

National Report to the IOTC Scientific Committee for Australian tuna fisheries 2007

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Abstract

Pelagic longline and purse seine are the two main fishing methods used by Australian vessels to target tuna and billfish in the IOTC area. In 2006, Australian longliners caught 310 t of broadbill swordfish, 38 t of yellowfin tuna and 59 t of bigeye tuna. These catches are at similar levels to those of 2005 and are less than 20% of peak catches taken in 2001 and 2002. The number of active longliners and levels of fishing effort have declined significantly due to reduced profitability, primarily as a result of lower fish prices and high costs. The purse seine fishery caught 5629 t of southern bluefin tuna in 2006. The 2006 catch to skipjack tuna increased from the insignificant amounts caught in the previous three years, but for confidentiality reasons the actual amount cannot be reported. In 2002, 1144 t of skipjack tuna were caught by purse seine. Australian research and statistical collections are relevant to management of the domestic fisheries and regional management arrangements.

1. General fishery information

Australian fisheries targeting tuna and billfish in the IOTC area are primarily the pelagic longline fisheries - Western Tuna and Billfish Fishery (WTBF) and Eastern Tuna and Billfish Fishery (ETBF) and the purse seine fisheries - Southern Bluefin Tuna Fishery (SBTF) and Skipjack Fishery. These fisheries are managed by the Australian Government through the Australian Fisheries Management Authority (AFMA). Other methods such as handline, dropline, trolling and gillnetting capture tuna and related species in multipurpose fisheries, which are managed by both the Australian Government and State and Territory governments.

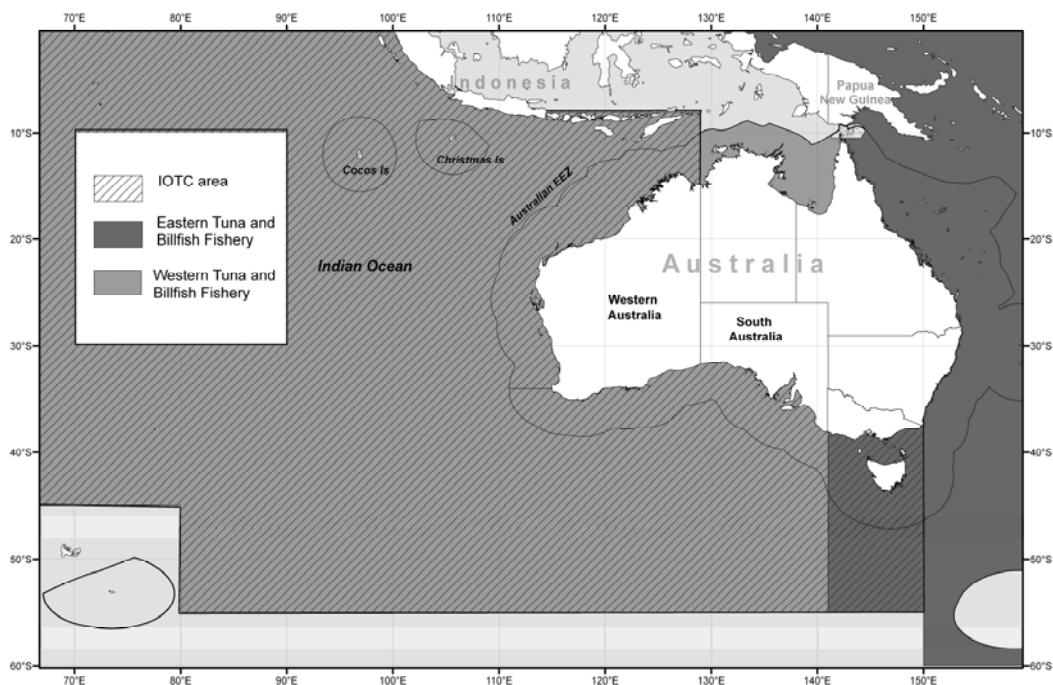


Figure 1. Location of ETBF and WTBF

1a. Catch by species and gear

Australian longline fishing for tunas and billfishes in the Eastern Indian Ocean has declined from a peak in 2001. There was a rapid increase in fishing activity between 1997 and 2001 in the WTBF, especially off Australia's western coast south of latitude 20° S. Broadbill swordfish have been the main target species since 1999 (peak catch of 2136 t in 2001) with smaller amounts of bigeye tuna and yellowfin tuna landed each year. The swordfish catch declined to below 400 t in 2004 and has remained at these lower levels. The yellowfin tuna and bigeye tuna catches have also shown dramatic reductions.

Table 1. Longline catches (tonnes liveweight) of tuna and billfish by Australian vessels in the IOTC area 2002-2006.

Calendar Year	Swordfish	Yellowfin tuna	Bigeye tuna
2002	2004	355	419
2003	1184	191	205
2004	370	152	91
2005	301	35	31
2006	310	38	59

Purse seine fishing operations by Australian vessels in the IOTC area are dominated by targeting of southern bluefin tuna (SBT) in the Great Australian Bight for grow-out in farm cages at Port Lincoln, South Australia. In 2006, 5629 t of SBT were captured. In some seasons, purse seine vessels also target skipjack tuna late in the SBT season. Catches of skipjack in 2006 increased from the very small quantities of skipjack caught in the previous three years, however, the amount cannot be reported for confidentiality reasons. The skipjack catch for 2001 was 898 t and for 2002 was 1144 t.

The multipurpose fisheries target different species to the longline and purse seine fisheries. In 2006, very small quantities of fish were caught using minor line methods.

1b. Fleet structure

The number of Australian longline vessels operating in the IOTC area has declined significantly since 2005 with only five vessels operating in 2006. This is down from 13 active vessels in 2004 (and 45 vessels in 2001). Most of these vessels have operated in the WTBF and very little longline fishing is undertaken in the area of the ETBF west of 150° E. The longline fleet fishes mainly within the EEZ, between 20° S and 35° S but fishing extends into adjacent high seas areas at times. Longline fishing effort by Australian vessels has declined significantly from a peak of 6.25 million hooks in 2000 to 0.72 million hooks in 2006. The main factor influencing the decline in fishing effort is reduced profitability, caused by lower export prices and higher costs, particularly fuel costs.

Most longline vessels range in length from 20 m to 35 m and are less than 200 GRT. Ice, ice slurry or brine spray systems are used to chill the catch and trips are limited to approximately ten days although vessels undertaking high seas areas undertaken longer voyages.

The purse seine fleet has remained reasonably constant at 8-11 vessels since 2002. This reflects the focus on capture of SBT for farm cages and the constant overall quota of 5265 t allocated to Australia by the Commission for Conservation of Southern Bluefin Tuna (CCSBT). The purse seine fleet vessels vary in size from 20 m to 45 m length.

Table 2. Number of longline and purse seine vessels active in the IOTC area 2002 to 2006.

Calendar Year	Longline	Purse seine
2002	44	11
2003	37	8
2004	23	9
2005	6	9
2006	5	11

1c. Non-target, associated and dependent species

Approximately 60 species of fish are recorded in longline logbooks as being captured in the WTBF. The majority of non-target species are caught in low numbers with the notable exceptions of blue shark and crocodile shark. Attachment 3 presents the proportions of retained and released catch of the twenty most abundant species observed in the longline fishery in 2003-04. A full list of fish species is provided in Attachment 2.

1d. National data collection and processing systems

Catch and effort data continues to be collected by daily fishing logbooks for the longline and purse seine fisheries. AFMA distributes, collects and processes these logbooks. State fisheries authorities for the most part collect catch and effort by monthly fishing returns.

Disposal of catch is monitored for the SBT purse seine fishery but not currently for the WTBF. Catch disposal forms will be introduced when catch limits are introduced in 2007.

A Vessel Monitoring System has been operating for a number of years in the WTBF. A ministerial direction for Australian Government managed fisheries will require all other vessels to install VMS equipment by July 2007.

A pilot observer program was initiated for the Western Tuna and Billfish fishery in 2003. The program was to be concluded in 2005 but due to unspent project funds and low levels of longline fishing activity, the pilot continued into 2006. Ongoing levels of observer coverage are yet to be decided, although a seabird Threat Abatement Plan requires a 5% coverage level.

A size monitoring program for the WTBF has been conducted since mid 1999. A contractor collects weights and lengths (where possible) for yellowfin tuna, bigeye tuna and broadbill swordfish from processors in Western Australia. In most years the majority of landings for these three species are monitored by this project. Size monitoring of the SBT purse seine catch is carried out when fish are transferred from tow cages to farm cages. A sample of at least 40 fish from each tow cage are weighed and measured.

2. Implementation of Scientific Committee recommendations

Australia participates actively in the Scientific Committee and the associated working parties. Complete data was provided to IOTC for statistical reporting in 2007, including bycatch data and size-frequency for target tuna and billfish species. Observers continue to be placed on Australian longline vessels fishing in the Eastern Indian Ocean to monitor catch and effort reporting, bycatch and wildlife interactions.

3. National research programs

The current research priorities for Australia's Western Tuna and Billfish Fishery against which research proposals will be considered include:

- investigate the stock structure of bigeye tuna and swordfish in the eastern Indian Ocean, with particular emphasis on determining the relationship between fish caught within the WTBF and those caught in nearby waters and the broader Indian Ocean;
- monitor catch and effort by the recreational and charter-fishing sectors targeting highly migratory fishes;
- determine key biological parameters (age, growth, reproduction) required for assessment of Indian Ocean populations of bigeye tuna, yellowfin tuna and swordfish stocks;
- develop a harvest strategy including appropriate target and limit reference points;
- assess the impact and reliance of the WTBF on the pelagic ecosystem, including trophic linkages and the impact of fishing on ecologically related species;
- develop strategies to reduce the damage and loss of catch through predation.

Several research projects are in progress. An ecological risk assessment to identify high risk species is being undertaken for all Australian Government-managed fisheries and results for the WTBF will be considered in management arrangements in 2008. In 2007, the Australian Government introduced a harvest strategy policy to guide sustainability of its fisheries. A harvest strategy that incorporates appropriate target and limit reference points is to be implemented for the WTBF in 2008.

4. Other information

4.1 Recreational fishery

Western Australia has a keen recreational game fishery, targeting sailfish (*Istiophorus platypterus*), black marlin (*Makaira indica*), blue marlin (*M. mazara*), striped marlin (*Tetrapturus audax*) and yellowfin tuna. In 1994 Western Australia passed legislation preventing the landing of all billfish of the family Istiophoridae. However, this legislation was not enforced until December 1999. Meanwhile, in 1998 the Australian Government banned the retention of blue and black marlin, whether alive or dead, taken anywhere in the AFZ by commercial fishing. In 2005, legislation was introduced by the Australian Government to allow the landing of striped marlin in Western Australia.

4.2 Environmental issues

In response to bycatch issues, AFMA has formulated a Bycatch Action Plan for three Australian tuna fisheries (WTBF, SBTF and the ETBF).

AFMA has banned the practice of finning sharks at sea, prohibiting the possession or landing of fins separate from carcasses. AFMA has enforced the landing limit of 20 sharks per vessel per fishing trip, and also banned wire traces (which increase the likelihood of retaining shark). Vessels undertaking high seas trips may apply for a permit to retain 100 sharks per fishing trip.

Catches of sea turtles have been reported in WTBF logbooks and during interviews with operators. Observers placed on longliners during 2003–04 reported low catch rates of sea turtles.

In August 1998 the Minister for the Environment approved a Threat Abatement Plan to reduce the incidental catch of seabirds by longliners. All WTBF operators are currently required to carry an approved bird-scaring 'tori' line, to use it and set it only at night when operating south of 30°S, and to not discharge offal during line setting and hauling.

Attachment 1.

Total annual catch (tonnes whole estimated weight, scaled up from landed processed weight) for three target species (yellowfin tuna, bigeye tuna and swordfish), three major byproduct species (albacore tuna and rudderfish) and three marlin species caught by Australian fisheries operating in the eastern Indian Ocean, 1986–2006.

Year	Effort (million hooks)	Yellowfin tuna	Bigeye tuna	Swordfish	Skipjack tuna*	Albacore tuna	Blue shark	Rudderfish	Blue marlin	Black marlin	Striped marlin
1986	0.07	0.20	20.16	0.49	635.40	15.17	0.00	0.00	0.00	0.00	0.05
1987	0.30	2.55	67.88	0.11	1470.62	13.86	0.00	0.00	0.00	0.02	0.00
1988	0.17	0.23	12.49	0.11	82.60	10.66	0.00	0.00	0.00	0.00	0.00
1989	0.72	159.03	54.99	19.07	4.40	25.59	0.00	0.00	9.37	17.82	28.20
1990	0.40	54.53	36.85	12.44	642.26	7.92	0.00	0.00	4.55	3.90	1.50
1991	0.17	0.72	1.26	0.21		3.89	0.00	0.00	0.00	0.00	0.00
1992	0.30	7.46	8.51	1.12	334.04	19.74	0.00	0.00	0.00	0.00	0.20
1993	0.52	1.98	26.72	9.64	29.03	42.65	0.00	0.00	0.00	0.00	0.06
1994	0.75	18.28	26.91	26.38	1201.71	53.70	0.05	0.00	0.08	0.34	0.45
1995	0.96	62.03	47.00	46.07	466.73	6.55	0.00	0.00	0.05	0.00	1.86
1996	1.02	96.90	22.19	15.68	335.58	6.40	19.50	7.45	0.00	0.01	2.38
1997	0.97	252.88	44.46	26.05	28.08	20.75	21.85	12.41	1.55	2.59	11.85
1998	1.81	237.25	160.80	238.09	1401.94	24.46	14.86	35.32	0.00	0.00	8.82
1999	4.03	408.89	411.66	1011.95	826.71	20.14	23.12	61.05	0.00	0.00	22.59
2000	6.25	432.75	435.65	1690.10	486.58	30.61	25.14	82.77	0.00	0.00	1.69
2001	6.18	567.15	385.99	2135.62	897.52	93.85	26.27	46.13	0.00	0.00	0.00
2002	5.96	354.64	418.51	2004.66	†	73.23	52.68	31.53	0.00	0.00	0.73
2003	3.93	191.04	205.39	1183.95	†	65.62	40.20	19.81	0.00	0.00	0.06
2004	1.55	151.95	90.69	369.69	†	25.33	19.33	5.02	0.00	0.00	0.07
2005	0.76	35.44	31.14	301.32	†	7.20	9.90	1.68	0.00	0.00	4.12
2006	0.72	38.18	58.69	310.10	†	10.37	10.93	3.60	0.00	0.00	4.69

*Purse seine catches.

All catches are for the longline fishery, with the exception of skipjack, which is caught by the purse seine fishery. Note that data recorded by fishermen in the early years is possibly a mix of whole and processed weights, therefore the data presented here for years prior to 2000 are likely to underestimate whole weight.

† Confidential data

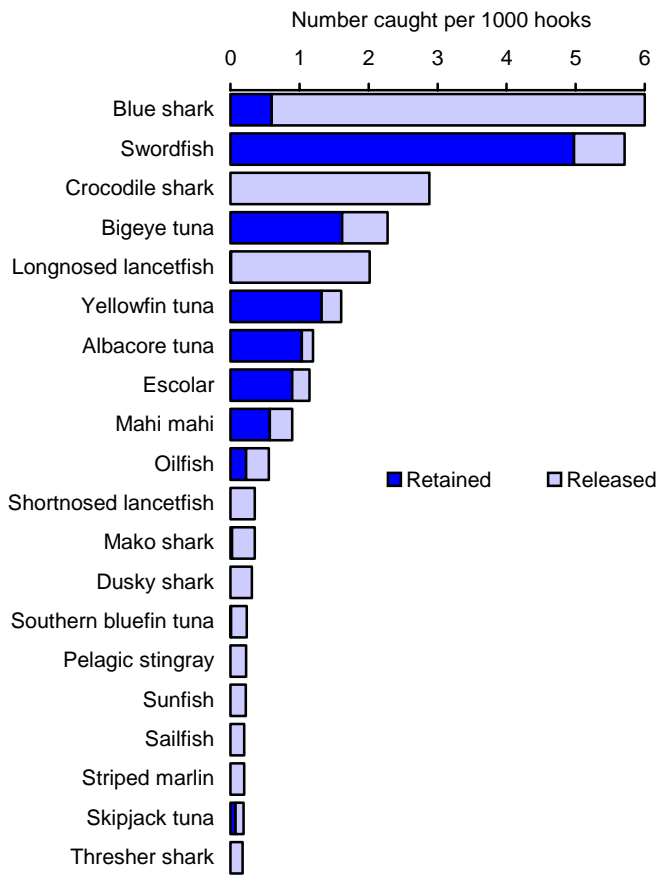
Attachment 2.

Fish species or species groups identified by observers in WTBF retained and released, catch excluding tuna and swordfish.

FAO SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
PSK	Crocodile Shark	<i>Pseudocarcharias kamoharai</i>
SMA	Shortfin Mako	<i>Isurus oxyrinchus</i>
POR	Porbeagle	<i>Lamna nasus</i>
BSK	Basking Shark	<i>Cetorhinus maximus</i>
ALV	Thresher Shark	<i>Alopias vulpinus</i>
BTH	Bigeye Thresher	<i>Alopias superciliosus</i>
PTH	Pelagic Thresher	<i>Alopias pelagicus</i>
CVX	Whaler Shark	Family Carcharhinidae
BRO	Bronze Whaler	<i>Carcharhinus brachyurus</i>
DUS	Dusky Shark	<i>Carcharhinus obscurus</i>
BSH	Blue Shark	<i>Prionace glauca</i>
CCP	Sandbar Shark	<i>Carcharhinus plumbeus</i>
FAL	Silky Shark	<i>Carcharhinus falciformis</i>
TIG	Tiger Shark	<i>Galeocerdo cuvier</i>
ALS	Silvertip Shark	<i>Carcharhinus albimarginatus</i>
OCS	Oceanic Whitetip Shark	<i>Carcharhinus longimanus</i>
SPN	Hammerhead Shark	<i>Sphyrna</i> spp.
SPZ	Smooth Hammerhead	<i>Sphyrna zygaena</i>
DGS	White-Spotted Dogfish	<i>Squalus acanthias</i>
ISB	Cookie-cutter Shark	<i>Isistius brasiliensis</i>
PLS	Pelagic Stingray	<i>Dasyatis violacea</i>
STI	Pelagic Stingray	<i>Dasyatis</i> spp
RMB	Manta Ray	<i>Manta birostris</i>
ALX	Longnose Lancetfish	<i>Alepisaurus ferox</i>
ALO	Shortnose Lancetfish	<i>Alepisaurus brevirostris</i>
POK	Coley	<i>Pollachius virens</i>
MAR	Malabar Grouper	<i>Epinephelus malabaricus</i>
DOL	Dolphinfish	<i>Coryphaena hippurus</i>
BRA	Pomfret	<i>Brama</i> spp.
POA	Ray's Bream	<i>Brama brama</i>
GPF	Small-scale Pomfret	<i>Xenobrama microlepis</i>
TAL	Big-scale Pomfret	<i>Taractichthys longipinnis</i>
BRU	Southern Ray's bream	<i>Brama australis</i>
OTI	Banded/Spotted Croaker	<i>Protonibea diacanthus</i>
BAC	Pickhandle Barracuda	<i>Sphyraena jello</i>
GBA	Great Barracuda	<i>Sphyraena barracuda</i>
BAR	Striped Sea Pike	<i>Sphyraena</i> spp
OIL	Oilfish	<i>Ruvettus pretiosus</i>
LEC	Black Oilfish	<i>Lepidocybium flavobrunneum</i>
GES	Snake Mackerel	<i>Gemphylus serpens</i>
BEH	Frostfishes	<i>Benthodesmus</i> spp.
BUK	Butterfly Mackerel	<i>Gasterochisma melampus</i>
WAH	Wahoo	<i>Acanthocybium solandri</i>
MLS	Striped Marlin	<i>Tetrapturus audax</i>
SFA	Indo-Pacific Sailfish	<i>Istiophorus platypterus</i>
BLM	Black Marlin	<i>Makaira indica</i>
SSP	Shortbilled Spearfish	<i>Tetrapturus angustirostris</i>
CEO	Rudderfish	<i>Centrolophus niger</i>
EOL	Lemon Sole	<i>Pelotretis flavilatus</i>
MOP	Sunfish	<i>Mola ramsayi</i>

Attachment 3.

Longline catch rates of the 20 most abundant species reported by observers during 2003–04.



Observers reported a further 26 species, which are not shown in this graph. Observers monitored 13 longline trips, covering 104 longline operations and 134 755 hooks. All operations were night sets. Note that the proportion of each species retained and released is shown and that many of the bycatch species were released in good condition.