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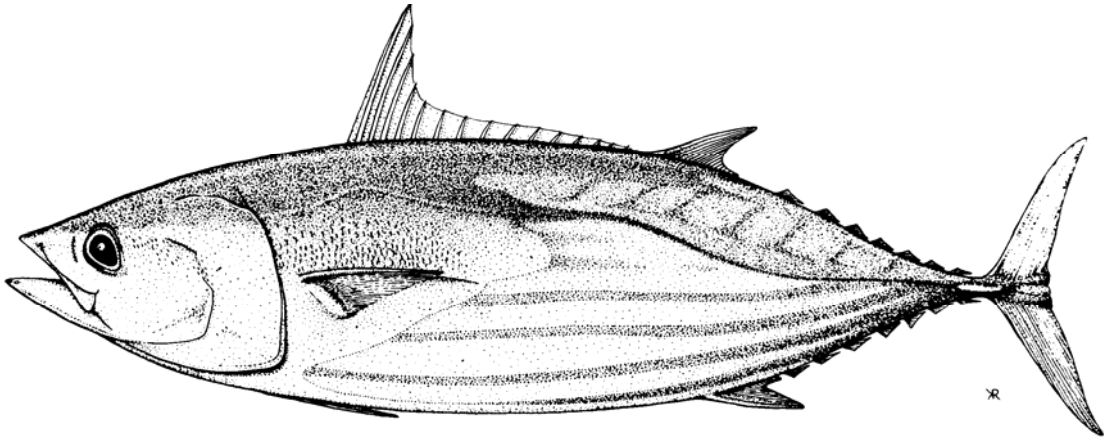
Fiji tuna fisheries



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1. INTRODUCTION

The Fiji fishing zone has provided good catches of albacore and other pelagic species. This area has attracted foreign fishing activity since the early 1950s. Fijian participation in the commercial tuna fishing picked up in the mid 1970s, then mainly focusing on pole-and-lining. Since the inception of the Taiwanese and Korean longline activity in the 1980s, longlining has become the predominant fishing method, while pole and line fishing is conducted in a very small scale with few artisanal trolling fishers targeting FAD's for the local market.

The Fisheries Department of the Ministry of Fisheries and Forests continues to execute and implement control, monitoring and surveillance regimes on its offshore fishery operating under the Fisheries Act, Marine Spaces Act and under the guidelines set forth in its Tuna Development and Management Plan. Future plans are to move towards an ecosystem approach to fisheries management which takes into account the economics, environmental and social aspects of the fishery.

This paper was prepared for presentation to the WCPFC – SC 2 in Manila, Philippines on August 2006. It describes the methods used by Fiji domestic fleets to catch tuna in the Fiji fishing zone, fishing fleet structure, data coverage levels, catch records for five years (2001-2005), marketing of catches, onshore monitoring and future developments.

2. TUNA AND BILLFISH FISHERIES

2.1 Fleet Structure

Table 1 shows the breakdown of domestic vessels licensed to fish in Fiji waters over the last five years.

Table 1. The list of domestic longline and licensed pole and line vessels, 2001 – 2005.

YEARS	LICENSED LONGLINE VESSELS	FIJI BASED NON-LICENSED VESSELS	LICENSED POLE AND LINE VESSELS
2001	95	N/A	2
2002	103	56	2
2003	101	38	1
2004	84	78	14
2005	72	74	1

The Fiji domestic longline fleet is composed of the licensed longline vessels plus other unlicensed longline vessels that are based in its ports. These Fiji based vessels are those that fish outside Fiji waters but unload their catch in Suva and Levuka ports and are stationed at Suva for bunkering and provisioning.

The number of licensed longline vessels has decreased from 103 in 2002 to 72 in 2005 due to the carrying out of a more stringent vetting process and enhanced monitoring on the conduct of fishing vessels.

The pole and line vessels in 2004 comprised of 13 Japan vessels having trip-based licenses and a single Fiji vessel. No Japan pole and line vessels were licensed in 2005**.** A single purse seine Japan vessel was licensed in Fiji. The total catch from this vessel for Fiji waters totaled 295 kg.

2.1.1 Data Coverage

Unfortunately, logsheets do not provide full coverage of activities at this stage and it has been necessary to adjust the logsheet catch totals to account for missing data. For years prior to 2000, the logsheet coverage is not known and it has therefore not been possible to raise the logsheet data. Estimates of the target species and non-target species for 2005 were determined by raising the available logsheet data to account for **months** where vessels were known to be active, but did not provide logsheets. (The Fisheries Department maintains a table showing months where licensed vessels were active/inactive and where logsheets have been submitted). The 2005 logsheets coverage for the Fiji domestic fleet was maintained at 98%.

The non-target species was assumed to have been under-reported in logsheets and with more observer data now being collected, future estimates of the non-target species would be determined using the proportion of observers' non-target species composition to the target species percentage composition (as done for the 2002 non-target species estimates). The observer coverage levels on the longline licensed fleet increased from 2.3% in 2004 to 4.2% in 2005.

Unlike most distant-water longline fisheries, the Fiji domestic fishery lands and markets a number of non-tuna species, although shark and other species are not commercially viable (e.g. lancet fish) are typically discarded. It should be noted that the estimation of total catch at this stage does <u>not</u> take into account the non-target species (e.g. shark) discarded at sea.

2.1.2 Domestic longline

Figure 1 shows the distribution of fishing effort for the Fiji domestic fleet during 2005. Majority of the effort was within the Fijian waters with some activity in the high seas and in the neighbouring EEZs where several vessels are licensed to fish. Records show that the catch of the Fiji fleet in waters outside the EEZ has increased considerably for the years 2001 – 2004 from 10% to 55%. Contrasting patterns were observed in 2005 where the catch of the domestic fleet from waters outside the EEZ was reduced to 31%.

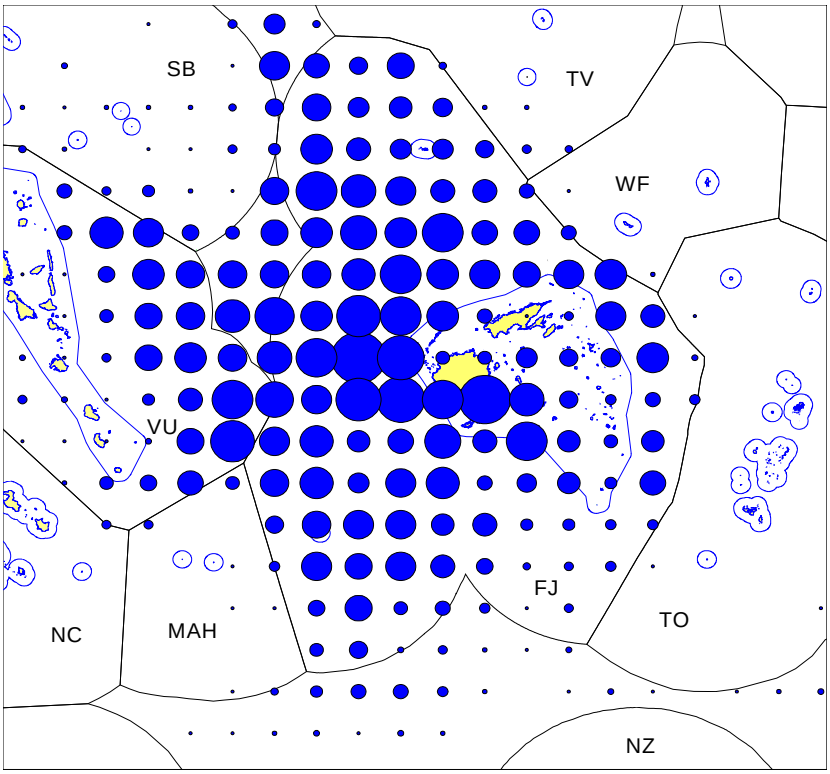

Figure 1. Distribution of Fijian longline effort for 2005.

For the last decade, longlining has been the preferred method of tuna fishing in Fiji. Catch logsheets are completed by vessels and provided to the Fiji Fisheries Department as a condition of fishing license.

Table 2 shows the breakdown of the total catch for each of the past five years, noting that discarded non-target species have not been accounted for.

Table 2: Estimates of the catch by species for the domestic longline fleet.

SPECIES	TOTAL CATCH (MT)				
	2001	2002*	2003	2004	2005
Albacore	7,971	8,026	6,881	11,290	8,901
Bigeye	662	853	889	1,254	423
Yellowfin	2,082	2,027	2,482	4,164	1,989
Swordfish	115	717	125	141	68
Sailfish	33	148	41	26	14
Blue Marlin	186	361	158	171	100
Black Marlin	46	402	47	62	37
Striped Marlin	88	76	76	65	39
Spearfish	-	278	31	57	34
Mahimahi	-	354	254	164	97
Wahoo	-	486	268	221	131

Shark	223	1,277	453	1,189	696
Other	813	1,468	500	813	481
Total	**12,219**	**16,472**	**12,205**	**19,617**	**13,010**

*Non-target species raised to observer percentage species composition (2002)

The total catch by the domestic longline fleet (catches inside and outside the EEZ) during 2005 was 13,010mt (11,313mt for the tuna species). The tuna catch levels decreased from the 16,703mt caught in 2004 to 11,313mt in 2005 attributed mainly to the substantial reduction in Albacore and Bigeye catches (as seen in both table 2 above and Figure 1 below).

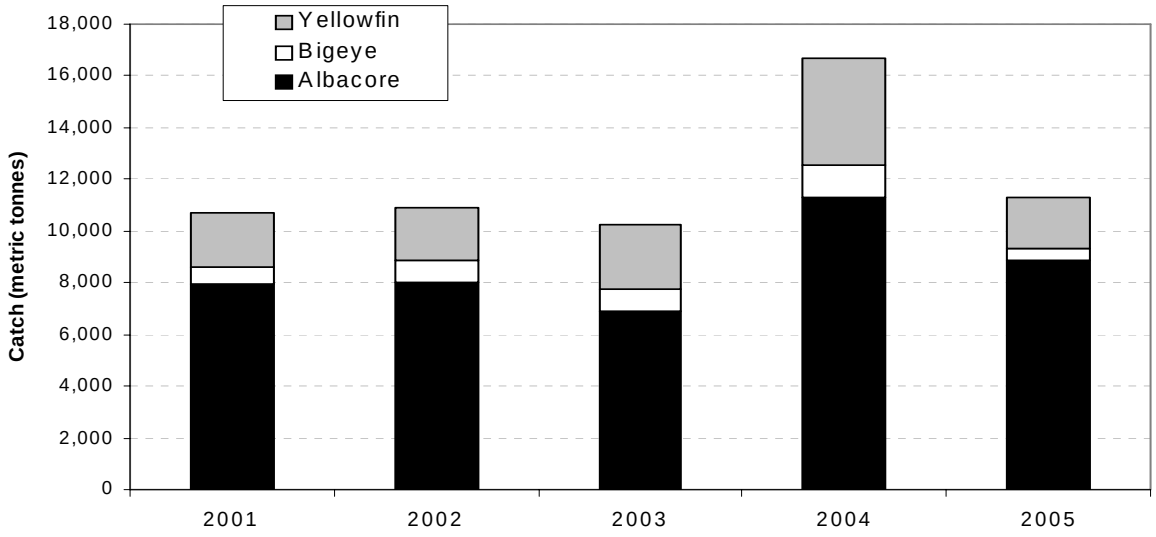

Figure 1. Annual Catch (metric tonnes) trends for albacore, bigeye, and yellowfin tuna.

The catches of the non-target species was observed to be low in 2003, 2004 and especially in 2005 suggesting a degree of under- reporting. This has prompted the department to target observer coverage levels of more than 6% in order to use observer data to best estimate the non-target species catch. Ultimately, the Department plans to reach its target of 20% coverage.

The 2005 catches of the non-target species totaled 1,697mt a 40% reduction in catch from 2004.

Trends in nominal CPUE are sometimes used as an indicator of abundance, but must be considered in association with other direct (e.g. targeting strategy, patterns of effort, size composition of the catch, recruitment, etc.) and indirect (e.g. environmental) factors affecting the fishery.

Figure 2 shows the trends in tuna CPUE for the Fiji longline fleet. The CPUE for albacore increased sharply in 1996 from being consistently below 1.0 per 100 hooks to around 1.5 per 100 hooks. In 2003, it returned to the 1.0 per 100 hooks before increasing again to 1.7 in 2005. The peak in the yellowfin CPUE for 2000 and 2004 may be due to there being more yellowfin available compared to previous years, otherwise yellowfin CPUE appears relatively stable over the time series. Bigeye CPUE appears to have remained consistent at and around the 0.2 level earlier in the time series then dropping to 0.1 levels from 1999.

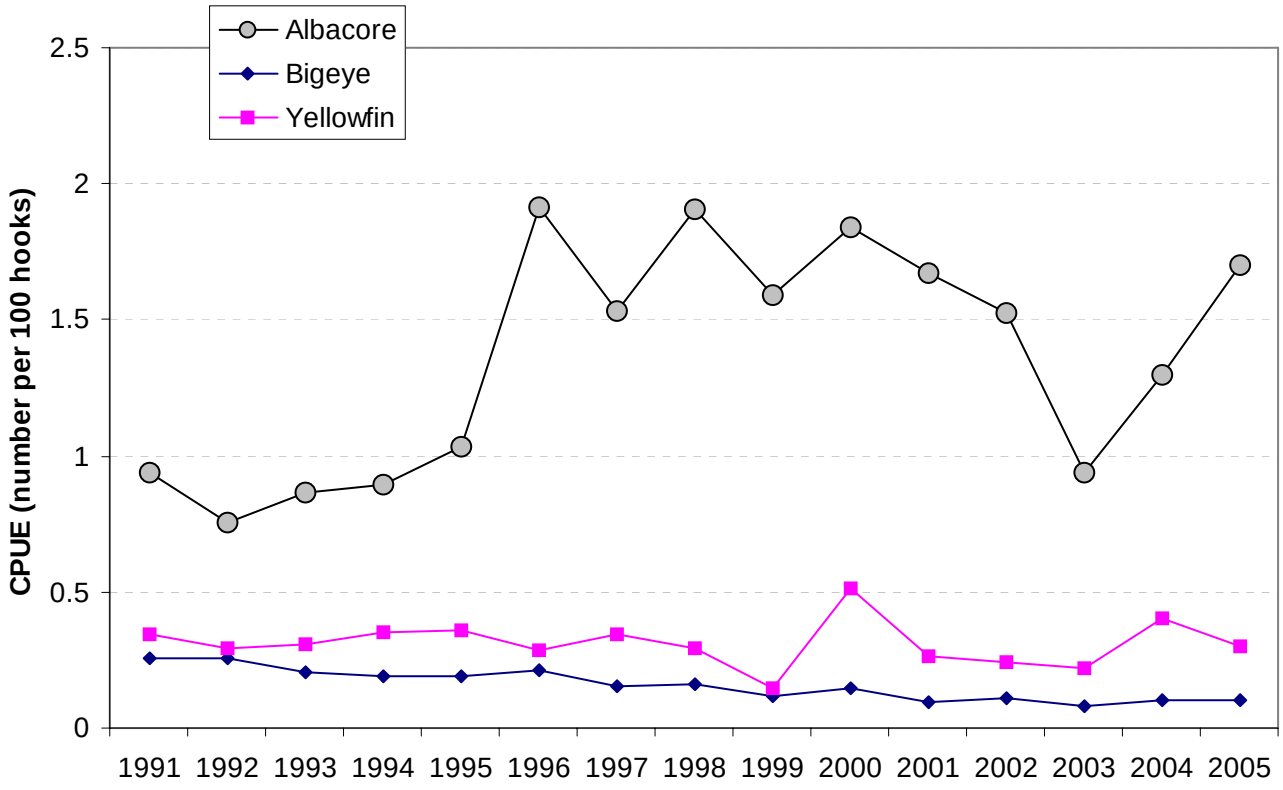

Figure 2. Annual trends in albacore, bigeye and yellowfin nominal CPUE (number per 100 hooks) for the Fijian longline fleet

From 2001 to 2005, trends for the billfish nominal CPUE – black marlin, blue marlin, striped marlin, sailfish and swordfish, were similar i.e. all decreased in nominal CPUE from 2002 before increasing in 2005 (see figure 3). The exception was for the short-billed spearfish where its CPUE increased remarkably from 0.005 fish per 100 hooks in 2002 to 0.015 fish per 100 hooks in 2005.

Note that there may be some degree of under-reporting of non-target species. In future, hope to use the catch rates (CPUE) from observer data

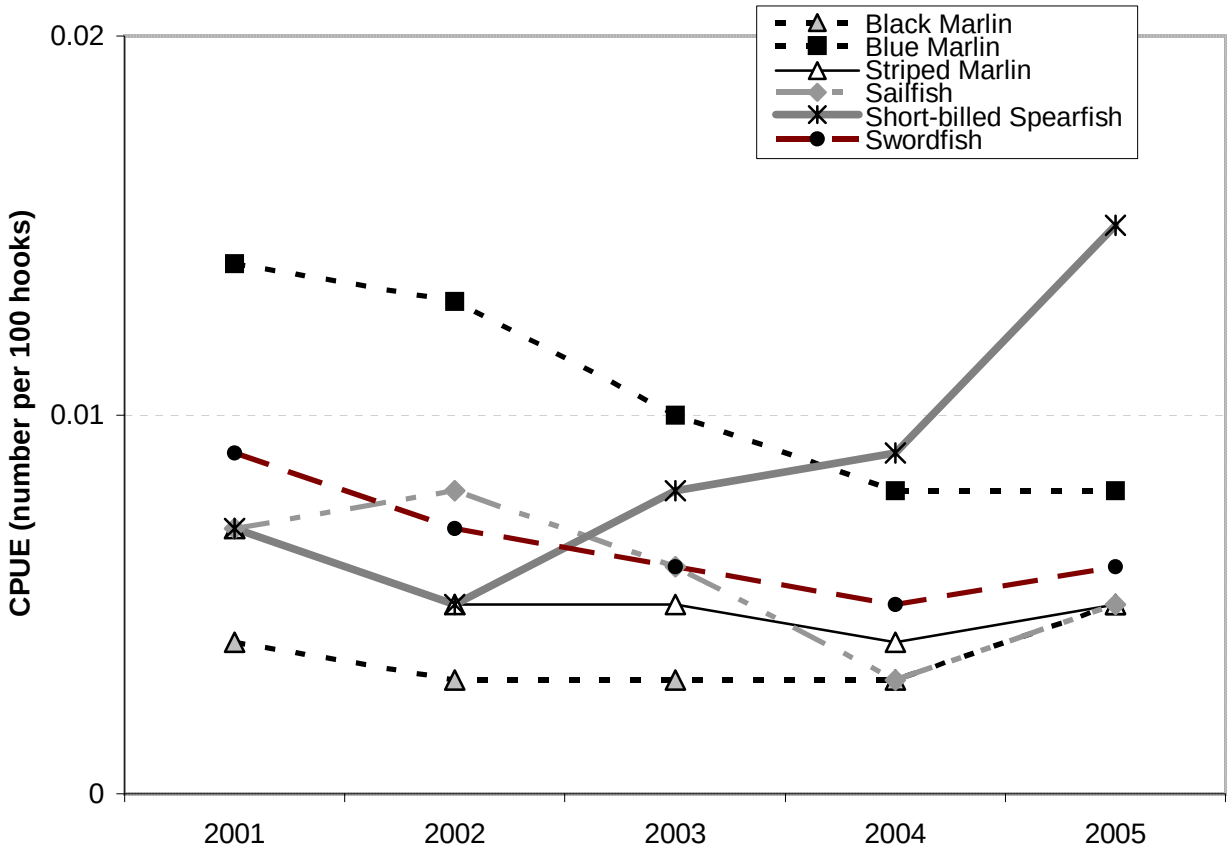

Figure 3. Annual trends of billfish CPUE (number per 100 hooks) for the Fijian longline fleet.

The species composition of the tuna catch is primarily made up of albacore (typically more than 60%), followed by yellowfin, then bigeye. The second and third quarters (April–September) account for the highest catches of tuna by the Fijian longline fleet. The seasonal catch for albacore was highest in the third quarter and lowest in the first, whereas the highest yellowfin and bigeye catches are typically during the second quarter (corresponding to the period with the highest sea surface temperature) and lowest during the fourth.

Figure 4 shows the trends in tuna species composition for the domestic longline fleet. In the early 1990s, when fishing activity was relatively low, albacore accounted for about 50% of the tuna catch but then increased to around 70% - 80% from 1995 onwards with 68% being recorded in 2005. Trends of yellowfin catch throughout the years have remained at 15-25% of total tuna catch with the highest seen in 2004. The percentage composition of bigeye increased progressively from 2001, peaking in 2003 and then declining slowly in 2004 and 2005.

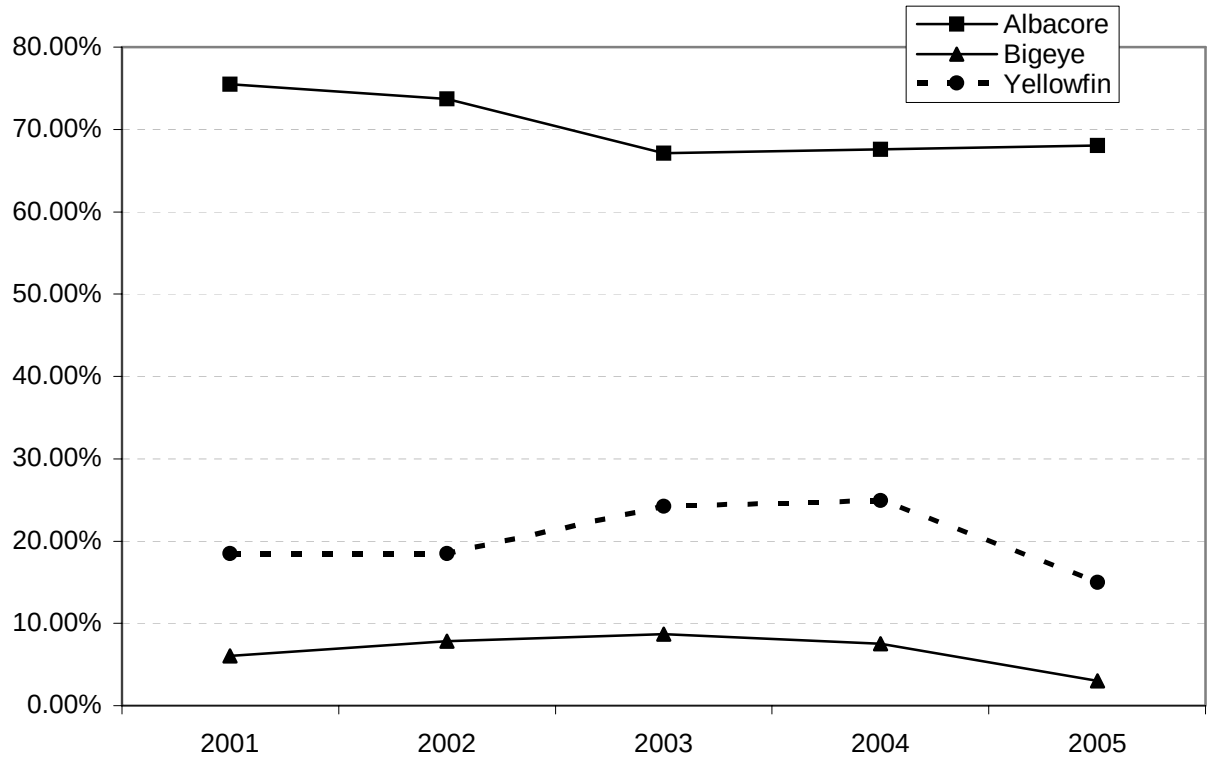

Figure 4. Trends in tuna species composition (by weight) for the Fiji Domestic longline fleet fishing within Fiji's EEZ.

2.1.2 Pole and Line

The Fiji domestic pole and line began in 1976. Averaging around 4,000mt, the domestic fleet had continually supplied PAFCO with mainly skipjack and yellowfin tuna. Unlike the longline fleet, the number of pole and line vessels has decreased over the years with quite a few converting into longliners. No data was provided for the pole-and-line activity.

2.2 F.A.D – Trolling

The Government engaged itself in the deployment of FADs in 1998. They had deployed and maintained FADs around the country to assist the industrial sector (pole-and-line and purse seine) when they were operational, as well as assisting the small-scale sector. The catches from the small-scale tuna fishing for the years 2002 – 2005 is represented in the table 3 below.

Table 3. Estimates of total catch from the small scale artisanal trolling fishery.

Year	Number of Fishers	Total Catch (mt)
2002	4	2.6
2003	11	91.7
2004	4	27.7
2005	4	41.1

3 MARKETING OF CATCHES AND BYCATCHES

In 2005, Fiji exported 66% of sashimi grade tuna to Japan and America. The remaining 34% was exported to China and other countries. Fiji's billfish are also exported mainly to the US, buying close to 43% of the total billfish exports.
Besides the US, the non-target species is exported to China, Thailand, New Zealand and Japan.

Albacore and skipjack are either processed at the local cannery (PAFCO) or exported to Pago Pago. The Pacific Fishing Company (PAFCO) receives its raw materials directly from the domestic and foreign vessels unloading at the Levuka port or indirectly through Freezer Containers from the local fishing companies. The raw fish material supplied to PAFCO is exported as three products i.e. as canned fish, packed tuna loins, and as fishmeal. The canned tuna is mainly exported to the American and Canadian (65%) markets and approximately 25 % to Kobe in Japan. The tuna loins are exported to Bumble Bee in Santa Fe, America for further processing whereas the fishmeal is shipped out mainly to the Philippines and Japan.

The remainder of the bycatch and other damaged fish are sold locally at supermarkets, restaurants or directly to consumers.

4 ONSHORE AND MONITORING DEVELOPMENTS

Onshore developments include the establishment of new fish-processing factory bringing the total number of processing factories in Suva to 5. Processing has moved towards down-streaming products from not just the traditional "whole fish" exports but also to value added products such loins and tuna pouches targeting the EU markets.

Fiji is still serious in the monitoring of its offshore fisheries resources. Since its inception in July 2002, the Fisheries department still maintains its observer programme headed by a national observer coordinator. The team comprises of 11 fully-fledged observers who are continually placed on Fiji licensed vessels. The programme also encompasses port sampling during unloadings and transhipments. The monitoring of vessels unloading their catch at the Levuka port has increased with an enforcement officer carrying out port sampling duties (and complimenting SPC port samplers) as well as carrying out dockside boarding on vessels.

The Enforcement Section is also responsible for carrying out surveillance activities in harbor and at sea in collaboration with the Fiji Navy. This is done by accompanying naval patrol vessels and EEZ surveillance flights during their quarterly surface and aerial patrols.

5. FUTURE DEVELOPMENTS

The Department, in collaboration with the fishing industry, are looking at avenues to strengthen the industry in terms of increased processing and value adding, efficient vessel servicing, and the provision of support and welfare services for the crews. Plans are under way to develop a new multi-purpose fisheries port in the head of Suva bay to cater for increasing trade volumes as the present wharf is limited by the lack of room to expand. This port will offer greater bunkering and provisioning services, encouraging the unloading of fish and in turn help reduce the number of transhipments done out at the high-seas.

Plans are underway to put in place an Ecosystem Approach Management Plan in 2007 in line with the WCPFC's move towards incorporating the holistic approach to the management of its fish stocks.