Biomass trend for SPALB showing stock size with and without fishing. Source: SPC-OFP (2012)**



**Figure 11. Kobe plot for SPAB showing the fishing mortality and spawning stock biomass relative to MSY. Source: SPC-OFP (2012)**

### **Regional management of SPALB**

International tuna fishery management in the Western and Central Pacific Ocean (WCPO) is conducted by the Western and Central Pacific Fisheries Commission (WCPFC). Within the WCPO, the independent and freely associated Pacific Island nations belong to the South Pacific Forum's Forum Fisheries Agency (FFA). The member nations in the FFA divide broadly between those nations bordering the Pacific Warm Pool (Palau, Federated States of Micronesia, Marshall Islands, Kiribati, Tuvalu, Nauru, Solomon Islands, Papua New Guinea), and the remaining countries of the Central South Pacific (Vanuatu, Fiji, Tonga, Samoa, Tokelau, Niue, Cook Islands).

The former group have formed a subregional group called the Parties to the Nauru Agreement (PNA) and the EEZs and high seas areas bounded by these countries contains the majority of the WCPO skipjack resource, fished primarily by purse seine vessels, fishing on free swimming schools and on fish aggregating devices (FADs). The EEZs and adjacent high seas of the latter

group contain a major component of the SPALB resource, fished primarily by longliners. New Zealand and of the Central South Polynesian Pacific countries (Cook Islands, Niue, Samoa, Tokelau and Tonga) have formed another regional arrangement, Te Vaka Moana (TVM).

TVMs overarching goal is 'to secure, protect and enhance associated long-term economic benefits able to be derived from fisheries and protect the important contribution fisheries make to the food security of the communities'. Much of the work of the TVM, takes place under the auspices of regional processes such as those within the WPFMC, the Forum Fisheries Committee (FFC) supported by the FFA and the Heads of Fisheries supported by the Secretariat of the Pacific Community. In addition, TVM also has important relationships with other key partners, including American Samoa, French Polynesia and New Caledonia, who TVM works closely with in the management of shared stocks taken by southern longline fisheries. The longline fisheries of Cook Islands<sup>3</sup>, Niue, Samoa, Tokelau and Tonga are, like American Samoa, almost entirely dependent on the American Samoa canning industry.

Current regional management for SPALB by the WCPFC is contained in Conservation and Management 2010-05. The provisions of CMM 2010-05 include the following:

- Commission Members, Cooperating Non-Members, and participating Territories (CCMs) shall 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.
- The provisions of the preceding paragraph 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.
- By adoption of this CMM (CMM 2010-05) the Commission rescinds CMM 2005-02 which has been revised and replaced.
- CCMs that actively fish for South Pacific albacore in the Convention Area south of the equator shall cooperate to ensure the long-term sustainability and economic viability of the fishery for South Pacific albacore, including cooperation and collaboration on research to reduce uncertainty with regard to the status of this stock.
- CCMs shall report annually to the Commission the catch levels of their fishing vessels that have taken South Pacific Albacore as a bycatch as well as the number and catch levels of vessels actively fishing for South Pacific albacore in the Convention area south of 20°S. Initially this information will be provided for the period 2006-2010 and then updated annually.

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<sup>3</sup> Cook Islands longline fishery also has a swordfish component

- This measure will be reviewed annually on the basis of advice from the WCPFC Scientific Committee on South Pacific albacore.

Despite this measure, or possibly as a result of it, effort and catch of SPALB have increased markedly between the equator to the north of 20 degrees North, and creating serious resource concerns and management concerns for the Te Vaka Moana sub-group of the FFA member countries whose tuna fisheries are primarily focused on longlining form SPALB. A key priority for TVM and many other coastal States is the adoption of effective catch limits for the SPALB fishery. At present, WCPFC has no catch limits for albacore, meaning the fishery is open and vulnerable to increased effort and overfishing north of 20 degrees N. WCPFC does have some effort limits in place for south of 20 degrees S, but these appear to have been ineffective in maintaining catch levels. Further it is difficult to assess compliance of countries like China where longline fleet size has expanded rapidly, and which reports total catch by species without even an indication of whether these catches are taken north or south of the equator (WCPFC 2012c).

The TVM members want to see a Total Allowable Catch (TAC) adopted for the Commission, and this TAC would include a clear overall catch limit for the high seas, and within Exclusive Economic Zones (EEZ). TVM have been working to set limits for each of their own EEZs, and expected to finalize these and notify WCPFC of these in 2013.

In addition to the importance of TVM to American Samoa, the Governments of the Cook Islands and American Samoa have entered into a Memorandum of Agreement for the Cook Islands Ministry of Marine Resources to open an office in Pago Pago to monitor Cook Islands vessels that operate out of American Samoa. This development recognizes the pivotal importance of American Samoa to the Cook Islands, since most of its longline fleet is primarily home ported and operating from Pago Pago. As such, the satellite office will be able conduct the day to day monitoring of Cook Islands longline fleet from Pago Pago first hand and not remotely in Rarotanga.

### **Options and scenarios for the Council to consider for the American Samoa longline fishery**

These options and scenarios are framed somewhat differently from the typical alternatives for amending a Fishery Ecosystem Plan (FEP), since the future American Samoa longline fishery is intimately bound up with regional and sub-regional fishery management arrangements as outlined above.

#### **1. No Action**

Under the No Action the Council maintains existing management measures and simply responds to WCPFC management measures.



## **2. The Council works independently to establish a limit for the volume of SPALB that can be caught within the US EEZ around American Samoa**

Under this alternative the Council would independently develop SPALB catch limits, either for large (>50ft) longliners only or both small (< 50ft) and large longline vessels operating within the US EEZ around American Samoa. Such a unilateral action may not have a major impact on the stock as a whole but may prevent localized depletion of SPALB within the EEZ.

## **3. The Council works closely with TVM to explore management options**

The Council would fully engage with TVM in the development and implementation of management measures for SPALB, and in particular mutually acceptable SPALB catch limits within EEZs and on the high seas. Under this option the Council would:

- Explore with TVM the mechanism for developing catch limits in zone and on the high seas;
- Explore transferability of unfished catch limits between TVM members, and matching catch limits with fishing capacity;
- Explore development of EEZ access agreements.

## **SSC and Council Action at the 112<sup>th</sup> SSC and 156<sup>th</sup> Council Meeting should consider these scenarios and potential options to address the long term viability of the American Samoa longline fishery in a domestic and international context.**

## **4. Government of American Samoa becomes a member of TVM**

Under this alternative, the American Samoa Department of Marine and Wildlife Resources becomes a member of TVM, probably a two stag process, initially as observer, then membership, which would require coordination with the Council and other US Government Agencies.

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