Pelagic Fisheries of the Western Pacific Region Fishery Ecosystem Plan 2009 Annual Report

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Western Pacific Regional Fishery Management Council
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Pacific Pelagic Fisheries Fishery Ecosystem Plan
2009 Annual Report

Information and data analysis for this document provided by scientists at National Marine Fisheries Service (NMFS) Pacific Islands Fisheries Science Center, American Samoa Department of Marine and Wildlife Resources, State of Hawaii Department of Land and Natural Resources, Guam Department of Agriculture, Division of Aquatic and Wildlife Resources; Commonwealth of the Northern Mariana Islands Division of Fish and Wildlife; and NMFS Pacific Islands Regional Office

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1.0 Introduction

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA), fishery management councils create fishery management plans (FMPs) to manage fisheries in their respective regions. In 2009, the Western Pacific Regional Fishery Management Council (Council) developed five archipelagic fishery ecosystem plans (FEPs) and the Pacific Pelagic Fisheries of the Western Pacific FEP[1] (Pelagics FEP) by transforming the existing demersal and pelagic fisheries FMPs into ecosystem-based approach management plans, consistent with the MSA and the national standards for fishery conservation and management. The Council's FEPs represent the first step in a collaborative approach to implementing an ecosystem-based approach to fishery management in the Western Pacific Region. This report is the first annual FEP report on Council-managed pelagic fisheries and activities in the U.S. exclusive economic zone (EEZ) waters of the Western Pacific Region (WPR). This report is meant for the public and as such does not contain all available scientific data; there are additional technical reports and datasets, available upon request, from which this report was based.

The Pacific Pelagics FEP established the framework under which the Council manages the pelagic fishery resources of American Samoa, Guam, Hawaii, the Commonwealth of the Northern Mariana Islands (CNMI), and the islands of the Pacific Remote Islands Area (PRIA)[2] and seeks to integrate and implement an ecosystem approaches to management. The FEP did not establish any new fisheries or fishery management regulations. The FEP identified as management unit species (MUS) those current pelagic management unit species known to be present in waters around the WPR and incorporated all of the management provisions of the Pelagics FMP currently applicable.

1.1 Pelagic Fisheries 2009 Highlights

During 2009, notable developments with potential to impact the pelagic fisheries managed under the PFEP ranged from proposed protected species listings to international tuna quota (or catch limit) implementation. Also in 2009, on January 6, President Bush established three new National Marine Monuments in the Western Pacific region by issuing Proclamations by the President using his authority under the Antiquities Act. Most of the waters inside the new monuments are now off limits to commercial fishing.

In American Samoa, the September 2009 closure of Chicken of the Sea tuna cannery in Pago Pago caused the loss of nearly 2,000 jobs and may have significant detrimental effects on the territory's economy. The Council is however working to assist with fishery development and seafood marketing projects in American Samoa to provide for long-term economic growth and stability and increase local production of healthy protein, and to provide additional marketing opportunities to offset those lost from the

[1] Can be located at: http://wpcouncil.org/fep/WPRFMC%20American%20Samoa%20FEP%20(2009-09-22).pdf

[2] Includes Baker, Jarvis, Wake and Howland Islands, Kingman Reef, and Johnston and Palmyra Atolls.

cannery closure. Although much damage was incurred from the September 2009 tsunami experienced in American Samoa, the pelagic fleet and landings were largely unaffected. American Samoa's pelagic landings were higher in 2009 than in 2008, however less than the increased effort and landings that occurred in 2007.

In the Mariana Archipelago, Guam had increased pelagic landings with total pelagic catch in 2009 the highest since 2001. Guam's 2009 total pelagic landings were approximately 719,892 pounds, approximately 30% greater than 2008. During 2009, CNMI's pelagic fishery landed nearly 184,000 lb of pelagic MUS worth approximately $313, 000. Of the total catch, 85 percent was tunas with 70% skipjack tuna and 14% yellowfin tuna. Total commercial PMUS landings in CNMI continued to decline from a peak in 2005.

In Hawaii, during 2009, 127 longline vessels took 1,365 trips and set 18,572 sets using over 39.4 million hooks in areas including U.S. EEZ waters and the high seas. They caught 31.7 million pounds of pelagics worth around 83 million dollars.

Hawaii's pelagic fisheries total landings and revenue had been on an upward trend since 2001 to 2008 with a decrease in both in 2009. Hawaii's main catch in terms of landings and number of fish caught is bigeye tuna as it has been since 1996. Bigeye tuna catches are now managed under a quota or a total allowable catch (TAC) set by the WCPO international tuna management organization, the Western and Central Pacific Fisheries Commission (WCPFC). The TAC, intended to end the overfishing of bigeye tuna in the WCPO, was further reduced in 2009 which was largely responsible for reduced revenue and landings for the Hawaii-based longline fleet.

1.2 WPR Pelagic Fisheries Overview

The major commercial fishery in the WPR, in terms of landings and revenue, is by far the pelagics fishery composed of large and small vessels utilizing a variety of different gears and technigues to target pelagic fish stocks. In the WPR the main pelagic fishery sectors are deep-set and shallow-set longlining, trolling, pole-and-line fishing, shortlining, handlining, and mixed gear fishery. These fisheries are based out of Hawaii, American Samoa, Guam, and CNMI and fishing occurs in U.S. exclusive economic zone (EEZ) waters around these archipelagos, the PRIA, and in international waters of the western and central Pacific Ocean (WCPO) and the eastern Pacific Ocean (EPO).

Purse seine fishing also occurs in the WPR but is not managed through this FEP as it is regulated under the High Seas Fishery Compliance Act, rather then the MSA. The purse seine fishery's catch for 2009 was estimated at nearly 153,000 metric tons, which far exceeds the combined catch of all the other U.S. pelagic fisheries in the WPR managed under the PFEP.

1.3 WPR Pelagic Tuna MUS Stock Assessments

1.3.1 South Pacific Albacore Tuna

A 2008 assessment of South Pacific albacore conducted by Hoyle et al. (2008) covering the period 1952 to 2006 determined South Pacific albacore were not determined to be subject to overfishing, and are not overfished. This stock was reassessed in 2009 with some changes made to the model; two major sources of uncertainty were addressed and the assessment reappraised (Hoyle and Davies 2009). Hoyle and Davies (2009) concluded that there is no indication that current levels of catch are not sustainable in terms of recruitment overfishing, particularly given the age selectivity of the fisheries, however, current levels of fishing pressure appear to be affecting longline catch rates.

1.3.2 Skipjack Tuna

The most recent assessment of skipjack tuna in the WCPO was conducted in 2008 (and included data from 1972 to 2007 (Langley & Hampton 2008). Current fishing mortality rates for skipjack tuna are estimated to be well below the F_{MSY} reference point and, therefore, overfishing is not occurring (i.e., $F_{CURRENT} < F_{MSY}$). The total biomass of skipjack tuna has fluctuated above the biomass-based reference point B_{MSY} and recent biomass levels are estimated to be well above the B_{MSY} level. These conclusions appear relatively robust (i.e., scientifically valid), at least within the statistical uncertainty of the current assessment. Recruitment variability, influenced by environmental conditions, will continue to be the primary influence on stock size and fishery performance. The 2009 western and central Pacific-wide estimated total catch of skipjack was the highest ever recorded at 1.78 million metric tons.

1.3.3 Yellowfin Tuna

The most recent assessment of WCPO yellowfin tuna was conducted in 2007 using data from 1952-2006 (Langley et al. 2007). Since 1990, the biomass of yellowfin tuna in the WCPO has steadily declined and fishing mortality rates have increased. It was not possible for the authors to make a definitive statement as to whether overfishing of yellowfin was occurring in the WCPO. They concluded that the WCPO yellowfin tuna fishery could be considered to be fully exploited, with a substantial (47%) probability that overfishing was occurring. The stock was not considered to be in an overfished state, although continued fishing at current levels of effort will move the stock to an overfished state. Further, the assessment indicated that the equatorial regions are likely to be overexploited, while exploitation rates in the subtropical regions are relatively low.

1.3.4 Bigeye Tuna

The 2009 stock assessment concluded that overfishing of bigeye tuna is occurring, that it is likely that bigeye tuna is in, at least, a slightly overfished state, or will be in the near future; and that greater overall yields could be obtained by reducing the mortality of small fish (Harley et al. 2009).

2.1 American Samoa's Pelagic Fisheries

2.1.1. Introduction to American Samoa's Pelagic Fisheries

Pelagic fishing in American Samoa has historically been an important component of the traditional domestic fisheries. The pelagic fishery was largely a troll-based fishery prior to 1995 when horizontal longlining was introduced to American Samoa by fishermen from Western Samoa. Today, American Samoa's pelagic fisheries include small and large-scale longlining, and a pelagic troll fishery. The primary target species is albacore tuna. In the troll fishery, the catch is generally stored in personal freezers until a sufficient amount accumulates and it is sold to the cannery, to stores, restaurants and local residents; and is donated for family functions. The pelagic longline fishery is based on supplying fresh or frozen albacore directly to the one remaining tuna cannery in Pago Pago.

During 2009, Proclamation 8377 establishing the Rose Atoll Marine National Monument in American Samoa (74 FR 1577) directed the Secretaries (Interior and Commerce) to prohibit commercial fishing within the monument despite the fact that there was already in place a large vessel (>50 ft) exclusion zone, established by the Council and NMFS around Rose Atoll in American Samoa. The new monument at Rose Atoll does not, however, completely overlap the existing eastern boundaries of the large vessel closed area around the Tutuila, Manua Islands and Rose Atoll.

2.1.2 Fishery Performance and Economic Data

Data Collection

The American Samoa domestic pelagic fishery is monitored by the Department of Marine and Wildlife Resources (DMWR) through a program established in conjunction with the Western Pacific Fishery Information Network (WPacFIN). Prior to 1985, only commercial landings were monitored. From October 1985 to the present, data are collected through a boat-based creel survey that includes subsistence and recreational fishing as well as commercial fishing. In 1990 a Commercial Purchase (receipt book) System was instituted requiring all businesses in American Samoa, except for the canneries, that buy fish commercially to submit to DMWR a copy of their purchase receipts. In January 1996, in response to the developing longline fishery a federal longline logbook system was implemented.

All longline fishermen are required to obtain a federal permit and to submit logs containing detailed data on each of their sets and the resulting catch. From 1996 to 1999, the logbooks submitted by the local longliners were edited in Samoa for any missing data and were then sent to the NMFS Honolulu Lab every week for further editing and data processing. Starting with 2000, logbook data was entered and maintained in Samoa and downloaded to NMFS in Hawaii periodically.

2.1.2.1 Landings

Over 10.6 million pounds (lb) of pelagic species were estimated as landed by American Samoa vessels during 2009 (Table 1), an increase of about 1.0 million lb from 2008 (Figure 1). Tuna MUS comprised about 94% of the total landings and albacore dominated (85%) tuna landings and accounted for 80% of the total pelagic landings. In 2009, albacore landings increased (10%) to about 8.6 million lb from about 7.8 million lb in 2008. Non-tuna PMUS landings comprised about 500,000 lb. with wahoo dominating (61%) the non-tuna landings, and barracudas dominating the other pelagics. Of the total landings, nearly all, or about 10.5 million lb, were commercial landings.

Figure 1: American Samoa Annual Commercial Landings of Tuna and Non-tuna PMUS, 1982-2009

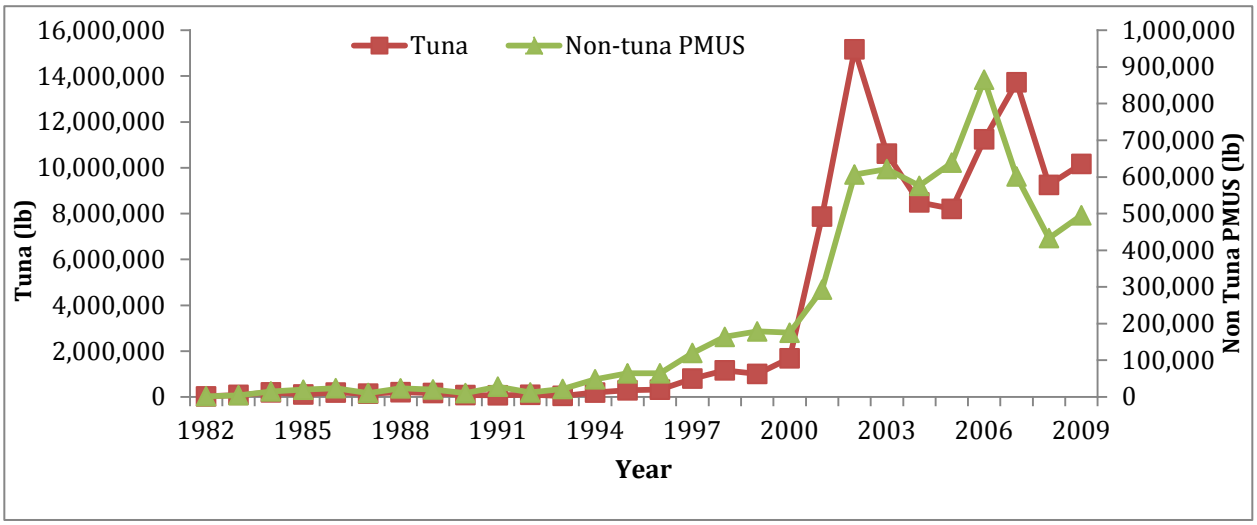


Table 1: American Samoa Estimated Total Landings by Gear Type, 2009

Species	LongLine Pounds	Troll Pounds	Other Pounds	P
Skipjack tuna	341,829	2,582	0	3
Albacore tuna	8,604,024	0	0	8,6
Yellowfin tuna	865,012	2,560	0	8
Kawakawa	0	5	0	
Bigeye tuna	351,509	0	0	3
Tunas (unknown)	198	0	0	
TUNAS SUBTOTALS	10,162,572	5,146	0	10,1
Mahimahi	36,763	113	57	
Black marlin	225	0	0	
Blue marlin	91,753	0	0	
Striped marlin	7,981	0	0	
Wahoo	303,960	0	0	3
Sharks (all)	2,405	0	68	
Swordfish	27,361	0	0	
Sailfish	4,184	0	0	
Spearfish	6,670	0	0	
Moonfish	6,322	0	80	
Oilfish	6,171	0	0	
Pomfret	1,241	0	0	
NON-TUNA PMUS SUBTOTALS	495,035	113	205	4
Barracudas	500	41	3,927	
Rainbow runner	48	14	304	
Dogtooth tuna	0	14	626	
Pelagic fishes (unknown)	529	0	0	
OTHER PELAGICS SUBTOTALS	1,077	69	4,857	
TOTAL PELAGICS	**10,658,683**	**5,328**	**5,062**	**10,6**

2.1.2.2 Effort

A record number of hooks, over 17.5 million, were set by American Samoa-based longline vessels during 2007, however, the number decreased in 2008 to 14.4 million and back up to around 15 million in 2009 (Figure 4). During 2009, about 15.0 million hooks were deployed during 4,869 sets on 177 trips by 26 American Samoan longline vessels (Table 2). Longline effort indicators – sets, hooks, trips - decreased in 2009 compared to 2008; and the number of active longline vessels decreased by two (Figure 2, Table 3). The number of fishing trips decreased by 55% in 2009 (Figure 3); but hours fished increased similarly from both creel and logbook data from 99,000 in 2008 to about 103,000 fishing hours in 2009. Longline vessels 50 feet and up dominate the American

Samoa pelagic landings, as the number of local alias participating in the longline fishery remains at one boat as of the last three years (Table 3).

Table 2: American Samoa Longline Effort, 2009

Boats
Trips
Sets
1000 Hooks
Lightsticks

Table 3: Issued and Active Permits in American Samoa Longline Fishery, by Vessel Class Size, 1994-2009

	Class A < 40 Feet		Class B 40.1 - 50 Feet		Class C 50.1 - 70 Feet		Class D > 70 Feet	
Year	Permits	Active	Permits	Active	Permits	Active	Permits	Active
1994	0	0	0	0	0	0	0	0
1995	14	4	0	0	0	0	0	0
1996	26	11	1	0	1	0	0	0
1997	35	19	1	0	1	1	2	2
1998	37	21	1	0	1	1	1	1
1999	45	35	2	1	2	2	1	1
2000	45	37	2	2	5	3	2	2
2001	61	37	6	6	11	9	23	18
2002	55	32	6	6	14	6	25	18
2003	31	17	5	4	15	9	23	22
2004	11	9	2	2	13	8	22	21
2005	8	5	3	2	11	9	20	18
2006	21	3	5	0	12	6	24	19
2007	18	2	6	0	11	5	26	22
2008	17	1	6	0	11	5	26	22
2009	12	1	0	0	12	5	26	20

Figure 2: American Samoa Vessels in the Pelagic Fisheries, by Method, 1982-2009

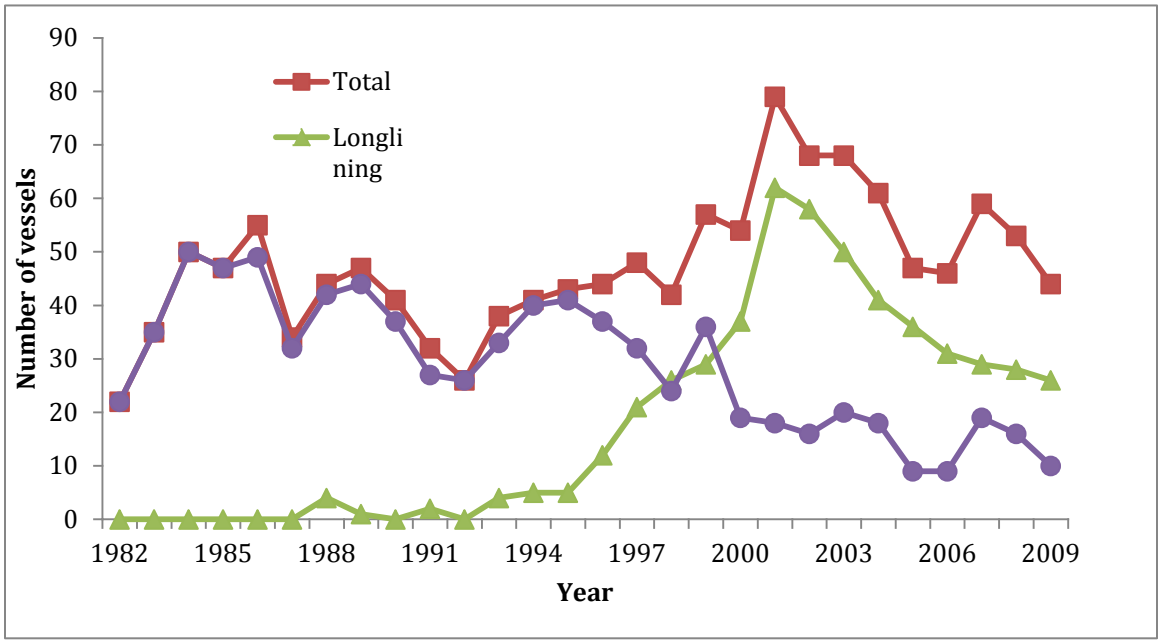


Figure 3: Sets in American Samoa Pelagic Fisheries, by Method, 1982-2009

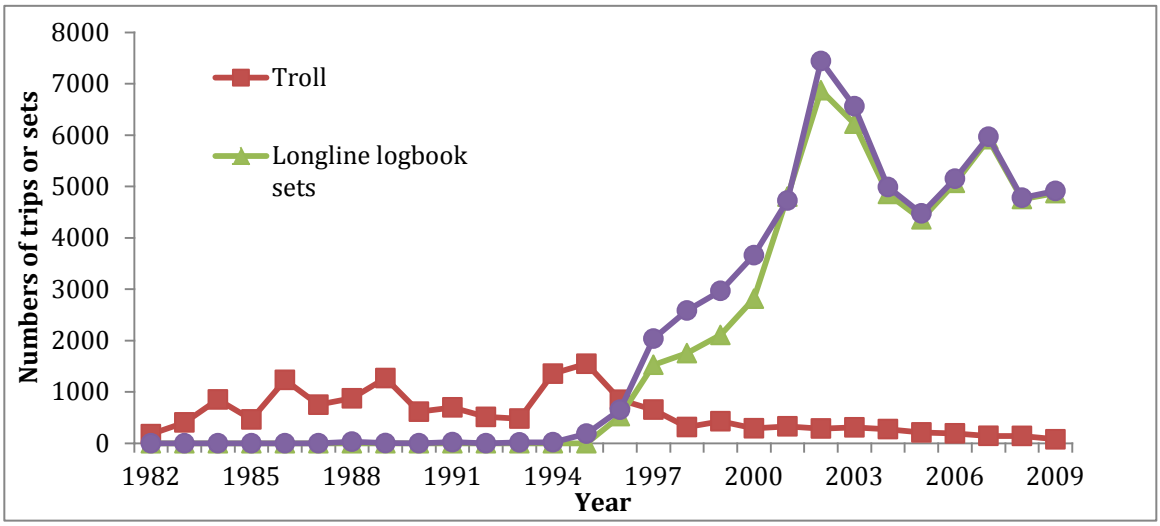
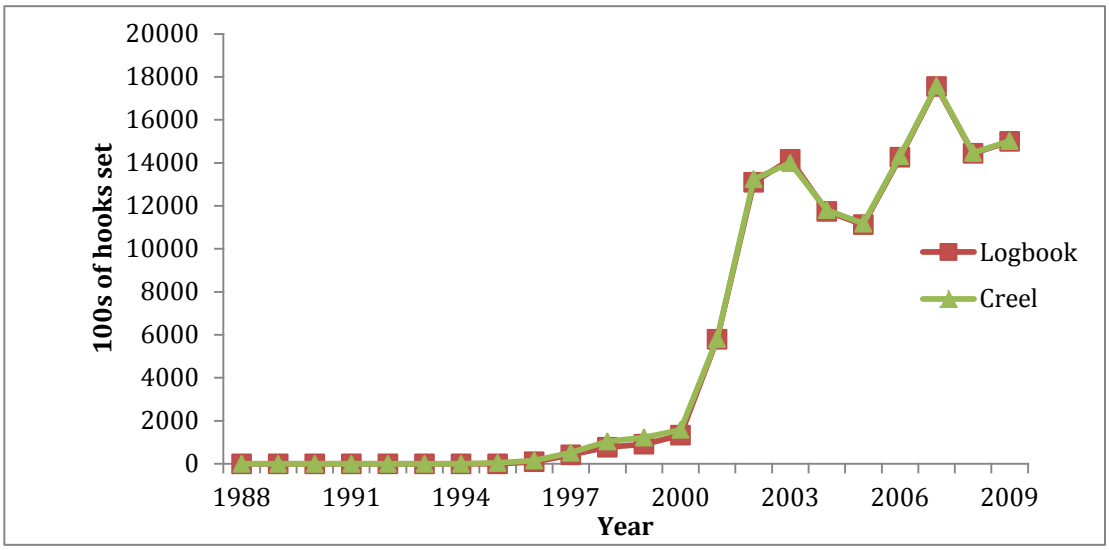


Figure 4: Hooks (1,000) Used in American Samoa Longline Fishery, 1982-2009



2.1.2.3 Catch per unit of Effort (CPUE)

Catch rates or CPUEs in the pelagic longline fishery in American Samoa increased in 2009 over 2008 rates but were still reduced from 2007 and 2006 rates (Table 4). The 2009 longline CPUE (catch per 1,000 hooks) for tuna species shows a slight increase of 0.6 fish from 18.2 CPUE recorded for 2008. As would be expected the highest catch rate was for the main target stock, albacore tuna, which in 2009 increased by 0.6 fish per 1,000 hooks (to 14.8 from 14.2 fish per 1,000 hooks) recorded for 2008. However, this was down from 24.2 in 2006. For the non-tuna catch, wahoo had the highest rate and an increase of 0.3 fish per thousand hooks from the 2008 catch rate. Total non-tuna species catch rate also increase to 2.5 in 2009 from 2.0 in 2008.

The troll fishery's average pounds per troll hour have generally been increasing since 2001 until 2009 with 25.64 pounds-per-hour (PPH) down from 50.44 PPH in 2008. Average annual trolling trip-hours during 2009 was 405, the lowest amount since 1982. The trolling CPUE decreased 59% from 62.38 PPH in 2008. The 62.38 PPH recorded in 2008 is the highest ever in the 28 year history.

2.1.2.4 Revenue

During 2009, American Samoa's pelagic fisheries produced revenue greater than $10.5 million (Table 5). Inflation-adjusted revenue for 2009 shows an approximate 5 % increase in earnings for both tuna and non-tuna PMUS, compared to 2008. Revenue for the American Samoa pelagic fleet peaked in 2002 at more than $16 million with a second smaller peak in 2007 (Figure 5).

Total tuna sales were estimated at $10.1 million or 96% of the total value. The majority of 2009's total commercial value (82 %) was derived from albacore with a value around $8.6 million and an average price of $1/ lb. Troll and other non-longline pelagic fisheries accounted for an approximate $24,400 in revenue. The CPI for 2009 was 238.9 and 231.5 for the previous year.

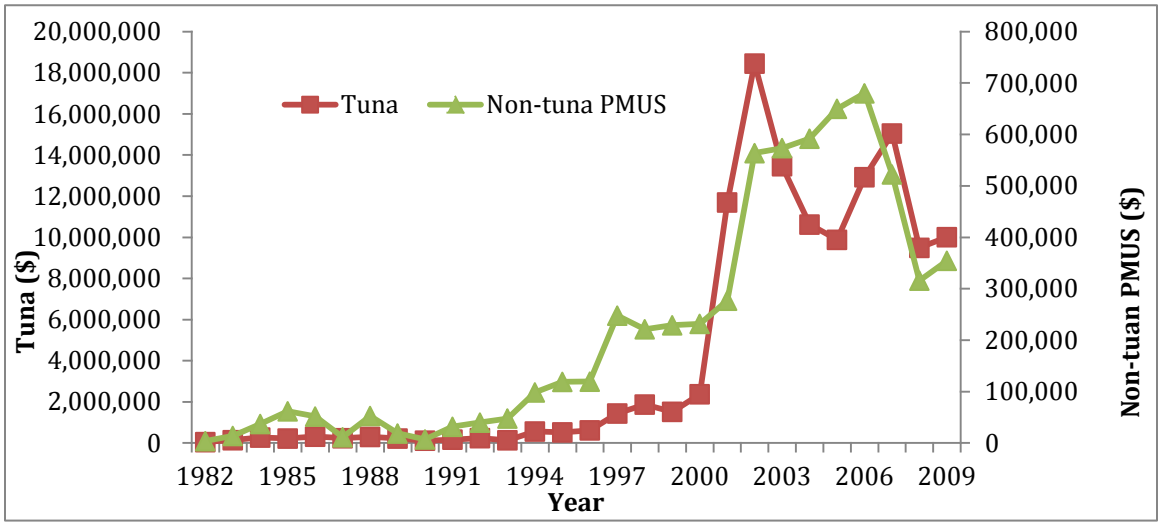
Table 4: American Samoa Longline Vessels Catch per 1,000 Hooks, 2006-2009

Species	2006 All Vessels	2007 All Vessels	2008 All Vessels	2009 All Vessels
Skipjack tuna	3.2	2.3	2.4	2.3
Albacore tuna	18.4	18.3	14.2	14.8
Yellowfin tuna	1.6	1.9	1.0	1.1
Bigeye tuna	0.9	0.9	0.5	0.6
TUNAS SUBTOTALS	24.2	23.5	18.2	18.8
Mahimahi	0.4	0.1	0.1	0.2
Blue marlin	0.2	0.2	0.2	0.2
Wahoo	1.5	1.0	0.7	1.0
Sharks (all)	0.5	0.4	0.4	0.4
Swordfish	0.1	0.0	0.0	0.0
Spearfish	0.1	0.0	0.1	0.1
Oilfish	0.5	0.5	0.4	0.5
Pomfret	0.0	0.1	0.1	0.1
NON-TUNA PMUS SUBTOTALS	3.3	2.4	2.0	2.5
Pelagic fishes (unknown)	0.0	0.2	0.1	0.2
OTHER PELAGICS SUBTOTALS	0.0	0.2	0.1	0.2
TOTAL PELAGICS	**27.5**	**26.0**	**20.3**	**21.5**

Table 5: American Samoa PMUS Landings, Value, and Average Price, 2009

Species	Longline			Troll/Non-Longli	
	Pounds	Value($)	Price/ LB	Pounds	Value($)
Skipjack tuna	341,829	$206,410	$0.60	2,379	$4,219
Albacore tuna	8,604,024	$8,616,157	$1.00	0	$0
Yellowfin tuna	853,036	$796,992	$0.93	2,560	$7,304
Bigeye tuna	320,576	$378,821	$1.18	0	$0
TUNAS SUBTOTALS	10,119,465	$9,998,380	$0.99	4,939	$11,523
Mahimahi	24,417	$57,271	$2.35	171	$445
Black marlin	187	$168	$0.90	0	$0
Blue marlin	55,556	$52,778	$0.95	0	$0
Striped marlin	1,785	$1,964	$1.10	0	$0
Wahoo	299,404	$181,105	$0.60	0	$0
Sharks (all)	0	$0		68	$34
Swordfish	18,843	$40,996	$2.18	0	$0
Sailfish	1,751	$4,359	$2.49	0	$0
Spearfish	953	$1,096	$1.15	0	$0
Moonfish	4,863	$7,294	$1.50	80	$120
Oilfish	4,549	$4,549	$1.00	0	$0
Pomfret	1,019	$2,293	$2.25	0	$0
NON-TUNA PMUS SUBTOTALS	413,328	$353,875	$0.86	318	$599
Barracudas	192	$516	$2.68	3,750	$10,012
Rainbow runner	48	$128	$2.65	219	$581
Dogtooth tuna	0	$0		641	$1,700
OTHER PELAGICS SUBTOTALS	241	$644	$2.68	4,609	$12,293
TOTAL PELAGICS	**10,533,034**	**$10,352,899**	**$0.98**	**9,867**	**$24,415**

Figure 5: American Samoa Inflation Adjusted Revenue, Tuna and Non-tuna PMUS, 1982-2009



2.1.3 Bycatch and Protected Species

Longline logbooks show that in 2009 about 12% of American Samoa's longline catch was released, approximately 35,900 fish. Of the total tuna catch, 3.4% of all tunas combined were released (Table 6). Other than 'unknown tuna", skipjack tuna has the highest percentage of released tuna MUS. Sharks dominate non-tuna PMUS percentages of bycatch at 99.3% or 5,479 sharks released. Overall, non-tuna PMUS are discarded at a high rate in the American Samoa longline fishery with the exception of wahoo of which nearly 75% are kept. For total PMUS, nearly 12 % of the total catch was released during 2009.

The American Samoa pelagic longline fishery targeting tunas has been monitored by NMFS under a mandatory observer program since March 2006. Beginning April 2006, branch personnel have conducted daily shoreside dock rounds in American Samoa to determine which fishing vessels are in port. These dock rounds are used to obtain an estimate of fishing effort on a real-time basis by assuming that a vessel is fishing when it is absent from the harbor. During 2009, observer coverage was just under 8 percent, although this has since been increased considerably. During observed trips in 2009, two green sea turtle interactions/mortalities were recorded and zero interactions with seabirds or marine mammals. During the first half of 2010, observer coverage was 16.7 percent and there were 3 green sea turtle interactions (2 mortalities) and zero interactions with seabirds or marine mammals.

Table 6: Number of Fish Kept, Released and Percent Released for American Samoa Longline Vessels, 2009

Species	Number Kept	Number Released	Percent Released
Skipjack tuna	26,866	7,517	21.9
Albacore tuna	221,315	673	0.3
Yellowfin tuna	15,585	911	5.5
Bigeye tuna	8,118	570	6.6
Tunas (unknown)	11	15	57.7
TUNAS SUBTOTALS	271,895	9,686	3.4
Mahimahi	1,629	1,602	49.6
Black marlin	2	26	92.9
Blue marlin	675	2,691	79.9
Striped marlin	116	224	65.9
Wahoo	10,776	3,670	25.4
Sharks (all)	37	5,926	99.4
Swordfish	215	90	29.5
Sailfish	64	612	90.5
Spearfish	145	1,210	89.3
Moonfish	128	584	82.0
Oilfish	326	7,014	95.6
Pomfret	141	1,249	89.9
NON-TUNA PMUS SUBTOTALS	14,254	24,898	63.6
Barracudas	48	360	88.2
Rainbow runner	8	1	11.1
Dogtooth tuna	0	10	100
Pelagic fishes (unknown)	11	2,909	99.6
OTHER PELAGICS SUBTOTALS	67	3,280	98.0
TOTAL PELAGICS	286,216	37,864	11.7

2.1.4 Non-commercial Fishery

The founding of the American Samoa Game Fishing Association in 1974 in Pago Pago led to fishing tournaments being held on a regular basis in the territory (Tulafono 2001). A total of 64 tournaments, averaging two to three tournaments per year and 10 to 20 vessels in each competition, were conducted in Pago Pago between 1974 and 1998. However interest in fishing tournaments waned during the late 1990s, with only three vessels participating in the last tournament held in 1998. The reason for this decline was not entirely clear, but may be related to the expansion of the longline fishery in American Samoa and the shift from commercial trolling to longlining. According to Tulafono, fishermen were more interested in earning income and it was time consuming to switch from longline to troll gear for a weekend of tournament fishing. Tulafono (2001) noted that tag and release programs, which are gaining popularity with recreational and charter-

vessel fishermen elsewhere in the U.S., would not be popular in American Samoa. In common with many Pacific islands, fish were caught to keep for food in American Samoa, and fish landings and their distribution through the community were important in order to meet social obligations. Releasing fish would be considered a failure to meet these obligations (Tulafono 2001). There are no data on non-commercial catches and effort currently available.

Estimates of recreational catch for the Western Pacific are given in Table 7. The data for Guam, CNMI and American Samoa are based on the proportion of catches landed for sale and catches retained and not sold, in all landings sampled by creel surveys in each area. The ratio of unsold to sold catch in the samples was used in conjunction with the total catch estimate expanded from the creel survey data. This was adjusted downwards based on the creel surveys by the ratio of landings by vessels retaining 100% of their catch to the total unsold catch. This accounts for that fraction of the catch not sold by commercial fishing vessels. The volume of fish landed by vessels retaining all their catch was labeled the nominal recreational catch. Recreational fish catches in Hawaii are monitored through the Hawaii Marine Recreational Fishing Survey (HMRFS) as described in Section 3.1.4.2.

During 2009, approximately 44 non-commercial fishing trips were taken resulting in an estimated 2,730 lb of PMUS caught which is just 0.03% of the total pelagic catch (Table 7).

Table 7: Estimated Non-commercial Catches in the Western Pacific Region, 2009

Location	Total catch (lbs)	Unsold catch (lb)	Nominal recreational catch (lb)	Recr. catch as % of total catch	Recr. fishing trips
American Samoa	10,640,460	2,827	2,732	0.03	44
Guam	622,840	329,340	303,391	48.70	3,764
Hawaii	51,178,951	NA	21,692,676	42.38	361,563
NMI	404,633	91,082	85,423	21.11	4,212

2.1.5 Ecosystem Components

During the 145th Council meeting in July 2009, U.S. purse seiners suggested the concept of “cooperative surveillance” instead of “cooperative research” be considered and retain access to all U.S. EEZ waters to U.S.-built hulls. They stated they fish is U.S. waters on a limited basis only when El Nino develops.

2.1.6 Research

During 2009, the Council endorsed and supported a variety of cooperative and other research projects related to pelagic species and fisheries.

Research funded by the Council and conducted during 2009 included gear research in American Samoa's longline fishery to examine the impact of larger hooks and larger bait on albacore catch rates (Beverly et al. 2011). Use of larger-sized hooks would be intended to minimize interactions with green sea turtles and longline gear. Gear trials were conducted to determine if larger hooks could be used in this fishery without significantly impacting catch rates of the target stock, albacore tuna; or overall revenue. Using a commercial longline vessel fishing out of Pago Pago, American Samoa, investigators undertook 43 sets comparing 14/0 (control) with 16/0 (experimental) circle hooks. A total of 108,036 hooks were set, equally divided between the two hook sizes. For the main target species in this fishery, albacore, there was no significant difference in catch rates, the life status of fish on capture, or the size composition of the catch. Statistically significant differences were found in the catch rates of escolar, skipjack, and wahoo with higher catch rates on the 14/0 hooks, and in the size composition of bigeye and yellowfin with larger fish taken on the 16/0 hooks. The results suggest that the adoption of larger circle hooks in the fishery will not have an impact on albacore catch rates, but there will be some potential losses (reduced catch rates of skipjack and wahoo) and some potential gains (larger bigeye and yellowfin). The results indicate that overall, any impact on the fishery should be negligible.

In addition, the University of Hawaii's Pelagic Fisheries Research Program (PFRP) funded and carried out a variety of projects during 2009/2010[3] including a study on assimilating in situ bioacoustic data in a mid-trophic level model and its impact on predicted albacore feeding habitat in American Samoa waters.

[3] See: http://www.soest.hawaii.edu/PFRP/newprojects09_10.htm

3.1 Hawaii's Pelagic Fisheries

3.1.1. Introduction to Hawaii

Of all fisheries managed under the Pacific Pelagic FEP, the Hawaii-based longline fishery is the largest accounting for the majority of Hawaii's commercial pelagic landings. Hawaii's pelagic fisheries also include troll and handline, offshore handline, and an aku boat (pole and line) fishery. A total of 3,150 fishermen were licensed in 2007 by the State of Hawaii, including 2,164 (69%) who indicated that their primary fishing method and gear were intended to catch pelagic fish. Most licenses that indicated pelagic fishing as their primary method were issued to trollers (65%) and longline fishermen (28%). The remainder was issued to ika shibi and palu ahi (handline) (6%) and aku boat fishers (1%).

3.1.2 Fishery Performance and Economic Data

3.1.2.1 Longline Landings

During 2009, 127 longline vessels took 1,365 trips and set 18,572 sets using over 39.4 million hooks in areas including U.S. EEZ waters and the high seas. Hawaii's pelagic fisheries total landings and revenue had been on an upward trend since 2001 to 2008 with a decrease in both in 2009 (Figure 6). Hawaii's main catch in terms of landings and number of fish caught is bigeye tuna as it has been since 1996. In 2009, landings of the four main tunas in Hawaii's fishery, bigeye, yellowfin, skipjack and albacore were around 10.7, 2.8, 1 and 0.68 million lbs, respectively.

Bigeye tuna catches are now managed under a quota or a total allowable catch (TAC) set by the WCPO international tuna management organization, the Western and Central Pacific Fisheries Commission (WCPFC). The TAC, intended to end the overfishing of bigeye tuna in the WCPO, was further reduced in 2009 which was largely responsible for reduced revenue and landings shown in Figures 6 and 7, respectively, and in Table 10.

Figure 6: Hawaii Total Commercial Landings and Revenue, 1987-2009

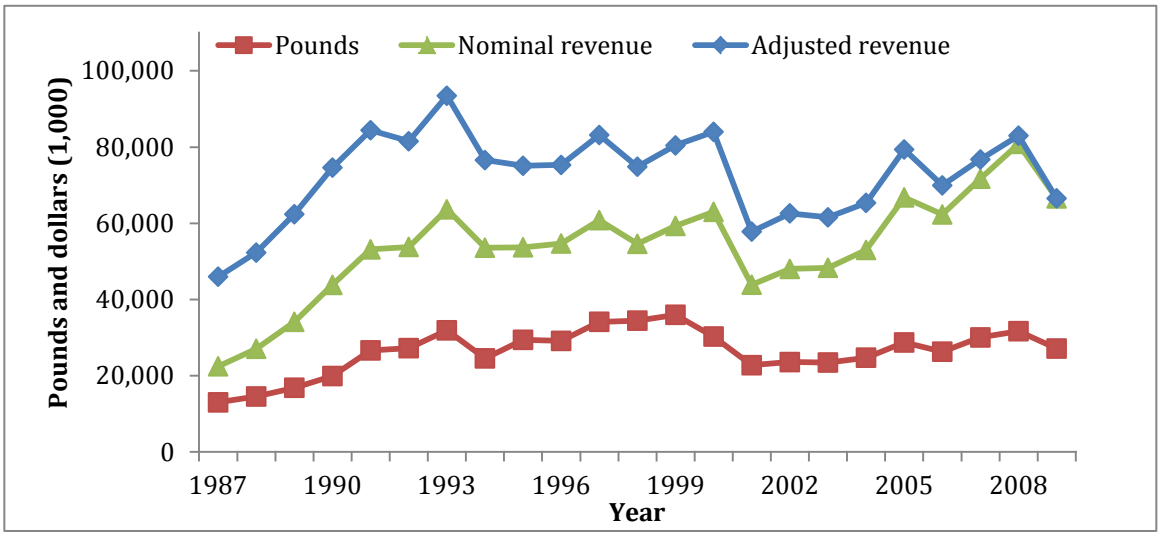


Figure 7: Species Composition of Tuna Landings in Hawaii, 1987-2009

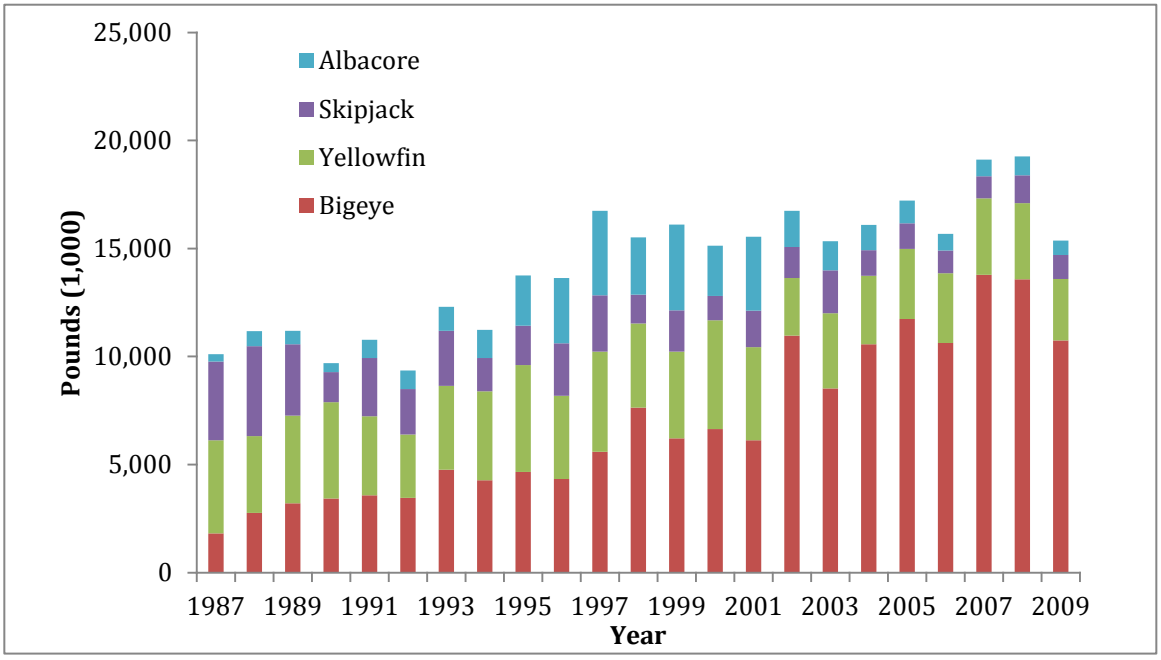


Figure 8: Hawaii Total Commercial Pelagic Landings, by Gear Type, 1987-2009

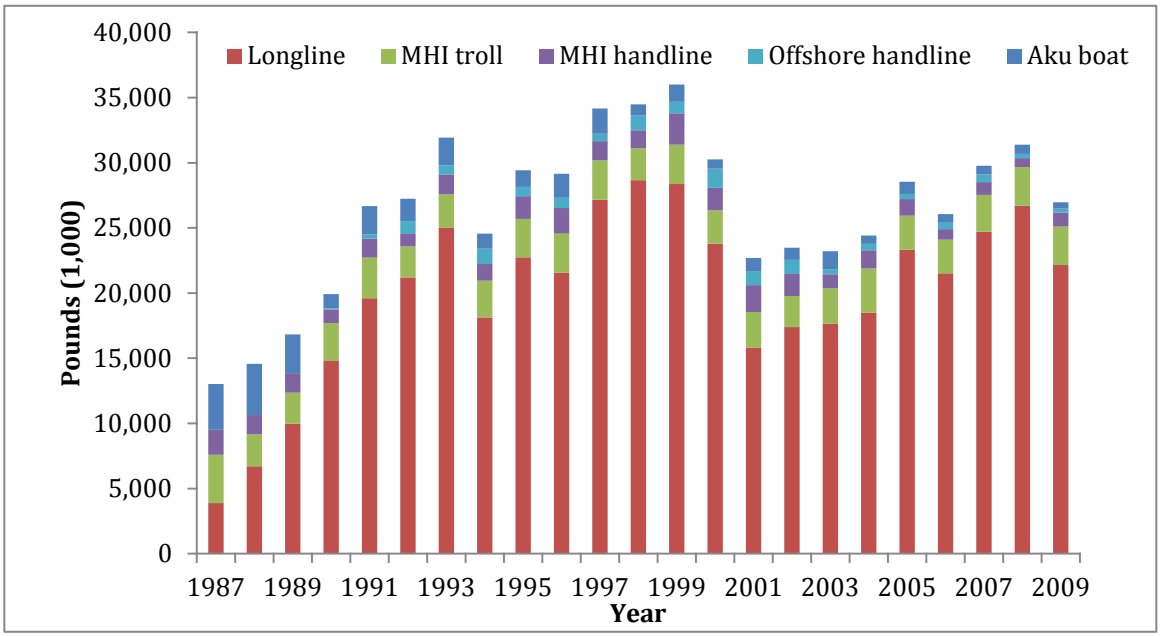


Figure 9: Hawaii Commercial Tuna Landings, by Gear Type, 1987-2009

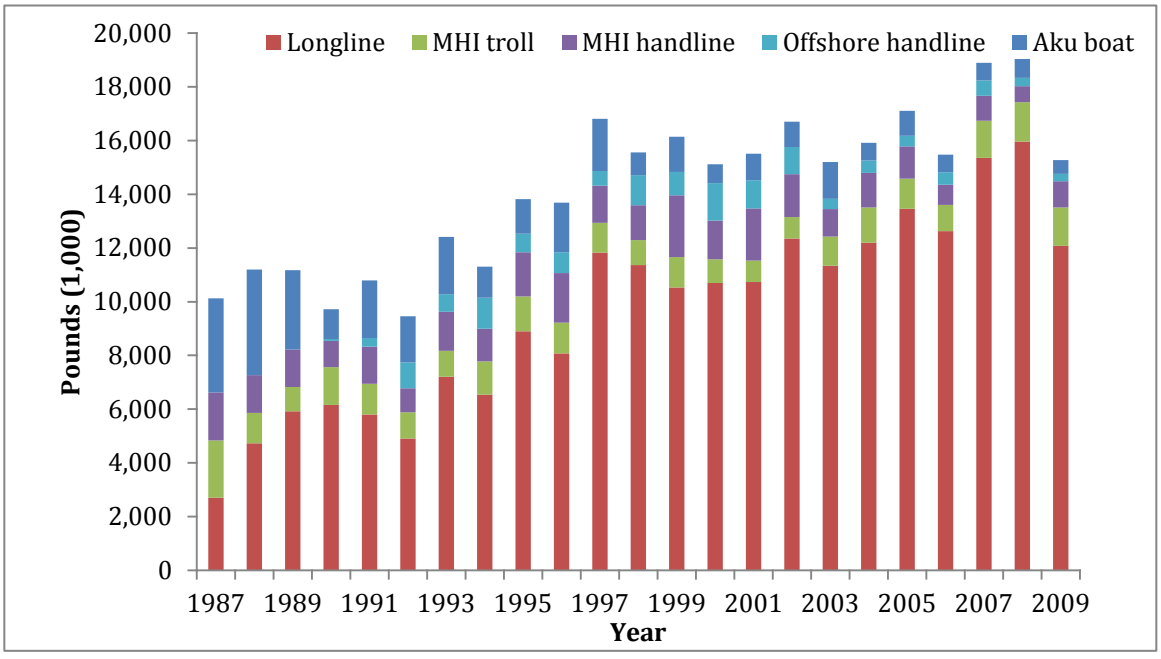


Figure 10: Hawaii Bigeye Tuna Landings, 1987-2009

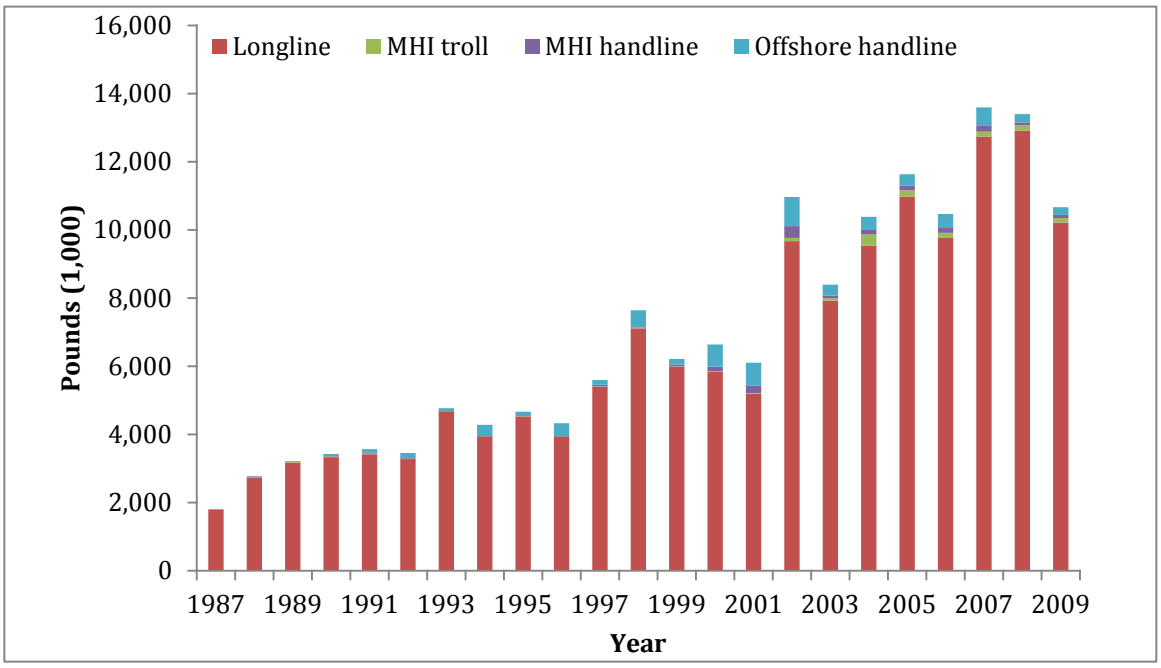
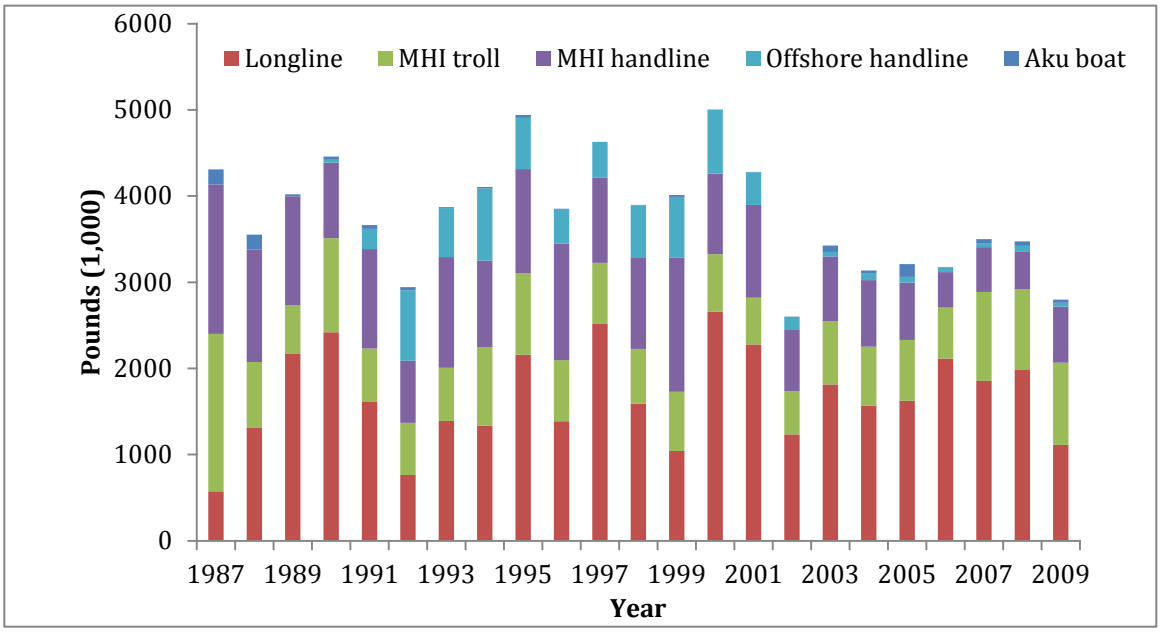


Figure 11: Hawaii Yellowfin Tuna Landings, 1987-2009



Throughout the history of the commercial billfish fishery in Hawaii, landings have varied widely as the swordfish fishery was developed and grew in the late 1980's through the early 1990's with a peak in 1993 (Figure 12). Landings plummeted as the shallow-set fishery was closed in 2001-2004 and has reopened with reduced effort since 2004. The majority of billfish landings are from the shallow-set longline fishery targeting swordfish and as bycatch in the deep-set longline tuna fishery.

The top billfish MUS landings are swordfish, blue marlin, and striped marlin, respectively (Figure 13). During 2009, billfish landings topped 6 million lb with a value over $9.6 million, approximately 22 percent of total landings and 15 percent of the total value of PMUS in Hawaii (Table 10).

Other PMUS accounted for 21 percent of total PMUS landings and ~14 percent of total revenue during 2009. "Other PMUS" was mainly comprised of mahimahi, opah (moonfish), ono (wahoo), pomfret (monchong), and others (Figure 14, Table 10). Mahimahi are caught in similar quantity by the longline and the troll fisheries with 720,000 lb and 692,000 lb respectively in 2009, and in smaller quantities by the handline fishery (Figure 16). Opah landings have increased steadily over time with 2009 the highest landings on record (Figure 17). Shark landings decreased drastically after implementation of the federal Shark Finning Protection Act of 2000 (Figure 18).

Figure 12: Hawaii Commercial Billfish Landings, By Gear Type, 1987-2009

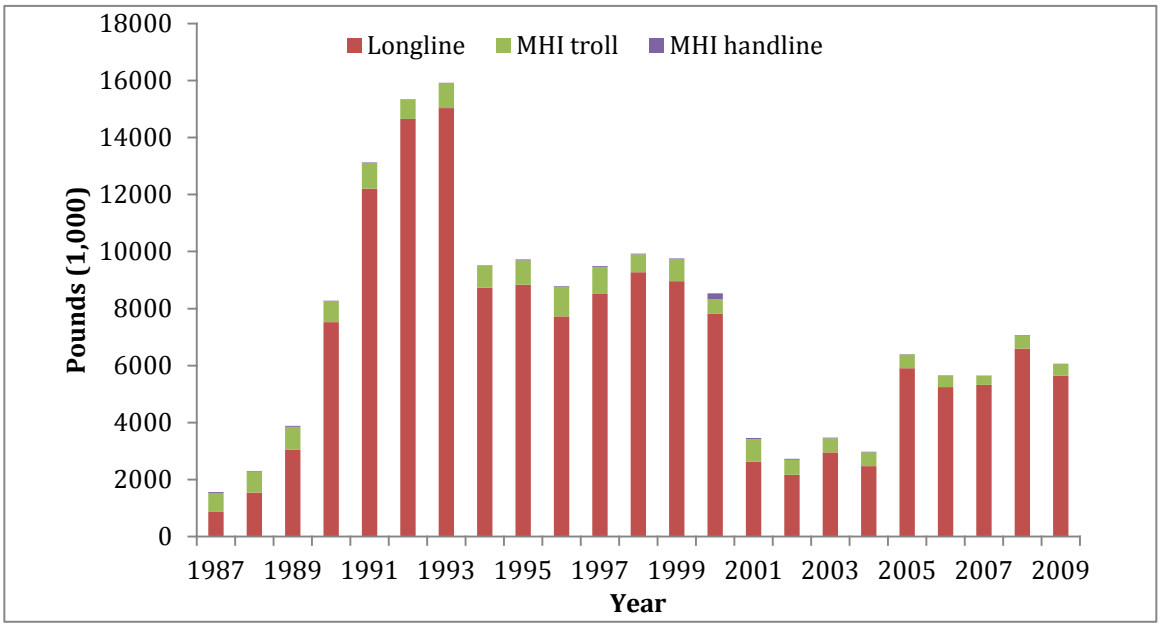


Figure 13: Species Composition of Billfish Landings, 1987-2009

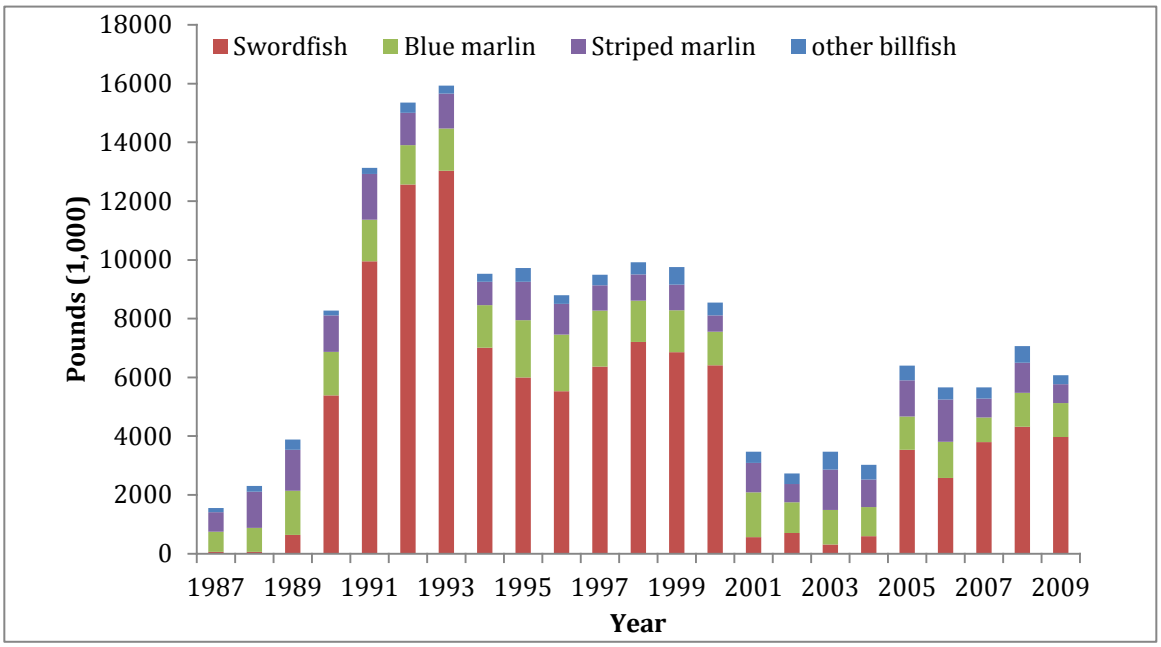


Figure 14: Species Composition of Other PMUS Landings, 1987-2009

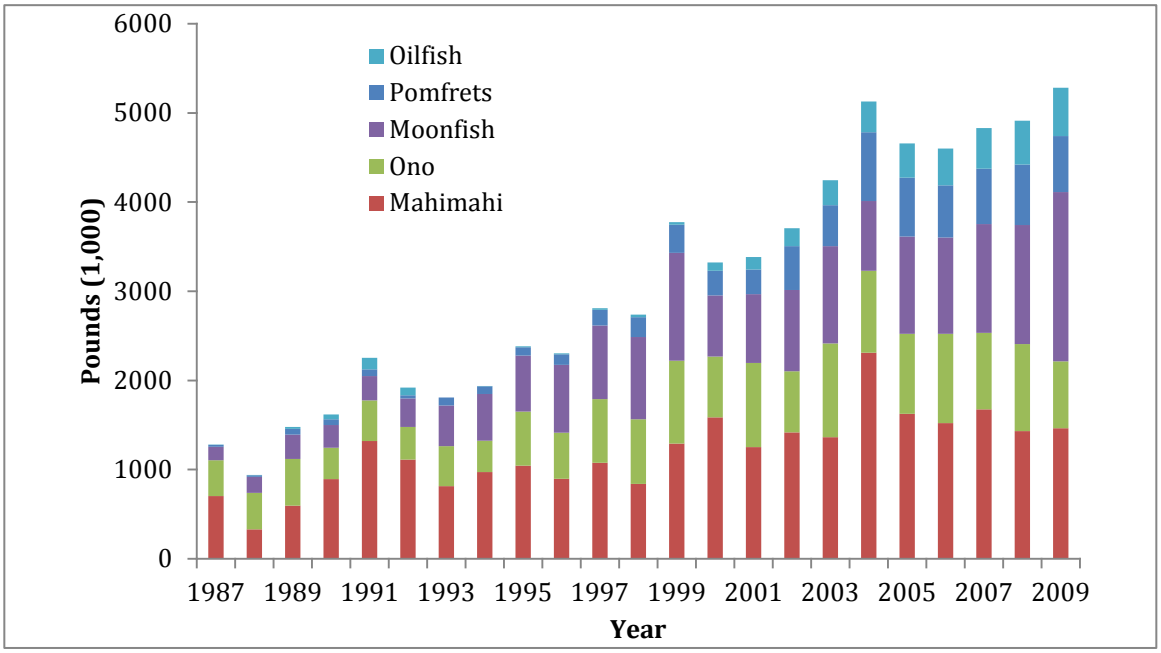


Figure 15: Hawaii Commercial Landings of other PMUS by Gear Type, 1987-2009

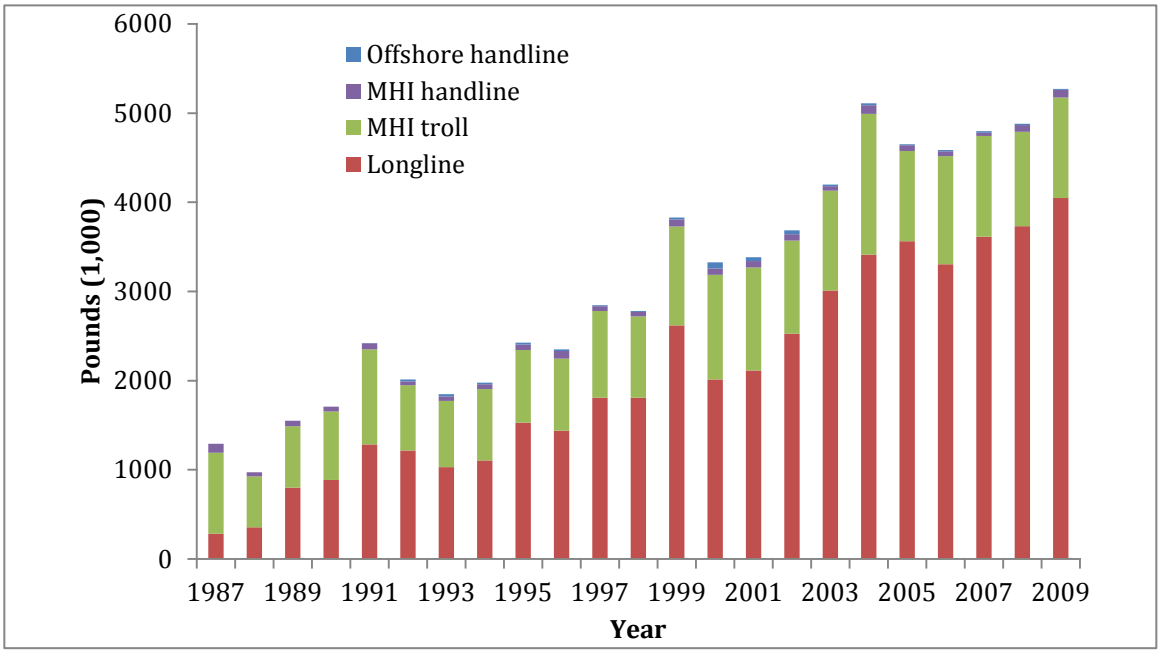


Figure 16: Hawaii Mahimahi Landings, 1987-2009

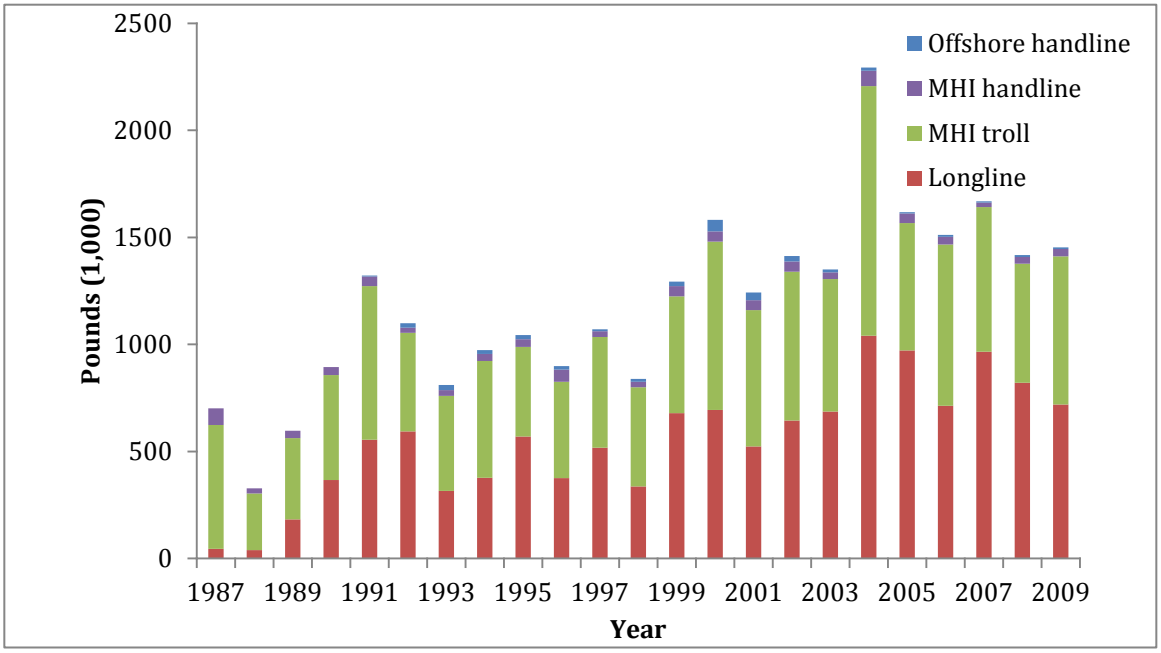


Figure 17: Hawaii Longline Moonfish/Opah Landings, 1987-2009

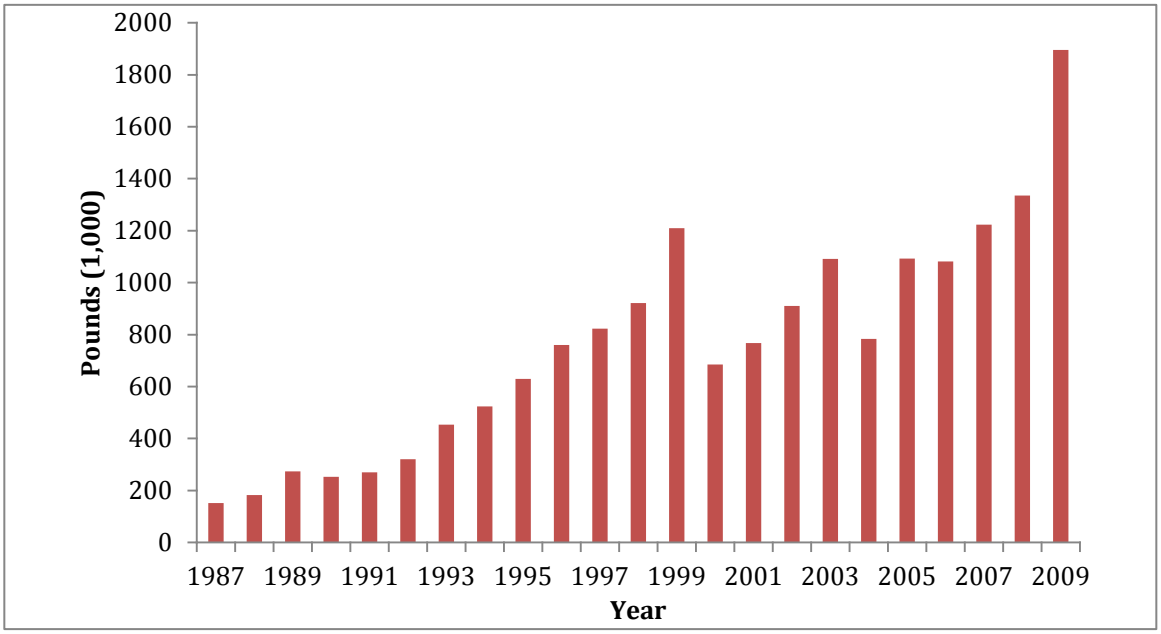
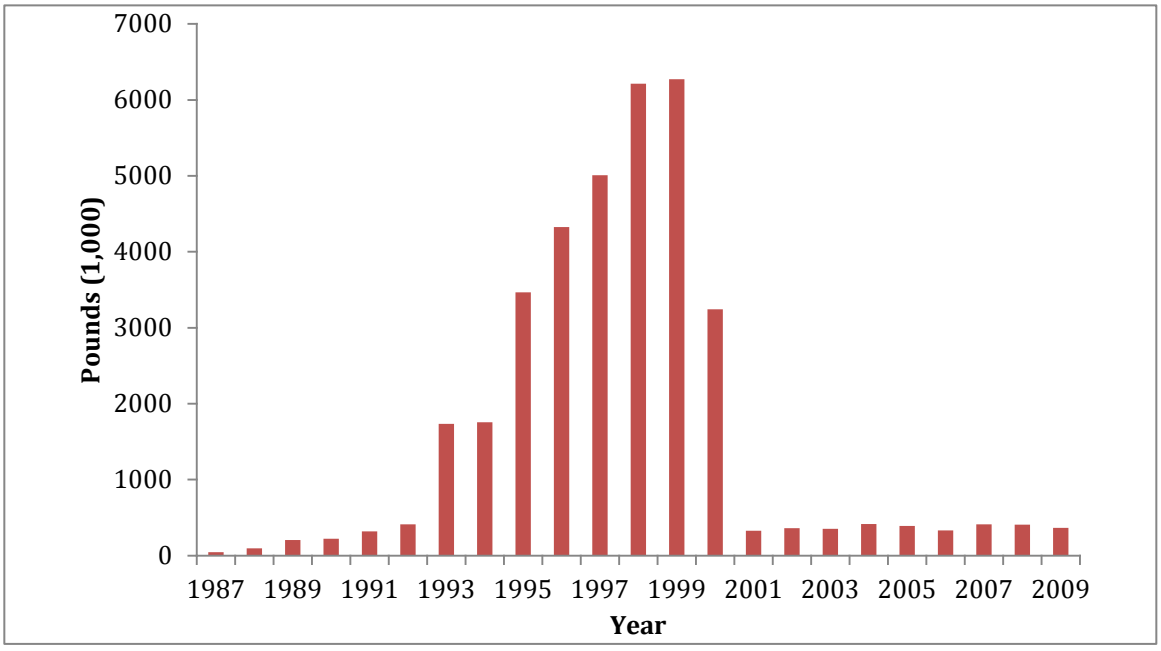


Figure 18: Hawaii Longline Shark Landings, 1987-2009



try fishery with a maximum of
29 vessels since 2004 (Figure
ery until 2005 while effort in
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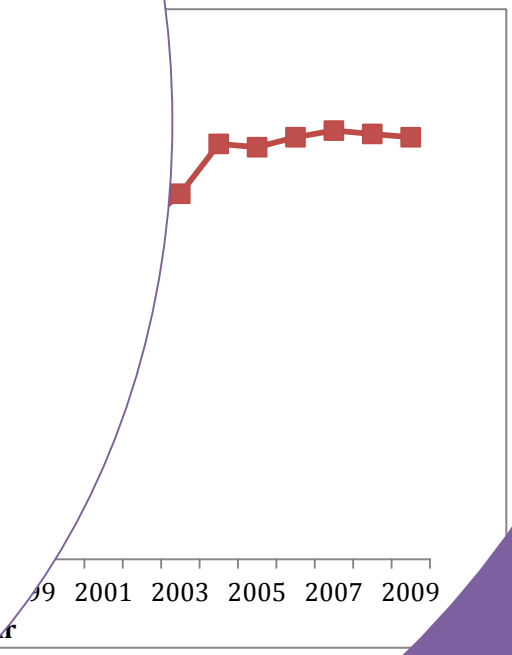
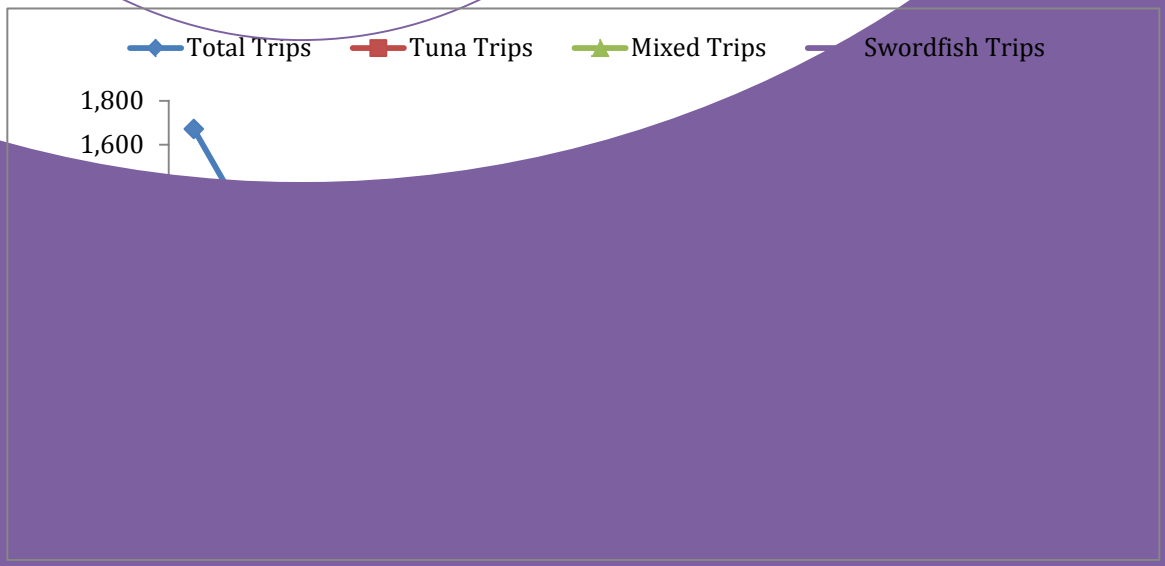
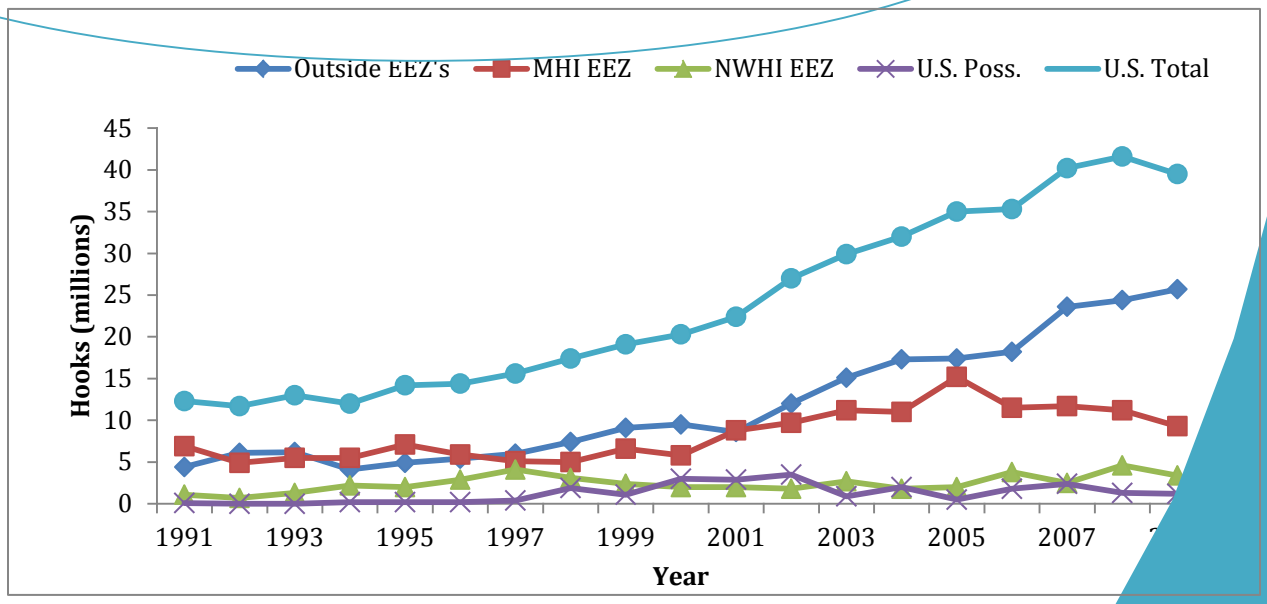
ssels, 1987-2009



-based Longline Fishery, 1991-





3.1.2.3 Longline Catch per Unit of Effort (CPUE)

Catch per unit of effort (CPUE) in Hawaii's pelagic fisheries for the 3 mai
tunas, bigeye, yellowfin and albacore have been variable yet on the decline for
dozen years (Figure 22). CPUE of other PMUS is quite variable and depende
type (shallow-set, deep-set, or mixed) as shown in Table 8 for mahimahi ar
average weight of bigeye, alabacore, and skipjack tuna caught in the lon
have not altered significantly over time, however, the average size of
to have decreased over time (Table 9).

Figure 22: Hawaii Longline CPUE for Major Tuna on Tuna Trips, 1991-2009

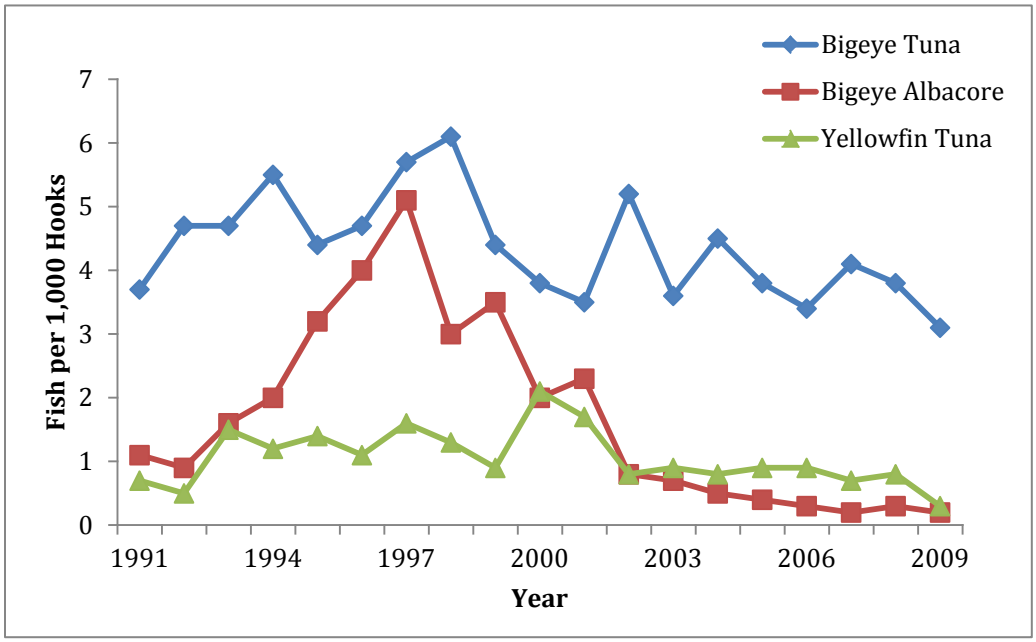


Table 8: Longline CPUE (fish per 1000 hooks) by Trip Type, 1991-2009

	Longline CPUE (Fish per 1000 Hooks) By Trip Type					
	Mahimahi			Ono		
Year	Tuna Trips	Mixed Trips	Swordfish Trips	Tuna Trips	Mixed Trips	Swordfish Trips
1991	2.18	4.13	3.62	0.39	0.12	0.06
1992	1.68	9.47	4.78	0.34	0.14	0.06
1993	1.52	2.69	2.33	0.55	0.15	0.13
1994	2.03	6.56	2.62	0.32	0.06	0.04
1995	2.39	10.26	6.78	0.57	0.22	0.16
1996	1.03	3.42	2.31	0.36	0.16	0.23
1997	1.46	9.11	10.24	0.59	0.35	0.29
1998	0.84	3.25	1.53	0.55	0.27	0.12
1999	1.48	6.03	4.65	0.59	0.35	0.24
2000	1.32	11.89	8.45	0.43	0.13	0.08
2001	1.89	7.53	--	0.60	0.42	--
2002	1.79	--	--	0.33	--	--
2003	1.85	--	--	0.62	--	--
2004	2.09	--	0.30	0.49	--	0.01
2005	2.12	--	4.75	0.48	--	0.10
2006	1.51	--	0.66	0.50	--	0.01
2007	2.08	--	1.40	0.32	--	0.06
2008	1.56	--	3.20	0.35	--	0.09
2009	1.61	--	1.99	0.23	--	0.02
Average	**1.71**	**3.91**	**3.14**	**0.45**	**0.12**	**0.09**
Std. Dev.	**0.39**	**4.05**	**2.83**	**0.12**	**0.14**	**0.08**

Table 9: Average Weight of Major PMUS Caught in Hawaii's Longline Fishery, 1987-2009

	Tunas				
Year	Albacore	Bigeye Tuna	Bluefin Tuna	Skipjack Tuna	Yellowfin Tuna
1991	52	85	185	20	118
1992	45	77	192	17	99
1993	44	88	203	17	93
1994	41	81	190	18	97
1995	51	79	271	18	95
1996	53	64	223	17	80
1997	55	71	239	20	89
1998	55	74	177	20	76
1999	52	75	202	20	62
2000	54	79	166	17	67
2001	55	68	190	18	62
2002	56	71	151	16	62
2003	56	77	273	19	67
2004	46	69	207	16	62
2005	50	88	238	15	58
2006	51	84	0	12	68
2007	54	82	0	15	73
2008	52	86	0	17	57
2009	47	87	0	18	77

3.1.2.4 Non-Longline Pelagic Fisheries (NLPF)

In addition to the longline fishery, Hawaii's pelagic fisheries include a troll fishery, a handline fishery, an akuboat pole-and-line fishery, and a few shortline operators (similar to a longline with gear < 1 mile in length). The largest non-longline sector is the troll fishery with over 1,600 participants and 30,000 days fished (Figure 23).

The handline fishery is comprised of between 500-600 individuals who fish ~5,000 days annually (Figure 24). The peak of the handline fishery was in 1999 dominated by fishers operating off the Big Island. Today the handline fishery accounts for ~1 million lb of PMUS and revenue of ~ $1.8 million (Figure 27). Catch in the nearshore handline fishery is dominated by yellowfin tuna (Figure 28), while the offshore fishery, with less than 10 participants, fishes at Cross Seamount and around several offshore weather buoys catches predominantly bigeye tuna (Figure 29).

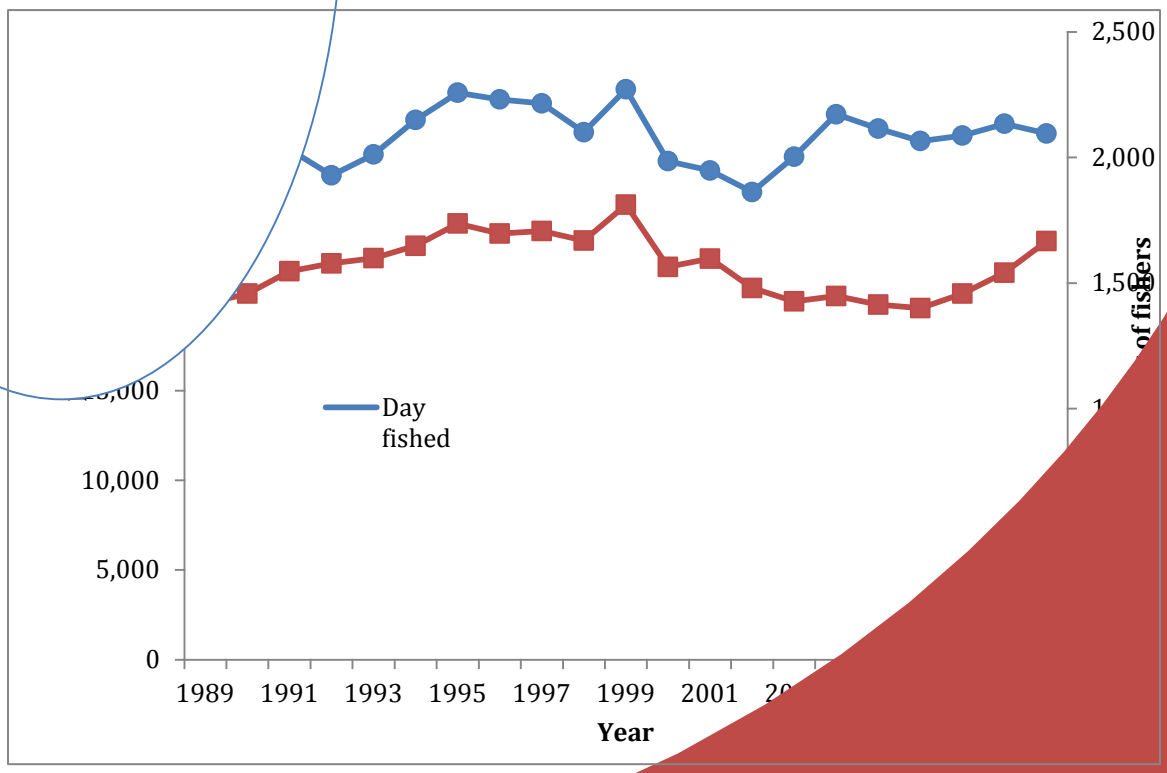
The aku (skipjack tuna) pole-and-line fishery in Hawaii has declined over time six vessels participating in ~ 150 trips during 2009 (Figure 30). Their catch during 2009 was 511,000 lb with $679,000 in revenue (Figure 31).

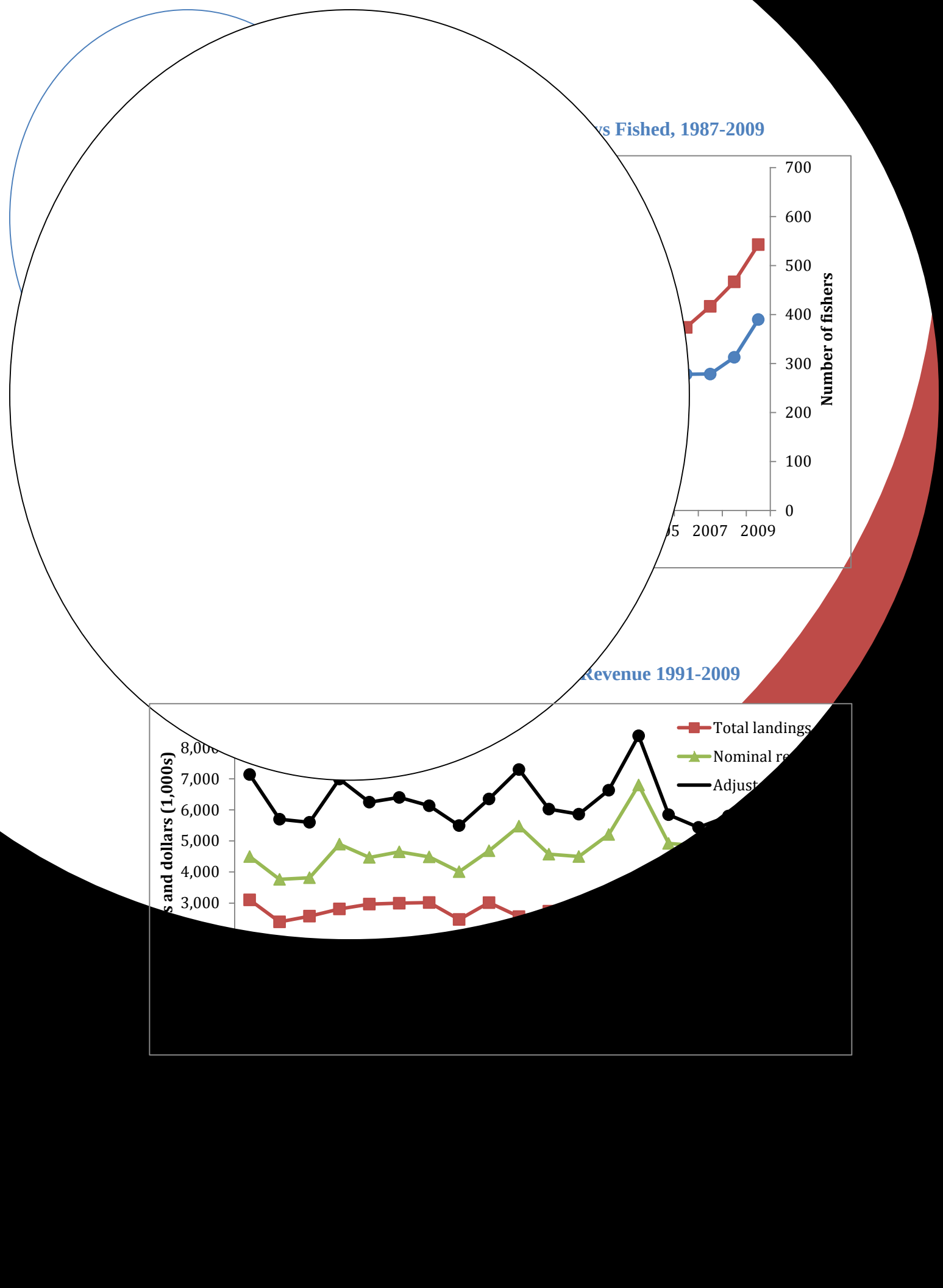
In 2009, the troll fishery landed nearly 2 million lbs of PMUS with revenues of ~$5.2 million (Figure 24). The dominant MUS landed is yellowfin tuna. Landings of

t all time highs for the past three years (Figure 25). The NLPF also
The troll fishery was responsible for the majority of mahimahi
n in Figure 16.

nercial landings are shown in Figure 8 with tuna landings in
lowfin tuna, and billfishes landed in the NLPF are shown in
spectively. In Figure 15, the percent of total catch comprised of
e sectors is shown.

waiian Islands Troll Fishers and Days Fished, 1987-2009




ys Fished, 1987-2009
700
600
500
400
300
200
100
0
Number of fishers
5
2007
2009
Revenue 1991-2009
Total landings
Nominal re
Adjust
8,000
7,000
6,000
5,000
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3,000
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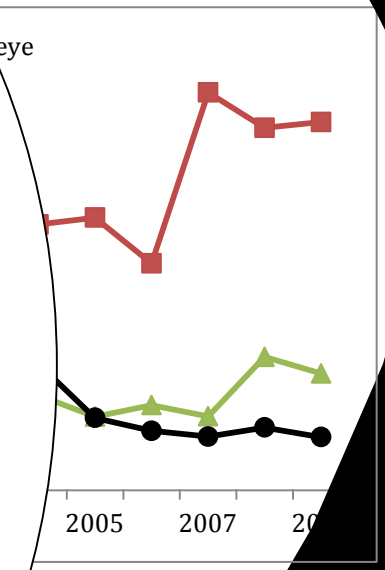
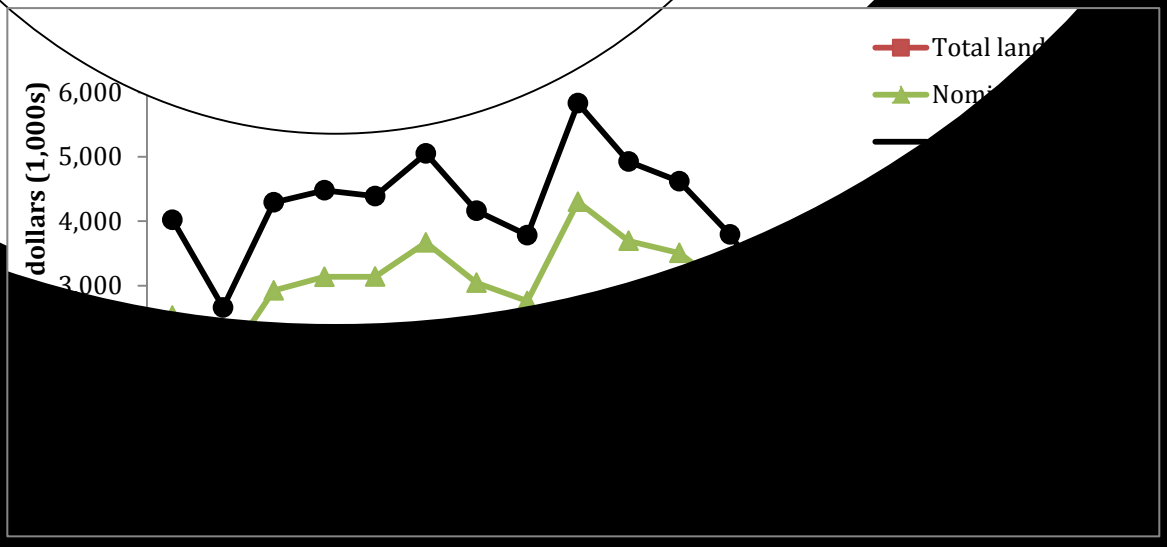
a Landings, 1991-2009



venue, 1987-200



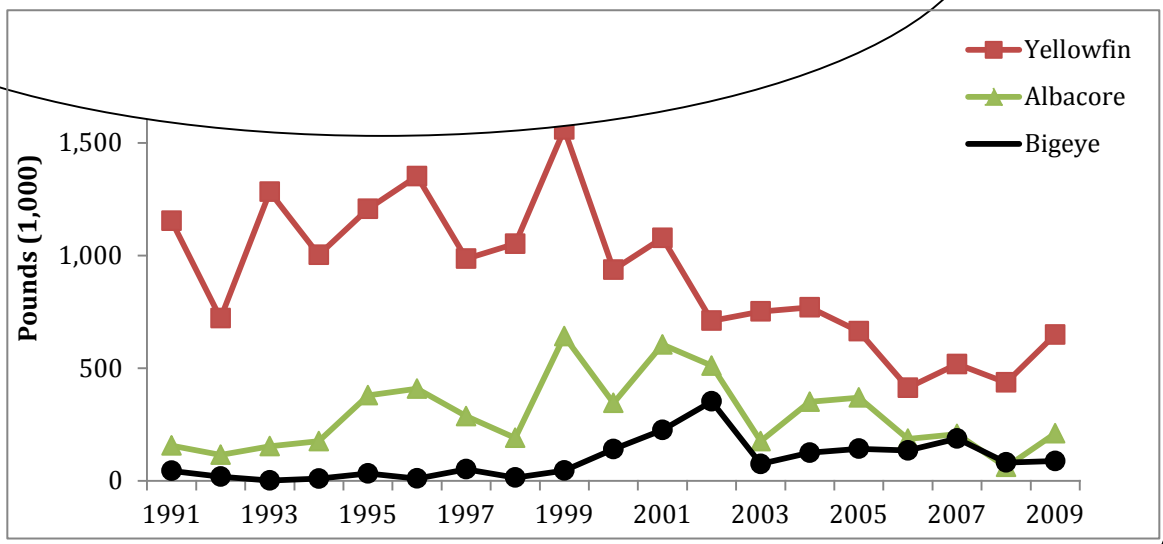
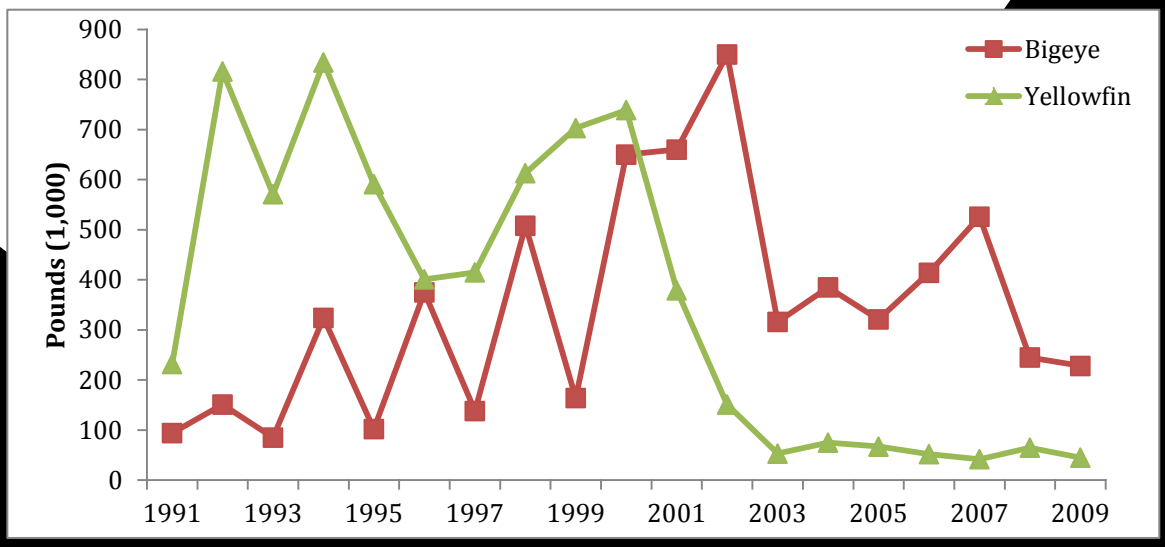
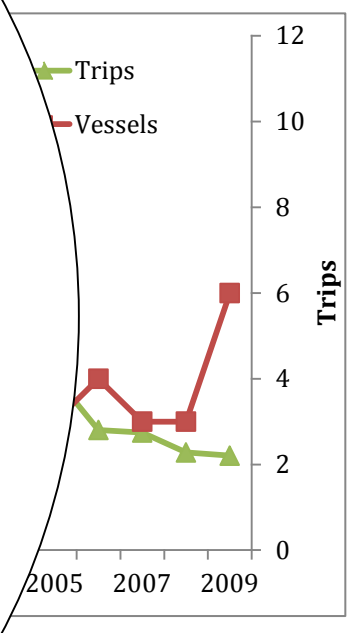


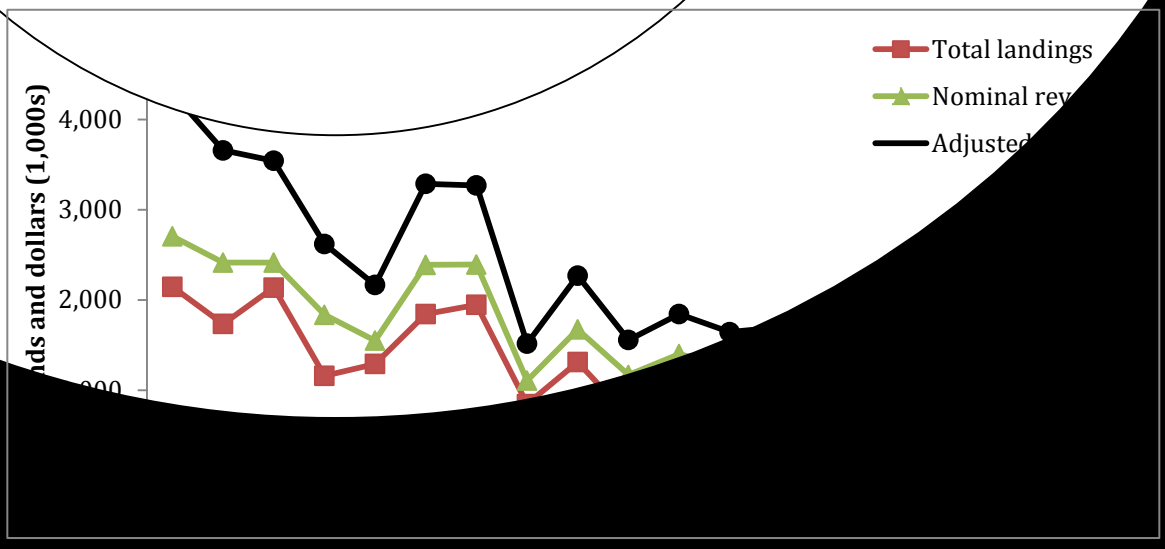
Figure 29: Hawaii's Offfshore Handline Landings, 1991-2009



tivity, 1987-2009



Revenue, 1987--2009



5 million from 2008 (Table 10).
nd primarily due to the reduced
t in 2009 (Figure 33, Table 10).

ings and Revenue, 1991-2009

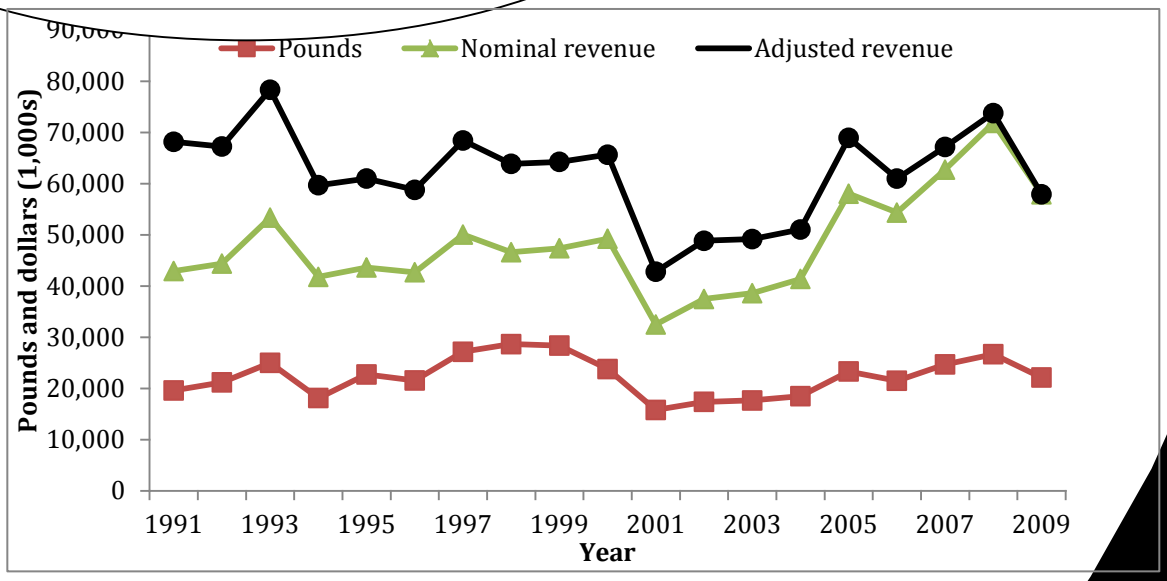


Figure 33: Total Commercial Pelagic Ex-vessel Revenue by Gear Type,

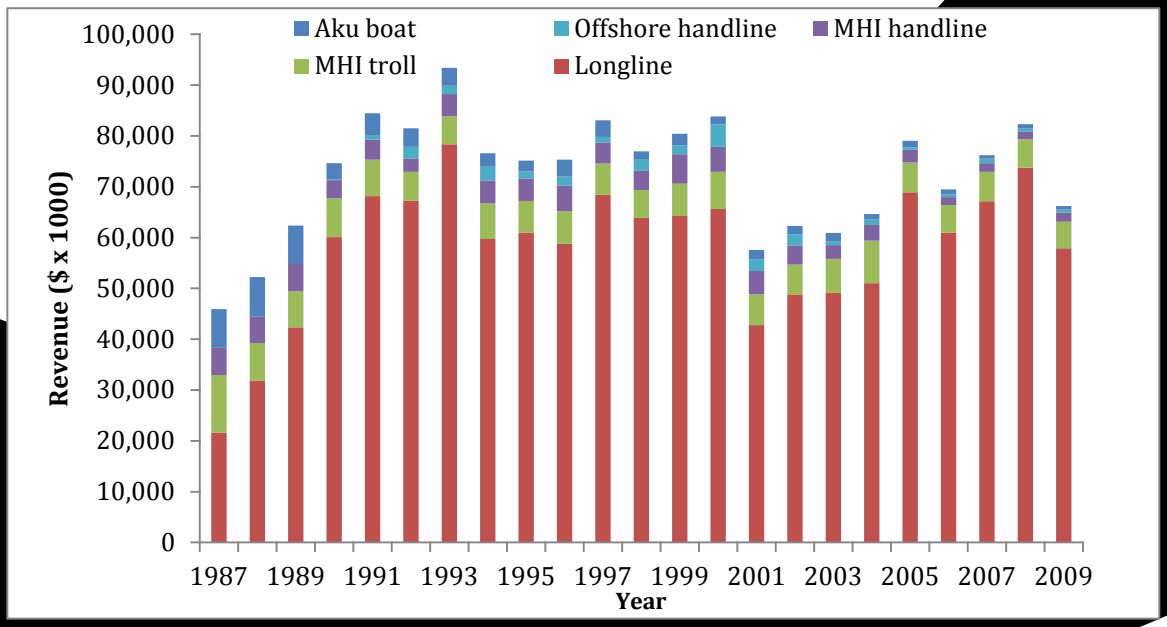


Table 10: Hawaii Commercial Pelagic Landings, Revenue, and Average Price by Species, 2008-2009

Species	2008 Pounds Landed (1000 lbs)	2008 Ex-vessel Revenue ($1000)	2008 Average Price ($/lb)	2009 Pounds Landed (1000 lbs)	2009 Ex-vessel Revenue ($1000)	2009 Average Price ($/lb)
Tuna PMUS						
Albacore	874	$1,380	$ 1.72	678	$1,071	$ 1.65
Bigeye Tuna	13,571	$51,006	$ 3.81	10,753	$39,366	$ 3.66
Bluefin Tuna	1	$0	--	2	$0	--
Skipjack Tuna	1,279	$1,221	$ 1.34	1,098	$1,010	$ 1.42
Yellowfin Tuna	3,536	$8,891	$ 2.77	2,844	$6,249	$ 2.52
Tuna PMUS subtotal	**19,260**	**$62,497**	**$3.42**	**15,375**	**$47,696**	**$3.27**
Billfish PMUS						
Swordfish	4,316	$7,363	$ 1.92	3,975	$7,256	$ 1.89
Blue Marlin	1,161	$1,047	$ 1.14	1,154	$1,193	$ 1.16
Striped Marlin	1,023	$1,076	$ 1.05	644	$947	$ 1.47
Other Billfish	566	$386	$ 0.73	296	$295	$ 1.04
Billfish PMUS subtotal	**7,067**	**$9,872**	**$1.57**	**6,070**	**$9,691**	**$1.54**
Other PMUS						
Mahimahi	1,432	$3,268	$ 2.61	1,464	$2,853	$ 2.22
Ono (wahoo)	976	$2,296	$ 2.69	751	$1,673	$ 2.77
Opah (moonfish)	1,335	$2,225	$ 1.72	1,896	$2,376	$ 1.28
Oilfish	491	$942	$ 1.92	544	$704	$ 1.29
Pomfret	677	$1,709	$ 2.55	628	$1,381	$ 2.20
Sharks (whole weight)	416	$154	$ 0.45	373	$139	$ 0.47
Other Pelagics	47	$40	$ 1.11	46	$29	$ 1.15
Other PMUS subtotal	**5,375**	**$10,634**	**$2.15**	**5,703**	**$9,154**	**$1.75**
Total Pelagics	**31,702**	**$83,003**	**$2.81**	**27,148**	**$66,541**	**$2.57**

3.1.3 Bycatch and Protected Species

3.1.3.1 Bycatch

Bycatch in the Hawaii-based longline fishery is dominated by sharks which are almost all released with the exception of mako sharks which are the most widely consumed in Hawaii (Table 11). Nearly 7 percent of swordfish caught are released, which may be due to the prohibition on deep-set tuna longliners from retaining more than 10 swordfish per trip. Other PMUS with more than 1,000 individuals released include bigeye, skipjack, and mahimahi.

Table 11: Total Bycatch, Number and Percent Released, Kept and Caught, 2009

	Number Released	Percent Released	Kept	Caught
Tuna				
Albacore	397	3.9	9,754	10,151
Bigeye Tuna	1,336	1.1	117,661	118,997
Bluefin Tuna	0	0.0	12	12
Skipjack Tuna	1,003	5.6	16,943	17,946
Yellowfin Tuna	196	1.5	13,200	13,396
Other Tunas	1	8.3	11	12
Billfish				
Blue Marlin	31	0.7	4,242	4,273
Spearfish	89	1.0	8,749	8,838
Striped Marlin	97	1.2	7,853	7,950
Other Billfish	14	2.6	527	541
Swordfish	1,513	6.9	20,333	21,846
Other Pelagic Fish				
Mahimahi	1,937	3.0	61,745	63,682
Moonfish	240	1.1	21,120	21,360
Oilfish	681	2.1	32,117	32,798
Pomfret	200	0.5	36,735	36,935
Wahoo	36	0.4	8,789	8,825
Misc. Pelagic Fish	62	8.3	683	745
Total (Non-Shark)	**7,833**	**2.1**	**360,474**	**368,307**
Sharks				
Blue Shark	47,930	99.5	238	48,168
Mako Shark	2,319	62.1	1,416	3,735
Thresher Shark	6,664	95.1	345	7,009
Other sharks	1,678	93.4	118	1,796
Total Sharks	**58,591**	**96.5**	**2,117**	**60,708**

3.1.3.2 Protected Species

The Hawaii-based pelagic shallow-set longline fishery targeting swordfish has been monitored under a mandatory observer program with 100 percent observer coverage since 2004. During 2009, the shallow-set fishery had 13 interactions with sea turtles (0.007 interaction rate[4]), 5 with marine mammals (0.003 interaction rate), and 111 interactions with seabirds (0.063 interaction rate).

The Hawaii-based pelagic deep-set longline fishery targeting tunas during 2009 had approximately 20.6 percent observer coverage. During 2009, this fishery had 5 interactions with sea turtles (0.001 interaction rate), 14 marine mammal interactions (0.002 interaction rate), and 45 interactions with seabirds (0.006 interaction rate).

Protected Species Administrative Actions

On October 1, 2009, the National Marine Fisheries Service (NMFS) received a petition to list the Hawaiian insular population of false killer whales (*Pseudorca crassidens)* as an endangered species and designate critical habitat to ensure its recovery pursuant to the Endangered Species Act of 1973 (ESA), as amended. NMFS formed a false killer whale Biological Review Team (BRT) which completed a status review of the species in August 2010. After reviewing the best scientific and commercial information available, NMFS determined that the Hawaiian insular false killer whale is a distinct population segment (DPS) that qualifies as a species under the ESA. Moreover, after evaluating threats facing the species, and considering efforts being made to protect the Hawaiian insular DPS, NMFS determined that the DPS is declining and is in danger of extinction throughout its range. Therefore on November 17, 2010, NMFS announced in the Federal Register their proposal to list the species as endangered under the ESA including a solicitation for public comments that had to be received by NMFS by February 15, 2011.

3.1.4 Non-commercial Fishery

During 2009, an estimated 361,563 non-commercial (or recreational) fishing trips were taken in Hawaii. These trips resulted in catches estimated at over 21.6 million lb of PMUS, around 42% of the total pelagic catch (Table 7).

3.1.4.1 Non-commercial Fishery Introduction

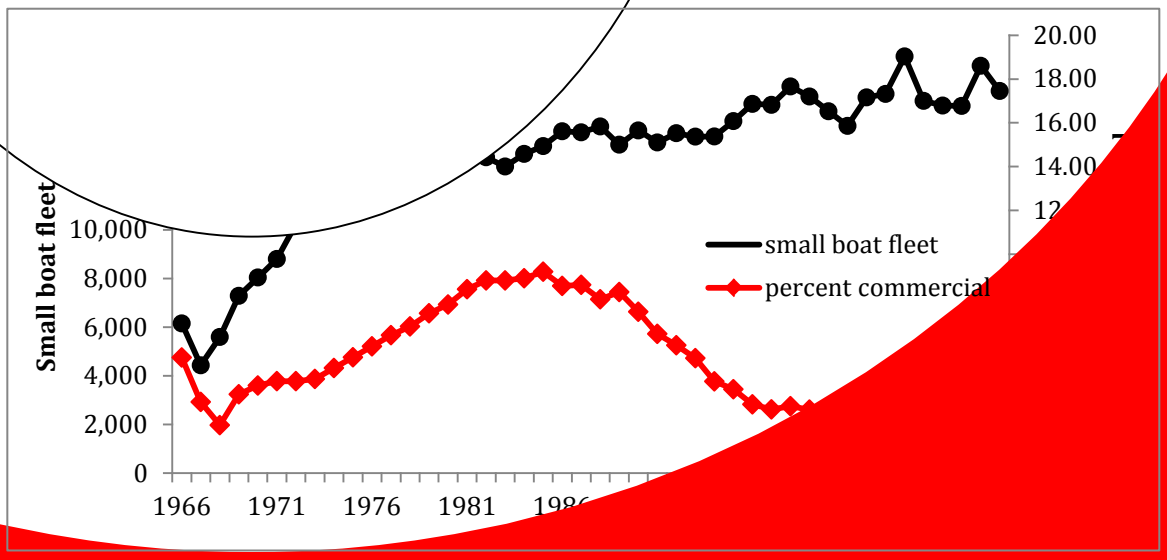
In Hawaii, recreational shoreline fishing was more popular than boat fishing up to and after WW II. Boat fishing during this period referred primarily to fishing from traditional canoes (Glazier 1999). All fishing was greatly constrained during WW II through time and area restrictions, which effectively stopped commercial fishing and confined recreational fishing to inshore areas (Brock 1947). Following WWII, the advent

[4] Interaction rate = interactions per 1,000 hooks

hulls and marine inboard and outboard
reational fishing.

recreational fishing occurred
ntroduction of fiberglass technology
d and outboard engines (Figure 34).
l boats in the territory being used
reational or pleasure craft had
ls in the 1990s. There are
of different recreational fishing
urnament organizers. Hawaii
ments, about 30 of which are
ntry fees of around $100. This
pport a local fishing magazine,
to recreational fishermen,
onditions at the major small boat
small boat harbors and launching
and Shipping news.

t Registrations in Hawaii, 1966-2009



which has been used by NMFS to estimate recreational catches in most of the coastal states of the U.S.

The MRFSS program uses a triple survey approach that has been developed over the 20+ years of its history. For each two-month survey period (wave) a random sample of households is called by telephone to determine how many have done any fishing in the ocean, their mode of fishing (private boat, rental boat, charter boat, or shoreline), what methods were used, and how much effort (number of trips and hours) was expended. Concurrently, surveyors are sent out to boat launch ramps, small boat harbors, and shoreline fishing sites to interview fishermen to fill out intercept survey forms. The intercept survey collects data on fishing area, fishing methods, trip/effort, species caught, and lengths and weights of fish. The sites are randomly selected, but stratified by fishing pressure so that the sites with the highest pressures are likely to be surveyed more often. In addition the charter boat operators are surveyed by a separate survey. This additional survey of the charter fleet serves the same function as the random digit dialing household survey and is necessary because out of town fishers that charter vessels wouldn't be covered by randomly calling the Hawaiian populace. The telephone and charter survey data are used to estimate total statewide fishing effort and the intercept surveys provide detailed catch and trip information. Data from the three surveys are combined and expanded by computer to yield statewide estimates of total effort and catch by species, mode, and county.

In 2006, the MRFSS survey was reviewed by the National Research Council of the National Academy of Sciences (NRC 2006). The reviewers were critical of the statistical methods employed to generate expansions of the survey data to annual recreational catch estimates for each state. Consequently, NMFS is conducting an overhaul of the MRFSS survey to respond to the NRC criticisms. As such, readers of this report should understand that there is uncertainty surrounding the various expansions from the HMRFS survey and figures reported here may change as new methods are developed to conduct the expansions from survey data.

3.1.4.3 Hawaii Non-commercial Fishery Catch

Hawaii's non-commercial fishery is estimated to have caught nearly 21.7 million lb of PMUS (42% of all PMUS) via more than 361,500 trips (Table 7). Non-commercial fishers dominate the yellowfin catch in Hawaii (Figure 35) with their next most numerous catch being mahimahi, wahoo/ono, skipjack and blue marlin (Table 12, Figure 35). In terms of catchability and catch rates, yellowfin tuna again clearly dominate in Hawaii's non-commercial fishery (Figure 36).

Table 12: Species Catch Composition Comparison Between Charter and Commercial Troll Vessels, Hawaii 2009

Species	Charter vessels		Commercial vessels	
	Landings (lb)	Percent	Landings (lb)	Percent
Yellowfin tuna	770,737	33.40%	155,793	30.20%
Mahimahi	506,319	21.94%	123,496	23.94%
Wahoo	384,724	16.67%	43,584	8.45%
Skipjack	253,945	11.01%	33,458	6.49%
Blue marlin	222,276	9.63%	131,515	25.49%
Bigeye tuna	103,736	4.50%	6,851	1.33%
Striped marlin	13,554	0.59%	7,294	1.41%
S.N. spearfish	5,565	0.24%	5,679	1.10%
Other	46,458	2.01%	8,224	1.59%
Total	2,307,314	100.00%	515,894	100.00%

Figure 35: Hawaii Annual Non-commercial Fishery Catch by Weight of Six Major Species Between 2003-2009

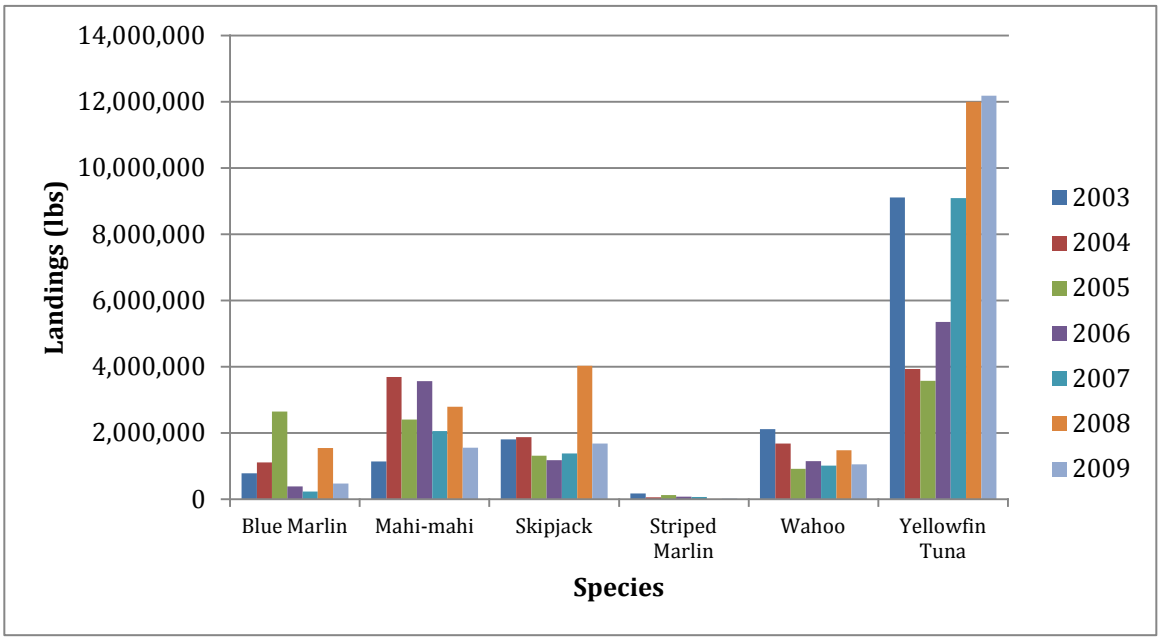
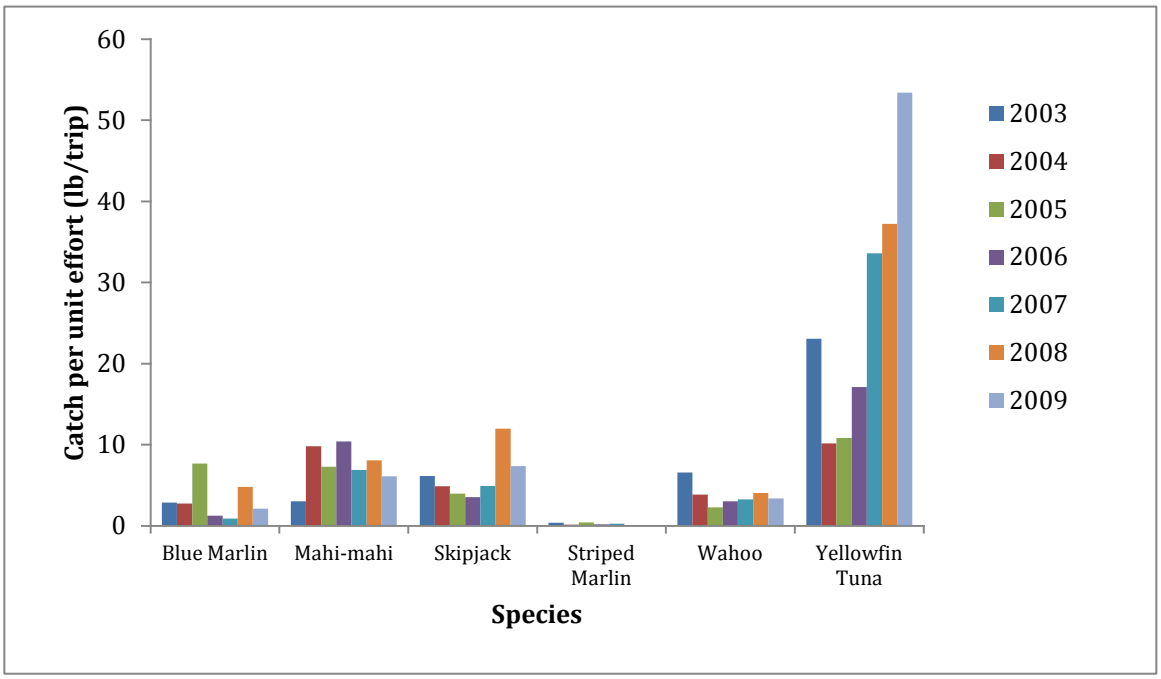


Figure 36: Hawaii Annual Non-commercial Catch per Unit Effort (lb/trip) for Six Major PMUS, 2003-2009



3.1.5 Ecosystem Components

3.1.6 Research and Monitoring

3.1.6.1 Monitoring Surveys

From early August to early December 2010, NMFS Pacific Islands Fisheries Science Center and Southwest Fisheries Science Center conducted the Hawaiian Islands Cetacean and Ecosystem Assessment Survey, or HICEAS[5]. The large-scale collaborative survey covered the entire EEZ around the Hawaiian Archipelago, including the NWHI. The last HICEAS survey was in 2002. The primary goal of the survey was to collect data needed to calculate new estimates of abundance for cetacean species in Hawaii EEZ waters. The survey used visual and acoustic line-transect methods, with the survey tracklines designed to cover uniformly the waters within the EEZ from the Island of Hawaii to Kure Atoll. Over 400 sightings of cetaceans were recorded during the survey, and a similar number of acoustic detections. In addition, 147 skin biopsy samples were collected from over 10 species, including 40 samples of false killer whales in the offshore and the NWHI portions of the study area. Analysis of survey data is underway and new abundance estimates should be available for most species by the end of 2011.

[5] See: http://www.pifsc.noaa.gov/qrb/2011_03/article_01.php

3.1.6.2 Research

The closure of the Hawaii-based bigeye tuna longline fishery in the WCPO, in November 2010, just before the holidays, an economically and culturally important time of year for tuna consumption in Hawaii, raised many concerns about potential effects the closure may have on fishermen, wholesalers, retailers, consumers, and others connected to Hawaii's seafood industry. Therefore, in November 2010, PIFSC social scientists began a study of the socioeconomic impacts of the bigeye tuna fishery closure[6]. The study involves attending the Honolulu fish auction twice weekly to observe reactions and responses to the closure, and conducting interviews with auction employees, buyers, retailers, fishermen, consumers and business owners in the fisheries industry, such as gear and ice shops. The study continues as bigeye fishing in the WCPO resumed in 2011. They will compile the qualitative interview data and combine it with other information, including quantitative data on prices and other variables collected from the auction and data from the Economics Program's multi-year monitoring of retail prices at Oahu seafood outlets.

The University of Hawaii's Pelagic Fisheries Research Program (PFRP) funded and carried out a variety of projects during 2009/2010[7]. These included a study on the age and growth of striped marlin, *Kajikia audax*, in Hawaii's longline fishery; an examination of the biology and habitat use of monchong, *Eumigistes illustris*, at Cross Seamount, Hawaii; also at Cross Seamount, a study on the impacts of fishing on vulnerable seamount non-target species; an analysis of Hawaii longline fishery catch data for blue and striped marlins; and an economics study on the role social networks have on fishermen's economic performance in Hawaii's longline fishery.

3.1.6.3 Research Needs

During 2009, the Council endorsed a variety of cooperative and other research projects. The Council recommended that a comprehensive proposal be developed for a large female blue marlin tagging study at Kona, Hawaii, and elsewhere.

[6] See: http://www.pifsc.noaa.gov/qrb/2011_03/article_10.php

[7] See: http://www.soest.hawaii.edu/PFRP/newprojects09_10.htm

4.0 Mariana Archipelago Pelagic Fisheries

During January 2009, Proclamation 8335 (74 FR 1557) established the Marianas Trench Marine National Monument which includes the three northern most islands (the Islands Unit) of the CNMI. This designation represents lost future fishing opportunities for fishermen in the Mariana Archipelago.

4.1 Guam

4.1.1. Introduction to Guam's Pelagic Fisheries

Pelagic fishing vessels based on Guam are classified into two general groups: distant-water purse seiners and longliners that fish outside EEZ waters around Guam and transship through the island, and small, primarily non-commercial, trolling boats that are either towed to boat launch sites or berthed in marinas and fish only within local waters, either within Guam's EEZ or on some occasions in the adjacent EEZ waters around CNMI.

Guam's estimated annual pelagic landings have varied widely, ranging between 322,000 and 937,000 pounds in the 28-year time series (Figure 37). The 2009 total pelagic landings were approximately 719,892 pounds (Table 13), approximately 30% greater than 2008 (Figure 37). Landings were primarily composed of five major species: bonita or skipjack tuna (*Katsuwonus pelamis*), mahimahi (*Coryphaena hippurus*), wahoo (*Acanthocybium solandri*), yellowfin tuna (*Thunnus albacares*), and Pacific blue marlin (*Makaira mazara*). Of the total landings in 2009 just over 19% (138,854 lb) were commercial landings.

Other minor species caught include rainbow runner (*Elagatis bipinnulatus*), kawakawa (*Euthynnus affinis*), dogtooth tuna (*Gymnosarda unicolor*), double-lined mackerel *(Grammatorcynus bilineatus*), and oilfish (*Ruvettus pretiosus*). Sailfish and sharks were also caught during 2009, however, these species were not encountered during offshore creel surveys and data on their catch were not available for inclusion in this report. While sailfish is kept, sharks are often discarded as bycatch. In addition to the above pelagic species, approximately half a dozen other species were landed incidentally this year.

There are general wide year-to-year fluctuations in the estimated landings of the five major pelagic species. Landings in 2009 for the five common species increased from 2008 levels. Mahimahi catch increased more than 39% from 2008 (Figure 40), while wahoo catch totals increased 33% from 2008 (Figure 41), skipjack increased by more than 12% (Figure 39) and Pacific blue marlin catch increased 235% from 2008 (Figure 42).

Aggregate landings of all pelagics, tuna, and non-tuna PMUS increased in 2009 from 2008 levels (Figure 37, Table 14). Landings of all pelagics increased 30%, with tuna PMUS increasing 20% and non-tuna PMUS increasing more than 39%. The number of trolling boats decreased by 4% (Figure 44), the number of trolling trips increased by 44% (Figure 45) and hours spent trolling increased by 56%. Fewer boats making more and longer trips may be a result of increasing prices paid for fish or increasing catches, as target species appeared more abundant in 2009 than in 2008. Trolling catch rates (pounds per hour fished) showed a decrease compared with 2008 (Figure 46). Total CPUE was down 15%, with yellowfin, and marlin showing the greatest increases, while bonita, mahimahi, and wahoo showed decreases.

4.1.2 Guam Fishery Performance and Economic Data

4.1.2.1 Guam Landings

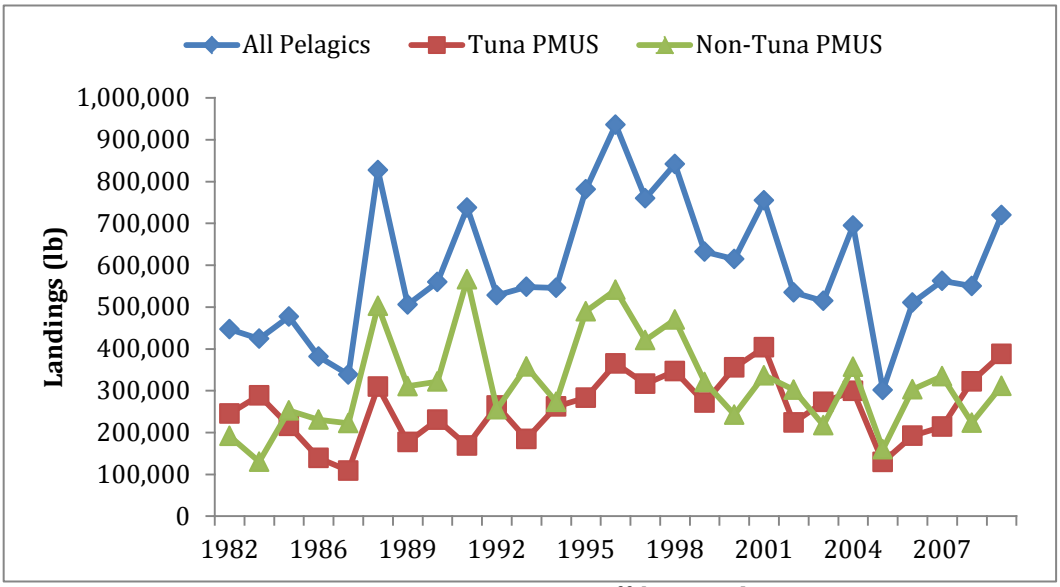
Table 13: Guam 2009 Creel Survey- Pelagic Species Landings (lb)

Species	Total Landing	Non-Charter	Charter
Skipjack Tuna	331,063	322,682	8,381
Yellowfin Tuna	50,279	49,065	1,214
Kawakawa	3,143	2,567	576
Albacore	0	0	0
Bigeye Tuna	0	0	0
Other Tuna PMUS	29	0	29
Tuna PMUS	**384,514**	**374,314**	**10,200**
Mahimahi	146,649	124,061	22,588
Wahoo	130,733	121,698	9,035
Blue Marlin	32,605	20,411	12,194
Black Marlin	0	0	0
Striped Marlin	0	0	0
Sailfish	904	904	0
Shortbill Spearfish	0	0	0
Swordfish	0	0	0
Oceanic Sharks	0	0	0
Pomfrets	430	430	0
Oilfish	61	61	0
Moonfish	0	0	0
Misc. Longline Fish	0	0	0
Non-tuna PMUS	**311,382**	**267,565**	**43,817**
Dogtooth Tuna	3,265	3,265	0
Rainbow Runner	1,804	1,772	32
Barracudas	4,899	4,899	0
Oceanic Sharks	0	0	0
Misc. Troll Fish	14,027	14,027	0
Non-PMUS Pelagics	**23,995**	**23,963**	**32**

Total Pelagics	**719,891**	**665,842**	**54,049**

Source: DAWR offshore creel survey data. This table includes several species of barracuda and the double-lined mackerel, species that may not be included in other tables in this report. Pelagic totals may slightly differ in those tables.

Figure 37: Guam Annual Estimated Pelagic Landings, Tuna and Non-Tuna PMUS

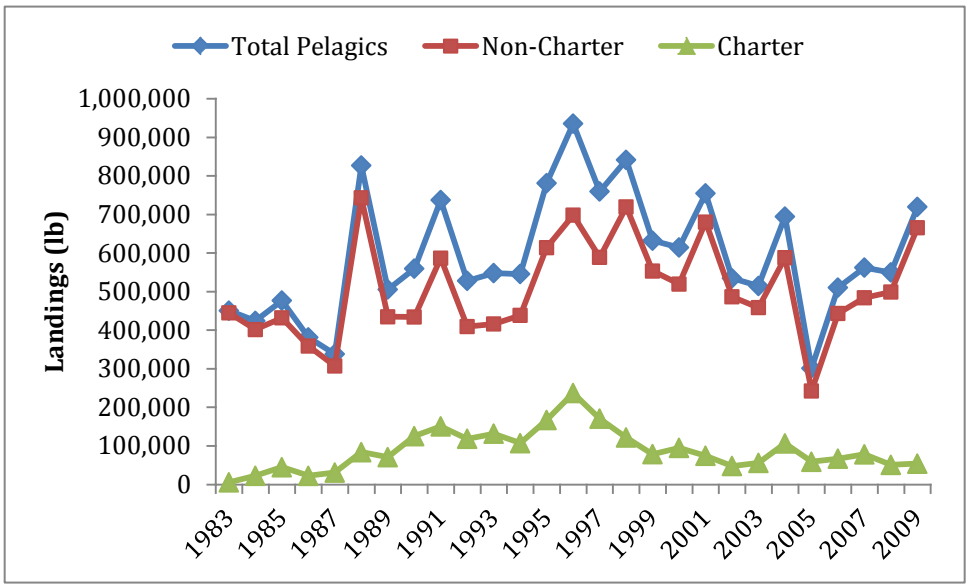


Source: DAWR offshore creel survey

Table 14: Guam Estimated Landings: Total, Tuna and Non-tuna PMUS, 1982-2009

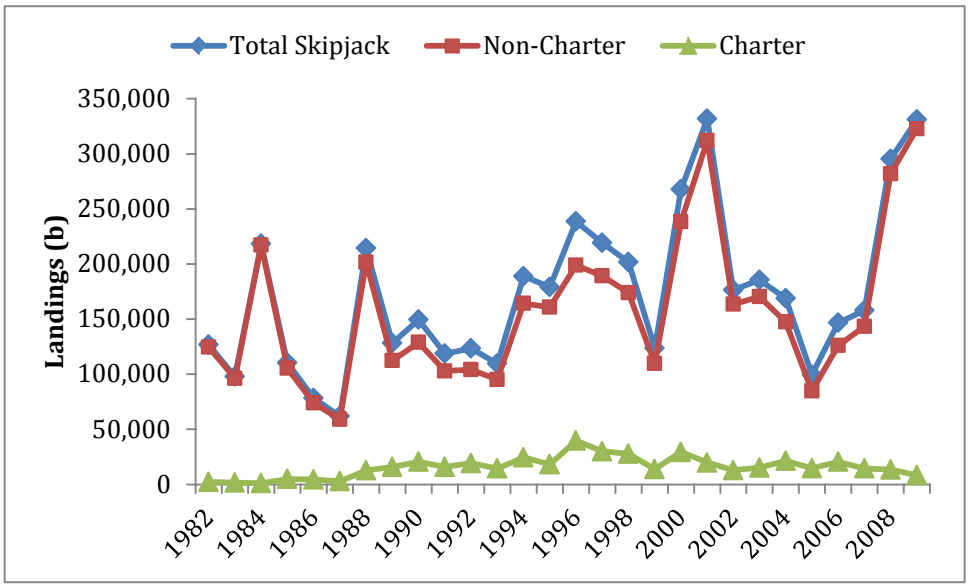
Year	All Pelagics	Tuna PMUS	Non-Tuna PMUS
1982	446,996	245,205	191,897
1983	450,823	166,105	277,179
1984	424,299	288,634	130,027
1985	477,073	215,686	252,707
1986	381,495	139,099	230,814
1987	338,354	108,729	222,521
1988	827,260	309,571	502,803
1989	505,811	177,158	310,755
1990	559,773	230,559	321,935
1991	737,653	168,669	566,242
1992	528,215	264,362	255,471
1993	548,295	184,394	357,787
1994	545,917	262,181	273,167
1995	781,389	283,055	489,757
1996	935,837	364,929	541,317
1997	759,936	316,552	420,967
1998	841,816	346,677	470,068
1999	632,319	271,359	320,529
2000	614,709	355,581	242,558
2001	754,999	403,691	336,571
2002	534,878	223,805	302,339
2003	514,820	273,029	217,440
2004	694,746	299,495	357,169
2005	301,487	129,489	159,929
2006	510,608	192,247	303,297
2007	562,513	214,014	334,599
2008	550,081	322,053	223,406
2009	**719,892**	**387,751**	**311,412**
Average	588,643	255,146	318,738
Standard Deviation	159,507	79,824	112,664

Figure 38: Guam Estimated Pelagic Landings: Total, Charter and Non-Charter, 1982-2009



Since 2005, skipjack landings have more than tripled and the 2009 catch of 331,063 lb is only 705 lb below the 2001 peak (Figure 39).

Figure 39: Guam Estimated Skipjack Landings: Total, Charter and Non-Charter, 1982-2009



Catches of the major non-tuna PMUS (mahimahi, wahoo, and blue marlin) have fluctuated widely in total catch most likely due to the high variability in the year-to-year abundance and availability of the stocks and in the charter vessel catch due to the increases (in the 1980's) and decreases in tourism and the effects on charter businesses (in the 1990's).

In 2009, mahimahi landings increased to approximately 146,650 lb, with total, non-charter and charter landings increasing 31%, 25%, and 81% respectively, over 2008 catches (Figure 40). Wahoo landings in 2009 nearly tripled form those in 2007 (Figure 41). Blue marlin landings are significantly below their peaks in 1990, 1997, 2000, although the 2009 catch more than tripled over 2008 (Figure 42).

Figure 40: Guam Estimated Mahimahi Landings: Total, Charter and Non-charter, 1982-2009

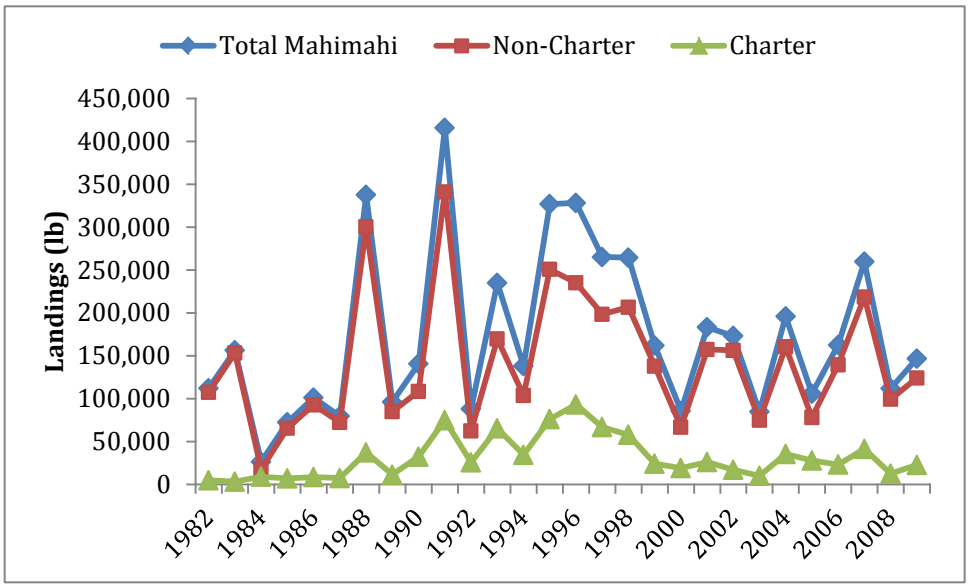


Figure 41: Guam Estimated Wahoo Landings: Total, Charter and Non-Charter, 1982-2009

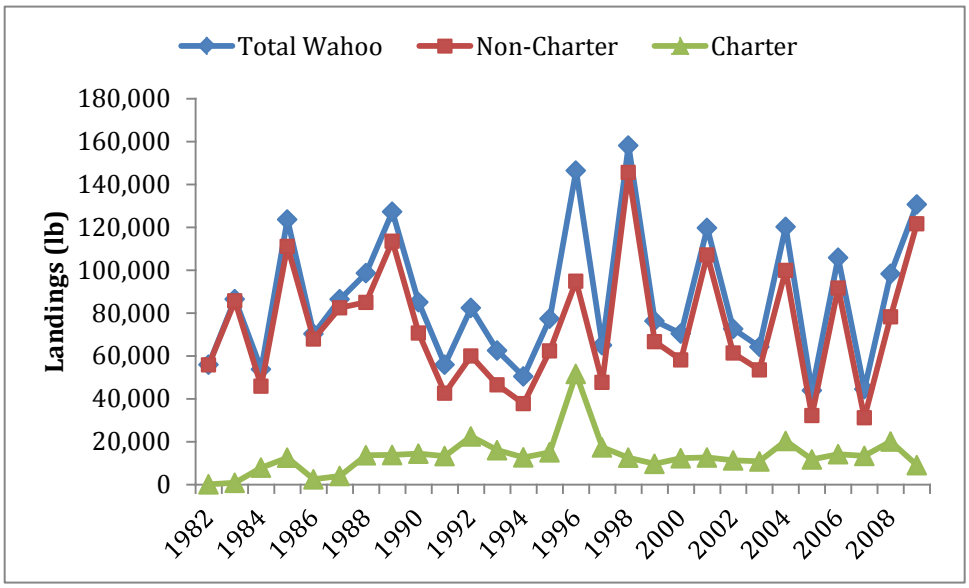


Figure 42: Guam Estimated Blue Marlin Landings: Total, Charter, and Non-Charter, 1982-2009

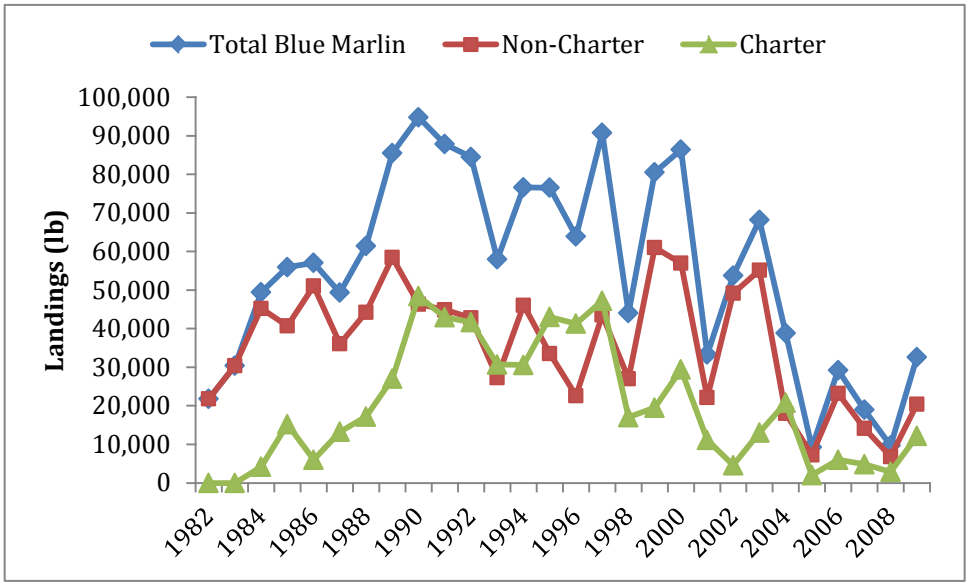
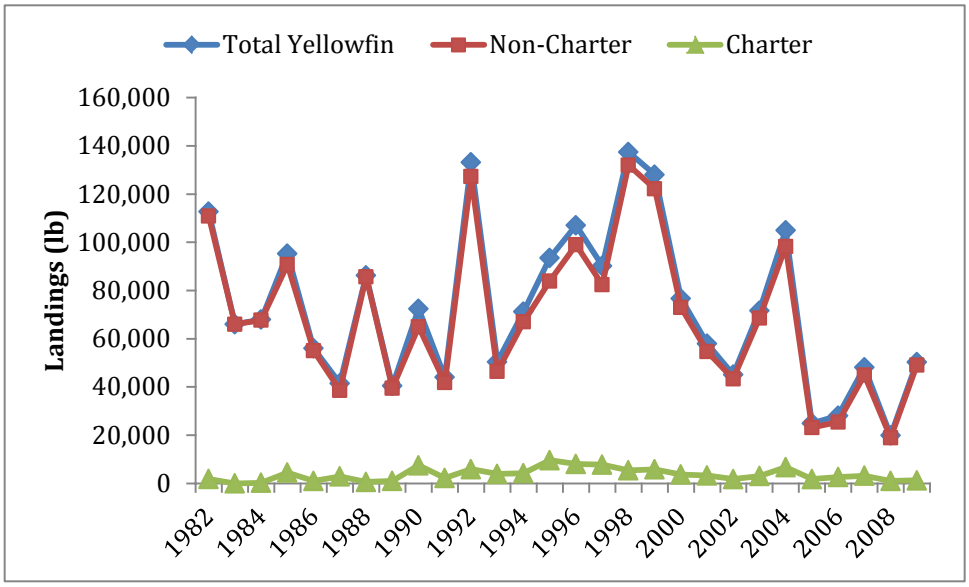


Figure 43: Guam Estimated Yellowfin Tuna landings: Total, Charter and Non-Charter, 1982-2009

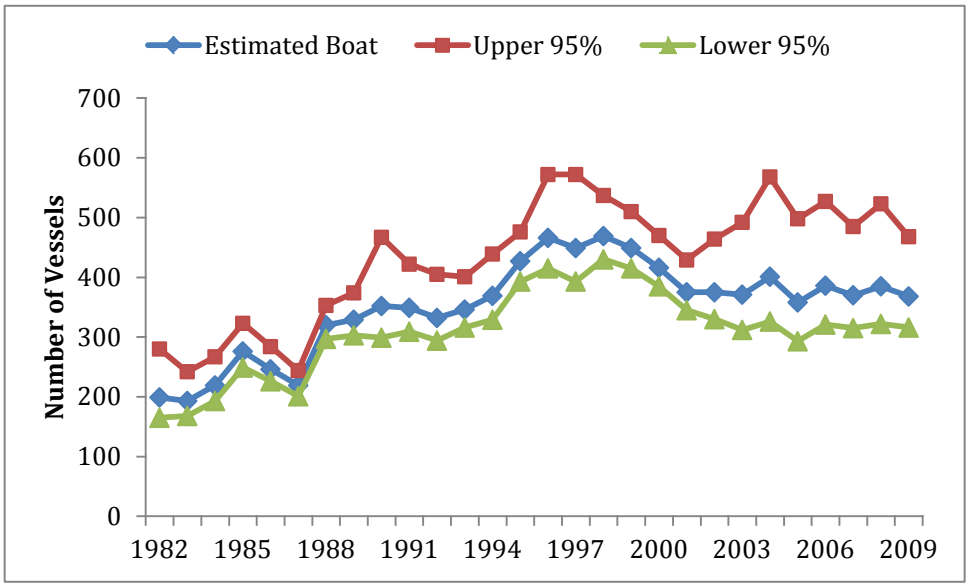


4.1.2.2 Effort

There were 368 boats involved in Guam's pelagic fishery in 2009, down slightly (4%) from 2008 (Figure 44). A majority of the fishing boats are less than 10 meters (33 feet) in length and are usually owner-operated by fishermen who earn a living outside of fishing. Most fishermen sell a portion of their catch at one time or another making it difficult to differentiate among recreational, subsistence, and commercial fishers.

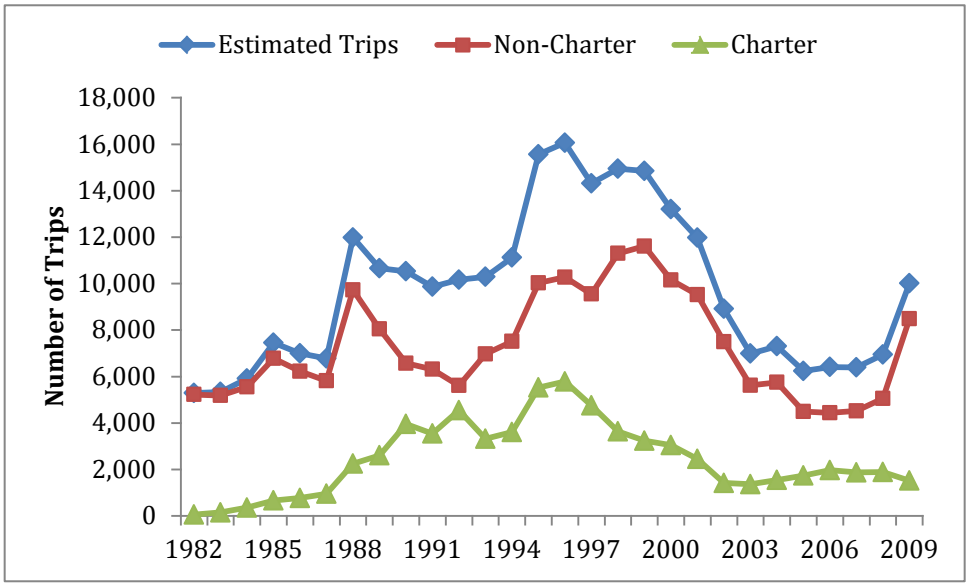
A small, but significant, segment of the pelagic landings come from marina-berthed charter boats that are operated primarily by full-time captains and crews while most troll trips are by non-charter vessels (Figure 45). In 2009, 7.5% of total landings were from charter vessels (Table 13, Figure 38). In 2009, the total number of troll trips was approximately 10,000, which increased by 44 percent over 2008. The number of non-charter trips in 2009 increased by 68% over 2008.

Figure 44: Guam Trolling Vessels, 1982-2009



The number of troll trips began to decline in 1999, due to a number of factors including a continuing economic recession on the island, a decline in Asian visitors for charter boats, and an increase in cost to maintain, repair, and fuel boats for the average fishermen compared with fish caught for sale to make up for expenses. In 2009, the total number of troll trips increased by 44 percent over 2008 and the number of non-charter trips increased by 68 percent while charter trips decreased by 19 percent (Figure 45). The increase in non-charter trips may be attributed to an increase in pelagic fishes, especially bonita. The decrease in charter trips may be attributable to the global economic downturn.

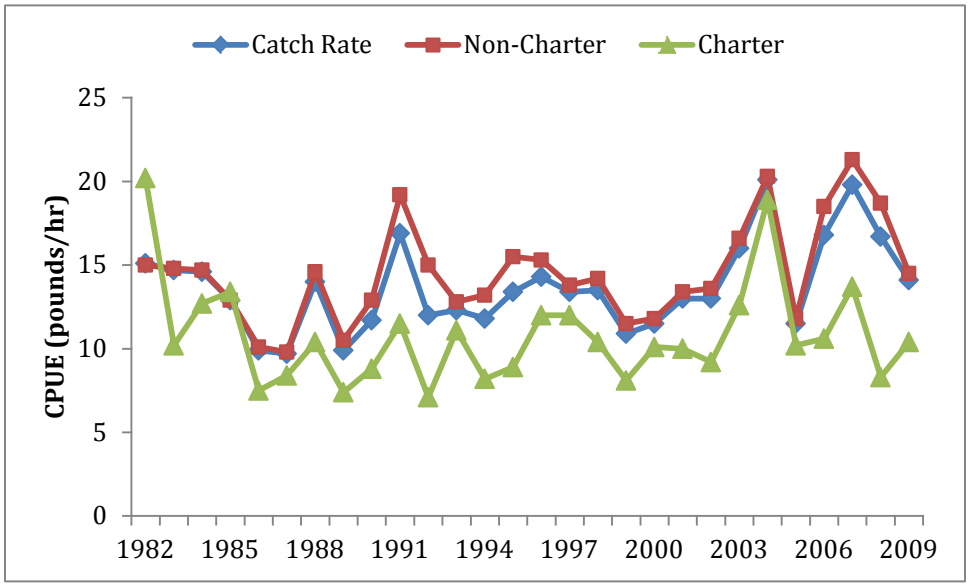
Figure 45: Guam Annual Troll Trips: Total, Charter and Non-Charter, 1982-2009



4.1.2.3 Catch per Unit of Effort (CPUE)

Catch (pounds) per unit of effort (hour) in Guam's troll fishery shows great variability with fluctuations likely due to variability in the year-to-year abundance and availability of the stocks (Figure 46). However, since it is not possible to allocate species-specific effort, effort used to target other species can also result in artificially high or low catch rates for a given species. This is especially true with charter boats targeting blue marlin during the summer months. In 2009, total overall, and non-charter catch rates decreased 15 and 22 percent, respectively while charter vessel catch rates increased by 25 percent. Charter catch rates have generally been lower than catch rates of non-charter boats, probably due to their shorter fishing time, and non-charter boats beginning earlier in the morning and ending as late as early evening.

Figure 46: Guam Trolling CPUE (lb/hr): Average, Non-Charter and Charter, 1982-2009



4.1.2.4 Revenue

In 2009, commercial landings and revenue increased about 10 percent over 2008 levels (Figure 47). Table 15 shows 2009 average price per pound for major PMUS. The adjusted average price for all pelagics increased 11 percent, with tuna PMUS prices increasing 17 percent, and non-tuna PMUS increasing 13 percent, over 2008. Adjusted revenue per trolling trip increased 1 percent for all pelagics, increased 34.5 percent for tuna PMUS, and decreased 6.5 percent for non-tuna PMUS. While the adjusted average price of pelagic species increased in 2009, the number of boats in the fishery decreased

(Figure 44). A majority of trollers do not rely on the catch or selling of fish as their primary source of income.

Guam law requires the government of Guam to provide locally caught fish to food services in government agencies, such as Department of Education and Department of Corrections and in 2002, the government of Guam began implementing cost-saving measures, including privatization of food services. The requirement that locally-caught fish be used for food services, while still a part of private contracts, is not being enforced, which has allowed private contractors to import cheaper foreign fish, and reduced the sales of vendors selling locally-caught fish. This represented a substantial portion of sales of locally-caught pelagic fish and the continuing decline in commercial sales and revenue seen following 2002 may be, in part, due to this change.

Figure 47: Guam Annual Revenue from All Pelagics, Tuna PMUS and Non-Tuna PMUS, 1982-2009

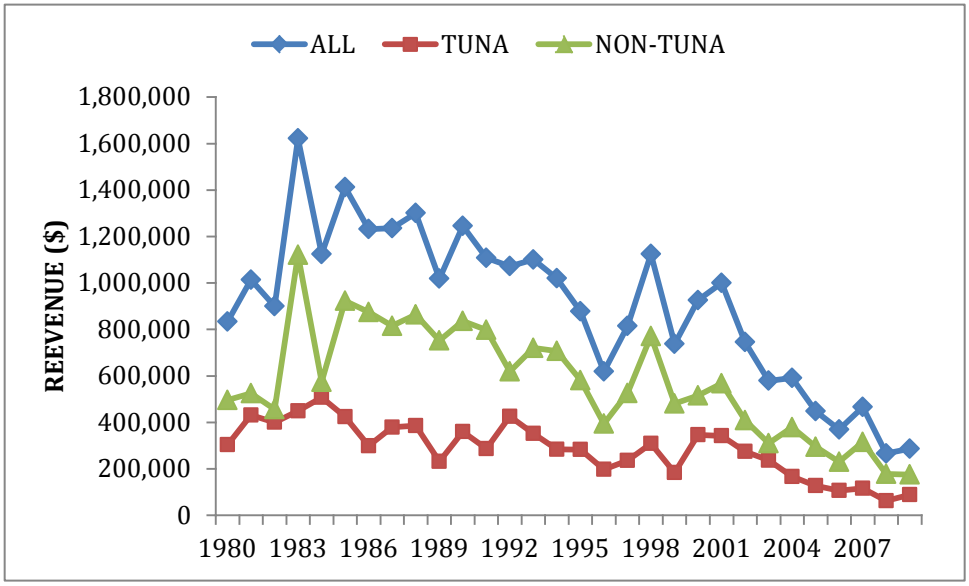


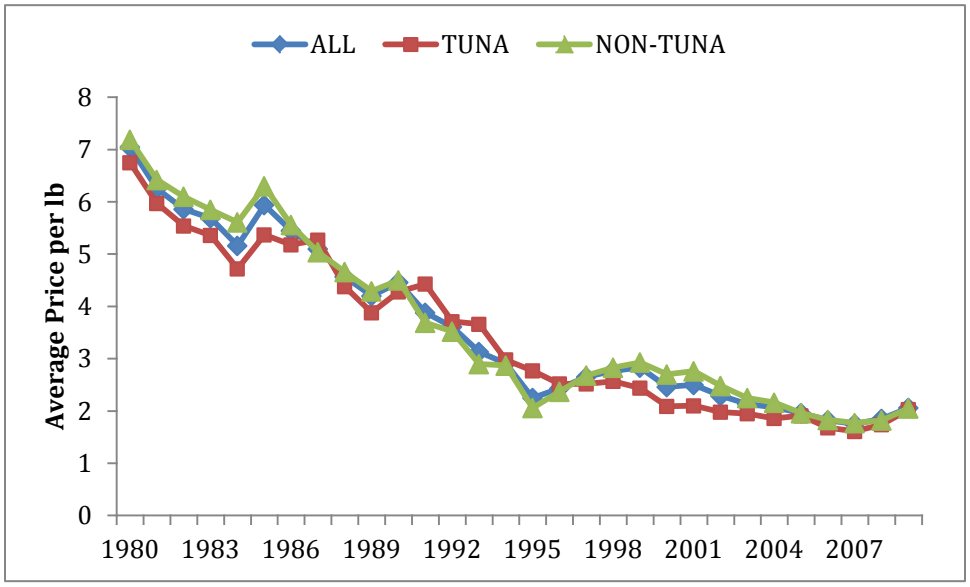
Table 15: Guam 2009 Annual Commercial Average price of Pelagic MUS

Species	**Average Price ($/Lb)**
Kawakawa	2.00
Yellowfin Tuna	2.20
Bonita/skipjack Tuna	**1.97**
Tunas Subtotal	2.03
Monchong	2.46
Spearfish	1.54
Sailfish	1.51
Marlin	1.34
Wahoo	2.24

Species	Average Price ($/Lb)
Mahimahi / Dolphinfish	**2.20**
Non-tuna PMUS Subtotal	2.05
Barracuda	2.11
Rainbow Runner	2.36
Dogtooth Tuna	**1.56**
Non-PMUS **Pelagic Subtotal**	2.03
Pelagic Total	**2.04**

As shown in Figure 48, the inflation-adjusted price of tuna and other non-tuna PMUS has shown a dramatic decline since data on the pelagic fishery was first collected in 1980. In 2007, the trend started to change slightly. In 2009, the upward trend continued, with the adjusted price for all pelagics increasing 11 percent, 17 percent for tuna PMUS, and 13 percent for non-tuna PMUS species. All three categories are well below their 28-year averages. Locally caught pelagic fish continues to have to compete with cheaper pelagic fish caught by longliners. These are value-added products sold at several supermarkets and roadside vendors.

Figure 48: Guam Inflation-adjusted Average Prices: Pelagics, Tuna, and Non-tuna PMUS, 1980-2009



4.1.3 Bycatch and Protected Species

Bycatch information was recorded beginning in 2000 as a requirement of the PFMP. Historically, most fish landed by fishermen in Guam is kept regardless of size and species and therefore percentage of bycatch is low (Table 16). Bycatch for the pelagic troll fishery is comprised of sharks, shark-bitten pelagics, small pelagics, or other less desirable or marketable pelagic species.

Table 16: Guam Trolling Bycatch Summary from Interviews

Year	Released alive	Released dead/ injured	Total Number Released	Total Number Landed	Percent Bycatch *	Interviews with Bycatch	Total Number of Interview	% with Bycatch
2001	7	3	10	5,289	0.2	10	461	2.2
2002	1	2	3	3,443	0.1	3	258	1.2
2003	5	0	5	3,026	0.2	2	178	1.1
2004	0	0	0	4,292		0	91	0
2005	3	0	3	2,631	.11	3		
2006	2	1	3	3,478	.09	3	413	.7
2007								
2008	1	0	1	3,495	.02	1	98	1.02
2009	2	1	3	3,478	.08	3	604	.05

4.1.4 Non-commercial Fishery

In Guam fishing clubs have been founded along ethnic lines by Japanese and Korean residents. These clubs had memberships of 10-15 people, along with their families. Four such clubs were founded in Guam during the past 20 years, but none lasted for more than a 2-3 years (Gerry Davis, Guam DAWR pers. comm.). There was also a Guam Boating Association comprising mostly fishermen, with several hundred members. This organization functioned as a fishing club for about 10 years and then disbanded. Some school groups and the boy scouts have formed fishing clubs focused on rod and reel fishing, and there is still one spearfishing club that has only a handful of members, but appears to be still be active. There are also some limited fishing tournaments on Guam, including a fishing derby for children organized by the local Aquatic and Wildlife Resources Division.

Actions affecting the non-commercial fishery in Guam includes the makeshift boat ramp at Ylig Bay will be eliminated in 2010 due to planned widening of the main road on the south east coast of Guam. In December 2006, a new launch ramp and facility was opened in Acfayan Bay, located in the village on Inarajan on the southeast coast of Guam. Monitoring of this ramp for pelagic fishing activity began at the start of 2007. In early 2007, this facility was damaged by heavy surf, and has yet to be repaired. Monitoring of this ramp is currently on hold until the ramp is repaired, however, the current financial situation of the Government of Guam makes it unlikely this ramp will be

repaired in the near future. With the loss of the Ylig ramp and the destruction of the ramp in Acfayan bay, there will be no boat launching facilities on the east side of Guam.

In March and April 2010, DAWR deployed 6 fish aggregating devices (FADs), the first FADs deployed in nearly two years. DAWR received five more systems which are awaiting deployment, weather permitting. This would bring the number of FADs on station to thirteen, of the fourteen considered to be a full complement.

The data for Guam are based on the proportion of catches landed for sale and catches retained and not sold, in all landings sampled by creel surveys in each area. The ratio of unsold to sold catch in the samples was used in conjunction with the total catch estimate expanded from the creel survey data. This was adjusted downwards based on the creel surveys by the ratio of landings by vessels retaining 100% of their catch to the total unsold catch. This accounts for that fraction of the catch not sold by commercial fishing vessels. The volume of fish landed by vessels retaining all their catch was labeled the nominal recreational catch.

The non-commercial pelagic fishery in Guam during 2009 took an estimated 3,764 trips landing over 300,000 lb of PMUS (Table 17). Approximately one-sixth of the total non-commercial catch is from charter vessels (Tables 18 & 19).

Guam's charter boat catch during 2009 was approximately 51,000 lb of PMUS (Table 18). The catch was comprised of a suite of PMUS dominated by mahimahi, blue marlin, wahoo, skipjack and yellowfin tuna, respectively (Table 19).

Table 17: Estimated Non-commercial Catches in the Mariana Archipelago, 2009

Location	Total catch (lbs)	Unsold catch (lb)	Nominal recreational catch (lb)	Rec. catch as % of total catch	Rec. fishing trips
Guam	622,840	329,340	303,391	48.70	3,764
CNMI	404,633	91,082	85,423	21.11	4,212

Table 18: Estimated Charter Vessel Catches and Effort in Mariana Islands and Hawaii, 2009

Location	Catch (lb)	Effort (trips)	Principal species
Guam	50,945	1,891	Wahoo, Skipjack, Mahimahi, Blue marlin
Hawaii	515,894	8,640	Yellowfin, Blue marlin, Mahimahi, Wahoo
Northern Mariana Islands	4,691	94	Wahoo, Skipjack, Mahimahi, Blue marlin

Table 19: Guam Catch Species Composition Comparison Between Charter and Commercial Vessels, 2009

Species	Charter		Commercial	
	Landings (lb)	Percent	Landings (lb)	Percent
Mahimahi	22,588	41.79%	124,061	18.63%
Blue Marlin	12,194	22.56%	20,411	3.07%
Wahoo	9,035	16.72%	121,698	18.28%
Skipjack Tuna	8,381	15.51%	322,682	48.46%
Yellowfin Tuna	1,214	2.25%	49,065	7.37%
Others	637	1.18%	27,925	4.19%
Total	54,049	100.00%	665,842	100.00%

4.2 The Commonwealth of the Northern Mariana Islands (CNMI)

4.2.1. Introduction to CNMI's Pelagic Fishery

The CNMI pelagic fishery occurs primarily from the island of Farallon de Medinilla south to the island of Rota with trolling the primary fishing method utilized. The pelagic fishing fleet, other than charter boats, consists primarily of vessels less than 24 ft in length which usually has a limited 20-mile travel radius from Saipan.

In the past charter vessels generally retained their catches, selling half or more to local markets. However in recent times, charter vessels rarely sell any of their landings. No logbook system is in effect for charter fishing.

The primary target and most marketable species for the pelagic fleet is skipjack tuna. In 2009 skipjack tuna landings comprised around 70 percent of the entire pelagic landings. Schools of skipjack tuna have historically been common in near shore waters, providing an opportunity to catch numerous fish with a minimum of travel time and fuel costs. Skipjack is readily consumed by the local populace and on the menu at restaurants primarily as sashimi.

Yellowfin tuna and mahimahi are also easily marketable species but are seasonal. During their seasonal runs, these fish are usually found close to shore and provide easy targets for the local fishermen. In addition to the economic advantages of being near shore and their relative ease of capture, these species are widely accepted by all ethnic groups.

In late 2007, the first established longline fishing company in the CNMI, Crystal Seas, began its operation out of the island of Rota. However, by 2009 Crystal Seas became USA Islands Seafood and relocated its operation to Saipan. There are currently four licensed longline fishing vessels stationed in the CNMI. Federal logbook data are being collected.

Catch statistics in CNMI's pelagic fishery are characterized using data in the Commercial Purchase Data Base. The collection system for data is dependent upon first-level purchasers of local fresh fish to accurately record all fish purchases by species categories on specially designed invoices. Staff from the Department of Lands and Natural Resources, Division of Fish and Wildlife (DFW) routinely distribute and collect invoice books from 30 participating local fish purchasers on Saipan. Purchasers include most fish markets, stores, restaurants, hotels and roadside vendors ("fish-mobiles").

The current commercial purchase database collection system only documents landings on Saipan. The establishment of a data collection system for the islands of Tinian and Rota are in the process. It is believed that the commercial purchase database landings include around 90% of all commercial landings on Saipan. There is also a

subsistence fishery on Saipan were profit making is made by selling a small portion of their catch to cover fishing expense. Usually fishermen selling their catch going "door to door" which results in around 30% of the unreported commercial landings do this.

Although the Saipan data collection system has been in operation since the mid-1970s, only data collected since 1983 are considered accurate enough to be used. It is assumed that data in this report are credible. However, this database lacks information concerning fishing method, location, and effort because previous data generated from Creel Survey are believed to be unreliable.

4.2.2 CNMI Fishery Performance and Economic Data

Table 20: CNMI 2009 Commercial Landings, Revenue and Average Price (per lb)

Species	Landing (Lbs)	Value ($)	Avg Price ($/Lb)
Skipjack Tuna	129,176	209,875	1.62
Yellowfin Tuna	25,113	49,435	1.97
Saba (kawakawa)	1,521	2,311	1.52
Tuna PMUS	**155,809**	**261,620**	**1.68**
Mahimahi	19,580	34,980	1.79
Wahoo	3,389	6,777	2.00
Blue Marlin	47	71	1.50
Sailfish	162	243	1.50
Sickle Pomfret (w/woman)	511	1,201	2.35
Non-tuna PMUS	**23,689**	**43,272**	**1.83**
Dogtooth Tuna	2,575	4,233	1.64
Rainbow Runner	1,759	3,476	1.98
Barracuda	24	35	1.50
Troll Fish (misc.)	125	251	2.00
Non-PMUS Pelagics	**4,483**	**7,995**	**1.78**
Total Pelagics	**183,981**	**312,887**	**1.70**

4.2.2.1 CNMI Landings

During 2009, CNMI's pelagic fishery landed nearly 184,000 lb of pelagic MUS worth approximately $313, 000 (Table 20). Of the total catch, 85 percent was tunas with 70% skipjack tuna and 14% yellowfin tuna. In addition, 11% of total landings was mahimahi; and the rest comprised of wahoo, dogtooth tuna, rainbow runner, saba or kawakawa, and other PMUS. Total commercial PMUS landings continued to decline from a peak in 2005 (Figure 49) due to tuna landings (Figure 50).

Figure 49: CNMI Commercial Landings: Total, Tuna and Non-Tuna PMUS, 1983-2009

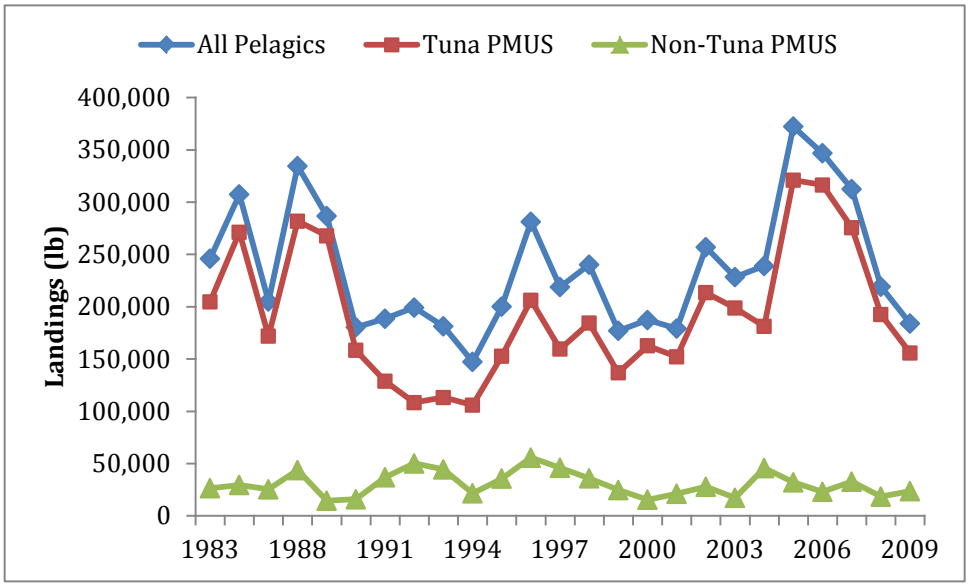
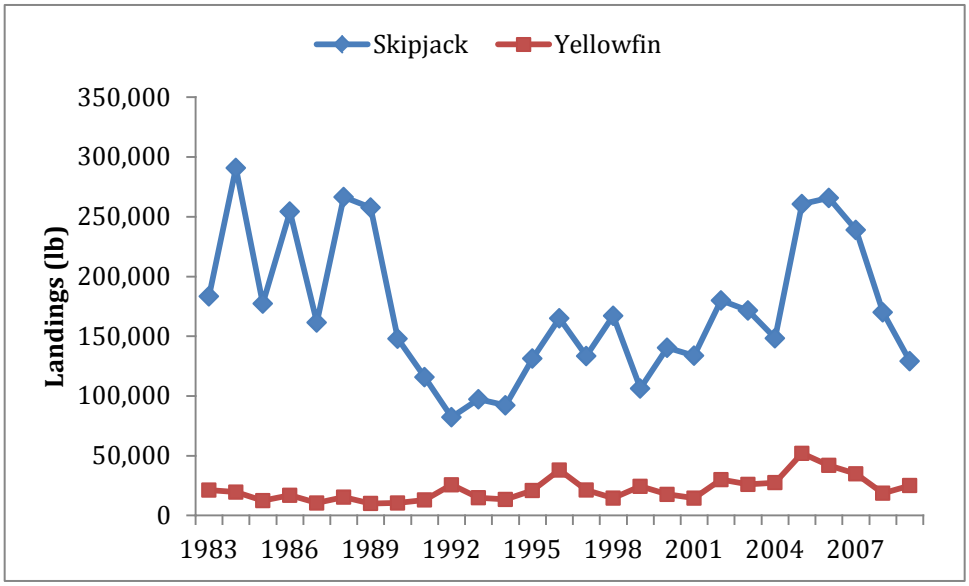
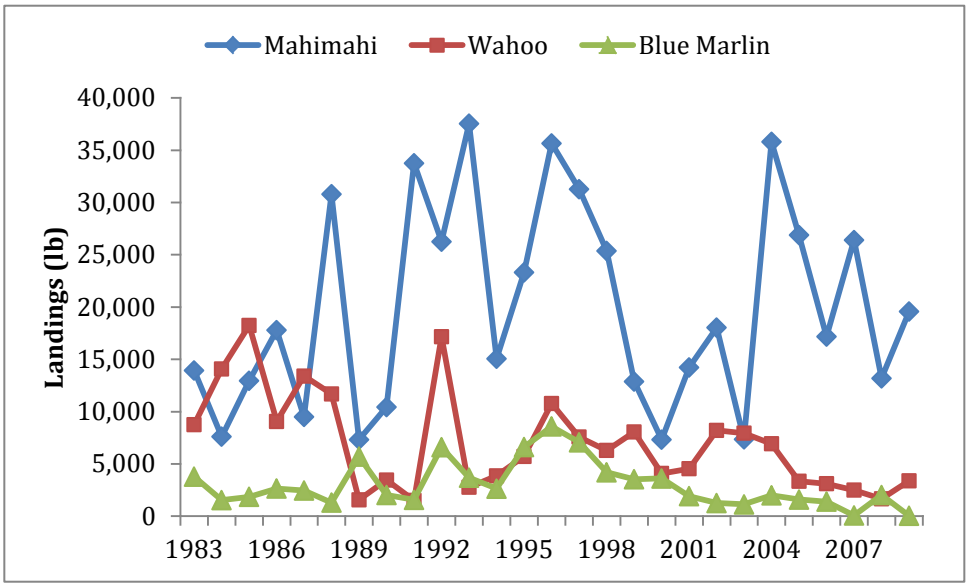


Figure 50: CNMI Commercial Skipjack and Yellowfin Tuna Landings, 1983-2009



Commercial landings data for non-tuna PMUS show great variability over time, most notably mahimahi, followed by wahoo and blue marlin (Figure 51). Blue marlin is rarely a target by the commercial fishermen except for charter boats and during fishing tournaments. If blue marlins are landed, they are often kept by the fishermen and therefore rarely ever recorded in the Commercial Purchase Data Base.

Figure 51: CNMI Commercial Landings of Mahimahi, Wahoo and Blue Marlin, 1983-2009

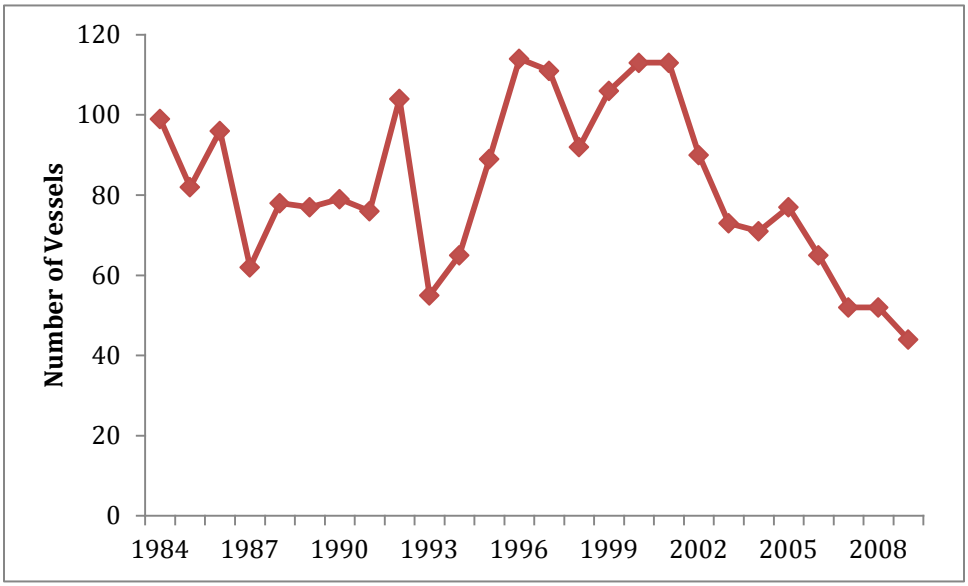


4.2.2.2 CNMI Effort

The number of fishers (vessels) making commercial pelagic landings showed a record high number in 1996 to a record low in 2009 (Figure 52). Part of the increase in the early 1990's was attributable to the influx of new fishing boats as a result of money obtained by leasing property, and because some fishermen were using several different boats, thus artificially inflating the total number of boats making pelagic landings.

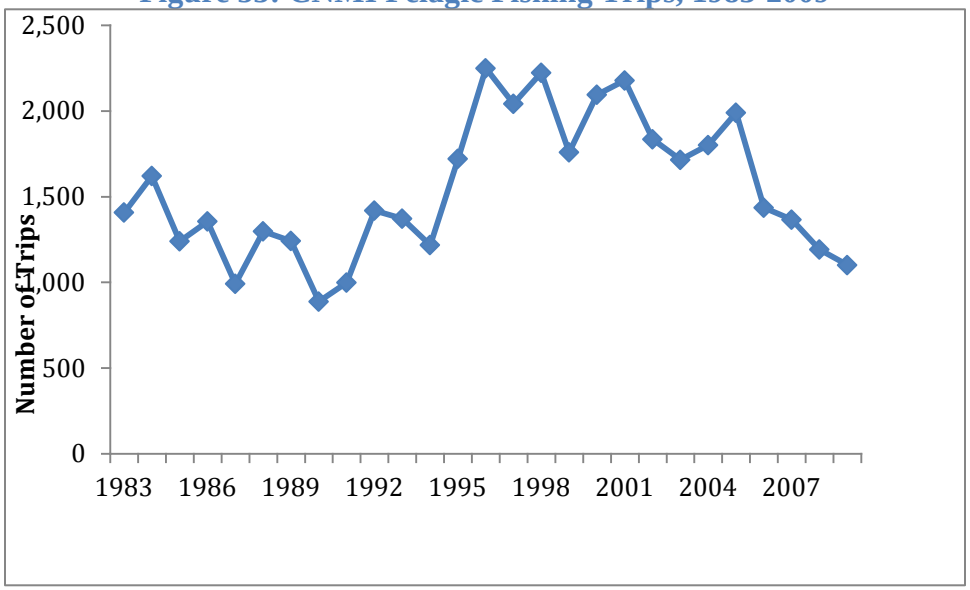
Many of the 1990's "new" fishermen, with their new boats, are believed to have left the fishery during 1993, and the increase from 1994 to 1997 might be due to the re-entry of repaired and refurbished boats from the 1992 fleet. The decline since 2000 is partly due to vendors who own multiple fishing boats entering all their landings on a single receipt and at times combining monthly total landings onto a single receipt. Other factors that may have influenced a reduction in effort could include bad weather that plagued the Marianas throughout 2003 and early 2004, and the continued increase in fuel price. This decrease continued in 2009 by 15 percent, partly due to the increasing price of fuel, the continued decline in the average price per pound of skipjack tuna and overall downward trend in the CNMI economy.

Figure 52: CNMI Commercial Pelagic Fishing Vessels Making Landings, 1983-2009



The number of pelagic trips shows a similar pattern to the number of vessels (Figure 53). The number of trips is affected by weather patterns including typhoons that hit the Marianas region frequently and the increasing price of fuel cost. In 2006, the CNMI saw the price of gasoline at $3.58 per gallon and prices continued rising to $4.33 per gallon in 2007, and it has continued to increase to over $5.00 in Rota in early 2011.

Figure 53: CNMI Pelagic Fishing Trips, 1983-2009



4.2.2.3 CNMI Catch per Unit of Effort (CPUE)

Catch rates for PMUS in CNMI's pelagic fishery fluctuate widely as shown in Figures 54 and 55. There is no clear identifiable justification for the variations in CPUE. They may be due to variations in catchability or availability which could also account for variations in catches as shown in Figures 50 and 51, for skipjack tuna and mahimahi, the major tuna PMUS and non-tuna PMUS, respectively.

Blue marlins are not a marketable species and are rarely a target by fishermen except during fishing tournaments. When landed, it is rarely sold to vendors participating in the Commercial Purchase Data Collection Program; therefore it would not be recorded in the Commercial Purchase Data Base used to generate these reports. During the 2000 Saipan International Fishing Derby a 996-pound blue marlin was landed.

Figure 54: CNMI Trolling Catch Rates for Skipjack and Yellowfin Tuna, 1983-2009

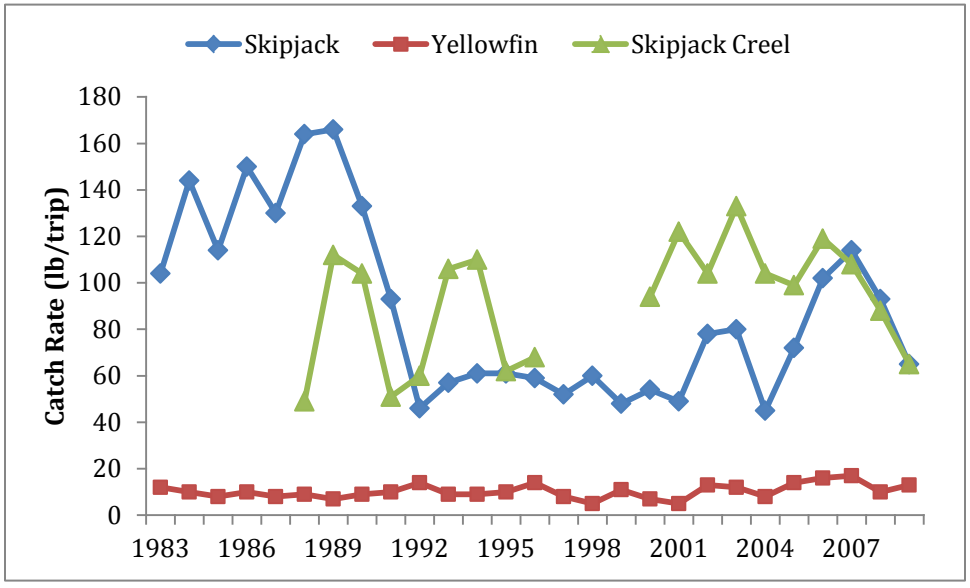
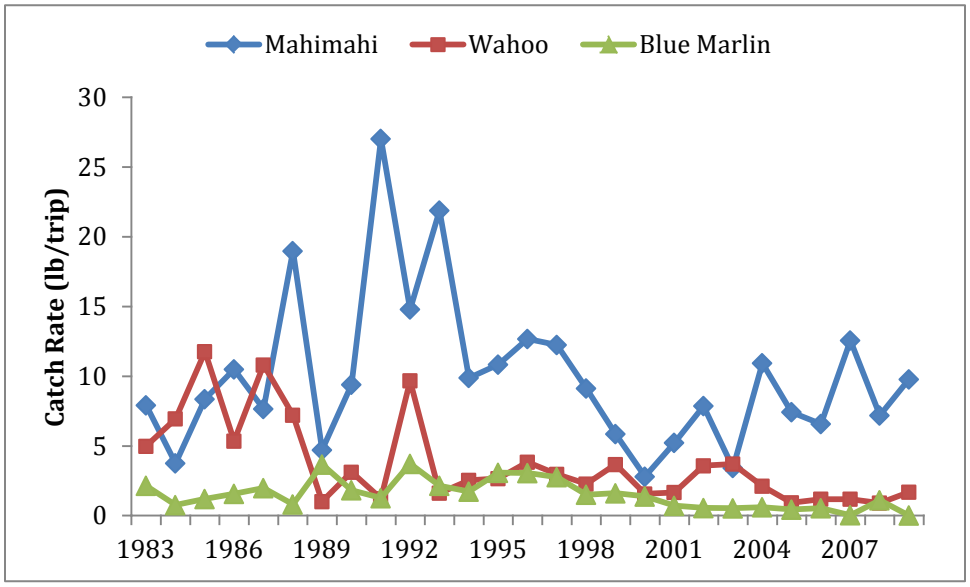


Figure 55: CNMI Trolling Catch Rate for Mahimahi, Wahoo and Blue Marlin, 1983-2009



4.2.2.4 CNMI Revenue

Revenue per trip has been declining with a few peaks since the late 1980's (Figure 56). The decline in revenues is partly due to a drop in price per pound for tuna and reduced market demand. Whereas overall pelagics revenue peaked in 2005 due to revenue form tuna and has steadily declined since then (Figure 57) resembling the tuna landings shown in Figure 50.

Figure 56: CNMI Inflation-adjusted Revenue per Trip for All PMUS, Tuna and Non-Tuna PMUS, 1983-2009

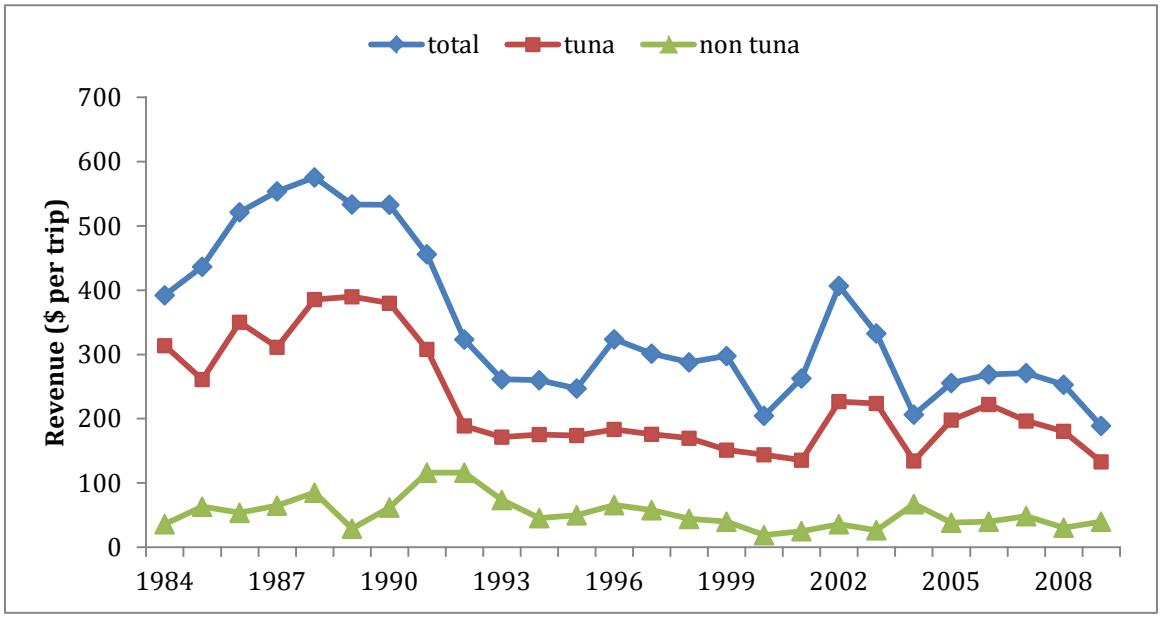
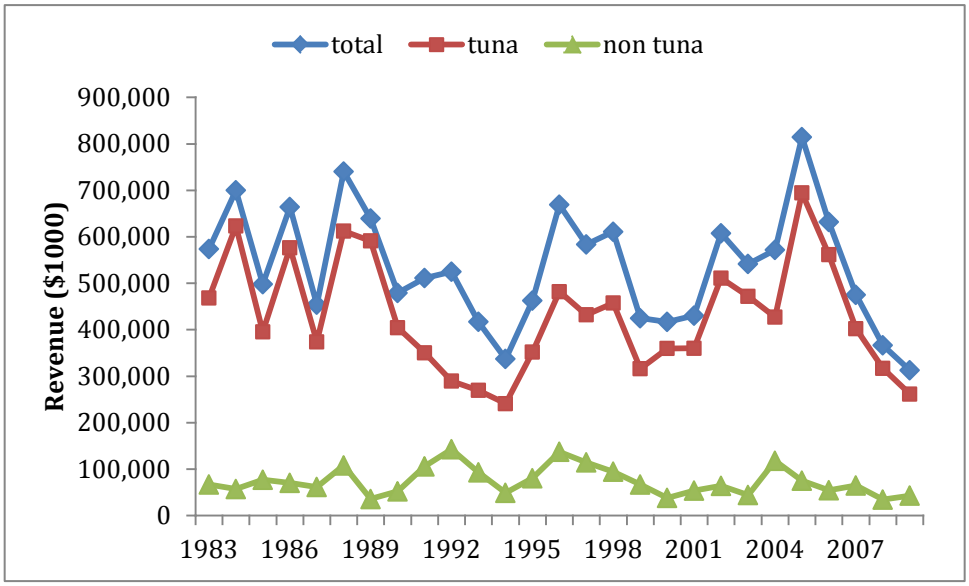


Figure 57: CNMI Revenue for All Pelagics, Tuna PMUS and Non-Tuna PMUS, 1983-2009



4.2.3 Bycatch

CNMI's pelagic fishery has very little bycatch, less than 1 percent, as reported in creel surveys (Table 21). A summary report shown in Table 21, from the year 2000 to

2007 by both non-charter and charter boats, indicate less than 1% or 6 out of 35,677 of the total pelagic species landed is released. The only three species reported as bycatch were mahimahi, yellowfin tuna and skipjack tuna. Only 4 out of 2,095 mahimahi or .19% landed was released, 1 out of 1,499 yellowfin or .08% landed was released, and 1 out of 32,083 skipjack tuna was recorded to be released. Charter boats had no bycatch reported.

Bycatch in the CNMI has been believed in the past not to exist, which is further supported by the results of the Offshore (Boat Based) Creel Survey. The CNMI will continue sampling in order to monitor this issue however it is a common practice by fishermen to keep all species caught regardless of size, species or condition.

Table 21: CNMI Creel Survey Bycatch Reports Summary, 2000-2007

Fishery	Released	Dead/ Injured	Both	All	BC %	With BC	All	BC%
Non-Charter						3	1,439	0.21
Mahimahi	4		4	2,095	0.19			
Yellowfin Tuna		1	1	1,499	0.07			
Skipjack Tuna	1		1	32,083				
TOTAL			6	35,677				

Note: Based on the Interview Catch Data in Years 2000-2007 from the Offshore Daytime Creel Survey

4.2.4 Non-commercial Fishery

There are few fishing clubs in the in the CNMI. The Saipan Sportfishing Association (SSA) has been in existence for at least 16 years, and sponsors the annual Saipan International Fishing Tournament, which is usually held in August or September. There is also a Tinian Sportfishing Association, but the current status of this club is unknown at this time. A recent innovation in the Mariana Islands is the publication of a free quarterly magazine, Mariana Fishing Magazine, which covers recreational fishing in both Guam and the CNMI.

The non-commercial data for CNMI are based on the proportion of catches landed for sale and catches retained and not sold, in all landings sampled by creel surveys in each area. The ratio of unsold to sold catch in the samples was used in conjunction with the total catch estimate expanded from the creel survey data. This was adjusted downwards based on the creel surveys by the ratio of landings by vessels retaining 100% of their catch to the total unsold catch. This accounts for that fraction of the catch not sold by commercial fishing vessels. The volume of fish landed by vessels retaining all their catch was labeled the nominal recreational catch.

During 2009, CNMI non-commercial fishing activity was estimated as 4,212 trips catching around 85,400 lb of PMUS (Table 17). This amount is approximately 21 percent of CNMI's total pelagic catch, during 2009.

4.3 Mariana Archipelago Ecosystem Components

Concerns have been raised about closure of traditional and cultural fishing areas; contamination of nearshore waters by runoff and sewage (*E. coli*), and drownings of fishermen when accessing dangerous yet open areas to fish.

Concerns continue over the military build-up and the military's proposal to train in additional areas and to increase the closed area around the island of Farallon de Medinilla (FDM). This would further decrease the number of days fishing would be able to occur in the productive waters around FDM. The Regional Ecosystem Advisory Committee (REAC) recommended an environmental assessment on the impacts of live bombing on the proposed 10-mile closure around FDM. Also associated with the military build-up EPA announces a 21% increase in toxic chemical releases into the air, water, and land as a result; along with social issues and increased deforestation on Guam.

4.4 Mariana Archipelago Research

In 2010, scientists in the PIFSC Ecosystem and Oceanography Division conducted a 4-week oceanographic and acoustic survey of oceanic waters in the Mariana Archipelago[8]. The NOAA ship Oscar Elton Sette was used to survey waters of the CNMI, Guam, and Micronesia. Data were collected to identify physical and biological oceanographic characteristics of the region to increase understanding of the habitat and ecosystem which supports a variety of pelagic species targeted by fishermen. Physical oceanographic data collected included measurements of conductivity/temperature/density (CTD), nutrients and chlorophyll-a, ocean currents, salinity, etc. Biological data collected included measurements of micronekton, zooplankton, etc. Findings included that zooplankton diversity and biomass in the trawl tows significantly increased south of 12°N along the Eastern Transect, while ichthyoplankton diversity and abundance were higher along the Western Transect than the Central Transect and Eastern Transect. Ichthyoplankton and micronektonic fish associated with coral reef communities were found west of the island chain, likely carried westward from the islands by the Northern Equatorial Current (NEC).

[8] See: http://www.pifsc.noaa.gov/qrb/2011_03/article_12.php

5.1 International Pelagic Fisheries in the Western Pacific Region

5.1.1. Introduction to International Fisheries

Harvest of bigeye tuna, the most valuable product the longline fleet harvests, is subject to quotas set by international regional fishery management organizations including the Western and Central Pacific Fisheries Commission (WCPFC) in the Western and Central Pacific Ocean and the Inter-American Tropical Tuna Commission (IATTC) in the Eastern Pacific Ocean. Under the WCPFC, the Hawaii longline fleet, along with one vessel operating out of California, is limited to 3,763 mt of bigeye tuna annually in 2009, 2010 and 2011. This amount is a 10 percent reduction in the Hawaii catch in the Western and Central Pacific Ocean from 2004, which is the WCPFC. Under the IATTC, the 2009 Hawaii longline bigeye tuna quota for vessels greater than 24 meters in length was 500 mt from the Eastern Pacific Ocean.

As Participating Territories to the WCPFC, American Samoa, Guam and CNMI have bigeye catch limits of 2,000 mt each, however, if Pacific island nations are undertaking responsible fishery development the bigeye catch limits do not apply. Utilization of these bigeye limits through the implementation of domestic chartering arrangements has been addressed by the WCPFC but has so far been precluded by the US territories due to the current regulatory structure of the PFEP. Therefore, the Council took final action at its October 2009, meeting to amend the PFEP to allow US Participating Territories to enter into agreements and arrangements with US fishing vessels and US fishing entities as may be necessary to support fishing development in the US territories and more effectively utilize these limits.

The catch of entire international tuna fleet in the WCPO during 2009 was estimated at 2.4 million metric tons (mt), the highest annual catch ever recorded with the purse seine fishery accounting for an estimated 1.8 million mt (77% of the total catch, and another record for this fishery), with pole- and-line taking an estimated 165,814 mt (7%), the longline fishery an estimated 223,792 mt (9%), and the remainder (7%) taken by troll gear and a variety of artisanal gears (Williams and Terawasi 2010).

5.1.2 Fishery Performance and Economic Data

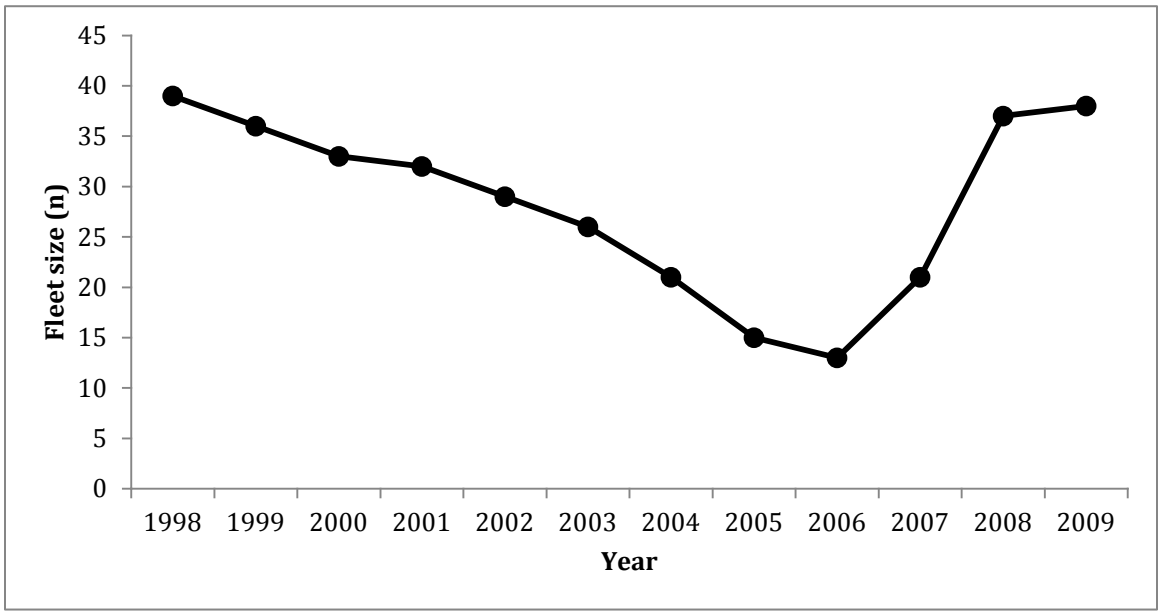
5.1.2.1 US Purse Seine Fleet

The number of vessels licensed and active in the U.S. purse seine fleet steadily declined since the late 1990s. However, in 2007 this trend began a reversal and the number of vessels increased significantly to 21 by the end of 2007 and the fleet continued to recover throughout 2008 and into early 2009, where it approached the limit of 40 regular licenses (Figure 58). Under the current terms of the Treaty, 45 licenses are available to the United States, five of which are reserved for joint-venture arrangements with Pacific Island parties. As of December 31, 2009, there were 38 United States-

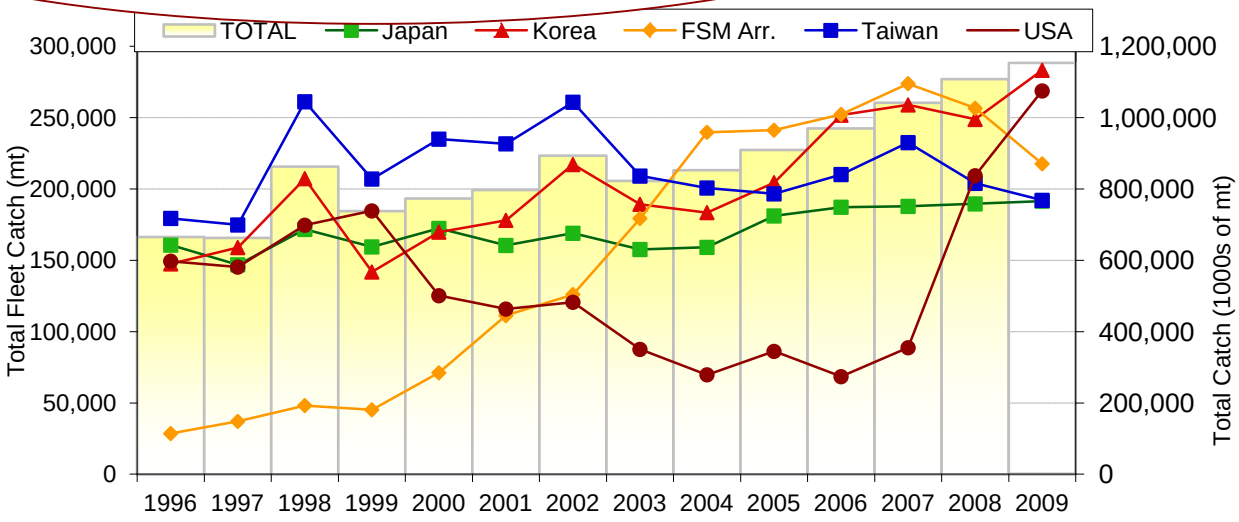
flagged purse seine vessels licensed in the Treaty area (USCG 2010). An additional vessel that was licensed throughout the year caught fire and sank in mid-December, therefore a total of 39 vessels participated at some point of the year in 2009 (USCG 2010).

Concomitant with the increase in fleet size or effort was a significant increase in landings by the U.S. fleet, considered within the top 5 fleets operating in the WCPO (Figure 59). Table 22 shows the ports where U.S. purse seiners delivered the 138,246 metric tons of tuna catch during 2009. The top port is Pago Pago, American Samoa followed by Federated States of Micronesia (FSM).

Figure 58: U.S. -flagged Purse Seine Vessels, 1998-2009



Source: USCG 2010



Source: Williams and Terawasi 2010

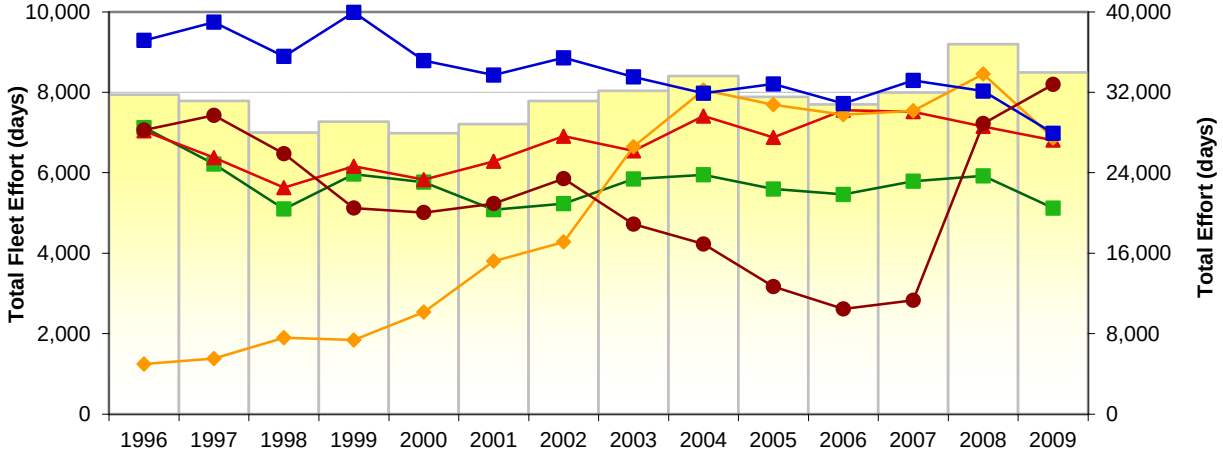


Table 22: Tuna Landings (mt) of U.S.-flagged Western Pacific Purse Seine Vessels by Species and Port[9]

LANDING PORT	Skipjack	Yellowfin & Bigeye	Total	Percent
U.S.PORTS				
Pago Pago, American Samoa	63,585	10,495	74,080	27.9
Pago Pago Transshipment	4,196	612	4,808	3.1
FOREIGN PORTS				
Solomon Islands	18,735	1,770	20,525	13.4
Federated States of Micronesia	46,950	3,843	50,824	33.3
Papua New Guinea	20,291	2,562	22,853	15
Republic of the Marshall islands	8,290	680	8,970	5.9
Tarawa, Kiribati	210	0	210	0.1
Masan, Korea	1,050	0	1,050	0.7
General Santos, Phillippines	930	30	960	0.6
TOTAL	138,246	14,476	152,772	100

Source: USCG 2010

5.2 International Pelagic Research

PIFSC scientists continued to participate in the collaborative of the Pacific Tuna Tagging Project (PTTP), a major tuna research initiative in the WCPO[10]. The PTTP is being implemented by the Secretariat of the Pacific Community's Oceanic Fisheries Program, the National Fisheries Authority of Papua New Guinea, and the members and participating non-members of the WCPFC. From 2006 through 2010, the PTTP has tagged and released over 259,600 skipjack, yellowfin and bigeye tuna over a broad area of the WCPO. Objectives of the PTTP include improving stock assessments, determining tuna movement patterns, and aid in understanding how FADs might affect tuna movement behavior in the region.

The PTTP is the third large-scale tuna tagging campaign undertaken in the WCPO, preceded by the inaugural Skipjack Survey and Assessment Programme (SSAP) from 1977-1981 and the Regional Tuna Tagging Project (RTTP) from 1989-1992. During the SSAP campaign, WCPO tuna fishing was dominated by pole and line fisheries, while during the RTTP and PTTP campaigns, purse-seine fisheries dominated. Over the span of these tagging campaigns, there was a massive increase in the use of fish aggregating devices (FADs), and the annual WCPO tuna catch increased from 300,000 mt during the SSAP years to 2.4 million mt in recent times.

[9] 2009 landings are based on reports received as of 14 January 2010 and cover landings until about July 2009. Under the WCPFC, NMFS landings data are not obligated to be reported until April 30th each year.

[10] See: http://www.pifsc.noaa.gov/qrb/2010_06/article_07.php

In another study, PIFSC scientists from the Center's Ecosystem and Oceanography Division, collaborated with staff in the Protected Species Division and colleagues in Taiwan and Japan to develop a new statistical technique to examine use of oceanic habitat features by loggerhead sea turtles in the North Pacific[11]. The new method was developed in a study of loggerhead turtles (*Caretta caretta*) in waters off Taiwan, where this species of sea turtle is commonly captured as bycatch in the coastal pond net fishery. The large-scale fishery is capable of exerting a substantial negative impact on the loggerhead turtles. Taiwan is not known to have any loggerhead nesting sites, and genetic analysis indicates that these turtles are likely from the Japan nesting stock. This North Pacific stock is a vital component of the worldwide loggerhead turtle population, hence any additional sources of mortality on the stock need to be carefully examined, monitored, and minimized.

The purpose of the collaborative study was to analyze the movement patterns of loggerhead turtles taken as pond net fishery bycatch in Taiwan by way of satellite tags attached to loggerheads caught in the fishery and released. The satellite geolocation data transmitted by the tags via satellite were used to infer the tagged turtles' patterns of habitat use in relation to regional oceanographic features such as large oceanic eddies.

The University of Hawaii's Pelagic Fisheries Research Program (PFRP) funded and carried out a variety of projects during 2009/2010[12]. These include examining tag retention in tropical tunas; integrating electronic and conventional tagging data into modern stock assessment models; examining ocean acidification impacts on tropical tuna populations; an evaluation of biological, economic, and management drivers of fishery performance: a global meta-analysis of tuna and billfish stocks; improved effectiveness of WCPFC through better informed fishery decision makers with emphasis on stock assessment methodologies; and a study aimed at integrating conventional and electronic tagging data with a habitat-based population dynamics model (called SEAPODYM). Also funded was a descriptive assessment of traditional and small-scale fisheries in the western Pacific region.

[11] See: http://www.pifsc.noaa.gov/qrb/2010_06/article_06.php

[12] See: http://www.soest.hawaii.edu/PFRP/newprojects09_10.htm

6.1 Pelagic Fisheries in the Pacific Islands Remote Areas (PRIA)

6.1.1. Introduction to PRIA

On January 6, 2009, President Bush established three new National Marine Monuments in the Western Pacific region by issuing Proclamations by the President using his authority under the Antiquities Act. Proclamation 8336 (74 FR 1565) established the Pacific Remote Islands Marine National Monument located in waters around the PRIA of Wake, Baker, Howland, and Jarvis Islands, Johnston Atoll, Kingman Reef, and Palmyra Atoll. This monument designation caused longliners, purse seiners and other fisheries which had fished inside the Monument waters to become displaced by the new monument boundaries. The PRIA have been important fishing grounds in certain years. For example, in 1997, almost 20% of the total US purse seine catch in the Western Pacific was taken within the US EEZ around Howland and Baker Islands. Similarly, in 2002, 20% of the yellowfin and bigeye catch for the Hawaii longline fleet was harvested from within the US EEZ waters around Kingman Reef and Palmyra Islands

Some Hawaii-based longline vessels and U.S. purse seine vessels may sporadically fish the U.S. EEZ waters around the islands of the PRIA with the largest volume of fish coming from purse seine fishing.

In addition, there has been some recreational fishing activity at some islands of the PRIA, namely at Midway, Wake, Johnston and Palmyra Islands. There are no resident populations at Howland & Baker and Jarvis Islands and recreational fishing activity at these locations is likely minimal. There was a tourist facility at Midway until 2002, which operated a charter boat fishery targeting primarily pelagic fish at Midway Atoll. At Palmyra Atoll, an island privately owned by The Nature Conservancy, a 22 ft catamaran is used for offshore trolling and four small boats operated within the lagoon used for bonefish angling. There are several craft used for recreational fishing at the two military bases on Johnson and Wake Islands.

6.1.2 Fishery Performance and Economic Data

During 2009, approximately 1 percent of Hawaii-based longline fishing vessels fished in waters around the PRIA. A total of 64 vessels took 98 trips and conducted 505 sets utilizing 1.16 million hooks and catching about 16,000 PMUS. In terms of numbers of fish caught, the dominant catch was bigeye tuna, blue shark, yellowfin tuna, pomfret, skipjack and albacore tunas, respectively. In terms of bycatch and number released the dominant MUS was sharks, with 98% released and the dominant shark species caught was blue shark. The highest CPUE (number caught/1,000 hooks) is for bigeye tuna followed by blue shark and yellowfin tuna (Table 23).

Table 23: Longline Catch Statistics from US EEZ Waters of the PRIA, 2009

PMUS			Number Caught	Number Kept	Number released	CPUE
Billfishes						
Blue	marlin		291	289	2	0.25
Striped	marlin		202	200	2	0.18
Shortbill	spearfish		377	364	13	0.33
Swordfish			138	116	22	0.12
Other	billfishes		49	49	0	0.04
Total			1,057	1,018	39	0.92
Sharks						
Blue	shark		2,279	20	2,259	1.99
Mako	sharks		96	10	86	0.08
Thresher	sharks		532	15	517	0.46
Oceanic	whitetip	shark	313	26	287	0.27
Silky	shark		40	0	40	0.03
Other	sharks		246	11	235	0.21
Total			3,506	82	3,424	3.06
Tunas						
Albacore			1,065	1,060	5	0.93
Bigeye	tuna		3,947	3,893	54	3.44
Yellowfin	tuna		1,919	1,886	33	1.67
Bluefin	tuna		0	0	0	0
Skipjack	tuna		1,189	996	193	1.04
Other	tunas		0	0	0	0
Total			8,120	7,835	285	7.08
Other	**PMUS**					
Mahimahi			334	329	5	0.29
Moonfish			159	159	0	0.14
Wahoo			547	539	8	0.48
Oilfish			686	686	0	0.6
Pomfret			1,398	1,394	4	1.22
Total			3,124	3,107	17	2.72
Total	**PMUS**		15,807	12,042	3,765	13.78
Total	**Non-PMUS**		61	11	50	0.05
Total	**All**	**Species**	15,868	12,053	3,815	13.83

7.0 Fishing Community

7.1 Community Demonstration Projects Program & Marine Education and Training

The Community Demonstration Projects Program (CDPP) Advisory Panel (AP) met on May 4 – 5, 2010, to review applications for funding under the Western Pacific Community Demonstration Project Program and the Western Pacific Marine Education and Training (MET) Mini Grant Program.

Solicitations for applications for the CDPP were published on January 22, 2010 in the Federal Register. Available funding was $500,000 with no minimum or maximum funding limit. The purpose of the CDPP funding is to foster and promote use of traditional indigenous fishing practices and/or develop or enhance community-based fishing opportunities.

The Western Pacific Marine Education and Training mini grants deadline was March 5, 2010. Available funding is $150,000, $15,000 funding limit. The purpose is to improve communication, education and training on marine resource issues through the Western Pacific Region and increase education for marine-related professions among coastal community residents.

The Community Demonstration Project Program Advisory Panel consists of eight individuals two from each of the territorial areas in the Council's area of authority and responsibility:

American Samoa: Kitara Vaiau and Vaasa Simanu
Commonwealth of Northern Mariana Islands: Lino Olopai and Herman Tudela
Guam: Peter Perez and Dave Alvarez
Hawaii: Gary Beals and William Mossman

The process to review and rank the MET proposals and CDPP was to review each proposal through open discussion, individual ranking of the proposal using objective criteria to assign a numerical value, averaging the numerical points for an average score and listing the proposals in rank order at the end of the review. At that point the AP could reopen discussion and adjust the ranking to suit the consensus. Due diligence was applied in the initial review by Federal Program Officer(s) prior to the applications being distributed to the AP.

Rank order of the MET Mini Grant proposals:

1. Traditional Fishing on Guam, MARS	$ 15,000
2. Maunalua Fishpond Education Project, Maunalua Fishpond Heritage Center	$ 15,000
3. American Samoa CC Distance Learning Project, ASCC	$ 14,847
4. Reef Watch Waikiki, UH	$ 14,485

5. Aquaculture Outreach in Hawaii and Pacific, CTSA/OI	$ 14,950
6. Hui Malama Loko I`a, Paepae o He`ei`a	$ 14,900
7. CNMI Heritage Awareness Diving Awareness, PMRI	$ 14,810
8. Bluewater Education Program, KCCEF	$ 15,000
9. Maunalua User Survey, Malama Maunalua	$ 15,000
Total amount expended for MET	$133,992
Unexpended MET funds	**16,008**
Total funds available for MET mini grants	$150,000
Recommended to not be funded:	
10. PNG Capacity Building, Wildlife Conservation Society	$ 14,400

Rank order of Western Pacific Community Demonstration Projects:

There were seven proposals under the Demonstration Project Program. Funding is limited to $500,000. Funding limitations will result in the four top-ranked proposals being funded. $49,839.25 is left after funding the top four projects.

1. Multicultural Marine Conservation Exchange Demonstration Project, UH Sea Grant	$ 74,474.00
2. Reviving, Demonstrating and Teaching Pre-contact Indigenous fishing Techniques, TASI	$ 92,013.00
3. Guam ADA Compliant Fishing Platform, GOSA	$158,673.75
4. Malama Loko Ea, Alu Like	$125,000.00
Total amount requested for this solicitation	$450,160.75
Unexpended CDPP Funds	**49,839.25**
Total funds available for this solicitation	$500,000.00
5. Ahupua`a Honua Maunalei Mauka Watershed Project, Uhane Pohaku Na Moku O Hawai`i	$127,300.00
6. Moloka`i Fishing Auwana, Moloka`i Community Service Council	$ 24,000.00
7. Promoting Environmental Stewardship in the Production of Pacific White Shrimp in the CNMI, NMC CREES	$100,000.00
Unfunded projects	$251,300.00

8.0 Administrative and Enforcement Actions

8.1 Administrative Actions

During 2009, Amendment 18 became effective, which eliminated the set limit for the Hawaii-based shallow-set longline fishery and increased the North Pacific loggerhead turtle incidental take limit from 17 to 46 annually. The WCPFC international bigeye tuna catch limit for the Hawaii longline fishery of 3,763 mt was established and will be implemented for 2009, 2010, and 2011. Additionally, vessel identification requirements were modified to become compliant with WCPFC requirements (final rule published January 21, 2009).

Actions recommended for consideration by the Council during 2009/2010 include:

- An amendment to minimize the American Samoa longline fishery's interactions with green sea turtles by requiring that, for vessels larger than 40 feet in length, hooks be set at least 100 meters deep through compliance with minimum gear length requirements.

- Development and analysis of a bigeye tuna catch shares program for the Hawaii longline fishery and to monitor impacts of any regulatory closures for bigeye while analyzing alternatives related to input controls (including a change to the fishing year) in this fishery.

- An amendment to develop domestic bigeye chartering arrangements for the territories of American Samoa, Guam, and CNMI including an annual catch limit of 2,000 mt for each of the Territories, the provision of limited authority to the Territories to utilize their longline bigeye catch limits through charter arrangements, and establish criteria to determine if a vessel operating under a chartering arrangement is integral to the Territory's domestic fleet.

- Development of an options paper analyzing the impact of the (maximum) incidental catch limit of swordfish in the Hawaii deep-set longline fishery including alternatives to modify the limit.

8.2 Enforcement Actions

8.2.1 U.S. Coast Guard

During February to July 2009, the U.S. Coast Guard (USCG) reported an Indonesian-flagged longline vessel not on the WCPFC's List of Authorized Vessels fishing on the high seas in the vicinity of Jarvis Island in the PRIA; safety violations on an American Samoa longline vessel; illegal vessel bunkering by a Kiribati-flagged vessel in Kiribati EEZ waters; a Japanese-flagged longliner found fishing 4 miles outside US

EEZ at Howland and Baker Islands in the PRIA. In addition, of the Hawaii-based fleet, a longline vessel was found fishing inside the Papahanaumokuakea Marine National Monument in the NWHI; and a small quantity of shark fins aboard a vessel without corresponding carcasses.

During July- October 2009, the USCG reported 21 boardings of foreign vessels, levying a $10,000 fine and three apprehensions; and boarding and seizure of a Taiwanese-flagged longline vessel fishing in U.S. EEZ waters around CNMI. The USCG also participated in a multilateral operation during the purse seine FAD closure period.

8.2.2 NOAA Office of Law Enforcement and General Counsel

During 2009, NOAA Office of General Counsel for Enforcement and Litigation (GCEL) charged a vessel $10,000 for fishing in the Hawaiian Islands Longline Prohibited Area; and charged another vessel $7,500 for shark finning. In the CNMI, a final settlement of $500,000 for a Taiwanese vessel fishing illegally was incurred, $200,000 has been paid and the vessel also has to have VMS operational for three years. Three other Taiwanese vessels found fishing in US EEZ waters in CNMI were charged $130,000 apiece, a total of $215,000 has been received so far and they also must have VMS operational for two years. In addition, a Marshall Islands-flagged purse seiner was fined $500,000 for fishing within U.S. EEZ waters at Jarvis Atoll in the PRIA and a requirement to use VMS for 3 years and participate in the Global Drifters Program by deploying buoys for 3 years. CNMI received four checks totaling $124,738, which constitutes a partial penalty for prosecution of the owners of four Taiwanese-flagged vessels caught illegally fishing in U.S. EEZ waters around CNMI. Notices of violation were also issued for fishing inside a Special Preserve Area in the Papahanaumokuakea MNM; for using a high seas vessel on the high seas without a valid high seas permit; among others.

NOAA GCEL also issued several warnings related to protected species including violations of the Endangered Species Act (ESA) such as: taking threatened sea turtles, approaching humpback whales in Sanctuary waters, and taking endangered monk seals.

NOAA OLE investigated illegal marketing of mislabeling of a local seafood product on the mainland; possible misconduct of observers; and imposed a $23,000 fine on a U.S. purse seiner for setting on a live sei whale.

8.3 Plan Team Recommendations

The Pelagics Plan Team (PPT) held a web-based meeting in September 2009 to discuss management actions under consideration. The PPT recommended:

- The most reliable method for documentation of catches, (used in determining catch shares) if the Council should proceed with a catch shares program for bigeye and yellowfin tuna in the Hawaii longline fishery, would be permit numbers.

- That Council staff investigate how increasing fishing mortality on bigeye tuna in the Territories through charter arrangements above the limits provided by WCPFC CMM 2008-01 could be consistent with "responsible" under the FAO Code of Conduct.

- That Council staff include in the draft amendment for charter fishing arrangements alternative sets of criteria for determining if vessels operating under domestic charter arrangements are integral to a Territory's domestic fleet.

9.0 Conclusion

The future of the pelagics fishery in the WPR will be largely intertwined with international fisheries management most notably the management of bigeye tuna with regards to longline fishery catch limits and limiting the purse seine fishery's incidental capture of juvenile bigeye tuna. Management of yellowfin tuna is also an ongoing international management challenge as this is an important target stock for the smaller, non-longline fisheries in the WPR including Hawaii, Guam and CNMI, and American Samoa while also the target for large-scale international fisheries.

Fisheries development opportunities in the island areas of American Samoa and the Marianas Archipelago could provide much needed revenue and sources of local sustainable and healthy food for the island communities. There are challenges to overcome for fisheries development to be successful in the islands including local infrastructure limitations, high fuel prices, and recent natural disasters; however, there are opportunities worth developing for the islands pelagic fisheries.

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