

**An Overview of
The Australian
Southern Bluefin Tuna Purse Seine Pilot Observer Programme 2002 03
and
Observed Longline Operations 2002**

**R Stanley and M Scott
Senior Observers
Australian Fisheries Management Authority**

Introduction

Fishing operations taking Southern Bluefin Tuna (SBT) in the Australian Fishing Zone were observed in both the purse seine and longline sectors in 2002-03

The first placement of observers on the Australian domestic purse seine fleet took place in February 2003 targeting both purse seine fishing and tow cage operations.

There has been an ongoing observer program in Australian longline fisheries since 2001. The observers collect data mostly on domestic longline vessels taking SBT as a bycatch whilst fishing for other tuna and billfish species. To date, most observer effort has been in waters south of 30°S, where there is a high probability of some incidental catch of SBT between May and September each year.

Observer Training

AFMA

AFMA has recruited and trained observers since 1992. Observers are recruited from a range of backgrounds but primarily they are young graduates with a marine biology or zoological science background.

The training provided includes but is not limited to;

- occupational health and safety at sea,
- fishing methodologies,
- the collection of otoliths and other biological sampling at sea,
- length frequency data collection,
- data recording at sea,
- species identification,
- direct electronic entry of data at sea, and
- conversion factor work.

Additional to the above, some observers received additional training in fish tagging techniques, including the placement of archival tags. Other observers have also been trained in the use of temperature depth recording devices.

The manuals and data forms used were as per the Observer Project Plan for the SBT

Pilot Observer Programme OBS 2002-109A.

The manuals and project plan used in the East Coast fishery are outlined in Observer Project Plan OBS 2002-101.

Other Providers

The Marine and Freshwater Research Institute (MAFRI) were contracted by AFMA to provide two observers on the SBT purse seine fleet. The observers engaged via this sub-contract were trained by the institute.

Observer Program Design and Coverage

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. It was also planned to monitor two tow cage transport events, which represents about 5% of the towing effort. This pilot program design called for 60 observer sea days covering fishing activities between 33 to 34 °S and between 131 and 133 °E. This is the area where historically most of the Australian SBT purse seine effort has been centred.

In the design it was planned to stagger the observer effort over the season with deployments in the first week of January and in early February. The allocation of observers to vessels was designed to be random.

The choice of vessels boarded by the observers was limited by the availability of the vessels in Pt Lincoln and of the observers themselves. However, the observers were able to move between vessels on the fishing ground. Also, because agreements regarding sub-contracting arrangements were settled late, there is no data from the first two months of the local fishing season.

Longline sector

The design of the observer program in the Australian East Coast longline sector was primarily aimed at monitoring and experimental mitigation of seabird bycatch however, data on all catch was recorded. In addition, specific observer coverage was provided for a CCSBT tagging program and increased observer monitoring was initiated during the core part of the SBT 'season'. The majority of observer coverage was in waters south of 30°S during the period June to September 2002. This coincides with the key areas and periods of SBT occurrence in the region. AFMA observers covered in excess of 10% of pelagic longline fishing operations.

There were 13 observers deployed during the East Coast "SBT season" and they monitored 154 shots

Observer Collected Data

The following is a summary of the observer-collected data.

Effort Data

Purse-seine sector

In 2003, observers covered a total of 47 sea days on purse-seine vessels and an additional 19 days on a single tow cage operation.

There were 24 purse-seine sets observed. Of these, 19 complete shots were observed from the purse-seine vessel and a further four from a 'chum' vessel holding the school for the purse seiner to shoot. A further four shots were observed where fish were missed in the shot attempt, or the shot was abandoned. The observed fishing effort is 11% of the effort for the fishery.

There was data gathered on the movement of some spotter aircraft, their time in the area preceding shots. There are also data in relation to the vessel its gear and equipment.

The opportunity to be aboard a chum vessel was not anticipated in the design of the project and as a result there were some data that we were unable to collect. This opportunity should it arise again will be better documented by observers.

Longline sector

In the longline sector for the period 1 June to 30 September 2002 there were 119,577 hook sets observed in the area off south eastern Australia south of 30°S. These observed hooks were set as 134 longline shots. In the same period, logbook data shows there were 898,539 hooks set in this area of the fishery. This equates to coverage of 13% of longline effort for the region. The above does not include any effort from those three vessels that were targeting SBT for tagging purposes.

Catch Data

Purse-seine sector

For the purse seine sector, catch data was in the form of estimates as there is no actual weight information available for purse seine sets made for farming purposes. Similarly because fish are taken alive, there was no opportunity for observers to count numbers of fish accurately at sea, or to handle the fish and record individual live fish weights/lengths. Hence, all catch data are estimates by the observer. Approximately 590 t of SBT catch was observed.

There were no observed interactions with any ecologically related species other than skipjack tuna. Two skipjack tuna were noted as mortalities in the purse seine shots but others were noted swimming with the caged SBT following a transfer.

Longline sector

For the longline sector other than specific tagging trips, observers recorded 115 SBT caught for the period. The total catch of all species was 7998 individual fish. Hence, SBT accounted for 1.4% of the total observed catch by number. There was no opportunity or facilities to weigh fish at sea and so catch weights where they are noted are observer estimates only.

A table of the count of species observed for this period is appended

Length Frequency Data

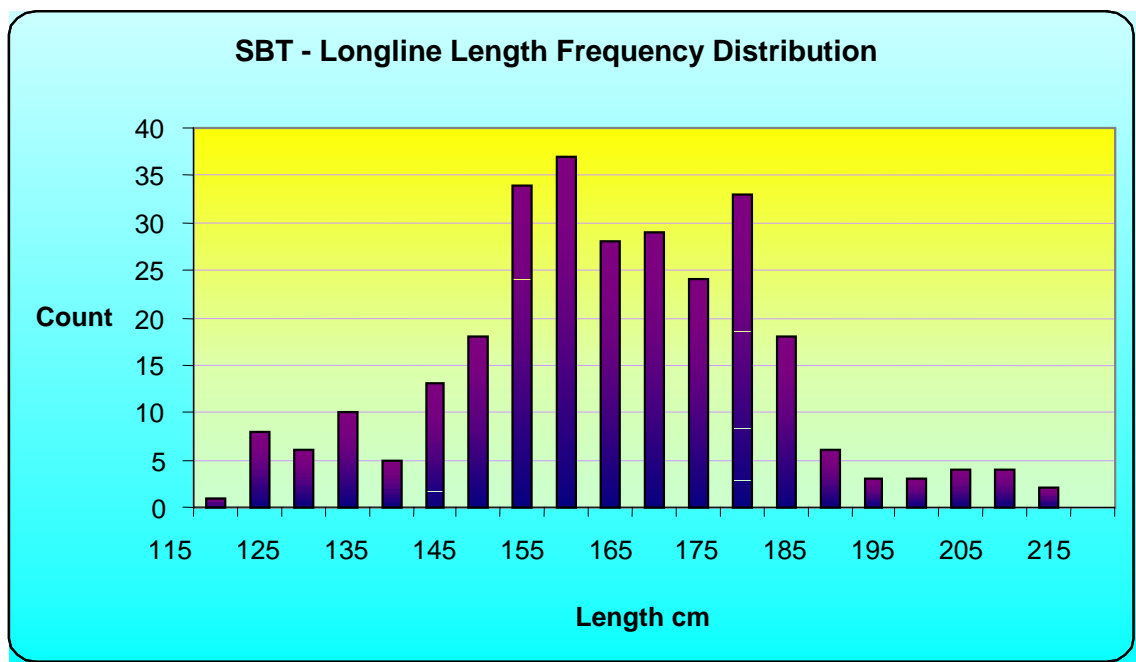
Purse-seine sector

For the purse-seine sector in South Australia, observers were only able to take length measurements on the mortalities that occurred in purse seining operations, and during observed tows. There were only 12 length measurements obtained.

Longline sector

For SBT caught by longline there was the opportunity to measure 286 of the 480 fish.

A length frequency histogram showing the size distribution of those fish measured is shown.



Biological Data

In the longline and purse seine fisheries there was no opportunity for observers to collect accurate weight data, although there are a small number of observer estimates for weights in the comments section of some entries. There were observer weight estimates for 25 fish in the purse seine fishery. There were no otoliths collected by observers from SBT. However there is an ongoing project to collect otoliths from farm mortalities.

Release and Discard Data

There were 25 fish in the purse seine sector that were not retained, of these 12 were mortalities that were associated with the tow. There were another 13 fish that were taken during purse seine operations or were “sampled” for size by the “chum” boat of these 2 were mortalities and the remaining 11 were troll caught or polled “sample” fish that were released alive.

In the shots of two purse seiners where shots were abandoned it was estimated that in

each case there was between 6 to 10 tonnes of SBT.

Of the 591 SBT caught and recorded by observers in the longline sector, 214 were observed as discarded or otherwise released (i.e. non-retained). Non-retention accounted for 36% of the longline SBT catch. Life status and fate of all SBT was recorded and is reported below. This data should be considered in the context of the three different management arrangements that were in place during observations. First, there was a CCSBT tagging program using three vessels (under scientific research permits) to tag SBT. These vessels had access to CCSBT Research Mortality Allowance. Data from this program is presented in Table 1 below. Immediately following the CCSBT Tagging Program operations, Australia undertook further tagging aboard commercial fishing vessels in the same area. Data from the additional tagging activity is presented in Table 2. Outside the SBT tagging activities, SBT catch and life status data was collected on all observed longline operations under the Threat Abatement Plan (TAP) for Seabirds. This TAP data is presented in Table 3.

Table 1 - SBT Observer data from CCSBT Tagging Program Vessels

Fate	Life Status		
	Dead (incl. head only) or damaged	Alive or alive and vigorous	Unknown
Discarded	2	3	1
Escaped		10	1
Jerked or cut free	1		
Sub Total	3	13	2
Retained	114	11	5
Tagged		148	
Unknown		4	5
Total	117	176	12

Table 2 – SBT Observer data from post-CCSBT Tagging Operations

Fate	Life Status		
	Dead (incl. head only) or damaged	Alive or alive and vigorous	Unknown
Discarded	2	4	
Escaped		10	
Jerked or cut free	61	21	
Sub Total	63	35	
Retained		20	
Tagged		53	
Total	63	108	

Table 3 - SBT Observer data from Seabird Bycatch Mitigation Trials

Fate	Dead or damaged	Alive or alive and vigorous
Discarded	15	44
Escaped	-	-
Jerked or cut free	13	26
Sub Total	28	70
Retained	5	12
Total	33	82

Tagged Fish

There were no tagged fish noted by observers on purse-seine vessels off South Australia. This is because there is no opportunity to handle and examine fish until the farm harvest process is underway.

On the East Coast of Australia there were 201 fish tagged. There were no SBT tag recoveries made by AFMA observers.

Conclusions

The observer programs in the Australian SBT fishery achieved their intended levels of coverage except for the monitoring of a second tow-cage operation in the purse-seine sector.

Data returned met AFMA expectations, however the Australian purse-seine fishery seeks to take live fish and as a consequence, some data required by CCSBT could not be sampled.

Australian observer programs in both longline and purse-seine sectors will continue in 2003-04 with what are assumed to be similar coverage levels and objectives.

Appendix 1

Observed Longline Catch for June - September 2002 South of 30 degrees South¹

Name	Code	Discard escape etc	Retained
Thunnus albacares	YFT	117	3348
Albacore	ALB	31	1172
Escolar	LEC	31	574
Skipjack tuna	SKJ	25	436
Ray's Bream	POA	4	365
Bigeye tuna	BET	6	319
Long snouted lancetfish	ALX	299	0
Swordfish	SWO	8	164
Striped marlin	MLS	3	95
Shortfin mako	SMA	9	73
Blue shark	BSH	51	18
Bronze whaler shark	BRO	48	16
Sunfish	MOP	61	0
Common dolphinfish	DOL	1	51
Short snouted lancetfish	ALO	50	0
Oilfish	OIL	8	36
Stingrays nei	STI	35	0
Hammerhead sharks nei	SPN	7	27
Rudderfish	CEO	1	22
Indo-Pacific blue marlin	BLZ	16	0
Giant manta	RMB	13	0
Barracudas nei	BAR	11	0
Mackerel Tuna	MKT	0	9
Tiger shark	TIG	6	2
Thresher	ALV	6	1
Shortbill spearfish	SSP	1	5
Pomfret sp	BRA	0	5
Oceanic whitetip shark	OCS	2	3
Black marlin	BLM	4	0
Snake mackerel	GES	4	0
Bigeye thresher	BTH	2	1
Ground sharks	CVX	3	0
Dusky shark	DUS	2	1
Silky shark	FAL	3	0
Longfin mako	LMA	0	3
Marlin sp	MAR	2	0
Cobia	CBA	0	2
Pelagic thresher	PTH	1	1
Dealfishes	TRP	2	0
Pickhandle barracuda	BAC	1	0
Porbeagle	POR	1	0
Unknown	UNK	178	0
Wildlife			
Black-browed albatross	DIM		2

¹ This is from vessels that were part of the East Coast Longline bird mitigation trials and does not include data from the dedicated CCSBT tagging program.