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ANNUAL REPORT TO THE COMMISSION
PART 1: INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS

WCPFC-SC6-AR/CCM-01

AUSTRALIA

Australian Government
Bureau of Rural Sciences

ANNUAL REPORT TO THE WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION

PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS 2009

AUSTRALIA

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June 2010

Scientific data was provided to the Commission in accordance with the decision relating to the provision of scientific data to the Commission on the 30th April 2010	**YES**

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Summary

Australian commercial fisheries for highly migratory species in the Western and Central Pacific Fisheries Commission (WCPFC) Convention Area are managed as part of the Eastern Tuna and Billfish Fishery (ETBF) (mainly a longline fishery with a small minor line component) and Eastern Skipjack Fishery (purse seine fishery). The majority of fishing occurs in the longline sector of the ETBF and as such, is the focus of the annual report.

Total catches reported in logbooks for the ETBF decreased from 5768 t in 2008 (5742 t longline, 26 t minor line) to 5403 t in 2009 (5271 t longline, 132 t minor line). This is a decline from a peak of 8229 t in 2002. Longline fishing effort in the fishery has fallen from a peak of 12.40 million hooks in 2003 to 8.82 million hooks in 2009; however, it is an increase from 2008 fishing effort levels (8.06 million hooks). The decrease in fishing effort from 2003 levels is mainly a result of the strength of the Australian dollar, increased operating costs and the surrender of permits under the structural adjustment component of the recent Australian Government *Securing Our Fishing Future* package. Fifty-five vessels reported longlining in the WCPFC Convention Area during 2009. Longline logbook catches of albacore tuna increased from 1084 t in 2008 to 1342 t in 2009. Longline catches of bigeye tuna decreased from 895 t in 2008 to 508 t in 2009. Longline catches of skipjack tuna decreased from 18 t in 2008 to 10 t in 2009. Longline catches of yellowfin tuna also decreased from 1475 t in 2008 to 1181 t in 2009. Longline catches of striped marlin decreased from 374 t in 2008 to 325 t in 2009. Longline catches of swordfish decreased from 1240 t in 2008 to 1111 t in 2009.

There were 11 active minor line vessels during 2009. The number of vessels reporting using minor line has steadily decreased from a peak of 52 vessels in 2001. This is partly due to the surrender of 49 percent of permits under the structural adjustment component of the recent Australian Government *Securing Our Fishing Future* package. Annual minor line effort decreased from 310 lines in 2008 to 164 lines in 2009. In the 2008–09 fishing season, there were no active vessels in the Eastern Skipjack Fishery.

The Australian Fisheries Management Authority (AFMA) observer program has deployed observers on domestic longliners since 2001 as part of a program to test the effectiveness of seabird mitigation devices. Since July 2003, observers have been deployed more broadly across the fishery with the aim of collecting additional fishery data, including information on fishing gear and the size and species composition of catches. In 2009, observers monitored 564 408 hooks in the longline fishery (6.4 percent of the total number of hooks deployed).

AFMA is currently working towards the introduction of quota based management in the form of individually transferable quotas (ITQs) into the ETBF scheduled for March 2011.

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Background

Australian commercial fisheries for highly migratory species in the Western and Central Pacific Fisheries Commission (WCPFC) Convention Area are managed as part of the Eastern Tuna and Billfish Fishery (ETBF) (mainly a longline fishery with a small minor line component) and Eastern Skipjack Fishery (purse seine fishery).

Longline

Japanese longliners began fishing off Australia's east coast in the late 1950s. Sporadic domestic longline for yellowfin tuna[a] commenced soon after in the early 1960s. The declaration of the Australian Fishing Zone (AFZ) in 1979 resulted in Japanese longliners being licensed under bilateral agreements. Japanese longliners were excluded from the AFZ from 1998. In the early 1980s, longlining increased markedly after successful air freighting of fresh-chilled tuna to Japan. There was a second wave of expansion of effort in northern Queensland waters in the 1990s resulting in high catch rates of yellowfin and bigeye tuna.

In the mid-1990s, improved access to swordfish markets in the United States of America prompted many ETBF fishers to move to southern Queensland ports such as Mooloolaba to target swordfish. Longlining for swordfish has declined since early 2005 because of high fuel and bait costs, and changes in the exchange rate.

Increased operating costs and fluctuating market returns saw many longliners targeting lower-value albacore tuna during the first half of 2006. Recent decreases in the price of albacore tuna and unfavourable export conditions, such as a strengthening Australian dollar, has prompted some longliners to move back to targeting bigeye tuna and swordfish.

Pole-and-line, purse seine and minor line

The pole-and-line fishery expanded rapidly in the 1950s with the introduction of live-bait-and-pole techniques for southern bluefin tuna and sporadic catches of skipjack and yellowfin tuna. Pole-and-line fishing decreased in the late-1990s with little to no fishing by Australian fleets in the WCPFC Convention Area since then.

The introduction of purse seining in the 1970s boosted catches further. After peaking at 7000 t in the early 1990s, purse seine catches of skipjack have decreased dramatically with zero to very low catches in recent years. In the eastern AFZ, skipjack tuna are occasionally fished from southern New South Wales to north-eastern Tasmania.

Recreational fishing

Recreational and charter anglers have taken tuna and billfish off eastern Australia since the early 1900s. During the 1970s, recreational vessels capable of operating beyond 20 nm became more available. Consequently, angling for tuna and billfish grew in popularity from this time. The continental shelf is less than 8 nm wide in some places along the southeast coast of Australia, and anglers catch tuna and billfish from the shore at several locations. The Game Fishing Association of Australia (GFAA) was formed in 1938. By 2000, GFAA boasted a membership of more than 10 000 anglers, most based on the east coast of Australia. Many gamefishers tag and release much of their catch, especially marlins.

[a] Scientific names found in Appendix 1

Flag State reporting

Domestic longlining catch and effort

Unless otherwise stated, all catch and effort levels in this document are derived from those reported in Australian Fisheries Management Authority (AFMA) catch and effort logbooks. Fifty five vessels reported longlining in the WCPFC Convention Area during 2009, down from a peak of 180 in 1997 (Figure 1). Although total longline fishing effort increased from 8.06 million hooks in 2008 to 8.82 million hooks in 2009 (Table 1), there has been an overall downward trend from the peak effort of 12.40 million hooks deployed in 2003. This decline is mainly a result of the strength of the Australian dollar, increased operating costs and the surrender of permits under the structural adjustment component of the recent Australian Government *Securing Our Fishing Future* package.

Total longline catches reported in logbooks in the ETBF decreased from 5742 t in 2008 to 5271 t in 2009, despite the greater number of hooks deployed. This is down from a peak of 8229 t in 2002. Historical annual catches for the Australian fleet, by primary species in the WCPFC Convention Area are shown in Figure 2. Catches of albacore tuna increased from 1084 t in 2008 to 1342 t in 2009. Catches of bigeye tuna decreased from 895 t in 2008 to 508 t in 2009. Catches of skipjack tuna decreased from 18 t in 2008 to 10 t in 2009. Catches of yellowfin tuna also decreased from 1475 t in 2008 to 1181 t in 2009. Catches of striped marlin decreased from 374 t in 2008 to 325 t in 2009. Catches of swordfish decreased from 1240 t in 2008 to 1111 t in 2009; the total allowable catch (TAC; 1400 t) for swordfish is set on a financial year basis (1 July—30 June). Annual catch distributions of the main target species by the Australian longline fleet for 2005–09 are shown in Figure 3.

There were no catches of blue and black marlin recorded in 2005–2008; commercial retention of both species by domestic longliners has been banned since 1998. Annual catch estimates of non-target, associated and dependent species, including sharks, by the Australian longline fleet from 2005–09 are presented in Table 2. Historically, the vast majority of the catch and effort by Australian longliners has been taken within the Australian Fishing Zone (AFZ), with little effort on the adjacent high seas (Table 3.).

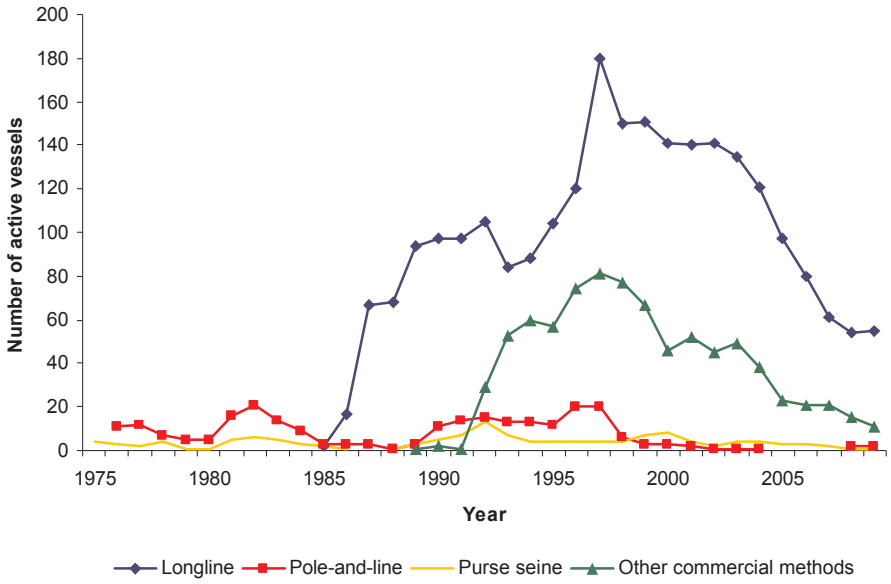


Figure 1. Historical annual vessel numbers for the Australian fleet, by gear (longline, purse seine, pole-and-line and other commercial methods [minor line including trolling, rod-and-reel and handline]) for the WCPFC Convention Area.
Source: AFMA catch and effort logbook database

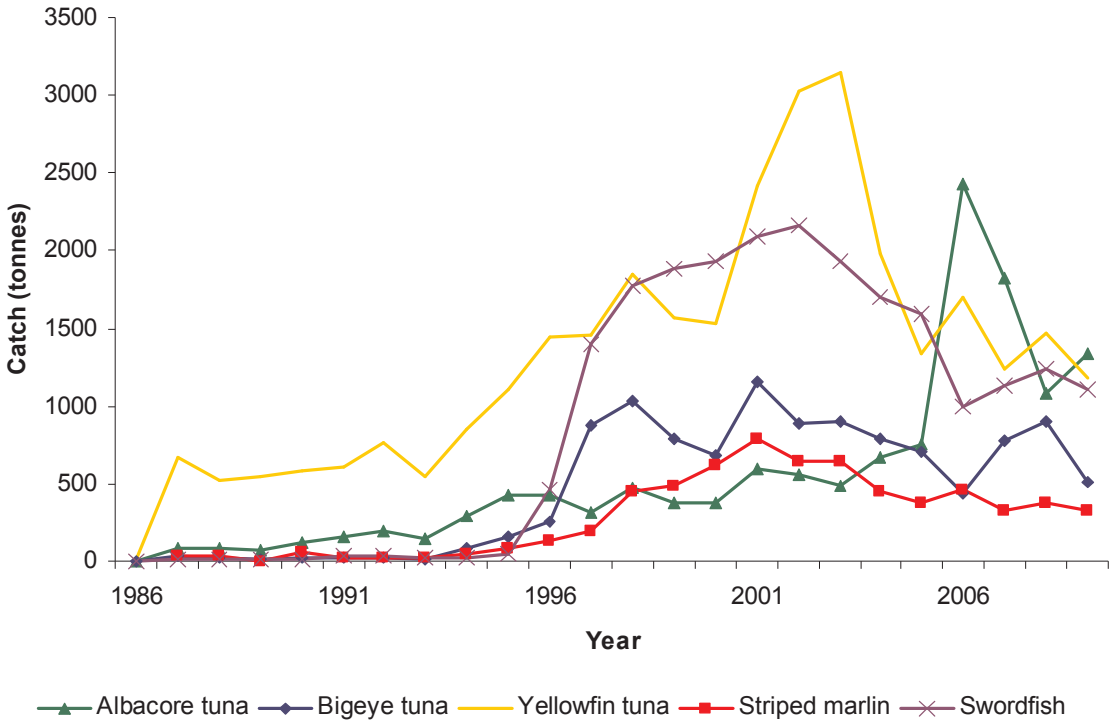
Table 1. Annual catch and effort estimates (whole weight) for the Australian fleet, by gear and primary species, for the WCPFC Convention Area, 2005–09.

Fishing method	Year	Effort (Longline–number of hooks (000's); purse seine & pole-and-line–search hours)	Primary species (t)					
			Albacore	Bigeye	Skipjack	Yellowfin	Striped marlin	Swordfish
All gears	2005	-	756.4	712.1	3.1	1335.6	376.2	1596.4
	2006	-	2429.9	452.8	94.2	1703.1	465.2	995.5
	2007	-	1834.1	891.9	13.4	1251.2	331.0	1132.5
	2008	-	1085.1	899.7	46.2	1478.3	374.2	1240.7
	2009	-	1342.3	618.8	12.6	1201.0	325.1	1111.2
Longline	2005	8949	752.8	709.0	2.1	1334.4	375.5	1595.8
	2006	8821	2428.5	437.9	48.7	1695.4	465.0	995.4
	2007	8444	1825.1	776.9	8.2	1236.9	330.4	1131.0
	2008	8059	1084.3	895.0	18.0	1475.2	374.2	1240.4
	2009	8821	1342.3	508.3	9.9	1181.3	325.1	1110.9
Purse seine	2005	475	0.0	0.0	0.0	0.0	0.0	0.0
	2006	495	0.0	0.0	44.0	0.0	0.0	0.0
	2007	354	0.0	0.0	0.0	0.0	0.0	0.0
	2008	309	0.0	0.0	15.2	0.0	0.0	0.0
	2009	396	0.0	0.0	0.0	0.0	0.0	0.0
Pole-and-line	2005	-	0.0	0.0	0.0	0.0	0.0	0.0
	2006	-	0.0	0.0	0.0	0.0	0.0	0.0
	2007	-	0.0	0.0	0.0	0.0	0.0	0.0
	2008	-	0.0	0.0	0.4	0.0	0.0	0.0
	2009	-	0.0	0.0	1.7	0.0	0.0	0.0
Other commercial methods[b]	2005	-	3.6	3.1	1.0	1.2	0.7	0.6
	2006	-	1.4	14.9	1.5	7.7	0.2	0.1
	2007	-	9.0	115.0	5.2	14.3	0.6	1.5
	2008	-	0.8	4.7	12.6	3.1	0.0	0.3
	2009	-	0.0	110.5	1.0	19.7	376.2	0.3

Source: AFMA catch and effort logbook database

[b] Minor line component including trolling, rod-and-reel and handline.

a)



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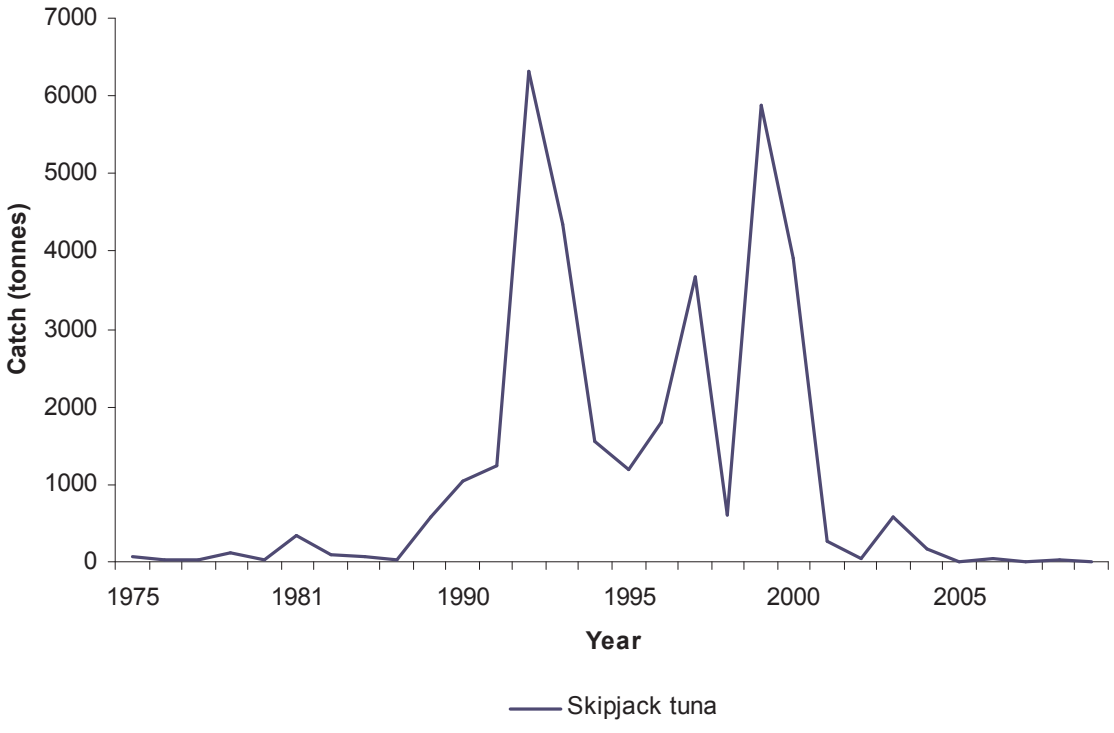


Figure 2 (a–b). Historical annual catch for the Australian fleet by primary species, for the WCPFC Convention Area.

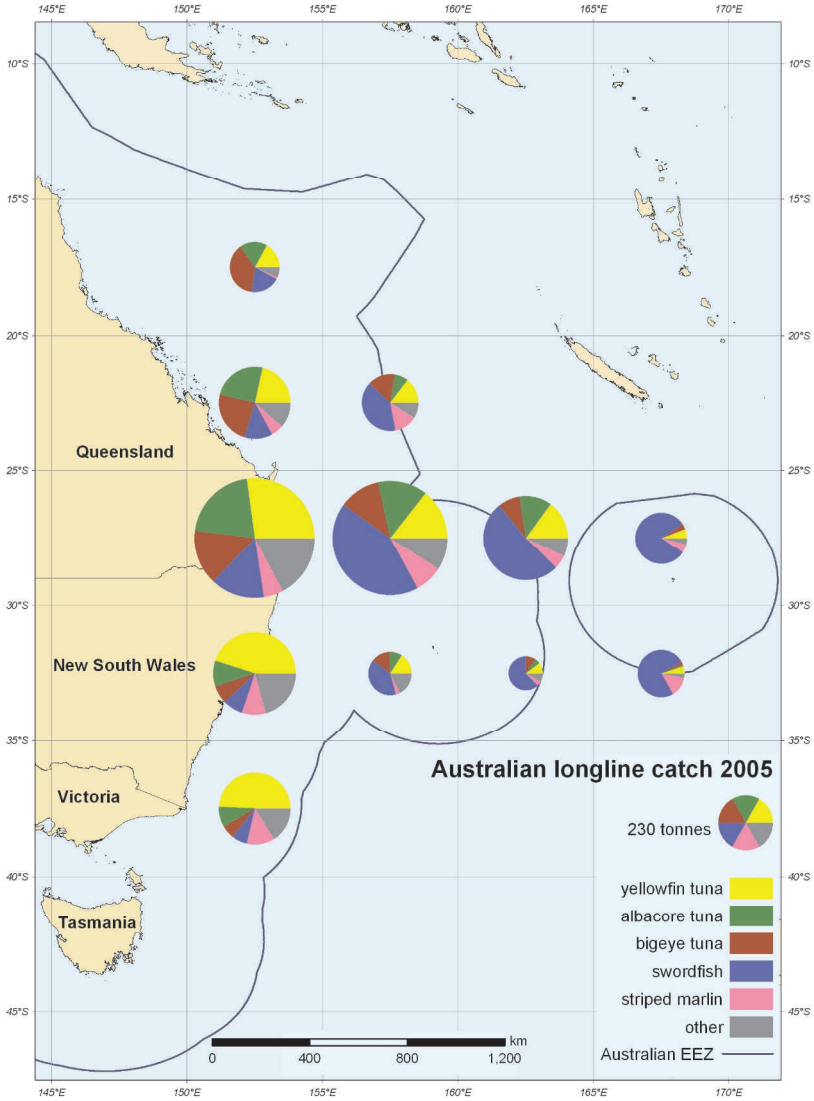
Source: AFMA catch and effort logbook database

Table 2. Annual retained catch estimates of non-target, associated and dependent species, including sharks, by the Australian fleet, by gear (longliners and other methods combined), in the WCPFC Convention Area, for 2005–09.

Group	Species	Longliners (t)					Other methods combined (t)				
		2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
Scalefish	Escolar	84.4	64.0	101.1	78.1	43.9	0.0	0.0	0.1	0.0	0.0
	Mahi mahi	2.6	2.3	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
	Moonfish	11.1	97.8	112.8	64.4	73.9	0.0	0.0	0.0	0.0	0.0
	Northern bluefin tuna	13.0	5.5	3.8	2.7	3.5	0.0	0.0	0.0	0.0	0.0
	Ocean sunfish	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oilfish	7.9	6.8	2.5	0.0	0.0	0.3	0.1	0.1	0.0	0.1
	Ray's bream	29.1	6.9	60.4	39.2	34.9	0.0	0.0	0.0	0.0	0.9
	Rudderfish	154.4	125	146.7	169	147.5	6.7	38.2	4.4	5.7	9.7
	Sailfish	189.1	117.6	101.8	160.5	131.1	0.1	0.1	0.1	0.0	0.1
	Shortbilled spearfish	13.5	25.8	13.0	10.9	13.8	0.0	0.0	0.0	0.0	0.0
	Southern bluefin tuna	37.3	6.3	6.9	22.4	194.8	0.0	0.0	0.0	0.0	10.0
	Wahoo	12.4	43.7	32.7	29.9	28.4	0.0	0.0	0.1	0.0	0.0
	Subtotal	554.8	503.4	583.7	578.1	671.8	7.1	38.4	4.8	5.7	20.8
Sharks	Blacktip sharks	3.2	3.9	2.6	0.0	0.0	0.0	0.0	0.1	13.9	0.3
	Blue shark	10.6	10.3	9.0	5.8	23.1	3.5	0.5	0.3	0.4	0.4
	Bronze whaler	20.0	15.2	10.8	7.8	14.8	1.9	3.2	1.2	2.1	2.4
	Dusky shark	0.0	2.3	0.0	2.6	3.9	0.0	0.0	0.0	0.0	0.0
	Hammerhead shark	0.0	6.9	2.4	2.5	3.3	0.0	0.0	0.0	0.0	0.0
	Oceanic whitetip shark	5.9	4.4	3.7	2.0	3.5	0.0	0.0	0.0	0.0	0.0
	Scalloped hammerhead	4.5	0.0	0.0	0.0	0.0	0.0	1.1	0.0	1.7	0.0
	Shortfin mako	63.9	43.5	35.7	50.5	64.7	4.0	2.7	0.8	2.3	1.9
	Silky shark	0.0	2.3	1.7	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Smooth hammerhead	2.0	0.0	0.0	0.0	0.0	0.4	0.6	0.2	0.0	0.0
	Thresher shark	1.4	0.0	0.0	0.0	0.0	4.2	3.3	0.4	1.2	2.6
	Tiger shark	6.2	4.5	2.8	2.8	4.3	0.0	5.9	0.0	4.2	0.0
	Subtotal	117.7	93.3	68.7	74.0	117.6	14	17.4	3.0	25.8	7.6
	TOTAL	**672.5**	**596.7**	**652.4**	**652.1**	**789.4**	**21.1**	**55.8**	**7.8**	**31.5**	**28.4**

Source: AFMA catch and effort logbook database

a)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Queensland
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Australian longline catch 2005
230 tonnes
yellowfin tuna
albacore tuna
bigeye tuna
swordfish
striped marlin
other
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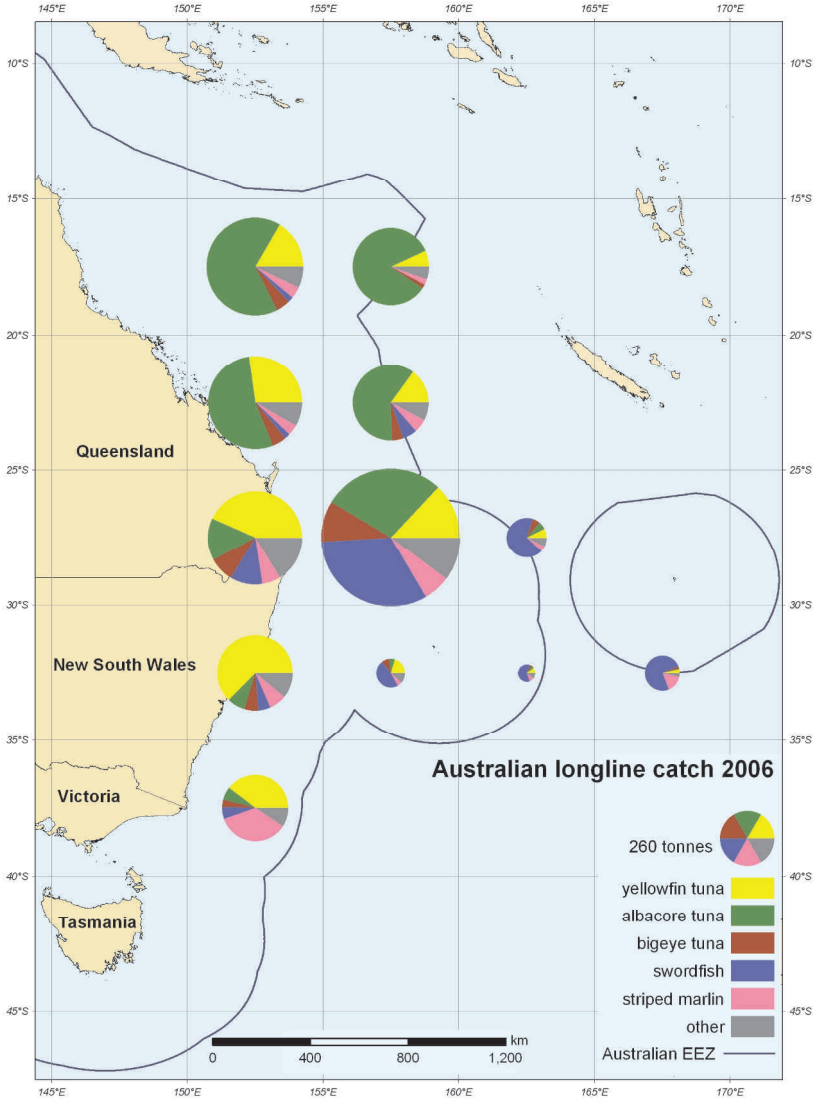
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Queensland
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Victoria
Tasmania
Australian longline catch 2006
260 tonnes
yellowfin tuna
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bigeye tuna
swordfish
striped marlin
other
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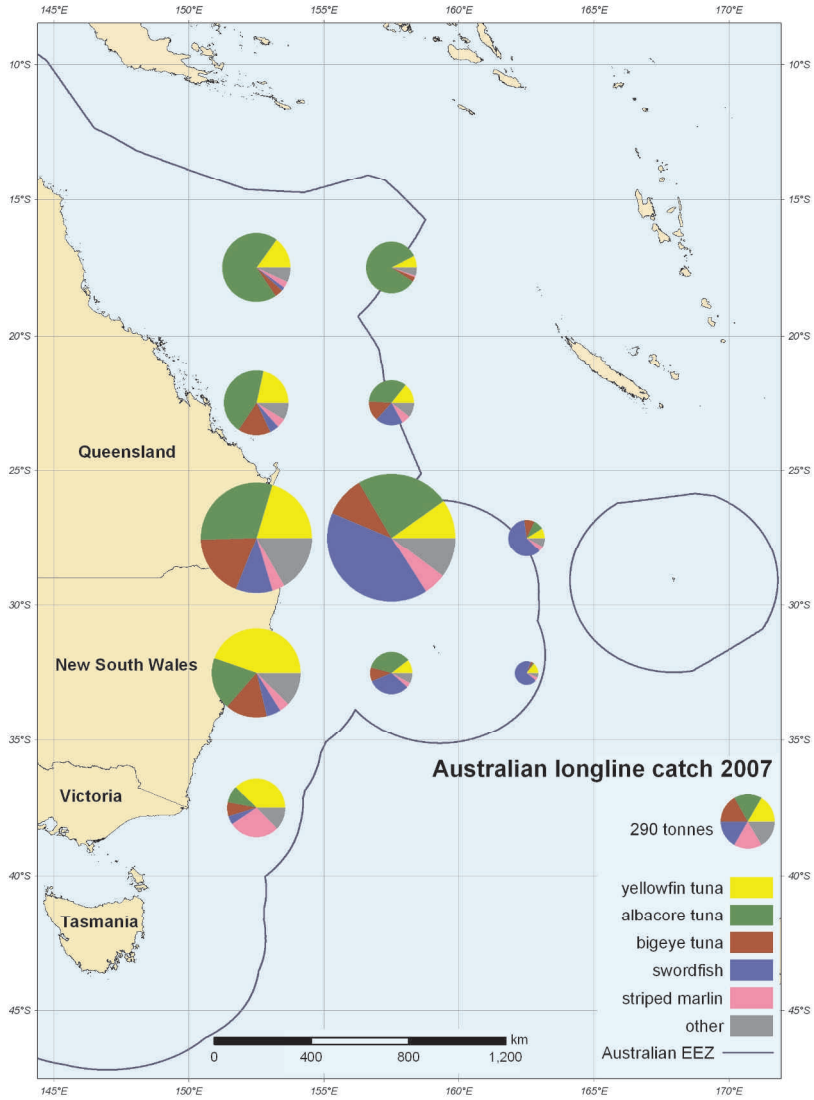
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Queensland
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Australian longline catch 2007
290 tonnes
yellowfin tuna
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bigeye tuna
swordfish
striped marlin
other
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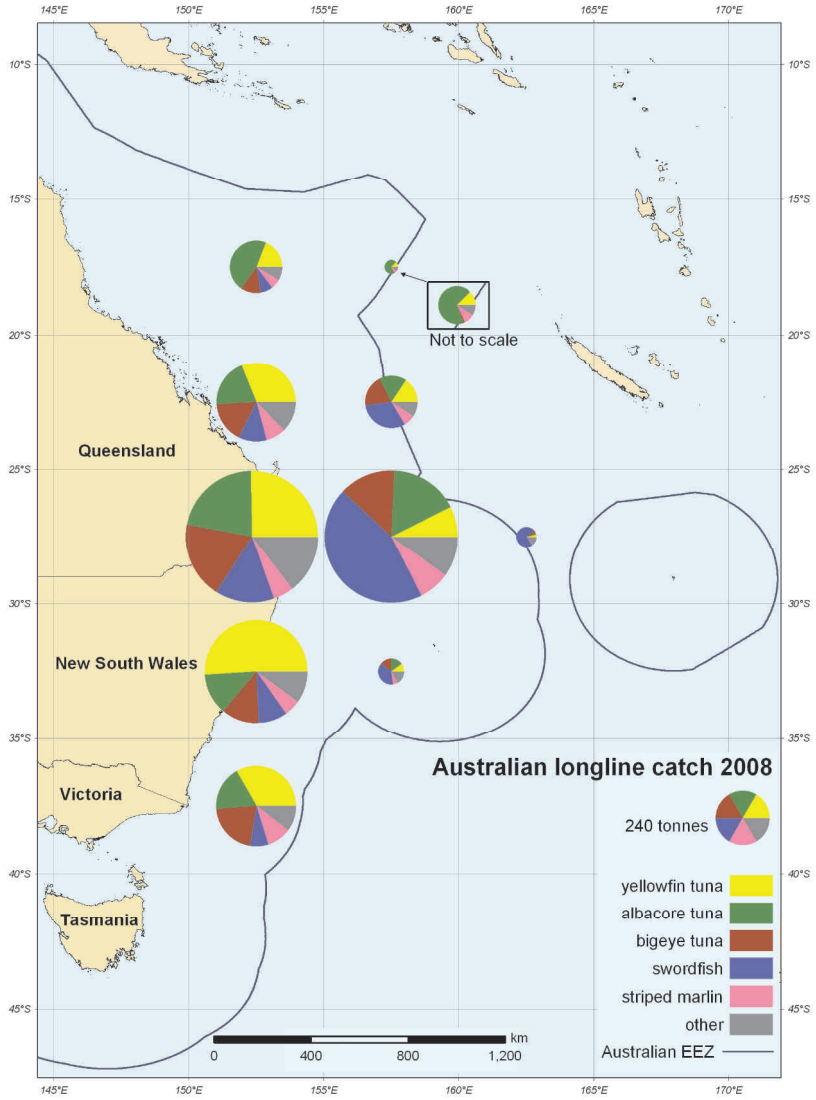
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Queensland
New South Wales
Victoria
Tasmania
Australian longline catch 2008
240 tonnes
yellowfin tuna
albacore tuna
bigeye tuna
swordfish
striped marlin
other
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km
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e)

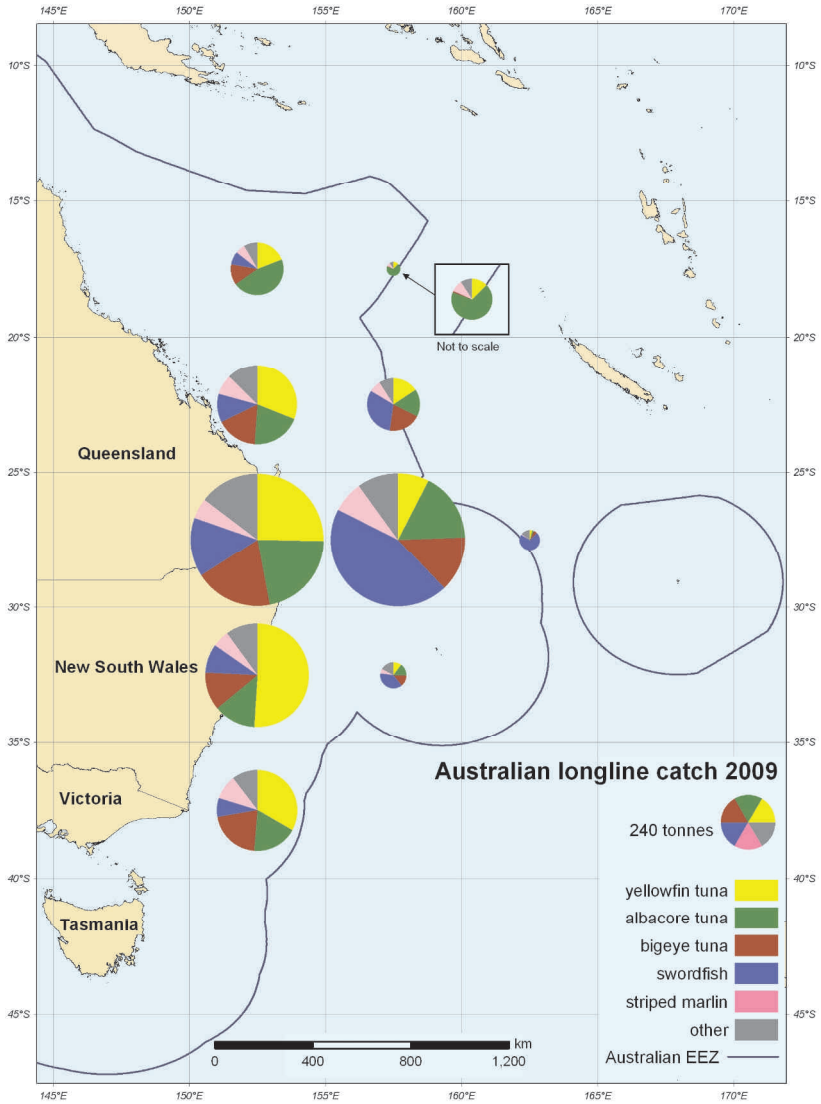


Figure 3 (a–e). Annual distribution of target species catch by the Australian longline fleet active in the WCPFC Convention Area, for 2005–09. Catches have been aggregated to five degree blocks and are scaled to the pie chart provided in the legend.

Source: AFMA catch and effort logbook database

Purse seine, pole-and-line and minor line catch and effort

In 2009, there were no active vessels in the Eastern Skipjack Fishery.

Total minor line catches increased from 26 t in 2008 to 132 t in 2009. There were 11 active minor line vessels during 2009. The number of vessels reporting using minor line has steadily decreased from a peak of 52 vessels in 2001. This is partly due to the surrender of 49 percent of permits under the structural adjustment component of the recent Australian Government *Securing Our Fishing Future* package. Annual minor line effort decreased from 310 lines in 2008 to 164 lines in 2009. This is a decrease from a peak of 975 lines in 2007. Effort in the minor line sector does not follow the same declining trend over time as the number of active vessels, as the peak effort in 2007 was during a year with only 21 vessels active. Minor line catches (including trolling, rod-and-reel and handline) comprised a small proportion of total catches (see Table 1). All pole-and-line and minor catches occurred within the AFZ.

Table 3. Catch and effort by Australian longliners, by primary species, within the AFZ and on the high seas, 2005–09. Proportions of catch and effort within the AFZ versus the high seas are provided in parentheses.

	Year	Effort (000 hooks)	Primary species catch (t)					
			Albacore	Bigeye	Skipjack	Yellowfin	Striped marlin	Swordfish
Within AFZ	2005	8587 (96.0%)	740.5 (98.4%)	692.8 (97.7%)	2.1 (100.0%)	1311.6 (98.3%)	350.4 (93.3%)	1401.3 (87.8%)
	2006	8553 (97.0%)	2406.8 (99.1%)	423.5 (96.7%)	48.3 (99.2%)	1666.1 (98.3%)	446.2 (96.0%)	901.4 (90.6%)
	2007	8327 (98.6%)	1815.6 (99.5%)	770.5 (99.2%)	8.2 (100.0%)	1229.3 (99.4%)	327.8 (99.2%)	1083.9 (95.8%)
	2008	8006 (99.3%)	1080.4 (99.6%)	891.0 (99.6%)	18.0 (100.0%)	1472.6 (99.8%)	371.7 (99.3%)	1221.7 (98.5%)
	2009	8776 (99.5%)	1337.4 (99.6%)	506.5 (99.6%)	9.9 (100.0%)	1180.1 (99.9%)	323.6 (99.6%)	1091.5 (98.2%)
High seas	2005	362 (4.0%)	12.3 (1.6%)	16.2 (2.3%)	0.0 (0.0%)	22.8 (1.7%)	25.1 (6.7%)	194.5 (12.2%)
	2006	268 (3.0%)	21.7 (0.9%)	14.4 (3.3%)	0.4 (0.8%)	29.3 (1.7%)	18.8 (4.0%)	94.0 (9.4%)
	2007	117 (1.4%)	9.5 (0.5%)	6.4 (0.8%)	0.0 (0.0%)	7.6 (0.6%)	2.6 (0.8%)	47.1 (4.2%)
	2008	53 (0.7%)	3.9 (0.4%)	4.0 (0.4%)	0.0 (0.0%)	2.6 (0.2%)	2.5 (0.7%)	18.7 (1.5%)
	2009	45 (0.5%)	4.9 (0.4%)	1.8 (0.4%)	0.0 (0.0%)	1.2 (0.1%)	1.4 (0.4%)	19.5 (1.8%)

Recreational fishing catch and effort

The heavy tackle recreational gamefish fishery for large black marlin off the Great Barrier Reef between Cairns and Lizard Island (October–November 2009) was reportedly substantially better than the previous two years. Most charter vessels reported successful tagging and releasing of large to very large marlin, with fish being present through the season, along the outer reef. Favourable currents were deemed to be a major contributing factor, in contrast to the previous poor seasons during which colder currents from the south persisted.

Juvenile black marlin did not appear in high abundance relative to previous years off Townsville over August–September, resulting in a lack of this year class in southern Queensland and New South Wales waters the following summer. However, larger black marlin ranging from 50 to 100 kg appeared in good numbers off the Sunshine Coast, extending to Port Stephens. Striped marlin continued to dominate the recreational billfish catch in New South Wales, while blue marlin were largely absent from the wider grounds for the first time in many years. Large mahi mahi (15 to 25 kg) were a feature of the gamefish fishery in New South Wales, while yellowfin tuna were largely absent.

Fishing patterns

Fishing patterns vary with target species, location and season. The management area of the ETBF extends from the top of Queensland to the Victoria–South Australia border; including waters around Tasmania (see Figure 4). In the WCPFC Convention Area, skipjack tuna are fished from southern New South Wales to north-eastern Tasmania.

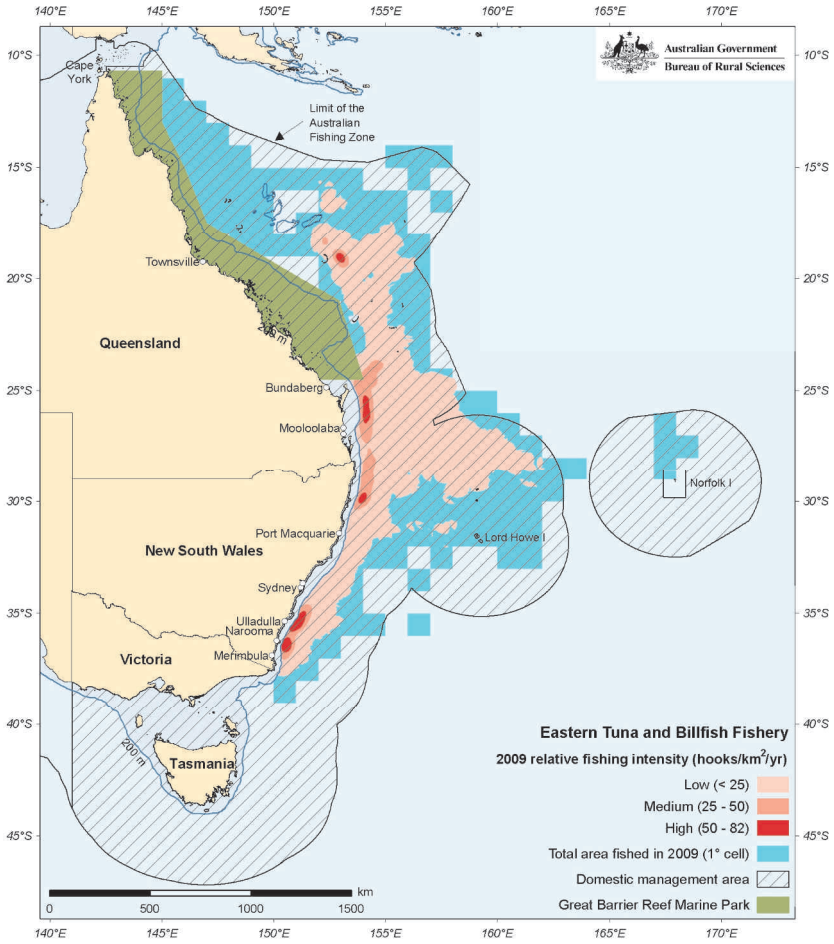


Figure 4. Longline effort distribution in the Eastern Tuna and Billfish Fishery (2009).

Fleet operations

Domestic longlining vessels are mostly 15–25 m long and use monofilament gear (Table 4). Vessels usually conduct one longline operation per day, or night, depending on the target species. A typical longline set will comprise about 1200 hooks. Fishers commonly operate around 107 days per year. Most trips are between 2 and 15 days; however, occasionally trips may extend up to 30 days. Typical fishing trips range from 40–300 nm from port, though some vessels may range up to 1000 nm or further to fish. The catch is gilled and gutted and stored on ice, in ice slurry or in refrigerated brine. Almost no bigeye tuna or swordfish, and probably less than five percent of the yellowfin tuna catch, are taken by methods other than longlining.

Historically, most purse-seiners were 20–25 m long, but several were 40–45 m. Most poling vessels are 15–20 m long. Purse seine and pole-and-line fishers often use satellite thermal imagery and spotters in aircraft to locate schools of fish. There are no dedicated minor line vessels; most minor line catches are reported by vessels (e.g. longline) on their way to and from fishing grounds.

Table 4. Number of Australian vessels, by gear and size category, active in the WCPFC Convention Area, for 2005 to 2009. Gross registered tonnes (GRT) is the unit for vessel size.

Year	Longline					Purse seine	Pole-and-line	Troll	Total
Vessel size (GRT)	≤50	51–200	201–500	Unknown	Subtotal	≤500	50–150	Unknown	
2005	47	50	0	0	97	3	0	0	100
2006	37	43	0	0	80	3	0	0	83
2007	27	33	1	0	61	2	0	0	63
2008	25	28	1	0	54	1	2	0	55
2009	27	27	1	0	55	1	2	0	56

Source: AFMA catch and effort logbook database

Species of special interest (seabird, turtle and marine mammals)

Observed annual interactions of species of special interest (seabird, turtle and marine mammals) by the Australian longline fleet from 2005–09 are presented in Table 5.

In 2009, Australia formally submitted a mitigation plan, *Eastern Tuna and Billfish Fishery Sea Turtle Mitigation Plan* (the mitigation plan), for review by the Scientific Committee (SC) and Technical Compliance Committee (TCC), and approval by the Commission. The mitigation plan was submitted under CMM 2008-03 (Conservation and Management of Sea Turtles) and was designed to reduce the interaction rate of turtles in pelagic longline fisheries which target broadbill swordfish. In an Australian context, the fishery to which this measure has the most relevance is the ETBF. As both the SC and TCC had recommended Commission approval of the mitigation plan, it was approved by the Commission at WCPFC 6, 2009 and took effect 1 January 2010. The observed sea turtle interaction rates will be reported as part of Australia's Annual Part 1 Report to the Scientific Committee from 2011 onwards.

Table 5. Observed annual estimated captures of species of special interest (seabird, turtle and marine mammals) for the Australian longline fleet, in the WCPFC Convention Area, for 2005–09.

Group	Common name	2005	2006	2007	2008	2009
Seabirds	Black-browed albatross	0	1	2	2	3
	Buller's albatross	0	1	0	1	0
	Grey-headed albatross	1	0	0	0	0
	Shy albatross	0	2	0	1	1
	Southern royal albatross	0	0	0	0	0
	Wandering albatross	1	1	3	1	0
	Yellow-nosed albatross	0	0	0	0	0
	Albatrosses (other)	1	0	0	2	1
	Flesh-footed shearwater	2	1	0	0	0
	Short-tailed shearwater	0	0	0	0	0
	Sooty shearwater	0	0	0	0	0
	Wedge-tailed shearwater	1	0	0	0	0
	Petrels, prions and shearwaters	1	0	0	0	0
	Cape petrel	4	0	3	0	0
	Great-winged petrel	1	0	0	0	0
	Westland petrel	0	0	0	0	0
	Great skua	0	0	3	0	0
	Subtotal	12	6	11	7	5
Turtles	Green turtle	6	1	5	1	1
	Hawksbill turtle	0	0	1	0	1
	Leatherback turtle	8	8	3	3	5
	Loggerhead turtle	1	2	2	2	4
	Pacific (Olive) Ridley turtle	3	0	0	2	0
	Turtles (other)[c]	-	1	0	0	0
	Subtotal	18	12	11	8	11
Whales	Common dolphin	0	0	0	0	0
	Humpback whale	1	0	0	0	0
	Short-finned pilot whale	0	0	1	0	0
	Subtotal	1	0	1	0	0
Pinnipeds	Australian fur seal	0	1	0	4	0
	Subtotal	0	1	0	4	0
	TOTAL	**31**	**19**	**23**	**19**	**16**

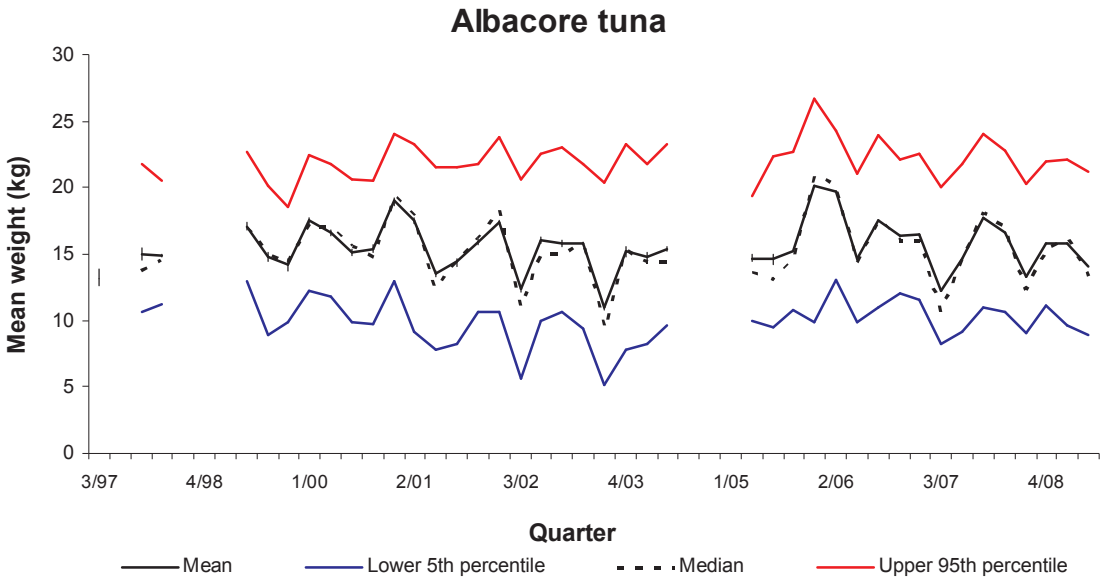
Source: AFMA observer database

[c] This category was not reported prior to 2006 calendar year; Turtles (other)' were unidentified turtles, possibly hard-shelled turtles (e.g Olive Ridley, Hawksbill).

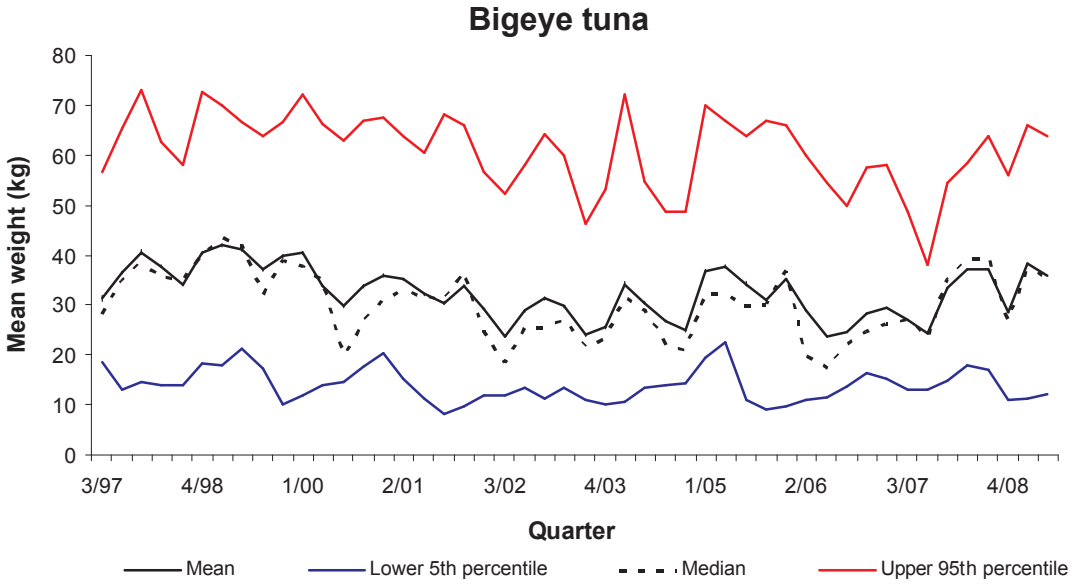
Trends in size composition

The size composition (based on processed weights) of yellowfin tuna, albacore tuna and striped marlin has remained relatively constant over time (Figure 5). However, the mean processed weight of bigeye tuna decreased from around 37 kg in the late 1990s to around 30 kg in 2002 and was below 30 kg in 2007, but has since increased to around 35 kg. The mean processed weight of swordfish shows a steady decline from around 52 kg in the late 1990s to around 42 kg in recent years.

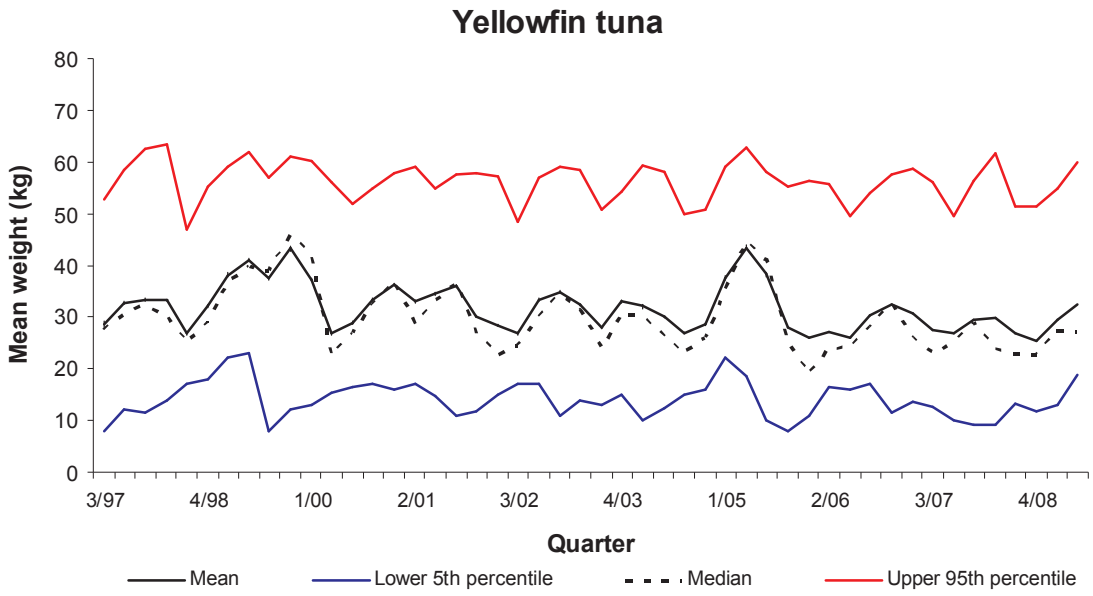
a)



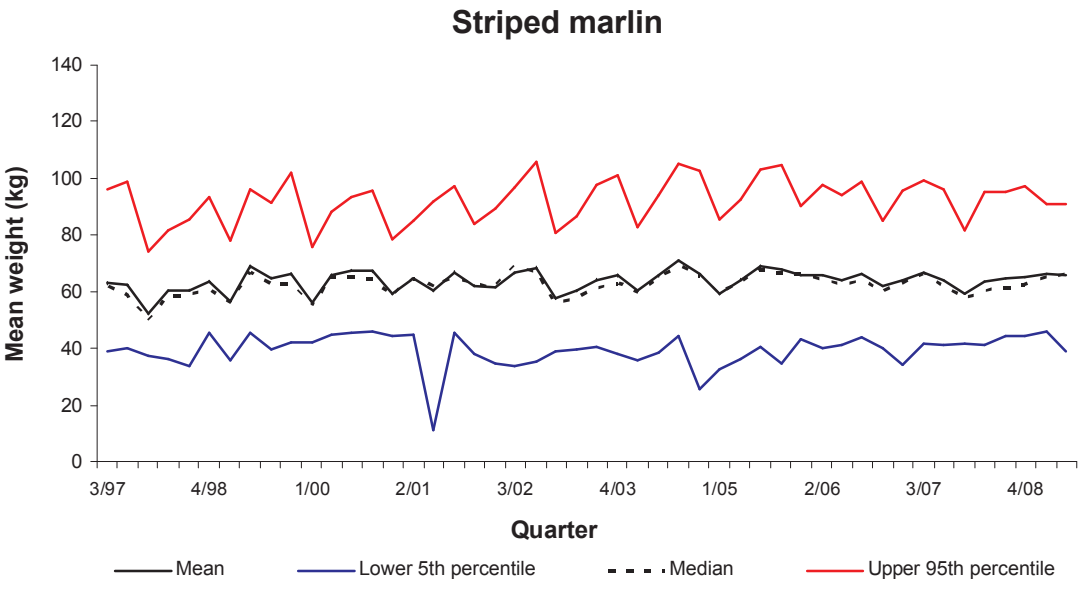
b)



c)


Yellowfin tuna
Mean weight (kg)
80
70
60
50
40
30
20
10
0
3/97
4/98
1/00
2/01
3/02
4/03
1/05
2/06
3/07
4/08
Quarter
Mean
Lower 5th percentile
Median
Upper 95th percentile

d)


Striped marlin
Mean weight (kg)
140
120
100
80
60
40
20
0
3/97
4/98
1/00
2/01
3/02
4/03
1/05
2/06
3/07
4/08
Quarter
Mean
Lower 5th percentile
Median
Upper 95th percentile

e)

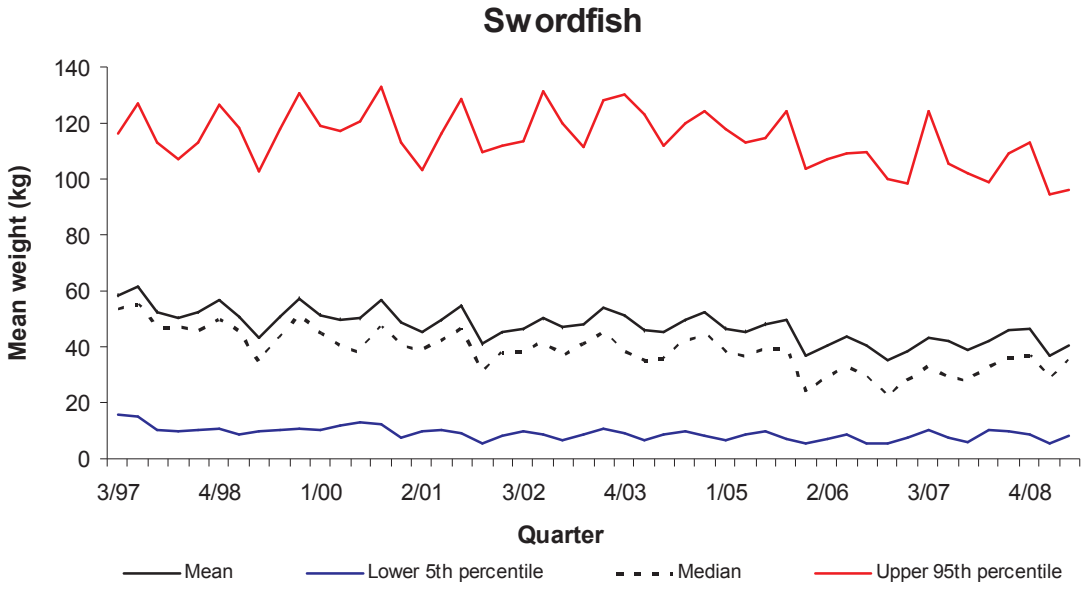


Figure 5 (a–e). Time series of quarterly mean, medium, lower 5th and upper 95th percentiles processed weights of a) albacore tuna, b) bigeye tuna, c) yellowfin tuna, d) striped marlin and e) swordfish sampled across the entire ETBF based on the data collected from the port sampling program in the ETBF.

Coastal State reporting

There are currently no foreign fishing vessels licensed to operate in the AFZ. Japanese longliners were licensed to operate in the eastern AFZ from the late 1950s until November 1997.

Socio-economic factors

Total gross value of production (GVP) for the ETBF increased by 19 percent in 2008–09, from A$33.0 million in 2007–08 to A$38.9 million in 2008–09 (2008–09 dollars). Although this is a substantial increase, GVP still remains well below the peak recorded in 2001–02 of $96.6 million.

Historically, yellowfin tuna has typically been the dominant species in the fishery in GVP terms, with the exception of the 2007–08 financial year in which bigeye tuna was the dominant species. In 2008–09, a 40 percent increase in yellowfin tuna prices combined with a 31 percent increase in yellowfin tuna catch resulted in this species once again becoming the dominant species in value terms. It accounted for $14.3 million or 37 percent of GVP for the fishery.

Price increases also occurred for all other key species in the fishery with the exception of striped marlin. Overall bigeye tuna value declined by 28 percent from $11.2 million in 2007–08 to $8.1 million in 2008–09. Another key change in 2008–09 was a 60 percent increase in the value of albacore catch to $4.6 million; the second highest value recorded for this species. The value of swordfish and striped marlin both increased by 8 percent in 2008–09; to $7.3 million and $2.7 million, respectively. The increased trend in the value of striped marlin differs from the trend of

striped marlin catches reported earlier due to differences in reporting catches for financial year (1 July–30 June) versus calendar year. Lower prices, declining catch rates and the surrender of 99 longlining permits under the structural adjustment component of the recent Australian Government *Securing Our Fishing Future* package are believed to have had an impact on effort in the ETBF.

GVP data for the Eastern Skipjack Fishery have been confidential since 2005–06 due to the small number of active vessels in the fishery. Few vessels have fished in this fishery in recent years, indicating the low profitability of the fishery. Stock availability in the Eastern Skipjack Fishery varies from year to year. Operators capitalise on this, fishing opportunistically in years of relatively abundant stocks and not using their permits in years of relatively scarce stocks. As a result, effort in the fishery is more dependent on availability than on prices, although lower prices in recent years have also contributed to lower effort levels.

Disposal of catch

The principal destination for Australian tuna is Japan, which received 66 percent of total tuna exports (excluding southern bluefin tuna) in 2008–09. Other important markets of Australian tuna exports in 2008–09 included the United States of America (USA) (8 percent), Spain (6 percent), American Samoa (6 percent) and New Zealand (5 percent).

Japan has overtaken the USA as the main export market for swordfish. In 2008–09, approximately 76 percent of exported swordfish went to Japan, as opposed to 22 percent to the USA. Japan is also the main export market for bigeye and yellowfin tuna. In 2008–09, the main albacore markets were Spain, Singapore, American Samoa and Japan. Skipjack tuna is mostly canned and sold domestically; however, the sole remaining cannery in Australia (Port Lincoln) closed in early 2010.

Onshore developments

As part of the recent Australian Government *Securing Our Fishing Future* package, there has been a substantial investment in onshore development, some of which benefited fishers in the ETBF. Funding was available through the Onshore Business Assistance and Fishing Community Assistance components of the package to assist businesses and communities affected by the reductions in fishing activity as a result of the package. Investments include the purchasing of new equipment, redevelopment and upgrade of facilities, diversification and expansion of operations and the development of programs aimed at increasing consumer awareness, some of which benefited fishers the ETBF. This package has now been finalised.

Future prospects of the fishery

The structural adjustment component of the recent Australian Government *Securing Our Fishing Future* package resulted in the removal of 99 longlining and 112 minor line permits from the ETBF. AFMA is currently working towards the introduction of quota based management in the form of individually transferable quotas (ITQs) into the ETBF scheduled for March 2011.

Commercial operators view the Australian skipjack fisheries as important developing fisheries as significant catching capacity exists in Port Lincoln, South Australia. Currently, catches are low as a result of variability in the availability of skipjack tuna in the AFZ, variable participation levels, low profit margins and the closure of the Port Lincoln cannery; however, there is room for development in this fishery.

Status of tuna fishery data collection systems

Logbook data collection and verification

AFMA introduced a logbook for domestic longliners in 1986. The logbook has been revised on several occasions. The latest (AL06—Australian Pelagic Longline Daily Fishing Log) was introduced in 2007; vessels began submitting AL06 logbooks in November 2007. Return of logbooks by Australian longliners improved when, in 1995, it became a condition of fishing permits and has nearly been 100 percent in recent years. Logbooks have also been introduced for the skipjack tuna purse-seine fisheries; PS01—Australian Purse Seine Daily Fishing Log was distributed in July 2002 with the first skipjack tuna catch recorded in this logbook in December 2003. Weights from catch disposal records are verified; weights recorded on logbooks are an estimate only.

Catch and effort logbooks have been introduced for charter operators in both Queensland (Queensland Charter Fishery logbook) and New South Wales (New South Wales Charter Fishing Boat Logbook Monitoring Program). The New South Wales Department of Primary Industries has also monitored catch and effort data from gamefishing tournaments for a seven year period and a report summarising their observations was released in 2002 (Murphy et al. 2002).

Many anglers who target tuna and billfish voluntarily tag and release under the New South Wales Cooperative Gamefish Tagging Program, which was established in 1973. The data indicate the general distribution of recreational angling activities and trends in catches (masked by changes in effort levels), targeting and reporting of releases.

Observer program

AFMA observers have been deployed on domestic longliners since 2001. Since July 2003, observers have been deployed more broadly across the fishery with more general duties, such as the collection of data on fishing gear and the size and species composition of catches. In 2009, observers monitored 564 408 hooks in the fishery (6.4 percent of the total number of hooks deployed in the fishery) (Table 6).

Table 6. Estimated annual coverage of operational catch and effort (logbooks), port sampling (coverage rate for the five main target species of individual fish weights collected from processors receiving longline caught fish in the ETBF) and observer data for the Australian fleet, active in the WCPFC Convention Area, 2005–09.

Gear	Year	Operational catch & effort coverage (%)	Observer coverage (%)	Port sampling coverage (%)					
				YFT	BET	ALB	SWO	STM	SKJ
Longline	2005	100	5.6	55	84	17	92	75	0
	2006	100	5.8	63	79	11	76	68	0
	2007	100	5.3	68	98	13	83	70	0
	2008	100	10.4	63	74	15	82	76	0
	2009	100	6.4	68	71	16	83	74	0
Purse-seine	2005	100	0	0	0	0	0	0	0
	2006	100	0	0	0	0	0	0	0
	2007	100	4.6	0	0	0	0	0	0
	2008	100	5.7	0	0	0	0	0	0
	2009	100	0	0	0	0	0	0	0

Sources: Dambacher (2005), Dambacher & Moeseneder (2006), Robert Campbell (CSIRO) and AFMA observer database.

Port sampling program

The collection of individual processed fish weights from processors receiving longline caught fish from the ETBF commenced in mid-1997. The program mainly focuses on the five principal target species in the fishery (yellowfin tuna, bigeye tuna, albacore tuna, swordfish and striped marlin) though data on a range of other species have also been collected. Data are collated on a financial year basis (July–June the following year). During the 12 years that the program has run, over 1.23 million individual fish weights pertaining to the five target species have been collected together with around 214,000 weights for the other species. Coverage rates for the target species are high, averaging around 64 percent for yellowfin tuna, 79 percent for bigeye tuna and swordfish, 26 percent for albacore tuna and 61 percent for striped marlin (Table 6). Values presented for 2009 include the first six months only (July–December). Bulk weights for binned albacore tuna (covering around 56 percent of the catch in recent years) and some other species are also collected.

Unloading/Transhipment

Catch disposal records are the formal method for monitoring unloads, and were implemented in the ETBF in January 2006 (Table 7). Catch disposal records are completed by both the fisher and licensed fish receiver at the point of unload to obtain accurate data on fish numbers and verified weight by species. Skippers tend to under-estimate the weights reported in logbooks for most species, so the catch disposal record data have been reported in official statistics since 2007. Compliance checks are conducted on unloads as part of a risk based compliance program. Weight estimates are also derived from the size-monitoring program, and are likely to be more accurate than logbook data for that part of the time series. A small amount of transhipment occurs in the ETBF (within the AFZ) between domestic vessels, with the catch verified in catch disposal records.

Table 7. Annual catch estimates (converted whole weights) for the Australian longline fleet, for 2006–09, derived from catch disposal records. Estimates are in tonnes.

Year	Albacore	Yellowfin	Bigeye	Striped marlin	Swordfish	Other	Total
2006	2591.4	1830.3	498.6	441.2	1136.1	762.9	7260.5
2007	1924.6	1389.6	1007.5	358.7	1352.7	833.5	6866.6
2008	1276.7	1650.3	1026.5	425.3	1483.2	822.4	6684.4
2009	1522.8	1386.6	726.4	360.6	1315.0	775.0	6086.5

Source: AFMA catch disposal records

Other

A range of data is also collected via individual research projects. Please see *Research activities covering target & non-target species* for more information.

Research activities covering target & non-target species

The Australian Government and the fishing industry allocate considerable funds to fishery research and monitoring each year. In addition to the logbook and observer programs, key areas of recent and ongoing research include:

Biological research projects

- Reproductive dynamics of swordfish in the domestic longline fishery off eastern Australia (Young and Drake, 2002)
- Age and growth of bigeye tuna from the eastern and western AFZ (Farley, 2003)
- Age and growth of swordfish from Australian waters (Young and Drake, 2004)
- Population biology and habitat preferences of striped marlin in eastern Australia (Keller & Davie, 2009)
- Integrated study of albacore population biology and biogeography in the area of influence in the ETBF (Farley, ongoing)
- Defining regional connections in south-west Pacific swordfish (Wilcox, ongoing)

Assessment-related research projects

- Dynamics of the interactions of the fishery and swordfish on seamounts off eastern Australia (Campbell and Hobday, 2003).
- Migration and habitat preferences of bigeye tuna on the east coast of Australia (Gunn et al., 2005)
- Stock assessment of striped marlin in the south-western Pacific Ocean (Langley et al., 2006)
- Developing harvest strategies for the ETBF (AFMA, 2007)
- Developing robust stock-status indicators (Basson and Dowling, 2008)
- Updating the stock assessment of swordfish in the south Pacific Ocean (Kolody et al., 2008)
- Determining the depths fished and the effective longline effort targeted at various species in the ETBF (Campbell and Young, 2010)
- Integrated evaluation of management strategies for multi-species long-line fisheries (Davies, being finalised)
- Predicting the impact of hook decrementation on the distribution of fishing effort in the ETBF (Wilcox, ongoing)

Ecological research projects

- Determining the ecological impacts of longline fishing in the ETBF (Young, 2008)

Bycatch research projects

- A review of byproduct interactions and economics in Australia's tuna and billfish fisheries (Bromhead et al., 2005)
- Marine turtle mitigation in Australia's pelagic longline fishery (Robbins et al., 2007)
- The effects of bycatch mitigation measures, such as circle hooks and wire leaders, on target and non-target catches (Ward et al., 2008)
- Estimating turtle bycatch rates in the ETBF (Tennant et al., ongoing)

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Appendix A—Scientific and common names

Common names	Scientific names
Albacore tuna	*Thunnus alalunga*
Albatrosses (other)	*Diomedeidae spp.*
Australian fur seal	*Arctocephalus pusillus doriferus*
Australian sea lion	*Neophoca cinerea*
Bigeye tuna	*Thunnus obesus*
Black marlin	*Makaira indica*
Black-browed albatross	*Thalassarche melanophrys*
Blacktip sharks	*Carcharhinus spp.*
Blue marlin	*Makaira nigricans*
Blue shark	*Prionace glauca*
Bronze whaler shark	*Carcharhinus brachyurus*
Buller's albatross	*Thalassarche bulleri*
Cape petrel	*Daption capense*
Common dolphin	*Delphinus delphis*
Dusky shark	*Carcharhinus obscurus*
Escolar (black oilfish)	*Lepidocybium flavobrunneum*
Flatback turtle	*Natator depressa*
Flesh-footed shearwater	*Puffinus carneipes*
Great skua	*Catharacta skua*
Great-winged petrel	*Pterodroma macroptera*
Green turtle	*Chelonia mydas*
Grey-headed albatross	*Thalassarche chrysostoma*
Hammerhead shark	*Sphyrna spp.*
Hawksbill turtle	*Eretmochelys imbricata*
Humpback whale	*Megaptera novaeangliae*
Leatherback turtle	*Dermochelys coriacea*
Loggerhead turtle	*Carretta carretta*
Mahi mahi (dolphinfish)	*Coryphaena hippurus*
Moonfish (opah)	*Lampris guttatus*
Northern bluefin tuna	*Thunnus orientalis*
Ocean sunfish	*Mola mola*
Oceanic whitetip shark	*Carcharhinus longimanus*
Oilfish	*Ruvettus pretiosus*

Pacific (olive) ridley turtle	*Lepidochelys olivacea*
Petrels, prions and shearwaters	*Procellariidae spp.*
Ray's bream	*Brama brama*
Rudderfish	*Centrolophus niger*
Sailfish	*Istiophorus platypterus*
Scalloped hammerhead	*Sphyrna lewini*
Shortbilled spearfish	*Tetrapturus angustirostris*
Shortfin mako	*Isurus oxyrinchus*
Short-finned pilot whale	*Globicephala macrorhynchus*
Short-tailed shearwater	*Puffinus tenuirostris*
Shy albatross	*Thalassarche cauta*
Silky shark	*Carcharhinus falciformis*
Skipjack tuna	*Katsuwonus pelamis*
Smooth hammerhead	*Sphyrna zygaena*
Sooty shearwater	*Puffinus griseus*
Southern bluefin tuna	*Thunnus maccoyii*
Southern royal albatross	*Diomedea epomophora*
Striped marlin	*Tetrapturus audax*
Swordfish	*Xiphias gladius*
Thresher shark	*Alopias vulpinus*
Tiger shark	*Galeocerdo cuvier*
Wahoo	*Acanthocybium solandri*
Wandering albatross	*Diomedea exulans*
Wedge-tailed shearwater	*Puffinus pacificus*
Westland petrel	*Procellaria westlandica*
Yellowfin tuna	*Thunnus albacares*
Yellow-nosed albatross	*Thalassarche chlororhynchos*