

Appendix 1

American Samoa

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Summary

American Samoa's bottomfish fishery was relatively bigger between 1982 and 1986 than in recent years (Figure 1). This observation reflects a trend in the loss of skilled and full-time commercial fishermen from the fishery, the gradual depletion of newly discovered banks (e.g., 2% Bank), the shift of preference from bottomfishing to trolling and, recently, the diversion of effort by the highliner bottomfish fishermen towards longlining. The December 1992 hurricane contributed to the low 1992 landings (Figure 1) and the lowest number of trips recorded for the period 1982-1997 (Figure 3). A gradual increase in landings and revenues since 1998 converses the associated decrease in prices for the same period. A 290% increase in bottomfish imported from western Samoa contributed to the low market prices last year and again this year.

During 2002, a total of 14 local boats landed an estimated 40,800 pounds of bottomfish in the territory. Revenue for the domestic commercial fishery this year was estimated around \$75,700 with all catch being sold locally. The CPUE for 2002 (7.4 lb/hr) and not less than 50% of the average aggregate CPUE for the first 3 years of this fishery. Effort (hours and trips) has been increasing since 1998 as some of the alias that normally troll and/or longline perform bottomfishing when trolling and longline prices and catches decline. Overall average prices slightly dropped this year but prices for onaga and opakapaka increased mainly due to their demand by relatively new restaurants.

Regarding some of the SFA amendments: ***Commercial*** Bottomfish Landings and Revenues statistics for American Samoa is presented in Figure 2. No bottomfish ***Recreational*** trip was recorded this year. **Recreational** fishing is more associated with the pelagic fisheries and usually never occur in this fishery. There were no ***chartered*** bottomfish trip during this year and no **bottomfish by-catch was recorded this year (Table 3)**. In the *Preliminary Draft of EFH, Amendment for Bottomfish, WPRFMC Feb. 1998*, the approximate MSY estimate for American Samoa [196 nautical miles 100-fathom isobath] is estimated at 79,000 lbs. per year. Only about 52% was reached this year.

Indicators derived from current data do not dictate a need for management response at this time.

The following selected annual statistics dating back to 1982 provide a brief historical snapshot of American Samoa's bottomfish fishery

Selected Historical Annual Statistics

Year	Total Landings (lb)	CPUE (lb/trip-hr)	Adjusted Revenue	Adjusted Price/Lb.	CPI	Number of Boats
1982	64942	8.5	\$192229	\$3.09	100.0	27
1983	126327	10.0	\$451790	\$3.61	100.8	38
1984	94104	10.7	\$274745	\$2.96	102.7	48
1985	143225	8.1	\$230778	\$2.25	103.7	47
1986	91533	8.3	\$185265	\$2.04	107.1	34
1987	31232	11.9	\$68870	\$2.24	111.8	20
1988	63251	17.3	\$142944	\$2.36	115.3	27
1989	47482	16.7	\$78495	\$2.17	120.3	29
1990	14303	9.2	\$27102	\$2.17	129.6	19
1991	18677	9.1	\$37184	\$2.10	135.3	20
1992	13316	9.3	\$33333	\$2.51	140.9	14
1993	17518	7.3	\$36548	\$2.35	141.1	22
1994	44982	7.7	\$91171	\$2.20	143.8	19
1995	34414	9.8	\$66929	\$1.97	147.0	25
1996	38519	14.8	\$76737	\$2.03	152.5	26
1997	39867	14.7	\$89430	\$2.34	156.4	24
1998	15862	14.0	\$38124	\$2.65	158.4	16
1999	19563	12.9	\$45459	\$2.63	159.9	22
2000	28215	10.2	\$55700	\$2.13	166.7	17
2001	48944	15.2	\$92459	\$2.38	168.8	18
2002	40769	7.4	\$75727	\$2.13	169.2	14
Averages	49383	11.1	\$113858	\$2.40		25.0
Std. Dev.	35689	3.1	\$101273	\$0.40		9.42

Introduction

Bottomfishing utilizing traditional canoes by the indigenous residents of American Samoa has been a subsistence practice since the Samoans settled into the Tutuila, Man'ua and Aunu'u islands. It was not until the early 1970's that the bottomfish fishery developed into a commercial scheme utilizing motorized boats. A government subsidized program, called the Dory Project, was initiated in 1972 to develop the offshore fisheries into a commercial venture, and resulted in an abrupt increase in the fishing fleet and total landings. In 1982, a fisheries development project aimed at exporting high-priced deep-water snappers to Hawaii caused another notable increase in bottomfish landings and revenues. Between 1982 and 1988, the bottomfish fishery comprised as much as 50% (by weight) of the total commercial landings. Beginning in 1988, the nature of American Samoa's fisheries changed dramatically with a shift in importance from bottomfish fishing towards trolling. In the past eight years, the dominant (by weight of fish landed) fishing method has been longlining.

During the early 1980's, fisheries data were collected from the bottomfish fishery by interviewing only commercial vessels. In the current Offshore Creel Survey on Tutuila that started on October 1, 1985, commercial, subsistence and recreational domestic fishing boats landing catch in five designated areas were interviewed and their catch recorded. For two weekdays and one weekend/holiday per week, DMWR technicians normally sampled offshore trips between 0500 and 2100 hours. In the past three years, the sampling period was increased to cover boats that come in earlier or after the normal sampling period. Two DMWR samplers based on Tau and Ofu collect fisheries data from the Manu'a islands fleet.

Boat-based fishing in American Samoa used to be mainly trolling and/or bottomfish. In the past six years, longline landings significantly increased with revenues reaching around one million dollars in the past two years. Bigger foreign boats are entering the local fisheries but these are rigged for longlining and more of these are expected to enter the territory's longline fishery. Limited entry options have been initiated to check this increase.

The bottomfish fishery of American Samoa was typically commercial overnight bottomfish handlining using skipjack tuna as bait, on 28-30 foot aluminum/plywood alias. Lower quality bottomfish imported from western Samoa helps satisfy the demand for bottomfish but at the same time result in unattractive prices for local bottomfish fishermen. The adverse effects of three hurricanes that struck American Samoa in 1987, 1990 and 1991 can be seen in some of the trends in the fishery as depicted by the data in this report.

Recent changes in the fishery and improvements in the Offshore Creel Survey necessitates continuous modifications to algorithms used to process the data for this report. Hence the continuous need for technical support from WPacFIN.

Recommendations

2001 Recommendation:

DMWR should start preparing a sampling program for the alias fishing out of Vatia and Aunuu (not included in the normal sampling area) to improve coverage of the fisheries.

Status of 2001 Recommendations:

WPacFIN-DMWR has implemented an offshore creel survey on Aunuu and are still planning to expand sampling to cover the Vatia village fleet.

2002 Recommendation:

DMWR biologists should further investigate the low CPUE recorded this year.

Table 1. American Samoa 2002 Estimated Total Bottomfish Landings by Species.

Interpretation: Changes in species composition of the bottomfish complex reported in the past are due to samplers' varying ability and commitment to the identification of the various bottomfish species. Historical and current data and observations however, do not indicate any major changes in the composition of the bottomfish species landed.

Source: DMWR Offshore Creel

Calculation: Catches are normally weighed by species either at landing sites or during the selling of fish to stores and restaurants. Trips missed by the Creel Survey are accounted for in a separate data collection system – the Commercial Invoice System. This analysis, as in the past, is for the Offshore Creel Survey catch only. Analysis of the bottomfish fishery presented in this report is for the whole bottomfish complex and **not just for the BMUS.**

Species	Pounds
Blood snapper	4
Blue lined gindai	34
Blue lined snapper	7159
Ehu (squirrelfish snap.)	1507
Gindai (flower snap)	123
Gray jobfish	2920
Hawaiian opakapaka	66
Humpback snapper	2320
Lehi (silverjaw)	4654
Onaga (longtail snapper)	1380
Onespot snapper	48
Rufous snapper	50
Stone's snapper	68
Twinspot/red snapper	419
Yellow opakapaka	1515
Yelloweye opakapaka(P.fl.	6
Yellowtail snapper	9
Groupers (misc)	1288
Blacktip grouper	98
Flagtail grouper	52
Lunartail grouper	1561
Peacock grouper	33
Striped grouper	8
Tomato grouper	296
Emperors (misc)	12105
Longnose emperor	578
Redgill emperor	120
Jacks (misc)	240
Bigeye trevally	980
Black jack	581
Whitemouth trevally	24
Bottomfish (Assorted)	523
Total Bottomfish	40769

Table 2. American Samoa 2002 Estimated Commercial Landings by Species.

Interpretation: There appears to be no major changes in the prices of individual species in the past eight years. DMWR keeps track of fish prices for imported fish and those missed by the Offshore Creel Survey through a separate data collection system – the Commercial Invoice System. Data from that data processing system reveal that since 1992, the average price of bottomfish imported from western Samoa were lower than locally caught bottomfish. Locally caught bottomfish are of much superior quality than those imported from western Samoa (and previously from Tonga) because of better handling and affordable ice. Local fishermen, therefore, expect comparatively higher prices for their local bottomfish. Prices for some important species like opakapaka and onaga increased again this year.

Source: DMWR Offshore Creel Survey and Commercial Invoice System

Species	Pounds	Price/Lb.	Value
Blood snapper	4	\$1.61	\$6
Blue lined gindai	34	\$2.00	\$68
Blue lined snapper	6312	\$1.97	\$12439
Ehu (squirrelfish snap.)	1482	\$2.60	\$3861
Gindai (flower snap)	109	\$2.75	\$300
Gray jobfish	2609	\$1.57	\$4094
Hawaiian opakapaka	56	\$2.75	\$154
Humpback snapper	1881	\$1.99	\$3749
Lehi (silverjaw)	4528	\$2.38	\$10788
Onaga (longtail snapper)	1350	\$2.59	\$3490
Onespot snapper	46	\$1.37	\$63
Rufous snapper	29	\$2.75	\$80
Stone's snapper	59	\$2.75	\$162
Twinspot/red snapper	169	\$1.75	\$295
Yellow opakapaka	1504	\$3.69	\$5544
Yelloweye opakapaka(P.fl.)	6	\$2.75	\$17
Yellowtail snapper	9	\$2.50	\$23
Groupers (misc)	1185	\$1.96	\$2327
Blacktip grouper	94	\$2.75	\$259
Flagtail grouper	42	\$2.75	\$116
Lunartail grouper	676	\$1.93	\$1307
Peacock grouper	33	\$2.00	\$65
Striped grouper	8	\$2.75	\$22
Tomato grouper	175	\$2.46	\$430
Emperors (misc)	10757	\$1.97	\$21173
Longnose emperor	429	\$2.00	\$858
Redgill emperor	120	\$2.00	\$240
Jacks (misc)	230	\$0.75	\$173
Bigeye trevally	660	\$2.21	\$1458
Black jack	457	\$2.42	\$1106
Whitemouth trevally	24	\$1.90	\$46
Bottomfish (Assorted)	523	\$1.95	\$1017
Total Bottomfish	35599	\$2.13	\$75727

Calculation: During creel surveys, the disposition of the catch is recorded, and if sold, the price is obtained whenever possible. The average prices reported in this table are calculated by dividing the total revenue by the weight sold in pounds for each species.

Table 3. American Samoa 2002 Bottomfish Bycatch

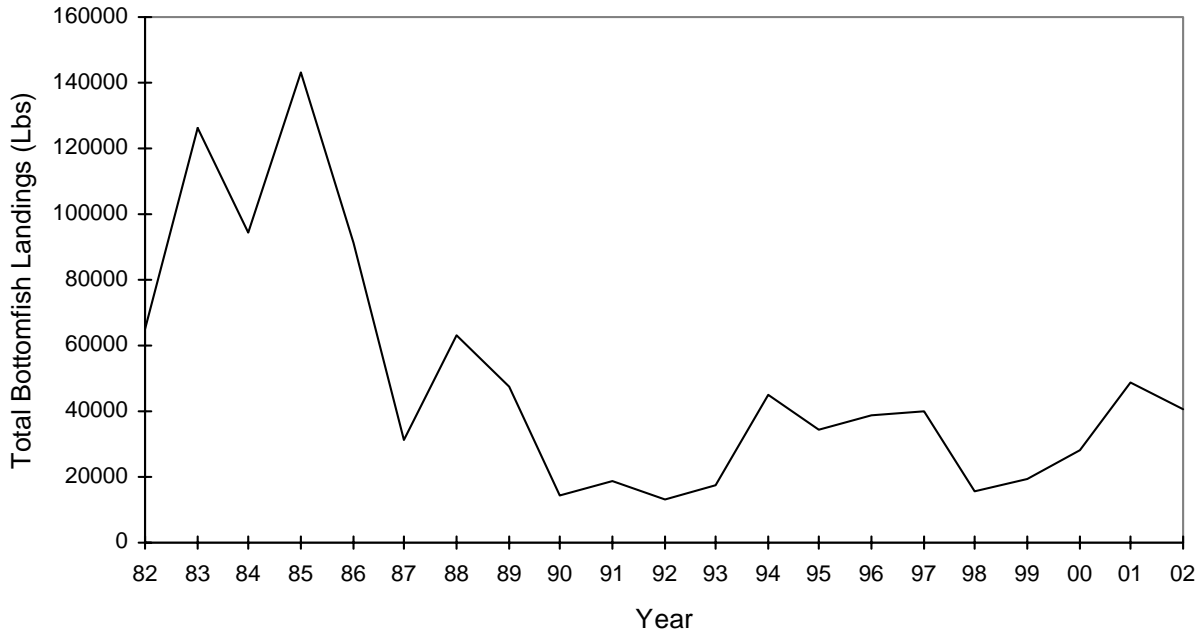
Species	Bycatch				Catch	%BC	Interviews		
	Alive	Dead Inj	Unk	Total			With BC	All	%BC
No Bycatch							0	470	0.00
All Species (Comparison)					6959	0.00			

Interpretation: No bycatch was recorded this year.

Source: DMWR Offshore Creel Survey

Calculation: The Bottomfish Bycatch table is obtained from creel survey interviews. The Bycatch numbers are obtained by counting fish in the interviews for purely bottomfishing trips with a disposition of bycatch. The catch for all species included for comparison is obtained by counting all species of fish caught by purely bottomfishing interviews and the number of interviews is a count of purely bottomfishing interviews

Figure 1. American Samoa Total Bottomfish Landings



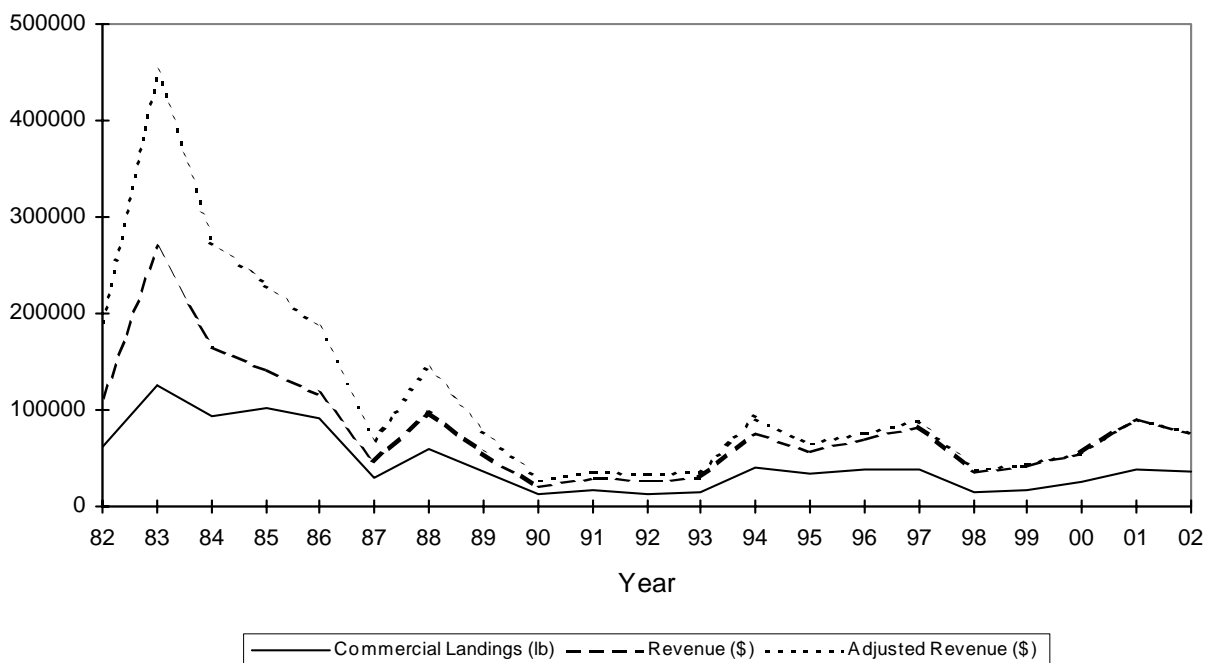
Interpretation: The substantial decline in landings in 1987 and 1990 were partially due to vessel losses caused by two hurricanes. Boat repairs were delayed as fisherman repaired or rebuilt their houses. In terms of total landings, the bottomfish fishery is much smaller in recent years than it was any time between 1982 and 1986, a period when there was a relatively large fleet and fishermen were attracted to the profitable bottomfish export program that exported deep-water snappers to Hawaii. The increase in 1994 was due primarily to improved sampling on Tutuila and increased efforts by the Tutuila highliners. Furthermore, the Manua landings more than tripled due to social/cultural events during the year. The 1998 decline mirrored the 33% decrease in the number of boats participating. Since 1998 some alias have been bottomfishing when longline catches and prices declined. A few veteran successful bottomfish fishermen left the fishery and may have contributed to the recent decline.

Source: DMWR Offshore Creel Survey Database

Calculation: Bottomfish landings for 1982-84 were calculated by adjusting the sampled Tutuila data by the calculated annual percent coverage of the fleet, and then adding the similarly adjusted Manua landings. The landings from 1986 to Present were calculated by expanding the Offshore Creel Survey Data for Tutuila for the species listed in Table 1. The sampled Manua landings were adjusted by adjusting for the monthly percent coverage of the fleet and added to the Tutuila data. Since the Offshore Creel Survey started in October 1, 1985, The first nine month of the 1985 landings were calculated as they were in 1982-84 and the last three months of the 1985 landings were calculated as post 1986 data.

Year	Landings(lb)
1982	64942
1983	126327
1984	94104
1985	143225
1986	91533
1987	31232
1988	63251
1989	47482
1990	14303
1991	18677
1992	13316
1993	17518
1994	44982
1995	34414
1996	38519
1997	39867
1998	15862
1999	19563
2000	28215
2001	48944
2002	40769
Average	49383
Std. Dev.	35689

Figure 2. American Samoa Estimated Commercial Bottomfish Landings



Interpretation: Commercial landings mirror the total fishery's low catches in recent years compared to the robust 1982-1986 period. Relative to total landings, commercial landings decreased even more substantially in 1989, because the percent of the catch sold by bottomfish fishermen dropped from an average of about 97% in 1982-88 to 78% in 1989. The peak in 1983 portrays the high prices of deep-water snappers exported to Hawaii, while the trough in 1987 can be attributed to effects of the 1987 hurricane. The December 1991 hurricane contributed largely to the decreased landings and subsequently a decrease in revenues in 1992. Unfavorable weather continued through May 1992 hindering commercial bottomfish trips. Increased efforts in 1994 produced a notable increase in revenues and no major changes in commercial landings have been recorded since

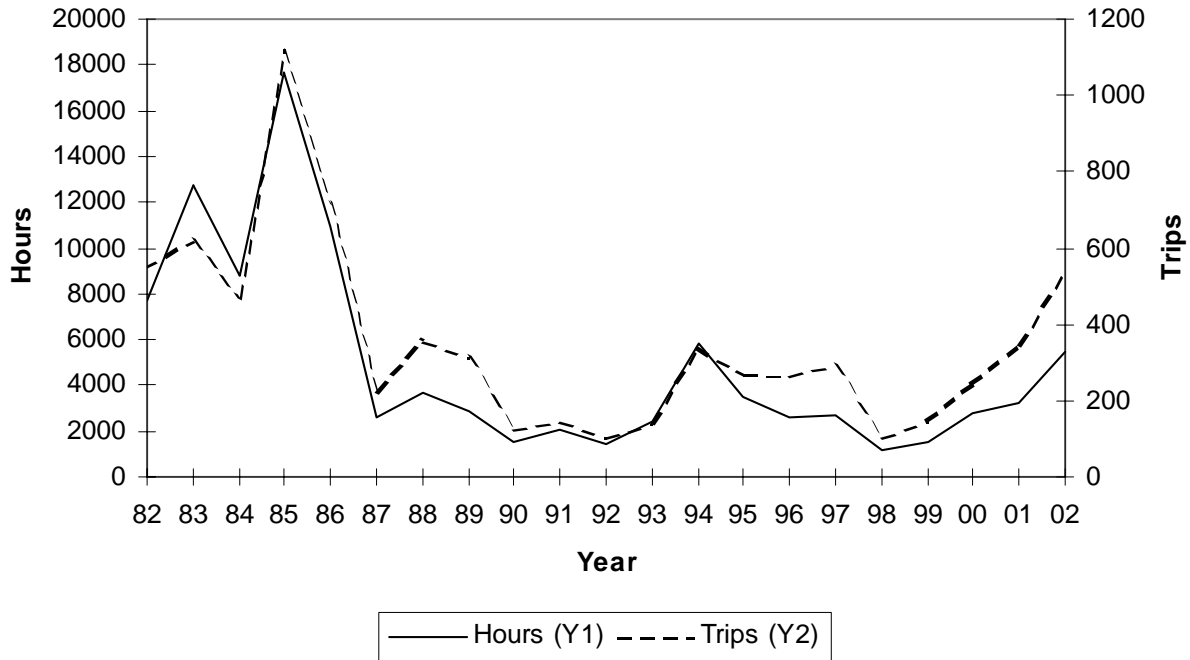
Year	Commercial Landings (lb)	Revenues	Adj. Factor	Adjusted Revenue
1982	62016	\$113678	1.691	\$192229
1983	125167	\$269083	1.679	\$451790
1984	92841	\$166917	1.646	\$274745
1985	102670	\$141495	1.631	\$230778
1986	90775	\$117331	1.579	\$185265
1987	30740	\$45519	1.513	\$68870
1988	60503	\$97440	1.467	\$142944
1989	36165	\$55789	1.407	\$78495
1990	12535	\$20752	1.306	\$27102
1991	17748	\$29747	1.250	\$37184
1992	13264	\$27777	1.200	\$33333
1993	15591	\$30482	1.199	\$36548
1994	41429	\$77527	1.176	\$91171
1995	33956	\$58148	1.151	\$66929
1996	37908	\$69195	1.109	\$76737
1997	38342	\$82653	1.082	\$89430
1998	14400	\$35697	1.068	\$38124
1999	17247	\$42967	1.058	\$45459
2000	26164	\$54877	1.015	\$55700
2001	38767	\$92274	1.002	\$92459
2002	35599	\$75727	1.000	\$75727
Average	44944	\$81194		\$113858
Std. Dev.	31649	\$56746		\$101273

then. Increase volumes of bottomfish “not sold” contributed to the decrease in commercial landings and revenue. For the last quarter, significant increases in sampled bottomfish trips were recorded as local fishermen fish more on Saturday s for the traditional Sunday meals (toana’l)

Source: DMWR Offshore Creel Survey Database

Calculation: A relatively complex set of algorithms are used to estimate the commercial landings from estimates of total landings created by the creel survey data expansion system. In short the percent sold by species and by fishing method is calculated annually and multiplied by the estimated total landings by that method for that year. For 1982-85 sampling was conducted on the commercial fleet only (which included nearly all of the fishing boats), whereas since the 1985 creel sampling has covered all boats (commercial and recreational). Analysis of creel data for 1986-87 indicates that over 98% of the landed bottomfish were being sold. Therefore is it believed to be valid to compare commercial data for years prior to 1986 to creel survey totals for years since 1986.

Figure 3. American Samoa Estimated Bottomfish Hours and Trips



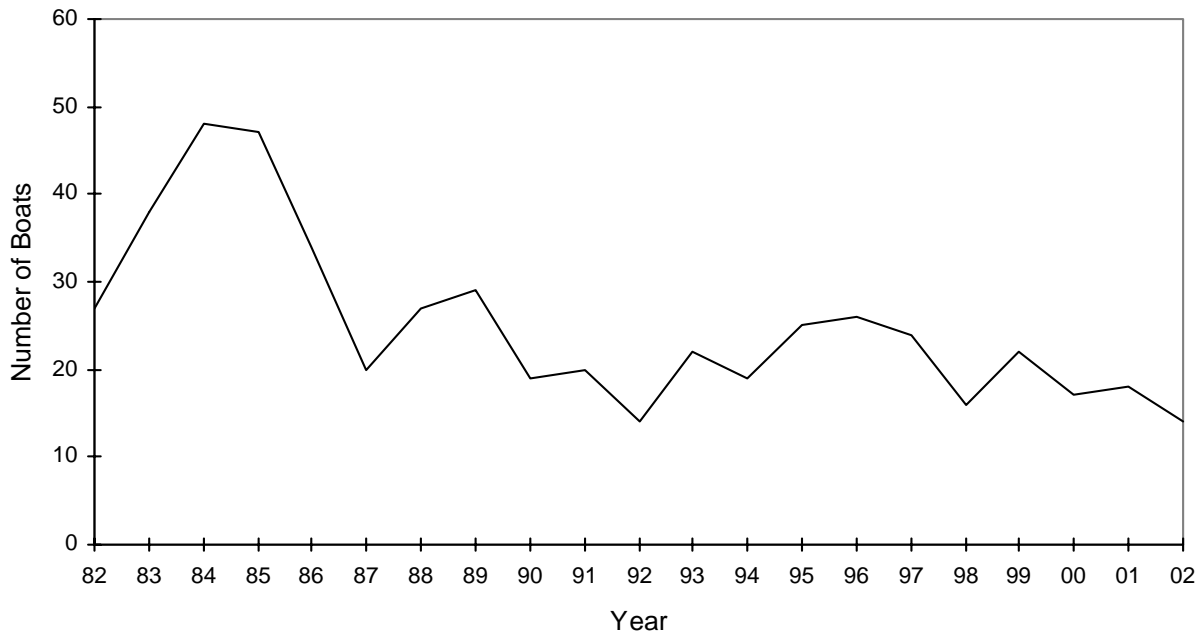
Interpretation: The sharp decline in the bottomfish landings since 1986, noted in Fig.1 is mirrored in this figure by a sharp decline in the level of effort expended in that fishery. Rather than indicating a problem with the resource, this decline depicts an actual trend of commercial boat owners and fishermen seeking other more lucrative and stable lines of work. The 1994-1996 estimated efforts were greater than those for the 1990-93 period due to the highliners increased efforts, with some boat owners employing teams (usually 2-3 fishermen) in continuous shifts during good weather. In 1997 and 1998 the number of boats participating in this fishery dropped significantly (see Figure 4) resulting in the notable declines in the number of trips and hours fished that period. The 1999 increase in effort can be attributed to some alias that normally longline and troll, doing occasional bottomfishing and those that normally bottomfish made additional trips.

Source: DMWR Offshore Creel Survey Database

Calculation: The annual estimated hours spent bottomfishing is calculated by dividing the annual total bottomfish catch by the average CPUE (pounds per hour) from trips doing only bottomfish fishing. The annual estimated number of trips is calculated by dividing the estimated annual hours by the average length of a bottomfish fishing trip. The average length of a bottomfish fishing trip (not shown) is calculated by using only trips which exclusively bottomfished and for which the trip length was recorded. The total hours fished from those trips is then divided by the number of trips. Recorded hours are trip hours.

Year	Hours	Trips
1982	7671	548
1983	12695	621
1984	8796	468
1985	17682	1116
1986	10983	717
1987	2632	220
1988	3661	354
1989	2844	313
1990	1548	122
1991	2042	145
1992	1426	101
1993	2393	141
1994	5857	341
1995	3497	270
1996	2608	265
1997	2712	290
1998	1132	100
1999	1519	145
2000	2769	244
2001	3210	342
2002	5480	533
Average	4912	352
Std. Dev.	4248	242

Figure 4. American Samoa Annual Estimated Number of Boats Landing Bottomfish



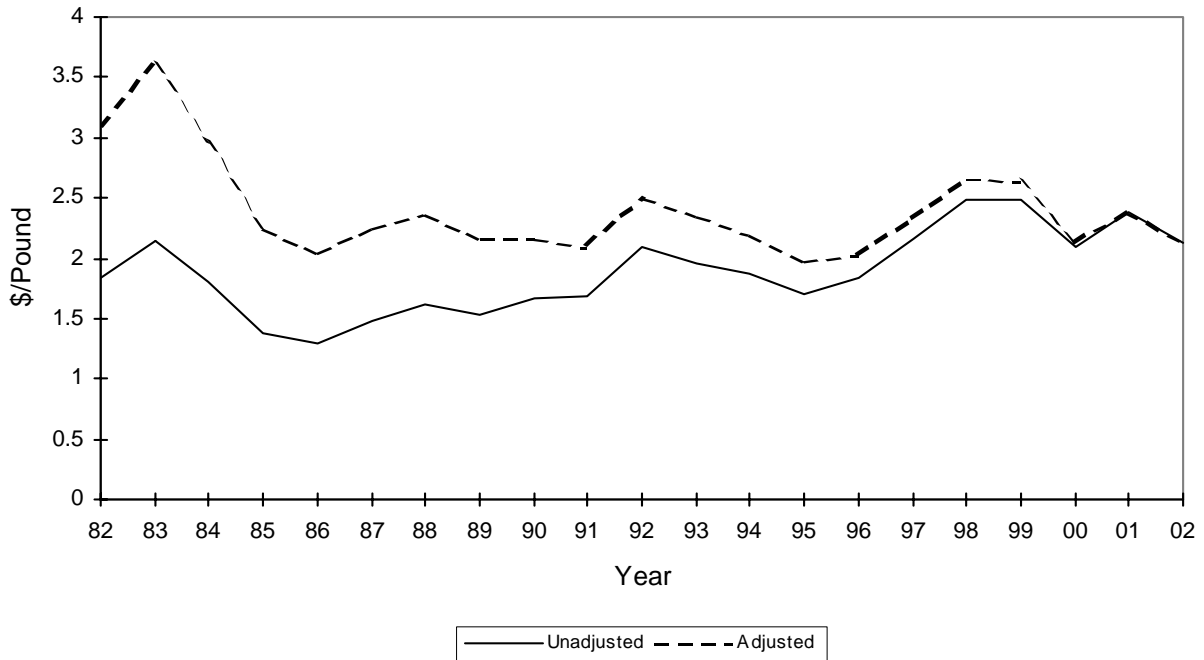
Interpretation: The decline in the fishery since 1985-86 is reflected by a decline in the number of boats participating in it. The 1987 hurricane caused the loss of the whole Manu'a fleet, plus some of the Tutuila fleet. Several boats that contributed to the 1989 bottomfish annual landings did not land any bottomfish in 1990, due to much needed boat repairs and their participation in non-bottomfish chartered trips. About 90% of the domestic fishing fleet was affected by the December 1991 hurricane, hence the slight decline in 1992. The increase in 1993 is due mainly to the re-entry to this fishery of a few boats after repairs, trips by two 14-foot vessels that didn't bottomfish in 1992, and the entry of one new Alia into the sampling area. A few new alias were bought from western Samoa and entered the fishery in 1995-1996. The continued increase in the number of bottomfish alias electing to longline, attracted by the relatively higher revenues obtained mainly from albacore sold to the canneries, is reflected in the significant drop in the number of boats bottomfishing in 1998. Four alias left the fishery this year.

Source: DMWR Offshore Creel Survey database

Calculation: The annual estimate of the number of boats in the bottomfish fishery is obtained from the data base by counting the unique boats sampled during the year which landed any bottomfish species regardless of fishing method.

<u>Year</u>	<u>Boats</u>
1982	27
1983	38
1984	48
1985	47
1986	34
1987	20
1988	27
1989	29
1990	19
1991	20
1992	14
1993	22
1994	19
1995	25
1996	26
1997	24
1998	16
1999	22
2000	17
2001	18
2002	14
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Average	25
Std. Dev.	9

Figure 5. American Samoa Average Price of Bottomfish



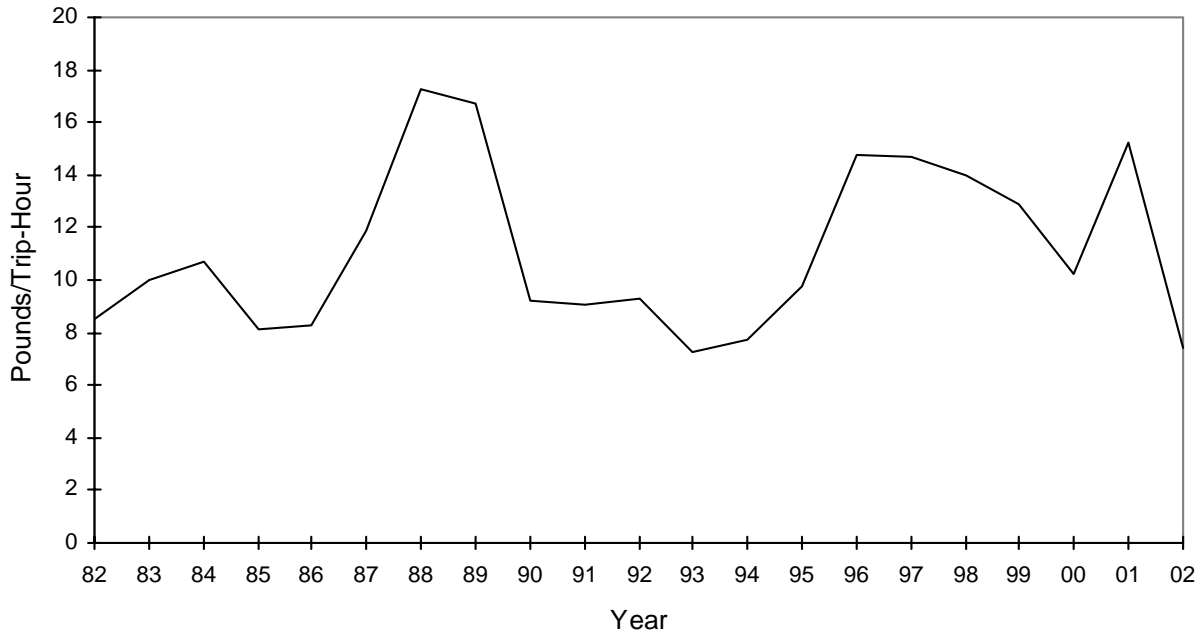
Interpretation: Prices were generally higher between 1982 and 1984 during the exportation of high-priced deepwater snappers to Hawaii. After this period, inflation-adjusted local prices have generally been stable. Prices of locally caught bottomfish are generally higher than imported fish, and could have been even higher had the local markets not been flooded by imported fish, which are usually of lower quality. The only imported bottomfish in 1994 were from western Samoa and these were sold at an average price of \$1.67/lb. Imported bottomfish (mainly from western Samoa) have always helped in meeting the demand for bottomfish. The increase in average price in 1998 is attributed mainly to the increase in demand for fresh bottomfish by a few new restaurants. Variable volumes of low-priced bottomfish from neighboring western Samoa contributes to the fluctuating local prices.

Source: DMWR Offshore Creel Survey database

Calculation: The average price of all bottomfish species combined is calculated by dividing total bottomfish revenue by total sold weight. The inflation-adjusted price is calculated by multiplying the unadjusted annual average price by the annual calculated consumer price index (CPI) for American Samoa using the current year as base.

Year	Unadjusted Price/Lb	Adjusted Price/Lb
1982	\$1.83	\$3.09
1983	\$2.15	\$3.61
1984	\$1.80	\$2.96
1985	\$1.38	\$2.25
1986	\$1.29	\$2.04
1987	\$1.48	\$2.24
1988	\$1.61	\$2.36
1989	\$1.54	\$2.17
1990	\$1.66	\$2.17
1991	\$1.68	\$2.10
1992	\$2.09	\$2.51
1993	\$1.96	\$2.35
1994	\$1.87	\$2.20
1995	\$1.71	\$1.97
1996	\$1.83	\$2.03
1997	\$2.16	\$2.34
1998	\$2.48	\$2.65
1999	\$2.49	\$2.63
2000	\$2.10	\$2.13
2001	\$2.38	\$2.38
2002	\$2.13	\$2.13
Average	\$1.89	\$2.40
Std. Dev.	\$0.34	\$0.40

Figure 6. American Samoa Annual Bottomfish CPUE



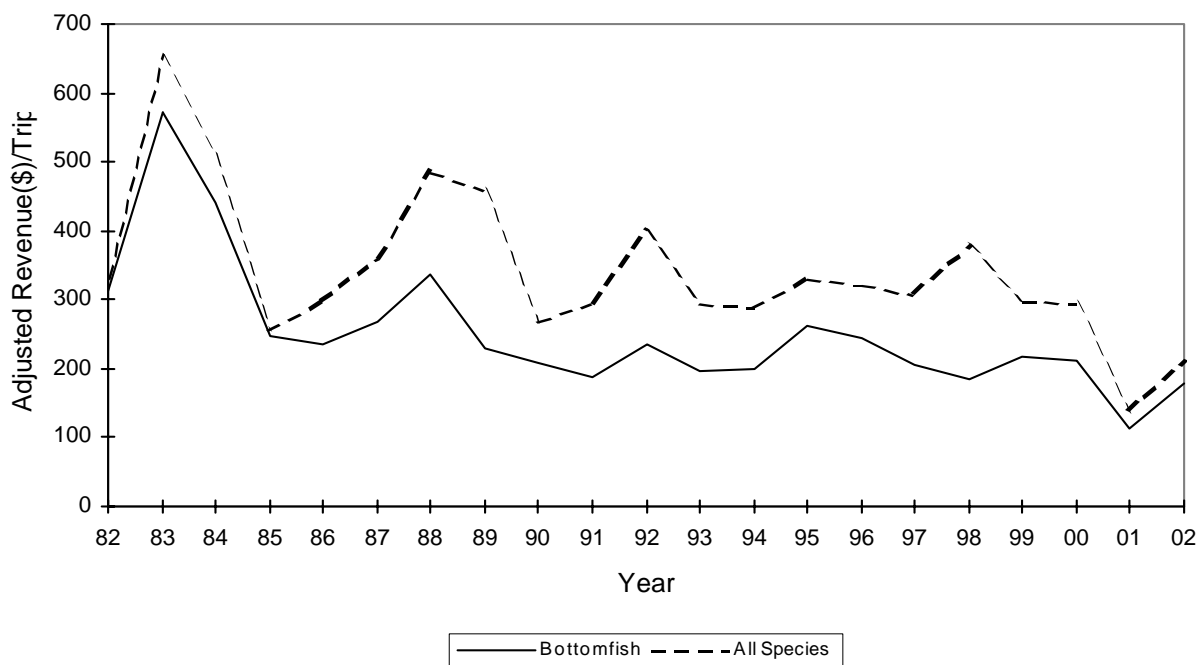
Interpretation: The initial increased CPUE in 1983 and 1984 occurred during the intense fishing of some new fishing grounds for deepwater snappers for export to Hawaii. A relatively high number of boats and local fishermen participated in the fishery during this period. The decline in 1985 and 1986 might be expected following the ardent harvesting of the limited fishing grounds. Reasons for the CPUE peak in 1988-89 are unknown. The decline in CPUE from 1989 to 1991 can be partially attributed to a combination of some new inexperienced fishermen entering the fishery and the exit of experienced and full-time commercial fishermen. CPUE has essentially remained stable during 1990-1992, increased for a few years and was relatively stable in 1996-1998. Bottomfishing techniques and gear have generally remained the same in the past years with the alias being the highliners since the early 1970's. The 1996 high CPUE estimates (and most probably the 1988-89 CPUE increase) can be attributed mainly to improved sampling and may also be related to favorable environmental conditions. This also may represent cyclical trends that maybe caused by decadal and inter-annual climatic changes with similar trends shown in the Hawaii bottomfish fishery. This year's low CPUE was not less than 50% of the average aggregate CPUE for the first three years of available data. The low CPUE this year may be partially attributed to three very experienced bottomfish fishermen leaving the fishery.

Source: DMWR Offshore Creel Survey database

Calculation: CPUE is calculated using only trips in which only the bottomfish method was used and trip hours were recorded. The average is calculated by using each CPUE from each trip as an observation and dividing by the number of trips.

Year	CPUE
1982	8.50
1983	10.00
1984	10.70
1985	8.10
1986	8.30
1987	11.90
1988	17.30
1989	16.70
1990	9.20
1991	9.10
1992	9.30
1993	7.30
1994	7.70
1995	9.80
1996	14.80
1997	14.70
1998	14.00
1999	12.90
2000	10.20
2001	15.20
2002	7.40
Average	11.10
Std. Dev.	3.11

Figure 7. American Samoa Average Inflation-Adjusted Revenue Per Trip Landing Bottomfish.



Interpretation: There have been no notable changes in revenues per trip since 1990. The distance between these two lines reflects the relative importance of bottomfish species in the total catch whenever any bottomfish are landed. The prominent importance of bottomfish between 1982 and 1985 occurred during the targeting of deepwater snappers (mainly *Etelis* and *Prisitipomoides*) for export to Hawaii. Bottomfish fishing was also the more profitable method of fishing during that period. The relative importance of bottomfish has generally been declining since 1985 as most of the full-time commercial fishermen quit this fishery with the remaining opting for trolling and lately, longlining. The supply of locally caught

Year	Bottomfish Unadjusted	Bottomfish Adjusted	All Species Unadjusted	All Species Adjusted
1982	\$185	\$312	\$196	\$331
1983	\$341	\$573	\$388	\$652
1984	\$269	\$442	\$309	\$509
1985	\$151	\$246	\$157	\$256
1986	\$150	\$236	\$189	\$299
1987	\$178	\$269	\$239	\$361
1988	\$231	\$338	\$332	\$487
1989	\$163	\$230	\$327	\$459
1990	\$160	\$209	\$205	\$268
1991	\$151	\$189	\$237	\$296
1992	\$196	\$236	\$332	\$398
1993	\$165	\$197	\$246	\$295
1994	\$171	\$201	\$245	\$288
1995	\$227	\$261	\$288	\$331
1996	\$221	\$245	\$290	\$322
1997	\$190	\$206	\$283	\$306
1998	\$172	\$184	\$355	\$379
1999	\$204	\$216	\$281	\$298
2000	\$208	\$211	\$290	\$295
2001	\$113	\$113	\$138	\$138
2002	\$180	\$180	\$211	\$211
Average	\$192	\$252	\$264	\$342
Std. Dev.	\$47	\$97	\$64	\$109

bottomfish has been supplemented by bottomfish imported from western Samoa. Even though commercial landings (and average price/lb) decreased, prices for high-priced deep-water snappers (e.g. onaga and opakapaka) continued to increase within the past two years, and may contribute to the increase in revenues per trip.

Source: DMWR Offshore Creel Survey database

Calculation: The average revenue per trip for all species is calculated by summing the revenues of all sales for any trip which landed any bottomfish species, and dividing by the number of trips. The average bottomfish revenue per trip is calculated from those same trips by summing the sales of only bottomfish species and dividing by the number of trips. Figure 7 plots the inflation-adjusted bottomfish and all species revenue per trip for the period 1982-2002.