

National Report to the IOTC Scientific Committee for Australian tuna fisheries 2006

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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 2005, Australian longliners caught 301 t of broadbill swordfish, 36 t of yellowfin tuna and 31 t of bigeye tuna. These catches are significantly less than 20% of peak catches taken in 2001 and 2002. The number of active longliners and levels of fishing effort have declined significantly and is attributed to reduced profitability, caused by lower fish prices and high costs. The purse seine fishery caught 5210 t of southern bluefin tuna in 2005 but insignificant amounts of skipjack tuna. 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.

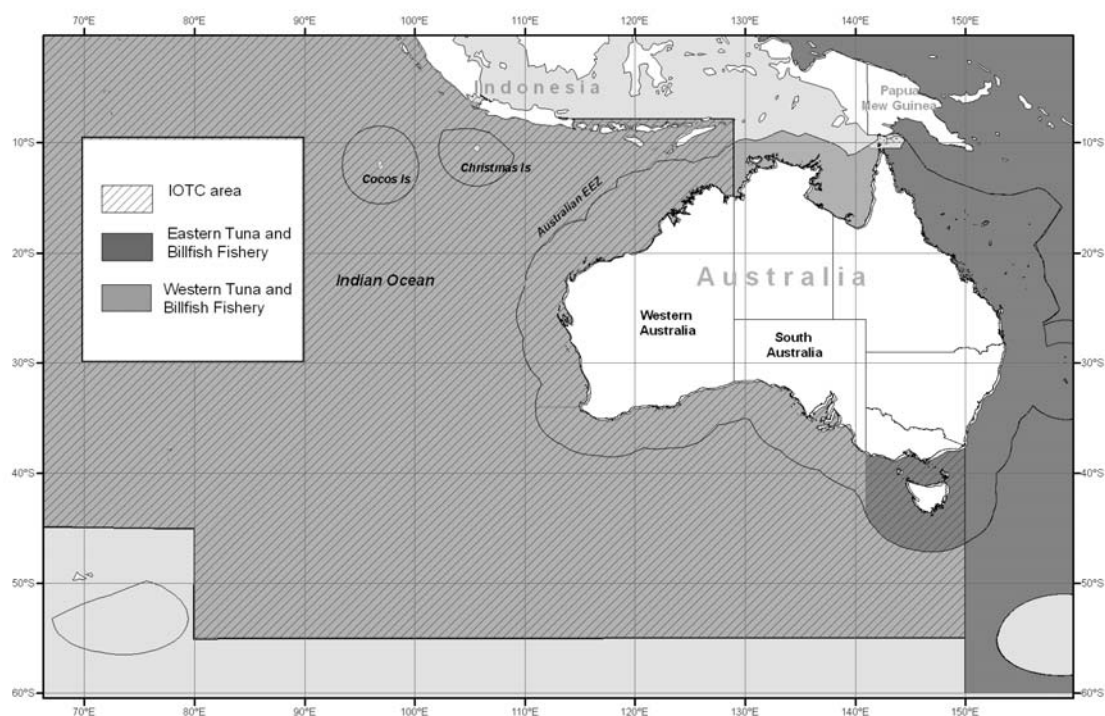


Fig 1. Location of ETBF and WTBF

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 has declined to about 300 t in 2005 and the yellowfin tuna and bigeye tuna catches have shown more dramatic reductions to less than 10% of peak annual catches.

Table 1. Longline catches (tonnes liveweight) of tuna and billfish by Australian vessels in the IOTC area 2001-2005.

Calendar Year	Swordfish	Yellowfin tuna	Bigeye tuna
2001	2136	557	386
2002	2000	355	419
2003	1184	191	205
2004	370	151	91
2005	301	36	31

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 2005, 5210 t of SBT were captured. In some seasons, purse seine vessels also target skipjack tuna late in the SBT season. Only very small quantities of skipjack have been caught in the last three years. Slightly larger catches of skipjack were made in 2001 (898 t) and 2002 (1144 t). Australia's take of skipjack tuna is negligible in the context of the global fishery.

The multipurpose fisheries target different species to the longline and purse seine fisheries. In 2005, 14 t of longtail tuna and 32 t of Spanish mackerel were captured using handlines and 278 t of Spanish mackerel and 5 t of albacore caught by trolling within the western regions of the Australian EEZ. Smaller quantities of skipjack tuna and bonitos were also captured by these methods.

1b. Fleet structure

The number of Australian longline vessels operating in the IOTC area declined significantly in 2005 to six vessels 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 6.21 million hooks in 2001 to 0.75 million hooks in 2005. The main factor influencing the decline in fishing effort is reduced profitability, caused by lower export prices and higher costs, particularly fuel costs.

The longline vessels range in length from 20 m to 35 m and no more than 200 GRT. Ice, ice slurry or brine spray systems are used to chill the catch and trips are limited to approximately ten days at the most.

The purse seine fleet has remained reasonably constant at 7-9 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 varies in size from 20 m to 45 m length.

Table 2. Number of longline and purse seine vessels active in the IOTC area 2001 to 2005.

Calendar Year	Longline	Purse seine
2001	45	13
2002	43	9
2003	36	7
2004	22	7
2005	6	8

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 (VMS) 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 introduced 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 has continued into 2006. Evaluation of the pilot program will be undertaken this year and a decision on future observer coverage then made by the fishery management advisory committee.

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. This is then extrapolated to estimate total weight and number of fish in each cage.

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 2006, 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

Following is a list of Commonwealth funded research and monitoring projects underway that are relevant to Australia's domestic fisheries operating in the eastern Indian Ocean. Principal investigators and the year of commencement are shown in parentheses.

- WTBF size monitoring program (Williams 1999)
See section 1 above.
- Pilot scientific monitoring program for the SWTBF (BRS 2003)
See section 1 above.
- Scientific assessment for TAC setting advice (CSIRO/BRS 2005)
CSIRO and BRS undertake fishery assessments for the Western Tuna and Billfish Stock Assessment Group that are input to TAC setting by the Management Advisory Committee.
- Effects of fishing on high-risk bycatch species (BRS/CSIRO 2005)
The project aims to identify a subset of bycatch species that may be at a high risk of overfishing by longline in the WTBF and wider Indian Ocean. It will review published and unpublished literature relevant to the assessment of selected species and collate catch, effort and size data and information on age and growth of selected species. Project near completion.
- Development of a robust set of stock status indicators for the Southern and Western, and the Eastern Tuna and Billfish Fisheries (CSIRO 2002)
Project near completion.
- SWTBF ecological risk assessment (CSIRO 2003)
CSIRO is conducting ecological risk assessments for all fisheries managed by the Australian Government. Project near completion.

- Implementation of bycatch mitigation measures in Australia's pelagic longline fisheries. (BRS 2006)

This project will quantify the effects of mitigation measures on target and non-target catches. The results will provide a basis for informed decision-making that takes into account the effects of those measures on other species and the industry's economic performance.

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 Commonwealth banned the retention of blue and black marlin, whether alive or dead, taken anywhere in the AFZ by commercial fishing. Resource sharing arrangements agreed in 2005 have brought about restrictions on the areas to be fished by longline vessels to allow use of these areas by recreational fishers.

4.2 Environmental issues

In response to bycatch issues, AFMA has formulated Bycatch Action Plans for all Australian tuna fisheries.

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).

Catches of sea turtles have been reported in SWTBF 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 SWTBF 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, 1986–2004.

Year	Effort (million hooks)	Yellowfin tuna	Bigeye tuna	Swordfish	Skipjack tuna*	Albacore tuna	Blue Rudder shark -fish	Blue marlin	Black marlin	Striped marlin
1986	0.05	0.00	16.76	0.49	635.10	14.47	0.00	0.00	0.00	0.05
1987	0.29	2.55	44.28	0.11	1208.80	9.56	0.00	0.00	0.00	0.00
1988	0.14	0.23	6.69	0.11	81.90	7.47	0.00	0.00	0.00	0.00
1989	0.68	157.63	53.79	19.07	2.20	24.89	0.00	0.00	9.37	17.82
1990	0.35	54.53	32.86	12.44	635.70	4.32	0.00	0.00	4.55	3.90
1991	0.00	0.72	1.06	0.21	0.00	3.89	0.00	0.00	0.00	0.00
1992	0.07	7.46	8.51	1.12	334.00	12.04	0.00	0.00	0.00	0.20
1993	0.36	1.98	26.72	9.64	29.00	33.65	0.00	0.00	0.00	0.06
1994	0.39	14.06	22.66	26.38	1201.00	40.20	0.00	0.00	0.08	0.42
1995	0.53	53.16	47.00	46.07	465.00	3.55	0.00	0.00	0.05	0.05
1996	0.28	89.07	21.68	15.68	335.27	2.55	0.00	6.28	0.00	0.01
1997	0.52	246.45	42.99	25.35	27.00	16.64	0.03	9.82	1.55	2.59
1998	1.04	232.06	160.45	235.74	1400.20	23.48	0.44	34.64	0.00	0.00
1999	3.53	405.06	411.48	1009.55	826.00	20.05	0.41	54.50	0.00	0.00
2000	6.20	427.40	433.40	1684.90	486.00	30.59	24.15	82.48	0.00	0.00
2001	6.21	557.46	385.99	2135.62	897.80	93.85	26.11	46.13	0.00	0.00
2002	5.98	354.64	418.51	1999.76	1144.01	71.97	52.49	31.40	0.00	0.00
2003	3.84	191.04	205.39	1183.95	0.0	65.62	39.43	18.94	0.00	0.00
2004	1.52	151.35	90.69	369.69	30.00	25.33	18.77	3.99	0.00	0.00
2005	0.75	35.44	31.14	301.32	0.33	7.20	9.58	1.59	0.00	0.00

*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 according to a report by Campbell (2001), data recorded by fishermen in the early years is likely to be a mix of whole and processed weights, therefore the data presented here for years prior to 2000 are likely to underestimate whole weight.

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

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 longliner trips, amounting to 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.