

**Australian Country Report: Ecologically Related Species in the Australian  
Southern Bluefin Tuna Fishery**

**ERSWG 7**

**Tokyo, 3 – 6 July 2007**

Bensley<sup>1</sup>, N., Stobutzki<sup>1</sup>, I. and Murphy<sup>2</sup>, R.

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<sup>1</sup> Bureau of Rural Sciences, GPO Box 858 Canberra ACT 2601

<sup>2</sup> Australian Fisheries Management Authority, GPO Box 7051 Canberra Business Centre ACT 2610

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## 1. Introduction

Three Australian fisheries catch Southern Bluefin Tuna (SBT) in varying quantities; the Southern Bluefin Tuna Fishery (SBT Fishery), Eastern Tuna and Billfish Fishery (ETBF) and the Western Tuna and Billfish Fishery (WTBF). These fisheries have distinct characteristics and management plans and are therefore discussed separately within this report. The SBT Fishery utilises the method of purse seining for smaller SBT. After capture, these fish are transferred to grow-out cages until harvesting. The ETBF and WTBF are both pelagic longline fisheries that incidentally catch SBT. Primary target species in these longline fisheries include yellowfin tuna (*Thunnus albacares*), bigeye tuna (*Thunnus obesus*), albacore tuna (*Thunnus alalunga*), broadbill swordfish (*Xiphias gladius*) and striped marlin (*Tetrapturus audax*).

Australia identifies Ecologically Related Species<sup>3</sup> (ERS), or non-target catch, as either byproduct or bycatch. Byproduct species are sometimes kept and sold, while bycatch is discarded at sea. Bycatch can also include the bycatch of protected species<sup>4</sup>. The longline fisheries are multi-species fisheries which, while being relatively selective, catch a range of fish including shark species and interact with a number of seabird species. Much of the non-target finfish catch in these fisheries is considered to be byproduct and is made available to the local market. Discarding of species with little or no commercial value has previously been the focus of management initiatives with AFMA recently commencing the implementation of the *AFMA Guide to Addressing Bycatch in Commonwealth Fisheries*, a policy which requires no discarding of quota species and substantial reduction in non quota species discarding. In contrast to the longline fisheries, purse seining for SBT has very little interaction with ERS. The nature of the purse seine fishing method allows the operators to be very specific in targeting their catch and as a result few byproduct or bycatch species are captured in the nets.

Although longline caught SBT is a very minor component of Australia's total SBT catch (less than one per cent), Australia has invested considerably in the endeavour to reduce the rate of both seabird interactions and captures across all our longline fisheries. Through Government and Industry initiatives, the incidence of seabird bycatch has declined markedly in recent years. The longline fishing industries are continuing to develop new and innovative ways to reduce impacts on seabird populations.

This report includes information and data on ERS from Australia's SBT fisheries up to the completion of the 2005-2006 SBT fishing season, which ran from 1 December to 30 November. The fishing in the SBT Fishery for the grow-out farms usually occurs from December to March each year. Data reported for the longline fisheries constitutes the longline fishing seasons which are defined by the Australian financial year, July 1 to June 30. Longline interactions with SBT occur primarily in the winter months between May and October.

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<sup>3</sup> The *Southern Bluefin Tuna Fishery Management Plan 1995* defines ecologically related species as (a) any species of fish, marine mammal or marine turtle that is prey of, or preys on, southern bluefin tuna (*Thunnus maccoyii*); and (b) any species of animal that is, or may be, incidentally affected by methods used to fish for southern bluefin tuna.

<sup>4</sup> 'Protected species' means all listed threatened, migratory, and marine species under the Australian Government *Environment Protection and Biodiversity Conservation Act 1999* and all cetaceans.

## 2. Review of SBT Fisheries

### 2.1. *Historical Fleet Size and Distribution*

Australians began fishing for SBT in the early 1950s off New South Wales and South Australia and then later in 1970 off Western Australia. The catch was used primarily for canning and peaked at 21 500 tonnes in 1982.

Progressively over the mid to late 1980s, the Australian catch focused on supplying the Japanese sashimi market. The introduction of an individual transferable quota (ITQ) based management plan in 1984, based on an Australian TAC of 14 500 tonnes, resulted in the redistribution of quota ownership. In the late 1980s the Australian quota was reduced to 5265 tonnes which led to further restructuring. Since 1992 there has been a progressive increase in the number of SBT taken under farming operations. In the three most recent seasons the purse seine sector utilized approximately 98 per cent of the available quota.

From 1990 to 1994, approximately half the Australian quota was taken by Australia-Japan joint venture longliners. With the termination of the joint venture arrangements in 1995, Australian catches again focused on the surface fishery with poling operations supplying the fresh chilled sashimi market and purse seiners providing SBT to farms.

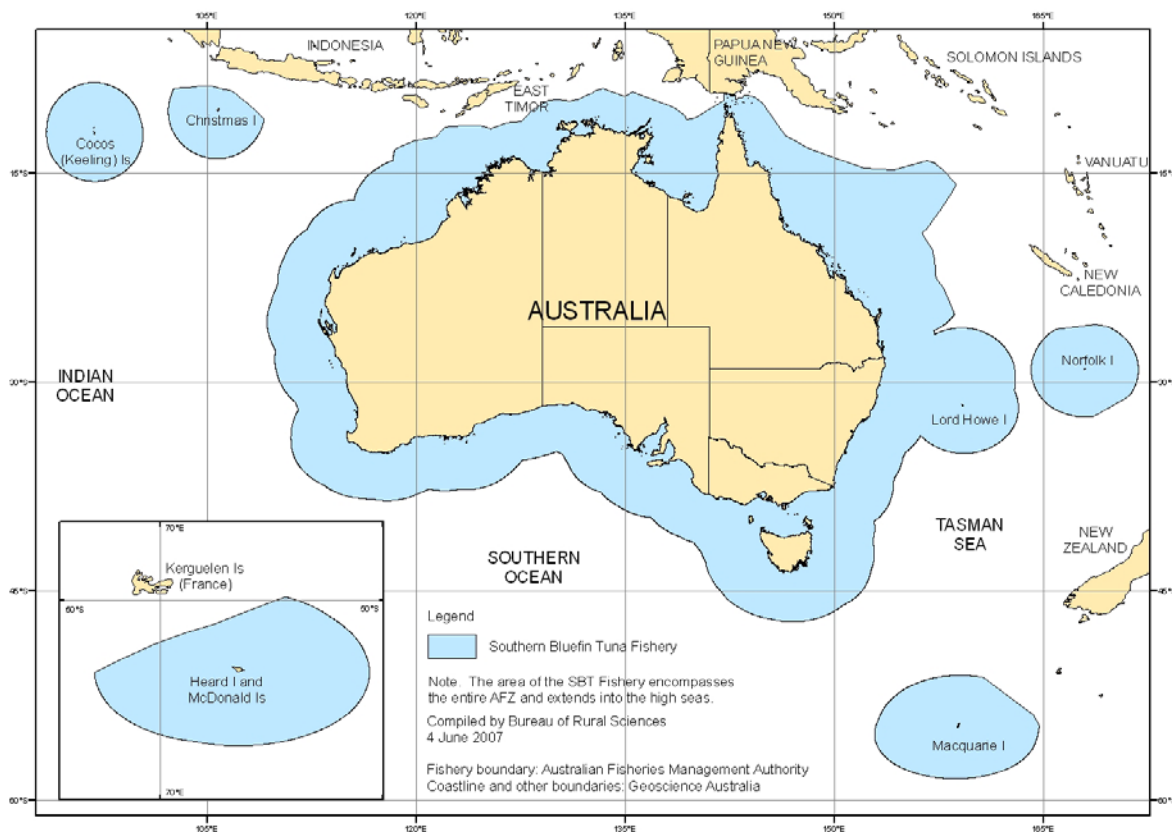
In the past there has been longlining for SBT off New South Wales, Tasmania, Western Australia, with occasional catches in South Australian waters. There were also some purse seine, trolling and poling operations in the Australian Fishing Zone (AFZ). Currently there is limited amount of targeted longline fishing for SBT off south eastern New South Wales during the winter months (May – October).

To minimise the risk of non-quota take of SBT by longliners off New South Wales and Western Australia targeting other fish species, access to the waters through which SBT migrate is restricted during the period of peak interaction with these fisheries. On the east coast AFMA actively manages access to these areas based on the outputs of a SBT habitat preference model. AFMA uses the scientific data to implement a series of rolling SBT fishing closures to prevent captures not covered by SBT quota. This is achieved by the introduction of restricted access areas, known as the SBT core and buffer zones. In order to fish within the closures, longliners must obtain quota and pay for 100 per cent observer coverage. These arrangements have been in place since 2000 in New South Wales. This arrangement has resulted in a significant reduction in longline effort in southern areas, and corresponding reductions in seabird and other species bycatch. Arrangements have been in place since 2001 in Western Australia which requires operators to hold minimum amounts of SBT quota.

### **Southern Bluefin Tuna Fishery**

The area of the SBT Fishery encompasses the entire AFZ and extends into the high seas (Figure 1). The AFZ is defined consistently with Australia's Exclusive Economic Zone and extends out to 200 nautical miles from the baselines.

The Australian SBT Fishery is managed under the *Southern Bluefin Tuna Fishery Management Plan 1995*, with any commercial catch of SBT managed under that Plan. This management plan covers activities up to the farm gate, i.e. purse seining and tow cages.



**Figure 1:** Australia's Southern Bluefin Tuna Fishery.

### Eastern Tuna and Billfish Fishery

The Eastern Tuna and Billfish Fishery (ETBF) extends from Cape York to the South Australia-Victoria border and includes waters around Tasmania. Broadbill swordfish (*Xiphias gladius*), bigeye tuna (*Thunnus obesus*) and yellowfin tuna (*Thunnus albacares*) are the most valuable commercial species. They are caught by pelagic longline and either airfreighted fresh-chilled to Japan and the United States or, to a lesser extent, sold on the domestic market. Longliners also take significant amounts of striped marlin (*Tetrapturus audax*) and albacore tuna (*Thunnus alalunga*). Several other species, such as black oilfish or escolar (*Lepidocybium flavobrunneum*), rudderfish (*Centrolophus niger*), moonfish (*Lampris guttatus*) and mahi mahi (*Coryphaena hippurus*), are a significant component of the retained catch.

Domestic longliners are mostly 15–25 m long, though larger boats are becoming more common. ETBF longliners use monofilament gear and, on average, set about 1200 hooks each day on around 93 days per year. Trip length ranges up to 30 days, but most are between 2 and 15 days. The catch is stored on ice, in ice slurry or in refrigerated brine. Some vessels range up to 1000 n.mile or further from port to fish, but 40–300 n.mile is more typical. Actual fishing practices vary with target species, location and season.

In late 2005, the *Eastern Tuna and Billfish Fishery Management Plan 2005* was approved. The catch of the target species is managed by controlling the total fishing effort expended in the fishery in a season through a total allowable effort by limiting the number of hooks that can be set each year. Rights to the fishery are determined on an annual basis and the process for granting statutory fishing rights (SFRs) has recently commenced in the fishery.

## Western Tuna and Billfish Fishery

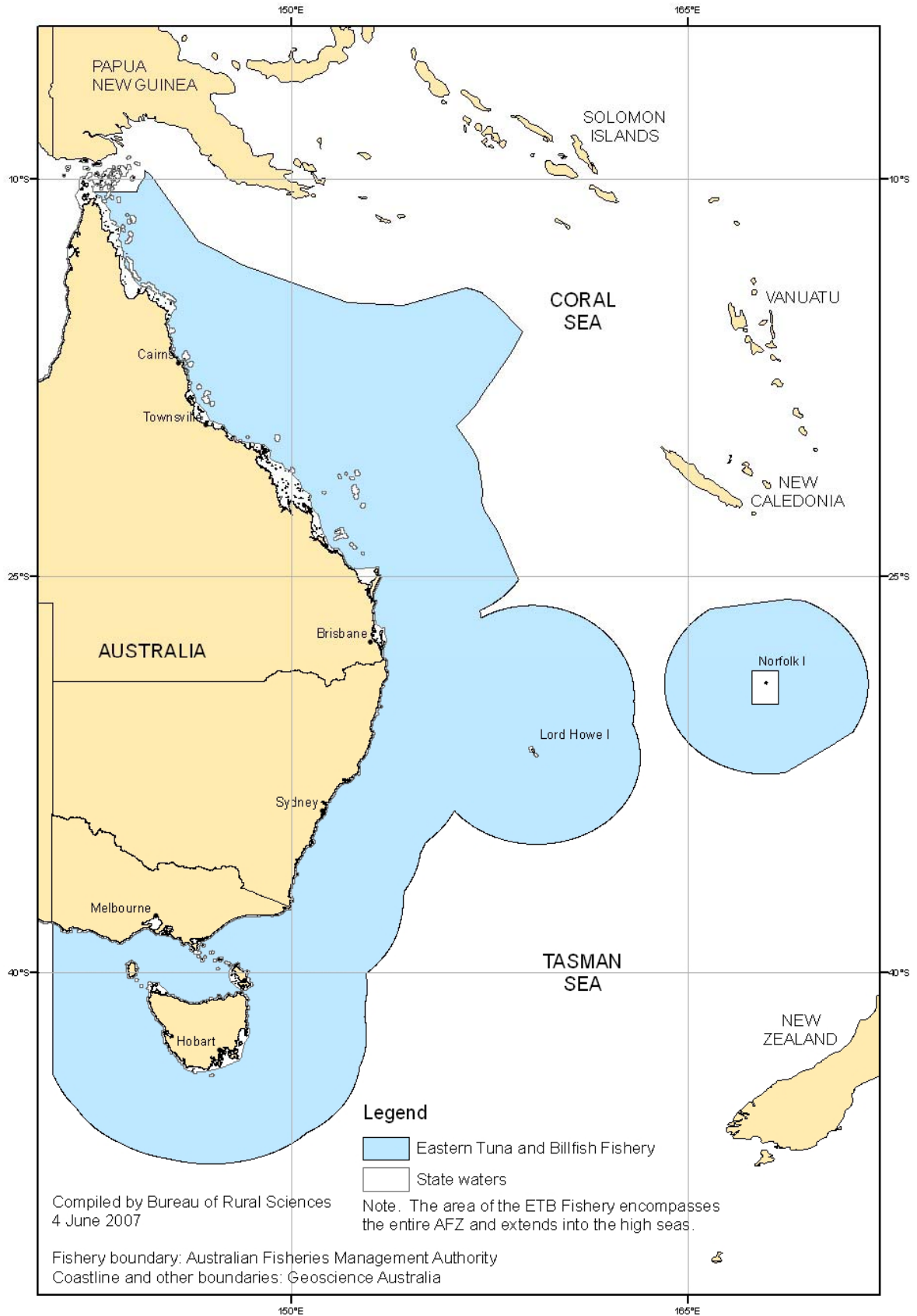
The WTBF encompasses the area of the AFZ off the northern, western and southern coastline westward from Cape York Peninsula (142°30'E) off Queensland, to 141°E at the South Australian/Victorian border (Figure 3). The fishery includes waters seaward of territorial waters (outside 12 nautical miles from the baselines) adjacent to Christmas and Cocos (Keeling) Islands and high seas areas throughout the Indian Ocean consistent with the area of competency of the Indian Ocean Tuna Commission.

All species of tuna and billfish caught in southern waters, except SBT and skipjack, are considered to form a part of this fishery. Despite the wide geographic extent of the fishery, the commercially valuable tuna and billfish species are not abundant in the shallow northern waters, consequently fishing activities are concentrated in oceanic waters along the west coast.

Most longline vessels in the fishery are 15–25 m long and set 1000–1500 hooks on monofilament lines, with an average of one set per day. Vessels fish throughout the year with an average of 10-15 day trips.

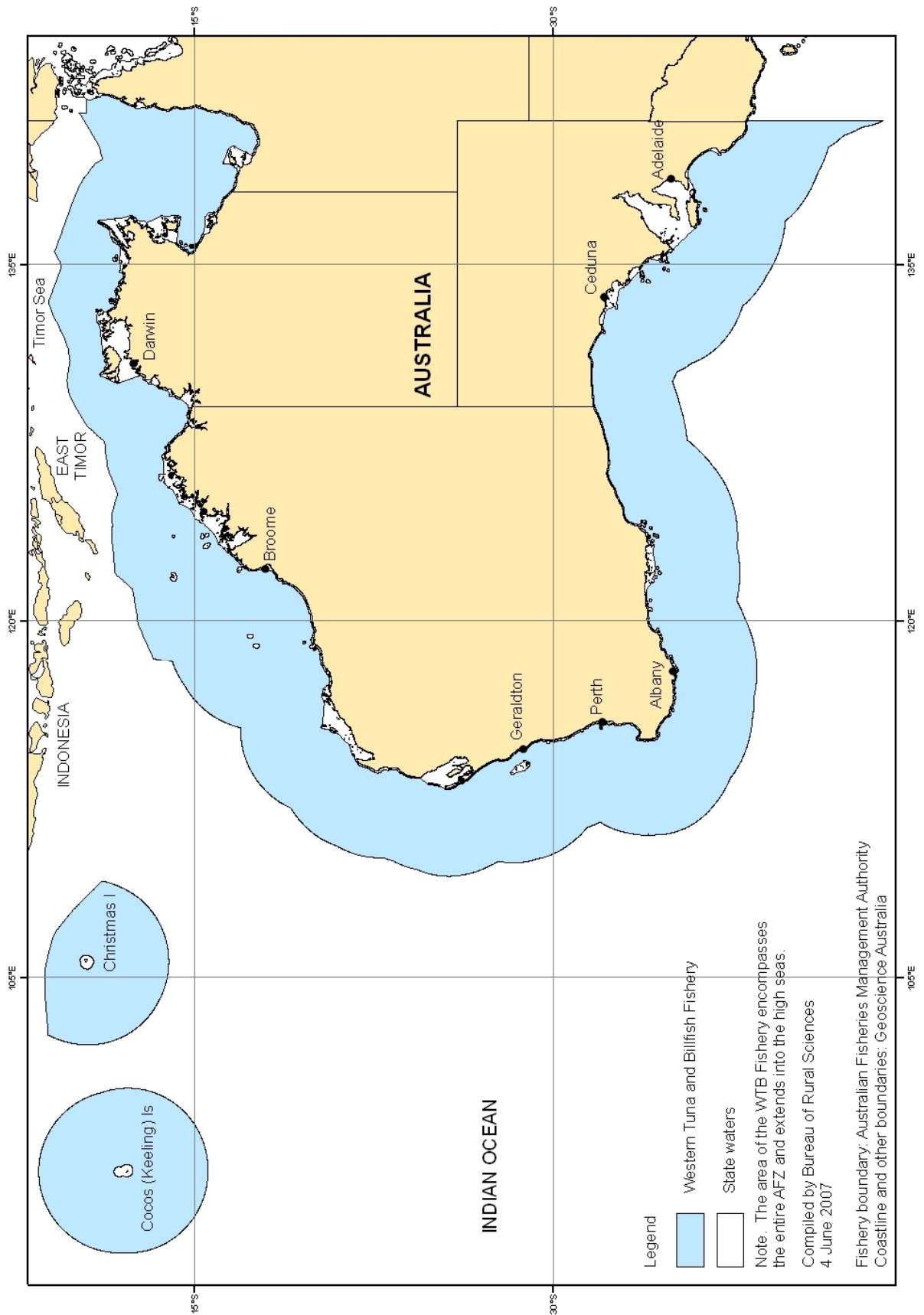
There has been a substantial decrease in the amount of fishing occurring in the WTBF since the peak in 2001-02. Both the amount of effort and catch have reduced to much less than their previous levels. The factors contributing to this decline have been suggested to include lower fish prices, higher costs for freight and fuel, as well as poor fish abundance and environmental conditions at certain times of the year.

As with the ETBF, the *Western Tuna and Billfish Management Plan 2005* was approved in late 2005. The Plan removed an internal barrier at 34° South which had previously separated the Southern and the Western Tuna and Billfish Fisheries and renamed the entire area the 'Western Tuna and Billfish Fishery'. The Plan provides for a system of ITQ statutory fishing rights (SFR) with the quota species being bigeye tuna, yellowfin tuna, striped marlin and broadbill swordfish. For a season, each SFR carries an entitlement to a share to the total allowable commercial catch for the relevant species.



**Figure 2: The Eastern Tuna and Billfish Fishery.**





**Figure 3:** The Western Tuna and Billfish Fishery.

## **2.2. Fleet size and distribution**

### **Annual Fleet Size and Distribution**

In 2005-06, a total of 14 commercial fishing vessels landed SBT in Australian waters, while in 2004-05, 24 commercial fishing vessels landed SBT in Australian waters.

### **Southern Bluefin Tuna Fishery (South Australia)**

The one- to five-year-old SBT, which school from late spring to autumn in surface waters of the eastern Great Australian Bight, were fished by seven purse seiners during the 2005-06 and eight in the 2004-05. Fishing commenced in mid December 2005 and finished in March 2006.

### **Eastern Tuna and Billfish Fishery (New South Wales, Tasmania, Queensland)**

During 2005-06, seven domestic longline vessels participated in the fishery for older juveniles and adults in deeper waters off New South Wales in winter. Longline fishing off NSW commenced in June 2006 and finished in September 2006. During 2004-05, 16 domestic longline vessels participated in the fishery off New South Wales.

No longline vessels, which landed SBT during 2004-2006, operated off Tasmania or Queensland.

### **Southern and Western Tuna and Billfish Fishery (Western Australia)**

No longline vessels caught SBT in this fishery in 2004-2006.

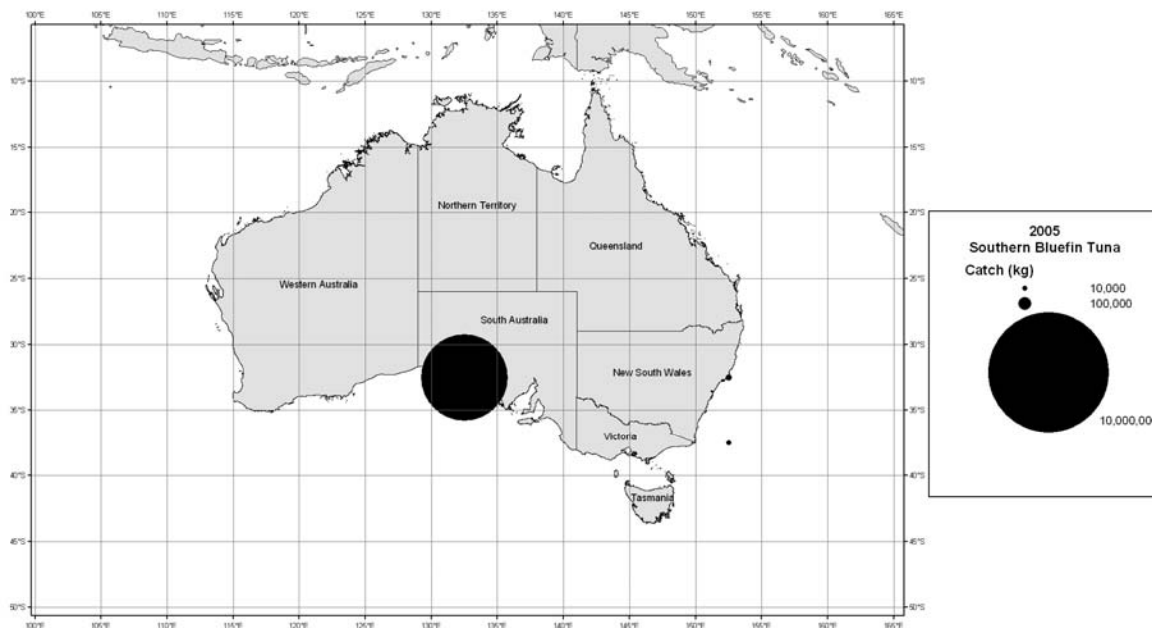
## **2.3. Distribution of Catch and Effort**

The 2004-05 quota year catch was 5215 t while the catch for the 2005-06 quota year was 5302 t.

The SBT landings for 2005-06 were:

- **Southern Bluefin Tuna Fishery**  
South Australia                      5302 tonnes (farmed)
- **Eastern Tuna and Billfish Fishery**  
New South Wales                      6 tonnes (longline)
- **Western Tuna and Billfish Fishery**  
Western Australia                      0 tonnes (longline)

SBT purse seined for fish farms in South Australia accounted for 99.9 % of the Australian quota, with the remainder taken by longliners off the New South Wales coast. There were no SBT poled off South Australia or Western Australia or trolled off Tasmania during either season. The Australian catch of SBT in the 2005 calendar year is mapped on Figure 4. The Australian catch by gear and state for the quota years 1988-89 to 2005-06 is shown in Table 1.



**Figure 4:** Australian SBT catch in the 2005 calendar year.

### 3. Fisheries Monitoring for Each Fleet

#### 3.1. Catch Documentation

There are a series of compulsory fishery-specific logbooks and associated catch records that are required by law to be completed by Australian fishers which includes operators of the tow cages (Attachments 1, 2, and 3). All of the data provided from Logbooks and Catch Disposal Records must be supplied to AFMA within specified time periods. Verification of this data is undertaken through observer programs and, as a minimum, through an annual audit process by AFMA.

In addition to detailed catch and effort information, specific reporting forms for protected species are included with fishery logbooks in all Australian Commonwealth fisheries (Attachments 4, 5 and 6).

AFMA has implemented a system of 'prior reporting' in the ETBF. Operators are required to inform AFMA of their impending arrival in port to alert authorities that they have catch on board their vessel.

#### 3.2. Observer Programs

Observer programs for the purse seine (including tow cage operations) and longline sectors have been in place for a number of years. The program began in the ETBF in September 2001 and in April 2003 in the WTBF. Since their inception, the observer coverage for SBT has been consistently greater than 10% of the fishing effort in both fisheries. A pilot observer program also began in the WTBF in April 2003 and has been continued despite the reduction in fishing over the past few years.

**Table 1:** Australian catch (t) by gear and State for quota years 1988-89 to 2005-06.

Quota Year	Western Australia				South Australia				New South Wales			Tasmania			Large Longliners			Australia Total				Total All Gears
	Albany Pole	Esperance Pole	Long-line	Total	Pole & Purse Seine	Farm Cages	Long-line	Total	Pole & Purse Seine	Long-line	Total	Troll	Long-line	Total	Aust. Charter	Joint-ventur	Total	Domestic Surface	Domestic Long-line	Total Long-line	RTMP	
1988-89	204	221	0	425	4872	0	0	4872	0	1	1	2	0	2	0	684	684	5299	1	685	0	5984
1989-90	133	97	0	230	4199	0	0	4199	0	6	6	14	0	14	0	400	400	4443	6	406	0	4849
1990-91	175	45	0	220	2588	0	0	2588	0	15	15	57	0	57	255	881	1136	2865	15	1151	#300	4316
1991-92	17	0	0	17	1629	138	14	1781	34	90	124	36	20	56	59	2057	2116	1854	124	2240	800	4894
1992-93	0	0	0	0	716	722	68	1506	16	238	254	23	44	67	0	2735	2735	1477	350	3085	650	5212
1993-94	0	0	0	0	621	1294	55	1970	0	286	286	7	105	112	0	2299	2299	1922	446	2745	270	4937
1994-95	0	0	0	0	908	1954	2	2864	0	157	157	4	109	113	0	1295	1295	2866	268	1563	650	5080
1995-96	0	0	0	0	1447	3362	0	4809	28	89	117	0	262	262	0	0	0	4837	351	351	0	5188
1996-97	0	0	0	0	2000	2498	0	4497	7	229	236	2	242	244	0	0	0	4507	472	472	0	4978
1997-98	0	0	^0	0	916	3488	^0	4403	~0	475	475	!0	219	219	0	0	0	4433	664	664	0	5097
1998-99	0	0	^0	0	28	4991	^0	5018	~0	97	97	!0	116	116	0	0	0	5016	216	216	0	5232
1999-00	0	0	^0	0	0	5130	13	5143	0	114	114	0	!0	0	0	0	0	5130	127	127	0	5257
2000-01	0	0	^0	0	0	5162	6	5168	0	32	32	0	!0	0	0	0	0	5162	38	38	0	5247
2001-02	0	0	7	7	0	5234	0	5234	0	*22	*22	0	!0	0	0	0	0	5234	29	29	0	5262
2002-03	0	0	≈0	0	0	5375	0	5375	0	17	17	0	0	0	0	0	0	5375	17	17	0	5391
2003-04	0	0	≈0	0	‡0	4874	†0	4874	0	*226	*226	0	20	0	0	0	0	4874	247	247	0	5120
2004-05	0	0	0	0	0	5214	0	5214	0	35	35	0	0	0	0	0	0	5214	35	35	0	5249
2005-06	0	0	0	0	0	5302	0	5302	0	6	6	0	0	0	0	0	0	5302	6	6	0	5308

# Note that a further 700t of Australian quota was 'frozen' (not allocated) in 1990-91.

^ 1997-98 and 1998-99 WA and SA non-farm catches are included in SA pole and purse seine catch, and in 1999-00 and 2000-01 WA longline catch is included in SA longline due to confidentiality guidelines.

~ 1997-98 to 1998-99 NSW pole and purse seine catches are included in NSW longline catch due to confidentiality guidelines.

! 1997-98 and 1998-99 Tas troll catches are included in Tas longline, and in 1999-00, 2000-01 and 2001-02 Tas longline catch is included in NSW longline due to confidentiality guidelines.

\* 2001-02 and 2003-04 NSW longline catch also includes QLD longline catch due to confidentiality guidelines.

≈ 2002-03 and 2003-04 WA longline catch is included in NSW longline due to confidentiality guidelines.

† 2003-04 SA longline catch is included in NSW longline due to confidentiality guidelines.

‡ 2003-04 additional SA purse seine catch that did not go into farm cages is included in SA farm cages catch due to confidentiality guidelines.

AFMA Observers are professionally trained and briefed to collect and verify fishery data on both target (SBT) and non-target species. The information collected by observers is extensive and provides management agencies with an accurate and descriptive representation of the fishery. The observer reports include details of daily fishing operations, the mitigation measures employed and any non-target interactions (Attachment 7). In terms of the catch ERS species, the number (and weight where appropriate) of each species caught, the life status, and whether it was retained or discarded is recorded for each shot observed.

### **Purse seine sector**

For the SBT purse seine fleet operating out of Port Lincoln, the design coverage was intended to be 10% of the fishing effort. In 2005, observers covered a total of 26 sea days on purse seine vessels and an additional 27 days on tow cage operations. The observed fishing was 11% of the effort for the fishery and estimated 12% of catch.

### **Longline sector**

The observer program has been running for six years in the ETBF and in that time, the coverage in the areas where SBT are likely to be caught has remained above the 10% required by CCSBT. The distribution of observers throughout the fishery has been unbalanced due to a number of factors including a higher abundance of seabirds in southern regions of the fishery and an increased coverage associated with the implementation of SBT fishing zones. Recent modification to the ETBF observer program, including improved liaison and selection of vessels has addressed these concerns.

## **3.3. Vessel Monitoring System**

All Australian longline vessels, including those that catch SBT, are required to operate Integrated Computer Vessel Monitoring Systems (ICVMS) whilst fishing and transiting to and from fishing areas. This allows real-time vessel position and activity reporting to a central VMS operations area at AFMA.

From 1 July 2007 all Australian purse seine and tow vessels catching and towing SBT for the Australian farm fishery off Port Lincoln are required operate ICVMS. Currently they report their locations and catch details on a daily basis. This may be done by ICVMS, or at sea by satellite phone, mobile phone or fax.

## **3.4. Port Monitoring**

Australian Fisheries Officers conduct random inspections of landings at key SBT ports, as well as at-sea boarding and inspection of vessels taking SBT in the longline and purse seine fisheries.

Compliance risk assessments for all sectors taking SBT are completed annually and a specific compliance operational plan is then developed and implemented annually for each fishery.

## 4. Seabird Interactions<sup>5</sup>

### 4.1. Threat Abatement Plan 2006

The vulnerability of seabirds to capture during longline fishing operations throughout the world has been well documented. Oceanic longline fishing operations have been listed as a key threatening process under Australia's *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). This listing required the Australian Government to develop a Threat Abatement Plan as a means of mitigating the threat to seabirds through the implementation of conservation measures and coordination of actions to alleviate the impact of longline fishing activities on seabirds in Australian waters. The Plan is known as the *Threat Abatement Plan 2006 for the Incidental Catch (or Bycatch) of Seabirds During Longline Fishing Operations* (TAP) and applies to all longline fisheries under Australian Government jurisdiction. The original TAP came in effect in 1998 (see CCSBT-ERS/0707/Info/06).

The Australian Government released a revised TAP in 2006. The original Plan had a life of five years, expiring in 2003. Under the requirements of the EPBC Act, it was necessary to review the original TAP and to determine its success against the TAPs objectives through an examination of data and the success of management arrangements. Substantial progress has been made toward reducing the impacts of fishing on seabirds. The prescriptions in the revised TAP recognise this success and seek to further reduce the incidental capture of seabirds.

Consistent with the objectives and prescriptions of the TAP, Australia has implemented conditions aimed at reducing seabird mortality through fishing permits. These are detailed in Section 7 (Seabird Mitigation Measures) of this report.

Australia continues to strongly support implementation of the FAO *International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries* (IPOA-Seabirds). Australia has demonstrated its commitment to reduce the incidental catch of seabirds through the development of the TAP, which satisfies Australia's commitment to the IPOA-Seabirds and prescribes compulsory use of mitigation measures within Commonwealth longline fisheries. The Australian Government is working to finalise its NPOA-Seabirds and it is expected to be released for public comment in 2007. Priority has been placed on effective implementation of the TAP given its legislative basis and capacity to prescribe mandatory threat abatement measures. Substantial progress has been made in reducing the impacts on seabirds of longline fishing in Australian waters. Australia completed its NPOA-Seabird Assessment Report in 2003 and it will be reviewed in 2007-08.

### 4.2. Observed Interactions with Seabirds

#### Southern Bluefin Tuna Fishery

There are very few recorded incidences of seabirds interacting with fishing vessels or gear in the SBT Fishery. Three seabird interactions were observed during the 2004-05 fishing season. The first interaction occurred when a shearwater was observed floating dead in the water during the hauling operation, however the observer was unable to determine how the interaction occurred or if the death was as a result of the fishing operation. The second recorded interaction took place when setting the gear when the observer saw a Storm Petrel collide with the vessel and die on impact. The final interaction recorded for the SBTf occurred when a shearwater became entangled in the net. The observer was

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<sup>5</sup> For Australian reporting requirements an 'interaction' is defined as any physical contact a fishing operation has with any retained or non-retained species. This includes all catching (hooked, netted, entangled) and collisions with an individual species (Source: AFMA/DEW Reporting MoU).

able to recover the bird and release it alive. Anecdotal evidence from observers suggests caution against extrapolation of this data because the interactions were vessel specific.

### **Eastern Tuna and Billfish Fishery**

Of the fisheries that interact with SBT, historically the only one with a substantive problem with seabird interactions is the ETBF. The implementation of mitigation measures in line with the threat abatement plans has resulted in a substantial decrease in interaction with seabirds.

Observers record all interactions including light and heavy contact with fishing vessels or gear, number of birds chasing or diving on baits, as well as abundance counts of birds seen around fishing vessels while fishing is in progress.

Of the shots observed in the ETBF that captured SBT during the period 27/09/2001 – 29/09/2006 only three albatross captures have been recorded one of which was able to be released alive.

### **Western Tuna and Billfish Fishery**

The prevalence of seabirds on the west coast of Australia is considerably less than that of the east coast. In addition to the lower abundance of birds fishing activity has been very low and this fishery has not targeted SBT in several years. With respect to seabird interactions, the majority of the fleet in the WTBF targets broadbill swordfish and as such predominately operates at night. As result seabird interactions are less likely. Observer data from recent years shows seabird interactions are below the target of 0.05 birds/per 1000 hooks prescribed by the TAP.

## **5. Non-target Fish**

Whilst the target species in Australia's longline fisheries are primarily tuna and billfish, there is a wide range of other fish species taken in these fisheries. For instance, observers in the ETBF reported 48 different species of fish caught in association with SBT captures during the period 27/09/2001 – 29/09/2006. A summary of the composition of observed non-target fish species catch in the ETBF 2005/06 is detailed in Table 5.

The 2005/06 observed catch composition in the ETBF shows that yellowfin tuna and albacore tuna are the most abundantly caught species.

Records of non-target species taken in Australia's SBT surface fishery, and longline fisheries are largely derived from logbook records, and are generally unverified. There is concern that logbook data do not reflect the true quantity of non-target species taken by longline vessels.

**Table 5:** Observed catch (number) of fish species in the ETBF longline sector 2005/06.  
Note: the table represents data for the entire ETBF of which SBT effort is only a very minor component.

Species name	Kept	Not Kept	Escaped	Tagged	Total
Yellowfin tuna	4,339	253	33	73	4,698
Albacore Tuna	4,418	105	21	5	4,549
Longnose Lancetfish	6	1,463	0	0	1,469
Broadbill Swordfish	1,254	68	20	33	1,375
Ray's Bream	849	2	2	3	856
Dolphinfish	802	16	26	4	848
Black Oilfish	676	58	4	1	739
Bigeye Tuna	551	77	4	23	655
Snake Mackerel	0	603	0	0	603
Striped Marlin	340	23	15	2	380
Blue Shark	14	247	38	79	378
Skipjack Tuna	293	77	0	0	370
Southern Bluefin Tuna	238	60	3	19	320
Sunfish	1	251	0	2	254
Shortnose Lancetfish	1	238	2	0	241
Mixed fish	10	57	141	1	209
Shortfin Mako	138	35	11	7	191
Black Marlin	0	107	3	11	121
Bronze Whaler	27	67	17	3	114
Wahoo	96	14	2	0	112
Shortbilled Spearfish	42	40	1	1	84
Pelagic Stingray	0	71	0	0	71
Tiger Shark	10	46	0	2	58
Oilfish	40	11	0	0	51
Oceanic Whitetip Shark	7	23	7	0	37
Great Barracuda	0	36	0	0	36
Blue Marlin	0	34	1	0	35
Bigeye Thresher	1	32	0	1	34
Silky Shark	5	16	1	5	27
Manta Ray	0	19	0	0	19
Rudderfish	14	5	0	0	19
Hammerhead Shark	4	12	0	0	16
Pelagic Thresher	0	13	0	0	13
Malabar Grouper	0	13	0	0	13
Pickhandle Barracuda	1	12	0	0	13
Opah	9	3	0	0	12
Thresher Shark	0	10	0	0	10
Dusky Shark	0	8	2	0	10
Common Blacktip Shark	6	4	0	0	10
Whaler Shark	2	6	0	0	8
Barracouta	0	7	0	0	7
Toadfishes	0	7	0	0	7
Crocodile Shark	0	5	0	0	5
Indo-Pacific Sailfish	3	2	0	0	5
Scalloped Hammerhead	0	4	0	0	4
Hector's Lanternfish	0	4	0	0	4
Sand Whiting	3	1	0	0	4
Northern Bluefin Tuna	4	0	0	0	4
Black Bream	3	0	0	0	3
Longfin Mako	0	2	0	0	2
Porbeagle	0	2	0	0	2
Cookie-cutter Shark	2	0	0	0	2
Yellowtail Kingfish	2	0	0	0	2
Blue-toothed Tuskfish	2	0	0	0	2
Frostfishes	0	2	0	0	2
Driftfishes	2	0	0	0	2
Australian blacktip shark	0	1	0	0	1
Great Hammerhead	1	0	0	0	1
Smooth Hammerhead	1	0	0	0	1
Spurdog	0	1	0	0	1
Black Conger Eel	1	0	0	0	1
Dealfish species	0	1	0	0	1
Jackass Morwong	1	0	0	0	1
Marlins, Sailfishes nei	0	0	1	0	1
Blue Warehou	1	0	0	0	1



## 5.1. Sharks

The prevalence of shark captures in Australia's fisheries has received considerable attention over the past several years. Historically, longliners have often used wire trace to reduce damage to gear and gear loss caused by sharks. Sharks are unable to break free from wire leaders and are landed, usually dead, so the hook can be retrieved. To reduce the incidence of shark deaths, the use of wire trace has been banned in the ETBF (2005) and WTBF (2004).

In addition, to prevent indiscriminate shark finning, longline operators are restricted to a 20 shark trip limit and must land trunks with fins attached. This limit however, does not apply to great white and grey nurse sharks which are no-take species protected under Australian law.

These regulations are likely to have reduced the shark captures in the longline sector.

In developing management arrangements for the shark, decision makers are guided by the recommendations in Australia's *National Plan of Action for the Conservation and Management of Sharks* (NPOA-Sharks - see CCSBT/0707/Info/07).

### Southern Bluefin Tuna Fishery

Bycatch of sharks during pole-and-line and purse seine fishing (including farm operations) for SBT is very minimal. Sharks taken as bycatch are able to be released before the net is retrieved and fish are transferred to towing cages. Sharks are known to interact with tow cages containing SBT that are being towed back to farms. Fishers are actively developing strategies to minimise these interactions including the use of predator nets.

### Eastern Tuna and Billfish Fishery

The 2005/06 observed catch of sharks in the ETBF is summarised in Table 5. The observer program shows that blue sharks (*Prionace glauca*) and shortfinned mako sharks (*Isurus oxyrinchus*) account for most of the reported catch. Most of the shark bycatch is currently discarded, species that tend to be retained are mako sharks although the information on this is limited (Table 5). The most commonly caught shark species, blue shark, appear to be most often landed alive and discarded. The spatial distribution of shark catches in the ETBF is not well understood and little scientific information currently exists on the abundance of shark species.

### Western Tuna and Billfish Fishery

In recent years the highest proportion of the shark catch in the WTBF has been made up by blue whaler sharks mostly landed alive and discarded.

An increased take of blue shark bycatch for high seas operations has been approved by AFMA to single jurisdiction high seas trips, and sets an interim trip landing limit for high seas caught pelagic sharks taken by WTBF operators of up to 100 pelagic sharks per trip comprised of a maximum of 80 blue whaler sharks and a maximum of 20 from a range of other oceanic shark and ray species.

Crocodile sharks (*Pseudocarcharias kamoharui*) have also been caught in relatively high numbers in the fishery in the past, these tend to be discarded.

## 6. Marine Mammals and Marine Reptiles

The longline and SBT purse seine fisheries all have a very low incidence of marine mammal and reptile interaction compared with many other fisheries both within Australia and throughout the world.

Observer data from the ETBF indicates that in the period 27/09/01 to 29/09/06 one leatherback turtle (*Dermochelys coriacea*) was caught in association with the catch of SBT.

## 7. Mitigation Measures

In December 1998, Australia's Oceans Policy established principles and actions to pursue ecologically sustainable development in Australian fisheries. The policy commitment included a requirement, under the EPBC Act, to prepare strategic assessment reports for all Commonwealth fisheries and those fisheries with an export component to ensure they are managed in an ecologically sustainable manner. The reports consider the impacts of the fishery on species caught in the fishery (retained and not-retained) and the broader marine environment. Strategic Assessments have been completed for the SBT Fishery and the longline fisheries and continue to guide the development of improved management arrangements to reduce the ecological impacts of Australian fisheries catching SBT.

Measures to reduce the ecological impacts of fisheries catching SBT rely initially on the analysis of fishery dependant and independent data collected through observer programs, fishery logbooks and targeted fishery research activities. As data is collected, and the impacts of SBT fishing operations on ERS become clearer, strategies to reduce these impacts are continuing to be developed and refined.

In this context, Australia has:

- Continued to use catch and effort logbooks to collect data on the catch of target and non-target species;
- Introduced observer programs in the SBT surface fishery; and its longline fisheries targeting SBT, including specific reporting requirements for protected species;
- Initiated a range of at-sea programs to trial strategies to reduce the incidental mortality of seabirds caught during longlining operations;
- Introduced detailed strategies to reduce bycatch and impacts on ecologically related species, performance measures to monitor progress, and reporting and review targets to assess the effectiveness of these strategies, and refine them where necessary. An important part of these strategies is the development of fishing industry Codes of Practice to reduce impacts on ERS.

Australia has completed an ecological risk assessment for each of its fisheries to quantify impacts on ecologically related species and the marine environment. The purpose of the project is to undertake ecological risk assessments for major fisheries managed by the Australian Government and to develop a framework for future risk assessments as additional information becomes available. The results of the project will help inform fisheries management agencies of priorities for research, data collection, monitoring and management and ensure there is a high level of confidence in the results that can be verified.

The ecological risk assessments rely on existing biological and catch information and consider five ecosystem components – target species, byproduct and bycatch species, protected species, habitats and communities. The assessments categorise various species into high, medium or low risk on the basis of their susceptibility to capture by the various fishing methods and the ability for species populations to recover. Completion and implementation of the project forms a core component of AFMAs move to ecologically based fisheries management.

## 7.1. Current Measures

### Mandatory Measures for Each Fleet

Reporting of protected species interactions is required within seven days under the EPBC Act. Failure to report interactions is an offence, carrying a penalty of up to \$11,000.

No action is taken for not reporting interactions directly, if interactions are reported in AFMA logbooks and provided to AFMA.

Additionally, failure to complete logbooks, including the listed marine and threatened species form/Wildlife reporting form, in accordance with the instructions can lead to a suspension or cancellation of a fishing concession.

### Seabirds

Regulations to reduce seabird bycatch in Australia's longline fisheries were put in place in February 2001. At that time, the regulatory conditions were separated by the latitudinal line of 30° South. In 2004, with the accumulation of observed data on the incidence of seabird interactions, permit conditions were amended to raise the line to 25° South in the ETBF. The line has remained at 30° South in the WTBF.

ETBF vessels operating south of latitude 25° South are required to:

- Deploy a tori pole apparatus that complies with specifications during line setting;
- Use weighted branchlines at all times. Weighting regimes of 60 and 100 grams are specified;
- Ensure that all bait used is properly thawed;
- Prevent the discharge of any offal during line setting; and
- Avoid the discharge of any offal during line hauling. If this is not possible, offal may only be discharged while the vessel is not underway or from the opposite side of the vessel to that where the line is being hauled.

ETBF vessels operating north of latitude 25° South are required to:

- Carry a tori pole apparatus that complies with specifications;
- Prevent the discharge of any offal during line setting; and
- Avoid the discharge of any offal during line hauling. However if this is not possible, offal may only be discharged while the vessel is not underway or from the opposite side of the vessel to that where the line is being hauled.

WTBF vessels operating south of 30° South are required to:

- Set longlines after nautical dusk and before nautical dawn;
- Deploy a tori pole apparatus that complies with specifications during line setting;

- Ensure that all bait used is properly thawed;
- Prevent the discharge of any offal during line setting; and
- Avoid the discharge of any offal during line hauling. If this is not possible, offal may only be discharged while the vessel is not underway or from the opposite side of the vessel to that where the line is being hauled.

WTBF vessels operating north of latitude 30° South are required to:

- Carry a tori pole apparatus that complies with specifications;
- Prevent the discharge of any offal during line setting; and
- Avoid the discharge of any offal during line hauling. However if this is not possible, offal may only be discharged while the vessel is not underway or from the opposite side of the vessel to that where the line is being hauled.

### **Sharks**

Australia has developed a NPOA-Sharks in line with the IPOA-Sharks. Actions within the Shark-plan have resulted in the establishment of regulations in the longline sector to minimise shark bycatch and prevent indiscriminate finning.

The regulations applying to the ETBF and WTBF are:

- A ban on the use of wire traces.
- A limit of 20 sharks per trip (notwithstanding the WTBF condition mention in 5.1), excluding school shark, gummy shark, elephant fish of the Families Callorhynchidae, Chimaeridae and Rhinochimaeridae and sawshark (*Pristiophorus sp.*). This limit however, does not apply to Great white (*Carcharodon carcharias*) and Grey nurse sharks (*Carcharias taurus*) which are no-take species protected under Australian law.
- Fishing permit holders are prohibited from carrying, retaining, or landing all shark dorsal, pectoral, caudal, pelvic and anal fins that are not attached to their carcass.
- Fishing permit holders are prohibited from carrying, retaining and landing livers obtained from sharks unless the individual carcasses from which the livers were obtained are also landed.

### **Fish**

Effective from 27 July 1998, the commercial take of blue marlin (*Makaira mazara*) and black marlin (*Makaira indica*) was banned under Australian law. Regulations specify that blue and black marlin must be returned to the water irrespective of life status.

#### **Compliance Monitoring System**

Routine SBT compliance activities include at sea patrols, including random inspection of vessels at sea. Australian authorities have conducted aerial surveillance and other compliance activities to monitor the use of tori poles and night setting. Port monitoring of landed catch and reconciliation of logbooks and other catch records, as well as vessel compliance with fishing permit conditions (such as Tori Pole regulations) are conducted in key ports each season. Vessel Monitoring Systems are used to ensure cost effective and efficient vessel monitoring and fishery compliance operations.

For the purse seine fishery, vessels are required to report daily positions and catch details in real time. Random at sea inspections are conducted and all SBT taken are sampled for average weight and filmed by video as they are transferred into floating harvest cages. This process forms the basis for Australia's quota monitoring and compliance with CCSBT

member allocations.

### **Level of Compliance for each measure**

Compliance with the measures has varied. Recent ecologically based fisheries management (EBFM) workshops and other industry based extension programs are significantly helping to improve awareness of, and compliance with, mandatory requirements. These programs have also provided assistance to industry on the proper set up of Tori lines and line weighting schemes.

### **Voluntary Measures for Each Fleet**

In addition to mandatory measures and scientific trials taking place under the longline TAP, some operators in the ETBF longline sector are adopting voluntary measures to reduce seabird bycatch. These include:

- Puncturing of the swim bladders of thawed baits to assist in sinking the baits out of the diving reach of seabirds;
- The use of bait casting machines on suitable vessels;
- The selection of gear which minimises the probability of seabird bycatch;
- Promoting the safe release of all seabirds caught alive on longlines;
- Promoting night-setting north of 25° South in the ETBF and north of 30° in the WTBF.

Codes-of-Practice have been developed for the ETBF and WTBF. The Codes are developed by the relevant industry organisations and set out principles and standards of behaviour for responsible fishing practices. They act as guides for operators and are designed to be stored on the vessels.

AFMA have provided the ETBF and WTBF operators with de-hooking devices and instructions on how to use them for safely removing turtles from longlines.

### **Proportion of fleet using each measure and how this proportion was determined**

Given the flexibility in the suite of mandatory measures available to fishers over a range of times and areas in Australia's longline fisheries it is difficult to attribute proportions to individual measures. This will be examined further in preparation for ERSWG 8.

## **7.2. Measures under Development/Testing**

### ***Seabirds***

Scientific studies have been conducted, some of which are ongoing, to investigate the most appropriate sink rate of live and dead baits, the differences of bait types, a variety of weighted branchline arrangements, and tori line design and application (Table 7).

### ***Sharks***

Trials to examine the impact of the ban on the use of wire trace in the ETBF recently concluded. A report will follow soon. A trial recently began examining the effect of the use of circle hooks on target and non-target species in the ETBF. This includes examining any effect on shark and marine turtle bycatch (Table 7).

### ***Turtles***

Despite the comparatively rare occurrence of longline interactions with marine turtles, the Australian Government has recognised the potential for these interactions to significantly contribute to the range of threats faced by marine turtle species. As a result, and as mentioned above, a project has been established with the aim of quantifying the relative effects of circle and tuna hooks on catches of target and common non-target species (Table 7).

The objective of the proposed trials will be to demonstrate if the mitigation solutions, principally large circle hooks and mackerel-type bait, that have been shown to be effective in other pelagic longline fisheries, are economically viable and commercially practical in our pelagic longline fisheries. The project results will assist fishery managers in making management decisions regarding future bycatch mitigation policies that are commercially and operationally practical for Australia's fisheries.

As part of the recent EBFM workshops AFMA provided all operators in the ETBF and WTBF with instructions on how to use de-hooking devices for safely removing turtles from longlines. In addition AFMA provided the operators with a de-hooking device.

**Table 7:** Mitigation measures under development/testing in Australian longline fisheries.

Mitigation measure	Lead agency and collaborators	Results to date	Planned development/testing	Expected completion date
<b>Seabirds</b>				
The Underwater Bait Setting Capsule for Pelagic Longline Fisheries: R&D, operational testing and experimental evaluation of seabird deterrent effectiveness	AAD, Ashworth Marine Engineering (AME) and ETBF Operators	N/A	Stage 1: October 2006-July 2007: Research and development; operational testing of units Mk1 & Mk 11 units (Ashworth Marine Engineering; AAD). Stage 2: July-November 2007: Testing two units in the ETBF under normal operational fishing. One unit is to be deployed from Mooloolaba and one unit to be deployed from Nelsons Bay, NSW. Stage 3: Scheduled for spring 2008. This stage involves conducting a controlled experiment on a chartered fishing vessel (the vessel will not be catching fish) to determine the most seabird-friendly method of setting longlines in pelagic longline fisheries.	2008
Weighted branchline arrangements.	AFMA and ETBF operators	N/A	Trialling different weighting regimes, 60 or 100gm, 2 – 3.5 m from hook.	2007
New Tori line design	AFMA/SEANET and ETBF operators	A new tori line has been designed and distributed to all ETBR and WTBF operators.	The design consists of a 100 m backbone from which paired and double-paired streamers form a curtain to the water (Attachment 8). SeaNet is continuing to improve the design by making minor alterations aimed at increased efficiency and ease of use.	Ongoing
<b>Sharks</b>				
The effects of wire-leaders on longline catch rates	BRS and AFMA	Observers completed 8 trips on longliners off North Queensland in 2005 comparing the performance of wire- and nylon monofilament leaders.	Another 20 trips are planned for 2006, with data analyse to be conducted in conjunction with circle hook work (below).	December 2007
<b>Turtles</b>				
The effects of circle hooks on longline catch rates	BRS, Belldi Consultancy and AFMA	Outfitted 3 longliners and completed 3 trips in 2005 testing the experimental design and developing data collection protocols (Stage I report available).	More extensive study involving about 20 trips off eastern and western Australia in 2006–07, depending on funding.	December 2007

**Description of each measure being developed and tested**

Refer to Table 7

**Lead agency undertaking research**

Refer to Table 7

**Description of any collaboration**

Refer to Table 7

**Results to date**

Results of the seabird mitigation trials to date have been variable but have indicated that the use of weighted lines and tori lines are successful in reducing the incidence of seabird capture and death (Table 7). This is in part, due to the relative simplicity of these approaches and therefore the high level of correct usage across the longline fleets.

Operators are also encouraged to develop and experiment with mitigation measures to suit their own situations and vessels.

A standard tori line design has been developed and provided to all operators currently participating in the ETBF and WTBF (Attachment 8). The design creates a substantial curtain of different coloured streamers which not only prevent seabirds from diving on the baits but also aims to prevent seabirds from approaching the vessel.

**Planned development/testing for next year**

Refer to Table 7

**Expected completion date and report to ERSWG**

Refer to Table 7

## **8. Public Relations and Education Activities**

All of the strategies in place or being trialled by Australia to reduce impacts of SBT fishing on ERS include a level of education and extension to increase their effectiveness. Staff from AFMA are regular visitors to key SBT fishing ports and engage in education and extension activities during these visits.



## 8.1. Public Relations Activities

In 2005 and 2006 an extensive education program was conducted in the main ports of the ETBF and the WTBF. The program was designed as an interactive workshop focused at skippers and crew and aimed to educate and involve fishers in the new direction of fisheries management – ecosystem-based fisheries management – which takes into consideration the impacts of fishing on the entire ecosystem not just the target species. They were also informed of the project to carry out ecological risk assessments for all fisheries managed by the Australian Government and the potential implications of this project including the ability for fishery managers to better direct research and management expenditure.

Participants were taught about the implementation of new fishing practices designed to reduce the incidental capture of seabirds, sharks and marine turtles taken during longline fishing operations. The participants were shown how to correctly assemble and use the recently designed tori line and informed of the importance of adhering to the prescribed line-weighting regimes to reduce the catch of seabirds. They were also shown how to use de-hooking and line-cutting equipment to reduce the impacts on sharks and turtles.

Feedback from the fishing industry indicated that the program was well received and has led to a greater understanding of the impacts of fishing on both target and ecologically related species.

### Media releases

- Senator The Hon Eric Abetz – Minister for Fisheries Forestry and Conservation: *Seaweek, seals and SeaNet – working toward a healthy marine environment* (5 March 2007)
- The Hon Malcolm Turnbull MP - Minister for the Environment and Water Resources - *Australia leading world in tackling shark by-catch* (5 March 2007)

### Information booklets, posters, other written material

Australian fisheries management agencies provide education materials in the form of booklets, posters, media releases and other written material for further education of vessel skippers and crews. Additional information was provided to operators through the recent EBFM workshops, including information on tori line design and application, the use of de-hookers and EBFM information.

A protected species identification guide has been distributed to all Commonwealth entitlement holders, and is aimed at assisting with the identification of protected species. This guide is available from the AFMA website ([http://www.afma.gov.au/environment/bycatch/id\\_guide.pdf](http://www.afma.gov.au/environment/bycatch/id_guide.pdf)) along with a range of other information material relating to ERS.

A significant education and public relation activity, Seaweek, was conducted in 2007. Seaweek is an annual national event organised by the Marine Education Society of Australasia (MESA). Seaweek 2007 was jointly organised by the Bureau of Rural Sciences (BRS) and MESA. The theme for Seaweek 2007 was *Marine Bycatch Matters*. This theme was chosen to increase awareness of bycatch issues and showcase the steps taken by Australian fisheries

A range of educational products were produced to support Seaweek 2007 including a dedicated website ([www.mesa.edu.au/seaweek2007/](http://www.mesa.edu.au/seaweek2007/)), a suite of inquiry-based school

units, electronic information sheets on bycatch issues, poster, an electronic postcard competition, a PowerPoint presentation, games with a bycatch theme, and a list of useful links to bycatch related websites.

### **Video**

Australian fisheries management agencies provide educational videos and other material for further education of vessel skippers and crews.

#### ***Crossing the line: Sea turtle handling guidelines for the longline fishing industry***

The video 'Crossing the Line' has been produced to help the Australian Longline fishing industry minimise its impact on sea turtle populations it shows how to use de-hooking devices on deck and on turtles still in the water, how to safely bring turtles aboard and handle them on deck, help comatose turtles recover and how to release them back into the water. It also explains how to tag, measure and identify the different species of turtle.

Produced by Hatching Productions and Beldi Consultancy

Funded by the Australian Fisheries Research and Development Corporation

### **Public presentations**

As detailed the recent EBFM workshops focussed on methods to reduce interaction with ERS species across a number of fisheries. In addition regular port visits are conducted by fisheries managers to increase awareness of ERS management options and new developments in the fisheries.

## **8.2. Education**

AFMA undertake regular and targeted education activities for Australian fisheries, some of which have been mention above. The development of codes-of-practice by industry are also a recognised avenue for education and increasing awareness.

### **Crew training, especially ship masters**

Specific activities to educate fishers on ERS issues are included in the TAP, National Plans of Action for sharks and Bycatch Action Plans for both the tuna purse seine and longline fisheries, and in the Ecological Risk Assessment project.

In addition, Australian observers are briefed to educate fishers on their responsibilities to complete logbooks and other data submission obligations, and in the requirements for, and use of, mitigation strategies to manage impacts on ERS. This information is passed onto ship masters and crews during observer trips and while in port.

### **Trainee fishers**

Not applicable.

### **Engineers**

Not applicable.

### **Managers**

The Australian Government is committed to ecologically sustainable development of Australian fisheries and all associated international commitments. On the job and specific training is provided in respect to these.

### **Observers**

Australian observers are briefed to educate fishers on their responsibilities to complete logbooks and other data sources, and to use mitigation strategies to reduce impacts on ERS.

## **8.3. Information Exchange**

Australia is committed to its data exchange obligations, and more broadly information exchange generally, and actively encourages open and transparent regional approaches in line with the data exchange categories outlined in the ERSWG reporting template:

- Research
- Educational materials
- Other regional fisheries organisations
- International organisations
- Non-member states and entities
- Review of new ideas obtained from crew debriefings or ship fishing reports.

Australia's commitment is particularly evident in efforts to establish and ERS data recommendation and the priority given to meeting data exchange obligations particularly in regard to the CCSBT, WCPFC, IOTC, and CCAMLR.

## **9. Information on other ERS (non-bycatch) such as prey and predator species**

In 2001 AFMA initiated the project Ecological Risk Assessment for Commonwealth Fisheries (ERACF). This project is undertaking Ecological Risk Assessments (ERAs) that look at the impact, both direct and indirect, of fisheries activities on all aspects of the marine ecosystem, which includes prey and predator species. This work forms part of a move to ecosystem-based fisheries management by AFMA.

The ERACF project considers all five aspects of ecosystems:

- Target species
- Bycatch and byproduct species
- Threatened, endangered and protected species
- Habitats
- Communities

The ERAs will help AFMA prioritise research and data collection as well as monitoring and management needs for the fisheries.

The ERACF Project started in 2001 and is being completed in two parts. Phase one was completed in July 2004 while Phase two, which started in October 2004, will be finalised in 2007. More information can be found at:

[http://www.afma.gov.au/environment/eco\\_based/eras/default.htm](http://www.afma.gov.au/environment/eco_based/eras/default.htm)

Australia is also undertaking a broad-scale, multidisciplinary studies to understand the pelagic ecology of the eastern Great Australian Bight and the area in which the ETBF operates. The work in the Great Australian Bight is being lead by the South Australian Research and Development Institute and focuses on the role of small pelagic fish and cephalopods, and the effects of fishing on seabirds and marine mammals. Implicit in this research is an understanding of the trophic pathways that sustain commercial fish production and high-trophic predator populations. Recent publications from this work include:

- Ward, T.M., McLeay, L.J., Dimmlich, W.F., Rogers, P.J., McClatchie, S., Matthews, R., Kampf, J. and Van Ruth, P.D. (2006) Pelagic ecology of a northern boundary current system: effects of upwelling on the production and distribution of sardine (*Sardinops sagax*), anchovy (*Engraulis australis*) and southern bluefin tuna (*Thunnus maccoyii*) in the Great Australian Bight. *Fish. Oceanogr.* 15:3: 191-207.
- Ward, T.M., Hoedt, F., McLeay, L., Dimmlich, W.F., Jackson, G., Rogers, P.J. and Jones, K. (2001) Have recent mass mortalities of the sardine *Sardinops sagax* facilitated an expansion in the distribution and abundance of the anchovy *Engraulis australis* in South Australia. *Mar. Ecol. Prog. Ser.* 220: 241-251.

The work on ecosystem in which the ETBF operates is being led by the CSIRO with the aim of identifying physical and biological impacts on the component species. The approach being taken aims to provide the information needed to support an ecosystem-based management framework. Through the analyses they are aiming to identify regional “hot spots”, detail their linkages and provide detailed scenarios as to how different management strategies and fishing practices will or will not impact pelagic food chains, ecologically related non-target species, competitors (e.g. sharks, marlins etc.) and their associated ecosystems. Recent publications from this work include:

- Young, J., Lansdell, M., Riddoch, S. and Revill, A. (2006) Feeding ecology of broadbill swordfish, *Xiphias gladius* (Linnaeus, 1758), off eastern Australia in relation to physical and environmental variables. *Bulletin of Marine Science* 79, 793-811
- Phleger, C. F., Young, J.W., Guest, M. Lansdell, M. and Nichols, P. D. (in press) Signature fatty acids: a robust method for evaluating mid-trophic relationships in open ocean ecosystems. In GLOBE Report No. 24 (in press)
- Lansdell, Matthew J. and Jock W. Young (in press). Pelagic cephalopods from oceanic waters off eastern Australia: species composition and distribution determined from the diets of large pelagic fishes. *Reviews in Fish Biology and Fisheries*.

## 10. Others

Not applicable

## 11. Summaries of country papers

### CCSBT-ERS/0707/10:

#### Review of international instruments relevant to ecologically related species: changes since ERSWG 6.

##### Abstract

This paper has been prepared for the seventh meeting of the Commission for the Conservation of Southern Bluefin Tuna's Ecologically Related Species Working Group (ERSWG) as an update to a previous submission which reviewed international instruments relevant to ecologically related species (ERS), particularly data requirements and recommendations for sharks and seabirds (CCSBT-ERS/-6-2/04). It summarises recent international agreements/obligations that are of relevance to the ERSWG, including:

- The Kobe Meeting of Joint Tuna Regional Fisheries Management Organisations (RFMOs) in Kobe, Japan, January 26, 2007, which agreed on a Course of Actions for RFMOs that identifies key areas and challenges to be urgently addressed to improve RFMO performance, including:
  - Improvement, sharing and dissemination of data and stock assessments and all other relevant information in an accurate and timely manner.
  - Implementation of the precautionary approach and an ecosystem-based approach to fisheries management including improved data collection on incidental by-catch and non-target species and establishment of measures to minimize the adverse effect of fishing for highly migratory fish species on ecologically related species, particularly sea turtles, seabirds and sharks.
  - Development of data collection, stock assessment and appropriate management of shark fisheries under the competence of tuna RFMOs.

The Kobe meeting also agreed that the five tuna RFMOs should have their performance reviewed, commencing as soon as practicable. This review would include criteria covering the relevant provisions of international instruments.

- The sixty-first session of the United Nations General Assembly's passed Resolutions (10, 62, 96) that made explicit mention of the impact of fishing (particularly longline techniques) on ERS and encouraged data collection and management measures to address these impacts.
- The twenty-seventh session of United Nations Food and Agriculture Organisation -Committee on Fisheries (UNFAO-COFI), which discussed the implementation of the Code of Conduct for Responsible Fisheries, implementation of the Ecosystem Approach to Fisheries and strengthening RFMOs.
- Recent measures adopted by RFMOs that relate to ERS. In 2006 the Western and Central Pacific Fishery Commission (WCPFC) and the Indian Ocean Tuna Commission (IOTC) adopted binding resolutions/conservation and management measures relating to reducing seabird bycatch in longline fisheries. These included the mandatory use of mitigation measures. The WCPFC resolution recognises the need to use multiple mitigation measures. The WCPFC also adopted a binding resolution on sharks, which includes measures on data collection and ensuring full utilization of retained shark. The IOTC and WCPFC measures for sea turtles are also provided. In 2006, the International Commission

for the Conservation of Atlantic Tuna (ICCAT) updated their 2005 resolution on sharks to require annual reporting of progress and implementation.

This paper is intended to assist discussion and progress recommendations by the ERSWG to the Extended Commission for the Conservation of Southern Bluefin Tuna regarding ecologically related species.

**CCSBT-ERS/0707/11:  
Draft recommendation on ERS data collection and provision requirements**

**Abstract**

Noting the discussions at CCSBT ERS 6 (paragraphs 47 - 50) on the provision of advice to the Commission on ERS data collection and provision in CCSBT fisheries, Australia and New Zealand have further reviewed the draft recommendation developed at that meeting (CCSBT-ERS 6 Attachment 7). The review highlighted some changes that were needed to develop a more effective recommendation. These changes have been strongly endorsed by FAO COFI and UNGA in their work since February 2006. This paper provides rationale for the changes, a revised recommendation for consideration by CCSBT ERS 7 and recommendation to the CCSBT Commission, and documentation of the changes from the ERS 6 resolution.

**CCSBT-ERS/0707/6 & 12: Draft recommendation on reducing the incidental bycatch of seabirds in CCSBT longline fisheries**

**Abstract**

Noting the discussions at CCSBT ERS 6 (paragraph 50 of the meeting report) on measures to reduce seabird bycatch in CCSBT fisheries, Australia and New Zealand have further reviewed the draft recommendation developed at that meeting (CCSBT-ERS 6 Attachment 8a). The review highlighted several changes that were needed to develop an effective recommendation. These changes have been strongly endorsed by FAO COFI and UNGA in their work since February 2006. This paper provides rationale for the changes, a revised recommendation for consideration by CCSBT ERS 7 and recommendation to the CCSBT Extended Commission, and documentation of the changes from the ERS 6 resolution.

**CCSBT-ERS/0707/9 &13:  
Draft recommendation on the conservation and sustainable utilisation of sharks taken in SBT fisheries**

**Abstract**

The Australian Department of Agriculture, Fisheries and Forestry (DAFF) coordinated the national response to the *FAO International Plan of Action for the Conservation and Management of Sharks* and the development of Australia's *National Plan of action for the Conservation and Management of Sharks (Shark-plan)*. The *Shark-plan* was released in 2004 following development by a Shark Advisory Group comprised of interested parties. The Shark Implementation and Review Committee (SIRC) have the responsibility to develop strategies for implementation and review of the *Shark-plan*.

**CCSBT-ERS/0707/BGD/02:****CCSBT-ERS/0602/04 - Review of international instruments relevant to ecologically related species: data requirements and recommendations for sharks and seabirds**

Stewardson, C., Findlay, J. and Bensley, N.

**Abstract**

This paper was prepared for the sixth meeting of the Ecologically Related Species Working Group of the CCSBT, Taiwan, 20–23 February 2006. The paper provides an overview of relevant international instruments to assist CCSBT members in the development of recommendations to monitor and reduce the impact of SBT fishing on ecologically related species (ERS). Specifically, the paper focuses on (i) data requirements to assist in monitoring and assessing the impact on ERS, and (ii) recommendations for reducing bycatch of sharks and seabirds.

Brief overviews are presented of ten key international instruments and a listing of other relevant bodies which recommend actions relevant to ERS. The key instruments include:

1. **The International Plan of Action for the Conservation and Management of Sharks (IPOA-SHARKS)** encourages States to adopt a national plan of action for the conservation and management of shark stocks (NPOA-SHARKS) if their vessels conduct directed fisheries for sharks or if their vessels regularly catch sharks in non-directed fisheries. States should also strive to cooperate through regional fisheries organisations with a view to ensuring the sustainability of shark stocks, including, the development of subregional or regional shark plans.
2. **The International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-SEABIRDS)** encourages States to adopt a national plan of action for reducing the incidental catch of seabirds in longline fisheries (NPOA-SEABIRDS) where there is concern about the occurrence of incidental catches of seabirds. States should also strive to cooperate through regional fisheries organisations to reduce the incidental catch of seabirds in longline fisheries.
3. **The Convention on the Conservation of Migratory Species of Wild Animals (CMS), including the Agreement on the Conservation of Albatrosses and Petrels (ACAP)**, encourages all Parties to mitigate known threats to the conservation of albatross and petrel populations. The CMS considers the incidental catch of seabirds during longline fishing operations as the most significant threat to albatrosses. In relation to fishing activities under the auspices of a regional fisheries organisation, the Parties shall consider information and evaluations from that organisation, and shall adopt, in its area of competence, the measures agreed by that organisation for reducing the incidental taking of albatrosses and petrels.
4. **The Convention on Biological Diversity (CBD)** is dedicated to promoting sustainable development, and encourages cooperation between Parties in developing methods for the sustainable use of biological resources.
5. **The Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)** aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. All international trade of species listed under CITES must first be authorised through a licensing system. The Conference of the Parties to the Convention (Twelfth Meeting, Santiago, Chile, 3-15 November 2002) resolution on Conservation and Management of Sharks urges Regional Fisheries Management Organisations to take steps to undertake the research, training, data collection, data analysis and shark management plan development outlined by FAO as necessary to implement the IPOA-SHARKS.

- 6. The Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR)** aims to conserve marine life of the Southern Ocean. All fishing and associated activities in the area to which this Convention applies shall be conducted in accordance with the provisions of the Convention. This includes adhering to conservation measures to reduce the incidental mortality of seabirds during longline fishing and data reporting requirements on bycatch, including fine-scale catch and effort for all species, by species.
- 7. International Commission for the Conservation of Atlantic Tunas (ICCAT)** has conducted assessments of blue shark and mako shark bycatch. In 2005 their Sub-Committee on Bycatch recommended that Contracting Parties and non-Contracting Parties (collectively termed CPCs) continue to develop and conduct observer programs to collect accurate data on shark and other bycatch, report on total catches (landings and discards), institute mitigation measures to reduce or eliminate bycatch interactions and undertake that further research on shark bycatch and biology.
- 8. Indian Ocean Tuna Commission (IOTC)** in 2005 adopted recommendations on incidental mortality of seabirds, including: that all CPCs should report on the status of their NPOA-Seabirds and be urged to implement the IPOA-SEABIRDS, should collect and provide information on interactions with seabirds and when feasible the Scientific Committee should assess the impact of incidental seabird catch. The resolution on the conservation of sharks was also adopted in 2005, including that all CPCs: shall annually report shark catch data, shall take measures to require their fishers fully utilise their retained shark catch, shall require their vessels to not have fins onboard that total more than 5 percent of the weight of shark on board, encourage the release of live sharks, and undertake research to make fishing gears more selective, such as avoiding use of wire trace.
- 9. Inter-American Tropical Tuna Commission (IATTC)** in 2005, adopted a resolution on incidental mortality of seabirds that all CPCs should report on their NPOA-SEABIRDS and are urged to implement the IPOA-SEABIRDS and when feasible assess the impact of incidental catch, including the identification of geographic areas where there could be interactions. The resolution on the conservation of sharks was also adopted in 2005 including, that each CPC: should establish and implement an NPOA-Sharks, take measures to require their fishers fully utilize any retained shark catch, shall require their vessels to not have fins onboard that total more than 5 percent of the weight of shark on board, encourage release of live sharks, undertake research to make fishing gear more selective and annually report catches, effort, landings and trade by species and provide any historic data. In 2006 the Scientific Committee with provide preliminary assessment of stock status of key species.
- 10. Western and Central Pacific Fisheries Commission (WCPFC)** in 2005 considered and will soon adopt recommendations on incidental mortality of seabirds including call for all Members and Cooperating Non-Members (CCMs) to implement the IPOA-SEABIRDS and report on this, collect and provide information on interactions with seabirds, take steps necessary to ensure comprehensive recording and monitoring of seabird interactions. The draft resolution on non-target fish species was also considered in 2005 and will soon be adopted including: that all CCMs shall encourage fishers to avoid capture of, and prompt release of all non-target species, the WCPFC will seek advice on steps to improve information, including enhancing observer and port sampling programs, review of mitigation measures for non-target and review mitigation measures.



**Other relevant bodies (international tuna research and management organisations and tuna related sites)** which recommend general/specific actions relevant to: (i) data requirements to assist in assessing and monitoring the impact of tuna fishing, and/or (ii) recommendations for reducing bycatch of ERS are also listed. These include Pacific Islands Forum Fisheries Agency (**FFA**), South Pacific Regional Environment Programme (**SPREP**), Secretariat of the Pacific Community (**SPC**), Asia-Pacific Economic Cooperation (**APEC**), Northwest Atlantic Fisheries Organisation (**NAFO**), North Pacific Fishery Management Council (**NPFMC**), Organisation for the Protection of Responsible Tuna Fisheries (**OPRT**), Pacific Islands Forum Secretariat (**PIFS**), High Seas Task Force, Food and Agriculture Organization (**FAO**) and the Division of Ocean Affairs and the Law of the Sea (**DOALOS**).

#### **CCSBT-ERS/0707/Info/06:**

### **Australia's Threat Abatement Plan 2006 for the Incidental Catch (or Bycatch) of Seabirds during Longline Fishing Operations**

#### **Abstract**

This paper provides Australia's key policy document to address the impact of longline bycatch of seabirds, the *Threat Abatement Plan 2006* (TAP 2006).

The incidental catch (or bycatch) of seabirds during oceanic longline fishing operations was listed under Australian legislation as a key threatening process on 24 July 1995. A key threatening process is one which adversely affects a threatened species, or could cause a species to become endangered. As required under this legislation, a *Threat Abatement Plan for the Incidental Catch (or By-catch) of Seabirds During Oceanic Longline Fishing Operations* was prepared and approved by the Minister for the Environment on 2 August 1998. The Threat Abatement Plan (TAP) expired in August 2003, necessitating a review. The provisions of the first TAP continued to apply to all fisheries managed by the Australian Government until such the new TAP came into place.

The attached *Threat Abatement Plan 2006* is a result of that review. It was prepared to meet the requirements of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and to coordinate national action to alleviate the impact of longline fishing activities on seabirds in Australian waters. It applies to all fisheries under Commonwealth jurisdiction.

Since the first TAP came into effect significant progress has been made in mitigating seabird bycatch. Night-setting of longlines and the use of bird scaring lines is now mandatory in high risk areas, and development and trialling of new mitigation measures has been undertaken over the last three years. A number of fisheries have recorded incidental catch rates well below the maximum permissible rate of 0.05 birds per 1000 hooks, including one fishery which has had zero bycatch for four years. However, for some pelagic fisheries it has become clear that another approach is needed to assist fisheries to achieve the target. The revised TAP, rather than prescribing mandatory mitigation measures as before, sets the performance indicators for each fishery and requires fishery managers and the fishing industry to adopt 'proven mitigation measures' to achieve this. Failure to achieve the performance indicator will require the adoption of a defined management response to reduce bycatch to the specified level, and ultimately closure of all or part of a fishery if revised management approaches are not successful.

This information is provided to assist the Commission in the further development and implementation of bycatch mitigation measures.

**CCSBT-ERS/0707/Info/07:  
The implementation of the National Plan of Action for the Conservation and Management of Sharks - Australia**

**Abstract**

The Australian Department of Agriculture, Fisheries and Forestry (DAFF) coordinated the national response to the *FAO International Plan of Action for the Conservation and Management of Sharks* and the development of Australia's *National Plan of action for the Conservation and Management of Sharks (Shark-plan)*. The *Shark-plan* was released in 2004 following development by a Shark Advisory Group comprised of interested parties. The Shark Implementation and Review Committee (SIRC) have the responsibility to develop strategies for implementation and review of the *Shark-plan*. In addition, the National Shark Recovery Group (NSRG) advises the Department of the Environment and Water Resources on the implementation of recovery plans for listed threatened sharks.

## 12. Attachments

- Attachment 1** Log sheet example: Australian Purse Seine and Pole Daily Fishing Log (TPB03)
- Attachment 2** Log sheet Example: Australian Pelagic Longline Daily Fishing log (AL05)
- Attachment 3** Example: Catch Disposal Record (PT02)
- Attachment 4** Wildlife and Other Protected Species List (AL05)
- Attachment 5** Recapture sheet for all Tagged Fish, Tagged Animals and Banded Seabirds (AL05)
- Attachment 6** Recapture sheet for all Tagged Fish/Animal Recaptures (TPB03)
- Attachment 7** Observer manual
- Attachment 8** Tori line instructions

Australian Fisheries Management Authority.  
Commonwealth of Australia

## Australian Purse Seine and Pole Daily Fishing Log - For Farmed Southern Bluefin Tuna Only TPB03

Log Book No: <b>0026</b>	Page No: <b>02</b>	Boat Name: <i>Sea Spray</i>	Dist. Symbol: <i>LFB 12345</i>	Master's Name: <i>C. Gavin</i>
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TICK APPROPRIATE NON-FISHING (NF) CODE BOX AT RIGHT: 1 Bad Weather  2 In Port  3 Broken Down  7 Cage Towing  Fishing Method Used? (tick appropriate box) Poling  Purse Seining

I did not work between *..28/..5../98..* and *..28/..11/..98..* 4 Steaming  10 Refit  Distinguishing Nos. of assisting vessels NB: State whether pole or seine boats *LFB023 (pole boat)*

Date of Fishing	NF Code?	Search Details		Fishing Details						Total Weight and Type of Bait		Estimated Catch Weights per Shot (kg)				Towing						
		Date (day/month)	Codes listed above	Hours Searched	Spotter Plane Used? (Y/N)	Sea Surface Temp. (C)	Start Time (24hr) (local time)	Latitude	Longitude	No. Poles Used?	Pole Boat Assisted Y/N	Seine Boat Assisted Y/N	Type	Kgs	SBT Weight	Other Species	Other Weight	Estimated % of school caught	Carrier Boat Name	Weight Transferred	Transfer Date	SBT 03
																					Book No.	Page No.
<i>29/11</i>	<i>6</i>		<i>4</i>	<i>20</i>	<i>1300</i>	<i>32°40'</i>	<i>132°30'</i>		<i>4</i>					<i>8,000</i>	<i>-</i>	<i>-</i>	<i>90</i>	<i>Star</i>	<i>8,000</i>	<i>29/11</i>	<i>036</i>	<i>09</i>
<i>30/11</i>	<i>4</i>																					
<i>1/12</i>		<i>4</i>	<i>N</i>	<i>21</i>	<i>1200</i>	<i>34°05'</i>	<i>131°08'</i>		<i>4</i>					<i>15,000</i>	<i>-</i>	<i>-</i>	<i>95</i>	<i>Jane S.</i>	<i>15,000</i>	<i>1/12</i>	<i>024</i>	<i>36</i>
<i>2/12</i>		<i>5</i>	<i>4</i>	<i>19</i>	<i>1100</i>	<i>33°50'</i>	<i>131°20'</i>		<i>N</i>					<i>25,000</i>	<i>-</i>	<i>-</i>	<i>70</i>	<i>"</i>	<i>25,000</i>	<i>2/12</i>	<i>024</i>	<i>36</i>
<i>2/12</i>		<i>2</i>	<i>4</i>	<i>19</i>	<i>1600</i>	<i>33°54'</i>	<i>131°17'</i>		<i>4</i>					<i>12,000</i>	<i>-</i>	<i>-</i>	<i>80</i>	<i>"</i>	<i>12,000</i>	<i>2/12</i>	<i>024</i>	<i>36</i>

**Comments:**

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<p><b>Wildlife Interactions:</b> List any wildlife interacting with you during your fishing activities, including netted animals. If possible, list Species name, Interaction Date, No. of Animals and Life Status of any animals released after capture. Life Status Codes are listed on the writing template. Please record any extra details in the Comments section.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 30%;">Species:</th> <th style="width: 20%;">Date/s:</th> <th style="width: 20%;">Qty:</th> <th style="width: 30%;">Life Status:</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>	Species:	Date/s:	Qty:	Life Status:													<p><b>Concession Holder or Authorised Person:</b> I certify that the information I have provided on this form is a complete and accurate record.</p> <p>Dated: <i>3/12/98</i></p> <p>Name: <u><b>C. GAVIN</b></u></p> <p>Signature: <u><i>C. Gavin</i></u></p>
Species:	Date/s:	Qty:	Life Status:														

# Attachment 2

## Australian Pelagic Longline Daily Fishing Log – AL05

Australian Fisheries Management Authority.  
Box 7051  
Canberra Mail Centre ACT 2610

NOTE: DO NOT USE A SINGLE PAGE FOR MORE THAN ONE TRIP

Original Copy – Send to AFMA

<b>Log No.</b>	<b>Page No.</b>	<b>Boat Name</b> <b style="color: red;">Cormorant</b>	<b>Dist. Symbol</b> <b style="color: red;">LFB963</b>	<b>Time Zone Fished</b> <b style="color: red;">EST</b>	<b>Departure Port</b> <b style="color: red;">ULLADULLA</b>	<b>Departure Date</b> <b style="color: red;">12/6/00</b>							
<b>SHOT INFORMATION</b>		<b>Shot 1</b> Date <b style="color: red;">13/6/02</b>	<b>Shot 2</b> Date <b style="color: red;">15/6/02</b>	<b>Vessel docked between</b> <b style="color: red;">9 / 6 / 02</b> and <b style="color: red;">11 / 6 / 02</b>									
Start Set Time (24h)		<b style="color: red;">0300</b>	<b style="color: red;">0230</b>	<b>Non-fishing Date/s and Codes during a Trip (ENTER CODE IN BOX)</b>									
Start Set	Lat. (dd mm)	<b style="color: red;">35 35</b>	<b style="color: red;">36 31</b>	1 – Bad Weather    3 – Broken Down    4 – Steaming									
Position	Long. (ddd mm)	<b style="color: red;">151 42</b>	<b style="color: red;">151 55</b>	6 – Searching    5 – Other Fishery (SPECIFY)									
End Set Time (24h)		<b style="color: red;">0610</b>	<b style="color: red;">0515</b>	<b>Date/s</b>									
End Set	Lat. (dd mm)	<b style="color: red;">35 19</b>	<b style="color: red;">36 25</b>	<b style="color: red;">12 / 6 / 02</b> to / /									
Position	Long. (ddd mm)	<b style="color: red;">151 40</b>	<b style="color: red;">151 40</b>	<b style="color: red;">14 / 6 / 02</b> to / /									
Mainline Length No. hooks		<b style="color: red;">35</b> nm(km) <b style="color: red;">900</b> hooks	<b style="color: red;">27</b> nm(km) <b style="color: red;">800</b> hooks	/ / to / /									
Line shooter used (CIRCLE)		<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Comments</b>									
Seabird Mitigation Measures Used (CIRCLE)		<input checked="" type="radio"/> TORI <input checked="" type="radio"/> THAW <input type="radio"/> PSBL <input checked="" type="radio"/> NSET <input type="radio"/> LWEI <small>CHUTE CAPS DYED OTHER NAPP</small>	<input checked="" type="radio"/> TORI <input checked="" type="radio"/> THAW <input type="radio"/> PSBL <input checked="" type="radio"/> NSET <input type="radio"/> LWEI <small>CHUTE CAPS DYED OTHER NAPP</small>	<b style="color: red;">Snood cut to release large, lively blue marlin. Discards refer to fish not sought by market.</b>									
<b>Gear Information</b>	Estimated average depth targeted in metres	<b style="color: red;">80</b>	<b style="color: red;">70</b>	<b>Minor Line Methods Used</b>									
	No. hooks between bubbles	<b style="color: red;">9</b>	<b style="color: red;">10</b>	Trolling <input checked="" type="checkbox"/> Hrs <b style="color: red;">2</b>	<b>Complete at End of Trip</b>								
	No. of lightsticks used	<b style="color: red;">300</b>	<b style="color: red;">400</b>	Rod & Reel <input type="checkbox"/> Hrs	Port of Landing								
	Bait type/wt used for shot	<b style="color: red;">Squid/Pilchards 200 kg</b>	<b style="color: red;">Pilchards 160 kg</b>	Handline <input type="checkbox"/> Hrs	<b style="color: red;">ULLADULLA</b>								
	Bought <input checked="" type="checkbox"/> Self caught <input type="checkbox"/>	Live bait <input type="checkbox"/> Dead bait <input checked="" type="checkbox"/>	Live bait <input type="checkbox"/> Dead bait <input checked="" type="checkbox"/>	No. of Lines Used? <b style="color: red;">2</b>	Trip End Date								
	Sea surface temp. (C)	<b style="color: red;">17</b>	<b style="color: red;">18</b>		<b style="color: red;">15/6/00</b>								
Wind direction (ie. NW)	<b style="color: red;">S</b>	<b style="color: red;">SSE</b>		First Receiver/s of Fish									
Wind speed (kn)	<b style="color: red;">12</b>	<b style="color: red;">15</b>		<b style="color: red;">ULLADULLA CO-OP</b>									
<b>Catch Details</b> Tick box below to show target species		No. Fish Kept	Est. Processed Wt Kept (kg)	Form Code	No. Fish Not Kept	No. Fish Kept	Est. Processed Wt Kept (kg)	Form Code	No. Fish Not Kept	No. Fish Kept	Est. Processed Wt Kept (kg)	Form Code	No. Fish Not Kept
Yellowfin Tuna	<input checked="" type="checkbox"/>	<b style="color: red;">11</b>	<b style="color: red;">350</b>	<b style="color: red;">GG</b>	<b style="color: red;">3</b>	<b style="color: red;">14</b>	<b style="color: red;">480</b>	<b style="color: red;">GG</b>	<b style="color: red;">1</b>	<b style="color: red;">3</b>	<b style="color: red;">60</b>	<b style="color: red;">GG</b>	
Bigeye Tuna	<input checked="" type="checkbox"/>	<b style="color: red;">4</b>	<b style="color: red;">150</b>	<b style="color: red;">GG</b>		<b style="color: red;">6</b>	<b style="color: red;">160</b>	<b style="color: red;">GG</b>					
Albacore	<input type="checkbox"/>	<b style="color: red;">7</b>	<b style="color: red;">50</b>	<b style="color: red;">W</b>		<b style="color: red;">4</b>	<b style="color: red;">40</b>	<b style="color: red;">W</b>		<b style="color: red;">2</b>	<b style="color: red;">15</b>	<b style="color: red;">W</b>	
Southern Bluefin Tuna	<input type="checkbox"/>												
Broadbill Swordfish	<input type="checkbox"/>					<b style="color: red;">2</b>	<b style="color: red;">90</b>	<b style="color: red;">TR</b>					
Striped Marlin	<input type="checkbox"/>	<b style="color: red;">1</b>	<b style="color: red;">35</b>	<b style="color: red;">TR</b>									
Ray's Bream	<input type="checkbox"/>				<b style="color: red;">2</b>	<b style="color: red;">3</b>	<b style="color: red;">10</b>	<b style="color: red;">GG</b>					
Northern 'Jumbo' Bluefin Tuna	<input type="checkbox"/>												
Short Finned Mako Shark	<input type="checkbox"/>	<b style="color: red;">1</b>	<b style="color: red;">80</b>	<b style="color: red;">F</b>					<b style="color: red;">1</b>				
Bronze Whaler Shark	<input type="checkbox"/>												
Dusky Whaler Shark	<input type="checkbox"/>												
Blue Shark	<input type="checkbox"/>				<b style="color: red;">7</b>				<b style="color: red;">4</b>				
Oceanic Whitetip Shark	<input type="checkbox"/>												
Blacktip Shark	<input type="checkbox"/>												
Tiger Shark	<input type="checkbox"/>												
Hammerhead Shark	<input type="checkbox"/>												
Silky Shark	<input type="checkbox"/>												
Porbeagle Shark	<input type="checkbox"/>	<b style="color: red;">2</b>	<b style="color: red;">90</b>	<b style="color: red;">TR</b>									
Rudderfish	<input type="checkbox"/>	<b style="color: red;">2</b>	<b style="color: red;">10</b>	<b style="color: red;">GG</b>		<b style="color: red;">1</b>	<b style="color: red;">30</b>	<b style="color: red;">TR</b>					
Oilfish	<input type="checkbox"/>					<b style="color: red;">1</b>	<b style="color: red;">4</b>	<b style="color: red;">GG</b>					
Escolar (Black Oilfish)	<input type="checkbox"/>	<b style="color: red;">3</b>	<b style="color: red;">25</b>	<b style="color: red;">GG</b>									
Dolphinfish	<input type="checkbox"/>								<b style="color: red;">1</b>				
Wahoo	<input checked="" type="checkbox"/>	<b style="color: red;">Sunfish</b>			<b style="color: red;">1</b>								
Lancetfish	<input type="checkbox"/>				<b style="color: red;">3</b>								
Other Species	<input type="checkbox"/>	<b style="color: red;">Moonfish</b>							<b style="color: red;">2</b>				
	<input type="checkbox"/>	<b style="color: red;">Thresher Shark</b>	<b style="color: red;">1</b>	<b style="color: red;">50</b>	<b style="color: red;">TR</b>	<b style="color: red;">1</b>	<b style="color: red;">10</b>	<b style="color: red;">F</b>					
<b>No Take Species</b>	<b>Species</b>	<b>Number Released</b>		<b>Number Released</b>		<b>Number Released</b>		<b>Number Released</b>		<b>Number Released</b>		<b>Number Released</b>	
		<b>Alive</b>	<b>Dead</b>	<b>Alive</b>	<b>Dead</b>	<b>Alive</b>	<b>Dead</b>	<b>Alive</b>	<b>Dead</b>	<b>Alive</b>	<b>Dead</b>	<b>Alive</b>	<b>Dead</b>
	Blue Marlin	<b style="color: red;">1</b>											
	Black Marlin												
Great White Shark													
Grey Nurse Shark													
<b>Non-Fish Bycatch / Interactions</b>	<b>Shot No.</b>	<b>Species Group</b> eg. seabird, cetacean, turtle OR Species (if known)	<b>No. Released</b>		<b>Position Caught</b>		<b>No. Caught During</b>		<b>Estimated Time of</b>				
			<b>Alive</b>	<b>Dead</b>	<b>Lat. (dd mm) / Long. (ddd mm)</b>	<b>Set</b>	<b>Haul</b>	<b>Interaction</b>					
	<b style="color: red;">1</b>	<b style="color: red;">Loggerhead Turtle</b>	<b style="color: red;">1</b>		<b style="color: red;">35° 24'S 151° 41'E</b>	<b style="color: red;">N/A</b>		<b style="color: red;">N/A</b>					
<b style="color: red;">2</b>	<b style="color: red;">Albatross</b>		<b style="color: red;">1</b>	<b style="color: red;">36° 29'S 151° 52'E</b>	<b style="color: red;">1</b>		<b style="color: red;">0700</b>						
<b>COMMENTS – Is there anything else that you consider to be important? eg. gear failure, tag or band numbers, was the animal hooked or entangled, etc.</b>													
Shot No. <b style="color: red;">2</b> . Hooked in beak - Bird drowned, carcass discarded. Band no. and further details recorded on Tag Form. Photos provided with logsheets. Turtle released alive, trace cur at hook.													
Tag <input checked="" type="checkbox"/> Band No. <b style="color: red;">A754L</b>													

I certify the information which I have provided on this form to be a complete and accurate record.

Concession Holder or Authorised Person	Printed Name <b style="color: red;">TIM GARDENER</b>	Signature <i>T. Gardener</i>	Date <b style="color: red;">15 / 6 / 02</b>
--	--	------------------------------	---

**NOTE** • If tagged fish / animals or banded birds are captured, please complete tag form at back of book and return to AFMA.



## Attachment 4

## Wildlife and Other Protected Species List

Please be as specific as you can with regard to the species identification.

Fish Species	
<b>Great White Shark</b>	<i>Carcharodon carcharias</i>
<b>Grey Nurse Shark</b>	<i>Carcharias taurus</i>
<b>Whale Shark</b>	<i>Rhincodon typus</i>
<b>Pipefish, Sea Horses &amp; Sea Dragons</b>	<i>Syngnathids</i>
<b>Black Cod</b>	<i>Epinephelus daemlii</i>

Non-Fish			
All Seabirds	All Seals	All Whales/Dolphin/Dugong	Marine Reptiles
Albatross	Australian Sea Lion	Dolphin ( <i>if species unknown</i> )	Flatback Turtle
Booby	Australian Fur Seal	Killer Whale	Green Turtle
Cormorant	New Zealand Fur Seal	False Killer Whale	Hawksbill Turtle
Frigatebird	Fur Seal ( <i>if species unknown</i> )	Humpback Whale	Leatherback Turtle
Gannet	Leopard Seal	Pilot Whale	Loggerhead Turtle
Giant Petrel	Southern Elephant Seal	Sperm Whale	Olive Ridley Turtle
Gull		Southern Right Whale	Turtle ( <i>if species unknown</i> )
Mollymawk		Baleen Whale ( <i>if species unknown</i> )	Sea Snake
Mutton Bird		Toothed Whale ( <i>if species unknown</i> )	
Noddy		Large Whale ( <i>if species unknown</i> )	
Pelican		Small Whale ( <i>if species unknown</i> )	
Penguin		Dugong	
Petrel			
Prion			
Shag			
Skua			
Shearwater (Mutton bird)			
Tern			
Tropicbird			
Large Seabird			
Small Seabird			

### Common Names for Albatross, Petrels and Other Seabird Species

Great Albatross	Mollymawks and Sootys	Petrels	Others
Wandering Albatross	Black-browed Albatross	Northern Giant Petrel	Abbot's Booby
Northern Royal Albatross	Campbell Albatross	Southern Giant Petrel	Lesser Noddy
Southern Royal Albatross	Buller's Albatross	White-chinned Petrel	Christmas Island Frigate
Gibson Albatross	Shy Albatross		
Antipodean Albatross	White-capped Albatross		
Tristan Albatross	Salvin's Albatross		
Amsterdam Albatross	Chatham Albatross		
Laysan Albatross	Grey-headed Albatross		
Yellow-nosed	Albatross (Indian)		
Light-mantled Albatross			
Sooty Albatross			

## Attachment 5

## Recapture Sheets for all Tagged Fish, Tagged Animals and Banded Seabirds

When you catch any tagged fish or other animals, or banded birds, please complete the questionnaire below and forward it to:

**AFMA Logbook Coordinator**  
**Box 7051**  
**Canberra MC ACT 2610**

If you have any comments to make about the captured fish/animal or this questionnaire, use the reverse of this sheet.

**Please Note: There are rewards for many of the Tagging Programs currently being undertaken.**

**The Green copy of this tag recapture sheet is for your own records.**

**Please return the tag/tags with this form.**

Name, Address and Phone No.					
Skipper's Name			Vessel Name		
Tag Number/s and colour			Capture Date		
Length of fish - from tip of lower jaw to fork in tail or for Swordfish from behind eyeball to fork in tail			cm	Estimated Whole Weight of Fish	kg
Location of capture of tagged fish Latitude (dd mm)			Longitude (ddd mm)		
Number of tags recovered from this fish (tick one) 1 <input type="checkbox"/> 2 <input type="checkbox"/>			Species		

Name, Address and Phone No.					
Skipper's Name			Vessel Name		
Tag Number/s and colour			Capture Date		
Length of fish - from tip of lower jaw to fork in tail or for Swordfish from behind eyeball to fork in tail			cm	Estimated Whole Weight of Fish	kg
Location of capture of tagged fish Latitude (dd mm)			Longitude (ddd mm)		
Number of tags recovered from this fish (tick one) 1 <input type="checkbox"/> 2 <input type="checkbox"/>			Species		

Name, Address and Phone No.					
Skipper's Name			Vessel Name		
Tag Number/s and colour			Capture Date		
Length of fish - from tip of lower jaw to fork in tail or for Swordfish from behind eyeball to fork in tail			cm	Estimated Whole Weight of Fish	kg
Location of capture of tagged fish Latitude (dd mm)			Longitude (ddd mm)		
Number of tags recovered from this fish (tick one) 1 <input type="checkbox"/> 2 <input type="checkbox"/>			Species		



## Attachment 6

### Recapture Sheets for all Tagged Fish/Animal Recaptures

When you catch any tagged fish (or other animals) please complete the questionnaire below, and forward it with the tag/s to:

**The Logbook Coordinator  
Australian Fisheries Management Authority  
Box 7051  
Canberra Mail Centre  
ACT 2610**

If you have any comments to make about the captured fish/animal, this questionnaire, or any other matter use the reverse of this sheet.  
PLEASE NOTE: THERE ARE REWARDS FOR TAG RETURNS IN MANY OF THE TAGGING PROGRAMS CURRENTLY BEING UNDERTAKEN!

The **BLUE COPY** of this form is for your own records.

Name and Address	-----			
Skipper's Name		Vessel Name		
Tag Number		Capture Date		
Length of fish - from tip of lower jaw to fork in tail		cm	Weight of Fish Whole / Cleaned	
Location of capture of tagged fish (degrees and minutes)	Latitude		Longitude	
Number of tags recovered from this fish (tick one) 1 <input type="checkbox"/> 2 <input type="checkbox"/> Species				

Name and Address	-----			
Skipper's Name		Vessel Name		
Tag Number		Capture Date		
Length of fish - from tip of lower jaw to fork in tail		cm	Weight of Fish Whole / Cleaned	
Location of capture of tagged fish (degrees and minutes)	Latitude		Longitude	
Number of tags recovered from this fish (tick one) 1 <input type="checkbox"/> 2 <input type="checkbox"/> Species				

Name and Address	-----			
Skipper's Name		Vessel Name		
Tag Number		Capture Date		
Length of fish - from tip of lower jaw to fork in tail		cm	Weight of Fish Whole / Cleaned	
Location of capture of tagged fish (degrees and minutes)	Latitude		Longitude	
Number of tags recovered from this fish (tick one) 1 <input type="checkbox"/> 2 <input type="checkbox"/> Species				

# Attachment 7

## VESSEL VOYAGE SUMMARY



### OBSERVER DETAILS

OBSERVER LAST NAME	JOE SON
OBSERVER FIRST NAME	ANDY
OBSERVER PROJECT	TORI LINE
OBSERVER TRIP ID No	VL 14
EMPLOYING ORGANISATION	AFMA

### TIME ZONE

Record in this field the time zone that you have used when recording data on this voyage. You should use ship's time, which may not be local time. Use only one time zone per voyage.

UTC + 10

### VOYAGE DETAILS

DEPARTURE (SHIP DATE AND TIME)				
DD	MM	YY	hh	mm
23	04	03	05	00

RETURN (SHIP DATE AND TIME)				
DD	MM	YY	hh	mm
24	04	03	17	00

DEPARTURE TYPE (circle)	PORT OR VESSEL NAME
PORT	NAROOMA
TRANSFER	

RETURN TYPE (circle)	PORT OR VESSEL NAME
PORT	NAROOMA
TRANSFER	

### ACTIVITY SUMMARY

TOTAL No OF HOOKS, TRAPS OR NETS SET	800
TOTAL No OF HOOKS, TRAPS OR NETS OBSERVED	800
TOTAL No OF SETS (HOOK FISHERY ONLY)	1
TOTAL No OF SETS OBSERVED (HOOK FISHERY ONLY)	1
TOTAL No OF HAULS OBSERVED	1
TOTAL No OF BIOLOGICAL DATA SHEETS	3
TOTAL No OF WILDLIFE ABUNDANCE DATA SHEETS	2
TOTAL No OF WILDLIFE INTERACTION DATA SHEETS	2
TOTAL No OF SAMPLES RETAINED	0
TOTAL No OF SEABIRDS CAUGHT	0

TOTAL No OF BIRD BANDS COLLECTED	0
TOTAL No OF FISH TAGS COLLECTED	1
TOTAL No OF DAYS ABOARD	2
TOTAL No OF FISHING DAYS	2
TOTAL No OF STEAMING DAYS	0
TOTAL No OF SEARCHING DAYS	0
TOTAL No OF DAYS LOST TO BREAKDOWN	0
TOTAL No OF DAYS LOST TO WEATHER	0
TOTAL No OF FISH, BIRDS OR SEALS TAGGED	0
TOTAL No OF SEALS CAUGHT	0
TOTAL No OF CETACEANS CAUGHT	0

### WILDLIFE MITIGATION MEASURES

WERE WILDLIFE MITIGATION MEASURES DEPLOYED DURING THE CRUISE (Y/N)	Y
TYPE OF WILDLIFE MITIGATION MEASURES DEPLOYED	TORI LINE
TOTAL No OF HOOKS, TRAPS OR NETS SET WITH WILDLIFE MITIGATION MEASURES DEPLOYED	800
TOTAL No OF HOOKS, TRAPS OR NETS SET WITHOUT WILDLIFE MITIGATION MEASURES DEPLOYED	0

### TAG & BAND DETAILS

TAG or BAND NUMBER	N56781	N72181
TAG ACTION (CAPTURED or RE-RELEASED)	CAPTURED	CAPTURED
OBSERVER ONBOARD @ TIME OF CAPTURE (Y/N)	Y	N
TAG / BAND AGENCY	NSW FISH	NSW FISH
TAG / BAND TYPE	Spagettie	Spagettie
TAG / BAND COLOUR	Yellow	Yellow
SPECIES CODE	YFT	MLS
DATE OF CAPTURE (DD/MM/YY)	23/04/03	07/08/02
LATITUDE	36°00.6	36°01.7
LONGITUDE	150°51.7	150°51.7
LENGTH LCF (cm)	120	900
WHOLE WEIGHT (kgs)	30	170
SST (°C)	21.7	23.7
MARKING COLOUR		
MARKING POSITION		
OBSERVED AGAIN (Y/N)		
COMMENTS		See below

### COMMENTS

A yellow NSW gamefish tag was given to the observer during the steaming home. The strip's details for a reward are as follows:

Name: Mark Smith  
Address: 17 Altair Place  
Narooma 2617

# Attachment 7



## OBSERVER PROGRAMME

### TORI POLE AND LINE SPECIFICATIONS

OBSERVER NAME	ANDY JOESON	OBSERVER TRIP ID	VI 14
VESSEL NAME	VIXEN	OBSERVER PROJECT	TORI LINE 38gram

#### TORI POLE - PORT

(1) TORI POLE LENGTH (METERS)	5
(2) CONSTRUCTION MATERIAL	AL
(3) POLE ANGLE (DEGREES)	80
(4) DISTANCE OF POLE FROM STERN (METERS)	9
(5) HEIGHT OF TIP OF POLE ABOVE DECK (METERS)	5
(6) HEIGHT OF TIP OF POLE ABOVE WATER (METERS)	6
(7) HEIGHT OF TORI LINE AT POINT ABOVE STERN (M)	3

#### TORI POLE - STARBOARD

(1) TORI POLE LENGTH (METERS)	5
(2) CONSTRUCTION MATERIAL	AL
(3) POLE ANGLE (DEGREES)	80
(4) DISTANCE OF POLE FROM STERN (METERS)	9
(5) HEIGHT OF TIP OF POLE ABOVE DECK (METERS)	5
(6) HEIGHT OF TIP OF POLE ABOVE WATER (METERS)	6
(7) HEIGHT OF TORI LINE AT POINT ABOVE STERN (M)	3

#### TORI LINE - PORT

(8) TOTAL LENGTH OF TORI LINE (METERS)	200	
(9) LENGTH OF AERIAL SECTION (METERS)	100	
(10) LENGTH OF WATER SECTION (METERS)	100	
AERIAL SECTION	MATERIAL	KU
	DIAM (MM)	5
	COLOUR	Yellow
WATER SECTION	MATERIAL	KU
	DIAM (MM)	5
	COLOUR	Red

#### TORI LINE - STARBOARD

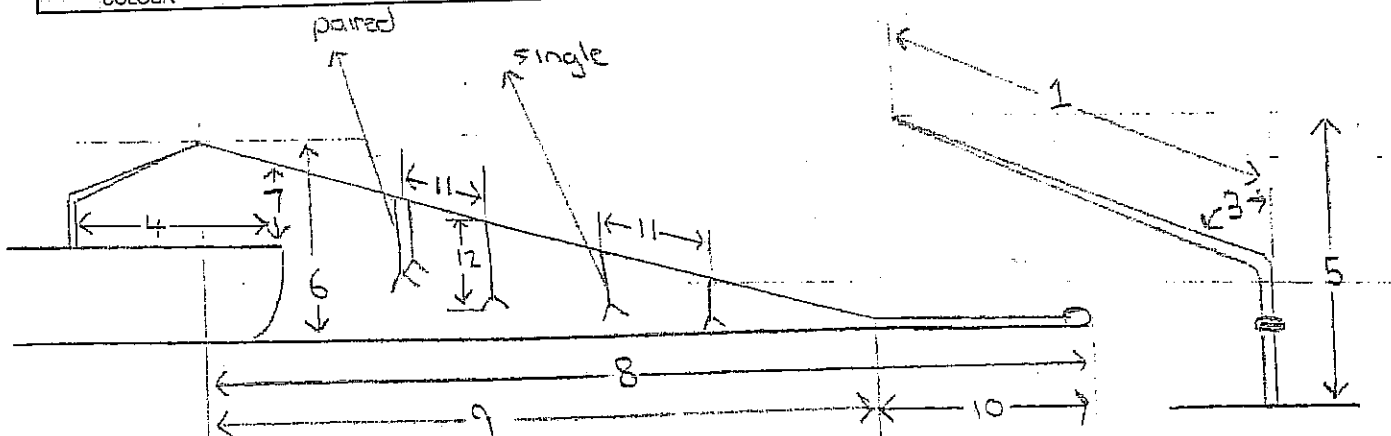
(8) TOTAL LENGTH OF TORI LINE (METERS)	200	
(9) LENGTH OF AERIAL SECTION (METERS)	100	
(10) LENGTH OF WATER SECTION (METERS)	100	
AERIAL SECTION	MATERIAL	KU
	DIAM (MM)	5
	COLOUR	Yellow
WATER SECTION	MATERIAL	KU
	DIAM (MM)	5
	COLOUR	Red

#### STREAMER DESCRIPTION - PORT

NUMBER OF STREAMERS	30
(11) AVERAGE DISTANCE APART (METERS)	2
(12) AVERAGE LENGTH (METERS)	2
LENGTH FIXED (fix) OR VARIABLE (var)	Fix
SAME HEIGHT ABOVE WATER (Y/N)	N
PAIRED (p), SINGLE (s), COMBINATION (c)	Paired
LENGTH TYPE - (FIXED, DETACHABLE, COMBINATION)	Fix
MATERIAL	Packing strip
DIAM (MM)	20
COLOUR	Blue

#### STREAMER DESCRIPTION - STARBOARD

NUMBER OF STREAMERS	30
(11) AVERAGE DISTANCE APART (METERS)	2
(12) AVERAGE LENGTH (METERS)	2
LENGTH FIXED (fix) OR VARIABLE (var)	Fix
SAME HEIGHT ABOVE WATER (Y/N)	N
PAIRED (p), SINGLE (s), COMBINATION (c)	Paired
LENGTH TYPE - (FIXED, DETACHABLE, COMBINATION)	Fix
MATERIAL	Packing strip
DIAM (MM)	20
COLOUR	Blue



#### COMMENTS

Tori Lines and poles brand new. Fades were attached to the ends of tori line to keep lines tight during operations

# Attachment 7

## OBSERVER PROGRAMME



### LONGLINE VESSEL AND FISHING GEAR DETAILS

OBSERVER NAME	ANDY JOESON	VESSEL NAME	VIXEN	OBSERVER TRIP-ID	VI 14
OBSERVER PROJECT	Tor. Line	LOG BOOK TYPE	ALO 4	LOG BOOK SERIAL No	2781

VESSEL DETAILS	
VESSEL OWNER	Mike Taggart
NATIONALITY	Australian
HOME PORT	Narooma
DISTINGUISHING SYMBOL	LFB 842
INTERNATIONAL CALL SIGN	VIXN
GROSS TONNAGE (GRT)	70
LENGTH OVERALL (LOA) metres	20.5
FREEBOARD HEIGHT (cm)	150
YEAR OF MANUFACTURE	1999
MAIN ENGINE BRAKE POWER (kw)	640
NUMBER OF MAIN ENGINES	1
FUEL CAPACITY (tonnes)	11
FUEL CONSUMPTION (tonnes / day while fishing)	0.5
TOTAL FREEZER CAPACITY (VOLUME) cm <sup>3</sup>	21
TOTAL RSW CAPACITY (VOLUME) m <sup>3</sup>	30
BLAST FREEZER CAPACITY (tonnes / day)	NA
COLD STORAGE CAPACITY (VOLUME) m <sup>3</sup>	3

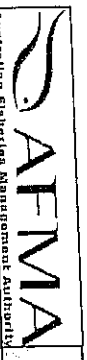
ELECTRONIC FISHING EQUIPMENT		
ELECTRONIC EQUIPMENT	circle	MANUFACTURER
GPS 1	<input checked="" type="radio"/> Y <input type="radio"/> N	KODEN
GPS 2	<input type="radio"/> Y <input checked="" type="radio"/> N	
RADIO DIRECTION FINDER	<input checked="" type="radio"/> Y <input type="radio"/> N	TAIYO
RADIO DIRECTION FINDER	<input type="radio"/> Y <input checked="" type="radio"/> N	
RADAR 1	<input checked="" type="radio"/> Y <input type="radio"/> N	FURUNO
RADAR 2	<input type="radio"/> Y <input checked="" type="radio"/> N	
WEATHER FACSIMILE	<input type="radio"/> Y <input checked="" type="radio"/> N	
TRACK PLOTTER	<input checked="" type="radio"/> Y <input type="radio"/> N	SEA FABER
SOUNDER 1	<input checked="" type="radio"/> Y <input type="radio"/> N	FURUNO
SOUNDER 2	<input type="radio"/> Y <input checked="" type="radio"/> N	
SONAR	<input type="radio"/> Y <input checked="" type="radio"/> N	
NOAA RECEIVER	<input checked="" type="radio"/> Y <input type="radio"/> N	TAIYO
SST RECORDER 1	<input checked="" type="radio"/> Y <input type="radio"/> N	TAIYO
SST RECORDER 2	<input type="radio"/> Y <input type="radio"/> N	
INMARSAT SERVICE	<input checked="" type="radio"/> Y <input type="radio"/> N	
VMS	<input checked="" type="radio"/> Y <input type="radio"/> N	

CREW DETAILS	
CAPTAIN'S LAST NAME	SMITH
CAPTAIN'S FIRST NAME	MARK
YEAR'S EXPERIENCE AS A CAPTAIN	4
YEARS EXPERIENCE IN THE FISHERY	13
TOTAL NUMBER OF CREW	3
OTHER	

FISHING GEAR DESCRIPTION - PART B			
BRANCHLINE CODE	BRANCHLINE A	BRANCHLINE B	BRANCHLINE C
BRANCH MATERIAL	NM		
BRANCH LENGTH (cm)	720		
SEKIYAMA MATERIAL	NA		
SEKIYAMA LENGTH (cm)	NA		
LEADER MATERIAL	NM		
LEADER LENGTH (cm)	360		
LEADER B/S (kgs)	150		
TOTAL LENGTH (cm)	870		
LEAD WEIGHT USED	Yes		
WEIGHT SIZE (gms)	38		
DISTANCE OF HOOK FROM WEIGHT (cm)	360		
HOOK TYPE (J OR CIRCLE)	Circle		
HOOK SIZE	3/0		

FISHING GEAR DESCRIPTION - PART A	
ONLINE MATERIAL	NM
MAINLINE SIZE (mm)	3.2
MAINLINE LEN (km)	60
BUOYLINE MATERIAL	KU
BUOYLINE 1 LEN (m)	10
BUOYLINE 2 LEN (m)	NA
LINE CASTING CONTROLLER	<input type="radio"/> Y <input checked="" type="radio"/> N
BRANCHLINE HAULER	<input checked="" type="radio"/> Y <input type="radio"/> N
No of BRANCHLINE HAULERS	2
LINE SHOOTER	<input checked="" type="radio"/> Y <input type="radio"/> N
TORI POLE	<input checked="" type="radio"/> Y <input type="radio"/> N
No OF TORI POLES	

COMMENTS



Australian Fisheries Management Authority

OBSERVER PROGRAMME

OBSERVER NAME: ANDY JOHNSON

VESSEL NAME: VIXEN

OBSERVER PROJECT: Tail Line 38

OBSERVER TRIP ID: VI 14

TIME ZONE: 10 UTC +

VESSEL ACTIVITY LOG

Date	Time (hh:mm)	Vessel Activity Code	Shot Number	Latitude (dd° mm.m')	Longitude (ddd° mm.m')	Start End Bta #	SST °C	Net Sonde °C	Wind speed (kts)	Wind direction (d°)	Swell height (m)	Swell direction (d°)	Sea height (m)	Sea direction (d°)	Cloud / 8	Beaufort (1-12)	Vessel Course (d°)	Vessel Speed (kts)	Offal Discharge (Y/N)	Offal Discharge Level
23 Oct 03	15:30	SE	01	36 10 0.6 S	150 51 7.7 E	S 214	-	-	5	140	2	140	0.5	140	4	2	310	7	N	NA
23 Oct 03	15:44	SE	01	35 51 9.0 S	150 51 52.0 E	02 213			5	140	2	140	0.5	140	4	2	310	7	N	NA
23 Oct 03	16:12	SE	01	35 51 4.4 S	150 51 2.5 E	03 213			5	140	2	140	0.5	140	4	2	310	7	N	NA
23 Oct 03	16:55	SE	01	35 51 0.4 S	150 53 7.7 E	04 217			5	140	2	140	0.5	140	4	2	310	7	N	NA
23 Oct 03	17:40	SE	01	35 51 5.5 S	150 53 6.6 E	217			5	140	2	140	0.5	140	4	2	190	2	Y	L
23 Oct 03	06:45	HA	01	35 51 8.1 S	150 47 9.7 E	S 211			5	290	0.5	270	0.5	290	1	2	190	2	Y	L
23 Oct 03	07:18	HA	01	36 11 3.9 S	150 47 8.0 E	04 211			5	290	0.5	270	0.5	290	1	2	190	2	Y	L
	09:02	HA	01	36 10 18.6 S	150 47 7.8 E	03 212			5	290	0.5	270	0.5	290	1	2	190	2	Y	L
	10:39	HA	01	36 10 2.5 S	150 47 8.0 E	02 212			5	290	0.5	270	0.5	290	1	2	180	2	Y	L
	11:40	HA	01	36 11 5.5 S	150 47 8.1 E	214			5	290	0.5	270	0.5	290	1	2				

Comments

Vessel Activity Codes: DO - dodging, DR - drifting, SE - setting, HA - hauling, ST - steaming, SR - searching, AN - anchoring, GT - cage towing

Offal Discharge Level: OT - other, PR - processing, JF - jigging, TL - trolling, JF - in port, BW - bad weather, BD - broken down

H - high, M - medium, L - low, N - negligible











Date: 230403 Vessel: VIXEN Observer Trip ID Number: VI 14 Shot Number: 01

**Tori Line**

Number of tori lines deployed: 2  
 Number of hooks set with tori lines deployed: 850  
 Number of hooks set without tori lines deployed: 0  
 Average time taken to deploy tori lines (minutes): 10  
 Average time taken to retrieve tori lines (minutes): 10

Setting arrangement of tori poles (Tick Box)  Permanently fixed in position   
 Deployed into position for set

Reason for no tori lines or poles: \_\_\_\_\_  
 \_\_\_\_\_

**Deployment & Recovery**

What was the method of deploying & recovering the tori lines? (Tick Box)  
 By hand  
 Manual pulley or winch  
 Mechanical pulley or winch

Efficiency: Poor Good Very Good  
 Deploying:     
 Recovery:

**Tangles**

How many times did the fishing gear tangle with the tori lines: 1  
 Describe reason for tangle & method of remedy: Radio Beacon caught in tori line during set. Remedy vessel stopped + tori line pulled in to free beacon

**Incidence of Damage**

How many times did the tori lines damage: \_\_\_\_\_  
 Describe reason for damage and method of remedy: \_\_\_\_\_  
 \_\_\_\_\_

Snoods:  Mainline:  Buoys:  Radio Beacons:  Vessel:   
 Tori Poles:  Other Tori Line:

**Hooks & Line Weighting**

**Deployment**

Number of snood bins used (circle): 1 2  
 Position baits deployed (tick box):  Port Side  Starboard Side  Alternate   
 Baits enter water forward or aft of stern? AFT Distance from stern where baits enter water (metres): 2  
 Method of snood deployment (tick box):  (1) Bait deployed first, snood fed from bin   
 (2) Swivel and snood deployed first and bait deployed last

Number of hooks deployed with weighted swivels: 950  
 Number of hooks deployed without weighted swivels: 0  
 Reason for no weighted swivels: \_\_\_\_\_  
 Line shooter used (Y/N)  Average mainline tension during shot (tick box) Slack  Medium  Tight  Mixture

**Effectiveness**

(aim is to place baits under the tori lines for protection)  
 What % of hooks were: \_\_\_\_\_  
 (1) Deployed under the tori lines - full protection 100  
 (2) Deployed to port or starboard of the tori lines - no protection  
 Reason for poor deployment strategy, remedy: \_\_\_\_\_  
 \_\_\_\_\_

**Influence of weather**

What was the effect of the wind speed and direction (as described in the setting details) on the position of the tori lines in relation to the baits: (tick box)  
 Tori lines over baits - full protection  
 Tori lines to port or starboard of baits - no protection  
 Did the setting crew change their deployment strategy in order to make the tori lines more effective (Y/N)  
 Describe: \_\_\_\_\_  
 \_\_\_\_\_

**Incidence of line weighting - risk to crew safety**

Cause of risk (tick box)  
 Snood tension released by hook being severed or pulled from fish  
 Airborne due to snood puller velocity  
 Misjudgment by crew of snood recovery  
 Other Describe: \_\_\_\_\_  
 Crew  Vessel  Water  Other   
 No. of times weight collide with: \_\_\_\_\_  
 Describe outcome: Bruised left hand  
 Injury Sustained (Y/N)  Describe: \_\_\_\_\_  
 How did vessel address the crew safety issue (tick box): Helmets with visors  Slow hauling awareness  Other   
 Describe: No mitigation action taken

Observer Name: ANDY JESON  
 Observer Signature: ANDY JESON



# Tori Line Instructions

This tori line has been provided to you unassembled. The following instructions detail the construction of the line so that it conforms to the conditions detailed in the fishing permit for this vessel. This set of instructions gives a tori line height of 8 metres.

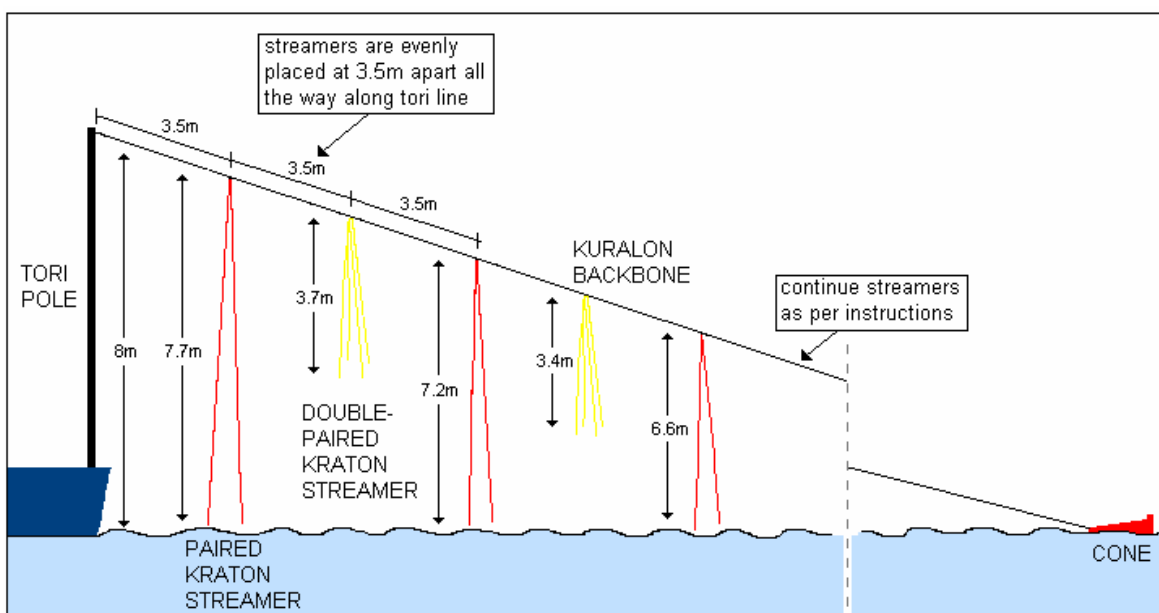
It is compulsory to use the tori line when fishing during day light hours in the area of water south of 25° South.

## Your Kit Contains:

- 100m roll of 4.5mm Kuralon for tori line backbone
- 130m roll of 9.8mm Kraton streamer material (orange)
- 120m roll of 4.2mm Kraton streamer material (yellow)
- 1x 6mm snap clip
- 10x "A" 5.2mm lock crimps
- 1x packet of cable ties
- 1x 4 inch polystyrene float
- 1x 6 inch polystyrene float
- 1x 10 inch hard plastic float
- 1x 900mm cone

## Tori Line Construction

1. The tori line is to be attached at a height of 8m from the surface of the water.
2. Unroll Kuralon and, using a crimp, attach the snap clip to one end. This end will be attached to the tori pole. The Kuralon is the backbone of the tori line and has already been cut to length.
3. The tori line consists of two types of streamers – a longer, paired streamer (9.8mm orange Kraton) and a shorter, double-paired streamer (4.2mm yellow Kraton) which alternate along the tori line backbone.
4. The length and positioning of the streamers is detailed in Table 1 over the page.
5. Cut a 15.4m length of orange Kraton. Using a cable tie, attach the middle of the length of Kraton to the tori line backbone making two streamers of equal length.
6. Cut two lengths of 7.4m yellow Kraton. Using a cable tie, attach the middle of both to the backbone at 3.5m from the first streamer.
7. Continue alternating the streamers at 3.5m intervals according to the streamer lengths detailed in Table 1.



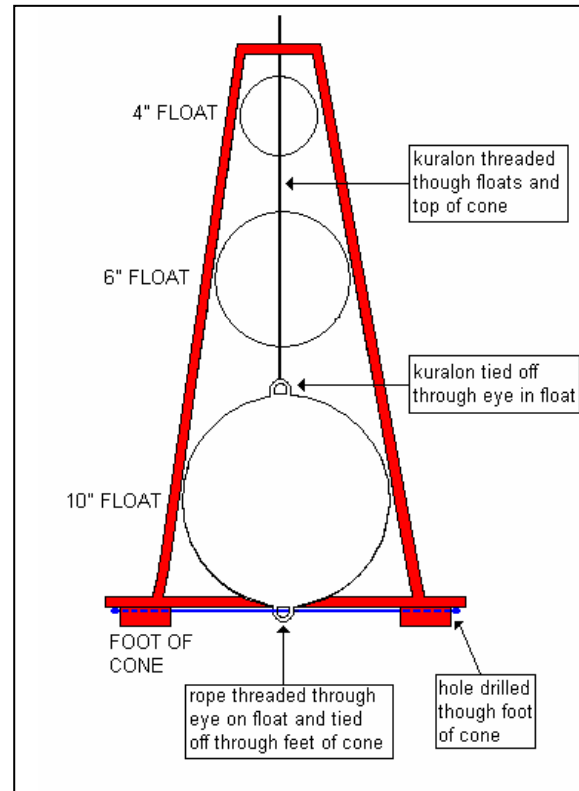
**Table 1. Streamer Lengths**

KRATON STREAMER COLOUR	LENGTH OF STREAMER (m)	CUT LENGTH (m)	PLACEMENT OF STREAMER FROM BOAT END(m)
Orange	7.7	15.4	3.5
Yellow	3.7	7.4 (x2)	7.0
Orange	7.2	14.3	10.5
Yellow	3.4	6.9 (x2)	14.0
Orange	6.6	13.2	17.5
Yellow	3.2	6.3 (x2)	21.0
Orange	6.0	12.1	24.5
Yellow	2.9	5.8 (x2)	28.0
Orange	5.5	11.0	31.5
Yellow	2.6	5.2 (x2)	35.0
Orange	4.9	9.8	38.5
Yellow	2.3	4.6 (x2)	42.0
Orange	4.4	8.7	45.5
Yellow	2.0	4.1 (x2)	49.0
Orange	3.8	7.6	52.5
Yellow	1.8	3.5 (x2)	56.0
Orange	3.2	6.5	59.5
Yellow	1.5	3.0 (x2)	63.0
Orange	2.7	5.4	66.5
Yellow	1.2	2.4 (x2)	70.0
Orange	2.1	4.2	73.5
Yellow	0.9	1.8 (x2)	77.0
Orange	1.6	3.1	80.5
Yellow	0.6	1.3 (x2)	84.0
Orange	1.0	2.0	87.5

**CONE/FLOAT CONSTRUCTION**

1. Drill a hole (longways) through opposite feet on base of cone.
2. Insert small (4") then medium (6") float into the cone making sure that the holes align with the hole in the top of the cone.
3. Thread Kuralon backbone through the top of the cone and through the floats. Top of cone should point towards the boat end.
4. Tie off the end of the Kuralon to the eye of the large float and insert the float into the base of the cone.
5. Pull on the Kuralon to pull floats tight in the cone.
6. Pass a length of rope through the eye of the float and the drilled holes in the feet of the cone.
7. Tie off the rope (tightly) at both feet so that the rope holds the float firmly in place.

**For more information  
Contact AFMA Direct on  
1300 723 621**



## Australian Country Report: Ecologically Related Species in the Australian Southern Bluefin Tuna Fishery. ERSWG 7

### Attachment 9

Observed bycatch from the Australian SBT Fishery. The data are pooled for all years 2003 to 2007 in line with confidentiality obligations.

<b>Species</b>	<b>Amount</b>	<b>Comments</b>
Shearwater (unidentified sp.)	2	One found floating dead on water, one entangled in the net and released alive.*
Storm petrel	1	Flew into the vessel and died.*
Yellow-nosed albatross	1	Hooked and freed itself and flew away.
Mako shark	1	Released alive
Hammerhead shark	1	Released alive
Skipjack tuna	3,325 kg	
Leatherjackets	206 kg	
Albacore tuna	14 individuals	Released alive

\*Anecdotal evidence from observers suggests caution against extrapolation of this data because the interactions were vessel specific.