



**Australian Government**

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**Department of the Environment and Heritage**

**Strategic Assessment of the  
Southern Bluefin Tuna Fishery**

**2004**

**Approval and Wildlife Division  
Department of the Environment and Heritage**

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## **Disclaimer**

This document is an assessment carried out by the Department of the Environment and Heritage of a commercial fishery against the Australian Government Guidelines for the Ecologically Sustainable Management of Fisheries. It forms part of the advice provided to the Minister for the Environment and Heritage on the fishery in relation to decisions under Parts 10, 13 and 13A of the Environment Protection and Biodiversity Conservation Act 1999. The views expressed do not necessarily reflect those of the Minister for the Environment and Heritage or the Australian Government.

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# 1 Scope of the Assessment

This assessment covers the purse seine operations in the Southern Bluefin Tuna Fishery (SBT Fishery). Since the late 1990s the SBT Fishery has been characterised as having two components. Around 96-98% of Australian SBT is taken in the purse seine sector and the remainder taken in the two longline fisheries – the Eastern Tuna and Billfish Fishery (ETBF) and the Southern and Western Tuna and Billfish Fishery (SWTBF).

Under the *Fisheries Management Act 1991* (the FM Act), the SBT Fishery Management Plan 1995 (as amended) establishes the management framework for the fishery, including the management of SBT quota, the primary tool for managing the Australian catch of SBT.

The assessment does not address environmental impacts of longlining for SBT or the ‘grow out’<sup>1</sup> or aquaculture activities. Assessment of the environmental impacts attributable to aquaculture is conducted through other processes, usually State environmental management requirements or through *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) referrals.

Impacts attributable to longlining on bycatch, interactions with protected species and impacts on the environment will be assessed as part of the assessment of the ETBF and the SWTBF. Longline fishing for SBT or within the ETBF or the SWTBF requires the appropriate longline permit for the area in which the fishing occurs.

If there is a significant change from the current primary method of capture of SBT, the impacts of the fishery on bycatch and protected species would need to be reviewed to establish if a re-assessment is necessary.

## 2 Executive Summary

### 2.1 Background

On 5 February 2002 the Minister for the Environment and Heritage (the Minister) signed an Agreement with the Australian Fisheries Management Authority (AFMA) for the strategic assessment of the SBT Fishery under Parts 4, 10, 13 and 13A of the EPBC Act. Following public consultation, draft Terms of Reference for the strategic assessment were adopted and are available through links at the Department of the Environment and Heritage’s (DEH) website (<http://www.deh.gov.au/coasts/fisheries>). The draft *Assessment Report – Southern Bluefin Tuna* and the proposed amendments to the *Southern Bluefin Tuna Fishery Management Plan 1995* (titled the *Southern Bluefin Tuna Fishery Management Amendment Plan 2004*)(*No SBT 05*) (collectively referred to as the SBT Fishery Management Plan) were initially released for public comment on 15 July 2002. The public comment period ended on 15 August 2002 with 16 submissions received. AFMA prepared a response to these submissions, making amendments or corrections to the draft as considered appropriate.

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<sup>1</sup> ‘grow out’ is the term applied to the aquaculture operations in which SBT, caught by purse seiners and transferred into cages adjacent to ports such as Port Lincoln in South Australia, are fattened before processing and export.

The assessment report and AFMA’s responses to the public comments (collectively referred to in this report as AFMA’s submission) and the draft SBT Fishery Management Plan were subsequently submitted to DEH for assessment on 30 September 2002.

On 9 May 2003 AFMA sought a deferment of the strategic assessment in response to compliance issues identified during the 2002-03 fishing season. AFMA determined that the proposed draft SBT Fishery Management Plan required further amendment to, in part, address these compliance related issues. The deferment was agreed in correspondence to AFMA on 26 May 2003.

An amended SBT Fishery Management Plan was put out for a second round of public comment on 15 July 2003. Because the nature of the amendments did not materially alter AFMA’s submission, it was agreed between AFMA and DEH that the submission need not be put out for a second round of public comment. The public comment period on the amended SBT Fishery Management Plan ended on 18 August 2003 with 5 submissions received. AFMA reviewed the public comments and prepared responses to the issues raised in these submissions but did not substantially amend the plan.

The final documentation for the strategic assessment was received from AFMA on 28 June 2004. AFMA’s submission (excluding the draft SBT Fishery Management Plan) was put out for final public comment on the implication of the declaration of the fishery as a Wildlife Trade Operation (WTO) under Section 303FN of the EPBC Act on 2 July 2004. No comments were received before the closing date of 30 July 2004.

DEH has prepared this report on the assessment of the SBT Fishery against the Terms of Reference and the Australian Government’s *Guidelines for the ecologically sustainable management of fisheries* (the Guidelines). DEH has taken into consideration information provided in AFMA’s submission including all public comments on AFMA’s submission and the SBT Fishery Management Plan and AFMA’s responses to them.

A summary of the SBT Fishery is provided in the following table.

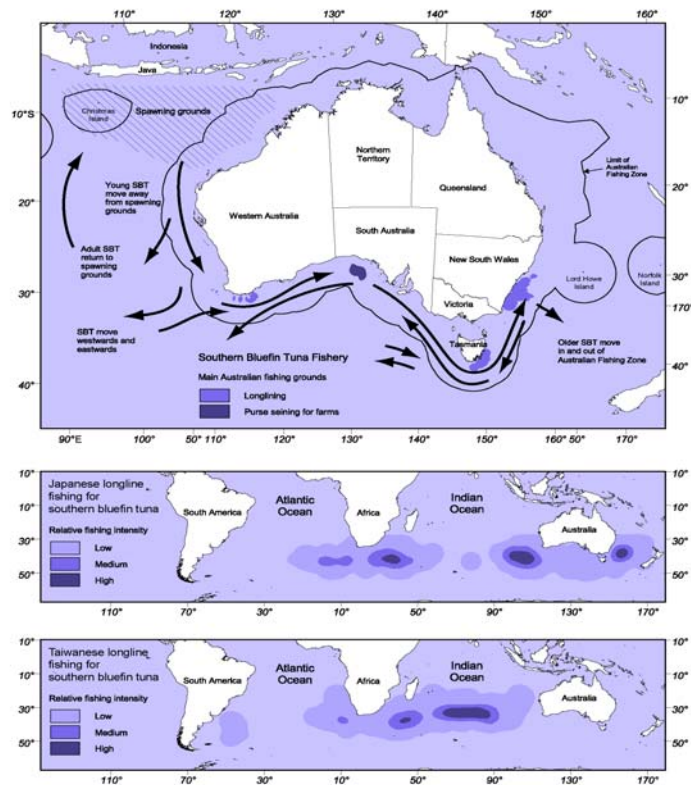
<b>Target Species</b>	The single species target is Southern Bluefin Tuna ( <i>Thunnus maccoyii</i> ). SBT is also taken along with Broadbill swordfish ( <i>Xiphias gladius</i> ), Bigeye Tuna ( <i>T obsesus</i> ) and Yellowfin Tuna ( <i>T albacares</i> ) in the East Coast Tuna and Billfish Fishery (ETBF) and the Southern and Western Tuna and Billfish Fishery (SWTBF) and although these fisheries interact with the SBT fishery, fishers cannot take SBT in the ETBF or the SWTBF without holding SBT quota. There is no by-product in the SBT fishery.
<b>Area of Fishery</b>	The fishery encompasses the Australian Fishing Zone and high seas activities, focussing on the waters off southern Australia. The major purse seine activity occurs off Port Lincoln in South Australia. Most SBT catch by longlining occurs off the east coast of Australia.

<b>History of the Fishery</b>	<p>SBT has been fished since 1950s by Japanese longliners on Indonesian spawning grounds, with activity expanding in 1960s into the southern oceans, peaking in 1960s with catches over 80,000 tonnes annually. Since 1990 the catch has ranged between 13,231 tonnes (1994) and 19 588 tonnes (1999). In 2001 the global take as 10 year average is estimated at 16,459 tonnes.</p> <p>The annual Australian catch of SBT peaked in 1982 at 21,501 tonnes. Since the 1989–90 season, it has on average been below 5,265 t, which is Australia's long-standing national allocation by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT).</p> <p>The fishery is managed by AFMA under the <i>Fisheries Management Act 1991</i> (FMA Act) and the <i>Southern Bluefin Tuna Fishery Management Plan 1995</i> as amended by the <i>Southern Bluefin Tuna Fishery Management Amendment Plan 2004 (no SBT 05)</i>.</p>
<b>Fishery status:</b>	<p>Target species regarded as overfished, with parental biomass in the order of 4 – 19% of the unfished biomass and in the order of 25–53% of the 1980 level. 9% has been recently quoted as the current biomass level. The spawning stock is considered to be severely depleted and many Australian scientists have significant concern over its capacity to rebuild.</p>
<b>Value of commercial harvest</b>	<p>Estimates range from \$57<sup>2</sup>m to \$79m, prior to value adding by fattening the fish in farm cages. After value adding, value is estimated as over \$256m (2001 – 2002) and up to as much as \$450m.</p> <p>The long line catch is in the order of \$3m annually.</p>
<b>Stock assessment reliability:</b>	<p>The stock assessment process is considered to be relatively robust, but future projections vary significantly depending on underlying assumptions. There is general consensus over the status of the stock: the SBT spawning stock is at historically low levels and is substantially below the CCSBT 1980 rebuilding target for the parental biomass.</p> <p>The last stock assessment was conducted in 2000, under the auspices of Scientific Committee (SC) of the CCSBT. An independent international panel of scientists is involved in overseeing stock assessments.</p>
<b>Fishing Methodology</b>	<p>Around 98% of SBT is currently taken by purse seine, with the remainder mostly taken by longline. The purse seine component has increased from 3% in 1991 - 92 to 98% in 2000 – 01 and in 2002 – 03.</p>
<b>Bait species</b>	<p>Only a small amount of bait (for chumming) is used in the purse seine fishery.</p> <p>Pilchards and small pelagics (mackerels and scads) are used as feed for SBT aquaculture operations. These are normally purchased commercially from national sources or sometimes from international. It is estimated that around 70,000 tonnes of feed is consumed annually.</p> <p>Small pelagics are caught and used as bait in longline operations. Assessment of bait fishing operations will be included as part of relevant State fishery assessments or the strategic assessment of AFMA's small pelagic fishery management policy.</p>
<b>Commercial fishery Management:</b>	<p>Output based regime based on individual transferable quotas (ITQs) allocated as Statutory Fishing Rights (SFRs) from an annual Total Allowable Catch (TAC).</p>
<b>Active Fleet (2001 - 02)</b>	<p>55 pelagic longliners, 10 purse seiners, 1 pole boat and 2 minor line boats</p>

<sup>2</sup> Dollar values used in this report are Australian Dollars.

<b>Commercial licences issued:</b>	There are 99 Statutory Fishing Right Holders as at Oct 2000. In 1999-2000 season 8 purse seiners were used to take over 5,000 tonnes of SBT for 24 farm operators. In the same season, 44 longliners were used to take approximately 105 tonnes of SBT.
<b>Commercial harvest 2001 – 02 and 02 - 03:</b>	National allocation of 5,265 tonnes for both years. In 2002-03 Australia over-caught this limit by approximately 130 tonnes. Australia repaid this amount in 2003-04.
<b>Farm operations:</b>	Farming began in 1991 in Port Lincoln, South Australia and involves the purse seining of young SBT (15 - 30 kilogram), transferring the fish from the pursed net to a tow cage and then towing the cage to static farm cages located in waters off Port Lincoln.
<b>Five year trend and average (commercial):</b>	Global take as 10-year average estimated at approximately 16,459 tonnes. Harvest by CCSBT members capped by a TAC of 11,750 tonnes with national informally agreed allocation to Australia of 5,265 tonnes since 1989 - 90. At CCSBT10 (7 - 10 October 2003) agreement was reached on setting a TAC and member national allocations for the first time since 1997.
<b>Export</b>	Majority of catch exported to Japan for marketing as sashimi (with prices up \$50/ kilogram reported, but in the 2003 – 2004 season prices between \$20-30/ kilogram) after grow-out in aquaculture operations.
<b>Recreational fishery Management:</b>	State based with bag and boat limits applicable. <ul style="list-style-type: none"> <li>- NSW catch limit 2 at &gt;90centimetre and 5 at &lt;90centimetre/ person, no boat limit;</li> <li>- SA catch limit 2/ person and 6/ boat</li> <li>- Tas 2/ person, 3 as combined limit of any tuna species/ boat;</li> <li>- Vic 2/ person , no boat limit</li> <li>- WA 4/ person, no boat limit</li> </ul>
<b>Recreational harvest</b>	Recreational (including charter operators) take is unknown.
<b>Bycatch/ By-product</b>	Little bycatch in purse seine or pole and line sectors is reported although this is anecdotal. The take of by-product is prohibited under the SBT Fishery Management Plan.  SBT can be taken as part of a longline fishery (providing the fisher holds the necessary rights) and this fishery will include the take of a wide range of species as bycatch or by-product, species include shark species, albacore tuna ( <i>T alalunga</i> ), rays bream ( <i>Brama brama</i> ) and other large oceanic pelagic fish.
<b>Interaction with Protected Species</b>	Anecdotal reports and limited observer data indicate that there are no significant interactions with protected species in the purse seine or pole and line sectors. Species that may possibly interact are marine mammals (sea lions and seals) and white sharks ( <i>Carcharodon carcharias</i> ) and this is more likely in the farm cages than during the purse seine or towing operations.  In the longline sector, there is concern over the bycatch of seabirds particularly albatross (a threat abatement plan identifying longline fishing as a 'key threatening process' was released in 1998). There is also, as yet un-quantified, interaction with other protected species: turtles (a Recovery Plan for Marine Turtles in Australia was released in July 2003), marine mammals (seals) and sharks (National Plan of Action for sharks was released in June 2004)

**Table 1: Summary of Southern Bluefin Tuna Fishery**



**Figure 1.: Map depicting the general movement patterns of SBT and the main Australian fishing grounds<sup>3</sup>**

Southern Bluefin Tuna (SBT) is a highly migratory pelagic species considered to be a single stock widely distributed throughout the waters of the southern temperate oceans. The species is generally long-lived (40 yrs +), growing to over 200 centimetres in length and weighing over 200 kilograms. The general pattern is for spawning to occur in the Indian Ocean, south of Indonesia, between September and April. Major migration occurs southward along the coastline of Western Australia and then across the southern ocean with some of the stock (fraction unknown) travelling eastwards along the continental shelf of Australia and some heading westwards towards South Africa.

Juveniles recruit to the fished stock at around 9 – 12 months of age (~55centimetres, 3.5 kilograms). Fish migrate from the spawning grounds from the age of 3 years onwards. The purse seine fishery in Australia targets fish aged between 3 – 4 years of age (~15 – 30 kilograms) while the longline fishery targets fish from juvenile of about 3 years of age (~100 centimetres, 21 kilograms) through to adults. SBT are considered slow growing and Australian scientists believe it matures between 10 and 12 years old. Japanese scientists have maintained that SBT matures at 8 years of age. This difference of opinion has had significant implications for stock assessments and ultimately management of the fishery.

SBT biology and life history traits make it susceptible to overfishing and slow to recover from excess fishing pressure, contrasting sharply with tropical tunas. SBT is regarded by the Bureau of Rural Sciences<sup>4</sup> (BRS) and others as severely recruitment-overfished<sup>5</sup>, with

<sup>3</sup> reproduced from the Bureau of Rural Science: Fishery Status Reports, 2000 – 2001.

<sup>4</sup> Bureau of Rural Science: Fishery Status Reports, 2000 – 2001 and 2002 - 2003

spawning biomass in the order of 4 – 19% of the estimated unfished level or 25 – 53% of the estimated 1980 level, the recruitment-overfishing reference limit adopted by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT).

Southern Bluefin Tuna was classified as 'critically endangered' by the International Union for the Conservation of Nature (IUCN) in their Red Data Book of threatened species in 1996. In 2001, SBT was gazetted as a threatened species under Victoria's Flora and Fauna Guarantee Act 1988. In May 2004 NSW Fisheries Scientific Committee issued advice of the proposed recommendation to list SBT as endangered under the NSW Fisheries Management Act 1994.

In 2003, the SBT was nominated as a threatened species under the EPBC Act. This nomination is still under the consideration of the Threatened Species Scientific Committee.

SBT has been proposed by the Humane Society International for consideration by the Australian government as part of its approach to the 11th, 12th and 13th Conference of the Parties (CoPs) to the Convention on International Trade in Endangered Species (CITES). The Australian Government carefully considered the proposal within the context of its overall approach to each of the 3 CoPs and decided in each case not to proceed with such a nomination.

SBT is fished by many nations, with Japan, Australia, New Zealand, the Republic of Korea, Taiwan and Indonesia identified as the major nations taking SBT commercially. A number of other nations, including South Africa, also take SBT for domestic consumption. Internationally SBT are managed by the CCSBT. Australia is a full member of this Commission along with Japan, New Zealand and the Republic of Korea. Taiwan participates as the Fishing Entity of Taiwan in an extended Commission. Indonesia and the Philippines operate under the Commission as cooperating non-members. The Department<sup>6</sup> of Agriculture, Fisheries and Forestry (DAFF) is the lead agency for Australia's participation in the CCSBT.

CCSBT has set a rebuilding goal for the stocks of achieving 1980s level of parental biomass by 2020. There is growing acknowledgement within the CCSBT that this goal is unachievable at present catch rates and that any stock rebuilding can only occur if fishing is substantially reduced. There has been general agreement within CCSBT's Scientific Committee (SC) that, as catch rates have remained relatively stable since the mid 1990s, the likelihood of a further stock collapse has not been high and there was no need for any dramatic reductions in current catch levels. The CCSBT SC also noted that the current global catch could be considered the replacement yield of the stock. This situation is to be reconsidered at the meeting of the SC scheduled for September 2004.

Under CCSBT procedures, the management of the domestic fishery must comply with Australia's obligations to the Commission and decisions taken as a party to the Commission.

AFMA is responsible for the management of commercial tuna fisheries under agreements set within the Offshore Constitutional Settlement (OCS). New South Wales (NSW) is the only State that has not finalised an OCS agreement that gives AFMA authority for the

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<sup>5</sup> Recruitment overfishing is the rate of fishing above which the recruitment to the exploitable stock becomes significantly reduced. This is characterized by a greatly reduced spawning stock, a decreasing proportion of older fish in the catch, and generally very low recruitment year after year.

<sup>6</sup> Department of Agriculture, Fisheries and Forestry (DAFF) was formerly known as Agriculture, Fisheries and Forestry Australia (AFFA)

management of SBT taken in NSW waters. NSW has however introduced a ban on the commercial take of SBT inside state waters that will be in place until 2004 and a review of the OCS was initiated in 2004.

AFMA manages the Australian SBT Fishery under the FM Act. The domestic fishery is managed using a system of Individual Transferable Quotas (ITQs) set under a Total Allowable catch (TAC). ITQs are allocated as Statutory Fishing Rights (SFRs) under the SBT Fishery Management Plan. AFMA manages the commercial fishery under the stock assessments and catch ceilings (national allocations) established at the CCSBT. In addition, AFMA has scientific assessment processes in place to augment the work of the CCSBT's SC. CCSBT at its meeting in October 2003 (CCSBT10) agreed for the first time since 1997 on setting a TAC.

The Australian fishery, focussed around Port Lincoln in South Australia, is predominantly a purse seine fishery that is of approximately 10 weeks duration, commencing around December each year. This short fishing season is usually enough to enable all quota to be caught. The fishery supplies fish for 'grow out' in farms and from there for export, primarily to the Japanese markets in either fresh (chilled) or frozen form. The take of SBT in the east coast longline fishery is generally May - September and is usually an adjunct to longline fishing operations for other tuna species. The longline fishery operates off the east coast of Tasmania and off New South Wales, between Sydney and Eden as part of the ETBF. To take SBT in this fishery, quota allocated under the SBT Fishery Management Plan must be held by the fisher. The incidence of discarding by longline fishers who either do not hold quota, catch fish outside the buffer zones established by AFMA or who seek higher grade fish is a management challenge for AFMA.

The amount of SBT taken by recreational fishers (either through charter fishing operations or otherwise) is poorly known. The main recreational fishery areas are off Tasmania and New South Wales. The development of a sport fishery adjacent to the 'grow out' cages around Port Lincoln has been identified during discussions at the SBT Management Advisory Committee (MAC) meetings. Information from *The National Recreational and Indigenous Fishing Survey*<sup>7</sup> (released in July 2003) does not provide any quantitative indication of the recreational catch. The survey reports that approximately 1,300 tonnes of tunas/ bonitos is taken annually. The management of the recreational catch of SBT is the responsibility of State Fishery agencies, with catch limits (bag, boat or day) the usual form of management.

In October 2002 a workshop<sup>8</sup>, involving Federal, State and Northern Territory fisheries agencies, as well as representatives from the commercial, traditional, aquaculture, game, tourism, charter and recreational fishing sectors, drafted principles for rights based management of the recreational fishing sector. These were proposed to provide guidance to the Federal government in establishing the rights and responsibilities for recreational fishers when accessing Commonwealth managed fisheries. Further work in the preparation of a draft framework for resource allocation between fishery sectors and options for management was undertaken in 2003 and is being progressed in 2004.

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<sup>7</sup> *The National Recreational and Indigenous Fishing Survey*, edited by G W. Henry, New South Wales Fisheries and J M. Lyle, Tasmanian Aquaculture & Fisheries Institute (FRDC Project No. 99/158)

<sup>8</sup> *Workshop on Recreational Fishing Rights and Resource Allocation in Commonwealth-managed Fisheries*, Coolangatta, October 2002.

## 2.2 Overall Assessment

DEH's assessment is that the global stock of SBT can be effectively managed only through the CCSBT. The assessment supports the Australian Government position of continuing to play a proactive role in the CCSBT, with the aim of building a Commission that includes all nations taking SBT and is an effective regional fishery management forum with explicit and realistic objectives to rebuild stocks to ecologically sustainable levels. DEH considers that the key issue in the management of the SBT fishery (commercial or recreational) is the current overfished status of the stocks and the limited potential for stock recovery at the present level of exploitation

DEH believes that the SBT Fishery Management Plan including draft amendments will significantly improve overall management and will set the framework for achieving sustainability once the issues relating to the international fishery are resolved. Particular noteworthy elements introduced in the amended SBT Fishery Management Plan include:

- an appropriate data collection and verification system, through use of logbooks and an observer program covering around 10%<sup>9</sup> of the commercial fleet's operations;
- effective means of limiting commercial take of SBT;
- management of bycatch (noting there is no by-product in SBT fishery);
- an effective monitoring and compliance program for the commercial take;
- an annual risk assessment and risk analysis projects;
- a stock specific reference point for the fishery;
- definition of the methods by which SBT can be taken; and
- enhanced accountability for fishers holding quota.

Areas of management of the Australian SBT commercial fishery identified by DEH that require ongoing review and action where necessary, are:

- the management of any overcatch, including accuracy in recording the transfer of catch from the towing cages to the grow-out pens;
- the management of SBT taken in related fisheries; and
- the impact of taking SBT on the broader ecosystem.

Overcatch is not permitted in the SBT Fishery and AFMA has indicated that it enforces this control. However, overcatch is potentially an issue given the uncertainties in estimating catch in the purse seine operation. The importance of reliable information and accountability for the take of SBT during the purse seining, subsequent transfer and towing operations and finally transfer into the 'grow out' cages were highlighted by incidents in the fishery in the 2002 - 2003 season. Amendments to address this issue formed the basis for the second round of public comment on the proposed SBT Fishery Management Plan.

SBT may only be retained by fishers holding SBT quota. AFMA manages discarding of SBT in the longline sector by requiring longline fishers to hold SBT quota if they wish to fish in areas where SBT are likely to be taken.

In September 2002, AFMA determined that fishers must hold a minimum of four tonnes of SBT quota to fish in that part of the ETBF in which there is a high likelihood that SBT will be encountered during the winter months. This part of the fishery is known as the 'core zone'. These zones are dynamic and are determined by a combination of CSIRO SBT habitat modelling, actual recorded and observed SBT catch, and industry advice. Currently this is

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<sup>9</sup> 10% coverage is the level of coverage set by the CCSBT for fisheries taking SBT.

south of the parallel of latitude 37°00" South. Concurrently AFMA also introduced a 'buffer zone' to apply in areas where SBT interactions pose a lower risk. The buffer zone is between the boundary of the 'core' zone and currently south of the parallel of latitude 34°00" South. ETBF fishers must hold a minimum of 500 kilograms of SBT quota at the start of each trip to fish in this buffer zone. Finer scale determinations may be established in the future using information identifying key areas for SBT habitation. Preliminary reports have identified discarding of SBT caught in excess of the quota held when fishing in both the core and the buffer zones (and also north of the buffer zone where no quota limits apply generally no quota is held and therefore no SBT can be retained). AFMA needs to continue to reduce these discard mortalities and ensure they are factored into the SBT stock assessments and included within Australia's national allocation.

Coincidental with any increase in take through the longlining method, DEH is concerned on the possible effects of further reducing the parental biomass through the take of larger, mature fish out of a stock that is already at a very low biomass.

Virtually no information is available on the impacts of the fishery on the broader ecosystem, particularly the role of SBT within trophic levels and its relationship with ecologically related species. Apart from the unknown trophic impacts, the risks of the fishery operations to the broader environment are expected to be low and this should be established in the Ecological Risk Assessment for the fishery and in the ongoing risk assessments established in the SBT Fishery Management Plan.

In October 2001 the Commonwealth Scientific and Industrial Research Organisation (CSIRO) initiated, at the behest of AFMA, BRS and the Victorian Marine and Freshwater Research Institute, a project, titled "Ecological risk assessment for Australian Commonwealth fisheries" (ERA), to develop a general and flexible approach to assessing the ecological risks attributable to each Commonwealth managed fishery. The project aims to:

- assist AFMA to achieve ESD objectives; and
- underpin the progression towards ecosystem based fisheries management.

Considerable emphasis has been placed by AFMA on the ERA to identify the ecological risks attributable to fishing (and thus enable identification of mitigation measures). The ERA is being undertaken in relation to target, by-product, bycatch and broader ecological impacts for each fishery. The assessments will 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 impacted species populations to recover. Identified high-risk categories will require AFMA to initiate precautionary management responses and/ or assessment to a next more quantitative level. As part of the project CSIRO undertook to conduct case studies for several fisheries including the SBT Fishery, from the qualitative 1<sup>st</sup> level to, where appropriate, the 3<sup>rd</sup> quantitative level. This is proposed to be a full risk analysis involving the SBT MAC and other stakeholders. The SBT Case Study is still to be finalised by CSIRO with a final results anticipated in early 2005. DEH strongly endorses the project. DEH identifies the project as a significant tool to assist AFMA in achieving ecosystem based fisheries management.

The purse seine's selectivity in taking target species and the lack of reported interaction with the marine environment beyond the target species, suggests that the risk to bycatch, including species and ecological communities protected by the EPBC Act, and to the broader marine ecosystem is low. The operations of pole and line boats that sometimes accompany purse-

seining operations can involve the practice of chumming<sup>10</sup>, sometimes using live bait. These operations are assumed to have very limited impact or interaction with bycatch species. DEH believes that this assumption is probably correct, but needs to be validated through the observer program and the environmental risk analysis. Any appreciable change in fishing operations from purse seining to longlining will change the risk afforded to these bycatch species and may require reassessment of the management of the fishery.

The continued and improved operation of the observer program started in 2002/03, explicitly designed to provide management information in an independent and unbiased manner, is considered by DEH to be critical for public (and management) confidence in the long-term ecological sustainability of the fishery. The level of coverage of the observer program should be sufficient to verify the take of the target species and identify any other ecosystem impacts and should have a broad and representative coverage of the entire fleet. Verification of the levels of mortality of SBT during the catching and transfer phases of the fishing operations is a significant management issue addressed by AFMA in the second round of amendments of the SBT Fishery Management Plan.

The take of SBT by recreational fishers<sup>11</sup> is another significant issue. No reliable information about recreational take in Australia is currently available. The survey previously referred to did not differentiate between SBT and other tuna like species. For such a depleted stock, it is important that the CCSBT global take and subsequent national allocations are set in recognition of all mortalities, including those attributable to recreational take. In the international context, Australia's national allocation provided by the CCSBT is fully allocated to the commercial sector. DEH understands that SBT taken recreationally has been factored into stock assessments undertaken by CCSBT, with national allocations applying only to commercial take. CCSBT at its meeting in October 2003 (CCSBT10) sought clarification of how recreational mortality has been used in stock assessment conducted by the CCSBT SC in the past.

A comprehensive understanding of the level of take (and mortality) in the Australian recreational sector and effective management of this take is required. DAFF, under the direction of the Marine and Coastal Committee<sup>12</sup>, has initiated the development of a framework for resource sharing and management for Commonwealth-managed fisheries (including the tuna fisheries) which will be used to establish a fair and reasonable allocation of fishery resources between user groups (recreational and commercial). The development of appropriate management arrangements for SBT, involving agreement between the States and the Australian Government agencies, is seen by DEH as an integral and pivotal step in this framework. The States are expected to retain the responsibility for managing the recreation sector's take of SBT, with AFMA responsible for the commercial fishery. DEH concurs that it is essential to have clear management arrangements for SBT that identify and account for all fishing related mortalities (commercial, recreational and, where appropriate, research) in order to ensure the long term ecological sustainability of the species.

DEH believes a collaborative approach by all countries that fish for SBT through the CCSBT is essential if the single parental stock is to be rebuilt and for an ecologically sustainable

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<sup>10</sup> Chumming is the use of bait to attract fish to an area and to retain them to facilitate their capture by hook and line or otherwise.

<sup>11</sup> In this assessment the term 'recreational' refers generally to fishing undertaken by both recreational fishers and fishers catching SBT during charter fishing trips.

<sup>12</sup> Marine and Coastal Committee (MACC) is part of the Standing Committee on Natural Resource Management and is made up of the heads of Australia's fisheries and environmental agencies.

fishery to exist. Any unilateral reduction in take by Australian fishers is unlikely to provide any significant protection to the SBT stock or allow for rebuilding as other nations would almost certainly take up Australia's allocation. DEH concurs with Australian position that Australia has nothing substantial to gain (and leaves the species exposed to considerable further risk) by withdrawing from the CCSBT. Rather, Australia needs to remain an active participant in CCSBT to influence the global management and total take of SBT.

### **2.2.1 Conclusion**

The assessment of the SBT Fishery clearly identifies that fishing (both commercial and recreational) relies on a seriously overfished and depleted stock that has a limited potential for recovery at present levels of exploitation.

The material submitted by AFMA demonstrates that the management arrangements for the SBT Fishery are capable of meeting the intent of the Guidelines. Recommendations to address the issues and concerns identified have been developed to ensure stocks are rebuilt and that the risk of further impact is minimized in the longer term. Work is progressing by both DAFF and AFMA to address existing problems and reduce the environmental risks. Through the implementation of the recommendations and continuation of the responsible attitude to the management of the fishery, management arrangements are capable of controlling, monitoring and enforcing the level of take from the commercial fishery. While AFMA has sound management arrangements to manage SBT within Australia's national allocation, the severely recruitment-overfished nature of the stock, together with the externalities associated with operating as part of a global fishery, are such that inclusion of SBT on the list of exempt native specimens would be inappropriate.

Within the international constraints outlined above DEH considers that the operation of the fishery is consistent with achieving the objects of Part 13A of the EPBC Act. DEH considers the appropriate course of action to be to declare the fishery an approved Wildlife Trade Operation (WTO) with the actions specified in the recommendations to be undertaken to mitigate the environmental risks in the longer term. The WTO declaration will allow the continued export of product from the fishery while requiring the implementation of the recommendations of this report, other managerial commitments set in the SBT Fishery Management Plan and ongoing commitment to the establishment of a fully effective CCSBT. AFMA will be required to report annually on progress in implementing the recommendations and management plan commitments.

As the fishery area includes Commonwealth waters, consideration under Part 13 of the EPBC Act is required regarding the impact of the fishery on listed threatened species, listed threatened ecological communities, listed migratory species, cetaceans and listed marine species.

DEH considers that the SBT Fishery Management Plan and the associated Bycatch Action Plan requires fishers to take all reasonable steps to avoid killing or injuring protected species, and that the level of interaction under current fishing operations is low. DEH also considers that the fishery to which the Plan relates and in using the purse seine method or the pole and line method does not, or is not likely to, adversely affect the survival in nature of listed threatened species or population of that species, or the conservation status of a listed migratory species, cetacean species or listed marine species or a population of any of those species. Hence DEH recommends that the SBT Fishery Management Plan be declared an accredited management plan under Sections 208A, 222A, 245 and 265 of the EPBC Act. On

this basis, DEH is satisfied that an action taken by an individual fisher, acting in accordance with the SBT Fishery Management Plan, would not be expected to have a significant impact on a listed threatened species or listed migratory species protected by the EPBC Act.

DEH understands that the longline method to take SBT permitted under the SBT Fishery Management Plan is likely to interact with and take seabirds, turtles and other protected species and takes a range of bycatch species. Fishers taking SBT by longlining method will need to comply with the ETBF or the SWTBF Management Plans and any recommendations/conditions imposed on those fisheries arising from DEH's assessment of these fisheries under the EPBC Act.

Part 10 of the EPBC Act requires that Commonwealth managed fisheries undergo strategic assessment to determine whether actions taken in the fishery have a significant impact on the environment in the Commonwealth Marine Area. Under this Part, the Minister may accredit a management plan to exempt actions taken in accordance with the management plan from further impact assessment approval. DEH is satisfied, *inter alia*, that there has been adequate assessment of the impacts that actions, approved in accordance with the SBT Fishery Management Plan and using the purse seine or pole and line methods, have, will have or are likely to have on the marine environment. DEH is also satisfied that actions approved or taken in accordance with the SBT Fishery Management Plan will not have unacceptable or unsustainable impacts on the marine environment in a Commonwealth area. DEH therefore recommends that, in accordance with Part 10 of the EPBC Act, the SBT Fishery Management Plan be accredited under Section 33 for the matter of national environmental significance "the marine environment".

DEH's conclusion is reliant on Australia's effective engagement in the CCSBT, particularly the development of appropriate rebuilding objectives to achieve ecological sustainability and associated procedures to manage the rebuilding of the stocks. While the CCSBT sets the key parameters for management (rebuilding objectives, reference point(s), verified data requirements, catch monitoring, etc), AFMA has the major managerial responsibility for the domestic commercial fishery to ensure the CCSBT's directions are achieved. It is important that AFMA actively works towards rebuilding the SBT stocks following the directions from the CCSBT and employing whatever tools are provided in the FM Act, the SBT Fishery Management Plan or elsewhere.

The implementation of recommendations directed towards AFMA along with the other commitments made by AFMA in the submission and the SBT Fishery Management Plan will be monitored and reviewed as part of the next DEH review of the fishery in 3 years time.

### **3 PART I - MANAGEMENT ARRANGEMENTS**

#### **3.1 Management of SBT Fishery**

The AFMA manages the SBT Fishery under the FM Act and the SBT Fishery Management Plan. The overall objectives of the FM Act form the basis for the management of all Commonwealth fisheries.

The SBT Fishery Management Plan introduced in 1995 and as amended by the SBT Fishery Amendment Plan 2004 (No. SBT 05) provides for access to SBT in all waters of the AFZ (except NSW waters inside 3 nm) and extends to high seas for Australian fishers. The management plan has been developed through a consultative process that has involved interaction with stakeholders through the SBT MAC, the Fishery Advisory Group (FAG) and public consultation periods.

The SBT Fishery Management Plan has a supporting framework of regulations, permit conditions and directions, including:

- the *Fisheries Management (Southern Bluefin Tuna Fishery) Regulations 1995*;
- the Draft Three Year Strategic Research Plan 2002 – 2004 for SBT Fishery; and
- the Tuna Purse Seine Fisheries Bycatch Action Plan (the Tuna Purse Seine BAP); and
- the Tuna and Billfish Long line BAP

The management of the fishery is also required to be consistent with any relevant international or regional management regimes to which Australia is a party. The United Nations Convention on the Law of the Sea (UNCLOS) is the international agreement that gives Australia the right to define an Exclusive Economic Zone (EEZ) and to manage and conserve resources within this zone. SBT is considered to meet the characteristic of a highly migratory species which straddles national and international waters, the Conservation of Straddling Fish Stocks and Highly Migratory Fish Stocks, 1995 is also applicable. The Convention for the Conservation of Southern Bluefin Tuna is the main international regional management arrangement covering SBT. The international context for the SBT Fishery is described in Section 3.2.

AFMA's governing legislation, the FM Act, provides AFMA with clear accountability to the Australian Fisheries Minister and the Parliament and, through them, the wider community. The legislation requires that the Minister approve the AFMA Corporate Plan and Annual Operational Plan. AFMA must also submit an Annual Report to the Fisheries Minister and the Parliament and provide a copy of that report to the peak industry body - the Australian Seafood Industry Council (ASIC). The AFMA Chair and Managing Director are required to report on AFMA's performance to the ASIC Executive and AFMA holds an annual public meeting to consult with industry, other stakeholders and the general public. DEH notes the reporting requirements of AFMA to a number of stakeholders. In addition, AFMA will be required to report annually to DEH on the implementation of those recommendations in this assessment applicable to AFMA. Reports to be produced and presented to the Australian Government Department of the Environment and Heritage annually, and to include:

- a description of the status of the fishery, including catch and effort information and results of the annual fishery appraisal undertaken by AFMA;
- results of any research or surveys undertaken within the year; and
- an outline of progress in implementing the recommendations made in the *Strategic Assessment of the Southern Bluefin Tuna Fishery, 2004*.

The Fisheries Minister must formally accept each statutory management plan before it comes into effect. This process involves consideration by Parliament as each fishery's management plan is a disallowable instrument and must be tabled in Parliament. The Minister may also give directions to AFMA concerning the performance of its functions and the exercise of its powers and AFMA must comply with those directions.

AFMA consults broadly when developing fisheries management policy. The manner in which consultation is undertaken depends on the nature and scope of the issues being considered. AFMA advertises the availability of documents through newspaper advertisements and mail outs to persons on various registers maintained by the Authority. In most cases, documents are available on the AFMA website (<http://www.afma.gov.au>) or can be obtained directly from AFMA.

The management plan is publicly available and has been developed through extensive public consultation processes that provided sufficient opportunity for input to all interested and affected parties. The draft Plan has undergone two rounds of public consultation; each of over 28 days duration, and the Strategic Assessment Report was also subject to a 30 day public consultation period and a subsequent 28 day period.

The draft SBT Fishery Management Plan contains objectives for the management of the fishery and a series of performance measures, performance criteria against which these measures may be assessed, and environmental obligations for individuals operating in the fishery. The management objectives provide for the protection of target species, by-product, bycatch species and the broader marine environment, and reflect the objectives of the Australian Government *Guidelines for the ecologically sustainable management of fisheries*.

The management of the SBT Fishery is primarily output based. The main control used by AFMA is the establishment of ITQs, allocated from an annual TAC set by the AFMA Board and based on the national allocation set by CCSBT, for each SFR holder permitted to access the fishery. SFRs issued under a statutory management plan are considered (by the Government 1989 Policy Statement) to be a more secure form of property right, both as a commercial asset, and as a means to encourage responsible fishing practices through more secure resource access. ITQs are considered most appropriate for single stock target species; for highly selective fisheries; and in fisheries for which the target species are considered overfished. The Australian SBT Fishery is characterised by these various criteria.

The SBT Fishery has a reasonably sound stock assessment process that underpins the specific biological reference point set by the CCSBT. The stock assessment process is conducted under the auspices of the CCSBT and overseen by four eminent international stock assessment scientists as an advisory panel. Scientists from CSIRO, BRS and AFMA provide input to the stock assessments. Australia has concerns about whether the reference point is achievable under current allowable catch levels or is appropriate for rebuilding the stocks to ecologically sustainable levels.

Although the fishery is managed primarily through output controls (the main input controls are limitations on gear to using purse seine, pole and line and pelagic longline) the nature of the gear means that the level of take of the target species and interactions with non-target species can be controlled, particularly in the purse seine component of the fishery.

DEH considers it important that management arrangements remain flexible to ensure timely and appropriate managerial decisions. An amendment to the management arrangements or any significant shift in fishing away from the purse seine method of fishing could change the outcomes of DEH's assessment.

**Recommendation 1:** AFMA to inform DEH of any proposed amendment to the management regime for the Australian SBT Fishery, including any significant shift in fishing away from the purse seine method of fishing, to enable DEH to evaluate any impact on the ecological sustainability of the SBT fishery

Operators in the fishery are required to complete a range of documentation (logbooks and associated catch records) designed to record all catches and the transfer of catch throughout the processing and export chain. Fishery dependent data relating to the target species is collected on a regular basis. These include:

- fishing logs;
- farm transit and catch disposal records; and
- trade information scheme documentation (a requirement of the CCSBT).

The 2<sup>nd</sup> round amendments to the proposed SBT Fishery Management Plan strengthen the reporting requirements to now include more timely information on all mortalities from both the non-farm and farm sectors.

AFMA coordinates compliance arrangements for Commonwealth fisheries and utilizes state and territory fisheries officers to undertake compliance and enforcement operations. Compliance and enforcement is a mix of extension and enforcement activity properly designed to encourage and ensure operators comply with management requirements, catch, bycatch and byproduct limits and allow for monitoring of protected species interactions. Measures to address compliance and enforcement of management arrangements are in place for the SBT Fishery. These are set out within a compliance operational plan that involves assessment of the potential risks of non-compliance with management arrangements and then a further assessment of the impact or consequence of a particular act of non-compliance. A risk reduction strategy developed through this process is incorporated into a Compliance Program for the fishery. The program is reviewed annually. DEH is satisfied that the current management arrangements comply with all relevant threat abatement plans, recovery plans, the National Policy on Fisheries Bycatch, and bycatch action strategies developed under that policy.

The draft SBT Fishery Management Plan requires the Authority to review the Plan whenever it considers it necessary and at least every 5 years after its commencement. Administrative flexibility is incorporated into the draft management plan through the use of supporting instruments such as regulations, directions and conditions on SFRs.

The proposed draft SBT Fishery Management Plan, as amended, includes requirements to review performance against measures set in the Plan on an annual basis or to other set timeframes. DEH believes it is important that the performance criteria in the SBT Fishery Management Plan have appropriate quality criteria against which each measure in the Plan can be assessed to ensure that it is achieving the outcome(s) required. Specific areas relating to ecological sustainability to be reviewed (and management plan or arrangements amended if necessary) include:

Performance Measures <sup>13</sup>	Review Criteria	Timelines
SBT Fishery Management Plan	effectiveness of measures taken to achieve the Plan's objectives (as set out in the performance criteria)	<ul style="list-style-type: none"> <li>on a needs basis and at least every five years</li> </ul>
A research program to support assessment and management.	reviewed to determine if it has been developed, documented and implemented	<ul style="list-style-type: none"> <li>reviewed annually</li> </ul>
A risk-based compliance program.	reviewed to determine if it has been developed, documented and implemented	<ul style="list-style-type: none"> <li>developed within 6 months of the commencement of the Plan</li> </ul>
<p>A data strategy (that has been designed to:</p> <ul style="list-style-type: none"> <li>collect, verify, analyse and manage data relevant to the management of the SBT Fishery, including data about catch and effort, and biological, ecological, economic and technical data; and</li> <li>obtain data from 'at sea' research activities, fishery observer programs, by-catch monitoring programs, ecologically related species monitoring, ecosystem related monitoring, size monitoring, landing and farm monitoring and a catch certification scheme.</li> </ul>	reviewed to determine if it has been developed, documented and implemented within the required time and is publicly available	<ul style="list-style-type: none"> <li>reviewed annually</li> <li>developed within 12 months of the commencement of the Plan</li> <li>reviewed biennially</li> </ul>
Mechanisms that have been put in place to monitor fishing catch against granted statutory fishing rights and Australia's national catch allocation for Southern Bluefin Tuna for that season and any required changes implemented for the following season	evaluated including any recommendations for change, with results publicly available	<ul style="list-style-type: none"> <li>reviewed annually</li> </ul>
Procedures implemented to ensure that Australia's national catch allocation for a season is not exceeded		<ul style="list-style-type: none"> <li></li> </ul>
Appropriate technology to monitor fishing catch against granted SFR and Australia's catch allocation	evaluated (including whether the most appropriate technology has been used with results available publicly	<ul style="list-style-type: none"> <li>reviewed annually</li> </ul>
A by-catch action plan implemented to minimise the impact of fishing on non-target species and the marine environment	impact of fishing on non-target species and the marine environment reviewed	<ul style="list-style-type: none"> <li>reviewed biennially</li> </ul>
A strategy to assess and address risks to the ecologically sustainable development of the fishery	key risks, including those arising from any major changes in fishing practices, to the ecologically sustainable development of the SBT Fishery have been identified and actions have been undertaken to manage those risks.	<ul style="list-style-type: none"> <li>annually</li> </ul>
Australia's obligations under international agreements that deal with fish stocks, including decisions of the CCSBT	Australia's obligations and responsibilities under the Convention are implemented within timeframes agreed with the Commission	<ul style="list-style-type: none"> <li>not stated</li> </ul>

**Recommendation 2:** Operation of the Australian fishery is to be carried out in accordance with the Southern Bluefin Tuna Fishery Management Plan 1995 (as amended) including conducting the reviews identified against an overarching objective of ensuring the fishery achieves ecological sustainability.

<sup>13</sup> extracted from the proposed amendments to the *Southern Bluefin Tuna Fishery Management Plan 1995* described in the *Southern Bluefin Tuna Fishery Management Amendment Plan 2004 (No SBT 05)*

In June 2000, the Commonwealth Policy on Fisheries Bycatch was released to provide a national framework for coordinating efforts to reduce bycatch. In September 2001 AFMA launched the Tuna and Billfish BAP and in April 2003 AFMA initiated a review of all BAPs. As part of this review a BAP specific for purse seine fisheries has been drafted (the Tuna Purse Seine Fisheries BAP or the Purse Seine BAP) and is expected to be introduced in late 2004.

A revised format for the BAPs has been agreed with the key areas being:

- clear identification of the issues considered a risk (both direct and indirect) to achieving the objective of ensuring that the impacts of the fishery's bycatch on the ecosystem are sustainable and consistent with legislative requirements; addressing
  - protected species and ecological communities;
  - high risk and other bycatch species;
  - removal of habitat; and
  - impact of total bycatch on the broader ecosystem
- strategies/ actions that relate to each of the risks and which includes data collection, analysis and management responses, ensuring each strategy is
  - prioritised;
  - specific (identifying who is responsible);
  - estimates costs and sources of funding; and
  - establishes realistic timeframes.
- outcome as well as process orientated performance indicators, (eg levels of compliance with regulations, levels of bycatch reduction and uptake of bycatch reduction measures); and
- regular (6 monthly) progress reporting.

The implementation of effective bycatch action plans in the tuna fisheries is critical to the long-term ecological sustainability of these fisheries. DEH endorses adoption of a BAP for the SBT Fishery, acknowledges the process for the regular review of the BAPs and notes AFMA's commitment to implement a Tuna Purse Seine BAP that meets the intent of ensuring that the impacts of purse seine fishing, including SBT fishing, on bycatch are sustainable and consistent with legislative requirements.

In the event that a significant impact on the environment, bycatch or protected species occurs, the management regime includes measures that can be introduced quickly (the 'Directions'<sup>14</sup> power) to ensure that no further impact is made. The 'Directions' power is provided for under Section 17 of the FM Act.

### **3.2 International Context**

SBT is a highly migratory species fished throughout its range. Japan, Australia, New Zealand, the Republic of Korea, the Fishing Entity of Taiwan, South Africa and Indonesia account for the majority of the catch.

In the mid 1980s it was apparent that the SBT stock was at risk and management and conservation was required. From 1985 the three main nations fishing for SBT, Japan, Australia and New Zealand, began to apply strict quotas as a management and conservation measure. In 1994, these voluntary arrangements were formalised with the signing of the Convention for the Conservation of Southern Bluefin Tuna. Since then the CCSBT has

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<sup>14</sup> A direction under this power in relation to the SBT fishery may identify areas, species, equipment, method or any combination of these in which fishing is prohibited or limited.

managed the fishery internationally. Australia is a founding member of the CCSBT and is active in this Regional Fishery Management Organisation (RFMO).

Australia's international obligations under the Convention require that Australia's SBT Fishery be managed, as a minimum, in accordance with measures imposed by the CCSBT. AFMA has the capacity within the SBT Fishery Management Plan to impose measures additional to but not contrary to any measures set by the CCSBT.

The CCSBT's objective is to ensure, through appropriate management, the conservation and optimum utilisation of the global SBT Fishery. In pursuit of this objective the CCSBT performs a number of functions. It:

- is responsible for setting a total allowable catch and its allocation among the members;
- considers regulatory measures to meet Convention objectives;
- coordinates a scientific research program aimed at providing information to support the CCSBT's management objectives (the program is a mixture of member managed activities and activities managed directly by the CCSBT Secretariat);
- takes decisions to support and implement fishery management;
- provides a forum for the discussion of issues relevant to the conservation objectives of the Convention;
- acts as a coordination mechanism for members' activities in relation to the SBT Fishery;
- fosters activities directed towards the conservation of ecologically related species (living marine species which are associated with the SBT Fishery) and bycatch species;
- encourages non members engaged in the fishery to join or participate as observers in Commission activities; and
- cooperates and liaises with other regional tuna fishery management organizations in areas of mutual interest.

CCSBT reports that the estimated total world catch of SBT is in the order of 15,500 tonnes. When the Convention came into force in May 1994, CCSBT set a TAC of 11 750 tonnes, with national allocations of 6,065 tonnes, 5,265 tonnes and 420 tonnes to Japan, Australia and New Zealand respectively. For the period 1997 to 2003, there was an inability within the CCSBT to agree on a TAC or national quotas, and in the absence of a decision by CCSBT to set a TAC, Australia and New Zealand maintained their catches at the pre-agreed levels. However, Japan sought a quota increase, either as an additional commercial catch, or an 'experimental fishing program' (EFP), or a combination of these. Australia and New Zealand opposed any increase, and no agreement was reached despite numerous and extensive meetings. In 1998, Japan undertook an EFP without CCSBT endorsement, and increased its total catch to 7,052 tonnes. In 1999, Japan again proceeded unilaterally to increase its quota through an EFP, and increased its total catch of 7,552 tonnes. Australia successfully took legal action against Japan through the international legal system including the International Tribunal on the Law of the Sea (ITLOS) to have this 'overcatch' repaid. The Republic of Korea became a member in 2001 and in 2002 Taiwan became a member of an extended Commission (as the Fishing Entity of Taiwan).

In 2003 the CCSBT agreed on a TAC of 14,030 tonnes and national allocations as follows:

Japan	6,065 tonnes
Australia	5,265 tonnes
New Zealand	420 tonnes
Republic of Korea	1,140 tonnes
Fishing Entity of Taiwan	1,140 tonnes

A further allocation of 900 tonnes was set-aside for cooperating non-members, of which 800 will be available to Indonesia if it becomes a member or more likely a cooperating non-member. The residual, approximately 570 tonnes is accounted for nominally in recreational and artisanal catches and a small amount set aside as research related mortality occurring in tagging programmes and the like. To establish how recreational catches have been handled, the CCSBT will investigate the approach that has traditionally been taken to recreational catches of SBT in stock assessment and the national allocations and to report to members prior to or during CCSBT 11, scheduled for October 2004.

The main management objective of the CCSBT is to rebuild the spawning stock to its 1980 level by 2020. The recruitment of young fish declined substantially once the spawning biomass decreased below the 1980 level, so the 1980 biomass was adopted as the recruitment-overfishing reference limit. The SC was established within the CCSBT to provide advice to the CCSBT and is supported by a panel of independent scientists. The SC's stock assessments undertaken in 2001 under the auspices of the CCSBT indicate, "that the current global catches provide for little chance for achieving this objective". The SC is scheduled to undertake a stock assessment in 2004. The SC in its 2001 report to the CCSBT (and reinforced at the 9<sup>th</sup> meeting of the CCSBT held in October 2002 and at the 10<sup>th</sup> meeting in October 2003) made the following observations with regard to the SBT fishery:

- Current (2000) SBT catch levels appear roughly close to replacement yield, with projections showing divergent trends under current catch scenarios ranging from recovery to further decline – the projections were very sensitive to assigned weightings (such as the age of maturity).
- At current catch levels, the probability of the SBT spawning stock biomass being larger in 2020 than it is now is about 50%, with an equal probability the level will be less in 2020.
- At current catch levels there is little chance that the SBT spawning stock will be rebuilt to 1980 levels by 2020. Substantial quota reductions would be required to achieve that goal.

The SC advised the CCSBT that an immediate reduction in total removals was not necessary to prevent a further decline. Some Australian scientists believe that a substantial reduction in catch is necessary in order for stock rebuilding to occur.

BRS has estimated that the parental biomass is currently in the order of 4 - 19% of the unfished biomass (and in the order of 25 - 53% of the 1980 level).

Management of the Australian SBT Fishery is constrained by the international context in which it operates. As it is recognized that as part of a global fishery, Australia can only influence a certain portion of the take in the fishery and a collaborative approach by all countries that fish for SBT is required if the single parental stock is to be rebuilt and sustained. Any unilateral reduction in take by Australian fishers is likely to be taken up by other countries fishing for SBT and this impacts on the ability of AFMA to ensure that the management of SBT in the Australian commercial fishery is demonstrably ecologically sustainable. While recognizing the risk DEH believes Australia has nothing substantial to gain (and leaves the species exposed to considerable further risk) by withdrawing from the CCSBT. DEH concurs with Australian position taken to CCSBT to date that Australia needs to remain an active participant in CCSBT to influence the global management and total take of SBT.

As part of the management of this risk DEH identifies that the challenges surrounding the management of the SBT fishery internationally include:

1. reviewing the CCSBT's rebuilding objective to ensure it better reflects ecological sustainability objectives and includes milestones established to demonstrate that stock rebuilding is occurring;
2. developing an agreed robust stock assessment process (and the resultant determination of the global stock);
3. obtaining formal agreement on a total global allowable catch that will lead to stock recovery;
4. the finalisation of the Management Procedure (MP) (see below) to formalise how the TAC and national allocations will be set as the stock assessment becomes more certain;
5. ensuring that all the major SBT fishing nations are members of the CCSBT (and have an appropriate allocation from within the global TAC) particularly the inclusion of South Africa (as a full member) and Indonesia (as cooperating non-member or otherwise);
6. monitoring the global catch of CCSBT members and limiting catch of non-member countries and emerging fishing nations; and
7. protecting the SBT stocks on the spawning grounds (that straddle the Indonesian and Australian exclusive economic zones and the high seas).

DEH believes that integral to ensuring the ecological sustainability of the commercial SBT fishery in Australia, Australia, through DAFF, must work actively within the CCSBT to address these challenges in a timely and proactive manner. DEH further believes that a failure of the CCSBT to demonstrate that it can and will effectively rebuild the SBT stock to ecologically sustainable levels may necessitate consideration for protection from fishing pressures through other environmental legislative means.

**Recommendation 3:** DAFF to pursue Australian Government objectives to rebuild the SBT stock to ecologically sustainable levels. This is to include working within the CCSBT to:

- pursue the establishment of interim milestones within CCSBT that includes management processes and measures of progress towards meeting rebuilding objectives;
- endeavour to ensure the membership of the CCSBT includes all nations taking SBT who have a legitimate historical association with the fishery;
- pursue the protection of SBT spawning stock and spawning grounds from unsustainable fishing pressures;
- ensure all take of SBT is monitored through a comprehensive catch documentation scheme; and
- ensure the recreational take of SBT is taken into account in establishing the global take and setting national allocations.

Since an initial meeting in May 2000, the CCSBT has been working on developing a Management Procedure; developed as a set of rules, agreed in advance, to dictate how a Total Allowable Catch for the SBT fishery would be adjusted as data becomes available. The management procedure will have three components: (1) a list of data as inputs, (2) an algorithm or model to process the data and (3) rules to translate the algorithm output of the model into a Total Allowable Catch. In 2002 the CCSBT:

- developed a draft structure of the operating models for the SBT fishery;
- identified five fisheries and the data sets required for conditioning of the model;

- agreed on the principles for selecting candidate management procedures; and
- agreed on the initial identification of objectives and related performance measures (maximizing catches, safeguarding the resource, minimising inter-annual variation in catch and effort).

Further progress was made in 2003 in considering the major management issues for an effective management procedure, including:

- the trade off necessary between catch levels and re-building of biomass. (Higher catches reduce the scope for re-building, and *vice versa*); and
- a trade-off between TAC stability (frequency of TAC change) and the magnitude of TAC changes. (Frequent TAC changes are likely to be smaller, whereas less frequent changes may require larger changes).

The emphasis in 2004 and beyond will be on refining the modeling underpinning the MP and setting the rate of recovery (balancing the competing economic and ecological influences in the fishery) and the level of risk that will be acceptable to the CCSBT in the recovery of the species.

DEH recognizes that Australia, through the activities of DAFF at CCSBT, has made considerable progress in improving the effectiveness of the CCSBT. Initiatives such as:

- the increased membership, particularly the accession of the Republic of Korea (October 2001) and the Fishing Entity of Taiwan (August 2002) (and with Indonesia participating as a ‘cooperating non member’ and South Africa joining would represent almost 100% coverage of the global SBT fishery);
- the implementation of the Ecologically Related Species Working Group (ERSWG) and ongoing engagement in this committee to work towards mitigation of the bycatch issues in the fishery (particularly bycatch associated with the international longline fishing sector);
- the adoption of the Trade Information Scheme (TIS) and working towards the development of a more comprehensive trade documentation system that monitors catch and trade from all SBT fishers;
- the establishment of the independent panel of scientists and the scientific research program established under the SC;
- the progress in the development of the MP; and
- the introduction of independent catch monitoring programs in key ports, particularly in Indonesia to identify and quantify their catches and to support research into fishing impacts on the spawning grounds;

are attributable, to a significant extent, to Australian initiatives.

The constraint the international framework imposes on AFMA’s management of the SBT Fishery has been an important consideration in DEH’s assessment of the fishery management arrangements. Should there be significant change in the CCSBT’s management of SBT, the SBT Fishery Management Plan and the strategic assessment may need to be reviewed.

**Recommendation 4:** DAFF to ensure DEH is kept informed of any significant change in the CCSBT’s management of SBT.

### **3.3 Conclusion**

DEH is satisfied that the SBT Fishery management regime is documented, publicly available and transparent, and is developed through a consultative process. The management arrangements are adaptable and underpinned by appropriate objectives and performance criteria by which the effectiveness of the management arrangements can be measured, enforced and reviewed.

The management arrangements are capable of controlling the harvest through a combination of input and output controls appropriate to the size of the fishery. Periodic review of the fishery is provided for, as are the means of enforcing critical aspects of the management arrangements.

The management regime takes into account arrangements in other jurisdictions, and adheres to arrangements established under Australian laws and international agreements. The major management issue in the fishery is the need to ensure an effective engagement in the RFMO that covers the fishery, viz the CCSBT.

DEH considers that there is scope to further refine the management arrangements and has provided a number of recommendations for improvements in the longer term. While some relate to AFMA and the management of the domestic commercial fishery there are also recommendations relating to the role of DAFF in ensuring the effectiveness of the CCSBT and the conservation and ecologically sustainable management of SBT internationally.

# 4 PART II – GUIDELINES FOR THE ECOLOGICALLY SUSTAINABLE MANAGEMENT OF FISHERIES

## 4.1 Stock Status and Stock Recovery

**Principle 1:** *“A fishery must be conducted in a manner that does not lead to over-fishing, or for those stocks that are over-fished, the fishery must be conducted such that there is a high degree of probability the stock(s) will recover”*

### Maintain ecologically viable stocks

**Objective 1:** *“The fishery shall be conducted at catch levels that maintain ecologically viable stock levels at an agreed point or range, with acceptable levels of probability”*

#### 4.1.1 Information requirements

Under the SBT Fishery Management Plan (as amended), AFMA has a comprehensive program of data collection incorporating an appropriate mix of both fishery dependent and fishery independent methods.

The primary means of collecting ‘fishery dependent’ data is through the range of logbooks and associated catch records, required by law, and which are used by AFMA for monitoring, compliance and research. The following diagram outlines the documentation collected on the fishery catch.

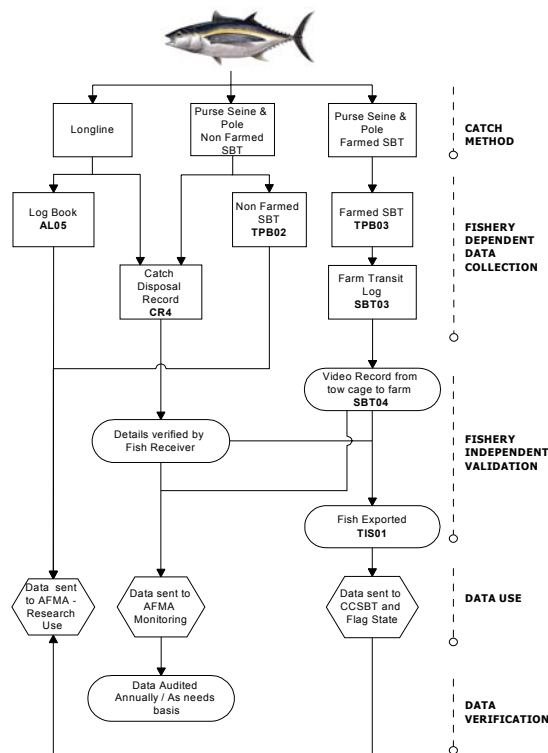


Figure 2.: AFMA Documentation

<sup>15</sup> Diagram from AFMA.

The collection of fishery independent data is progressed primarily through the Scientific Research Program (SRP) established under the auspices of the CCSBT. This involves a range of scientific studies specifically designed to collect information pertinent to the assessment of the stock of SBT. The CSIRO's Marine Research is the primary research organisation responsible for SBT research in Australian waters and undertakes a wide range of projects involving stock modelling and assessments, migration, biology and aquaculture. In time and with the oversight of an independent panel of eminent experts, the SRP should reduce levels of uncertainty in stock assessment, distribution of the species, fishing pressure and national and global catches.

CCSBT has introduced a system involving identification and recording of catch from the point of capture through to export and beyond through its Trade Information Scheme (TIS). While such a system has value, it is limited to data on SBT imported into the Japanese market, missing fish caught by the large Japanese fleet. Recommendation 3 includes points that seek to ensure that all catch is recorded and provided to management for inclusion in stock status deliberations.

At CCSBT 7 in April 2001, the Commission agreed to the introduction of a Scientific Observer Program as a priority. At CCSBT 8 in October 2001, the Commission set a level of coverage of 10% of catch and effort for this program. A pilot observer program, including terms of reference, has been developed by AFMA and set out in the Project Plan: *Observer operations for the purse-seine (South Australia) southern bluefin tuna fishery 2002 - 03*. Although only 10 days of observer coverage was achieved in 2001-2002, the full 10% level of coverage was implemented in 2002 –2003 and again in 2003-04.

DEH believes a statistically robust observer program is needed to validate the commercial catch information for use in SBT stock assessments and management, including information on fish mortalities occurring during the fishing operations and the collection of data on bycatch, protected species interactions and ecosystem impacts of fishing operations.

**Recommendation 5:** AFMA to ensure that the observer program, implemented to meet domestic and international data and management needs, is capable of providing the required information at a statistically robust level. The observer program is to be conducted against established terms of reference and objectives that provide clear direction in the collection of at least the following:

- validation of commercial catch information for use in SBT stock assessments and management, including information on fish mortalities occurring from the purse seine fishing operation through the tow back to the farm cages and final transfer into the 'grow out' cages, actual catch rates and the incidence of high grading and over catch;
- data on bycatch, protected species interactions and ecosystem impacts of fishing operations; and
- information on the techniques and technologies used to estimate the quantities of fish transferred during fishing operations and the further development of these.

Of the issues identified for the particular attention of the observers, given the severely recruitment-overfished status of the SBT stocks it is critical that Australia's system of verifying catch is as accurate as it can be and beyond dispute. At present weight estimates rely on sampling fish as they are transferred from the tow nets into the 'grow-out' cages or pens. These weight samples are extrapolated by the total count to determine the total catch

weight. DEH welcomes AFMA's inclusion of a performance measure in the management plan to review annually the technology use to monitor the SBT catch and implement any required changes as soon as possible thereafter.

Overall, given the range of fishery dependent or independent data gathered by AFMA and the mechanisms for regularly reviewing the data requirements (as set out in the data research program and data strategy) DEH is satisfied that there is a reliable information collection system in place appropriate to the scale of the fishery.

#### **4.1.2 Assessment**

AFMA relies on the stock assessment conducted under the CCSBT. The stock assessment is considered to be soundly based and as good as the current data and science allows, although it clearly focuses on the dynamics of SBT rather than broader ecosystem issues. In Australia, CSIRO is responsible for the modelling and stock assessments undertaken, including determining the proportion of SBT stock that could be available to harvesting. Within Australia, the work undertaken by CSIRO is augmented through input by scientists in the BRS and from management advice provided by staff at AFMA and DAFF.

In the past the stock assessment science has been in dispute, particularly between Australian and Japanese scientists. One area of dispute has been the probability of achieving the CCSBT's stock rebuilding objective, with the Australian scientists setting a low probability (<14%) whereas the Japanese scientists predicted a significantly higher (76 – 87%) probability. To redress this situation, an international panel of experts was established by the CCSBT to oversee the development of an agreed stock assessment modelling process by 2004. This initiative has been successful in reaching closer agreement between scientists on the status of the stock.

The CCSBT has established a Stock Assessment Group (SAG) that undertakes regular assessments of the status of the stock. This Assessment Group provides advice to the CCSBT via the SC, particularly on current status of the stock, global TAC and individual member country allocations. The stock assessment will be undertaken in 2004 and presented at CCSBT 11. The SBT Research Sub-committee is also a part of this SAG and oversees the SRP.

The role of the SC is, among other things, to:

- assess and analyse the status and trends of the population of southern bluefin tuna;
- coordinate research and studies of southern bluefin tuna;
- report to the CCSBT its findings or conclusions, including consensus, majority and minority views, on the status of the southern bluefin tuna stock and, where appropriate, of ecologically related species;
- make recommendations, as appropriate, to the CCSBT by consensus on matters concerning the conservation, management and optimum utilisation of southern bluefin tuna; and
- consider any matter referred to it by the CCSBT.

The SRP will decrease the uncertainty in the stock assessment process over time and will underpin the standards relating to data collection and stock assessment and in the establishment of a Management Procedure and operational requirements such as observer programs.

The distribution of SBT is reasonably well understood and research is being undertaken under the SRP to further refine this and the spatial structure of the species. Given the wide distribution and highly migratory nature of the species, specific location-related information is not considered a high priority in the management of the SBT stocks. The logbook program employed by AFMA does collect an array of spatial information although this is not verified to any significant degree. AFMA advises that the collection of spatial distribution data is improving including the introduction of an integrated computer vessel monitoring system. AFMA also advise that it has appropriate management arrangements in place should additional concerns over sustainability arising from distribution and stock structure be identified. Recommendation 3 includes points that seek to ensure that particular effort is made to provide protection for the recognized spawning areas off northern Australia.

AFMA systematically collects a range of information about the fishery and the species. This information is factored into the stock assessment processes undertaken within Australia and is provided to the stock assessment processes undertaken within the CCSBT.

DEH considers that the information collected through the logbooks and related catch documentation is reasonably reliable. However in such a high profile fishery that is under overfishing pressure, it is essential that confidence in catch data be as high as possible. The purse seine fishing operation as it currently operates raises a number of issues related to monitoring/ recording of SBT catch and subsequent compliance with Australia's national catch allocation. These issues could potentially contribute to an underestimation of Australia's total SBT take.

DEH understands that mortalities occur during the catching operations and during the tow back from the point of capture to the 'grow-out' cages and that these can vary but on occasion can be significant. Independent verification of these mortalities is required. Recommendation 5 requires AFMA to ensure the observer program introduced collects data on SBT mortalities during the catching, towing and transfer phases of the fishing operation.

Recreational fishers (including fishers on charter boats) also contribute to SBT mortalities. Issues associated with this include:

1. effectively no reliable information on the take of SBT by the recreational sector is available;
2. there is some uncertainty how the recreational take is factored into the stock assessments; and
3. no effective management arrangements are in place to monitor and control SBT take in the recreational fishery. (noting that while there are bag and boat limits in place these have not been determined through rigorous analysis).

Information on the national recreational catch of SBT is seriously deficient and the level of the recreational take of SBT take needs to be established as a matter of priority. This is an issue that must be addressed both in the national management of the fishery and within the international management of the species by the CCSBT. Estimates of the recreational take of SBT vary between 18 tonnes (advised by Australia at CCSBT 9, October 2002) and in excess of 120 tonnes (provided by recreational fishers to SBTMAC). The National Recreational and Indigenous Fishing Survey, released in July 2003, provides no guidance as to the amount of SBT taken. The survey reports that approx 232,350 tuna/ bonitos are taken annually. This number has been converted in the report to approximately 1,300 tonnes of tuna/ bonito of which SBT is an unknown proportion. A significant proportion of Australia's recreational SBT take is reported from Tasmania, taken by charter operators, and recent reports suggest that there is a developing sport fishery adjacent to the 'grow out' cages around Port Lincoln.

Due to the overfished status of the SBT stock it is vital that comprehensive and reliable total catch data is used in any assessment of the status of SBT and that all mortalities are considered in the determination of both national and international management arrangements.

At CCSBT 10 (October 2003) it was determined that the TAC set by the Commission is clearly for commercial catch. At this meeting it was also established that an amount is nominally retained by the CCSBT to account for recreational take and presumably artisanal fishing. This amount has been set arbitrarily at approximately 530 tonnes as follows:

Estimated Global Take	15,500 tonnes	less
National allocations for CCSBT members	14,030 tonnes	less
Reserved allocation for future CCSBT members	900 tonnes	less
Allocation for research mortalities	40 tonnes	less
Residual as global recreational take	530 tonnes	

CCSBT10 has tasked the secretariat of the Commission with providing information on how recreational catch has been taken into account in previous stock assessments. It has been reported that this information will be used by the Commission to decide how to manage recreational catch in the future.

In 2003/ 04 DAFF initiated the development of a Resource Sharing and Management Framework to establish how Australian fishery resources can be shared between user groups (such as between the commercial and recreational fishers taking SBT). DEH understands that the Resource Sharing and Management Framework will establish both how the resource will be shared between sectors and determine how this resource can be managed equitably, providing benefit for the wider Australian community while contributing to sustainable harvesting levels. DEH considers that DAFF should ensure that the framework establishes clear responsibilities for monitoring (ie data collection) and management of the SBT recreational fishery (among others). DEH acknowledges that this responsibility will most likely rest with the States but there should be a requirement to provide DAFF with relevant information on the recreational take of SBT on an ongoing basis. DAFF will require this to input into the CCSBT (for stock assessments, establishing global take and eventually to be factored into the national allocations).

**Recommendation 6:** Recognising that data on the take of SBT by recreational and charter fishing is inadequate, DAFF in conjunction with the Game Fishing Association of Australia will develop a cost effective and affordable method of reliably estimating the Australian recreational and charter catches of SBT.

Based on advice from the research agencies and groups involved in SBT, including the CCSBT's SBT research sub-committee, the SAG, CSIRO and the BRS, DEH believes there is a sound understanding of the SBT stocks and their status. DEH understands that the knowledge of the potential yield of SBT that should be available to the fishery (both commercially and recreationally) is improving but DEH still has concerns over the future of the fishery as well as the commercial survival of the species. Recommendation 3 highlights the need for the CCSBT to establish appropriate objectives that reflects ecological sustainability objectives and the need to establish interim milestones within CCSBT to provide a measure of the progress towards meeting rebuilding objective(s).

### **4.1.3 Management responses**

Management strategies are in place to control the level of take in the commercial fishery, achieved through the allocation by AFMA of a quota (as an ITQ) to holders of a SFR. This is derived from the global TAC set by the CCSBT and the Australian allocation agreed within the CCSBT.

The current management objective adopted by the CCSBT is to rebuild the parental SBT stock to the 1980 level by the year 2020. This objective has been enacted in the draft SBT Fishery Management Plan amendments proposed by AFMA. This objective is widely considered unachievable at current catch rates by Australian Scientists and DEH contends that this should be reviewed and a new objective that is clearly ecologically sustainably based developed. DEH notes that the achievement of even the current CCSBT objective would require a significant reduction in global catch/ effort or even a total closure for a period of time. However in the international environment in which the Australian SBT fishery operates and with the highly migratory nature of the species, any proposal for a unilateral reduction by Australia at this time needs to be taken in careful consideration of the value of the approach for the conservation of the species world-wide.

Considerable emphasis has been placed by AFMA on the outcomes of the CCSBT workshops planned held in early 2004 to establish biological reference points and decision rules that will apply to the management of the fishery. The outcomes of these workshops once adopted by the CCSBT will be adopted by AFMA and incorporated into the management plan for the SBT Fishery. DEH welcomes this undertaking by AFMA.

State-based management strategies are also in place for the recreational fishery, usually possession limits, although it does not appear that management is coordinated or that the bag and boat limits applied in each State have been determined on any strict scientific or management basis. In addition no effective monitoring requirements (or reporting) is in place. It is important that all mortalities of SBT, including recreational mortalities, are taken into account within Australia's commercial or recreational take. Recommendation 6 sets out the need to develop a management framework for recreational take of SBT.

To take SBT in either the ET&BF or the SWT&BF requires appropriate authorities to operate in the particular fishery and the holding of quota to cover all take of SBT. By-product provisions for non-SBT by-product are covered under the management arrangements within these fisheries.

### **4.1.4 Conclusion**

The serious decline in SBT spawning biomass is a cause for serious biological concern and, at present levels of exploitation, the long-term survival of SBT as a fishery is at considerable risk. At the current levels of take globally (commercially, recreationally and artisanally) the probability of the SBT stocks rebuilding to a position approaching ecologically sustainability is low, but as the CCSBT's SC notes, as catch rates have remained relatively stable since the mid 1990s, the likelihood of a further stock collapse is not high and there is no need for any dramatic reductions in current catch levels. This view will be reassessed at the stock assessments being conducted in late 2004 and will be considered at CCSBT 11 (October 2004, Korea)

CCSBT has set as the reference point for the fishery, the recovery of the parental biomass of 1980 by 2020. AFMA has also set this as the reference point for their management of the domestic fishery. To a significant extent AFMA's ability to achieve this objective is beyond its direct influence or responsibility, given that the Australian fishery is part of a global fishery, the management of which is undertaken by an international forum in which Australia is a member. DEH concurs with DAFF (and AFMA) that any unilateral management response by Australia to this situation at this time has a low likelihood of success, at least until all nations fishing for SBT are members and under the effective control of the CCSBT.

To ensure sustainability DEH concludes that DAFF, and to the extent possible, AFMA, must continue to play a leading and proactive role within the CCSBT ensuring it is working towards a meaningful and appropriate stock recovery objective and one that is measured through the achievement of a series of milestones that reflect ecologically sustainable management.

DEH is satisfied that the information collection systems and the stock assessment and management arrangements generally are sufficient to ensure that the fishery can be conducted at catch levels that would maintain ecologically viable stock levels with acceptable levels of probability. AFMA has described what is in effect a comprehensive program of data collection incorporating both fishery dependent and fishery independent methods that is appropriate to the scale of the fishery. The distribution of the species is reasonably well understood and research is being undertaken under the auspices of the SRP of the CCSBT to further define the distribution and spatial structure of the species.

DEH considers that there is scope to further refine some of the existing information collection, assessment and management responses and has provided recommendations for improvements in the longer term.

## **4.2 Promote recovery to ecologically viable stock levels**

**Objective 2:** *“Where the fished stock(s) are below a defined reference point, the fishery will be managed to promote recovery to ecologically viable stock levels within nominated timeframes”*

### **4.2.1 Management responses**

The assessment that stocks are overfished is being addressed through a recovery strategy, including the development of a Management Procedure (MP) which will have to be complied with by all members of the CCSBT. DEH is satisfied that the recovery of the stocks is to a large extent beyond the direct influence of AFMA and the recovery relies to a significant degree with the international management arrangements in place in the CCSBT including the establishment of appropriate rebuilding objectives and milestones.

The Australian Government’s strategy at the moment relies heavily on ensuring that all countries taking SBT are members of the CCSBT and abide by its rules. There is also a strong emphasis on ensuring there is a robust stock assessment and the development of a framework for the establishment of a TAC and national allocations. The fished stocks are at a point at which continued fishing at current levels is unlikely to achieve the broad objective of the CCSBT (viz conservation and optimum utilisation of the global SBT Fishery) or the specific goal of returning the spawning biomass to 1980s levels by 2020. Accordingly there also needs to be attention given to the review of this objective.

Considerable effort has been expended and progress has been made by the members of CCSBT and in particular by DAFF in the development of the MP. Progress towards the finalisation of this decision making framework should provide for a set of rules for selecting agreed management approaches for SBT within the CCSBT framework (particularly the establishment of the TAC that will achieve an appropriate rebuilding objective) that are relatively independent of the members of the CCSBT and, importantly, are scientifically robust. The advantages of the proposed approach include:

- greater probability of the CCSBT management objectives being met;
- more formal and effective management of uncertainty in relation to diminution of the contention surrounding the scientific assessment of stocks;
- provision of greater certainty for industry; and
- an opportunity to achieve a balance between competing management objectives.

### **4.2.2 Conclusion**

The fished stocks are reported to be at a point at which continued fishing at current levels is highly unlikely to achieve the broad objective of the CCSBT (viz conservation and optimum utilisation of the global SBT Fishery) or the specific goal of returning the spawning biomass to 1980s levels by 2020. No specific recovery strategy is in place or proposed by AFMA or importantly by the CCSBT to achieve the CCSBT recovery goal, although the MP process presents this opportunity. DEH supports the approach being taken by DAFF that notes that the unilateral implementation of measures such as a reduction by Australia will not afford any significant protection to the species.

Considerable effort is required by the CCSBT to make it a fully effective regional fishery management agency that can put in place appropriate management responses necessary to ensure the recovery of the stocks. To achieve this Australia must maintain an active and

proactive participation in the CCSBT, particularly in the development of an appropriate Management Procedure. Recommendation 3 highlights areas in which DEH believes particular additional emphasis should be afforded by DAFF in the establishment of an effective Commission.

As the managers of the domestic fishery AFMA must continue to take an active role in working with DAFF in the development of policy and tactics to ensure the CCSBT is functional and makes decisions underpinned by verified and defensible data.

### **4.3 Ecosystem impacts**

**Principle 2:** *“Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem”*

#### **Bycatch protection**

**Objective 1:** *“The fishery is conducted in a manner that does not threaten bycatch species”*

##### **4.3.1 Information requirements**

The majority of the catch in the SBT Fishery is taken using the purse seine method (up to 98% of total tonnage since 2001). While anecdotal reports indicate that there is no significant bycatch using this method, AFMA acknowledges that there is little verified data on bycatch in the SBT Fishery although observer coverage in 2002/03 and 2003/04 has improved this.

The Ecologically Related Species Working Group established under the CCSBT’s SC and to which AFMA is providing technical support as part of the Australian delegation, has identified the need to collect data derived from the fishery on:

- by-catch (including non-fish and wildlife interactions);
- discards (of SBT and other species);
- protected species interactions; and
- SBT tag/ band recapture details.

AFMA developed a BAP for the tuna fisheries in May 2001. Following a review in 2003, a BAP for the tuna purse seine fisheries (the Tuna Purse Seine BAP) has been prepared and is anticipated to be introduced in late 2004. The Tuna Purse Seine BAP requires:

1. identification of fishery specific issues and risks particularly those for:
  - protected species and threatened ecological communities, (in this draft of the BAP risks to marine turtles, seabirds, sharks, cetaceans and other marine mammals),
  - high risk and other bycatch species (the current draft of the BAP identifies risks to sharks and blue and black marlin)
  - removal of habitat attributable to the fishery operations; and
  - the impact of total bycatch on the broader ecosystem,
2. strategies/ actions addressing risks associated with:
  - protected species;
  - high risk and other bycatch species; and
  - the broader marine ecosystem
3. a Communication Strategy:
  - protected species
  - high risk and other bycatch species; and
  - the broader marine ecosystem
4. a prioritised workplan.

The strategies set in the BAP are separated into those related to data collection activities, data analysis and management responses. Each strategy includes a range of performance indicators that are both output and outcome based. The BAP also requires the preparation of a Code of Practice for fishers which will include a range of issues relating to bycatch. The efficacy of the Code in achieving the objectives of the BAP is to be reviewed within 18

months of the introduction of the BAP. AFMA has also committed to a review of the objectives and actions within the BAPs biennially.

The development and implementation of a robust observer program that verifies a range of bycatch data is critical for public (and management) confidence in the long-term sustainability of the fishery. Recommendation 5 identifies specific tasks that DEH believes should be included in the tasks of observers.

#### **4.3.2 Assessment**

AFMA advises that to date the ERA on the SBT Fishery that will establish the vulnerability or risks to bycatch has not been finalised. The ERA is expected to confirm that the SBT Fishery, employing the purse seine method of fishing, has a low level of bycatch. The results of the initial phase ERA project are expected in late 2004 and should this identify any unexpected risks to bycatch. DEH expects that AFMA will address these through the Tuna Purse Seine BAP or otherwise.

#### **4.3.3 Management response**

DEH agrees with the conclusion that the purse seine sector poses minimal risk to bycatch species, including protected species, and that AFMA has actions in train to validate this view. As such no specific measures are considered necessary at this stage to avoid capture or mortality of bycatch species.

No indicator group or bycatch species is currently monitored within the fishery. On current information DEH believes this is appropriate for the purse seine sector. AFMA is awaiting the outcomes of the ERA to identify any need to monitor an indicator group or bycatch species and to drive the collection of definitive data and the development of triggers, decision rules and responses.

On current information DEH believes that the management arrangements in place and the actions proposed would achieve the objective of conducting the purse seine fishery in a manner that does not threaten bycatch species.

#### **4.3.4 Conclusion**

Anecdotal preliminary observer reports, and industry advice indicates that there are no significant bycatch issues in the purse seine sector. DEH believes that this anecdotal evidence in all likelihood is correct but as there is little verified data on bycatch from the fishery this assumption needs to be substantiated through the observer program and other data collection programs.

AFMA acknowledges that there is very little verified knowledge of bycatch and has commenced programs to collect this information. These are:

1. a ERA for the SBT to investigate the susceptibility of various bycatch species to capture by the various fishing methods and the ability for species populations to recover from such interactions;
2. as part of the ERSWG established under the SC of the CCSBT, collecting information on:
  - wildlife interactions;
  - discards (of SBT and other species);

- protected species;
  - tag/ band recapture details; and
  - non-fish bycatch interactions;
3. the collection of data on bycatch within the actions of the Tuna Purse Seine BAP; and
  4. an observer program, charged with the collection of data on levels of bycatch.

#### **4.4 Protected species and threatened ecological community protection**

**Objective 2: “*The fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities*”**

##### **4.4.1 Information requirements**

Very little information is available on the interaction of the purse seine sector with protected species. Protected species known to occur in the area where the majority of fishing for SBT occurs include marine mammals (some cetacean species and species from the Families Otariidae (eared seals) and Phocidae ("true" seals)), the White Shark (*Carcharodon carcharias*) and some species in the Class Aves (birds) that occur naturally in Commonwealth marine areas.

Data relating to the capture and interaction with protected species is through logbooks completed by the fishers and forwarded to AFMA. Reports provided indicate a low level of interaction but to date there is only preliminary verification of this through the observer program. The range of activities currently initiated, namely the observer program, the ERA, the ERSWG work of the CCSBT and the Purse Seine BAP, will contribute to improving the reliability of information collected on protected species interactions.

DEH welcomes the support AFMA is giving to investigating the development of a tagging program to be used to investigate the post-release mortality of bycatch and which could be used to analyse the impact of the fishery on endangered, threatened or protected species.

Seals have been reported as harassing SBT in the towing and in the ‘grow out’ cages (although grow-out cages are outside the scope of this assessment) and that there are likely to be similar issues with great white and other shark species. This needs to be investigated and this can be achieved through the observer program. If a problem is identified, mitigation measures will have to be introduced that ensures individual specimens are not killed or injured as part of the fishing operation.

There are no known threatened ecological communities within the major SBT fishing areas accessed in Australia, although DEH notes that the area of the fishery includes the entire AFZ plus the high seas.

##### **4.4.2 Assessment**

Because of the reported low level of impact of the fishery operation on protected species there has been no assessment of the impact of the purse seine sector of the fishery on this group of animals. DEH acknowledges that AFMA is committed to collecting information through the ERA, the ERSWG work and the BAP to confirm this conclusion.

The SBT Fishery does not interact with any known threatened ecological community.

#### **4.4.3 Management response**

The purse seine sector is reported to have minimal interaction with ‘protected’ species. This assumption is being tested through a number of approaches being undertaken by AFMA and outlined in Section 4.3.4. There is anecdotal information that seals and great white sharks harass SBT in the towing cages and in the ‘grow out’ cages (although ‘grow out’ cages are outside the scope of this assessment). However these interactions are unsubstantiated.

The proposed SBT Fishery Management Plan includes a requirement for fishers to take all reasonable steps to minimise interactions with seabirds, marine reptiles, marine mammals which effectively cover most of the key species of concern under the EPBC Act, and fish identified in sections 15 (referring to black cod, *Epinephelus daemeli*) and 15A (blue marlin, *Makaira mazara* or black marlin, *Makaira indica*) of the FM Act.

The SBT Fishery does not interact with any known threatened ecological community and accordingly there are no management measures in place or that are considered necessary.

On balance DEH agrees with the view that the purse seine sector poses minimal risk to bycatch species and that AFMA has actions in train to validate this. Should this assumption be shown to be incorrect, DEH expects AFMA will use the capabilities it has under the SBT Fishery Management Plan to mitigate any threats to protected species.

As already indicated issues with the longline sector will be addressed in the appropriate assessment of those fisheries.

#### **4.4.4 Conclusion**

The impacts of the purse seine sector of the fishery on protected species are expected to be minimal or relatively benign. At this stage AFMA has only anecdotal knowledge of the level or nature of the interactions and accordingly does not have specific management arrangements in place, other than strategies to collect and verify fishery data. The data collection program either underway or proposed will go a long way towards quantifying and verifying the level of interaction of the fishery operations with protected species.

Interactions between great white sharks and seals and the tow cage component of the SBT Fishery have been reported anecdotally and are an area that warrants attention.

DEH notes that there are minimal interactions with protected species in this fishery and is satisfied that the fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities. Should this situation change, or a risk assessment process indicate otherwise, DEH suggests that appropriate actions be undertaken to ensure the fishery avoids mortality or injury to these species and avoids or minimises impacts on threatened ecological communities.

## **4.5 Minimising ecological impacts of fishing operations**

**Objective 3: “The fishery is conducted in a manner that minimises the impact of fishing operations on the ecosystem generally”**

### **4.5.1 Information requirements**

Little information has been or is routinely collected on the ecosystem in which the SBT exist, particularly in a manner that could be used to verify any impact the fishery may have on that ecosystem.

AFMA is involved in the development of data collection programs both within the fishery it directly manages (Australian fishers operating in the AFZ and on the high seas) and also as part of work being undertaken under the auspices of the CCSBT including the ERSWG. These programs should help to provide the information necessary for evaluating the impact of the fishery operations on the broader marine environment.

### **4.5.2 Assessment**

SBT is a pelagic species that normally occurs in waters of considerable depth and in Australia is usually associated with the continental shelf. Purse seine fishing, if the nets are set properly, has no direct contact with the substrate and therefore no significant potential to impact on the benthic communities that occur below the fishery. DEH concludes that the risk of interaction with benthic communities is considered to be very low and not commensurate with the costs of investigating possible impacts.

At a very superficial level, with the fishery operating on between 4% and 19% of the virgin biomass, there is likely to be an impact on the trophic components of the ecosystem (affecting both competitor, predator and prey interactions) attributable to the fishery. Information relating to these impacts is a key requirement within management, which must be addressed in order to achieve long-term ecological sustainability. AFMA is in the early stages of collecting information that can be used to determine the nature and level of impacts on either ecologically related species or other species that interact with SBT.

The limited data available suggest that SBT are polyphagous and opportunistic feeders. They are identified as top-level predators, with consequent implications that the fishery would be expected to have some impact on both their competitors and their prey. Little information is available and no risk assessment has been undertaken on the impact of the fishery on the structure of food chains or the energy flows within these. No current research is available to provide any insight into what SBT feed upon or any impacts their removal may have on these species but some information may be identified as part of the ERA process that will provide guidance to AFMA.

Little information is available but available information suggests that purse seining poses no significant risk to the physical habitat or water quality. Feeding SBT in the tow cages (if it occurs routinely) as they are brought into the area in which the ‘grow out’ cages are located may have some impact on water quality. At worst, this is expected to be a localised event with no significant or long-term impact to the ecosystem as a whole. The feeding regimes in the ‘grow out’ ponds and any resultant pollution are beyond the scope of this assessment.

### **4.5.3 Management response**

The removal of almost all of the SBT, one of the top-level predators in the ecosystem, is the single most significant impact on the ecosystem attributable to the fishery. While the key management actions internationally (including the establishment of the CCSBT's TAC, national allocations, the development of the MP) and nationally address the management of the take of SBT they do not specifically address the impact of such a high level of removal.

DEH agrees with AFMA that the programs currently underway, including the ERA being conducted by CSIRO and ongoing commitment to risk assessments in management, will improve knowledge of the level of risk the fishery imposes on the broader ecosystem and help to provide the appropriate level of information required to determine if specific ecosystem indicators are necessary. DEH believes that this, together with the formal data collection framework being implemented, should prevent/ mitigate or avoid fishery operations that are identified as causing significant damage to the environment.

DEH notes AFMA has committed to progress the development of management responses should the risk assessments identify appropriate ecosystem indicators.

DEH agrees with AFMA that the management response is appropriate because:

- the fishery's operations have a low direct impact on other species, other than the target species, or with the environment more generally (apart from the effect of the removal of a top level predator);
- AFMA is committed to an ongoing program of risk assessment, and AFMA has the capacity to implement management to prevent further impact resulting from a particular activity; and
- internationally AFMA is obliged to introduce any management determined by the CCSBT, based on relevant outcomes from the ERSWG.

### **4.5.4 Conclusion**

DEH believes that the purse seine sector of the fishery is managed in a manner that presents no significant risk to the environment (other than that potentially arising from the removal a top-level predator) and is conducted in a manner that minimises any direct impact on the ecosystem. DEH considers the approach being adopted by AFMA is appropriate, given the current level of knowledge of ecosystem impacts attributable to fishing activities and focus on a broader system-based approach to management.

DEH notes that AFMA is undertaking and relying on the outcomes of the CSIRO ERA project to identify key risks to the environment attributable to the fishery and that this is to be underpinned by the collection of relevant information through, in part, the observer program.

DEH is satisfied that the fishery is conducted in a sufficiently precautionary manner to minimise the impact of fishing operations on the ecosystem generally and particularly when the CCSBT is fully functional and clearly working towards the rebuilding of the SBT stocks.

## Acronyms in use in the Southern Bluefin Tuna Fishery Assessment Report

AFFA	Agriculture, Fisheries and Forestry - Australia
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
ASIC	Australian Seafood Industry Council
BAP	Bycatch Action Plan
BRS	Bureau of Rural Sciences
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CITES	Convention on International Trade in Endangered Species
COFI	FAO Committee on Fisheries
CoPs	Conference of the Parties to CITES
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Department of Agriculture, Fisheries and Forestry (formerly AFFA)
DEH	Department of the Environment and Heritage (formerly EA)
EA	Environment Australia
EEZ	Exclusive Economic Zone
EFP	Experimental fishing program
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ERA	Ecological Risk Assessment project being conducted by the CSIRO
ERSWG	Ecologically Related Species Working Group of the CCSBT
ETBF	Eastern Tuna and Billfish Fishery
ESP Act	Endangered Species Protection Act 1992
FAG	Fishery Assessment Group of the CCSBT
FM Act	Fisheries Management Act 1991
ITLOS	International Tribunal on the Law of the Sea
ITQ	Individual Transferable Quota
MAC	Management Advisory Committee
MP	Management Procedure developed by the CCSBT
OCS	Offshore Constitutional Settlement
NSW	New South Wales
Purse Seine Tuna BAP	The Purse Seine and Live Fish BAP
RFMO	Regional Management Organisation
SAG	Stock Assessment Group of the CCSBT
SBT	Southern Bluefin Tuna
SBT Fishery	Southern Bluefin Tuna Fishery
SBTMAC	Southern Bluefin Tuna Management Advisory Committee
SBT Management Plan	Southern Bluefin Tuna Management Plan 1995 (and as amended by the Southern Bluefin Tuna Fishery Management Amendment Plan 2004)
SC	Scientific Committee of the CCSBT
SFR	Statutory Fishing Rights
SRP	Scientific Research Program of the CCSBT
SWTBF	Southern and Western Tuna and Billfish Fishery
TAC	Total Allowable Catch
TIS	Trade Information Scheme of the CCSBT
UNCLOS	United Nations Convention on the Law of the Sea
WTO	Wildlife Trade Operation approved under 303FN of the EPBC Act