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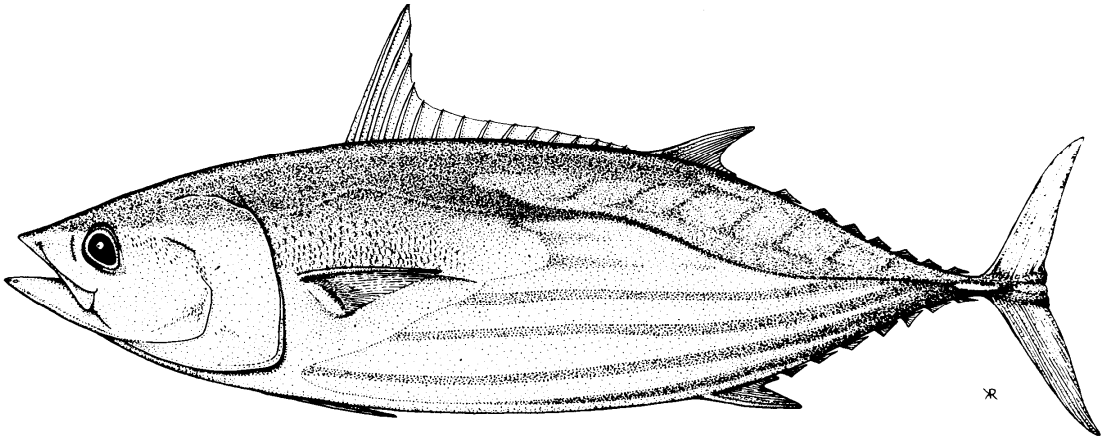
INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS

WCPFC-SC4-AR PART 1/WP-22

PALAU

SC4 Fisheries Report

Tuna fisheries in the waters of the Republic of Palau



July 2008

PALAU FISHERIES EXECUTIVE SUMMARY

The historic tuna fishery (1950-1980) in the Palau EEZ was dominated by the distant water longline fleets of Japan and Chinese Taipei. Effort increased from the late 1950's to exceed 10 millions hooks per year 1979. Tuna catches exceeded 6,000 mt in 1979, dominated by yellowfin tuna, with bigeye catches averaging 1,000 mt per year between 1950 and 1980. Catches of other species exceeded 1,500 mt per year by the mid 1970's, dominated by shark, black marlin and Indo-Pacific sailfish. Japanese longline effort in the Palau EEZ declined from the early 1980s, although effort appears to be increasing since 2005. Longline effort has been dominated by the fleet of Chinese Taipei and fleet of Chin (since 1990). Up to 300 vessels have operated within the EEZ in any one year, with the number fluctuating between 85 and 164 vessels since 2000. Since 2000, total longline effort in the Palau EEZ has varied between 6.1 and 17.2 million hooks per year, with the highest estimates of effort reported in 2005 and 2006.

Total catches from the Palau EEZ have displayed a similar trend to effort, with total catches exceeding 5,000 mt in 2006. Bigeye tuna have dominated the catches since late 1980s, likely due to longline fleets switching targeting from yellowfin to bigeye tuna. Bigeye catches exceeded 2,000 mt in 2005 and 3,300 mt in 2006, much higher than historic levels. Recent catches has also displayed and increase in median size, with very large bigeye dominating the catches. Catches of yellowfin tuna exceeded 1,700 mt in 2005 and 2006, much lower than the high historic catches estimated in the late 1970s. Catches of other species are much smaller than for these two species of tuna, dominated by blue marlin and swordfish; however, catches of these two species have been less than 100mt each in recent years.

Effort and catch by the purse-seine fishery operating in the Palau EEZ have displayed large inter-annual variation, and declined to very low levels between 1997 and 2002. However, there have been increases in purse-seine catch and effort in the EEZ since 2003. Most effort has been recorded by the fleet of Japan, and has been dominated by associated sets (logs, FADs) in most years. Low levels of pole-and-line effort have been reported from the Palau EEZ since 1979.

1. Brief Introduction

The longline fishery in the Palau EEZ is the most important contemporary fishery. The longline fishery has been dominated by distant water logline fleets of Japan and Chinese Taipei since the 50's. Japanese longline effort declined in 1980s but increasing, while the Chinese Taipei and Chinese fleet has been dominant since 1990. Up to 300 vessels have operated within the EEZ in any one year, with the number of vessels fluctuating between 85 and 164 vessels since 2000 (Figure1).

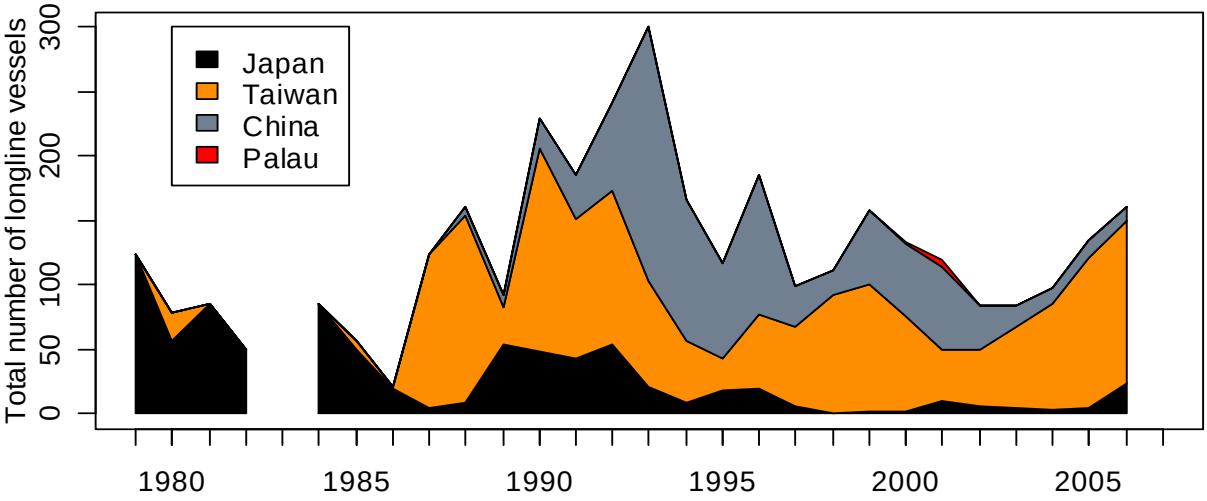


Figure1. Number of longline vessels by fleet operating in the Palau EEZ, 1979-2006. Data for 2007 are incomplete and not plotted. No data available for 1983.

Total catches exceeded 5,000mt in 2006. Bigeye tuna has been the dominant species since the late 1980. Bigeye catches, exceeded 2,000mt in 2005 and 3,300mt in 2006, and represent 3-6% of total WCPO bigeye catch. Yellowfin tuna catch exceeded 1,700mt in 2005 and 2006, much lower than the high catches estimated in the late 1970s. Besides these two species of tuna, there are much smaller catches of other species dominated by blue marlin and swordfish; however, catches of these two species have been less than 100mt tons each in recent years.

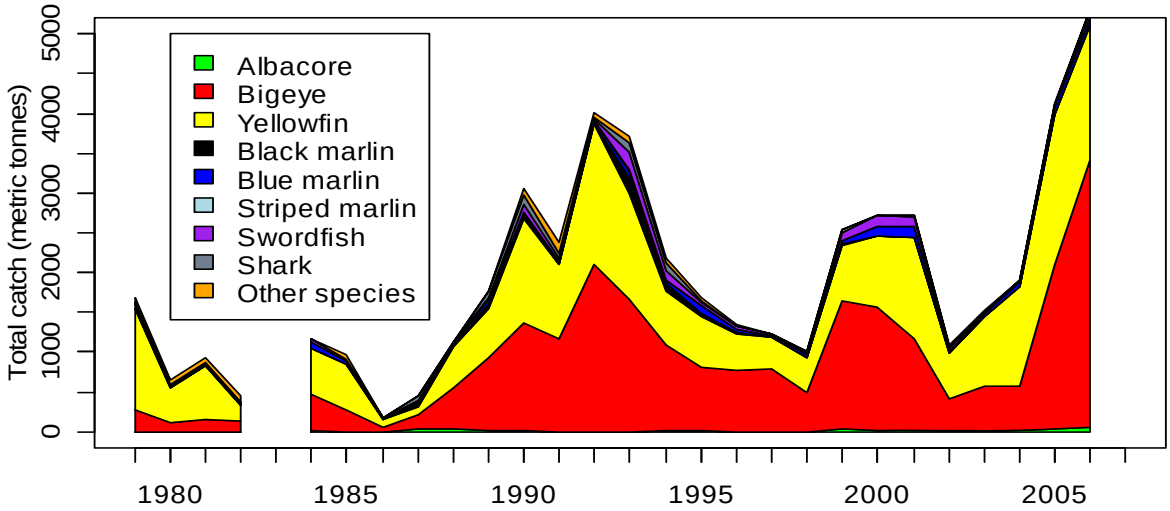


Figure2. Estimates of total longline catches of the main species by the longline fishery in the Palau EEZ, 1979–2007. Data for 2007 are incomplete and are not plotted. No logsheet data are available for 1983.

TUNA FISHERIES

2.1 Fleet Structure

Table 1 shows the breakdown of domestic based foreign vessels licensed to fish in Palau waters over the last five years. Still, Chinese Taipei had been the dominant fleet.

Table1. The number of vessels licensed to fish in Palau waters by fleet (2003–2007).

LONGLINE								*Purse Seine*
YEAR	CN	SRV	IND	BLZ	JP	TW	TOTAL	JAPAN
2003	6	0	0	0	14	70	121	31
2004	2	0	0	9	12	77	126	26
2005	2	2	0	6	12	107	156	27
2006	0	0	7	8	24	198	266	29
2007	0	0	0	0	36	101	166	29

2.2 Longline Effort

The central-eastern area of Palau's EEZ is where most longline effort and catch are focused. The Chinese and Chinese Taipei Fleets operate mainly in the central eastern area year-round as opposed to the recent operation of the Japanese fleet (Figure 3). The Japan longline effort is in the south-west of the EEZ mostly in the first and last quarters of each year.

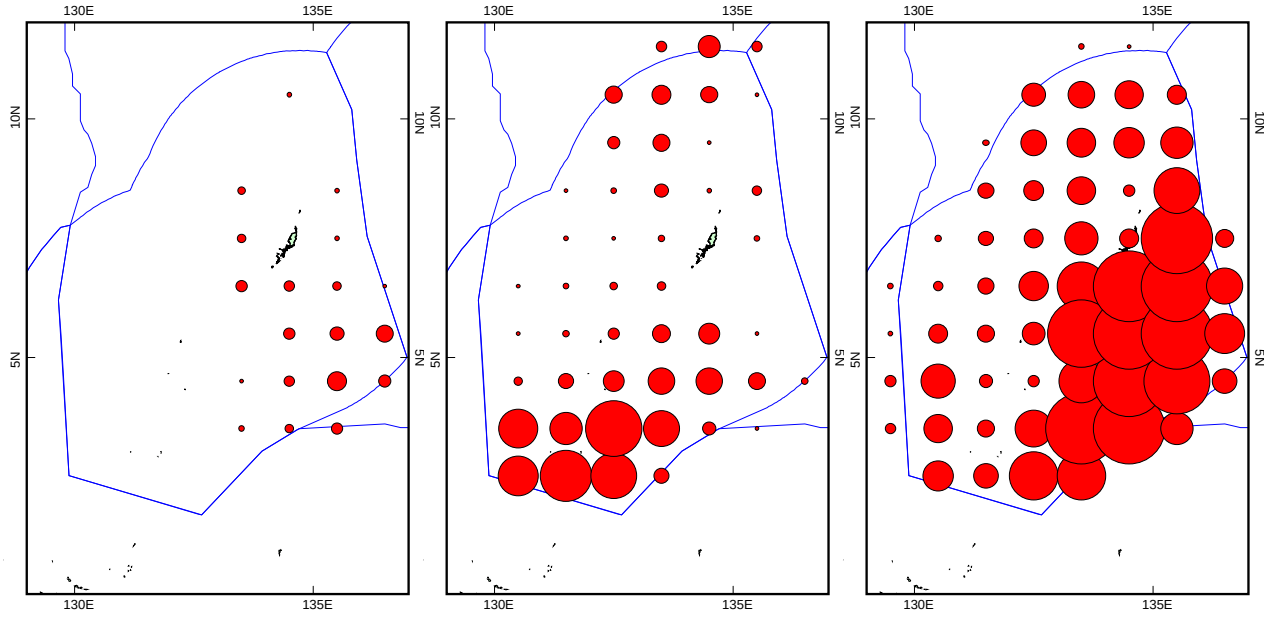


Figure3. Distribution of Chinese (left), Japan (middle) and Chinese Taipei (right) longline effort for 2007

Purse-seine fisheries operating in the Palau EEZ have displayed larger intern-annual variation and declined to very low levels between 1997 and 2002 in regards to catch and effort. However, an increased in catch and effort have been recorded since 2003. Low levels of pole-and-line effort have been reported from the Palau EEZ since 1979.

Chinese and Japanese fleets for the most part target bigeye (about 60% of catch of weight for these two fleets) and the Chinese Taipei fleet targeted yellowfin. However, the proportion of bigeye in catches by Chinese Taipei longline fleet has increased since 2005, a result of a switch targeting bigeye. The trend for all fleets towards targeting bigeye is also observed in the catch rate data, with increasing bigye catch rates by all fleet since 2003, in terms of weight and number of bigeye per hundred hooks (Table 2, 3 and 4). In contrast, yellowfin catches rates by fleet have generally been stable or declining in recent years. The Japanese and Chinese fleet have generally been stable or declining in recent years. The Japanese and Chinese fleet also report relatively high proportions of billfish, approaching 20% of the total catch by weight in recent years. Catch rate also shows increasing catch rates of swordfish and blue marlin by Japanese and Chinese fleet since 2005.

Table 2: Estimates of the catch by species for the Chinese Taipei longline fleet, 2003–2007 in Palau waters. (Source : Best estimate of logsheet and unloadings data; 2007 data are provisional)

			Catch (metric tonnes)								
Year	Boats	Trips	Bigeye	Yellowfin	Black Marlin	Blue Marlin	Striped Marlin	Sword-fish	Others	Total	% Cov. (Logs)
2003	63	712	583	964	1	54	1	10	30	1,643	69%
2004	82	1,133	693	1,694	8	69	2	16	13	2,495	56%
2005	117	1,503	1,831	1,820	3	65	1	8	42	3,768	66%
2006	138	1,859	2,752	1,700	2	35	0	10	44	4,543	78%
2007	128	1,275	1,076	1,196	0	7	0	9	20	2,309	100%

Table 3: Estimates of the catch by species for the Chinese longline fleet, 2003–2007 in Palau waters. (Source : Best estimate of logsheet and unloadings data; 2007 data are provisional)

			Catch (metric tonnes)								
Year	Boats	Trips	Bigeye	Yellowfin	Black Marlin	Blue Marlin	Striped Marlin	Sword-fish	Others	Total	% Cov. (Logs)
2003	16	106	48	34	0	7	1	3	1	95	81%
2004	12	115	45	24	0	6	0	3	0	78	61%
2005	13	438	315	107	6	32	1	20	4	486	50%
2006	11	278	335	62	10	33	0	21	2	464	65%
2007	2	19	16	3	0	1	0	0	0	21	100%

Table 4: Estimates of the catch by species for the Japanese offshore longline fleet, 2003–2007 in Palau waters. (Source : Logsheet data; 2007 data are provisional)

			Catch (metric tonnes)								
Year	Boats	Trips	Bigeye	Yellowfin	Black Marlin	Blue Marlin	Striped Marlin	Sword-Fish	Others	Total	% Cov. (Logs)
2003	5	9	30	14	0	1	0	1	3	50	97%
2004	3	21	37	31	1	2	1	4	0	77	67%
2005	4	16	56	29	0	3	2	4	2	97	83%
2006	26	98	626	200	2	38	0	72	19	957	100%
2007	27	115	430	370	5	40	1	82	16	945	100%

Table 5: Estimates of the catch by species for the Japanese offshore purse seine fleet, 2003–2007 in Palau waters. (Source : Logsheet data; 2007 data are provisional)

			Catch (metric tonnes)				
Year	Boats	Trips	Skipjack	Yellowfin	Bigeye	Others	Total
2003	13	17	1,050	1,043	10	34	2,137
2004	11	17	1,652	584	38	51	2,325
2005	7	13	1,128	857	1	29	2,015
2006	6	18	2,912	1,164	0	26	4,102
2007	4	12	264	179	0	2	445

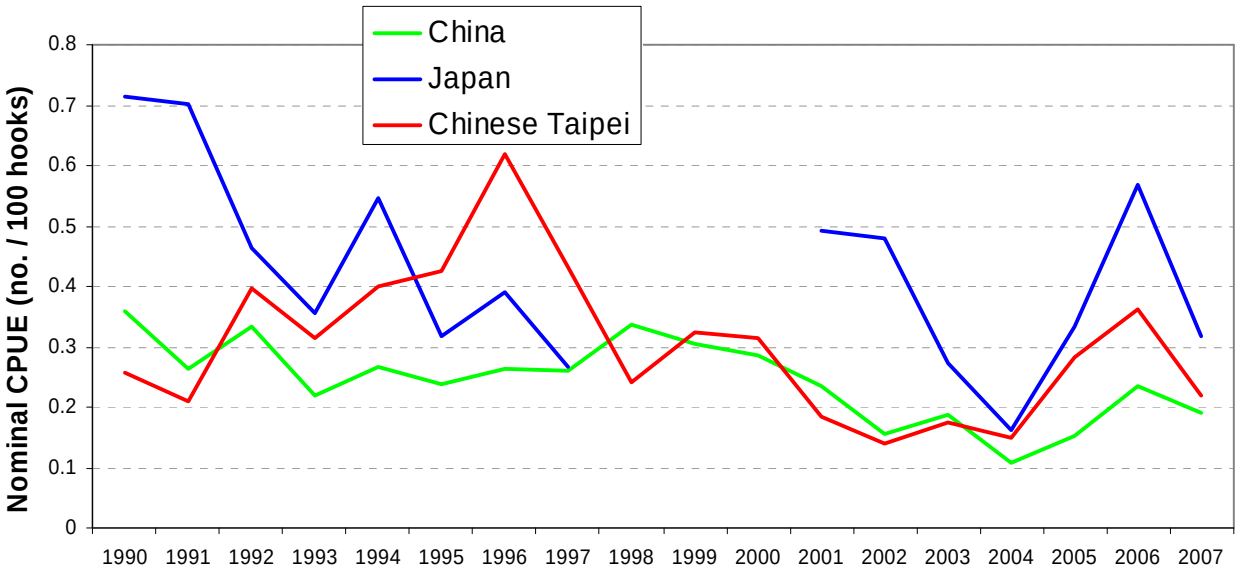


Figure 4. Annual trends in bigeye nominal CPUE (number per 100 hooks) for longline fleets operating in the Palau EEZ, 1990–2007

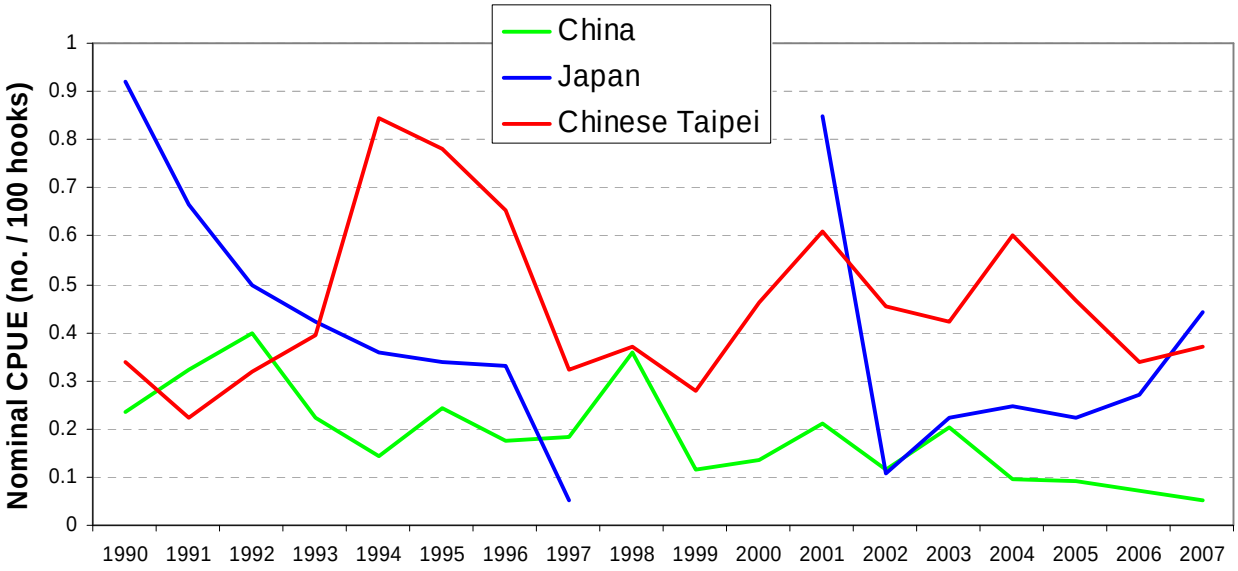


Figure 5. Annual trends in yellowfin nominal CPUE (number per 100 hooks) for longline fleets operating in the Palau EEZ, 1990–2007

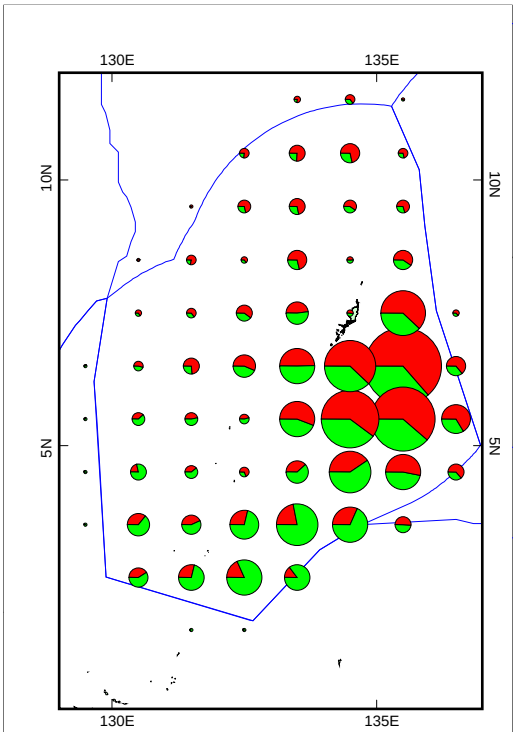


Figure6. Distribution of longline catch (metric tonnes) by species in the Palau EEZ, 2002-2007. (Red – Bigeye; Green – Yellowfin)

2.3 **Size of fish**

Although limited observer data are available for Palau, extensive port sampling programmes have produced a large amount of size of data for the major species captured in Palau EEZ.

Since the early mid 1990s, nearly all bigeye captured by the longline fisheries in the Palau EEZ have been greater than 120 cm FL (fork length) (Figure 7). Bigeye catches in most years contain one or two strong size modes. Since 2002, a strong cohort of bigeye has contributed to the catches of bigeye from the Palau EEZ, with the modal size increasing from approximately 115cm FL in 2002 to 150 cm FL in 2005 and 2006.

Yellowfin catches from the Palau EEZ are also dominated by one or two strong modes for most years, with most yellowfin being greater than 120 cm FL (Figure 8). Similar to bigeye, yellowfin from the Palau EEZ are extremely large. Few yellowfin less than 100cm FL have been reported from the Palau EEZ, especially since 2003.

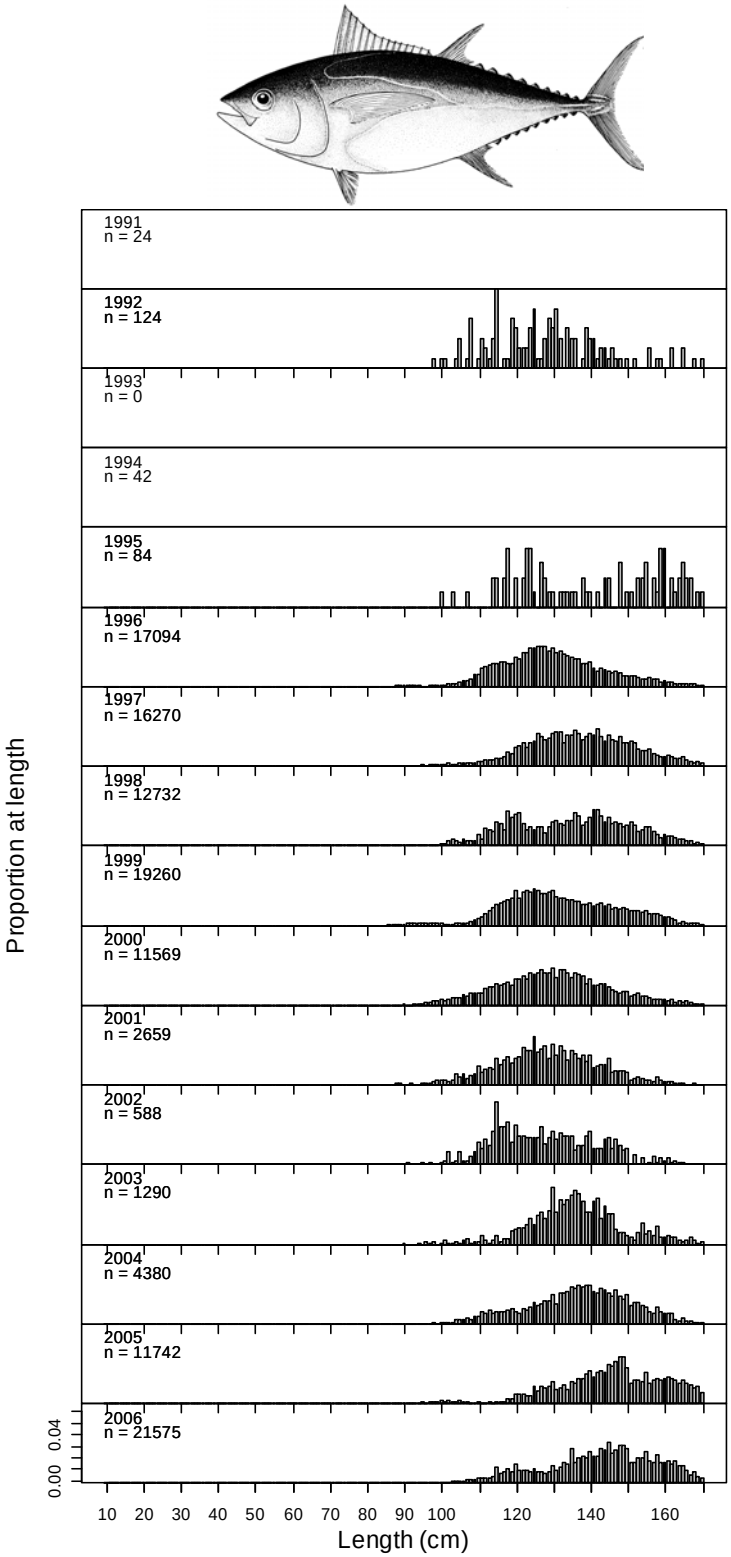


Figure7. Annual length-frequency distributions of bigeye captured by longline-method fisheries in the Palau EEZ, 1991–2006. Source, size-frequency data held by SPC. Lengths measured as fork lengths (FL). n, denotes the total number of fish measured for each year.

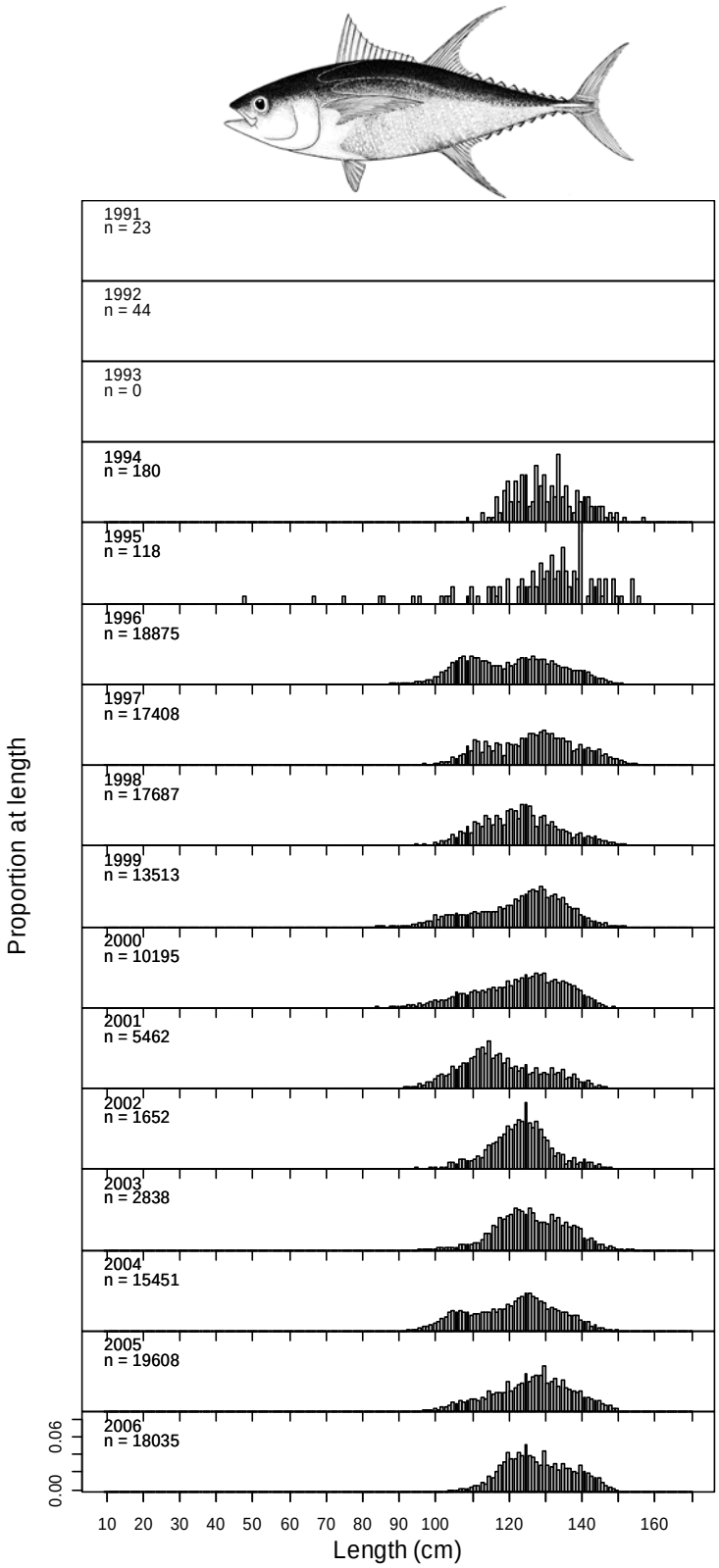


Figure8. Annual length-frequency distributions of yellowfin captured by longline-method fisheries in the Palau EEZ, 1991–2006. Source, size-frequency data held by SPC. Lengths measured as fork lengths (FL). n, denotes the total number of fish measured for each year.

3. Final market destinations of catches

All fresh chilled sashimi-grade tuna, once offloaded and packed, are air-freighted within 24hrs to sashimi markets in Japan (95%), U.S mainland, and Chinese Taipei.

By-catch, including billfish are stored in port facilities until being shipped by commercial carriers to canneries in the Philippines, Singapore and Chinese Taipei.

Table 6 and 7 show the exports by species for the Chinese Taipei and Chinese longline fleets. Comparison with logsheet-derived catches (Table 2) suggest that (i) there may be either some instances of under-reporting on logsheets, and/or (ii) the estimates of average weight used to determine catch for the logsheet data still need review.

Table 6: Export by species for Chinese Taipei longline fleet 2003-2007. (2007 data provisional)

	Catch (in metric tonnes)												
Year	MAR	ALB	BET	BLM	BUM	LAG	MLS	OTH	PBF	SFA	SWO	YFT	Total
2003			523.57	1.54	26.85	0.18	1.90	0.06	3.01		2.74	1064.95	1624.80
2004	0.07	0.09	678.25	1.36	42.59		0.64				6.50	1671.70	2401.20
2005		0.53	1630.29	2.44	26.39				10.16	0.23	2.19	1825.31	3497.54
2006		0.50	748.32	3.11	4.99		0.04	1.38	2.92		0.56	753.04	1514.86
2007		0.13	1746.74		8.93		0.00		18.19		19.87	2205.37	3999.23

Table 7: Export by species for the Chinese longline fleet, 2002 – 2006.

	Catch (in metric tonnes)													
Year	MAR	ALB	BET	BLM	BUM	DOL	LAG	MLS	OTH	PBF	SFA	SWO	WAH	YFT	Total
2002		0.20	225.94	13.35	33.24					0.30		43.33		111.70	428.05
2003		0.02	50.20		13.74			0.79				1.61		34.59	100.95
2004			36.34		8.94							2.07		17.81	65.16
2005			280.77	0.02	48.42					2.06		18.96		145.09	495.31
2006		0.08	105.58		23.89	0.04			0.48		1.55	12.99	0.01	51.08	195.69

4. Onshore Development

Still, at the moment there are three (3) locally-based foreign fishing entities fishing through access agreement and a bilateral agreement with the Japanese operating out of it homeport. Two locally owned fishing entities which has an access agreement with the Republic of Palau has been in-active ever since their agreement was finalized.

5. Developments concerning tuna fisheries research and statistics, such as port sampling and observers programs.

On-going extensive port sampling is conducted on all landed catch collecting fisheries data and information. In addition to fisheries Port Samplers, Customs Officers (Bureau Tax & Revenue) are also present to ensure proper documentations of fisheries products, weights, taxes and destination during preparation before shipping.

Following from a three week Regional Observers Training Course conducted by SPC/OFP and FFA in Palau in 2006, in middle July 2008 a one week sub-regional Observers Coordinator Workshop also took place in Palau. Two week in-country observers training on longline and purse seine was also conducted by SPC/OFP and FFA. With all this training Palau is now working on achieving at least 10% observers coverage then on to much high level coverage in two years time.