Seafood Risk Assessment

New Zealand Southern Bluefin Tuna Fishery

Prepared for the OpenSeas Programme

Assessment Summary

New Zealand Southern Bluefin Tuna Fishery	Unit/s of Assessment:	
	Product Name/s:	***Southern Bluefin Tuna***
	Species:	*Thunnus maccoyii*
	Stock:	STN1 (global stock)
	Gear type:	Pelagic longline
	Year of Assessment:	2017

Fishery Overview

This summary is adapted from MPI (2015a):

The Japanese distant water longline fleet began fishing for southern bluefin tuna (STN) in the New Zealand region in the late 1950s and continued after the declaration of New Zealand's EEZ in 1979 under a series of bilateral access agreements until 1995. Longlining for STN was introduced to the domestic fishery in the late 1980s and since 1991 surface longlines have been the predominant gear used to target STN in the domestic fishery with 96% of all days fished using this method and only 4% using hand line (< 1% used trolling).

Southern bluefin tuna was introduced into the QMS on 1 October 2004 under a single QMA, STN 1 (Figure 1). Figure 2 shows historical landings and TACC values for the domestic STN fishery between 1985-86 and 2013-14. Longline fishing effort is distributed along the east coast of the North Island and the south west coast of the South Island. The west coast South Island fishery predominantly targets STN, whereas the east coast of the North Island targets a range of species including bigeye, swordfish, and STN.

Figure 1: Management area for the New Zealand southern bluefin tuna fishery.

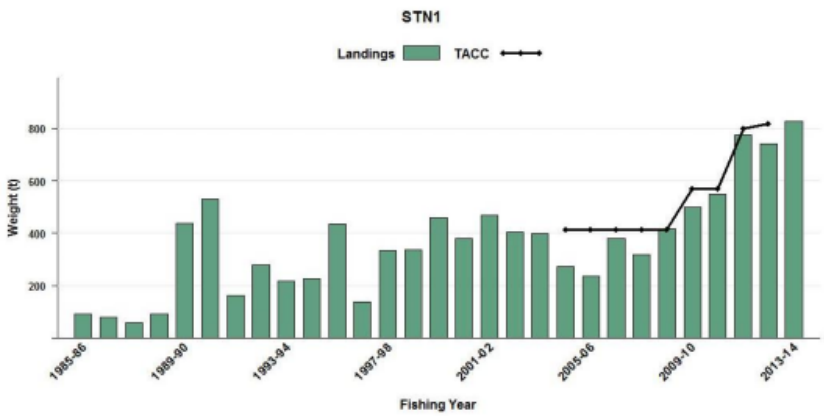

Figure 2: Catch history and TAC for the New Zealand southern bluefin tuna fishery between 1985-6 and 2013-4 in New Zealand waters.

Management of STN throughout its range is the responsibility of the Commission for Conservation of Southern Bluefin Tuna (CCSBT) of which New Zealand is a founding member. Current members of the CCSBT also include Australia, Japan, the Republic of Korea, the Fishing Entity of Taiwan and Indonesia. The Republic of South Africa, the European Community, and the Philippines have Cooperating Non-member status. Determination of the global TAC and provision of a national allocation to New Zealand is carried out by the CCSBT.

Southern bluefin tuna are targeted by recreational charter vessels and private anglers, although catches are small in comparison to commercial catches. It is not known whether Maori targeted STN prior to European settlement.

Scoring

Performance Indicator	STN1
COMPONENT 1	
1A: Stock Status	HIGH RISK
1B: Harvest Strategy	MEDIUM RISK
1C: Information and Assessment	PRECAUTIONARY HIGH RISK
OVERALL	HIGH RISK
COMPONENT 2	
2A: Non-target Species	MEDIUM RISK
2B: ETP Species	LOW RISK
2C: Habitats	LOW RISK
2D: Ecosystems	MEDIUM RISK
OVERALL	MEDIUM RISK
COMPONENT 3	
3A: Governance and Policy	LOW RISK
3B: Fishery-specific Management System	LOW RISK
OVERALL	LOW RISK

Summary of main issues

- The most recent assessment estimated the stock to be at a very low state, estimated to be 9% of the initial spawning stock biomass (SSB), and around 38% of the SSB capable of producing maximum sustainable yield (SSB_{MSY});
- CCSBT members have agreed a management procedure designed to rebuild the stock to an interim target reference point of 20% of the original spawning stock biomass by 2035 with 70% probability. The main uncertainty in the achievement of the interim target is the extent of unaccounted mortality (e.g. recreational catches, unreported catch by members and non-members, mortalities of releases, and discarding of fish).
- There is uncertainty over the status of some bycatch species taken in the fishery, although there are measures in place which are expected to ensure stocks remain above the point of recruitment impairment.

Outlook

STN1

Component	Outlook	Comments
Target species	Improving	Notwithstanding uncertainties around unaccounted catch, the Management Procedure adopted by CCSBT in 2011 should rebuild the SB to 20% SB_0 by 2035 with a 70% probability.
Environmental impact of fishing	Stable	No major changes to existing P2 arrangements are expected, albeit growing stock size should progressively mitigate any potential ecosystem impacts resulting from low stock size.
Management system	Improving	No major changes to existing P3 arrangements in New Zealand are expected, although at the stock-wide level CCSBT has introduced a range of initiatives in recent years to strengthen MCS arrangements.

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Disclaimer

This assessment has been undertaken in a limited timeframe based on publicly available information. Although all reasonable efforts have been made to ensure the quality of the report, neither this company nor the assessment' s authors warrant that the information contained in this assessment is free from errors or omissions. To the maximum extent permitted by law, equity or statute, neither this company nor the authors accept any form of liability, it contractual, tortious or otherwise, for the contents of this report or for any consequences arising from misuse or any reliance placed on it.

Background

This report sets out the results of an assessment against a seafood risk assessment procedure, originally developed for Coles Supermarkets Australia by MRAG Asia Pacific. The aim of the procedure is to allow for the rapid screening of uncertified source fisheries to identify major sustainability problems, and to assist seafood buyers in procuring seafood from fisheries that are relatively well-managed and have lower relative risk to the aquatic environment. While it uses elements from the GSSI benchmarked MSC Fishery Standard version 2.0, the framework is not a duplicate of it nor a substitute for it. The methodology used to apply the framework differs substantially from an MSC Certification. Consequently, any claim made about the rating of the fishery based on this assessment should not make any reference to the MSC or any other third party scheme.

This report is a "live" document that will be reviewed and updated on an annual basis.

Methods

Risk Assessment

Detailed methodology for the risk assessment procedure is found in MRAG AP (2015). The following provides a brief summary of the method as it relates to the information provided in this report.

Assessments are undertaken according to a 'unit of assessment' (UoA). The UoA is a combination of three main components: (i) the target species and stock; (ii) the gear type used by the fishery; and (iii) the management system under which the UoA operates.

Each UoA is assessed against three components:

1. Target fish stocks;
2. Environmental impact of fishing; and
3. Management system.

Each component has a number of performance indicators (PIs). In turn, each PI has associated criteria, scoring issues (SIs) and scoring guideposts (SGs). For each UoA, each PI is assigned one of the following scores, according to how well the fishery performs against the SGs:

- Low risk;
- Medium risk;
- Precautionary high risk; or
- High risk

Scores at the PI level are determined by the aggregate of the SI scores. For example, if there are five SIs in a PI and three of them are scored low risk with two medium risk, the overall PI score is low risk. If three are medium risk and two are low risk, the overall PI score is medium risk. If there are an equal number of low risk and medium risk SI scores, the PI is scored medium risk. If any SI scores precautionary high risk, the PI scores precautionary high risk. If any SI scores high risk, the PI scores high risk.

For this assessment, each component has also been given an overall risk score based on the scores of the PIs. Overall risk scores are either low, medium or high. The overall component risk score is low where the majority of PI risk scores are low. The overall risk score is high where any one PI is scored high risk, or two or more PIs score precautionary high risk. The overall risk score is medium for all other combinations (e.g. equal number of medium/low risk PI scores; majority medium PI scores; one PHR score, others low/medium).

Outlook

For each UoA, an assessment of the future 'outlook' is provided against each component. Assessments are essentially a qualitative judgement of the assessor based on the likely future performance of the fishery against the relevant risk assessment criteria over the short to medium term (0-3 years). Assessments are based on the available information for the UoA and take into account any known management changes. Outlook scores are provided for information only and do not influence current or future risk scoring.

Table 1: Outlook scoring categories.

Outlook score	Guidance
Improving	The performance of the UoA is expected to improve against the relevant risk assessment criteria.
Stable	The performance of the UoA is expected to remain generally stable against the relevant risk assessment criteria.
Uncertain	The likely performance of the UoA against the relevant risk assessment criteria is uncertain.
Declining	The performance of the UoA is expected to decline against the relevant risk assessment criteria.

Information sources

Information to support scoring is obtained from publicly available sources, unless otherwise specified. Scores will be assigned on the basis of the objective evidence available to the assessor. A brief justification is provided to accompany the score for each PI.

Assessors will gather publicly available information as necessary to complete or update a PI. Information sources may include information gathered from the internet, fishery management agencies, scientific organisations or other sources.

Assessment Results

COMPONENT 1: Target fish stocks

1A: Stock Status

CRITERIA: (i)The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing.

(a) Stock Status

STN1 **HIGH RISK**

MPI (2015a) report that "*Southern bluefin tuna consist of a single stock primarily distributed between 30ºS and 45ºS, which is only known to spawn in the Indian Ocean south of Java. Adults are broadly distributed in the South Atlantic, Indian and western South Pacific Oceans, especially in temperate latitudes while juveniles occur along the continental shelf of Western and South Australia and in high seas areas of the Indian Ocean. Southern bluefin tuna caught in the New Zealand EEZ appear to represent the easternmost extent of a stock whose centre is in the Indian Ocean.*"

Determination of the status of the southern bluefin tuna stock is undertaken by the CCSBT Scientific Committee (CCSBT-SC). The stock assessment was updated in 2014 for the first time since 2011.

In 2014, the stock remained at a very low state estimated to be 9% of the initial spawning stock biomass (SSB), and around 38% of the SSB capable of producing maximum sustainable yield (SSB_{MSY}) (CCSBT, 2014). However, there was some improvement since the 2011 stock assessment and fishing mortality is below the level associated with MSY. The biomass of 10+ year old fish relative to initial is estimated to be 7%, which is up from the estimate of 5% in 2011.

Given the very low state of the stock, there is little evidence that the stock is above the point of recruitment impairment (PRI) and we have scored this SI high risk.

Notwithstanding that, we note that there have been a number of potentially positive developments in relation to stock status. Recent abundance estimates from a close-kin genetics project (Bravington et al. 2014), as well as updates to the Operating Model incorporating the close-kin data, suggest that the current spawning biomass may be higher than was previously estimated (CCSBT, 2014). Moreover, CCSBT (2015) reported signs of higher recruitment in recent years and some consistent positive trends in the longline CPUE, albeit the CCSBT Extended Scientific Committee (ESC) noted that increased recruitment is of itself not necessarily indicative of increased spawning stock biomass.

The next full stock assessment of STN is expected during 2017.

PI SCORE	HIGH RISK

1B: Harvest Strategy

CRITERIA: (i) There is a robust and precautionary harvest strategy in place.

(a) Harvest Strategy

MEDIUM RISK

At the global level, harvest controls for the STN stock are developed and agreed by the CCSBT. A global total allowable catch (TAC) is agreed, with each member's national allocation determined in accordance with the *Resolution on the Allocation of the Global Total Allowable Catch* (CCSBT, 2011a). Members are responsible for ensuring their flagged vessels remain within national allocations. At the domestic level, catches within New Zealand's national allocation are controlled and monitored through the QMS.

The main components of the current TAC-setting process are set out in a Management Procedure (MP) known as the 'Bali Procedure', adopted by the Extended Commission (EC) in October, 2011 (CCSBT, 2013). These include:

- The MP is to be tuned to a 70% probability of rebuilding the stock to the interim rebuilding target reference point of 20% of the original spawning stock biomass by 2035;
- The minimum TAC change (increase or decrease) will be 100 tonnes;
- The maximum TAC change (increase or decrease) will be 3,000 tonnes;
- The TAC will be set for three-year periods, subject to paragraph 7 of CCSBT's *Resolution on the Adoption of a Management Procedure*; and
- The national allocation of the TAC within each three-year period will be apportioned according to CCSBT's *Resolution on the Allocation of the Global Total Allowable Catch*.

Under the MP, the effective catch limit for Members and Cooperating Non-members was 12,449t in 2014, and 14,647 t /yr for the years 2015-2017. The 2014 stock assessment estimated the current TAC would achieve the interim rebuilding target with a slightly greater probability than 70%. The fishing mortality rate in 2013 was estimated at around 66% of F_{MSY}.

While the harvest strategy is responsive to the state of the stock and all of the elements work together to achieve management targets, the current procedure does not meet the 80% probability threshold for the stock to be above PRI and fluctuating at or around

MSY. The most recent base case stock projections suggest the MP will achieve the interim target (20%) which is close to the estimated B_{MSY} (~24% B_0; CCSBT, 2014) with 70% probability and accordingly we have scored the SI medium risk.

Nevertheless, we note that unaccounted fishing mortality (UAM) from all sources is uncertain, and there are indications it may be substantial (Patterson and Stobutski, 2016). The potential sources of UAM included recreational catches, unreported catch by members and non-members, mortalities of releases, and discarding of fish. The ESC is concerned about the implications of UAM and noted that for some scenarios there was a substantial impact on the probability of achieving the rebuilding target by 2035 (CCSBT, 2014). The impacts of UAM and the trajectory of stock recovery should be examined in future assessments in light of the 2017 stock assessment results.

(b) Shark-finning

NA

CRITERIA: (ii) There are well defined and effective harvest control rules (HCRs) and tools in place.

(a) HCR Design and application **LOW RISK**

The Bali Procedure sets out a well-defined mathematical harvest control rule to underpin global TAC setting which serves to reduce the exploitation rate as PRI is approached (CCSBT, 2013). The HCR is designed to recover the stock to an interim target close to B_{MSY} and has been extensively simulation tested to explore vulnerability to uncertainty (e.g. CCSBT, 2011b).

PI SCORE	MEDIUM RISK

1C: Information and Assessment

CRITERIA: (i) Relevant information is collected to support the harvest strategy.

(a) Range of information **LOW RISK**

Sufficient relevant information on stock structure, productivity and fleet composition is available to support the harvest strategy. Stock structure is broadly well known, with STN forming a single stock primarily distributed between 30ºS and 45ºS, although tagging work continues in order to better understand stock dynamics (MPI, 2015a). The fisheries biology of the species is relatively well studied (e.g. MPI, 2015a). The structure and composition of the main fleets are well known.

(b) Monitoring and comprehensiveness **PRECAUTIONARY HIGH RISK**

Stock abundance is regularly monitored through periodic stock assessments (e.g. CCSBT, 2014), and removals from the stock by the main fishing fleets are relatively well documented (notwithstanding some historical discrepancies around Japanese market data and reviews of Australian farm information) (CCSBT, 2014; 2016). The main uncertainty is around UAM and the extent to which it might influence the capacity of the stock to rebuild to the interim targets by 2035 (CCSBT, 2014; 2015; 2016). Some preliminary evidence indicates that UAM may be significant (e.g. CCSBT, 2015) and stock projections indicate that some UAM scenarios have a substantial impact on the probability of the stock reaching the interim rebuilding target under the existing MP (CCSBT, 2014). Initial scenarios to explore sensitivity in the stock assessment to UAM were developed in 2014 and will be updated in the 2017 assessment, based on any new data available. The uncertainty associated with UAM led Patterson and Stobutski (2016) to conclude that it was 'uncertain' whether overfishing was occurring on the STN stock. MPI (2016a) conclude that it is unlikely (<40%) that overfishing is occurring.

CRITERIA: (ii) There is an adequate assessment of the stock status.

(a) Stock assessment **LOW RISK**

The most recent assessment (2014) undertaken by the CCSBT takes into account reported catch from all international jurisdictions (CCSBT, 2014). It also examines the sensitivity of the results to alternate estimates of unaccounted fishing mortalities. The assessment is appropriate for the stock and estimates status relative to a range of reference points which can be estimated.

(b) Uncertainty and Peer review **LOW RISK**

The current stock assessment operating model (OM) takes multiple sources of uncertainty into account by testing numerous alternative 'sensitivity scenarios', as well as running large numbers of simulations to estimate the probability distribution of results (CCSBT, 2014). Outcomes are peer reviewed through the CCSBT Scientific Committee process.

PI SCORE	PRECAUTIONARY HIGH RISK

COMPONENT 2: Environmental impact of fishing

2A: Other Species

CRITERIA: (i) The UoA aims to maintain other species above the point where recruitment would be impaired (PRI) and does not hinder recovery of other species if they are below the PRI.

(a) Main other species stock status

MEDIUM RISK

The intent of this scoring issue is to examine the impact of the UoA on 'main' other species taken while harvesting the target species. 'Main' is defined as any species which comprises >5% of the total catch (retained species + discards) by weight in the UoA, or >2% if it is a 'less resilient' species. The aim is to maintain other species above the point where recruitment would be impaired and ensure that, for species below PRI, there are effective measures in place to ensure the UoA does not hinder recovery and rebuilding.

For longline vessels targeting STN, the total average catch composition of retained species reported under QMS is summarised in Figure 3. Albacore tuna (ALB) and blue shark (BWS) comprise about 20% of the overall retained catch each, while broadbill swordfish comprises around 13% (Bentley et al, 2013). No other species accounts for >5% of the catch and would therefore qualify as a 'main' other species.

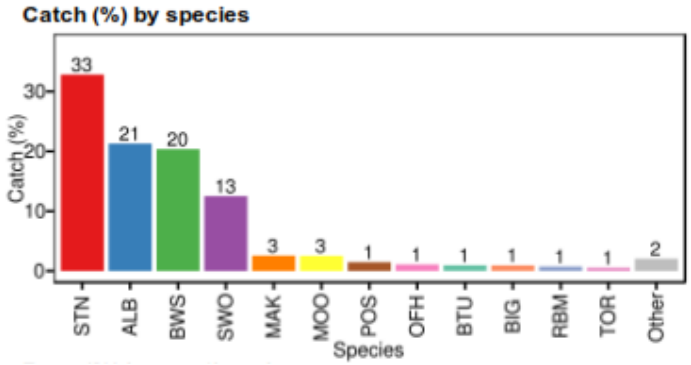

Figure 3: Catch composition for the surface longline fishery targeting southern bluefin tuna in New Zealand waters between 1990 and 2014 (Bentley, et al, 2013)

For discards, the best available information comes from independent observer data. MPI (2015a) presents catch compositions (of species other than STN) estimated from observer estimates and total fishing effort for domestic and charter vessel longline sets where STN was either targeted or caught during the 2010 calendar year. Blue shark accounts for the majority of the non-STN catch (59%), with albacore tuna (14%) and Ray's bream (8%) the only other species to meet the 5% threshold to be considered a 'main' other species.

Although neither broadbill swordfish or Ray's bream may constitute >5% of the catch where all retained and discarded species are considered together, for the sake of conservatism we have assessed them both here as main other species (along with blue shark and albacore tuna).

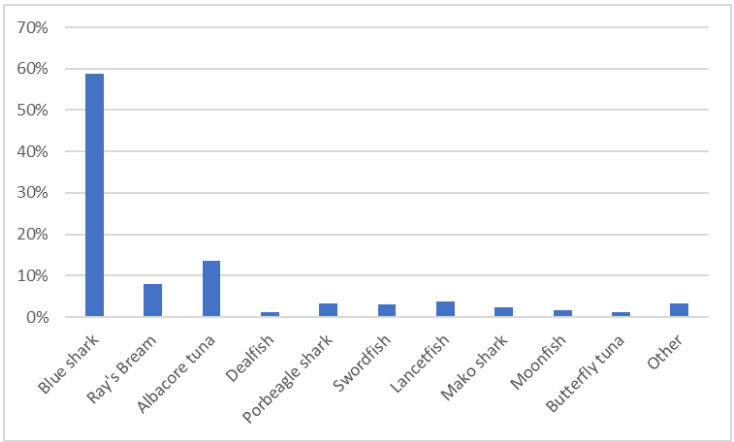

Figure 4: Scaled observer estimates of catch composition from combined domestic and charter longline sets where southern bluefin tuna was either targeted or caught during the 2010 calendar year (data source: MPI, 2015a)

Blue shark

Tagging data suggest blue sharks in the South Pacific constitute a single biological stock, although whether this is part of a single larger Southern Hemisphere stock is unclear (MPI, 2014). Catches of blue shark in New Zealand surface longline fisheries were relatively stable between ~600-1,400t between 1999-00 and 2012-13, although declined to 117t in 2013-14. MPI (2014) concluded that the status of the stock in relation to both target and limit reference points is unknown, as is its status in relation to overfishing limits. Nevertheless, standardised CPUEs for the New Zealand component of the stock have risen in the period 2005 to 2013 (MPI, 2014) and (based on an indicator analysis) Francis et al (2014) concluded that "there is no evidence that the stocks of blue, porbeagle and mako sharks in New Zealand waters have been adversely affected by fishing at the levels experienced since 2005, and that there are good signs that they are increasing". We also note that blue shark was assessed as part of an ecological risk assessment of WCPO longline fisheries in 2007 (Kirby and Hobday, 2007). Based on its productivity and susceptibility to capture, the species was rated medium risk to both shallow and deep set longline fisheries. This is also appears broadly consistent with a Level 1 (SICA) risk assessment undertaken for New Zealand sharks and rays, which rated blue shark a risk score of 12 out of a possible 36 (Ford et al, 2015). An

attempted stock assessment of the South Pacific stock in 2016 was inconclusive (Takeuchi et al, 2016). While it remains uncertain whether blue shark are above PRI, there is some basis to conclude that there are measures in place to ensure the UoA doesn't hinder recovery. These include catch limits under the QMS, requirements to report catch, periodic standardised CPUE-based analyses of stock trends and cooperation with regional (SPC) efforts to better assess stock status. The most recent plenary assessment of the blue shark stock (2014) also reported that biomass appeared to be increasing and that the stock was likely to increase if effort remained at current levels. Accordingly, we have scored blue shark medium risk. Francis et al (2014) note that conclusive determinations of stock status will require regional (i.e. South Pacific) stock assessments.

Albacore tuna

The most recent stock assessment of the south Pacific albacore stock was undertaken in 2015 (Harley et al, 2015). The assessment concluded that recent levels of spawning potential are most likely above the level which will support the MSY (SB_{2013} = 40%$SB_{F=0}$), and above 20%$SB_{F=0}$.

Ray's bream

Ray's bream probably come from a wide-ranging single stock found throughout the South Pacific Ocean and southern Tasman Sea (MPI, 2015a). No assessment has been undertaken, and the position of the stock against default target and limit reference points is unknown. MPI (2015a) report that 11% of the Ray's bream landings in New Zealand come from the Southern bluefin target surface longline fishery. The species was assessed as part of an ecological risk assessment of WCPO longline fisheries (Kirby and Hobday, 2007). Based on its productivity and susceptibility to capture, Ray's bream was rated medium risk to both shallow and deep set longline fisheries. Accordingly, we have scored it medium risk here (noting also that some measures are in place through catch limits under the QMS and periodic assessment of trends in catches through the Plenary process), however we note the evidence base is limited.

Broadbill swordfish

Swordfish found in the New Zealand EEZ are part of a much larger stock that spawns in the tropical central to western Pacific Ocean (MPI, 2015a). The most recent assessment of the stock was undertaken in 2013 (Davies et al, 2013). The assessment estimated 2013 levels of total biomass at between 44 – 68 %B_0 and spawning biomass 27 - 55%B_0 (range of key model runs). The assessment found that outputs were sensitive to growth parameters used, though under neither of the main growth schedules used (Australian and Hawaiian) was the stock estimated to be in an overfished state (Davies et al, 2013). Under both schedules the stock was estimated to be either at, or above, levels capable of producing MSY.

CRITERIA: (ii) There is a strategy in place that is designed to maintain or to not hinder rebuilding of other species; and the UoA regularly reviews and implements

(a) Management strategy in place MEDIUM RISK

The strategy to manage main other species includes:

- Control on catch and effort through TACs and ITQs on the target species;
- Monitoring through logbooks and catch returns;
- Monitoring through VMS and observers
- A prohibition on shark finning, and in the case of blue shark a requirement to land product with fins naturally attached; and
- Periodic assessments through the NZ Plenary process or external agencies (e.g. for WCPFC managed stocks).

For albacore and swordfish, these measures are likely to be considered at least a partial strategy to manage main other species within their biological limits. For blue shark and Ray's bream, the evidence is less conclusive. Both species were assessed as medium risk as part of a Productivity-Susceptibility analysis of the impact of wider WCPO longline fishery (Kirby and Hobday, 2007). Given the NZ STN fishery is likely to contribute only a very small proportion of the overall WCPO catch of both species, the marginal impacts of the UoA may be minimal overall. Nevertheless, it is not clear that the current strategy is expected to maintain both stocks at levels highly likely to be above PRI and we have scored this SI medium risk.

(b) Management strategy evaluation MEDIUM RISK

Stock assessments for albacore and broadbill provide an objective basis for confidence the strategy will work. The outcomes of the Francis et al (2014) indicator based assessment of blue sharks provide an objective basis for confidence that the measures will work for this species. The outcomes of the WCPO longline ecological risk assessment (Kirby and Hobday, 2007) suggest that the existing measures are likely to work for Ray's bream based on plausible argument.

(c) Shark-finning LOW RISK

Blue shark is the most numerous non-target species taken in the STN longline fishery (MPI, 2015a). Shark finning has been prohibited under New Zealand law since 1 October 2014[1]. Blue sharks are required to be landed with fins naturally attached.

CRITERIA: (iii) Information on the nature and amount of other species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage other species.

(a) Information MEDIUM RISK

Quantitative information is available and adequate to assess the impact of the UoA on albacore and swordfish stocks. While some quantitative information is available on catches of blue shark and Ray's bream, it is not yet sufficient to assess the impact of the UoA

[1] http://www.doc.govt.nz/news/media-releases/2014/shark-finning-to-be-banned-from-1-october/

on these species with respect to status. The available quantitative and qualitative information is however sufficient to support measures to manage the impact of the UoA on these species.

PI SCORE	MEDIUM RISK

2B: Endangered Threatened and/or Protected (ETP) Species

CRITERIA: (i) The UoA meets national and international requirements for protection of ETP species.
The UoA does not hinder recovery of ETP species.

(a) Effects of the UoA on populations/stocks — LOW RISK

The main potential ETP species interactions in the NZ STN fishery is with seabirds, sea turtles and marine mammals.

Seabirds

Between 2002–03 and 2014–15, there were 651 observed captures of all birds in southern bluefin longline fisheries (Abraham and Thompson, 2015). Observed captures were of southern Buller's albatross (373), New Zealand white-capped albatross (126), grey petrel (41), Campbell black-browed albatross (28), white-chinned petrel (24), Gibson's albatross (10), Westland petrel (8), wandering albatrosses (6), southern royal albatross (6), Antipodean albatross (6), black-browed albatross (5), Salvin's albatross (4), sooty shearwater (3), southern giant petrel (2), large seabirds (2), Cape petrels (2), wandering albatross (1), smaller albatrosses (1), northern Buller's albatross (1), light-mantled sooty albatross (1), and great albatrosses (1).

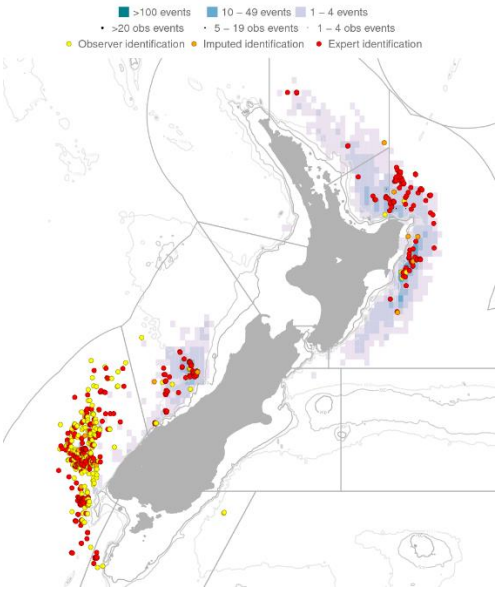

Figure 5: Map of fishing effort and observed seabird captures in southern bluefin tuna longline fisheries between 2002-03 and 2014-15 (Source: Abraham and Thompson, 2015)

Risks to sea birds associated with New Zealand's commercial fisheries have been assessed through a hierarchical series of risk assessments (e.g. Rowe, 2013, Richard and Abraham, 2013; Richard and Abraham, 2015, Richard and Abraham, in prep.; in MPI, 2016a). The most recent iteration derives for each taxon a risk ratio, which is an estimate of annual potential fatalities (APF) across trawl and longline fisheries relative to the Population Sustainability Threshold, PST (an analogue of the Potential Biological Removals, PBR, approach) (Richard & Abraham in prep; in MPI, 2016a). This index represents the amount of human-induced mortality a population can sustain without compromising its ability to achieve and maintain a population size above its maximum net productivity (MNPL) or to achieve rapid recovery from a depleted state. The management criterion used for developing the seabird risk assessment was that seabird populations should have a 95% probability of being above half the carrying capacity after 200 years, in the presence of ongoing fishing related mortalities, and environmental and demographic stochasticity (Richard & Abraham, 2013).

In the most recent assessment, only one species of seabird, black petrel (1.15), had a median risk ratio higher than 1 (or upper 95% confidence limit higher than 2) taking into account fishing related mortality across all trawl and longline fisheries (MPI, 2016a). For all other species, current rates of fishing related mortality were not expected to hinder the achievement of management targets (i.e. the risk ratio was <1). Estimated captures of black petrel in the Southern bluefin tuna longline sector are very low (1-2 birds per year since 2004-005; Abraham and Thompson, 2015).

Of the other seabirds observed to be captured in the southern bluefin tuna longline fisheries, southern Buller's albatross, New Zealand white-capped albatross, and grey petrel had median risk ratios of 0.39 (95% c.i. 0.22 – 0.66), 0.35 (95% c.i. 0.21 – 0.58), 0.04 (0.02 – 0.08) respectively (Richard and Abraham, in prep.; in MPI, 2016a). Of the two albatross species, surface longline fisheries accounted for around half the estimated captures across all New Zealand commercial fisheries in recent years for southern Buller's albatross and a relatively small fraction of total estimated captures for New Zealand white-capped albatross (MPI, 2016a). Accordingly, the direct effects of the inshore trawl fisheries appear highly unlikely to hinder recovery of ETP seabird species.

Sea turtles

MPI (2016a) report that between 2002–03 and 2013–14, there were three observed captures of sea turtles in southern bluefin longline fisheries (two leatherback turtles; 1 green turtle). Observer recordings documented all sea turtles as captured and released alive. Sea turtle captures for this fishery have only been observed off the east coast of the North Island. Based on this evidence it is highly unlikely that the fishery is hindering recovery of sea turtles.

Marine mammals

Cetaceans - MPI (2016a) report that "*between 2002–03 and 2013–14, there were five observed captures of whales and dolphins in southern bluefin longline fisheries. Observed captures included two long-finned pilot whales and three unidentified cetaceans (Abraham and Thompson 2011). All captured animals recorded were documented as being caught and released alive (Thompson & Abraham 2010), with catches occurring in the east coast of the North Island, west coast of the South Island, Fiordland, and Bay of Plenty*."

Fur seals – MPI (2016a) notes that:

- *"captures on longlines occur when the fur seals attempt to feed on the bait and fish catch during hauling. Most New Zealand fur seals are released alive, typically with a hook and short snood or trace still attached";* and
- *"New Zealand fur seal captures in surface longline fisheries have been generally observed in waters south and west of Fiordland, but also in the Bay of Plenty-East Cape area. Estimated numbers range from 127 (95% CI 121–133) in 1998–99 to 25 (14–39) in 2007–08 during southern bluefin tuna fishing by chartered and domestic vessels (Abraham et al 2010). These capture rates include animals that are released alive (100% of observed surface longline capture in 2008–09; Thompson & Abraham 2010). Capture rates in 2011–12 and 2013-14 were higher than they were in the early 2000s".*

New Zealand fur seals are the most common seals in New Zealand and are listed as 'least concern', with an increasing population trend. There are no national or international limits on incidental captures of fur seals. Although capture rates have increased slightly in recent years in STN longline fisheries, it is appears highly likely that current rates of capture are not hindering recovery of the species.

CRITERIA: (ii) The UoA has in place precautionary management strategies designed to:

- meet national and international requirements; and
- ensure the UoA does not hinder recovery of ETP species.

Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species

(a) Management strategy in place **LOW RISK**

The strategic framework for managing protected species interactions in New Zealand fisheries currently includes:

- Legislation: the Fisheries Act, Wildlife Act, and Marine Mammals Protection Act
- The National Plan of Action—Seabirds (MPI 2013a)
- The National Plan of Action – Sharks (MPI 2013b)
- The Marine Conservation Services Programme

When impacts of fishing are such that they are causing an adverse effect on protected species, measures are to be taken pursuant to s 15 of the Fisheries Act to avoid, remedy or mitigate that effect. If a Population Management Plan has been approved by the Minister of Conservation under either the Wildlife Act 1953 or the Marine Mammals Protection Act 1978 the Minister responsible for fisheries must give effect to those plans when managing the effects of fishing.

The Department of Conservation and Ministry for Primary Industries also contract research, including:

- population monitoring protected species;
- research relating to fishing effects on protected species;
- research on measures to mitigate the adverse effects of commercial fishing on protected species.

For surface longline fisheries specifically, MPI (2016a) reports that in 2007 a notice was implemented under s11 of the Fisheries Act 1996 to require surface longline vessels to set only during the hours of darkness and use a tori line (bird scarer) when setting. This notice was amended in 2008 to add the option of line weighting and tori line use if setting during the day. In 2011 the notices were combined under a new regulation (Regulation 58A of the Fisheries (Commercial Fishing) Regulations 2001).

Interactions between fisheries and ETP species are monitored through the NZ Observer Programme and vessel reporting. Observer coverage has ranged from 30-60% of hooks set since 2002-03 (Abraham and Thompson, 2015). Periodic risk assessments of key ETP species groups assess impacts in relation to key population parameters (e.g. Richard and Abraham, 2015; Richard and Abraham, in prep.; in MPI, 2016a).

Overall, policy frameworks and their implementation through a series of measures explicitly designed to manage the impact of fisheries on ETP species comprise a strategy which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.

(b) Management strategy implementation **LOW RISK**

There is an objective basis for confidence that the above-described strategy will work based on information directly about the fishery and species involved. Interactions between the STN fishery and protected sea birds, sea turtles and marine mammals are monitored through fisher and observer reporting, as well as periodic species-specific risk assessments (e.g. seabirds – Richard and Abraham, in prep; in MPI, 2016a). Highest risks appear to be with seabirds, albeit estimated annual potential fatalities in the STN surface longline fishery appear to be below the PBR for all species.

CRITERIA: (iii) Relevant information is collected to support the management of UoA impacts on ETP species, including:

- information for the development of the management strategy;
- information to assess the effectiveness of the
- management strategy; and
- information to determine the outcome status of ETP species.

(a) Information **LOW RISK**

Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for all ETP species groups. This information includes interactions between the fishery and protected species from observer data and periodic risk assessments (e.g. Richard and Abraham, in prep; in MPI, 2016a). The MPI protected species bycatch database contains good records and analysis of fisheries interactions by gear, vessel size, and ETP bird, mammal and reptile species across NZ commercial fisheries (MRAG Americas, 2016).

PI SCORE	LOW RISK

2C: Habitats

CRITERIA: (i) The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area(s) covered by the governance body(s) responsible for fisheries management

(a) Habitat status **LOW RISK**

Examples of "serious or irreversible harm" to habitats include the loss (extinction) of habitat types, depletion of key habitat forming species or associated species to the extent that they meet criteria for high risk of extinction, and significant alteration of habitat cover/mosaic that causes major change in the structure or diversity of the associated species assemblages (MSC, 2014). Further, MSC specifies that if a habitat extends beyond the area fished then the full range of the habitat should be considered when evaluating the effects of the fishery. The 'full range' of a habitat shall include areas that may be spatially disconnected from the area affected by the fishery and may include both pristine areas and areas affected by other fisheries.

Habitat impacts from pelagic longline fishing are negligible.

CRITERIA: (ii) There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.

(a) Management strategy in place **LOW RISK**

The main strategy in place to limit habitat impacts from the fishery is the use of pelagic longline gear. Additional measures are not required.

(b) Management strategy implementation **LOW RISK**

The pelagic nature of the fishing gear, used in open oceanic waters, provides an objective basis for confidence that the impacts will be negligible.

CRITERIA: (iii) Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.

(a) Information quality **LOW RISK**

Given the nature of the fishery, information is known at a level of detail relevant to the scale and intensity of the UoA.

(b) Information and monitoring adequacy **LOW RISK**

Information is adequate to allow for the identification of the main impacts, and there is reliable information on the spatial extent of the fishery.

PI SCORE	LOW RISK

2D: Ecosystems

CRITERIA: (i) The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.

(i)(a) Ecosystem Status MEDIUM RISK

Serious or irreversible harm in the ecosystem context should be interpreted in relation to the capacity of the ecosystem to deliver ecosystem services (MSC, 2014). Examples include trophic cascades, severely truncated size composition of the ecological community, gross changes in species diversity of the ecological community, or changes in genetic diversity of species caused by selective fishing.

MPI (2016a) note that "*southern bluefin tuna (Thunnus maccoyii) are apex predators, feeding opportunistically on a mixture of fish, crustaceans and squid and juveniles also feed on a variety of zooplankton and micronecton species (Young et al 1997). Southern bluefin tuna are large pelagic predators, so they are likely to have a 'top down' effect on the fish, crustaceans and squid they feed on*."

The impacts of the fishery on non-target species are likely to be limited (e.g. albacore, swordfish) or moderate (e.g. blue shark, Ray's bream). Impacts on ETP species are below the PBR, while impacts on habitats are negligible. To that extent, the main ecosystem impacts are likely to flow from the removal of the target species itself from the ecosystem, and the fact the stock has been fished to low levels.

Ackroyd and McLoughlin (2017) note that considerable research has been carried out on tunas as top predators in the Pacific ecosystem and trophic status studies (e.g. Cox et al, 2002, b; Sibert et al., 2006). For albacore, they note that the species is not considered to be a common forage species and research which considers albacore tuna as a top predator, suggests that the New Zealand albacore troll fishery is highly unlikely to adversely affect the diet of other species. STN is likely to occupy a similar functional trophic position as albacore. Given the STN fishery harvests around 1/3 to ¼ of the volume of fish as the albacore troll fishery (e.g. 825t Vs 2466t in 2014), there is a plausible basis to conclude that the STN fishery is at least likely (perhaps highly likely) not to disrupt the key elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm. Nevertheless, given the limited directly information about the impacts of STN fishing on the New Zealand ecosystem and the low level of the stock, we have scored this SI medium risk.

CRITERIA: (ii) There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.

(a) Management Strategy in place LOW RISK

The New Zealand Fisheries Act 1996 s 8 provides for "the utilisation of fisheries resources while ensuring sustainability." Ecosystem-based management is achieved through a multi-layered approach that considers fishery management (e.g., QMS), ETP management (a host of protected species and related initiatives such as NPOA seabirds, NPOA sharks, the protection of marine mammals, and habitat considerations (e.g. BPAs).

The adoption of the Bali Procedure which aims to return the STn stock to near-MSY levels in the interim, together with TACs to limit New Zealand catches and with good quality monitoring of all fisheries removals that might impact on trophic structure and function and management of fishery removals (e.g. through TACCs) represent a partial strategy to restrain impacts from causing serious and irreversible harm to the ecosystem.

(b) Management Strategy implementation LOW RISK

Of the main impacts, stock projections for STN indicate that the current settings of the Bali Procedure will return the stock to the interim target level with ~70% probability, while risk assessments for ETP species indicate that impacts from the targeted STN surface longline fishery are currently below the PBR. Accordingly, there is some objective basis for confidence that the partial strategy is being implemented successfully. Nevertheless, we note the UoA would be better placed against this SI with more direct information about the potential trophic impacts of the fishery.

CRITERIA: (iii) There is adequate knowledge of the impacts of the UoA on the ecosystem.

(a) Information quality MEDIUM RISK

A number of studies have been undertaken on the role of different species of tuna as top predators in the Pacific ecosystem (Cox et al, 2002; Sibert et al, 2006), as well as across key elements of New Zealand pelagic ecosystems (e.g. Bradford-Grieve et al, 1999). These (and other) studies are likely to be adequate to broadly understand the key elements of the ecosystem, albeit it is not clear that catches and stock size information alone is sufficient to detect any increase in risk given the absence of any specific investigations of the impact of low STN stock sizes on New Zealand's pelagic ecosystem. Accordingly, we have scored this SI medium risk.

(b) Investigations of UoA impacts MEDIUM RISK

The main impacts of the fishery on the ecosystem elements such as structure and function can be inferred from the stock assessments, QMS catch trends, and observer data covering the target and related species. Impacts on ETP species have been investigated in detail (e,g, Richard and Abraham, in prep; in MPI, 2016a), albeit there is limited understanding of the impact of low STN stock size on the New Zealand pelagic ecosystem.

PI SCORE	MEDIUM RISK

COMPONENT 3: Effective management

3A: Governance and Policy

CRITERIA: (i) The management system exists within an appropriate and effective legal and/or customary framework which ensures that it:

- Is capable of delivering sustainability in the UoA(s)
- Observes the legal rights
- Created explicitly or established by custom of people dependent on fishing for food or livelihood; and
- Incorporates an appropriate dispute resolution framework.

(a) Compatibility of laws or standards with effective management **LOW RISK**

The Convention for the Conservation of Southern Bluefin Tuna ("The Convention"), which entered into force in May, 1994, provides an effective legal framework for the conservation of STN consistent with Component 1. The Convention places less emphasis on 'ecologically related species' but still provides the capacity for members to adopt binding measures to mitigate bycatch, consistent with Component 2.

At the national level, the 1996 Fisheries Act and subsequent amendments provide a binding legal framework for delivering the objectives of Components 1 and 2. The law identifies and sets requirements for cooperation among the parties involved in fishing activities.

(b) Respect for Rights **LOW RISK**

Ackroyd et al (2017) report that "*MPI is responsible for the administration of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, which implements the 1992 Fisheries Deed of Settlement under which historical Treaty of Waitangi claims relating to commercial fisheries have been fully and finally settled. The Ministry is also responsible for the Maori Fisheries Act 2004, which provides that the Crown allocates 20% of quota for any new quota management stocks brought into the QMS to the Treaty of Waitangi Fisheries commission. For non-commercial fisheries, the Kaimoana Customary Fishing Regulations 1998 and the Fisheries (South Island Customary Fishing) Regulations 1998 strengthen some of the rights of Tangata Whenua to manage their fisheries.*

These regulations let iwi and hapü manage their non-commercial fishing in a way that best fits their local practices, without having a major effect on the fishing rights of others.

The management system therefore has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2."

The text of the CCSBT Convention notes that nothing in the Convention nor any measures adopted pursuant to it prejudices the positions or views of any Party with respect to its rights and obligations under treaties and other international agreements to which it is party.

CRITERIA: (ii) The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties.

(a) Roles and Responsibilities **LOW RISK**

At the CCSBT level, the Convention sets out the main function bodies (e.g. Commission, Scientific Committee, Secretariat) including roles and responsibilities, while other groups have been established by the members (e.g. Ecologically Related Species Working Group).

At the domestic level, the Minister responsible for the Fisheries Act, the Ministry of Primary Industries (responsible for effective fishery management), the Department of Conservation (responsible for conservation issues such as ETP species and MPAs) are the main government entities involved in the management process. Each has clearly and explicitly defined roles. Stakeholders and independent experts are involved in the fisheries working group process which provides advice to MPI and the Minister.

(b) Consultation Process **LOW RISK**

At the CCSBT level, consultation occurs through meetings of the Commission/Extended Commission, and subsidiary bodies including the Scientific Committee/Extended Scientific Committee, Ecologically Related Species Working Group and Compliance Committee.

At the domestic level, the Fishery Act requires consultations among stakeholders with an 'interest' in the decision to be made, and the Stakeholder Consultation Process Standard provides guidelines for implementing the consultations. The consultation regularly seeks and accepts information, explains the use and results, and provides opportunity and encouragement for engagement. The Minister of Fisheries is required to consult with those classes of persons having an interest (including, but not limited to, Maori, environmental, commercial and recreational interests) in the stock or the effects of fishing on the aquatic environment in the area concerned.

In practice, MPI has a number of forums that provide for interested party participation in the assessment and management of the fishery. All stakeholders are actively encouraged to participate in the meetings or to provide submissions. These forums include specific working groups on management and research issues. Commercial, customary, and environmental fishery interests participate in each of these processes. In addition, interested groups representing environmental and wildlife interests, along with local community interests, are given opportunities to participate in these discussions or provide submissions.

CRITERIA: (iii) The management policy has clear long-term objectives to guide decision making that are consistent with the outcomes expressed by Components 1 and 2, and incorporates the precautionary approach.

(a) Objectives **MEDIUM RISK**

At the CCSBT level, the Convention sets as an objective the long term conservation of STN, but does not have an explicit objective consistent with Component 2.

At the domestic level, long-term objectives to guide decision making are set out in the Fisheries Act, in Fisheries 2030 and other supporting documents (e.g. the Harvest Strategy Standard). These documents provide clear long-term objectives to guide decision-making, consistent with Components 1 and 2. The Fisheries Act (s10) also requires the application of a precautionary approach to decision making: "*All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:*

a) Decisions should be based on the best available information;
b) Decision makers should consider any uncertainty in the information available in any case;
c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate; and
d) *The absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act."*

Accordingly, while the domestic arrangements provide clear long-term objectives to guide decision-making, consistent with Components 1 and 2 and the precautionary approach, and are explicit within and required by management policy, the CCSBT Convention does not. Given the references in the Convention to 'ecologically related species' however, we have assumed these are implicit and have scored this SI medium risk.

PI SCORE	LOW RISK

3B: Fishery Specific Management System

CRITERIA: (i) The fishery specific management system has clear, specific objectives designed to achieve the outcomes expressed by Components 1 and 2.

(a) Objectives **LOW RISK**

The management of the New Zealand STN fishery is undertaken consistent with agreements reached at CCSBT (e.g. the Bali Procedure), as well as the legal and policy framework provided by the Fisheries Act, Fisheries 2030, the National Fisheries Plan for Highly Migratory Species (HMS), the Annual Operational Plan for Highly Migratory Species Fisheries and relevant environmental legislation (e.g. Conservation Act 1987, Wildlife Act 1953, NPOA-Seabirds, NPOA-Sharks). These documents provide well defined and explicit long and short term objectives.

CRITERIA: (ii) The fishery specific management system includes effective decision making processes that result in measures and strategies to achieve the objectives and has an appropriate approach to actual disputes in the fishery.

(a) Decision making **LOW RISK**

At the CCSBT level, the Convention sets out the decision-making arrangements. There is evidence through the adoption of the Bali Procedure and adjustments in national allocations (e.g. as a result of market anomalies) that decision making responds to serious issues in an adaptive manner. There is perhaps less evidence to demonstrate responsiveness on Component 2 issues, however some measures have been agreed (e.g. mandatory use of tori poles in all longline STN fisheries below 30^{o} south) and the status of bycatch and ecosystems issues is tracked through the Ecologically Related Species Working Group.

Domestically, sections 10, 11, and 12 of the Fisheries Act establish the requirements for the decision-making process, and Section 10 further requires the use of best available information for all decisions. This results in measures and strategies to achieve the fishery-specific objectives. The Fisheries Act requirement for best available information leads to scientific evaluation in advance of decisions. The Fisheries Act further requires consultation with such persons or organisations as the Minister considers are representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned including Maori, environmental, commercial, and recreational interests.

The MPI ensures that the Minister is provided with analysed alternatives for consideration before making any decisions (information is both from within and outside the Ministry [stakeholders, science]). The feedback process is formalised, involving planning, consultation, project development, and scientific enquiry. The Initial Position Paper/Final Advice Paper process highlights the extent of consultation, engagement and transparency of the decision making process. Thus, decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.

(b) Use of the Precautionary approach

At the CCSBT level, the precautionary principle is not explicit in the Convention, although the Commission has sought to adopt a more precautionary approach to increase the likelihood of the spawning stock rebuilding in the short term through the adoption of the Bali Procedure.

The precautionary approach must be followed by MPI. Section 10 of the Fisheries Act Information principles states: "*All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:*

a) Decisions should be based on the best available information:
b) Decision makers should consider any uncertainty in the information available in any case:
c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate:

d) *The absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act*."

(c) Accountability and Transparency **LOW RISK**

At the CCSBT level, the outcomes of the main meetings are available on the Commission's website, including justifications for action or inaction. A framework of permissions has been agreed for non-members and NGOs to attend relevant meetings as observers[2].

In New Zealand, information on the fishery's performance is produced through the MPI Fisheries Assessment Plenary process and is available on the MPI website. Scientific and other research reports commissioned by MPI are also available on the Ministry website. Information on proposed management changes are published through Initial Position Paper which allow for stakeholders to comment. MPI's Final Advice Paper to the Minister is also publicly available together with a summary of submissions and alternative policy options. Feedback on any actions or lack of action is provided to stakeholders through a variety of forums, as well as directly through published decision letters of the Minister (e.g. Guy, 2015).

Disclosure of information can be requested from the Ministry, under the Official Information Act. Information is released except when it is decreed by the Minister to be commercially sensitive or breaches confidentiality between the parties.

CRITERIA: (iii) Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.

(a) MCS Implementation **MEDIUM RISK**

CCSBT adopted a risk-based Compliance Plan to provide a framework for the Commission and Members to improve compliance, and over time, achieve full compliance with their CCSBT conservation and management measures (CCSBT, undated). The Compliance Plan includes a Three-Year Action Plan (2015-2017) to address priority compliance risks. The Commission has also adopted three compliance policy guidelines to support Members' implementation of the plan:

- Minimum performance requirements to meet CCSBT Obligations
- Corrective actions policy
- MCS information collection and sharing.

The plan is supported by a number of MCS measures including:

- A CCSBT VMS came into effect on 17 October 2008;
- A Catch Documentation System (CDS) which came into effect on 1 January 2010 and provides for tracking and validation of legitimate STN product flow from catch to the point of first sale on domestic or export markets. Under the CDS, each whole STN that is transhipped, landed as domestic product, exported, imported or re-exported must have a uniquely numbered tag attached to it and the tag numbers of all STN (together with other details) will be recorded on a Catch Tagging Form
- A program for monitoring transhipments at sea which came into effect on 1 April 2009 and was extended in October 2014 to include requirements for monitoring transhipments in port (effective from 1 January 2015).
- Port state measures; and
- List of IUU vessels.

Non-compliances with national allocations are reported publicly on the Commission's website[3]. CCSBT has also implemented a Quality Assurance Review (QAR) program to provide independent reviews to help Members identify how well their management systems function with respect to their CCSBT obligations and to provide recommendations on areas where improvement is needed.

There is little doubt a MCS system has been implemented in the fishery at the CCSBT level. The main uncertainties are extent to which it can address risks highlighted in the Compliance plan such as STN being landed as other (non STN) species, expansion of markets for STN and lack of information on recreational catches. Although there is a reasonable expectation the measures above will be effective, unaccounted for mortality is still a key uncertainty for stock assessment. Accordingly, we have scored this SI medium risk.

New Zealand's fisheries management system has documented a comprehensive and effective monitoring, control and surveillance system through 1) a compulsory satellite Vessel Monitoring System (VMS) with an on board an automatic location communicator (ALC); 2) government observers who may be placed on board to observe fishing and collect any information on fisheries resources (including catch and effort information) and the effect of fishing on the aquatic environment; and 3) accurate recordkeeping and recording requirements to establish auditable and traceable records to ensure all catches are counted and do not exceed the ACE held by each operator. Other measures include:

- fishing permit requirements;
- requirement to hold ACE to cover all target and bycatch species caught, or alternatively, to pay deemed values;
- fishing permit and fishing vessel registers;
- vessel and gear marking requirements;
- fishing gear and method restrictions;
- vessel inspections;
- control of landings (e.g. requirement to land only to licensed fish receivers);
- auditing of licensed fish receivers.

(b) Sanctions and Compliance **LOW RISK**

[2] https://www.ccsbt.org/en/content/attendance-meetings-observers

[3] https://www.ccsbt.org/sites/default/files/userfiles/file/docs_english/general/non-compliance_with_allocations.pdf

At the CCSBT level, possible sanctions for non-compliance are outlined in the CCSBT Compliance Plan and include:

- compliance assistance
- payback of overcatch
- quota reduction
- public disclosure
- increased monitoring measures (inspections, observers etc)
- trade or market restrictions (as consistent with international law).

The Commission has previously demonstrated a willingness to respond to overcatch through reduction in national allocations.

At the domestic level, for offences against the Fisheries Act 1996 or any of the Fisheries Regulations, the offender has to satisfy a reverse onus and establish that the offence was outside their control, that they took reasonable precautions and exercised due diligence to avoid the contravention, and, where applicable, they returned fish that was unlawfully taken and complied with all recording and reporting requirements. A wide range of sanctions from fines ($250 to 500,000) and imprisonment, forfeiture of catch and potential forfeiture of vessel, to prohibition from participating in fishing in the future constitute an effective deterrent to offenses and lead to industry compliance.

New Zealand's actual catch has remained within the TAC since the introduction of STN into the QMS in 2004.

At the more operational level, some evidence exists that fishers comply with the management system (e.g. MPI, 2015b; Table 2), albeit levels of breaches detected are non-trivial and more information would be needed on the nature of the breaches to determine impact.

Table 2: Outcomes of domestic compliance inspections in highly migratory species fisheries in 2014-15. (MPI, 2015b)

SLL/Troll Inspections		
	Number of Inspections	Breaches detected
At-sea	6	2
Monitored unloads	12	2
Vessel (port)	90	15
Other	113	1

(c) Systematic non-compliance

Historically, the Commission has had considerable discussions around anomalies in Japanese market data and Australian farm growth rates (e.g. CCSBT, 2006).

CRITERIA: (iv) There is a system for monitoring and evaluating the performance of the fishery specific management system against its objectives.
There is effective and timely review of the fishery specific management system.

(a) Evaluation coverage **LOW RISK**

CCSBT has mechanisms in place to evaluate key parts of the management system including management strategy evaluations for the MP and the quality assurance review process for compliance. At the domestic level, the Plenary process evaluates key elements of the management system annually. The Ministry implements a comprehensive peer-review process for all science research that is used to inform fisheries management decisions.

(b) Internal and/or external review **LOW RISK**

At the domestic level, the fishery management system has internal and external review through the Fisheries 2030, Statements of Intention and the Stock Assessment Plenary process. At the international level, CCSBT fishery management is subject to ongoing internal review through assessments of performance against the MP, as well as through the Ecologically Related Species Working Group. External assessments of Commission members compliance arrangements have been undertaken, and the Commission itself undertook a combined self-assessment/external assessment of performance against a common set of criteria and a methodology agreed for the five tuna Regional Fisheries Management Organizations (Anon, 2008).

PI SCORE	LOW RISK

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