

Marine Stewardship Council (MSC) Final Draft Report

**SZLC, CSFC & FZLC Cook Islands EEZ albacore, yellowfin and
bigeye longline fishery**

On Behalf of

SZLC CSFC and FZLC

Prepared by

Control Union UK Ltd.

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QA FDR

Role	Signature and date
Originator:	C. Sieben – 29 June 2020
Reviewer:	H. Jones 03/07/2020
Approver:	T. Tsuzaki 08/07/2020

Glossary

Term / acronym	Definition
B ₀	equilibrium unexploited total biomass
B _{F_{current}}	equilibrium total biomass at F _{current}
B _{init}	Initial biomass at the start of the stock assessment model (for the albacore assessment, B ₁₉₆₀)
B _{MSY}	equilibrium total biomass at MSY
CAB	Conformity Assessment Body
CCM	WCPFC Commission Members, Cooperating Non-Members, and participating Territories
CFA	China Southern Fishery Shenzhen Co. Ltd
CI	Cook Islands
CIFA	Cook Islands Fishing Association
CIFFO	Cook Islands Fisheries Field Office
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMM	WCPFC Conservation and Management Measure
CNM	WCPFC cooperating non-member
CoC	Chain of Custody
CPUE	Catch per Unit Effort
CSFC	China Southern Fishery Shenzhen Co. Ltd
CTIA	Cook Islands Tuna Industry Association
CU Pesca	Control Union Pesca Ltd. (now Control Union UK Ltd.)
EAFM	Ecosystem Approach to Fisheries Management
EEZ	Exclusive Economic Zone
eNGO	Environmental Non-Governmental Organisation
EMS	Electronic Monitoring System
EPO	Eastern Pacific Ocean
ERA	Ecological Risk Assessment
ETP	Endangered, threatened or protected species
FAME	SPC Division of Fisheries, Aquaculture and Marine Ecosystems
FAO	Food and Agricultural Organization
FFA	Pacific Islands Forum Fisheries Agency
FFC	Forum Fisheries Committee

Term / acronym	Definition
FIMS	fisheries information management system
FIP	Fisheries Improvement Project
F _{MSY}	Fishing mortality at age resulting in MSY
FSM	Federated States of Micronesia
HCR	Harvest Control Rule
iFIMS	integrated Fisheries Information Management Systems
IATTC	The Inter-American Tropical Tuna Commission
IGO	Intergovernmental Organisation
IPOA	International Plan of Action
ISC	International Scientific Committee for Tuna and Tuna like Species in the N. Pacific Ocean
ISSF	International Seafood Sustainability Foundation
IUCN	International Union for the Conservation of Nature
IUU	Illegal, Unreported and Unregulated (fishing)
LOA	Length Overall
LRP	Limit Reference Point
LTFV	Luen Thai Fishing Venture Ltd.
MCS	Monitoring, Control and Surveillance
MEY	Maximum Economic Yield
MFCL	Multifan-CL
MMR	Cook Islands Ministry of Marine Resources
MoU	Memorandum of Understanding
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
MSY	Maximum Sustainable Yield
MSY, Y _{FMSY}	equilibrium yield at FMSY
Nm	Nautical mile
NOAA	US National Oceanic and Atmospheric Administration
NPOA	National Plan of Action
NTADS	Non-target and dependent species
PAE	Party Allowable Effort
OFP	Oceanic Fisheries Programme (OFP) within the SPC Division of Fisheries, Aquaculture and Marine Ecosystems

Term / acronym	Definition
PCDR	Public Comment Draft Report
PICI	Pacific Islands Conservation Initiative
PICs	Pacific island countries
PITIA	Pacific Islands Tuna Industry Association
PNA	Parties to the Nauru Agreement
PRC	People's Republic of China
QMS	Quota Management System
RFID	Radio Frequency Identification
RFMO	Regional Fisheries Management Organization
RMI	Republic of the Marshall Islands
SBO	Equilibrium unexploited spawning potential
SB _{Fcurrent}	Average current spawning potential in the absence of fishing
SB _{init}	Initial spawning potential at the start of the stock assessment model (for the albacore assessment, SB1960)
SC	Scientific Committee
SEAPODYM	Spatial Ecosystem and Population Dynamics Model
SIDS	Small Island Developing States
SP	Spawning potential - equivalent measure to spawning stock biomass under the assumption that reproductive output is proportional to biomass over the size at maturity – but can take account of other patterns of reproductive output
SPC	Pacific Community (formerly Secretariat of the Pacific Community, and before that the South Pacific Commission; the organization has retained the acronym SPC despite the new name)
SPREP	Secretariat of the Pacific Regional Environment Programme
SRP	WCPFC Strategic Research Plan
SZLC	Liancheng Overseas Fishery (Shenzhen) Co. Ltd
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TAE	Total Allowable Effort
TCC	Technical Compliance Committee of the WCPFC
TMP	Tuna Management Plan
TRP	Target Reference Point
TVM	Te Vaka Moana
UNCLOS	United Nations Convention on the Law of the Sea

Term / acronym	Definition
UNFSA	United Nations Fish Stocks Agreement
UoA	Unit of Assessment
UoC	Unit of Certification
VB	von Bertalanffy (Growth curve or model)
VDS	Vessel Day Scheme
VMS	Vessel Monitoring System
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean
WWF	World Wildlife Fund
$Y_{F_{current}}$	Equilibrium yield at $F_{current}$

1 Executive Summary

This report covers the MSC reassessment of the SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore & yellowfin longline and scope extension for the addition of Western Central Pacific bigeye. The assessment team consists of Chrissie Sieben (Team Leader, Principle 2), Jo Gascoigne (Principle 1) and Charles Daxboeck (Principle 3). The site visit took place on the 11th and 12th November 2019. The assessment was undertaken in accordance with the MSC Fisheries Certification Process (FCP) v2.1 and MSC Fisheries Standard v2.01. The Risk-Based Framework (RBF) was not used.

The client fishery covers the vessels that are owned and/or managed by Liancheng Overseas Fishery (Shenzhen) Co. Ltd (SZLC), China Southern Fishery Shenzhen Co. Ltd (CSFC) and Liancheng Overseas Fishery (FSM) Co. Ltd. (FZLC) (the Client Group). The representative company for the client group based in the Cook Islands is Huanan Fishery (Cook Islands) Co. which is a subsidiary of CSFC. Note that FZLC is a subsidiary of SZLC and CSFC is a subsidiary of SZLC. All vessels in the Unit of Assessment (UoA) are freezer vessels and are flagged to either China, the Federated States of Micronesia or the Cook Islands. The vessels are licensed by the Cook Islands Ministry of Marine Resources (MMR) to fish for albacore, yellowfin and bigeye with pelagic longline in the EEZ of the Cook Islands. Landings are made in Apia (Samoa) and Kosrae and Pohnpei (Federated States of Micronesia). Although currently no landings take place in Pago Pago (American Samoa), Rarotonga (Cook Islands), or Papeete (French Polynesia), these seaports may be added as landing sites in the future. The vast majority of the catch is offloaded in Apia.

For all three Principle 1 stocks, the most recent stock assessments conclude that the stocks are above the MSY level with a high degree of certainty. Current management measures for south Pacific albacore are set out in CMM 2015-02 which requires that that CCMs do not increase the number of their vessels actively targeting South Pacific albacore in the Convention area south of 20°S over 2005 or 2002-4 levels, and includes data gathering and reporting requirements. The core regional management measure for yellowfin and bigeye is WCPFC CMM 2018-01, which provides for a series of management measures aimed at constraining effort on tropical tunas and is intended to be a “bridging measure” while work continues towards a formal harvest strategy. The latter is covered by CMM 2014-06 which commits WCPFC to putting in place a formal harvest strategy for its key stocks, with an associated workplan. Progress towards a harvest strategy has been slow, although for albacore an interim target reference point was adopted by the Commission in December 2018, in line with the workplan. At national level, there is a Total Allowable Catch (TAC) and a Total Allowable Commercial Catch (TACC) for albacore and bigeye. The Cook Islands manages this TACC via a quota management system (QMS) which came into force on the 6th December 2016 and became operational 1st January 2017. The quota applies to all in-zone longline fishing activities, except for subsistence and recreational fishing. Since 2016, the albacore TACC quota was fixed at 9,698 tonnes while the bigeye TACC quota was fixed at 2,500 tonnes, and these have not been adjusted to date.

Key data sources on interactions with other species were logbooks and observer reports, as well client data on bait use. South Pacific albacore, WCPO yellowfin and WCPO bigeye were identified as main primary species. Main secondary species were Pacific blue marlin, Indian oil sardine and Japanese pilchard (the latter two are used as bait). None of these species were considered likely to be below the point of recruitment impairment or biologically based limits, although the assessment team identified weaknesses in the UoA’s bait management policy and a condition was raised accordingly. Sharks and rays, all of which are protected in Cook Islands waters, were by far the most dominant group of ETP species captured in this fishery, with blue sharks and pelagic stingrays being most abundant in the observer data. The assessment team concluded, however, that direct effects of the UoA are highly likely to not hinder recovery of the species concerned. Impacts on seabirds, sea turtles

and cetaceans were also considered, but not thought to be significant. To mitigate bycatch of ETP species such as sharks and sea turtles, the client fleet uses circle hooks and has a policy in place which bans the use of shark lines and wire leaders and bans the retention of any elasmobranchs or their fins. Concerning turtle bycatch, the bait consists only of fish; no squid has been used in recent years. Although the fishery was generally thought to comply with national and regional management measures on bycatch and ecosystem impacts, the team had concerns about the coverage and quality of UoA observer data which led to a second condition under Principle 2.

The fishery takes place within a well-defined fisheries management framework, which consists of an international and national component: through the Western Central Pacific Fisheries Commission (WCPFC) and its associated bodies and the Cook Islands Ministry of Marine Resources (MMR). The MMR has the principal function of, and authority for, the conservation, management, and development of the living and non-living resources in Cook Islands waters. The main fisheries law of the Cook Islands is the Marine Resources Act 2005, while the tuna fishery specifically, is managed under the Marine Resources (Large Pelagic Longline Fishery and Quota Management) Regulations (2016). All levels of jurisdiction in this fishery are compliant with UNCLOS, UNFSA and the FAO Code of Conduct for Responsible Fisheries, including the Compliance Agreement. The Cook Islands are a full WCPFC CCM and have given legal effect to CMMs developed at the Commission despite, still being categorized as a Small Island Developing States (SIDS). The MMR is also responsible for implementing Cook Islands' monitoring control and surveillance (MCS) mechanism and sets requirements for *inter alia* logsheet data recording, observer coverage, VMS monitoring and at sea and portside vessel inspections. The client fleet has a good track record of compliance, with no serious breaches of regulations reported.

The team's final determination is that the fishery meets the criteria for MSC certification. Aggregate scores for each Principle are as shown in the following table:

Principle	Score		
	South Pacific albacore	Western Central Pacific yellowfin	Western Central Pacific bigeye
Principle 1 – Target Species	83.3	80.8	86.7
Principle 2 – Ecosystem Impacts	84.3		
Principle 3 – Management System	85.8		

Eight conditions were raised, in relation to Principles 1 and 2:

Condition number	Condition	Performance Indicator (PI)
1	<p>The fishery should put in place a regional harvest strategy for South Pacific albacore, incorporating limit and target reference points (management objectives), a harvest control rule and management actions, such that the strategy is responsive to the status of the stock and the elements of the strategy work towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p>The key missing elements of the harvest strategy at present are a well-defined harvest control rule with associated management actions.</p>	1.2.1 – ALB
2	A well-defined regional-level harvest control rule should be put in place for SP ALB, with associated management actions (in the form of a CMM	1.2.2 - ALB

Condition number	Condition	Performance Indicator (PI)
	or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and is expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important).	
3	<p>The fishery should put in place a regional harvest strategy for WCPO yellowfin, incorporating limit and target reference points (management objectives), a harvest control rule and management actions, such that the strategy is responsive to the status of the stock and the elements of the strategy work towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p>The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions.</p>	1.2.1 - YFT
4	A well-defined regional-level harvest control rule should be put in place for WCPO YFT, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and that are expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important).	1.2.2 - YFT
5	<p>The fishery should put in place a regional harvest strategy for WCPO bigeye, incorporating limit and target reference points (management objectives), a harvest control rule and management actions, such that the strategy is responsive to the status of the stock and the elements of the strategy work towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p>The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions.</p>	1.2.1 - BET
6	A well-defined regional-level harvest control rule should be put in place for WCPO BET, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and that are expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important).	1.2.2 – BET
7	By the end of Year 3, the fishery should have in place a partial strategy that ensures that bait is being sourced from sustainable fisheries. The partial strategy should be expected to maintain or not hinder rebuilding of bait species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	2.2.2
8	By the end of Year 2, the fishery should demonstrate that the available quantitative information is adequate, both in terms of coverage and	2.3.3

Condition number	Condition	Performance Indicator (PI)
	quality, to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species.	

The following recommendations were also raised:

1. Pelagic stingrays

A large number of pelagic stingrays are caught in this fishery, and while highly unlikely to have population-level impacts, it is recommended that a review of UoA on-board handling and release practices, and if possible, post-release survivability is carried out so that the effectiveness of the strategy can be determined with greater confidence.

2. Waste management

Over the course of the initial certification cycle, infringements against MARPOL73/78 regulations were noted by observers due to the dumping at sea of plastics, metals, chemicals, and old fishing line. The UoA has since implemented a waste management plan with associated inspections of UoA vessels in port. Although observer reports made available during surveillance audits demonstrate that improvements have made, the team decided to carry over this recommendation into the reassessment so that progress can continue to be monitored.

To be completed at Public Certification Report stage

2 Report Details

2.1 Authorship and Peer Reviewers

Chrissie Sieben (Team Leader, Principle 2)

Chrissie Sieben has a Master's Degree in Marine Environmental Protection which she obtained at the University of Wales, Bangor, and specialises in marine and fisheries ecology, marine environmental impact assessments and sustainable fisheries. She was the MSC fisheries scheme manager at ME Certification Ltd (which later became CU Pesca and more recently CU UK) up until December 2018. Previous to joining MEC, she worked as a fisheries consultant and marine ecologist on UK-based and international projects. Chrissie is now an independent assessor with over eight years' experience with the MSC certification requirements and has acted as team leader and P2 assessor on a range of preassessments, surveillance audits and full assessments of demersal and pelagic fisheries in the Atlantic, Mediterranean, Indian Ocean, Southern Ocean and Pacific. She also regularly participates in MSC training sessions and workshops. Chrissie speaks fluent French and Dutch in addition to English. She acts as the Team Leader for this assessment and is responsible for Principle 2. Chrissie has successfully completed the MSC online training on the application of the Risk-Based Framework (RBF), FCRv2.0 and FCPv2.1 and completed her ISO 19011 certification. Chrissie has no conflict of interest for this assessment.

Dr Jo Gascoigne (Principle 1)

Dr Gascoigne is a former research lecturer in marine biology at Bangor University, Wales and a shellfisheries and tuna fisheries expert, with over 25 years' experience working in the fisheries sector. On 20 May 2016 a variation request was granted by MSC, qualifying Dr Gascoigne as Principle 1 (P1) assessor for tuna fisheries, her main responsibility for this assessment. Dr Gascoigne is a fully qualified MSC Team Leader and has been involved as expert and lead auditor in MSC pre- and full assessments for the last 10 years. Dr Gascoigne has completed the required Fishery Team Leader MSC training modules for the new V2.0 Fisheries Certification Requirements. In addition, she has also completed the fisheries traceability version 2.0 MSC online training module. Jo has no conflict of interest for this assessment.

Dr Charles Daxboeck (Principle 3)

Charles obtained a Ph.D. in comparative respiratory physiology from the University of British Columbia, Vancouver and has been a legal resident of French Polynesia for the past 25 years, following twelve years in Hawaii. Aside from his scientific and consulting activities, Charles has been a member of the US delegation to the 19th Annual Consultation on Multilateral Treaty on Fisheries between Governments of certain Pacific Island States and the US Government (the Tuna Treaty) and to the Fourth Regular Session of the Scientific Committee of the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. He has also been a member of French Polynesian delegations to numerous pre-WCPFC ratification meetings (MHL4, 5, 6 and 7, PrepCon I, PrepCon 7, then WCPFC1 and WCPFC6 from 1999 to 2009). Charles has also been a member of the American Samoa delegation to WCPFC7 (2010) and of the CNMI delegation to WCPFC13 (2016). His experience also includes being a Member of the Board of Governors and of the Scientific Advisory Committee of the Pacific Ocean Research Foundation, Kailua-Kona, Hawaii (P.O.R.F.) for six years. He was also a member of the Scientific and Statistical Committee for thirty-three years (and SSC Chairman from 2011 to 2016), Western Pacific Regional Fishery Management Council (Department of Commerce, NOAA Fisheries). Charles' other experience in tuna fisheries

include MSC assessments of the French Polynesia EEZ albacore and yellowfin longline fishery, Pan Pacific yellowfin, bigeye and albacore tuna longline fishery on behalf of Dongwon Industries, Tropical Pacific yellowfin and skipjack tuna free-school purse seine fishery on behalf of Dongwon Industries, as well as the Y2, Y3 and Y4 surveillance audits of the SZLC, CSFC & CFA Cook Islands EEZ South Pacific albacore and yellowfin longline fishery. Dr. Daxboeck has recently joined The Nature Conservancy's Indo-Pacific Tuna Team as a contract consultant member. Charles has successfully completed the MSC online team member training on FCRv2.0. Dr. Daxboeck has no conflict of interest for this assessment.

Peer Reviewers:

The MSC Peer Review College compiled a shortlist of potential peer reviewers to undertake the peer review for this fishery. Two peer reviewers were selected from the following list:

- Giuseppe Scarcella
- Jim Andrews
- Joe Powers
- Steve Kennelly

A summary of their experience and qualifications is available via this link: <https://fisheries.msc.org/en/fisheries/szlc-csfc-fzlc-cook-islands-eez-south-pacific-albacore-yellowfin-and-bigeye-longline/@@assessments>

2.2 Version details

The following MSC programme documents were used in this assessment.

Table 1. Fisheries programme documents versions

Document	Version number
MSC Fisheries Certification Process	Version 2.1
MSC Fisheries Standard	Version 2.01
MSC General Certification Requirements	Version 2.4.1
MSC Reporting Template	Version 1.0

3 Unit(s) of Assessment and Certification

3.1 Unit(s) of Assessment (UoA)

CU UK confirms that the fishery under assessment is within the scope of the MSC Fisheries Standard (7.4 of the MSC Fisheries Certification Process v2.1):

- The target species is not an amphibian, reptile, bird or mammal;
- The fishery does not use poisons or explosives;
- The fishery is not conducted under a controversial unilateral exemption to an international agreement;
- The client or client group does not include an entity that has been successfully prosecuted for a forced or child labour violation in the last 2 years;
- The fishery has in place a mechanism for resolving disputes, and disputes do not overwhelm the fishery;
- The fishery is not an enhanced fishery as per the MSC FCP 7.4.6; and
- The fishery is not an introduced species-based fishery as per the MSC FCP 7.4.7.

CU UK confirms that the client group has submitted the completed ‘Certificate Holder Forced and Child Labour Policies, Practices and Measures Template’ prior to the start of this assessment.

Note that this report covers both the reassessment of the currently certified SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore & yellowfin longline fishery (MSC-F-30001) and the scope extension for the addition of Western Central Pacific bigeye (as per Annex PE of the FCPv2.1). The proposed Units of Assessment (UoA) are given in Table 2. UoAs were divided by target species only.

There are no other eligible fishers. The UoA is therefore the same as the UoC (7.5.2 and 7.5.3 of the FCPv2.1).

Table 2. Unit(s) of Assessment (UoA)

Species and stocks	UoA 1: South Pacific albacore (<i>Thunnus alalunga</i>) UoA 2: Western Central Pacific yellowfin (<i>T. albacares</i>) UoA 3: Western Central Pacific bigeye (<i>T. obesus</i>)
Geographical range of fishery	Area 77/81: Eastern Central Pacific / Pacific, Southwest Cook Islands Exclusive Economic Zone (excluding the internal waters and territorial sea of the Cook Islands)
Harvest method / gear	Pelagic longline
Client group	Vessels owned and/or managed by Liancheng Overseas Fishery (Shenzhen) Co. Ltd (SZLC); China Southern Fishery Shenzhen Co. Ltd (CSFC); and Liancheng Overseas Fishery (FSM) Co. Ltd (FZLC) – see Table 8, Table 9 and Table 10
Other eligible fishers	None

3.2 Unit(s) of Certification (UoC)

No changes to the UoAs defined above were proposed at the Client and Peer Review Draft (PCRDR) stage. As there are no other eligible fishers, the UoCs are the same as the UoAs (Table 3).

Table 3. Unit(s) of Certification (UoC)

Species and stocks	UoA 1: South Pacific albacore (<i>Thunnus alalunga</i>) UoA 2: Western Central Pacific yellowfin (<i>T. albacares</i>) UoA 3: Western Central Pacific bigeye (<i>T. obesus</i>)
Geographical range of fishery	Area 77/81: Eastern Central Pacific / Pacific, Southwest Cook Islands Exclusive Economic Zone (excluding the internal waters and territorial sea of the Cook Islands)
Harvest method / gear	Pelagic longline
Client group	Vessels owned and/or managed by Liancheng Overseas Fishery (Shenzhen) Co. Ltd (SZLC); China Southern Fishery Shenzhen Co. Ltd (CSFC); and Liancheng Overseas Fishery (FSM) Co. Ltd (FZLC) – see Table 8, Table 9 and Table 10

To be completed at Public Certification Report stage

The report shall include a justification for any changes to the proposed Unit(s) of Certification (UoC).

Reference(s): FCP v2.1 Section 7.5

4 Assessment results overview

4.1 Determination, formal conclusion and agreement

Following consideration of all stakeholders' inputs and comments to the Public Comment Draft Report (PCDR), the fishery assessment team concluded that the fishery should be certified against the MSC standard. This determination remains a recommendation pending the completion of the formal objections process and the final certification decision by the CU UK official decision-making entity.

To be completed at Public Certification Report

The report shall include a formal statement as to the certification determination recommendation reached by the assessment team on whether the fishery should be certified.

The report shall include a formal statement as to the certification action taken by the CAB's official decision-makers in response to the Determination recommendation.

Reference(s): FCP v2.1 Section 7.21

4.2 Principle level scores

The Principle level scores are shown in Table 4.

Table 4. Principle level scores

Principle	Score		
	South Pacific albacore	Western Central Pacific yellowfin	Western Central Pacific bigeye
Principle 1 – Target Species	83.3	80.8	86.7
Principle 2 – Ecosystem Impacts	84.3		
Principle 3 – Management System	85.8		

4.3 Summary of conditions

A summary of conditions raised in this assessment is provided in Table 5. Further detail on the conditions as well as the corresponding Client Action Plan is given in Appendix 5.

All Principle 1 conditions for SP ALB and WCPO YFT were carried over from the previous certification cycle, following MSC approval of the CAB-wide variation request, discussed in Appendix 1.2 (CAB-wide variation request Principle 1).

Table 5. Summary of conditions

Condition number	Condition	Performance Indicator (PI)	Related to previous condition?
1	The fishery should put in place a regional harvest strategy for South Pacific albacore, incorporating limit and target reference points (management objectives), a harvest control rule and management actions, such that the strategy is	1.2.1 – ALB	Yes, condition 2 in previous certification cycle.

Condition number	Condition	Performance Indicator (PI)	Related to previous condition?
	<p>responsive to the status of the stock and the elements of the strategy work towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p>The key missing elements of the harvest strategy at present are a well-defined harvest control rule with associated management actions.</p>		
2	<p>A well-defined regional-level harvest control rule should be put in place for SP ALB, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and is expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important).</p>	1.2.2 - ALB	Yes, condition 3 in previous certification cycle.
3	<p>The fishery should put in place a regional harvest strategy for WCPO yellowfin, incorporating limit and target reference points (management objectives), a harvest control rule and management actions, such that the strategy is responsive to the status of the stock and the elements of the strategy work towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p>The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions.</p>	1.2.1 - YFT	Yes, condition 9 in previous certification cycle.
4	<p>A well-defined regional-level harvest control rule should be put in place for WCPO YFT, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and that are expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important).</p>	1.2.2 - YFT	Yes, condition 10 in previous certification cycle.
5	<p>The fishery should put in place a regional harvest strategy for WCPO bigeye, incorporating limit and target reference points (management objectives), a harvest control rule and</p>	1.2.1 - BET	No

Condition number	Condition	Performance Indicator (PI)	Related to previous condition?
	management actions, such that the strategy is responsive to the status of the stock and the elements of the strategy work towards achieving stock management objectives reflected in PI 1.1.1 SG80. The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions.		
6	A well-defined regional-level harvest control rule should be put in place for WCPO BET, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and that are expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important)	1.2.2 – BET	No
7	By the end of Year 3, the fishery should have in place a partial strategy that ensures that bait is being sourced from sustainable fisheries. The partial strategy should be expected to maintain or not hinder rebuilding of bait species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	2.2.2	No
8	By the end of Year 2, the fishery should demonstrate that the available quantitative information is adequate, both in terms of coverage and quality, to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species.	2.3.3	Yes – see explanation below.

During the initial assessment, the following condition was raised in relation to PI 2.3.3: The occurrence and outcome of all catches of ETP species (sharks, sea turtles, seabirds and cetaceans) by LTFV vessels should be systematically and accurately reported on so that fishery-related mortality on ETP species can be quantitatively determined and the effectiveness of the management strategies can be determined. Where a need has been identified, the collected data should enable further development of management strategies to ensure that the fishery does not hinder recovery of ETP species (Gascoigne et al., 2015). This condition was closed during the initial certification cycle as through observer data and self-reporting, it could be demonstrated that the fishery was not a threat to ETP species. At reassessment, however, there was 1) a lack of clarity on UoA observer coverage and 2) the quality of the more recent observer data was questioned. The conditions, therefore, do not address the same issues.

4.4 Recommendations

The following recommendations were raised:

1. Pelagic stingrays

A large number of pelagic stingrays are caught in this fishery, and while highly unlikely to have population-level impacts, it is recommended that a review of UoA on-board handling and release practices, and if possible, post-release survivability is carried out so that the effectiveness of the strategy can be determined with greater confidence.

2. Waste management

Over the course of the initial certification cycle, infringements against MARPOL73/78 regulations were noted by observers due to the dumping at sea of plastics, metals, chemicals, and old fishing line. The UoA has since implemented a waste management plan with associated inspections of UoA vessels in port. Although observer reports made available during surveillance audits demonstrate that improvements have made, the team decided to carry over this recommendation into the reassessment so that progress can continue to be monitored.

5 Traceability and eligibility

5.1 Eligibility date

For the existing certificates (albacore and yellowfin), the eligibility date will be the date of re-certification.

For bigeye, the eligibility date is the date of publication of the PCDR (as per 7.8 of the MSC FCPv2.1). **Pending the successful outcome of this assessment**, any product caught after this date, by the vessels listed in Table 8, Table 9 and Table 10 and conforming to the UoA detailed in Section 3.1 shall thus be eligible to bear the MSC ecolabel, subject to the traceability conditions given in Section 5.3 and Clause 5.6 of the MSC Chain of Custody Standard v5.0 for under-assessment product.

Any bigeye harvested after the eligibility date and sold or stored as under-assessment fish shall be handled in conformity with the following requirements:

- All under-assessment products shall be clearly identified and segregated from certified and non-certified products.
- The client shall maintain full traceability records for all under-assessment product, demonstrating traceability back to the UoC and including the date of harvest.
- Under-assessment products shall not be sold as certified or labelled with the MSC ecolabel, logo, or trademarks until fishery certification and product eligibility are confirmed.

5.2 Traceability within the fishery

All vessels in the UoA require a fishing licence issued by the Cook Islands Ministry of Marine Resources (MMR). Fishing takes place mainly in the Cook Islands EEZ although vessels may also operate in other EEZs or on the High Seas. Under the Large Pelagic QMS Regulations and Fishery Plan (2016), each vessel authorised to fish in the Cook Islands EEZ must file both Zone Entry and Exit Forms. Information to be transmitted to MMR is: (a) Report type (ZENT for entry and ZEXT for exit) (b) Vessel Name (MMR standardised) (c) Licence number (d) Trip start date, i.e. date of departure from port (e) Date and time (GMT) (f) International Radio Call Sign (IRCS) (g) Position (h) Catch on board by weight (kilograms) by species (i) Intended action.

The SPC/FFA catch logsheet is completed daily aboard all vessels, to report estimated volume (tonnes) and number of individuals of retained and non-retained catch per species, as well as time and coordinates of the set (see Section 6.7.2 for more information). The MMR now also has enforced electronic reporting on all longline vessels, enabling daily reporting of catch data, which is a requirement under the Cook Islands Quota Management System (QMS – see Section 6.3.4 for further detail).

There is no at-sea processing, other than yellowfin offloaded as DWT (dressed headless without tail) or GG (gilled and gutted). After processing (if this occurs) each albacore, bigeye and yellowfin tuna (the key target species) is equipped with a RFID (Radio Frequency Identification) tag inside its cavity (see Figure 1). The tags electronically record the following information: vessel name, date of capture, estimated weight, species, and coordinates of the set. This enables the client group to identify catches by fishing area (i.e. in-zone vs. high seas). The fish are then blast-frozen and stored. All species are stored together in the hold; however, they remain identifiable at species level, both morphologically and with the RFID tags. In addition, there is a requirement for the submission of a Trip Completion Report upon completion in the port of unloading (Figure 2).

this fishery, all transshipment is required to take place at a designated port and any vessel wishing to land or tranship is required to provide 72 hours' prior notice of intent to do so.

Landing sites are Pago Pago (American Samoa), Rarotonga (Cook Islands), Papeete (French Polynesia), Apia (Samoa) and Kosrae and Pohnpei (Federated States of Micronesia). The majority of the catch is offloaded in Apia. There is currently no offloading taking place in Pago Pago, Papeete or Rarotonga, although this may change in the future. Vessels are unloaded one at a time. In all cases, the catch is offloaded from the fishing vessel directly onto a refrigerated cargo vessel (reefer). During unloading, the fish are sorted by size and species. The Client has its own weighing scale that feeds directly into a server and links the recorded weights to the information contained on the RFID tags. A report is generated per unloading for each vessel's trip. Here, VMS data, departure and unloading dates, operation days, bait consumption, fuel consumption, and daily and total tuna catches are recorded. After unloading, the fish are loaded into containers aboard a reefer vessel. In Apia, Pohnpei and Kosrae, a random sample of 60 pieces of retained catch per vessel is also graded on site for quality checking purposes. Client personnel supervise the unloading on-board the vessel as well as the loading of the fish into freezer containers. At this point, a reefer loading list is produced, which links the container's unique number back to the vessel name, time and date of loading and catch composition by number of pieces and weights. Note that the catch of one vessel may be split into different reefers and vice versa. In those instances where the catch from more than one vessel is in a single reefer, the catch from different vessels is separated by a net and identified by a label. When a reefer is filled, the containers are sealed. At each of the landing sites (currently Apia, Kosrae or Pohnpei), dockside inspections are systematically carried out by government fisheries officers (Ueta Faasili, pers. comm. and see Sieben et al. (2018a)). Furthermore, in Apia, usually one of the 2 Cook Islands Fisheries Field Office (CIFFO) agents from neighbouring Pago Pago (American Samoa) will also conduct offloading inspections and collect the trip completion and offloading hardcopy forms.

After offloading the product is shipped directly to a CoC-certified buyer or stored in CoC-certified storage until a buyer can be determined, when ownership changes. It is in these storage facilities that any under-assessment bigeye will be stored. Post-landing destinations include Bangkok, China and Pago Pago, where the catch is processed before being transported to end markets in the US, China, Europe and Japan.

To be completed at Public Certification Report stage

Table 6. Traceability within the fishery

Factor	Description
<p>Will the fishery use gear(s) that are not part of the Unit of Certification (UoC)?</p> <p>If Yes, please describe: If this may occur on the same trip, on the same vessels, or during the same season; How any risks are mitigated.</p>	<p>No, all UoC vessels are exclusively pelagic longliners</p>
<p>Will vessels in the UoC also fish outside the UoC geographic area?</p> <p>If Yes, please describe: If this may occur on the same trip; How any risks are mitigated.</p>	<p>Fishing takes place mainly in the Cook Islands EEZ although vessels may also operate in other EEZs or on the High Seas. The Client fleet makes use of RFID tags (Figure 1) which are attached to the fish when brought on board the vessel, which enable traceability to the point of catch and UoA area. While sophisticated and state of the art, this system is implemented internally by the Client Group, with no third-party verification (e.g. from a regulatory body). For this reason, the risk of substitution between in-zone and out of zone catches remains non-negligible. There are two scenarios that mitigate this risk:</p> <ol style="list-style-type: none"> 1) CoC starts at the point of landing; however, any trips that also include sets outside the Cook Islands EEZ shall be classed as non-MSC. 2) CoC starts at the point of catch, at vessel level.
<p>Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities.</p> <p>Transport Storage Processing Landing Auction</p> <p>If Yes, please describe how any risks are mitigated.</p>	<p>No risks of mixing other than that identified above. There is minimal risk of mixing during processing. Bigeye, yellowfin and albacore are morphologically distinct species and are unlikely to be substituted with each other or with other species. The risk of mixing during landing/offloading is discussed below.</p>

Factor	Description
<p>Does transhipment occur within the fishery?</p> <p>If Yes, please describe: If transhipment takes place at-sea, in port, or both; If the transhipment vessel may handle product from outside the UoC; How many risks are mitigated.</p>	<p>There is no transhipment at sea. In-port transhipment does occur, i.e. when the fishing vessels offload their catch into containers aboard a refrigerated cargo vessel (reefer). For the purpose of this assessment, this is considered the point of landing. This process may take place in Pago Pago (American Samoa), Rarotonga (Cook Islands), Papeete (French Polynesia), Apia (Samoa) and Kosrae and Pohnpei (Federated States of Micronesia). On the Client's side, all fish are equipped with RFID tags that enable traceability to the point of catch and the UoA area; however, as explained above, the risk of substitution between in-zone and out-of-zone catches remains non-negligible with two scenarios that mitigate this risk:</p> <p>1) CoC starts from the point of landing; however, any trips that also include sets outside the Cook Islands EEZ shall be classed as non-MSC.</p> <p>A reefer bill of lading is produced which links each container's unique number back to the vessel name, time and date of loading and catch composition by number of pieces and weights. This way, each container can be traced back to a given trip. Associated logbook and VMS data can then enable traceability back to the UoA area. Note that the catch of one vessel may be split into different reefers and vice versa. In those instances, there are two measures in place to identify catches: 1) the catch from different vessels is separated by a net and identified by a label, and 2) RFID tags are attached inside the cavity of the fish prior to blast-freezing. Loss of tags is therefore highly unlikely. When a reefer is filled, the containers are sealed. Dock-side inspection regimes are to be discussed further at the site visit.</p> <p>2) CoC starts at the point of catch, at vessel level.</p> <p>Under this scenario, all steps that follow the point of catch will require separate CoC certification. No further mitigation is required.</p>
<p>Are there any other risks of mixing or substitution between certified and non-certified fish?</p> <p>If Yes, please describe how any risks are mitigated.</p>	<p>None</p>

5.3 Eligibility to enter further chains of custody

As explained in the previous section, the risk of substitution between in-zone and out of zone catches remains non-negligible. There are therefore two scenarios for where CoC should begin, this is either from the point of landing (however with additional precautions as detailed below), or from the vessel:

1) CoC starts at the point of landing; however, any trips that also include sets outside the Cook Islands EEZ shall be classed as non-MSC.

The team considered that the procedures described above, in conjunction with the Cook Islands MCS system described in Performance Indicator 3.2.3 and the inspection regime at each of the offloading sites, constitute a robust traceability management system, ensuring that in those cases where all the catch comes from the Cook Islands EEZ, traceability back to the UoA can be demonstrated up to the point of landing (i.e. offloading of the fishing vessels onto reefer vessels). South Pacific albacore and Western Central Pacific yellowfin and bigeye caught by the vessels listed in Table 8, Table 9 and Table 10 within the Cook Islands EEZ and after the eligibility date will be eligible to enter further chains of custody from the point of landing. **Separate CoC certification will be required from this point onwards and before transportation to the next line in the supply chain.**

2) CoC starts at the point of catch, at vessel level, where trips also include sets outside the Cook Islands EEZ. South Pacific albacore and Western Central Pacific yellowfin and bigeye caught by the vessels listed in Table 8, Table 9 and Table 10 within the Cook Islands EEZ and after the eligibility date will be eligible to enter further chains of custody from the point of catch. **In this case, separate CoC certification will be required for each vessel**

Note that the eligibility date for bigeye differs from that of albacore and yellowfin:

- Western Central Pacific bigeye: the eligibility date is the date of publication of the PCDR (as per 7.8 of the MSC FCPv2.1). **Pending the successful outcome of this assessment**, any product caught after this date, by the Client Group and the vessels listed in Table 8, Table 9 and Table 10 and conforming to the UoA detailed in Section 3.1 shall thus be eligible to bear the MSC ecolabel, subject to the traceability conditions given in Section 5.3 and Clause 5.6 of the MSC Chain of Custody Standard v5.0 for under-assessment product.
- Western Central Pacific yellowfin: the eligibility date is the date of recertification (**Pending the successful outcome of this assessment**)
- South Pacific albacore: the eligibility date is the date of recertification (**Pending the successful outcome of this assessment**)

The Client fishery is informed that if they sell or label non-eligible (nonconforming) product as MSC certified, they must:

- a. Notify any affected customers and the CAB of the issue within 4 days of detection.
- b. Immediately cease to sell any non-conforming products in stock as MSC certified until their certified status has been verified by the CAB.
- c. Cooperate with the CAB to determine the cause of the issue and to implement any corrective actions required.

To be completed at Public Certification Report stage

5.4 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to enter further chains of custody

There are no IPI stocks in this fishery.

6 Scoring

6.1 Summary of PI Level Scores

A summary of Performance Indicator scores is given in the table below. For the overall aggregate Principle level scores, see Section 4.2.

Table 7. Performance Indicator scores

Principle	Component	Wt	Performance Indicator (PI)		Wt	UoA 1	UoA 2	UoA 3
						South Pacific albacore	Western Central Pacific yellowfin	Western Central Pacific bigeye
One	Outcome	0.33	1.1.1	Stock status	0.5	100	90	100
			1.1.2	Stock rebuilding	0.5	N/a	N/a	N/a
	Management	0.67	1.2.1	Harvest strategy	0.25	70	70	70
			1.2.2	Harvest control rules & tools	0.25	60	60	60
			1.2.3	Information & monitoring	0.25	80	80	90
			1.2.4	Assessment of stock status	0.25	90	95	100
Two	Primary species	0.2	2.1.1	Outcome	0.33	100	100	100
			2.1.2	Management strategy	0.33	80	80	80
			2.1.3	Information/Monitoring	0.33	95	95	95
	Secondary species	0.2	2.2.1	Outcome	0.33	85	85	85
			2.2.2	Management strategy	0.33	75	75	75
			2.2.3	Information/Monitoring	0.33	85	85	85
	ETP species	0.2	2.3.1	Outcome	0.33	80	80	80
			2.3.2	Management strategy	0.33	80	80	80
			2.3.3	Information strategy	0.33	70	70	70

Principle	Component	Wt	Performance Indicator (PI)		Wt	UoA 1	UoA 2	UoA 3
						South Pacific albacore	Western Central Pacific yellowfin	Western Central Pacific bigeye
	Habitats	0.2	2.4.1	Outcome	0.33	100	100	100
			2.4.2	Management strategy	0.33	95	95	95
			2.4.3	Information	0.33	80	80	80
	Ecosystem	0.2	2.5.1	Outcome	0.33	80	80	80
			2.5.2	Management	0.33	80	80	80
			2.5.3	Information	0.33	80	80	80
Three	Governance and policy	0.5	3.1.1	Legal &/or customary framework	0.33	95	95	95
			3.1.2	Consultation, roles & responsibilities	0.33	85	85	85
			3.1.3	Long term objectives	0.33	80	80	80
	Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.25	90	90	90
			3.2.2	Decision making processes	0.25	80	80	80
			3.2.3	Compliance & enforcement	0.25	80	80	80
			3.2.4	Monitoring & management performance evaluation	0.25	90	90	90

6.2 Fishery overview

6.2.1 The Client fishery

The client fishery covers the vessels that are owned and/or managed by Liancheng Overseas Fishery (Shenzhen) Co. Ltd (SZLC), China Southern Fishery Shenzhen Co. Ltd (CSFC) and Liancheng Overseas Fishery (FSM) Co. Ltd. (FZLC) (the Client Group). The representative company for the client group based in the Cook Islands is Huanan Fishery (Cook Islands) Co. which is a subsidiary of CSFC. Note that FZLC is a subsidiary of SZLC and CSFC is a subsidiary of SZLC.

The Client Group for this fishery is complex. Cook Islands tuna longline licences are issued to the companies that own the vessels which may in some cases differ from those listed above. In those instances, agent agreements are in place with Huanan Fishery (Cook Islands) Co., which means that vessels operating under one company (i.e. the companies listed in the Client Group) may be owned by another company. The agent agreements are formalised in a legally binding agent-boat contract requiring *inter alia* compliance with the relevant regulations, data provisions and measures put in place as a result of the existing MSC certification.

In previous years, the client group operated under a notification of a Charter Arrangement by MMR to WCPFC under CMM 2009-06. Although for 2019 and 2020, no such notification was issued, the UoA still operates under foreign fishing licences governed by Marine Resources Act 2005, Marine Resources (Licensing) Regulations 2012 and licensing criteria under Marine Resources (Large Pelagic Longline Fishery and Quota Management System - QMS) Regulation 2016.

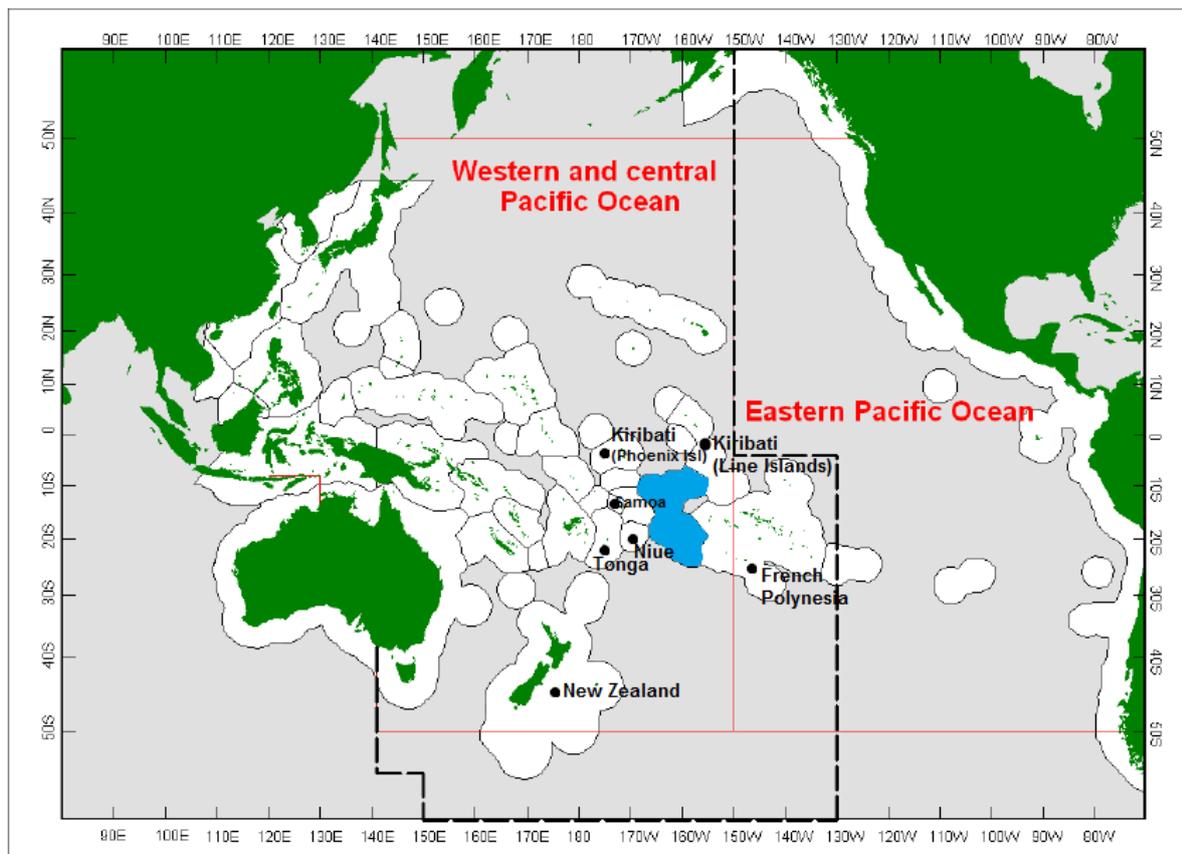


Figure 3. Map showing EEZ delimitation of the Cook Islands in blue. Adapted from Harley et al. (2011)

The vessels in the UoA are shown in Table 8 to Table 10. All are freezer vessels and are flagged to either China, FSM or the Cook Islands. In 2019, 56 licences were issued to the Cook Islands longline fleet, of which 20 were allocated to the Client Group.

Landings are made primarily in Apia (Samoa). Kosrae and Pohnpei (Federated States of Micronesia) may also be used very occasionally. Although currently no landings take place in Pago Pago (American Samoa), Rarotonga (Cook Islands), or Papeete (French Polynesia), these seaports may be added as landing sites in the future.

Note that a subset of UoA vessels have obtained CoC certification since the initial assessment; these are listed in Table 8 and Table 9. The vessels that do not have CoC certification remain subject to the traceability requirements specified in Section 5.3.

Table 8. List A-1: UoA vessels with MSC CoC certification (MSC-C- 55648) from 21st February 2017. (Note: not all will be licensed to fish in the Cook Islands EEZ at the same time)

Vessel Name	FFA VID	IRCS	Flag State	Registration number
HUA NAN YU 711	36073	BZXD22	China	(YUE)CHUANDENG(JI) (2016) FT-100050
HUA NAN YU 712	36074	BZXD23	China	(YUE)CHUANDENG(JI) (2016) FT-100048
HUA NAN YU 716	36238	BZXD24	China	(YUE)CHUANDENG(JI) (2016) FT-100034
HUA NAN YU 717	36239	BZXD25	China	(YUE)CHUANDENG(JI) (2016) FT-100033
HUA NAN YU 718	36246	BZXD26	China	(YUE)CHUANDENG(JI) (2016) FT-100032
HUA NAN YU 719	36247	BZXD27	China	(YUE)CHUANDENG(JI) (2016) FT-100030
HUA NAN YU 721	36259	BZXD28	China	(YUE)CHUANDENG(JI) (2016) FT-100031
HUA NAN YU 722	36260	BZXD29	China	(YUE)CHUANDENG(JI) (2016) FT-100029
HUA NAN YU 723	36261	BZXD32	China	(YUE)CHUANDENG(JI) (2016) FT-100028
HUA NAN YU 731	36435	BZXD33	China	(YUE)CHUANDENG(JI) (2017) FT-200084
HUA NAN YU 732	36436	BZXD34	China	(YUE)CHUANDENG(JI) (2017) FT-200085
HUA NAN YU 736	36437	BZXD35	China	(YUE)CHUANDENG(JI) (2017) FT-200086
HUA NAN YU 737	36481	BZXD36	China	(YUE)CHUANDENG(JI) (2017) FT-200087
HUA NAN YU 738	36480	BZXD37	China	(YUE)CHUANDENG(JI) (2017) FT-200088
HUA NAN YU 739	36479	BZXD38	China	(YUE)CHUANDENG(JI) (2017) FT-200089
SHEN LIAN CHENG 760	36212	BZXC32	China	(YUE)CHUANDENG(JI) (2016) FT-100051
SHEN LIAN CHENG 761	36208	BZXC33	China	(YUE)CHUANDENG(JI) (2016) FT-100053
SHEN LIAN CHENG 881	36498	BZXD92	China	(YUE)CHUANDENG(JI) (2017) FT-200004
SHEN LIAN CHENG 882	36499	BZXD93	China	(YUE)CHUANDENG(JI) (2017) FT-200005
SHEN LIAN CHENG 883	36512	BZXD94	China	(YUE)CHUANDENG(JI) (2017) FT-200006
SHEN LIAN CHENG 884	36513	BZXD95	China	(YUE)CHUANDENG(JI) (2017) FT-200003
SHEN LIAN CHENG 885	36514	BZXD96	China	(YUE)CHUANDENG(JI) (2017) FT-200002

Table 9. List A-2: UoA vessels with MSC CoC certification (MSC-C- 55648) from 5th June 2018 (Note: not all will be licensed to fish in the Cook Islands EEZ at the same time)

Vessel Name	FFA VID	IRCS	Flag State	Registration number
SHEN GANG FA 15	36493	BZXD52	China	(YUE)CHUANDENG(JI) (2018) FT-200033
SHEN GANG FA 16	36494	BZXD53	China	(YUE)CHUANDENG(JI) (2018) FT-200034
SHEN GANG FA 17	36495	BZXD54	China	(YUE)CHUANDENG(JI) (2018) FT-200035
SHEN GANG FA 18	36496	BZXD55	China	(YUE)CHUANDENG(JI) (2018) FT-200036
SHEN GANG FA 19	36506	BZXD56	China	(YUE)CHUANDENG(JI) (2018) FT-200037
SHEN GANG FA 715	36507	BZXD62	China	(YUE)CHUANDENG(JI) (2018) FT-200038
SHEN GANG FA 716	36502	BZXD63	China	(YUE)CHUANDENG(JI) (2018) FT-200055
SHEN GANG FA 718	36504	BZXD65	China	(YUE)CHUANDENG(JI) (2018) FT-200056
SHEN GANG FA 719	36505	BZXD66	China	(YUE)CHUANDENG(JI) (2018) FT-200057
SHEN GANG FA 720	36685	BZXD69	China	(YUE)CHUANDENG(JI) (2015) FT-200027

Table 10. List B: UoA vessels without MSC CoC certification (CI: Cook Islands; FSM: Federated States of Micronesia). (Note: not all will be licensed to fish in the Cook Islands EEZ at the same time)

Vessel Name	FFA VID	IRCS	Flag State	Registration number
ESTHER	34742	E5U2018	Cooks	1090
GRACE	35719	E5U2209	Cooks	1293
GRACE 1	35720	E5U2210	Cooks	1294
HONG YANG 8	36235	BBIW8	China	(LU)CHUANDENG(JI) (2018) FT-200229
HONG YANG 88	36307	BBIO8	China	(LU)CHUANDENG(JI) (2018) FT-200117
HONG YANG 9	36236	BBIW9	China	(LU)CHUANDENG(JI) (2016) FT-200046
LU RONG YUAN YU 888	36456	BBIV8	China	(LU)CHUAN DENG(JI) (2018) FT-200031
LU RONG YUAN YU 889	36457	BBIV9	China	(LU)CHUANDENG(JI) (2018) FT-200030
LU RONG YUAN YU 211	36771	BCLN8	China	(LU)CHUANDENG(JI) (2016) FT-200164
LU RONG YUAN YU 212	36628	BBLM6	China	(LU)CHUANDENG(JI) (2017) FT-200038
HONG YANG 2	35987	BBLY1	China	(LU)CHUANDENG(JI) (2016) FT-100017
VIKING SPIRIT	34836	E5WY	CI	CI 01/02
LADY ANN II	32945	E5U3018	CI	2118
CFA22	36214	V6P22	FSM	VR0120
HAI XING 715	36198	BZ7VG	China	(ZHE)CHUANDENG(JI) (2017) FT-200065
HAI XING 716	36199	BZ8VG	China	(ZHE)CHUANDENG(JI) (2017) FT-200067
HAI XING 717	36200	BZ9VG	China	(ZHE)CHUANDENG(JI) (2017) FT-200066

Vessel Name	FFA VID	IRCS	Flag State	Registration number
HAI XING 718	36201	BZ1VH	China	(ZHE)CHUANDENG(JI) (2017) FT-200068
HONG YANG 11	36727	BZU4B	China	(ZHE)CHUANDENG(JI) (2018) FT-200092
ZHONG YANG 18	36356	BZXD73	China	(ZHE)CHUANDENG(JI) (2016) FT-200019
ZHONG YANG 19	36357	BZXD74	China	(ZHE)CHUANDENG(JI) (2016) FT-200018
ZHONG YANG 28	36359	BZXD76	China	(ZHE)CHUANDENG(JI) (2016) FT-200017
HAI XING 815	36473	BZU6B	China	(ZHE)CHUANDENG(JI) (2018) FT-200050
HAI XING 817	36475	BZU8B	China	(ZHE)CHUANDENG(JI) (2018) FT-200052

6.2.2 Gear and operation of the fishery

Pelagic longline gear is used throughout the world's oceans to capture large pelagic fishes, including tuna and tuna-like species. Longline gear is typically deployed from a single vessel across many miles of ocean. The vessel deploys a single mainline made of nylon monofilament that is periodically buoyed with floatation devices and to which are attached hundreds or thousands of branch-lines, each with a single baited hook as shown in Figure 4. Within this simple framework, a variety of configurations and operational practices can be employed to specifically target different depths and species of fish.

A single set by vessels in the client fleet usually consists of a mainline that is up to 50km in length with c. 20m-long branch-lines attached at intervals along the length of the line. The distance between floats is about 1km, with about 25 hooks between floats. Larger 38m length vessels make ca. 80-day trips, with 68 sets per trip. Smaller ca. 32m length vessels typically make 50-day trips, with 42 sets per trip. The depth of the shallowest hook is at approx. 50m and deepest hook at about 300m. Wider circle hooks rather than other hook types (e.g. J-hooks or tuna hooks) continue to be used (Figure 5). Shark lines with wire leaders are also not used. Note that the client has a policy in place banning the retention of sharks and rays and banning the use of fishing gear and methods to target sharks (Section 6.7.5). Although gear loss is not formally monitored, the Client fishery does keep track of how many hooks are supplied each trip, which could act as some form of indicator for gear replacement. Nevertheless, radio buoys are spaced at regular intervals and at the very end of the main line. Radio buoys give out signals that are picked up by the radio direction finders on the vessel from as far away as 35nm (Beverly et al., 2003); should the mainline break then the lost section of mainline can be retrieved so the fish can still be harvested and the expensive gear retained. It is in any case very rare for the whole longline to be lost.

Bait use by the UoA is discussed in Section 6.7.3.

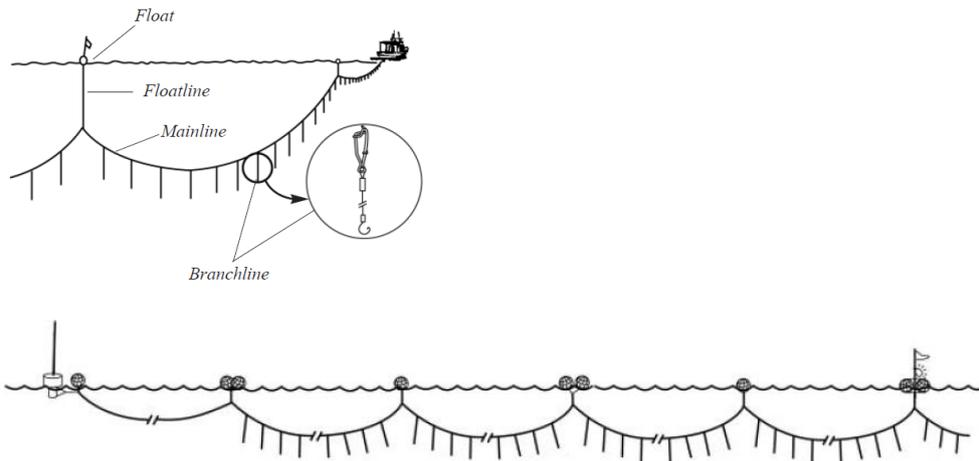


Figure 4. Illustration of longline set (Beverly et al., 2003)



Figure 5. Image of a circle hook used by vessels in the UoA. Image provided by Client.



Figure 6. Four hook designs commonly used in pelagic longline fisheries, from left, circle, J, tuna and teracima hooks. Note the UoA only uses circle hooks (Beverly 2009; IATTC 2011 – all cited in Gilman et al. (2019))

The client fleet operates on a year-round basis, mostly in the Cook Islands waters in the northern part of the EEZ (Figure 3) although about 5% of the time also in the High Seas. There is also the possibility that vessels may fish in other EEZs (e.g. FSM waters) before fishing in Cook Islands waters, or vice versa. As catches outside the Cook Islands EEZ are not covered by this assessment, the catch of trips that include multiple EEZs will not be eligible for MSC certification unless the vessels have separate CoC certification. This is explained in Section 5.2 (Traceability).

One major change since the initial assessment has been the establishment of 50nm Marine Protected Area (MPA) closures around all 15 islands within the Cook Islands EEZ (Figure 7), as stipulated under Part 3, Section 24 of the Marae Moana Act (2017). Approximately 20% of the EEZ is now closed to commercial fishing and based on VMS data, the closures are being well respected.

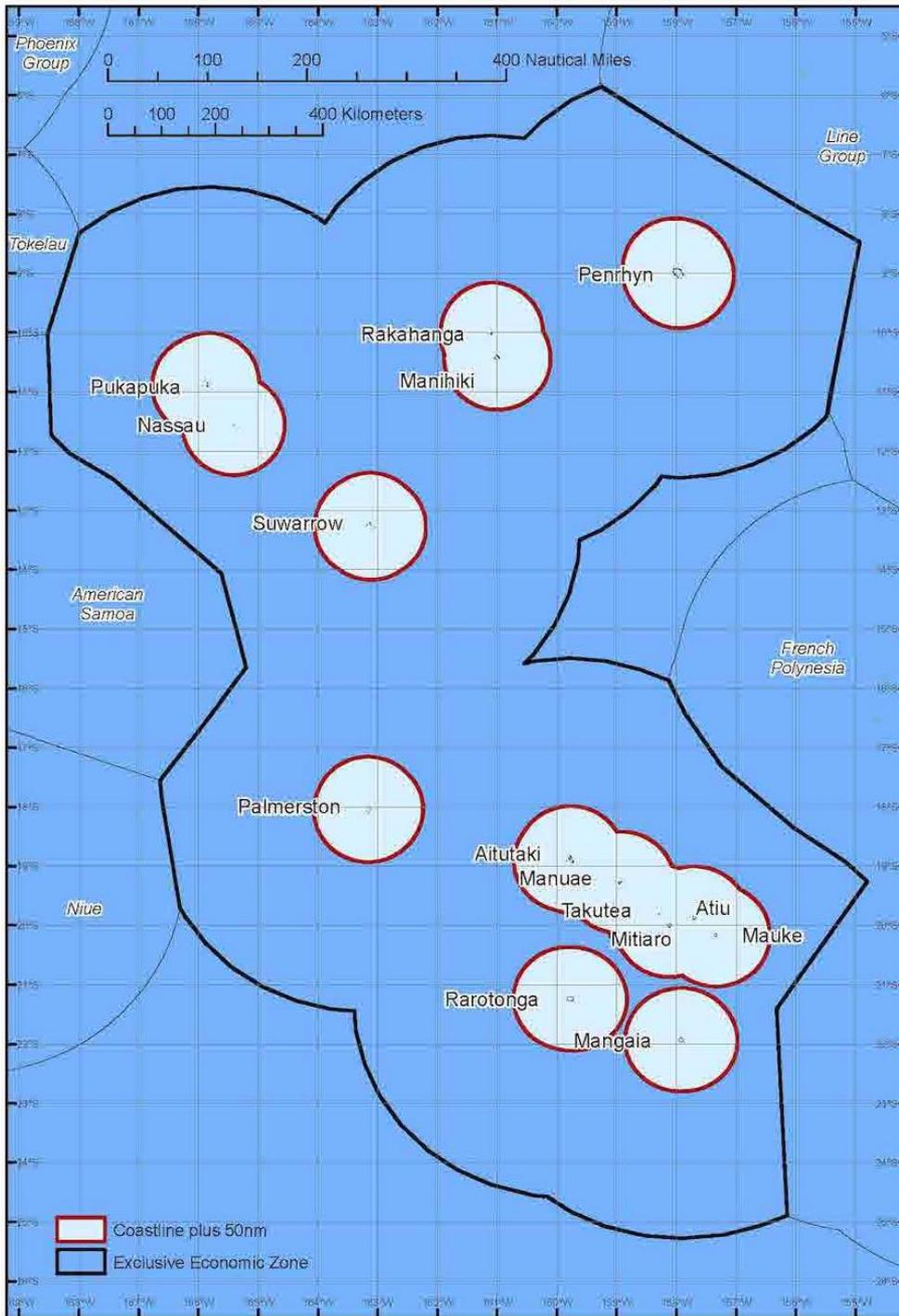


Figure 7. Map showing the 50nm contour around each of the 15 islands, where commercial fishing and seabed mining are prohibited. <https://www.conservation.org/projects/marae-moana-cook-islands-marine-park>.

6.3 Principle 1: General

6.3.1 TAC and catch data

Estimated catches from the Western Central Pacific Ocean (WCPO) yellowfin and bigeye and South Pacific (SP) albacore stocks and the UoAs are given in Table 11. The Cook Islands manages the albacore and bigeye fishery in its EEZ via a total allowable catch (TAC) and total allowable commercial catch (TACC) of albacore, which is set at the level of maximum historical annual catch (2012) (Table 11). The difference between TAC and TACC for SP ALB is based on very low artisanal catches historically, so therefore very small. For BET it is larger, as a more precautionary approach was applied, based also on historical EEZ catches and a desire to be in line with the 2,000 mt catch limit given in CMM 2018-01 (despite there being a SIDs exemption).

Table 11. Total catch from each stock with Cook Islands TAC and TACC. Yellowfin and bigeye catch estimates from WCPFC Convention Area; source: SPC (2019a). South Pacific albacore catch estimates from SC (2019). Cook Islands total allowable catch (TAC) and commercial catch (TACC) from Marine Resources (Large Pelagic Longline Fishery and Quota Management System) Regulations 2016. UoA/UoC catch data based on MMR logbook data. (NB: No other eligible fishers so UoA=UoC). All data in tonnes.

Stock	WCPO yellowfin		WCPO bigeye		SP albacore	
	2017	2018	2017	2018	2017	2018
Total landings from the stock	695,107	690,207	129,744	147,985	75,707	80,820
Cook Islands TAC	n/a	n/a	3,500	3,500	9,750	9,750
Cook Islands TACC	n/a	n/a	2,500	2,500	9,698	9,689
Total landings by UoA/UoC	725	507	183	152	2,752	2,444
UoA/UoC share of TACC	n/a	n/a	480	340	5,430	3,070

6.3.2 Low Trophic Level (LTL) species

None of the target species for this assessment are key Low Trophic Level (LTL) species, as they do not meet the requirements for key LTL species defined in paragraphs SA2.2.8 – SA2.2.10 of the MSC Fisheries Certification Requirements v2.0. The target stocks are not involved in large portions of the trophic connections in the ecosystem; large volumes of the energy do not pass through the stocks between lower and higher trophic levels; and there are many other species at their trophic level through which energy can be transmitted from lower to higher trophic levels. Further to this, it is not one of the species types listed in Box SA1, nor do they feed predominantly on plankton.

6.3.3 Management jurisdiction

The two tropical species under Principle 1 (yellowfin and bigeye) are managed as two separate stocks in the Pacific Ocean: the Western and Central Pacific (WCPO) stock and the Eastern Pacific (EPO) stock (the rationale for this approach is set out in the background section for each stock). This aligns with the Convention Areas of the two tuna Pacific Regional Fisheries Management Organisations (RFMOs) – i.e. WCPFC and the Inter-American Tropical Tuna Commission (IATTC). In this assessment, we are concerned with the WCPO stocks of yellowfin and bigeye (as explained above), and their management is the responsibility of WCPFC.

Albacore tuna, which is a more temperate-water species, is likewise considered to be divided into two separate stocks in the north Pacific and the south Pacific (see Section 6.4.1). Since both these areas cut across the Convention Areas of both RFMOs, responsibility is in theory shared. In practice, for

South Pacific albacore, almost all the catch takes place in the WCPO, and hence IATTC has never taken any management action for South Pacific albacore – WCPFC is the de facto management authority for this stock.

6.3.4 Cook Islands harvest strategy

As noted above, the Cook Islands sets a TAC and TACC for albacore and bigeye in its EEZ. It manages the TACC via a quota management system (QMS). The system came into force on the 6th December 2016 as part of the Marine Resources (Large Pelagic Longline Fishery and Quota Management System) Regulations 2016. The quota applies to all in-zone longline fishing activities, except for exploratory fishing and subsistence and recreational fishing which can be included in the larger Total Allowable Catch (TAC). The albacore quota has been fixed at 9,698 tonnes (TACC) and TAC 9,750 tonnes (derived from peak landings in 2012) while the bigeye quota is fixed at TACC of 2,500 tonnes (TAC 3,500 tonnes).

Licence holders are required to purchase a minimum quota allocation of 25t albacore and 20t bigeye. Individual companies may transfer quota between vessels but quota may not be transferred between companies. Quota uptake is monitored on a weekly basis with albacore and bigeye (as well as yellowfin) catches reported electronically by each Wednesday. The MMR issues a notification when 80% of a company's quota is reached, requiring vessels to report every 24 hrs; at 90% a stop fishing notification is sent out. For companies that exceed their quota, the overage is deducted from the following year's allocation. As only 80% of the national quota is allocated annually, TACC overages are reasonably unlikely. There is no provision for re-allocating any unused quota.

6.3.5 WCPFC harvest strategy – cross-cutting issues

Some elements of Principle 1 are specific to the individual stocks (i.e. the discussion of stock status and stock assessment), but there are two key elements which are shared across several stocks:

- The WCPFC harvest strategy for tropical tunas covers all three tropical species, and hence has the same approach for both yellowfin and bigeye stocks, although with some measures which are stock-specific;
- The approach by WCPFC to developing a formal harvest strategy and harvest control rule is the same across all three of the stocks discussed here.

To avoid repetition and cross-referencing, the common elements of the harvest strategy are discussed in this section, while stock-specific information is provided in subsequent sections.

6.3.6 Tropical tunas: Harvest strategy – brief history

The discussion in this report refers to various WCPFC tropical tuna CMMs which were in force at different times, and it is useful to summarise these briefly, for clarity (Table 12).

In addition, to understand the evolution of the tropical tuna harvest strategy as it relates to bigeye (which has been a key driver of changes to the harvest strategy), it is useful to understand the history of bigeye stock assessments (Table 13). The end date of the most recent assessment (2017 updated in 2018) is 2015, so currently there is no direct information about the impact of the CMMs after that time period (although there have been projections, discussed in Section 6.6.4 further on in this report).

In other words, the effect of the relatively stricter CMMs from 2015-01 onwards is still unknown, before any impact of the relaxation of some requirements in 2017 comes into play.

Table 12. Summary of various tropical tuna measures in force at WCPFC since 2014

CMM	Summary	Years in force	Perception of stock status when CMM agreed	
			Yellowfin	Bigeye
2013-01	First year of 4-year measure aimed in particular at reducing F on bigeye; additional measures are phased in each year	2014	Good	Overfishing, may be overfished
2014-01	Second year of 4-year measure	2015	Good	Overfished and overfishing
2015-01	Third year of 4-year measure	2016	Good	Overfished and overfishing
2016-01	Fourth year of 4-year measure	2017	Good	Overfished and overfishing
2017-01	'Bridging measure' while work towards a formal harvest strategy is ongoing. Some relaxation of measures relative to 2016-01.	2018	Good	Good (uncertain)
2018-01	Further bridging measure. Essentially the same as 2017-01 as regards tropical tuna stock management.	Current	Good	Good (less uncertain)

Table 13. Recent history of WCPO bigeye stock assessments

Assessment date	End year of time series	Assessment conclusion		
		Overfished?	Overfishing?	Uncertainty
2010	2009	'Approaching' or 'slightly'	Yes	-
2011	2009	Maybe	Yes	-
2014	2012	Yes	Yes	-
2017	2015	No	No	Higher
2018 (update)	2015	No	No	Reduced

6.3.7 Tropical tunas: Harvest strategy – current situation

A limit reference point (LRP) has been agreed by WCPFC for all the stocks under assessment: $20\%SB_{\text{current},F=0}$, where 'current' is defined as the most recent 10-year period for which data are available for the stock assessment. The current CMM for tropical tuna stocks in the WCPFC zone is CMM 2018-01 (replacing CMM 2017-01 on 3 February 2019). As noted above, these CMMs are intended to provide 'bridging measures' while work continues towards a formal harvest strategy. CMM 2018-01 runs to February 2021, unless replaced before.

The objective of the harvest strategy is the same for yellowfin and bigeye. They are set out in CMM 2017-01 (bigeye: paragraph 12; yellowfin: paragraph 14) and are unchanged in 2018-01:

Pending agreement on a target reference point the spawning biomass depletion ratio ($SB/SB_{F=0}$) is to be maintained at or above the average $SB/SB_{F=0}$ for 2012-2015.

This objective is to maintain the status quo for both stocks. For bigeye, the final year of the stock assessment is 2015, and the objective equates to 'current' biomass, as defined by the Scientific

Committee (SC). For yellowfin, the final year of the stock assessment is likewise 2015, although 2012-15 does not quite equate to either 'latest' or 'recent' as used in the stock assessment.

CMMs 2017-01 and 2018-01 provide for a series of management measures aimed at constraining effort on tropical tunas, focusing particularly on the purse seine fishery which accounts for almost 60% of the catch of yellowfin and ~40% of the catch of bigeye (2014-16; SPC (2018)) and has an impact on SB as well as SB_{MSY} disproportionate to its percentage of the catch because it takes mainly juveniles.

Measures for the purse seine fishery are as follows:

- A three-month ban on deploying, maintaining or setting on FADs during July-September, including the high seas and EEZs, in the area 20°N-20°S; with some exemptions for PNA vessels operating under the VDS (see below). Also a further two-month ban on FAD setting in the high seas in April-May or November-December; to be decided by the CCM; except for Kiribati and Cook Islands vessels in high seas areas adjacent to their EEZs and Philippines vessels in High Seas Pocket 1 (HSP1), for which a set of special measures are established;
- A maximum of 350 instrumented FADs to be in use, per vessel, at any one time;
- Purse seine catch or effort limits to be set for each relevant EEZ (see Note that under the Marine Resources (Large Pelagic Longline Fishery and Quota Management System - QMS) Regulation 2016, all quota is owned exclusively by the Crown until allocated in accordance with the fisheries plan and QMS regulations. The Secretary of the MMR therefore effectively sells or leases the quota to the UoA fishery. Because the quota is owned by the Cook Islands, it follows that CMM 2018-01 as it applies to the Cook Islands is relevant and that the catch limits in 2018-01 do not apply.
- Table 14; remaining countries have till the end of 2018 to set limits);

Non-SIDS (except Philippines) to set high-seas effort limits for their flag vessels for the area 20°N-20°S (see Table 14). The CMM also notes (para. 27): *CCMs shall ensure that the effectiveness of these effort limits for the purse seine fishery are not undermined by a transfer of effort in days fished into areas within the Convention Area south of 20°S. In order not to undermine the effectiveness of these effort limits, CCMs shall not transfer fishing effort in days fished in the purse seine fishery to areas within the Convention Area north of 20°N;*

- Any overshoot of catch or effort limits to be deducted from the following year.

CMM 2018-01 also sets longline bigeye catch limits by flag (including charter vessels) for the distant water nations, and requires that member countries which caught less than 2,000 t in 2004 should ensure that their annual catch does not exceed 2,000 t. These limits are to be reviewed in 2019 based on stock assessments and management advice, with 'hard limits' to be set in 2020. This may also be relevant for yellowfin in as much as it restricts longline effort in general (Table 15). Up to and including 2018, the vessels in the UoA, although not all flagged to the Cook Islands, fished against limits for the Cook Islands, since they operated under a charter notification with the country. For 2019, no such charter arrangement was notified to the WCPFC as would be required under CMM 2009-06. Despite such bigeye catch limits not applying to the Cook Islands, since SIDS have an exemption (under paragraph 5 of CMM 2013-07), MMR, under its QMS has instituted annual quotas (TAC or 3,500 t and a TACC or 2,500 t) for bigeye catches. Therefore, the UoA must fish against the TACC set out by the QMS. Note that under the Marine Resources (Large Pelagic Longline Fishery and Quota Management System - QMS) Regulation 2016, all quota is owned exclusively by the Crown until allocated in accordance with the fisheries plan and QMS regulations. The Secretary of the MMR therefore

effectively sells or leases the quota to the UoA fishery. Because the quota is owned by the Cook Islands, it follows that CMM 2018-01 as it applies to the Cook Islands is relevant and that the catch limits in 2018-01 do not apply.

Table 14. Purse seine EEZ effort or catch limits under CMM 2018-01 (Table 1 in CMM 2018-01). Note: PNA and Tokelau manage their effort together through the VDS.

Coastal CCM or group of CCMs	Maximum effort in vessel days, or catch limit in tonnes
PNA	44,033 days (see further details below)
Tokelau	1,000 days
Cook Islands	1,250 days
Fiji	300 days
Niue	200 days
Samoa	150 days
Tonga	250 days
Vanuatu	200 days
Australia	30,000 t skipjack, 600 t each of yellowfin and bigeye
French Polynesia	0 (purse seine ban in FP EEZ)
Indonesia	not yet decided
Japan	1,500 days
Korea	not yet decided
New Zealand	40,000 t skipjack; nothing specified for other species
New Caledonia	20,000 t skipjack; nothing specified for other species
Philippines	not yet decided
Taiwan	not yet decided
USA	558 days
Wallis and Futuna	not yet decided

Table 15. High seas purse seine effort limits and longline catch limits for relevant fishing nations under CMM 2018-01 (Table 2 and Table 3 in CMM 2018-01). * provisional

CCM	Purse seine effort limit (days)	Longline bigeye catch limit (t)
China	26	8,224
EU	403	-
Japan	121	18,265
New Zealand	160	-
Korea	207	13,942
Taiwan	95	10,481
USA	1270	3,554
Indonesia	-	5,889 *

Other measures in CMM 2018-01 are as follows:

- A requirement to use only non-entangling FADs, by 1 January 2020 (introduced in CMM 2018-01 for the first time);
- Capacity of freezer purse seiners >24m operating between 20°N and 20°S is limited to the level set out in CMM 2013-01 (and subsequent iterations), except SIDS and Indonesia; likewise for freezer longliners and freshfish longliners targeting bigeye (with additional exemption for countries with a domestic quota system);
- Any replacement of purse seine vessels should not increase overall capacity; and
- Other fisheries (i.e. not purse seine or longline) are limited to the catch level of 2004 or the average catch 2001-4, except for those taking <2,000 t who may take up to this level.

6.3.8 Tropical tunas: Analysis of management options

In 2017, the four-year tropical tuna measure (CMM 2013-01 to 2016-01) was coming to an end, and at the same time, the new stock assessment for bigeye gave a radically improved picture of the stock status (see Table 13 and bigeye P1 Section 6.6 further on).

Since work was ongoing towards a formal harvest strategy for yellowfin and the other tropical tuna stocks (Section 6.3.9), CCMs wanted to put in place one or a series of ‘bridging measures’ for tropical tuna which would apply until the formal harvest strategy could be agreed and implemented. In August 2017, a working group was convened to agree a series of management options for which SPC could evaluate the consequences for the stock status of the three tropical tuna stocks (SPC, 2017a). This was done as follows:

- Quantify the outcome of each management option in terms of proportional changes in purse seine and longline catch, making the (precautionary) assumption that all available effort and catch is used up to the limits set out in the management option;
- For each quantified option, run a deterministic 30-year projection to 2045, based on the uncertainty grid of the most recent stock assessment, to evaluate likely (average, equilibrium) stock status at the end of the projection period relative to the current situation and reference points $SB_{F=0}$ and F_{MSY} .

In relation to bigeye, it is important to note that this exercise was carried out using the uncertainty grid defined by SC13 after the 2017 stock assessment (explained in Section 6.6.3), which incorporates the old growth model, albeit down-weighted. Repeating this exercise with the 2018 updated uncertainty grid (SC14 grid) would result in more optimistic results, particularly in relation to the risk of breaching reference points.

Management options that were considered are summarised in Table 16. In total, SPC evaluated 211 different sub-options, presenting the full set of results in a spreadsheet.

Table 16. Management options and sub-options evaluated by SPC in order to inform management decision-making at WCPFC14 (when the four-year tropical tuna measure needed to be replaced by the first bridging measure, CMM 2017-01)

Option	Sub-option	Purse seine	Longline
0 – status quo		2013-15 average	2013-15 average
1	a	CMM 2016-01 FAD closures / limits	CMM 2016-01 catch limits; other CCMs take 2013-15 average
	b	2015-16 measures FAD closures	CMM 2016-01 catch limits; other CCMs take 2013-15 average
	c	2012-15 measures FAD closures	Baseline longline catch minus 31%
2		3-month FAD closure, plus range of additional FAD closures on the high seas (up to 12 months), plus total high seas effort limits in range 3-5,000 days (15 options total)	Not specified; SPC used a range, resulting in 161 sub-options overall
3	a	No FAD closure but range of FAD limits (5 options)	Options in range 77,400t to 94,600t (5 options)
	b	SPC to calculate limits required to meet objectives	
4		4-month FAD closure in zone with additional month for non-SIDS taking >500 t bigeye per vessel, plus high sea FAD closure	Not specified; SPC used a range
5		3-month FAD closure, plus 3-month high seas total closure (zero effort)	Not specified; SPC used a range

The results of this exercise are summarised briefly in Table 17. For yellowfin, any of the options maintain the status quo or better, in terms of SB and F, and none of them increase the risk of SB<LRP or F>F_{MSY} to 20% or above. For bigeye, conversely, projected consequences are variable and the risks of SB<LRP / F>F_{MSY} cannot be reduced to <20% except by significant cuts in both sectors of the fishery (range up to 8-month FAD closure plus longline status quo, to zero FAD closure with longline catch limits reduced by 50%). SPC emphasises, as noted above, that this is driven by the high level of uncertainty in the 2017 stock assessment (which is reduced in the 2018 update).

In option 3b, SPC was asked to define management options that meet objectives. Taking status quo in SB to be the objective as per CMMs 2017-01 and 2018-01, this is possible for Option 2 or Option 5 with a 10% reduction in longline catch limits, or Option 4 with status quo for longline. To maintain status quo in F as well, a reduction in longline catch limits of 30% is required for Options 2 and 5, or 20% for Option 4.

Table 17. Summary of evaluation of management options by projections from the stock assessment, except for Option 3b which is summarised in the text. SPC (2017b).

Option	Consequences for bigeye		Consequences for yellowfin	
	SB	F	SB	F
0	down	up	up	down
1	up with longline catch reduction >10%	down with longline catch reduction >30%	up	down

Option	Consequences for bigeye		Consequences for yellowfin	
	SB	F	SB	F
3	down	up	up	down
4	up unless longline catch increases	down with longline catch reduction >30%	up	down
5	up with longline catch reduction >10%	down with longline catch reduction >30%	up	down

6.3.9 Tropical tunas: PNA harvest strategy and the VDS

The member countries of PNA¹ operate a purse seine vessel day scheme (VDS). The objective of the purse seine VDS (from a stock management perspective) is to constrain purse seine effort to 2010 levels in the EEZs of PNA member countries (plus Tokelau), following the requirements of CMM 2016-01 and its previous iterations. The total number of days under the VDS across all the EEZs for 2017-18 is 45,590, and for 2019-20 45,033. The number of days is calculated as follows: 44,033 days are taken as baseline (2010) effort for PNA countries (from SPC); a percentage multiplier is added based on how the days are sold across different vessel length classes (for 2017-18 this increases the number of days by 1.3% relative to the baseline, for 2019-20 it is set to zero); the same calculation is carried out separately for Tokelau based on a baseline of 1,000 days – these are summed together to give a Total Allowable Effort (TAE) (PNA (2016a); see also CMM 2018-01).

A vessel day varies according to the size of the vessel. For vessels <50m Length Overall (LOA) one day counts as 0.5 VDS days; conversely a vessel >80m LOA must buy 1.5 VDS days per day fishing. This reportedly acts as a built-in disincentive to effort creep, to the extent that there are no vessels >80m left in the fishery. Effort creep is evaluated annually by PNA and SPC (Muller et al., 2018).

Effort is allocated between countries based on a pre-agreed key but can be traded if necessary. Fishing companies apply at the beginning of the year for the number of days they think they will require from each country and pay accordingly. They may also buy more days during the year as required, as long as they remain available (so far, days have reportedly not been limiting since price is more limiting).

In 2016, the Palau Arrangement established a similar VDS for longline vessels in PNA waters (PNA, 2016b). The scheme allows a total of 165,132 longline days across PNA members. There is the possibility in the Palau Arrangement to transfer days between members, although since all have sufficient allocation at present, there has been no need for this.

Reportedly, the total number of longline days was calculated based on the PNA proportion of total longline days in the WCPO (230,000), after the application of a 30% cut for high seas bigeye catches (bearing in mind this cut was established when the 2014 stock assessment was current, and the bigeye stock considered depleted). It is important to note that, unlike the purse seine VDS, every day at sea is considered a fishing day under the longline scheme. The scheme is due to be reviewed in 2021. For now, it is not considered to have a specific management purpose, but this could change in the future – it is putting a tool or framework in place which could be used if required.

¹ Republic of the Marshall Islands, Federated States of Micronesia, Kiribati, Nauru, Palau, Papua New Guinea, Solomon Islands, Tuvalu

6.3.10 Progress towards a formal harvest strategy

CMM 2014-06 commits WCPFC to putting in place a formal harvest strategy (now a ‘management procedure’) for its key stocks, including WCPO yellowfin and bigeye and North and South Pacific albacore. CMM 2014-06 has an associated workplan for each stock. The WCPFC workplan deadlines have been revised several times, most recently at WCPFC16 in December 2019. The current WCPFC workplan (agreed at WCPFC16: Attachment H in WCPFC (2019a)) pushes back deadlines relative to previous versions, as follows:

- Target reference points for bigeye and yellowfin: previously 2019, now 2021;
- Management procedure for bigeye and yellowfin: previously 2021, now unspecified but later than 2022 (end date of workplan); to allow development of a multi-species MSE framework; and
- Management procedure for South Pacific albacore: previously 2021, now 2022, to avoid a clash with a stock assessment planned for 2021 which may need to be incorporated into the MSE framework.

WCPFC notes in the preamble to the revised workplan that as well as the reasons for delay set out above, the delays have been agreed for the following general reasons: i) all the stocks but particularly the tropical stocks are taken in multispecies fisheries and therefore the end objective should be a multispecies management framework for all the stocks and ii) more time is required for capacity building with WCPFC members.

For albacore, the Commission proposes a ‘bridging measure’ which will be developed by the South Pacific Albacore Roadmap Working Group. This is a group led by Fiji which is supposed to be developing terms of reference and a workplan during 2020.

6.4 Principle 1: Albacore

6.4.1 Stock definition

There are considered to be two stocks of albacore tuna in the Pacific Ocean, i.e. the north and south Pacific stocks. This hypothesis is supported by various lines of evidence: lower catch rates in equatorial regions, tagging data (no recorded recoveries of in the South Pacific of fish tagged in the north), larval samples (albacore larvae are rare in samples from equatorial waters) and genetic data showing differentiation between north and south Pacific albacore (Tremblay-Boyer et al., 2018).

6.4.2 Biology

This section is taken from Tremblay-Boyer et al. (2018), except where otherwise indicated.

Mature albacore (>~80 cm) spawn in tropical and sub-tropical waters between ~10° and 25° during the summer. Juveniles tend to migrate to higher latitudes; in the southern hemisphere they are fished in the vicinity of the Sub-Tropical Convergence Zone (~40°S) at 45-50cm and age ~one year. Albacore appear to disperse gradually north- and southward from the central Pacific but may also migrate seasonally between tropical and sub-tropical waters. These seasonal migrations have been inferred from monthly trends in longline catch rates, which suggest that north-south movements tend to correspond with the seasonal shift in the 23-28°C sea surface temperature isotherm.

Males grow to larger sizes than females, and after sexual maturity (at ~85 cm), their growth rates vary. The length-at-age of both sexes also varies with longitude, with both growth rates and maximum sizes

increasing toward the east and reaching a maximum at about 160°W. There is therefore a possibility of regional difference in growth, slower in the southern regions where the troll fishery and smaller individuals occur, than in the subtropical regions to the north where the majority of the otolith sampling took place. Given the uncertainty regarding growth, the impact of alternative growth assumptions was examined in the assessment.

The natural mortality rate is estimated to be in the range 0.2-0.5 per year, with significant numbers of fish reaching ten years or more. Currently, the longest period at liberty for a recaptured tagged albacore in the south Pacific is 11 years, but in the north Pacific, there has been one recapture after 15 years. The level of natural mortality is considered a key area of uncertainty for stock assessment (as with most assessments).

6.4.3 Harvest strategy

WCPFC has adopted 20% $SB_{F=0}$ as a limit reference point (LRP) for the South Pacific (SP) albacore stock, calculated in the same way as for WCPO bigeye and yellowfin. The management measure for SP albacore is CMM 2015-02. The management objective of 2015-02 is that effort (expressed as the number of active vessels targeting the stock) should not increase over recent historical levels (defined as 2005 or 2002-04) (CMM 2015-02, paragraph 1).

There are various problems with CMM 2015-02 as a measure to control fishing mortality, notably that it only applies south of 20°S, “active vessels targeting SP albacore” are hard to identify and (as normal) SIDS are permitted ‘responsible development’ or their fishery (paragraph 2). Nevertheless, catch has been declining gradually but constantly since 2012.

At WCPFC15 (December 2018) an interim target reference point was agreed, with the objective of achieving an 8% increase in CPUE relative to 2013 levels. The interim TRP was set at 56% $SB_{F=0}$, to be adjusted according to estimates from stock assessments as to the biomass required to achieve the target increase in CPUE (measured as longline-vulnerable biomass in the stock assessments). A 20-year timeframe was agreed for achieving this management target. SPC were charged with developing candidate HCRs during 2019 which would meet these requirements; meanwhile it is not incorporated directly into management. Note that the purpose of this TRP is not strictly biological, since biomass is estimated to be well above B_{MSY} (see below) but rather to support SIDS longline fleets economically. The next stage in the workplan is for analysis of options for a management procedure based on this management target, while at the same time the South Pacific Albacore Roadmap Working Group is being reconstituted to work on bridging measures as required.

6.4.4 Stock status

Taking estimates across the structural uncertainty grid (explained above), SB is estimated to be at ~52% of the unfished level, which is below the newly-agreed interim TRP, but above SB_{MSY} with high probability (>>90%; noting that SB_{MSY} is estimated at only ~15% of SB_0 – much lower than the MSC default of 40%). F is also below F_{MSY} with high probability (>>90%) (Figure 8).

The estimated trends in fishery depletion and stock status are given in Figure 9 and Figure 10. Current stock status is presented in the form of dynamic Kobe plots and Majuro plots (Figure 11 and Figure 12).

	Mean	Median	Min	10%	90%	Max
C_{latest}	61719	61635	60669	60833	62704	63180
MSY	100074	98080	65040	70856	130220	162000
$YF_{current}$	71579	71780	56680	62480	80432	89000
f_{mult}	6.2	4.96	1.89	2.44	12.05	17.18
F_{MSY}	0.07	0.07	0.05	0.05	0.09	0.1
F_{recent}/F_{MSY}	0.23	0.2	0.06	0.08	0.41	0.53
SB_{MSY}	71407	68650	26760	39872	100773	134000
SB_0	443794	439800	308800	353870	510530	696200
SB_{MSY}/SB_0	0.16	0.17	0.07	0.1	0.21	0.23
$SB_{F=0}$	469004	462633	380092	407792	534040	620000
$SB_{MSY}/SB_{F=0}$	0.15	0.15	0.06	0.09	0.2	0.22
SB_{latest}/SB_0	0.55	0.56	0.33	0.42	0.69	0.74
$SB_{latest}/SB_{F=0}$	0.53	0.52	0.3	0.37	0.69	0.77
SB_{latest}/SB_{MSY}	4	3.42	1.45	1.96	7.07	10.74
$SB_{recent}/SB_{F=0}$	0.51	0.52	0.32	0.37	0.63	0.72
SB_{recent}/SB_{MSY}	3.88	3.3	1.58	1.96	6.56	9.67

Figure 8. South Pacific albacore: Summary of stock status in relation to reference points across the 72 models in the uncertainty grid; C=catch, $YF_{current}$ =equilibrium yield at $F_{current}$; F_{mult} =multiplier of current effort required to fish at F_{MSY} ; latest=2016; recent=2012-15 (Tremblay-Boyer et al., 2018).

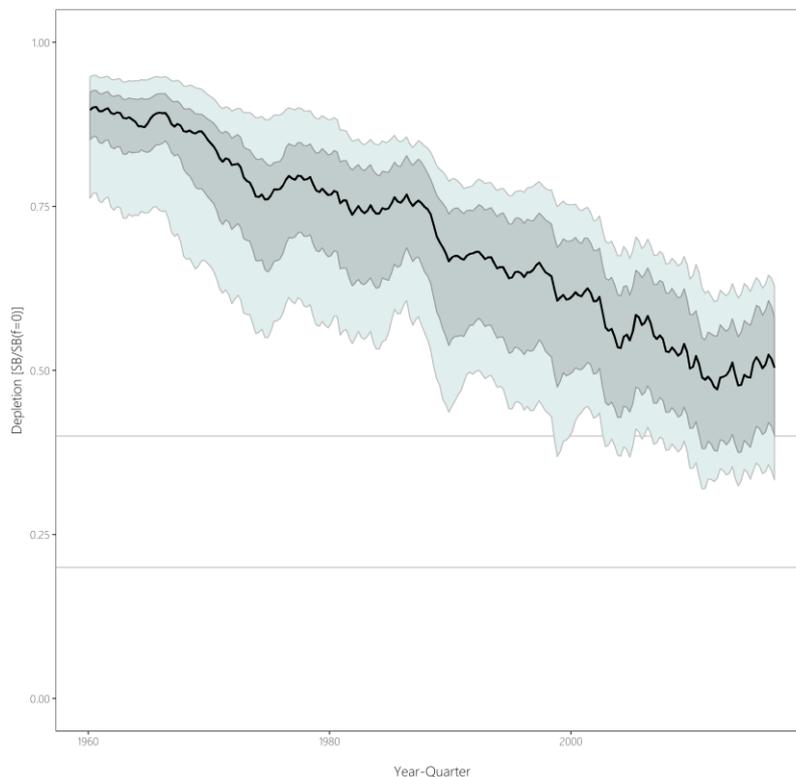


Figure 9. South Pacific albacore: Time-series depletion estimates across the structural uncertainty grid. The black line represents the grid median trajectory, the dark grey region represents the 50%ile range, the light grey the 90%ile range; horizontal lines=LRP and 2*LRP (Tremblay-Boyer et al., 2018).

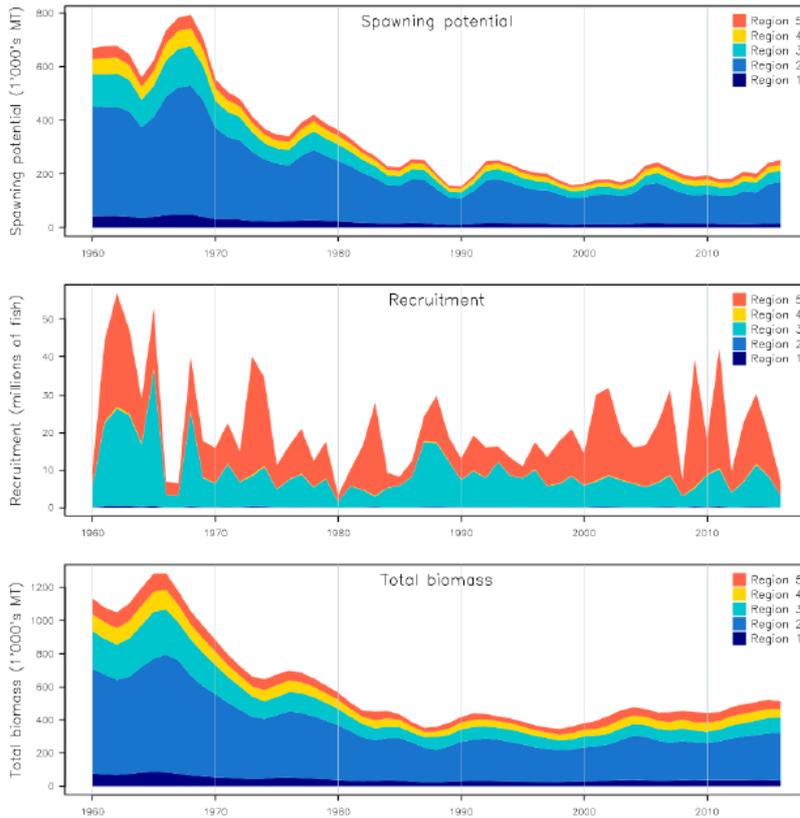


Figure 10. South Pacific albacore: Estimated trends in spawning potential (top), recruitment (middle) and total biomass (bottom) for the reference case model (Tremblay-Boyer et al., 2018).

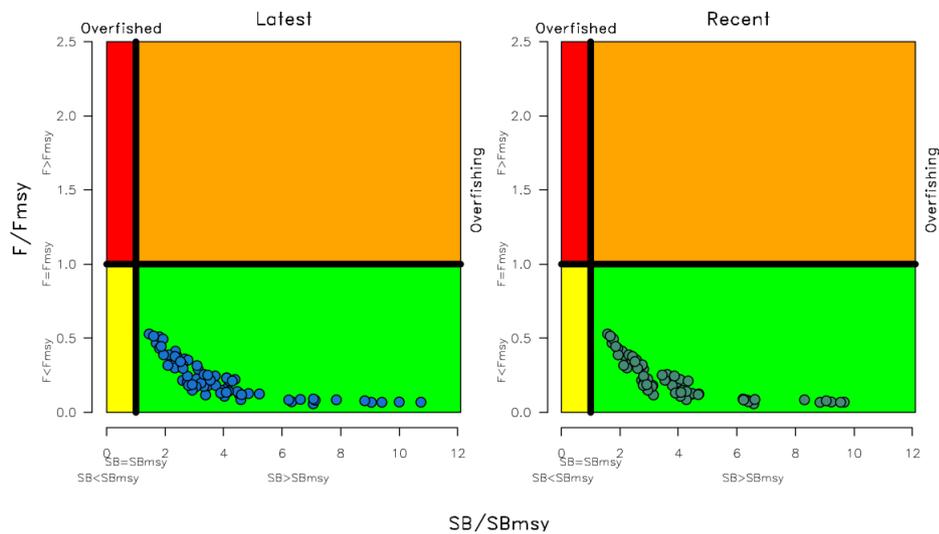


Figure 11. South Pacific albacore: Kobe plots summarising the results for each of the models in the structural uncertainty grid for SB_{latest} (left) and the SB_{recent} (right) relative to MSY reference points (Tremblay-Boyer et al., 2018).

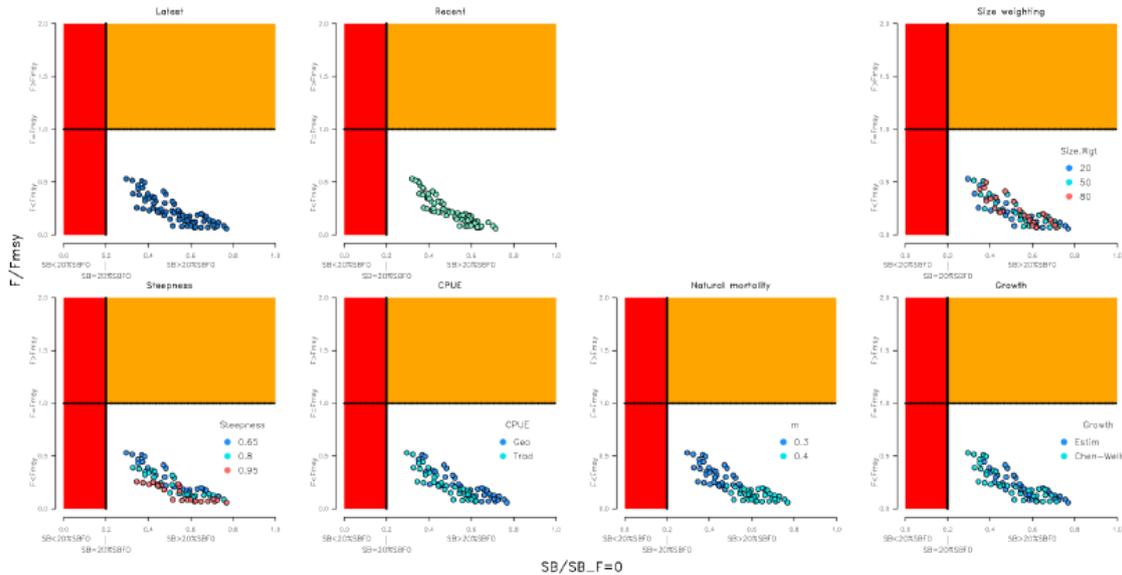


Figure 12. South Pacific albacore: Majuro plots summarising the results for each of the models in the structural uncertainty grid. The plots represent estimates of stock status in terms of spawning potential depletion and fishing mortality. The red zone represents spawning potential levels lower than the agreed limit reference point. The orange region is for fishing mortality greater than F_{MSY} . The points represent SB_{latest} for each model run except the two second from the left which show SB_{recent} . Otherwise, the different panels and colour-coding represent different sensitivity runs (Tremblay-Boyer et al., 2018).

6.4.5 Stock projections

SC15 discuss some projections from the 2018 stock assessment model for SP albacore. Based on constant catch at 2018 levels, the short-term risk (to 2020) of the stock breaching MSY or the limit reference points is low (probability ~0%) but in the longer term (to 2035) the risk of breaching the LRP rises to 23%. This is partly a function of the uncertainty grid: the projections appear to be more uncertain than for the tropical stocks, because the uncertainty grid incorporates a wider range of parameters, including growth and natural mortality, perhaps giving a more realistic estimate of uncertainty in the assessment.

6.4.6 Information

The South Pacific albacore assessment uses data on fishery-specific catch, effort and size-frequency, tag release-recapture data and biological information (growth curves, natural mortality etc.). The coverage of catch, CPUE and length-frequency data by fishery is shown in Figure 13. This fishery is part of fishery PICT.AZ.LL 1 (Pacific Island fisheries, longline, stock assessment region 1; second from bottom), for which catch and length data are available.

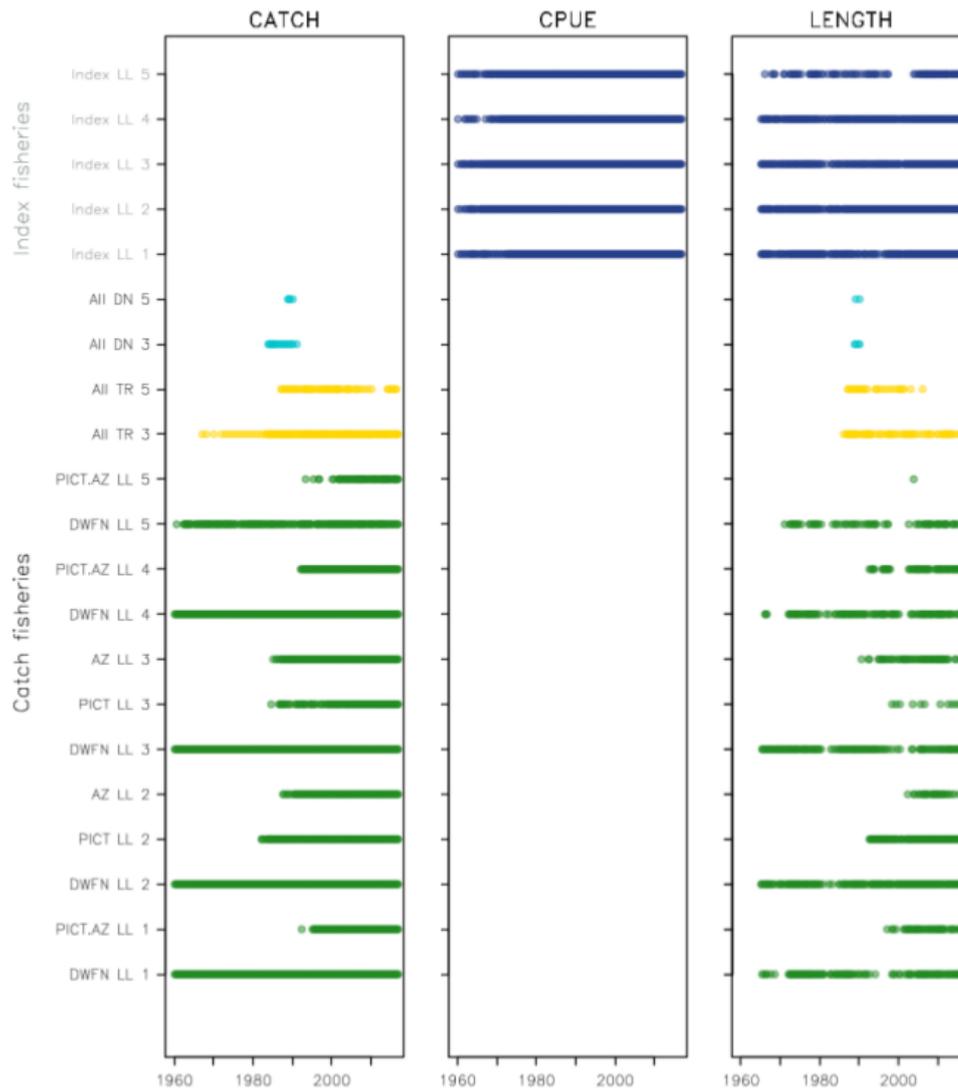


Figure 13. South Pacific albacore: Availability of catch, standardised CPUE and length-frequency data by year and fishery for the diagnostic case model (2018 regional structure, 16 catch fisheries + 5 index fisheries). The different colours denote gear-type of the fishery: longline (green); troll (yellow); driftnet (turquoise); index (blue) (Tremblay-Boyer et al., 2018).

6.4.6.1 Catch and effort

Catch and effort data are available from longline, troll and (historical) driftnet fisheries. Longline and troll catch was expressed in numbers of fish and driftnet catch by weight. For troll and driftnet fisheries, effort is measured in fishing days. For longline fisheries, effort was standardised based on two methods ('traditional' and geostatistical), with the geostatistical method applied in the reference case model. Standardised longline CPUE provides the abundance indices used in the assessment model.

6.4.6.2 Size composition

Size composition data are available from the longline and surface (troll) fisheries. For longline fisheries, size composition data have been routinely collected from the fishery since the early days, although the temporal and spatial coverage is not always good and sample size can be small. Following the recommendations of the external review of the bigeye assessment (Ianelli et al., 2012), size data are weighted by sample size to avoid disproportionate influence of datasets with small sample size and high variability on the model output. Troll fishery size-composition data are available from New

Zealand port sampling. Length-frequency data from fishing operations in the sub-tropical convergence zone come from the Albacore Research Tagging Project (1991-1992) and from port sampling programmes in Fiji, American Samoa and French Polynesia. There are also some historical observer data. Driftnet data were provided by the NRFSF for Japanese driftnet vessels. Data from Japanese vessels were also collected by observers and by port sampling in New Caledonia.

6.4.6.3 Tagging

Tag mortality is thought to be high in albacore and as a result albacore tuna are more challenging to tag than other species of tuna. There are no long-term large-scale tagging programmes that can confirm movement trends. The main tagging programme for this stock is the Regional Tuna Tagging Programme (RTTP) in the early 1990s and the South Pacific Albacore Tagging Project (2009–2010).

6.4.7 **Stock assessment**

This section is summarised from Tremblay-Boyer et al. (2018), except where otherwise indicated.

The stock is assessed using Multifan-CL (MFCL), as for yellowfin and bigeye.

The most recent stock assessment for South Pacific albacore was in 2018. Changes to the assessment address the recommendations of the 2015 stock assessment report (Harley et al., 2015) and the 2018 pre-assessment workshop (Pilling and Brouwer, 2018), which were notably i) to explore uncertainties in the assessment model in response to the inclusion of additional years of data and ii) to improve diagnostic weaknesses in previous assessments. The progression of model development from the 2015 reference case to the model proposed as the diagnostic case in 2018 was incremental, to ensure that the consequences of each modification could be assessed. Key changes made include additional data from 2014-2016, a new regional structure, updated biological information, updated default settings for the diagnostic case and implementation of new features of MFCL. The new regional structure is shown in Figure 14.

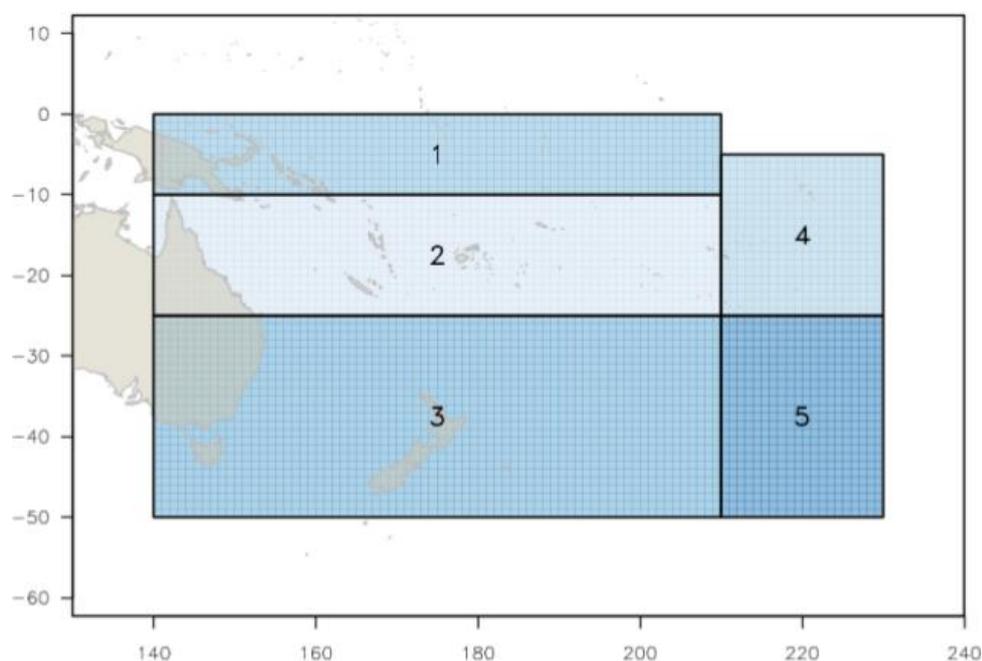


Figure 14. The geographical area covered by the stock assessment and the boundaries for the five regions under the 2018 regional structure (Tremblay-Boyer et al., 2018).

Estimating growth is problematic. In the base case model, a standard VB growth curve was estimated internally by the assessment model, with information on growth derived from length-frequency data and age-at-length data, in quarterly age classes. The values estimated by MFCL, conversely imply higher growth rates than are estimated for albacore stocks worldwide (Nikolic et al., 2017), and also give a poor fit to the presumed annual modes observed in the troll fisheries. Therefore an alternative scenario used fixed growth as a model input, based on a sex-combined Chen-Wells growth model (Tremblay-Boyer et al., 2018).

Two approaches were used to describe the uncertainty in the stock assessment outputs. The first estimates the statistical uncertainty for a given assessment model, i.e. the diagnostic or a base case. The second focuses on the structural uncertainty in the assessment, e.g. due to incomplete knowledge about growth, natural mortality, and regional variations in the fisheries, by considering a number of alternative models. Therefore, in addition to a diagnostic (or base) case model, one-off sensitivity models were used to explore the impacts of key data and model assumptions. Following this a grid of models was used to conduct a structural uncertainty analysis, where a number of scenarios were developed for the main uncertainties (Figure 15). The structural uncertainty grid for the 2018 assessment was constructed from five axes and comprised 72 runs. Management advice is formulated by the SC from the results of this overall structural uncertainty grid (WCPFC, 2018a).

Axis	Levels	Option
Steepness	3	0.65, 0.80*, or 0.95
Natural mortality	2	0.3*, 0.4
Growth	2	Estimated* (K , L_{∞}) or fixed (Chen-Wells)
Size frequency weighting	3	Sample sizes divided by 20, 50*, or 80
CPUE	2	Geostatistical*, Traditional

Figure 15. South Pacific albacore: The structural sensitivity grid used to characterise uncertainty in the assessment. Levels used under the diagnostic case are starred (Tremblay-Boyer et al., 2018).

6.4.8 P1 Performance Indicator scores and rationales

Scoring table 1. PI 1.1.1 – Stock status (Albacore)

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing			
Scoring Issue	SG 60	SG 80	SG 100	
a	Stock status relative to recruitment impairment			
	Guide post	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
	Met?	Yes	Yes	Yes

Rationale

The PRI for this stock is not known, although WCPFC has adopted 20% $SB_{F=0}$ as a limit reference point (LRP) for the stock, where $SB_{F=0}$ is calculated as the average over the period 2006–2015. B_{MSY} (see 1.1.1b below) is analytically determined in the stock assessment to be below the LRP ($\sim 15.6\%SB_{F=0}$).

The guidance in GSA2.2.3.1 states: *In the case where either B_{MSY} or the PRI are analytically determined, those values should be used as the reference points for measuring stock status unless additional precaution is sought. ... In the case where B_{MSY} is analytically determined to be lower than $40\%B_0$ (as in some highly productive stocks), and there is no analytical determination of the PRI, the default PRI should be $20\%B_0$ unless $B_{MSY} < 27\%B_0$, in which case the default PRI should be $75\%B_{MSY}$.*

Since B_{MSY} is analytically determined while the PRI is not, but B_{MSY} is $< 27\%B_0$, then following guidance, scoring of 1.1.1a should be based on $75\%B_{MSY}$ as a proxy for the PRI - unless 'additional precaution is sought'. Albacore is a productive species so there is no reason for requiring extra precaution in this case. SIa is therefore scored based on $75\%B_{MSY} = 12\%B_0$ rather than on B_{lim} .

To achieve SG60 it has to be likely ($\geq 70^{\text{th}}$ %ile), for SG80 to be highly likely ($\geq 80^{\text{th}}$ %ile) and for SG100 there has to be a high degree of certainty ($\geq 95^{\text{th}}$ %ile) that current stock status is above the PRI. Majuro plots (Figure 12) summarise the results for each of the models in the structural uncertainty grid with respect to $SB_{recent}/SB_{F=0}$. None of the runs fall below $20\%SB_{F=0}$ (the reference level shown in the plots), and hence none fall below $12\%SB_{F=0}$. Therefore, there is a high degree of certainty that the stock is above the PRI proxy and SG100 is met.

b	Stock status in relation to achievement of Maximum Sustainable Yield (MSY)
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	Guide post	The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?	Yes	Yes

Rationale

SP albacore has an agreed interim TRP based on increasing CPUE relative to 2013 levels (value currently estimated at $56\%SB_{F=0}$). The 2018 stock assessment puts the stock biomass below this level with ~two thirds probability (status in 2016). However, this TRP is significant above SB_{MSY} , which is estimated at $<20\%SB_{F=0}$ (see SIa). Under SA2.2.3 and GSA2.2.3, MSC require that this SI be scored relative to SB_{MSY} , where it is analytically determined, so the TRP is not used in scoring this SI.

Stock status relative to SB_{MSY} is presented in Kobe phase plots for each of the models in the structural uncertainty grid (Figure 11). In no case, for either 'recent' or 'latest', is stock biomass estimated to be below SB_{MSY} . Stock trajectories (Figure 10) suggest that stock biomass has fluctuated without trend since ~1990, therefore the stock has been at a level above SB_{MSY} in recent years. Stock assessments estimates of catch relative to MSY suggest that catch has only exceeded MSY in a very few years (2009 and 2010 in the time series from 1960). SG80 and SG100 are met.

References

Tremblay-Boyer et al. (2018)

Stock status relative to reference points

	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	$SB_{recent}/SB_{F=0}$ The recent level of spawning biomass in the absence of fishing ($SB_{F=0}$) LRP: $20\% SB_{F=0}$; where the recent period is defined as 2013-2016.	$SB_{F=0}=439,800t$	The minimum value of $SB_{recent}/SB_{F=0}$ is 0.32 and so is above $20\% SB_{F=0}$
Reference point used in scoring stock relative to MSY (SIb)	SB_{MSY} The recent level of spawning biomass relative to	$SB_{MSY}=68,650t$	The minimum value of SB_{recent}/SB_{MSY} is 1.58 and so SB_{recent} is greater than SB_{MSY} .

MSY; where the recent period
is defined as 2013-2016.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	100
Condition number (if relevant)	N/a

Scoring table 2. PI 1.1.2 – Stock rebuilding (Albacore)

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the stock.
	Met?	N/a		N/a

Rationale

Rebuilding is not required – not applicable

b	Rebuilding evaluation			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	There is strong evidence that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.
	Met?	N/a	N/a	N/a

Rationale

Rebuilding is not required – not applicable

References

Rebuilding is not required – not applicable

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	N/a
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	N/a
Condition number (if relevant)	N/a

Scoring table 3. PI 1.2.1 – Harvest strategy (Albacore)

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guide post	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	Yes	No	No

Rationale

MSC defines a harvest strategy as ‘the combination of monitoring, stock assessment, harvest control rules and management actions, which may include an MP or an MP (implicit) and be tested by MSE’ (MSC – MSCI Vocabulary v1.1).

Elements of a harvest strategy include the reference points used to set limits and targets, “current” and “available” HCRs (1.2.2), data collection procedures (P1 1.2.3), the stock assessment (P1 1.2.4), and the monitoring of implementation of management measures. Current management measures for south Pacific albacore are set out in CMM 2015-02 which requires that that CCMs do not increase the number of their vessels actively targeting South Pacific albacore in the Convention area south of 20°S over 2005 or 2002-4 levels, and includes data gathering and reporting requirements.

CMM 2014-06 sets out the roadmap to establishing a harvest strategy for key stocks managed by WCPFC. Under CMM 2014-06 WCPFC have also agreed a workplan with indicative timeframes to adopt or refine harvest strategies for South Pacific albacore, which is reviewed annually. At WCPFC15 (December 2018), the Commission adopted an interim TRP for this stock with the objective of an 8% increase in longline CPUE (estimated by SPC to be achieved at 56% $SB_{F=0}$). This brings WCPFC up to date according to the Harvest Strategy Workplan. The next deadline is for agreement of a management procedure, which at WCPFC16 was pushed back from 2021 to 2022 to avoid a clash with a stock assessment in 2021. It is foreseen that any management gaps should be plugged by a bridging measure developed by the South Pacific Albacore Roadmap Working Group, although this group as yet does not have terms of reference or a workplan (WCPFC, 2019a).

In relation to SG60, it is clear from the results of the stock assessment that the stock is well above MSY levels, and projections suggest that the current harvest strategy is likely to keep the stock above the LRP in the medium term (see 1.1.1). SG60 is met. In relation to SG80, the harvest strategy is required to be ‘responsive to the state of the stock’. While some progress has been made (e.g. agreement of an interim TRP), the existing harvest strategy currently in place (i.e. CMM 2015-02) simply requires that effort is not

increased above recent historical levels and makes no reference to the agreed reference points nor to changes to be made according to the stock status. Furthermore, it has a range of problems (SIDS exemption, nothing north of 20°S, defining vessels ‘actively targeting’ South Pacific albacore) which makes its impact on the stock difficult to predict (although in practice it seems to be working). On this basis, only SG60 is met.

b	Harvest strategy evaluation			
	Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	Yes	Yes	No

Rationale

Currently the stock is above PRI with a high degree of certainty and F is and has always been below F_{MSY} . Therefore, it appears that the harvest strategy is working and is achieving its objectives. Its performance has not, however, been ‘fully evaluated’, nor is it clear that in the long run it will be able to maintain biomass at the target level, which is higher than the current biomass level. Hence SG60 and SG80 are met but SG100 is not met.

c	Harvest strategy monitoring			
	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Yes		

Rationale

All the major fisheries report both catch and effort data (operational or aggregated; mainly the former) to SPC. CCMs are required to report annually to WCPFC the details of their fisheries (Part 1 reports) and compliance with the CMMs (Part 2 reports). There is therefore monitoring in place, sufficient to meet SG60.

d	Harvest strategy review			
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	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Not evaluated

Rationale

Not needed to be evaluated (because SIa scored <80)

e	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	N/a	N/a	N/a

Rationale

The target species is not a shark; not relevant.

f	Review of alternative measures			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	N/a	N/a	N/a

Rationale

This fishery targets albacore specifically, and there are no requirements such as minimum or maximum landing sizes or quotas which could lead to any of this catch being unwanted. Discarding rates for albacore are minimal, according to the stock assessment report and as evidenced by the observer data, which have reported discard rates of 1.41% for albacore (Table 25). This is further supported by the observer data collected over the course of this fishery's certificate (between 2014 and 2017) which indicate a < 1% discard rate by number of fish, rather than weight (Sieben and Daxboeck, 2019). Hence there is no 'unwanted catch'* of albacore in this fishery.

* SA3.1.6: The term 'unwanted catch' shall be interpreted by the team as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use.

References

CMMs 2015-02, 2014-06

Brouwer et al. (2018a), Tremblay-Boyer et al. (2018), WCPFC (2019a, 2019b), Sieben and Daxboeck (2019)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	70
Condition number (if relevant)	1

Scoring table 4. PI 1.2.2 – Harvest control rules and tools (Albacore)

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	Yes	No	No

Rationale

MSC requirements:

- SA2.5.2 In scoring issue (a) at the SG60 level, teams shall accept ‘available’ HCRs (instead of HCRs that are ‘in place’) in cases where:
- Stock biomass has not previously been reduced below the MSY level or has been maintained at that level for a recent period of time that is at least longer than 2 generation times of the species, and is not predicted to be reduced below B_{MSY} within the next 5 years; or
 - In UoAs where B_{MSY} estimates are not available, the stock has been maintained to date by the measures in use at levels that have not declined significantly over time, nor shown any evidence of recruitment impairment.
- SA2.5.3 Teams shall recognise ‘available’ HCRs as ‘expected to reduce the exploitation rate as the point of recruitment impairment is approached’ only in cases where:
- HCRs are effectively used in some other UoAs, that are under the control of the same management body and of a similar size and scale as the UoA; or
 - An agreement or framework is in place that requires the management body to adopt HCRs before the stock declines below B_{MSY} .

A HCR may be considered to be ‘available’ and ‘expected to reduce the exploitation rate as the PRI is approached’ at SG60 if i) ‘stock biomass has not previously been reduced below B_{MSY} or has been maintained at that level for a recent period of time’ (SA2.5.2a) and ii) ‘there is an agreement or framework in place that requires the management body to adopt HCRs before the stock declines below B_{MSY} ’ (SA2.5.3b). The stock is above B_{MSY} with high probability and under CMM 2014-06 there is an established workplan and agreed timetable for the adoption of well-defined harvest control rules (‘management procedure’ under new WCPFC terminology). The deadline for adopting a management procedure was 2021 but at WCPFC16 (December 2019) this was pushed back to 2022 to avoid clashing with a planned stock assessment. The process is therefore underway although some delays have been and continue to be evident. A TRP was finally agreed at WCPFC15 (2018), putting the workplan back on track.

Overall, at present although a generally understood HCR is in place, no well-defined HCRs are in place and so only SG60 is met.

b	HCRs robustness to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		No	No

Rationale

Since a HCR is 'available' rather than 'in place', it cannot be argued to be robust to the main uncertainties. Not met.

c	HCRs evaluation			
	Guide post	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Yes	No	No

Rationale

Various tools are in place to control exploitation rates of SP albacore, at both regional and Cook Islands level. At regional level there is CMM 2015-02, which requires CCMs not to increase the number of their vessels actively targeting albacore south of 20°S (described in Section 6.4.3). At Cook Islands level there is a TAC and TACC, as described in Section 6.3.4. The Cook Islands TAC covers about 12% of the total catches on the stock (2018; see Table 11).

Under SA2.5.5, in order to conclude that available HCRs are 'effective', MSC requires evidence of i) the use of effective HCRs in other stocks or fisheries under the same management body; or ii) a formal agreement or framework with trigger levels which will require the development of a well-defined HCR. It also requires consideration of current exploitation rates in relation to biological reference points and the agreed trigger level (guidance for SA2.5.6: 'evidence that current F is equal to or less than F_{MSY} should usually be taken as evidence that the HCR is effective').

Recent average fishing mortality is estimated to be well below F_{MSY} (median $F_{recent}/F_{MSY}=0.20$, 80 percentile range 0.08-0.41). Current levels of F are likely to maintain the stock above the LRP. Pilling et al. (2016) shows that fishing the stock at MSY level would require a significant increase in effort from current levels.

A well-defined HCR is being developed under CMM 2014-06. An interim limit and target reference point has been agreed, and management procedures will be evaluated for the main sources of uncertainty using Management Strategy Evaluation (MSE) (see WCPFC (2019a, 2019b)).

Overall, therefore, under the MSC requirements and guidance for ‘available’ HCRs, SG60 is met. SG80 is not met.

References

WCPFC (2019a, 2019b)

CMM 2014-06

Tremblay-Boyer et al. (2018); Brouwer et al. (2018b) and Pilling et al. (2016)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	60
Condition number (if relevant)	2

Scoring table 5. PI 1.2.3 – Information and monitoring (Albacore)

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Yes	Yes	No

Rationale

The information used by SPC to inform the stock assessment, projections etc. (and hence support the harvest strategy) is described in Section 6.4.6, and is extensive. This includes information on stock structure (see Section 6.4.1), stock productivity (age and growth, studies to inform estimates of natural mortality), fleet composition (vessel information, catch by flag by gear, operational logbook data) and other data such as port sampling and size composition data. The data have been improved since the previous assessment; for example, operational-level historical Japanese data are now available. There is uncertainty around natural mortality growth rates, with more information on age and growth highlighted as a priority requirement. There are also no tagging data available for albacore. SG60 and SG80 are met but SG100 is not met.

b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information

				[data] and the robustness of assessment and management to this uncertainty.
	Met?	Yes	Yes	No

Rationale

Fishery removals are monitored by individual CCMs via logsheets and port sampling and are required to be submitted to the Commission annually, in the form of estimates of total catch plus catch and effort data broken down by gear and either aggregated (5° squares by month) or (preferably) at operational level (individual logsheets). Despite some gaps in this dataset, coverage is good overall. This catch, effort and CPUE dataset is the key dataset for the stock assessment. Size-frequency data (collected via port sampling and observer programmes) are also used in the assessment, although estimation of growth curves remains problematic. Biological data are collected via research programmes (e.g. Farley et al. (2013)).

Formal stock assessments have taken place every few years (2012, 2015, 2018). In between formal stock assessments, SPC provide some information on trends in fishery indicators (total catch, nominal CPUE, catch at length and at weight), to guide management (e.g. Brouwer et al. (2018b)).

On this basis, the team felt that SG60 and SG80 were met, because information is available to monitor stock abundance (CPUE abundance indices) and removals by fishery (operational or aggregated logbook data, port sampling data), at a level of consistency and accuracy which allows for good quality stock assessments (see 1.2.4 below). The stock assessment is able to provide a range of indicators (analysis of stock status in relation to different reference points).

SG100 is not met, for the following reasons (which are common to a greater or lesser degree in almost all tuna stock assessments):

- The characteristics of tuna longline CPUE are not fully understood and it is unclear how successful most effort standardisation analyses are or how to properly represent the uncertainties (although this may be improved by the new geostatistical methods);
- Some data gaps remain in fishery-dependent data (see Figure 13);
- The requirement to ‘raise’ logsheet data by estimates of total catch (to account for missing logsheets) results in some loss of precision;
- Historical data are often lacking in precision;
- Although the frequency of stock assessments is reasonable, they are not carried out with ‘high frequency’ (i.e. not annually).

c	Comprehensiveness of information			
	Guide			There is good information on all other fishery removals from the stock.

	post
	Met?

Yes

Rationale

The assessment method used (MFCL) requires all catch and effort to be allocated to fisheries, where ideally the fisheries are defined to have selectivity and catchability characteristics that do not vary greatly over time. 16 fisheries (plus 5 'index fisheries') were defined according to gear type, fishing method and region or sub-region. Relative to the tropical species, there are fewer issues relating to large fisheries in Indonesia, the Philippines and Vietnam with poor catch and effort data (since in these areas there is not much albacore). The assessment does not include the albacore fishery (catch or CPUE) east of 130°W, but this does not appear to be an issue related to availability of data (SPC, pers. comm.), and is considered under 1.2.4. SG80 is therefore met.

References

Brouwer et al. (2018b), Farley et al. (2013), Harley et al. (2015), Hoyle et al. (2012) and Tremblay-Boyer et al. (2018)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
Condition number (if relevant)	N/a

Scoring table 6. PI 1.2.4 – Assessment of stock status (Albacore)

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		Yes	No

Rationale

The assessment is conducted using the integrated assessment model Multifan-CL (MFCL) that is able to integrate several sources of information, and uses the available data in a raw form as appropriate in a single analysis. MFCL is able to take into account features of the fisheries (catchability, selectivity) and the biology of the stock (in a population model). The model partitions the population into 8 spatial regions and 48 quarterly age-classes. When running an integrated assessment, it is important to correctly specify: i) the observation model process, e.g. the form of selectivity and discarding; ii) systems dynamics, e.g. values for steepness and natural mortality; and iii) appropriate data and data weightings. All of these were investigated using the uncertainty grid. SG80 is met.

In relation to SG100, a stakeholder (ISSF) raised an issue of potential concern in relation to how appropriate the assessment is in relation to the biology of the species (see Appendix 4.1). The stock is assumed to cover the entire South Pacific, but the stock assessment includes only the WCPFC Convention Area plus the WCPFC/IATTC overlap area. Catches of albacore in the eastern part of the South Pacific (excluding the overlap area) increased from 2008, peaking in 2014 and 2015 at just below 30,000 t (around a third of the total South Pacific catch) before dropping back to just over 20,000 t (around a quarter of the total) (SPC, 2019b). IATTC do not conduct any stock assessments of SPA. The IATTC Scientific Advisory Committee (SAC) (IATTC, 2018) has recommended that IATTC work with SPC to incorporate EPO catch into the SPA stock assessment, but this did not happen for the most recent assessment. SPC (G. Pilling, pers. comm. 04/03/2020) reports that there were difficulties (unspecified) which prevented these data and this area from being incorporated but they are discussing with IATTC how best to integrate them for the next assessment.

Since SPC and the SC express confidence in the stock assessment, the stock is far from MSY reference points and the HCR only applies in the WCP-CA, the assessment can be considered appropriate for the stock and HCR, so SG80 is met. Since a feature of the biology (i.e. the complete distribution of the stock) is not taken into account, SG100 is not met. Note that this scoring is harmonised with Stern-Pirlot et al. (2018).

b	Assessment approach		
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.
	Met?	Yes	Yes

Rationale

A target and limit reference point have been defined, with the TRP estimated in terms of SB directly from the stock assessment (based on a 8% increase in CPUE). The stock assessment model is able to estimate a range of reference points according to various different methodologies (see Figure 8). SG60 and SG80 are met.

c	Uncertainty in the assessment			
	Guide post	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	Yes	Yes	Yes

Rationale

Numerous sensitivity runs were undertaken during the assessment, allowing a set of axes of uncertainty to be developed which were then used to construct the uncertainty grid of model runs on which the advice is based. In general, uncertainty due to model structure and the assumed values of difficult to estimate parameters (such as M and steepness of the stock recruitment relationship) is greater than parameter uncertainty (i.e. as estimated within a single model run). Therefore, the use of an uncertainty grid based on a range of scenarios is a valid way to estimate uncertainty. SG60, SG80 and SG100 are met.

d	Evaluation of assessment		
	Guide post	The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.	

Met?

Yes

Rationale

The assessment takes into account structural uncertainty in the assessment model by running a ‘grid’ of models to explore the interactions among selected ‘axes of uncertainty’. The grid contains all combinations of two or more parameter settings or assumptions for each uncertainty axis. The axes are generally selected from those factors explored in the one-off sensitivities with the aim of providing an approximate understanding of variability in model estimates due to assumptions in model structure not accounted for by statistical uncertainty estimated in a single model run, or over a set of one-off sensitivities.

For highly complex population models such as MFCL fitted to large amounts of often conflicting data, it is common for there to be difficulties in estimating absolute abundance. Therefore, various diagnostics were examined in particular the fit to the various sources of data, and the biological and fisheries-related parameters. These included likelihood profiles, time-series changes in catchability and changes in selectivity across regions. The existence of such data conflicts in integrated stock assessment models is not uncommon. It was reassuring that the overall negative log-likelihood was minimised at an average biomass consistent with the minimum for the CPUE data, which is a desirable feature of integrated stock assessments. Also, alternative weighting of the size composition data was not overly influential regarding key stock assessment results, indicating some degree of robustness to the data weighting assumptions within the structural uncertainty grid.

Externally to the stock assessment, there is consideration each year of how to improve the input data (e.g. addition of new Japanese data in the most recent assessment; new methods of standardisation via geo-statistics). SG100 is met.

e	Peer review of assessment		
	Guide post	The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?	Yes	No

Rationale

Although neither the 2015 or the 2018 assessments have been formally externally peer reviewed, the assessment has benefited from developments that addressed the recommendations made by the independent review of the 2011 bigeye assessment (Ianelli et al., 2012). The assessment is subject to internal scrutiny by SPC as well as the Scientific Committee, which allows scientists from a number of CCMs to review and comment on the assessment. Changes are frequently made to assessments as a consequence of recommendations or requests by the SC (e.g. changes to the uncertainty grid for the 2017 bigeye assessment). SG80 is met but SG100 is not met.

References

Fournier et al. (2012), Harley et al. (2015), Hoyle et al. (2012), Ianelli et al. (2012), McKechnie (2014), Tremblay-Boyer et al. (2018), IATTC (2018), SPC (2019b) and Stern-Pirlot et al. (2018)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	90
Condition number (if relevant)	N/a

6.5 Principle 1: Yellowfin

6.5.1 Stock definition

For assessment and management purposes, WCPO yellowfin (west of 150°W) is considered a discrete stock, although tagging data suggest that there is longitudinal movement in equatorial regions, suggesting some mixing between the western and eastern Pacific (Tremblay-Boyer et al., 2017b). Furthermore, genetic data suggest that there may be stocks or sub-stocks within the western Pacific; a genetic study was able to distinguish between fish from Tokelau and the Coral Sea with a high degree of accuracy (Grewe et al., 2016). The details of population structure within the WCPO, if any, and the implications for management are far from being fully worked out (as is probably the case with other tuna stocks as well). For bigeye, the Scientific Committee (WCPFC, 2018a) expressed some concern about the division of the eastern and western Pacific stocks at 150°W (see below), but this seems to be less of a concern for yellowfin which has much lower relative catches around the 150°W line than bigeye (Figure 16 vs. Figure 23).

The regional structure of the stock assessment was adjusted in 2017 based on tagging data which showed limited movement between equatorial and more temperate waters, as well as to better reflect the distribution of the purse seine fishery (Tremblay-Boyer et al., 2017b).

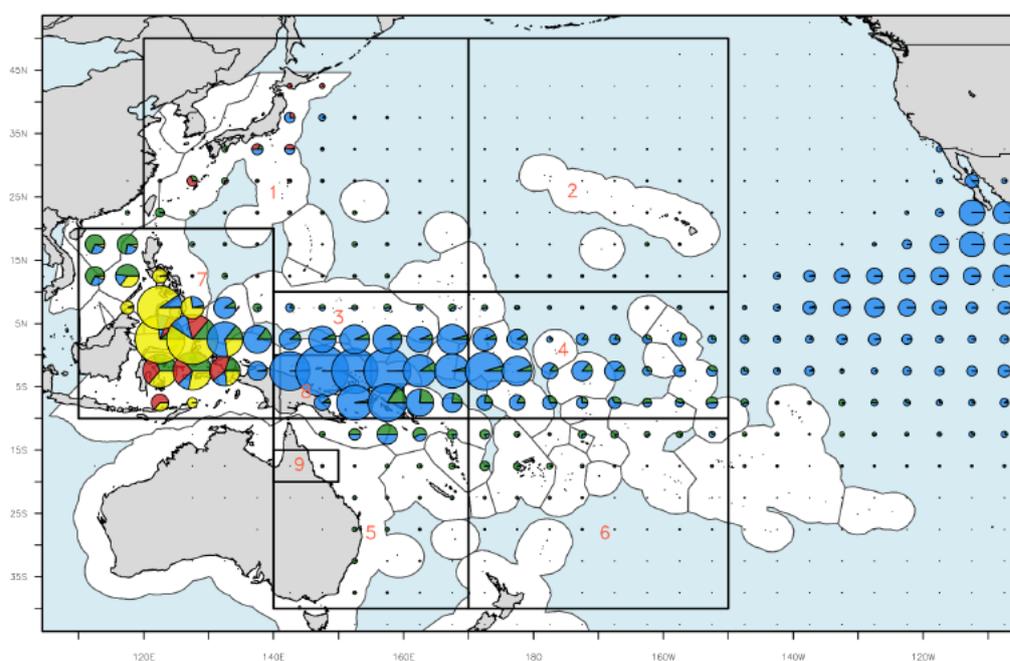


Figure 16. Geographical distribution of yellowfin catch in the Pacific Ocean (purse seine=blue, longline=green, pole and line=red, misc.=yellow), with the superimposed grid showing the regional structure and spatial limits of the SPC stock assessment (Tremblay-Boyer et al., 2017b).

6.5.2 Biology

Information in this section is taken from Tremblay-Boyer et al. (2017b).

Growth and maturity: Yellowfin tuna are fast-growing; reaching ~25cm FL (fork length) at approximately three months, and first appearing in surface fisheries at less than one year. They reach a maximum size of ~180 cm. Maturity is reached at ~100cm, whereupon spawning takes place in equatorial regions, probably opportunistically. There are known to be regional differences in growth

rate within the western Pacific; it is thought that growth rates are slower in Indonesia/Philippines waters than in the wider WCPO. This is not, however, taken into account in the stock assessment model, which uses a single growth schedule across all regions. A project on age and growth in yellowfin is underway ('Project 82'; Farley et al., 2018a) along the lines of Project 81 for bigeye (see below) but no results are available as yet.

Natural mortality: M varies with size, being lowest for individual's pre-maturity (~50-80 cm) and increasing for younger and older fish. Tagging data suggest that it is commonplace for individuals to reach four years old, while the longest period at liberty between tag and recapture for a WCPO yellowfin is currently six and a half years.

6.5.3 Stock status

The most recent stock assessment for WCPO yellowfin was carried out in 2017 (Tremblay-Boyer et al., 2017b). The assessment does not make any major changes to the assessment structure or assumptions, except for aligning the regional structure with the new regional structure for bigeye (i.e. changing the boundary between equatorial regions, Regions 3 and 4, and northern sub-tropical regions, Regions 1 and 2, from 20°N to 10°N; see Figure 16 above). The three additional years of data included in the assessment, however, cover a period of strong El Niño conditions and increasing catch levels. Preliminary catch estimates for 2017 suggest a record high catch of 670,890 t; an increase of 4% over 2016 and 12% above the 2012-16 average (WCPFC, 2018a).

SPC recommend that the stock status is evaluated and management advice formulated, not based directly on the reference case (diagnostic case) model, but rather on the overall structural uncertainty grid, which incorporates the conclusions of the one-off sensitivity analyses considered to be the most important. The stock assessment report presents a grid of 48 models, but after initial circulation, the SC requested an additional sensitivity be included (WCPFC (2017a); details given in Section 6.5.6), resulting in a grid of 72 models (Table A6 in the report appendix). This grid is summarised in Table 18. Majuro plots for the full grid and key sensitivities are given in Figure 17. Figure 18 shows box plots which summarise graphically the output of the structural uncertainty grid (Table 18) for each of the one-off sensitivities used in the final grid. Figure 19 show the trajectory spawner potential for each of the nine model regions, and for the overall diagnostic case model, compared to the trajectory in the absence of fishing (i.e. the trajectory of $SB_{F=0}$).

Table 18. Yellowfin: Summary of stock status estimates relative to reference points, across all 72 models in the structural uncertainty grid used to characterise uncertainty; latest = 2015, recent = 2011-14; $SB_{F=0}$ = average spawning potential in the absence of fishing for 2005-14, following the definition of the LRP agreed by the SC. Taken from Table A6 in Tremblay-Boyer et al. (2017b).

Parameter	Min.	25%	Median	75%	Max.
$F_{\text{recent}} / F_{\text{MSY}}$	0.54	0.66	0.73	0.82	1.13
$SB_{\text{latest}} / SB_{F=0}$	0.16	0.30	0.39	0.43	0.50
$SB_{\text{latest}} / SB_{\text{MSY}}$	0.80	1.24	1.41	1.62	1.91
$SB_{\text{recent}} / SB_{F=0}$	0.15	0.27	0.35	0.39	0.45
$SB_{\text{recent}} / SB_{\text{MSY}}$	0.81	1.28	1.43	1.59	1.93
$SB_{\text{MSY}} / SB_{F=0}$	0.16	0.25	0.26	0.29	0.35

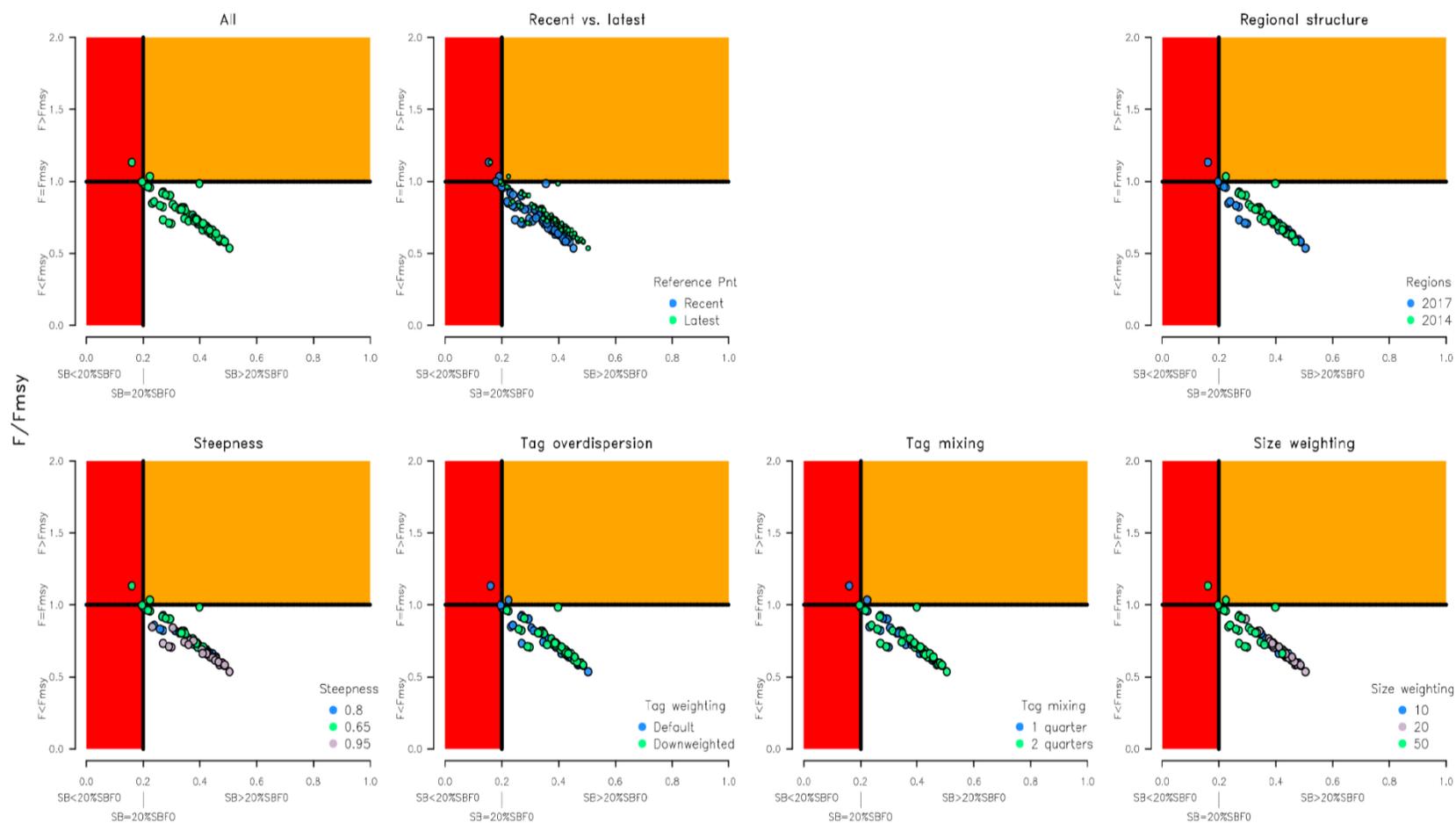


Figure 17. Yellowfin: Majuro plots summarising the results for each of the models in the structural uncertainty grid individually; y-axis = F/F_{MSY} ; orange zone = $F > F_{MSY}$; x-axis = $SB/SB_{F=0}$ (contrary to how it is labelled in the original figure); red zone = $SB < 20\%SB_{F=0}$, i.e. LRP agreed by WCPFC. All figures show SB_{latest} , except where otherwise indicated. Top left: all models for SB_{latest} ; top middle: ditto, also including SB_{recent} . Remaining five models show key sensitivity runs, with blue the diagnostic case model in each case: Top right: regional structure; bottom left: steepness; bottom mid-left: tag overdispersion; bottom mid-right: tag mixing; bottom right: size data weighting (details of sensitivities given in Section 6.5.6 below). Figure A41 in Tremblay-Boyer et al. (2017b).

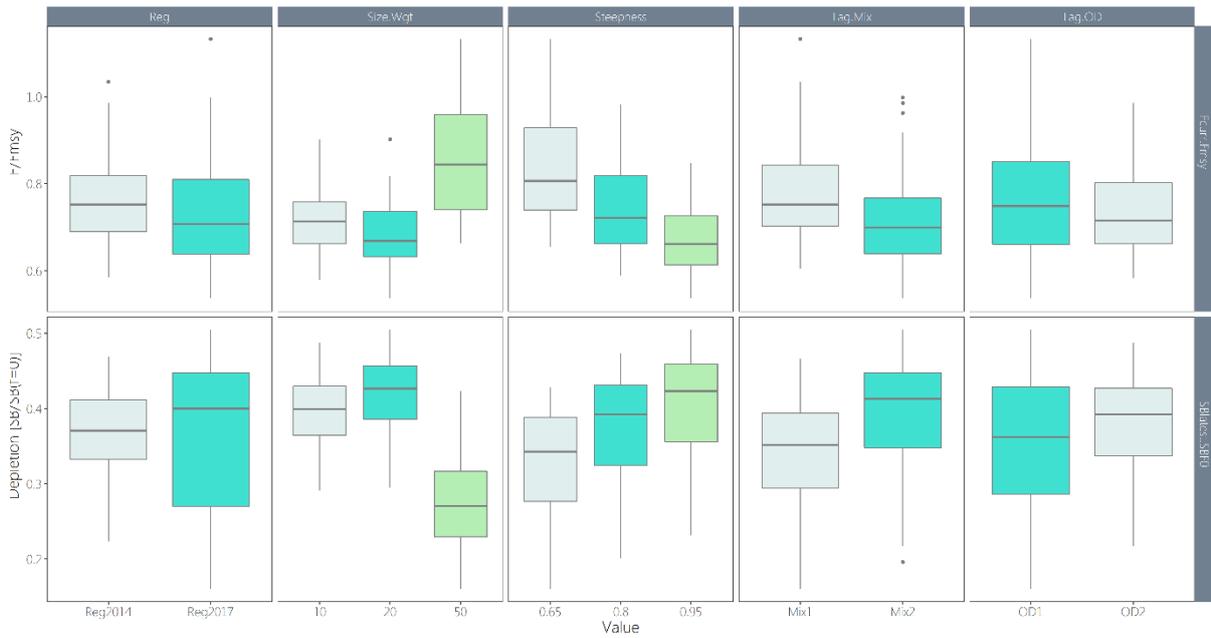


Figure 18. Yellowfin: Boxplots summarising the outcome of the structural uncertainty grid for each of the sensitivities included in the final grid; Top row = F/F_{MSY} ; bottom row = $SB/SB_{F=0}$. Figure A40 in Tremblay-Boyer et al. (2017b); diagnostic case model in green/turquoise.

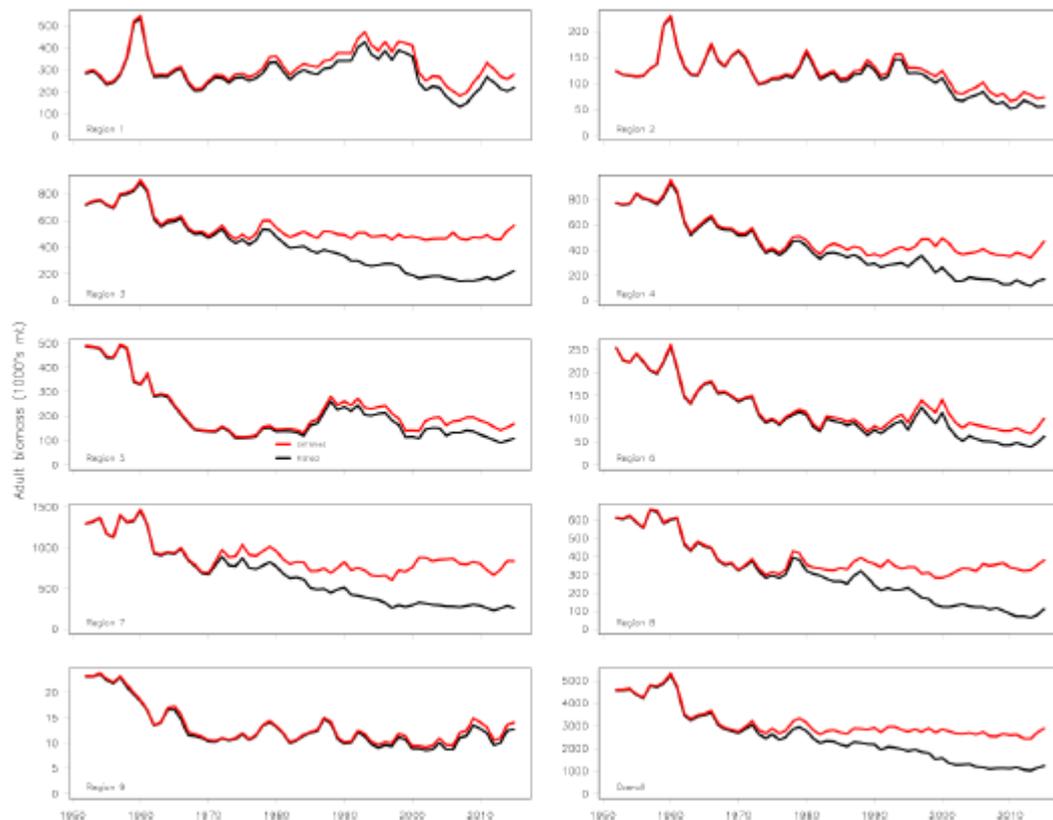


Figure 19. Yellowfin: Trajectories of spawner potential for each of the 9 model regions (see Section 6.5.6 for details) and for the overall diagnostic case model (bottom right) (black), compared to the trajectory in the absence of fishing (i.e. $SB_{F=0}$) (red). Figure 42 in Tremblay-Boyer et al. (2017b).

SPC summarises the results of the stock assessment as follows (Tremblay-Boyer et al., 2017b):

- Spawner biomass is estimated to have declined across the whole model period for all models, and for most of the model regions;
- The median estimate of spawner depletion is similar to the previous assessment, and the probability of spawner biomass being below the LRP is estimated to be <5%; the same is true for F/F_{MSY} ;
- F has increased continuously since the start of industrial fishing; F has in the past increased most rapidly on juveniles, but is also increasing on adults. A significant proportion of juvenile fishing mortality comes from surface fisheries in the Philippines, Indonesia and Vietnam, from which data are uncertain;
- Recent recruitment is estimated to be relatively high; it is not known why this is, but good recruitment also estimated for WCPO skipjack as well as both WCPO and EPO bigeye suggests it might be environmentally driven.

6.5.4 Stock status projections

In 2018, stock status projections were presented to SC14, estimating likely stock status in 2019, if actual catch and effort levels from 2016 continue to 2019 (Figure 20). These suggest that SB will increase somewhat relative to 2015 levels, with the median estimate of $SB_{2019}/SB_{F=0}$ 0.37. It is estimated that the stock will remain on the right side of MSY reference points with high probability (median $F_{2019}/F_{MSY}=0.63$; median $SB_{2019}/SB_{MSY}=1.51$). The probability of the stock breaching the agreed limit reference point ($20\%SB_{F=0}$) by 2019 is estimated to be 6%. Note, however, that these projections might be optimistic, given that catch estimates for 2017 are somewhat higher than for 2016 – more of the additional biomass may end up as catch than projected here.

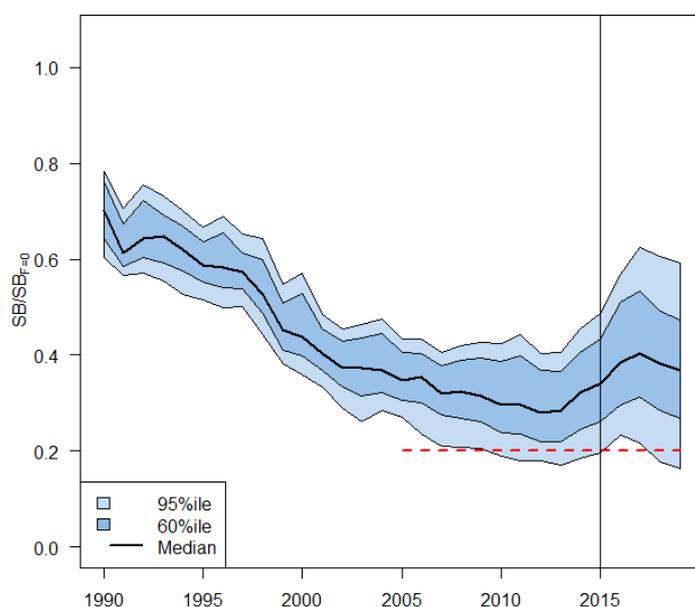


Figure 20. Yellowfin: Stochastic projection results of spawning biomass relative to the unfished level from 2015-2019, assuming actual catch and effort levels in 2016 continue through to 2019. Prior to 2015 the data represent the median, 60th and 95th percentiles of the uncertainty grid (as described above). The red dashed line represents the WCPFC agreed limit reference point. Figure 33 in Brouwer et al. (2018a).

SPC also evaluated the likely impact of CMM 2017-01 on the bigeye stock (described below), with some similar evaluation for yellowfin (SPC-OFP, 2018). They quantified the likely results of 2017-01 based on three fishing scenarios: 'status quo' (2013-15), 'optimistic' (scalar multiples 1.11 for purse seine effort and 0.98 for longline effort) or 'pessimistic' (scalar multiples 1.12 for purse seine and 1.35 for longline). The status quo and optimistic scenarios are projected to result in little change to SB or F, while the pessimistic scenario (notably the large projected increase in longline catch in this scenario) results in a small decline in SB and a small increase in F, but with those, larger increases in the probability of SB_{2045} falling below the limit reference point (see below) and F_{2045} increasing above F_{MSY} (from 7% to 16% for SB and from 2% to 9% for F).

Under this 'pessimistic' scenario, therefore, the stated objective of CMM 2017-01 (and 2018-01) for yellowfin – to maintain the status quo – is not met, but under the other scenarios, they are met. In all scenarios, however, the risk of $SB < LRP$ was maintained at $< 20\%$.

6.5.5 Information

The stock assessment report (Tremblay-Boyer et al., 2017b) provides a full description of the data sources used, from which the summary in this section is taken unless otherwise indicated.

Fisheries: The stock assessment defines 32 'fisheries' according to fishing gear and method (longline, purse seine (associated vs. unassociated), pole-and-line, various miscellaneous small-scale fisheries in Indonesia and the Philippines), as well as by region and by flag for Japan, Philippines, Indonesia Vietnam, Australia and the US.

The information provided from each fishery is summarised in the graphic below (from Tremblay-Boyer et al. (2017b); Figure 21). Recent and historical (back to ~1980 at least) catch data are available from nearly all the fisheries; standardised CPUE is only evaluated for longline fisheries; size data are available as weight for the longline fisheries and length (from port sampling) for the other gear types. There is no individual size or weight data collection from this fishery at present.

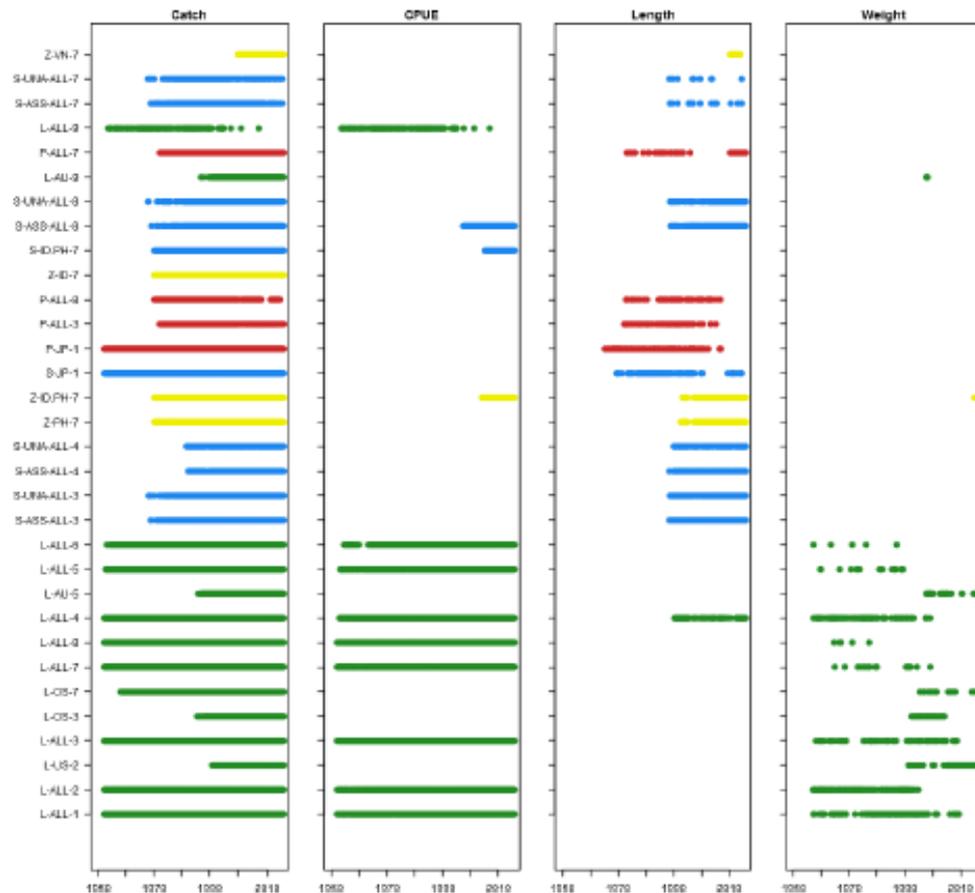


Figure 21. Yellowfin: Graphic representing the input data to the stock assessment from each ‘fishery’ (as defined as described above). Left to right: catch, CPUE, catch length sampling and catch weight sampling; top to bottom: the 32 fisheries defined by the stock assessment; x-axis of each column 1950-2015 (Figure 7 in McKechnie et al. 2017a).

Catch data: Catch is recorded by number for longline and by weight for other gears. Discards are considered minor and are not included in the stock assessment. For the purse seine catch, a method has been defined (‘Method 3’ – see Hampton and Williams (2017)) for dividing the catch by species (this after a process of analysis and review; see references in stock assessment report).

Effort: Effort is not included in the stock assessment for all fisheries. Purse seine effort is defined as days fishing / searching and allocated to set type (associated vs. unassociated) according to the proportion of sets of each type in the logbook data.

CPUE: The key datasets for the assessment are standardised longline CPUE time series from a range of fisheries. Since the 2014 assessment SPC has managed to compile an extensive database of operational (as opposed to aggregated) catch and effort data from all the main distant water fleets. This was used in the assessment, but the indices used in the 2014 assessment were also updated, as part of the step-wise progression of changes to the assessment (so that the impact of each change on the assessment conclusion can be evaluated). In the 2017 assessment, it has been possible to calculate standardised CPUE indices for nearly all the regions for most of the assessment time period.

Other fisheries: There has been gradual improvement in the data from Indonesia and the Philippines over the last decade or so; since the last assessment, some catch data from Vietnam have also been available. Effort for these fisheries is included as days fished where possible, but otherwise not included (this applies to three fisheries; ‘miscellaneous’ gears from each of the three countries).

Length / weight frequency: These data come from observers, port sampling or on-board collection by the crew and are converted to live weight. For purse seine fisheries, observer samples are corrected for grab-sample bias, and the long time-series of port sampling and observer data from Pago Pago is included and provides most of the early data. If both length and weight are available, weight is used for preference. Some length-frequency data are available from the ‘miscellaneous’ fishery in the Philippines, and this size-selectivity was assumed to apply to the other two ‘miscellaneous’ fisheries; the data were adjusted to remove fish >90 cm since these were considered most likely to arise due to gear misreporting. The data are weighted by catch size to avoid over-weighting small sample sizes in the model.

Tagging: In total 78,805 effective releases and 19,104 useable returns are incorporated into the stock assessment model. These data come from the Regional Tuna Tagging Project (1989–92), the Coral Sea Tagging Programme (1995, 1999–2001) and the Pacific Tuna Tagging Programme (2006–2014). Since 2014, new tagging data are available from the Japanese Tagging Programme (2000–2014), which were included as a sensitivity. Releases later than the 3rd quarter of 2014 are excluded because of delays in reporting of recaptures.

6.5.6 Stock assessment

The most recent stock assessment for WCPO yellowfin is described in Tremblay-Boyer et al. (2017b) from which the summary here is taken. The assessment uses data from 1952 to 2015, in quarterly timesteps; 2016 data being too preliminary at the time of assessment.

As with the assessments for all the main WCPFC stocks, the assessment model is run in Multifan-CL (MFCL), which provides a Bayesian framework and is routinely used by SPC for all assessments. MFCL is able to integrate multiple data sets into a single size-based, age- and spatially structured population model. Model parameters are estimated by maximising an objective function, consisting of both likelihood (data) and prior information components (penalties). An advantage of the approach is being able to make assumptions that are internally consistent and explicit and to better account for uncertainty, since assumptions are propagated into stock status, reference points and advice.

MFCL requires that ‘fisheries’ are defined with as near as possible constant selectivity and catchability. The details of how these fisheries are defined are given in Section 6.5.5. For each fishery, the assessment uses catch data, effort data (in the form of standardised CPUE time series; see Section 6.5.5). The model also uses tagging data.

The 2017 stock assessment (Tremblay-Boyer et al., 2017b) introduced a number of changes from the 2014 assessment (Davies et al., 2014) that had a significant influence on estimates of stock status. The three additional years of data (tagging, catch, effort, size frequencies) included in the assessment cover a period of strong El Niño conditions and increasing catch levels, with an increase in several of the standardised CPUE indices. The model attributed this to a period of slightly higher recruitment in some regions before the upturn in the CPUE (which in most cases is an index of the abundance of older fish vulnerable to longline gear).

Other changes made to the model included implementing minor developments to Multifan-CL since the 2014 assessment. These included developments in the modelling of recruitment (annual SRR, arithmetic rather than geometric mean of other recruitments), a trial of the Dirichlet multinomial likelihood for the size frequency data and estimation of a Lorenzen-type relationship between natural mortality for the size of fish. The values selected for these model settings had some impact on the estimates of stock status for the current assessment.

SPC in recent years have generated a grid of models to explore the interactions among selected axes of uncertainty. The grid contains all combinations of two or more parameter settings or assumptions for each uncertainty axis. The axes are generally selected from the one-off sensitivities with the aim of providing an approximate understanding of variability in model estimates due to assumptions in model structure, not accounted for by statistical uncertainty estimated in a single model run, or over a set of one-off sensitivities. The structural uncertainty grid for the 2017 assessment was constructed from 5 axes: steepness (3 settings), tagging data overdispersion (2), tag mixing (2), size data weighting (3) and regional structure (2). Initially the grid consisted of 48 models as only two size weighting had been applied, subsequently a third was added (see under 'sensitivities' below), so the final grid comprised 72 model runs.

Age / spatial structure: The model is structured into 9 regions and 28 quarterly age classes (the last a plus group).

Growth: Growth was assumed to be invariant by region and sex. It has been noted that growth of smaller fish (up to ~80cm) may not conform to a von Bertalanffy (VB) curve, so the mean length of the first 8 quarterly age-classes were set as independent parameters, with the mean lengths for the remaining age-classes following a VB growth model.

Steepness: Fixed at 0.8, with 0.65 and 0.95 tested as sensitivities (as all the main WCPFC tuna stocks).

Recruitment: Recruitment occurs in the model at age one, instantaneously at the beginning of each quarter. The stock-recruit relationship is considered weak (i.e. weak penalty for deviating from it); the six terminal quarterly recruitments are set at the mean of assessment period; the distribution of recruitment across regions is allowed to vary over time.

Natural mortality: M assumed to vary between males and females (because there is a larger proportion of males in the largest size classes); M is calculated externally by length and then converted to M-at-age using the growth curve; this M vector is put into the model as fixed values.

Maturity: The assessment estimates 'spawning potential' rather than spawner biomass, with the objective of directly estimating the relevant contribution to the next generation. This is a function of sex ratio at age, female maturity at age, female spawning frequency at age and female fecundity at age. As for M, this function is calculated by length and then back-transformed to age using the growth function.

Selectivity: Modelled using a variety of functions and methods (cubic spline smoothing, logistic function), depending on the fishery. Fisheries can 'share' selectivity if their characteristics are similar, to reduce the number of model parameters

Catchability: Constant catchability is assumed for fisheries where there is standardised CPUE (i.e. the model assumes that standardised CPUE is an index of abundance); otherwise catchability is allowed to vary over time (every two years); this deals for example with the issue of purse seine effort creep. (Purse seine effort creep is also directly evaluated and does not appear to be an issue; see Muller et al. (2018)).

Model runs: The model was run initially exactly as for 2014, and changes were made one at a time, so that the consequences of each change for the outcome of the assessment could be evaluated. The sequence went as follows: 2014 model → new Multifan-CL executable → update of the 2014 model with 2013-15 data → CPUE indices using longline operational database → new regional structure → some modification to recruitment estimation. This last provides the diagnostic model for the purposes

of the analysis of fits etc., although the uncertainty grid is used to characterise uncertainty and as the basis for management advice; see Section 6.5.3 (stock status).

Sensitivities: More than one hundred sensitivity runs were done but not all are presented in the report; they focus on those which considered to represent the plausible bounds of uncertainty. Below are the sensitivities runs used to generate the structural uncertainty grid (Table 19).

Table 19. Yellowfin: Key sensitivity runs selected to represent the range of uncertainties in the stock assessment (Table A5 in Tremblay-Boyer et al. (2017b)).

Sensitivity	Description	Tested values (diagnostic model in bold)
Steepness (h)	Shape of stock-recruit curve (proportion of full recruitment at 20%SB ₀)	0.65, 0.8, 0.95
Tag overdispersion	Variance of tag-recapture probability distribution; to test the effect of downweighing the tagging data to account for various kinds of process error in tagging	Parameter value 1 (Poisson distribution; parameter value 2 (downweighed))
Tag mixing period	Time taken for tagged fish to mix into the general population	One quarter, two quarters
Size-frequency weighting	Testing the impact of different assumptions about effective sample size for the size-frequency data	Effective sample size 100, 50, 20
Regional structure	Boundaries between equatorial and temperate regions set at 10°N rather than 20°N as in 2014	2017 vs. 2014 structure

6.5.7 P1 Performance Indicator scores and rationales

Scoring table 7. PI 1.1.1 – Stock status (Yellowfin)

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guide post	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
	Met?	Yes	Yes	Yes

Rationale

The PRI for this stock is not known. WCPFC has adopted 20% of the unfished spawning potential ($20\%SB_{F=0}$) as a LRP for yellowfin. This is taken to be the PRI, although it is ~77% of the median estimate of B_{MSY} (see Table 18). $SB_{F=0}$ is calculated from the estimated recruitments and a Beverton-Holt stock recruitment relationship (SRR) and offers a basis for comparing the exploited population relative to population subject to natural mortality only. Stock status was evaluated by estimating $SB_{recent}/SB_{F=0}$ and $SB_{latest}/SB_{F=0}$, where SB_{latest} and SB_{recent} are the estimated spawning potential in 2015 and the mean over 2011-2014, respectively.

To achieve SG60 it has to be likely ($\geq 70^{th}$ %ile), for SG80 to be highly likely ($\geq 80^{th}$ %ile) and for SG100 there has to be a high degree of certainty ($\geq 95^{th}$ %ile) that current stock status is above $20\%SB_{F=0}$. The 25th percentile is estimated directly in the uncertainty grid, so if this is above the PRI, this would satisfy SG60, but not SG80. For SG80 to be met, 14 or fewer of the model of the 72 model scenarios from the final grid should fall below $20\%SB_{F=0}$, and for SG100, three or fewer scenarios should fall below $20\%SB_{F=0}$.

In the final grid used to characterise uncertainty (72 runs; Table 18) the 25th %ile of $SB_{latest}/SB_{F=0}$ and $SB_{recent}/SB_{F=0}$ respectively was 0.27 and 0.25, so SG60 is satisfied. SG80 and SG100 can be approximately evaluated by reference to Figure 18 (Figure A40 in the stock assessment report), taking the ‘steepness’ plot as an example (since all scenarios are included in each plot): For two of the three levels of steepness considered in the sensitivities ($h=0.8$, $h=0.95$), all the scenarios estimate that $SB > LRP$. For the third steepness scenario ($h=0.65$), the 25%ile is above the LRP, but the scenario with the minimum value is not. This means that a maximum of six scenarios fall below the LRP, (i.e. there are 24 above the LRP for each of $h=0.8$ and $h=0.95$, plus a minimum of 75% of the scenarios for $h=0.65$ – i.e. at least 18 scenarios; making a minimum of 66 in total which are above the LRP). Hence SG60 and SG80 are met.

The Majuro plots show that there are only two scenarios for ‘latest’ and three for ‘recent’ that fall below the LRP (Figure 17, top middle panel; Figure A41 in the stock assessment report). On this basis, the SG100 level is also met.

b	Stock status in relation to achievement of Maximum Sustainable Yield (MSY)		
	Guide post	The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?	Yes	No

Rationale

SB_{MSY} is estimated (median estimate) at $26\%SB_0$. MSC provide a default value for B_{MSY} in terms of B_0 of 40%, but the guidance notes that this is only used if B_{MSY} is not analytically determined (GSA 2.2.3.1). Therefore, for the purposes of scoring the team have used the analytically determined median value of SB_{MSY} (i.e. $26\%SB_0$).

The 75thile of F_{recent}/F_{MSY} is 0.82; Figure 17 shows that only two runs (for both latest and recent) estimate that $F > F_{MSY}$. The median estimate of SB_{recent}/SB_{MSY} is 1.43 (Table 18). SG80 is met.

A high degree of certainty means $\geq 95^{th}$ %ile; however, 5%/95% confidence intervals are not provided for either SB_{recent}/SB_{MSY} or SB_{latest}/SB_{MSY} . In the 2014 stock assessment the lower 5% confidence interval for SB/SB_{MSY} was 1 and the upper 95% confidence interval for F/F_{MSY} was 1, suggesting that the stock at that time was at the limit of the definition of a 'high degree of certainty'. SPC states in their stock assessment conclusions that spawner biomass is estimated to have been declining across the entire period for all models and in most regions. On this basis, therefore, SG100 is most likely not met.

References

Davies et al. (2014) and Tremblay-Boyer et al. (2017b)

Stock status relative to reference points

	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (S1a)	Limit reference point	$20\%SB_{F=0}$	Median estimate from final grid: $35\%SB_{F=0}$ (SB_{latest}); $32\%SB_{F=0}$ (SB_{recent})
Reference point used in scoring stock relative to MSY (S1b)	MSY target	SB_{MSY}	Median estimate from final grid: 1.41 / 1.43 SB_{MSY} ($SB_{latest} / SB_{recent}$)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	90
Condition number (if relevant)	N/a

Scoring table 8. PI 1.1.2 – Stock rebuilding (Yellowfin)

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the stock.
	Met?	N/a		N/a

Rationale

Rebuilding is not required – not applicable

b	Rebuilding evaluation			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	There is strong evidence that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.
	Met?	N/a	N/a	N/a

Rationale

Rebuilding is not required – not applicable

References

Rebuilding is not required – not applicable

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	N/a
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	N/a
Condition number (if relevant)	N/a

Scoring table 9. PI 1.2.1 – Harvest strategy (Yellowfin)

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guide post	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	Yes	No	No

Rationale

MSC defines a harvest strategy as *'the combination of monitoring, stock assessment, harvest control rules and management actions, which may include an MP or an MP (implicit) and be tested by MSE'* (MSC – MSCI Vocabulary v1.1).

The stated objective of the WCPFC harvest strategy as defined in CMMs 2017-01 and 2018-01 is to maintain status quo biomass, pending agreement on a formal target reference point, previously due in 2019 but pushed back to 2021 by WCPFC16 (see Section 6.3.10).

CMM 2014-06 commits WCPFC to developing a formal harvest strategy ('management procedure') for yellowfin and the other key stocks; none of the key milestones for yellowfin have yet been met however (see harvest strategy workplan; Attachment H in WCPFC (2019a)). For the moment, the elements of the WCPFC harvest strategy are the following:

- Data collection on the stock and fishery (considered in detail in PI 1.2.3 below);
- Stock assessment process (considered in detail in PI 1.2.4 below);
- Limit reference point (20%SB_{F=0}) and management target (SB₂₀₁₂₋₁₅; from CMM 2018-01) (see Section 6.3.7);
- 'Available' HCR (see 1.2.2), with management tools set out in 2018-01 (described in see Section 6.3.7);
- Monitoring of implementation of CMM 2018-01 via data gathering and Part 1 and 2 reports to the Commission.

This management strategy is reviewed annually during the Commission meeting.

PNA harvest strategy: The PNA VDS is described Section 6.3.9. The purse seine VDS is relevant for yellowfin because the majority of the reduction in spawning potential can be ascribed to the purse seine fishery (see Figure 44 in the stock assessment report). A longline VDS has recently been established, but plays a limited role in management for the moment (see Section 6.3.9).

Overall scoring:

The objective of the current harvest strategy is to maintain the status quo (WCPFC: average $SB/SB_{F=0}$ for 2012-2015; PNA: purse seine effort at a maximum of 2010 levels). The most recent stock assessment suggests that the status quo is an acceptable biological target for yellowfin (see PI 1.1.1). The most recent tropical tuna CMMs (2017-01 and 2018-01) perhaps slightly weakened management provisions for yellowfin compared to the previous measure (CMM 2016-01), although comparison is difficult and probably overall the outcome will not be a great deal of difference.

Status quo projections to 2019, presented to SC14, predict that SB will increase somewhat relative to 2015 levels, and remain on the right side of MSY reference points with high probability (median $F_{2019}/F_{MSY}=0.63$; median $SB_{2019}/SB_{MSY}=1.51$), with a projected probability of breaching the LRP of 6% (although as noted in Section 6.5.4 these projections might be slightly optimistic). On this basis, the harvest strategy is achieving stock management objectives: SG60 is met. In relation to SG80, however, the team considered that the harvest strategy is not particularly responsive to the status of the stock. The team were not confident based on past or current form that, should yellowfin stock status be revealed at the next stock assessment to be approaching or below target levels, WCPFC and/or PNA would be able to stabilize or decrease fishing mortality in a fully effective and timely way under the existing harvest strategy. SG80 is not met.

b				
Harvest strategy evaluation				
Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.	
Met?	Yes	Yes	Not evaluated	

Rationale

Yellowfin fishing mortality has always been below F_{MSY} , and the stock has never declined below the default target of SB_{MSY} . From this it can be inferred that while the harvest strategy may not have been fully tested, there is evidence that it is achieving its objectives. SG60 and SG80 are therefore met.

c	Harvest strategy monitoring		
	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.	
	Met?	Yes	

Rationale

Extensive monitoring is in place at the stock level; details given in Sections 6.5.5 and 6.5.6. Therefore, SG60 is met.

d	Harvest strategy review		
	Guide post	The harvest strategy is periodically reviewed and improved as necessary.	
	Met?	Not evaluated	

Rationale

Not needed to be evaluated (because SIa scored <80)

e	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	N/a	N/a	N/a

Rationale

The target species is not a shark; not relevant.

f	Review of alternative measures			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	N/a	N/a	N/a

Rationale

This fishery targets yellowfin specifically, and there are no requirements such as minimum or maximum landing sizes or quotas which could lead to any of this catch being unwanted. Discarding rates for yellowfin are minimal, according to the stock assessment report and as evidenced by the observer data which have reported discard rates of 3.36% for yellowfin (Table 25). This is further supported by the observer data collected over the course of this fishery's certificate (between 2014 and 2017) which indicate a < 1% discard rate by number of fish, rather than weight (Sieben and Daxboeck, 2019). Hence there is no 'unwanted catch'* of yellowfin in this fishery.

* SA3.1.6: The term 'unwanted catch' shall be interpreted by the team as the part of the catch that a fisher did not intend to catch but could not avoid and did not want or chose not to use.

References

Tremblay-Boyer et al. (2017b), WCPFC (2017b), WCPFC (2019a), WCPFC (2019b); WCPFC (2018a), Brouwer et al. (2018a), Sieben and Daxboeck (2019)

CMMs 2018-01, 2017-01, 2014-06, 2013-01, 2014-01, 2015-01, 2016-01

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	70
Condition number (if relevant)	3

Scoring table 10. PI 1.2.2 – Harvest control rules and tools (Yellowfin)

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	Yes	No	No

Rationale

MSC requirements:

- SA2.5.2 In scoring issue (a) at the SG60 level, teams shall accept ‘available’ HCRs (instead of HCRs that are ‘in place’) in cases where:
- Stock biomass has not previously been reduced below the MSY level or has been maintained at that level for a recent period of time that is at least longer than 2 generation times of the species, and is not predicted to be reduced below B_{MSY} within the next 5 years; or
 - In UoAs where B_{MSY} estimates are not available, the stock has been maintained to date by the measures in use at levels that have not declined significantly over time, nor shown any evidence of recruitment impairment.
- SA2.5.3 Teams shall recognise ‘available’ HCRs as ‘expected to reduce the exploitation rate as the point of recruitment impairment is approached’ only in cases where:
- HCRs are effectively used in some other UoAs, that are under the control of the same management body and of a similar size and scale as the UoA; or
 - An agreement or framework is in place that requires the management body to adopt HCRs before the stock declines below B_{MSY}.

Stock biomass has been above the estimated MSY level throughout the time series, and since the probabilities that $SB < SB_{MSY}$ and $F > F_{MSY}$ are low (see 1.2.1a), it is not likely that the stock biomass will fall below this level in the next five years (see PI 1.1.1; Section 6.5.4; Table 18). WCPFC have an agreed, legally-binding framework in place to establish place formal harvest strategies and control rules for their main stocks, including WCPO yellowfin (see CMM 2014-06 and associated workplans; Section 6.3.10). The requirements of SA2.5.2-3 are therefore met for a HCR to be ‘available’. SG60 is met. Since the harvest strategy is not ‘in place’, SG80 is not met.

b	HCRs robustness to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		No	No

Rationale

Since a HCR is 'available' rather than 'in place', it cannot be argued to be robust to the main uncertainties. Not met.

c	HCRs evaluation			
	Guide post	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Yes	No	No

Rationale

Under SA2.5.5, in order to conclude that 'available' HCRs are 'effective' (SG60), MSC requires evidence of i) the use of effective HCRs in other stocks or fisheries under the same management body; or ii) a formal agreement or framework with trigger levels which will require the development of a well-defined HCR. It also requires consideration of current exploitation rates in relation to biological reference points and the agreed trigger level (guidance for SA2.5.6: 'evidence that current F is equal to or less than F_{MSY} should usually be taken as evidence that the HCR is effective').

Taking this last point, clearly $F < F_{MSY}$ (see 1.1.1). A formal agreement for the development of a well-defined HCR is provided by CMM 2014-06, with a framework provided by the associated workplan. A trigger level is provided by the agreed limit reference point ($20\%SB_{F=0}$). The recent assessment provides some evidence that the tools in use are sufficiently effective at controlling exploitation rates.

Overall, therefore, under the MSC requirements and guidance for 'available' HCRs, SG60 is met. SG80 is not met.

References

Tremblay-Boyer et al. (2017b), SPC-OFP (2018), Brouwer et al. (2018a), WCPFC (2017b, 2018a, 2019a, 2019b); SPC (2017a)

CMMs 2018-01, 2017-01, 2014-06, 2013-01, 2014-01, 2015-01, 2016-01

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	60
Condition number (if relevant)	4

Scoring table 11. PI 1.2.3 – Information and monitoring (Yellowfin)

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Yes	Yes	No

Rationale

The following information is available, and is used as part of the harvest strategy – notably to inform the stock assessment model:

1. Fishery-dependent information

Catch, effort and CPUE: It is a requirement for all CCM fisheries to provide catch and effort data to WCPFC/SPC, and unlike in the past, most key fleets now provide operational (logbook) rather than just aggregate data (Williams, 2017). Catch and effort data go back to 1950, although as expected, historical data are sparser and generally less reliable than more recent data. The logsheet data are raised to best estimates of total catch by SPC-OFP, to account for missing data. Purse seine catch is allocated to species via an agreed methodology ('Method 3') (Hampton and Williams, 2017). Longline CPUE data are analysed and standardised as described in McKechnie et al. (2017a) and Tremblay-Boyer et al. (2017b), and provide the key stock assessment input; purse seine CPUE is not used because of difficulty in measuring effort.

Length/weight-frequency data: Size-frequency data come from various port sampling programmes and some observer reports and go back to the 1960s. These data are weighted in the stock assessment according to spatial representation, to account for differences in length-frequency by geographic region.

Fleet composition: Each CCM provides information to WCPFC annually on their active fleet, in their Part 1 reports.

2. Fishery-independent information

Size and age data: Age at size is based on otolith data and modelled using a VB model, but allowing deviations for small size classes. In the stock assessment conclusions, SPC note that this process appears to work relatively well, but emphasise that there remains significant uncertainty about growth, and regional variation in growth, for yellowfin, as a result of limited data on aging (Pecoraro et al., 2016).

Natural mortality: For yellowfin (and other WCPO stocks), the methodology set out in Hoyle and Nichol (2008) is used to estimate M-at-length by sex, based on the levels of M which give the observed divergence in sex ratio after maturity. This M-at-length vector is then used to calculate a M-at-age vector using the growth curve, which is the input to the stock assessment model. Alternatively (as a sensitivity run), SPC tried a new function in MFCL which allows estimation of the functional form of M within the model.

Environmental data: The Ocean Fisheries Programme of SPC undertaken environmental research as part of their ecosystem monitoring programme, focusing particularly on potential environmental drivers of tuna population dynamics.

3. Stock structure

The WCPO yellowfin fishery is assessed and managed as a single stock in the WCPFC Convention Area, although there is evidence both for mixing across the WCPFC/IATTC boundary and for some stock structure within the WCPO (Section 6.5.1). Some work has been done for bigeye to evaluate the usefulness of a combined management approach (McKechnie et al., 2015a), which concluded that the approach of separate assessments in the WCPO and the EPO was appropriate at least for now; a combined assessment has not, however, been attempted for yellowfin.

4. Information inferred from the stock assessment

A significant range of information relating to stock status comes as the output of the stock assessment (Tremblay-Boyer et al., 2017b; WCPFC, 2017a), including estimates of spawner potential, recruitment, fishery impact etc.

5. Data gaps

Observer coverage (providing external verification of logbook data and information about discards) is low for the longline fishery. There is no external fishery-independent biomass indicator (such as a survey); which would be extremely difficult given the spatial scale of the stock and fishery. There remain significant data gaps for the large and diverse fisheries in Vietnam, Indonesia and the Philippines, although the data have improved in recent years.

Overall, given the size and complexity of the fishery, the range and comprehensiveness of the data available is impressive and improving all the time. Nonetheless, some data gaps do constrain stock assessments – SPC emphasise particularly uncertainty about age and growth and stock structure, as well as the perennial questions of steepness and natural mortality. The stock assessment continues to rely on commercial CPUE as an index of stock abundance, and although these data are carefully analysed and standardised as far as possible, there are no fishery-independent datasets with which they can be compared, while issues such as spatial and temporal changes in catchability remain problematic. On this basis, the team concluded that SG60 and SG80 are met, but SG100 is not met.

b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Yes	Yes	No

Rationale

Fishery removals are monitored by individual CCMs via logsheets and port sampling, and are required to be submitted to the Commission annually, in the form of estimates of total catch plus catch and effort data broken down by gear and either aggregated (5° squares by month) or at operational level (individual logsheet level). Despite some gaps in this dataset, coverage is good overall. This catch, effort and CPUE dataset is the key indicator for stock assessment. Other key fisheries data which support management are size-frequency data (collected via port sampling and observer programmes) and tag returns. Biological data are also collected via research programmes (see Pecoraro et al. (2016)).

Formal stock assessments have taken place every few years (2011, 2014, 2017). In between formal stock assessments, SPC provide some information on trends in fishery indicators (total catch, nominal CPUE, catch at length and at weight), to guide management (e.g. Piling et al. (2016)).

On this basis, the team felt that SG60 and SG80 were met, because information is available to monitor stock abundance (CPUE abundance indices) and removals by fishery (operational or aggregated logbook data, port sampling data), at a level of consistency and accuracy which allows for good quality stock assessments (see 1.2.4 below). The stock assessment is able to provide a range of indicators (analysis of stock status in relation to different reference points).

SG100 is not met, for the following reasons (which are common to a greater or lesser degree in almost all tuna stock assessments):

- The characteristics of tuna longline CPUE are often poorly understood and it is unclear how successful most effort standardization analyses are or how to properly represent the uncertainties;
- Purse seine catch and length-frequency data can be biased by grab-sampling techniques used to estimate species composition (although there is an agreed methodology used to avoid bias as far as possible; see Hampton and Williams (2017));
- Some data gaps remain in fishery-dependent data (see Figure 21) and in biological information (age/growth and stock structure);
- The requirement to 'raise' logsheet data by estimates of total catch (to account for missing logsheets) results in some loss of precision;

- Historical data are often lacking in precision;
- Although the frequency of stock assessments is reasonable, they are not carried out with ‘high frequency’ (i.e. not annually).

The uncertainty in the most recent stock assessment is high and difficult to quantify; and it is not completely clear how robust the management is to uncertainty – the management system is still a work in progress.

c	Comprehensiveness of information	
	Guide post	There is good information on all other fishery removals from the stock.
	Met?	Yes

Rationale

WCPFC and SPC work hard to quantify all sources of removals and include them in the stock assessment. Small-scale (but extensive) fisheries in Indonesia, the Philippines and Vietnam have in the past been a problem, and there has been ongoing work for quite a few years to quantify the catch (and where possible effort) from these fisheries. According to the stock assessment report, there has been gradual improvement in the data from Indonesia, the Philippines and Vietnam over the last few years, and catch data are included in the most recent stock assessment. Met.

References

McKechnie et al. (2015b), Pecoraro et al. (2016), Hampton and Williams (2017), Tremblay-Boyer et al. (2017b), WCPFC (2017a), Williams (2017), McKechnie et al. (2017a)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
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Condition number (if relevant)	N/a
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Scoring table 12. PI 1.2.4 – Assessment of stock status (Yellowfin)

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		Yes	Yes

Rationale

The assessment is conducted using an integrated assessment model Multifan-CL (MFCL) that is able to combine a range of datasets and to model several components, including (i) the dynamics of the fish population (growth, natural mortality, maturity and fecundity, recruitment); (ii) the fishery dynamics; (iii) the dynamics of tagged fish; (iv) the observation models for the data. The model partitions the population into 9 spatial regions and 28 quarterly age-classes and defines ‘fisheries’ to consist of relatively homogeneous fishing units that have selectivity and catchability characteristics that do not vary greatly over time and space, although in the case of catchability some allowance can be made for time series variation. SPC have considerable experience in the development and application of MFCL. SG80 and SG100 are met.

b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	Yes	Yes	

Rationale

MFCL can estimate a range of reference points based on yield/spawner per recruit and stock-recruit relationships. As an integrated statistical method, it can use the available data in as raw a form as appropriate in a single analysis. This allows for consistency in assumptions and permits the uncertainty associated with both data sources to be propagated to final model outputs such as reference points and projections. Therefore, SG60 and SG80 are met.

c	Uncertainty in the assessment			
	Guide post	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	Yes	Yes	Yes

Rationale

More than a hundred runs were undertaken in conducting the 2017 yellowfin assessment, then to represent uncertainty the assessment was based on a grid of structural uncertainties, including 72 runs focused on a small set of uncertainty axes considered to represent the ‘plausible range’ of stock uncertainty. The grid was constructed from 5 axes: steepness (3 settings), tagging data overdispersion (2), tag mixing (2), size data weighting (3) and regional structure (2). This allowed statements about probability of achieving management objectives to be made. SG60, SG80 and SG100 are met.

d	Evaluation of assessment		
	Guide post		The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?		Yes

Rationale

Alternative hypotheses in terms of model input parameter values or estimation methods, or model structure, are explored based on sensitivities, as described above (see also Figure 17, Figure 18). The transition from the 2014 reference case to the 2017 diagnostic case model is explained in Section 6.5.6, and shows the new or changed inputs and how they have been carefully evaluated at each stage. Alternative hypotheses are also explored externally; for example, Tremblay-Boyer et al. (2017a) considers the use of geo-statistics as a new method of standardising CPUE; opportunities for improving the input data (e.g. Peatman et al. (2017)) or developing new sources of input data (e.g. PNA (2017)) are considered by the SC each year. Met.

e	Peer review of assessment		
	Guide post	The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?	Yes	No

Rationale

Although neither the 2017 or the 2014 assessments have been externally peer reviewed the assessment has benefited from developments that addressed the recommendations made by the independent review of the 2011 bigeye assessment. These are detailed in the 2014 assessment report (Davies et al., 2014) and helped inform the recommendations of the 2017 pre-assessment workshop (PAW) held in Noumea over 24–27 April, 2017 (Pilling and Brouwer, 2017). The PAW reviewed the main input data sets and provided recommendations regarding the range of assessment model options and sensitivities to be included within the stock assessment. These recommendations provided the main direction for the current assessment. There have also been several reviews of the data inputs (Lawson, 2013; Powers, 2013). Therefore, although the current assessment has not been externally peer reviewed it is regularly subject to internal scrutiny by SPC and the scientific committee of the WCPFC, during which scientists from a number of contracting parties are able to review the assessment.

Therefore the SG80 level is met but not the SG100 level which requires evidence of a formal external review and an appropriate response by SPC and WCPFC.

References

Pilling and Brouwer (2017), Powers (2013), Davies et al. (2014), PNA (2017), Tremblay-Boyer et al. (2017b), Lawson (2013) and Peatman et al. (2017)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	95
Condition number (if relevant)	N/a

6.6 Principle 1: Bigeye

6.6.1 Stock definition

Bigeye are distributed throughout the tropical and sub-tropical Pacific, so the question arises as to whether it is appropriate to treat the WCPO as a stock separate from the EPO. Genetic analysis does not suggest significant population differentiation (Grewe and Hampton, 1998). Tagging suggests that while some individuals may move very large distances (up to 4000 nautical miles over one or more years), most were recaptured much closer to the tagging point. Tagging also suggests that east-west (or in particular west to east movement) is more significant than north-south movement (which is one reason why the regional structure of the stock assessment was adjusted; see Section 6.6.6). The working hypothesis is that bigeye in the far east and far west Pacific have little exchange, but there is likely to be mixing in the central Pacific and there is certainly extensive movement over the nominal WCPO/EPO boundary at 150°W (Figure 22). The consequences of this mixing for stock assessment has been evaluated via a Pacific-wide stock assessment (McKechnie et al., 2015b), the results of which suggest that the current approach is robust to this mixing.

Nevertheless, the WCPFC Scientific Committee (SC14) have expressed some concern over this stock hypothesis. They note that fishing grounds around 150°W are a core area of bigeye catch (unlike for yellowfin; see Figure 23 and compare to Figure 16), and hence influences both stock assessments, while the new work on growth in WCPO means that the assessments use different growth models (although there is some evidence of changes in growth across the Pacific; see below) (WCPFC, 2018a). Nevertheless, the two-stock structure is the working hypothesis for now.

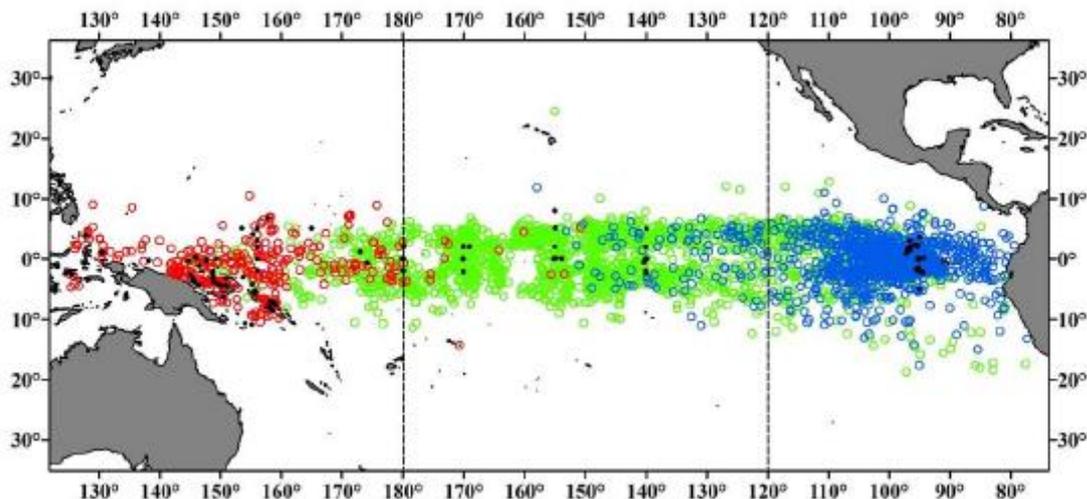


Figure 22. Movements of tagged bigeye divided into three regions. Black points are release locations; red are recapture locations for fish released in the western region; green for recaptures of fish released in the central region; blue for recaptures of fish released in the eastern region. Figure taken from McKechnie et al. (2017b) who in turn took it from Schaefer et al. (2015).

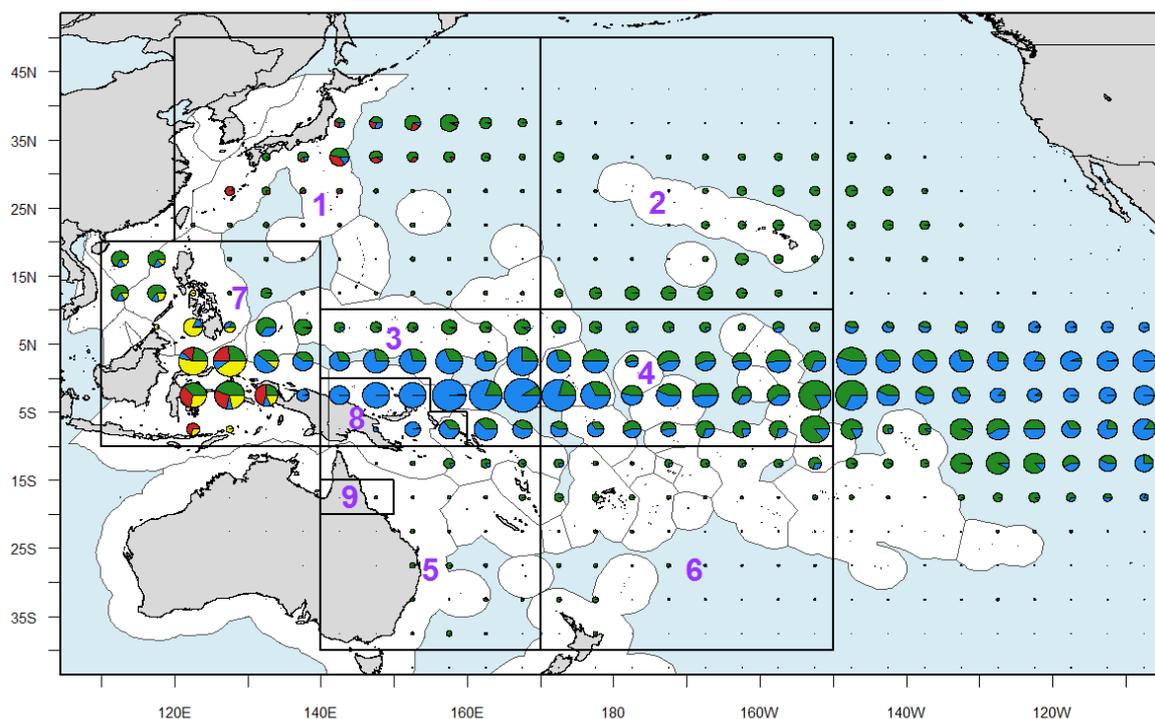


Figure 23. Geographical distribution of bigeye catch in the Pacific Ocean (purse seine=blue, longline=green, pole and line=red, misc.=yellow), with the superimposed grid showing the regional structure and spatial limits of the SPC stock assessment (Figure 8 in McKechnie et al., 2017b).

6.6.2 Biology

Growth and maturity: Bigeye tuna are relatively fast-growing, with a maximum length of ~200 cm. Individuals reach maturity in the length range 80-120 cm. It appears that bigeye growth is faster in the EPO than the WCPO, for reasons unknown; maturity is reached at a similar age but at a larger size in the EPO. Growth does not seem to vary significantly by sex (changes in sex ratio after maturity are therefore presumed to be related to differential natural mortality), but growth may vary spatially in the WCPO, although more data are required to map this in detail.

Bigeye age and growth in the WCPO have been revisited and revised in recent years ('Project 35'; Farley et al. (2017b), followed by 'Project 81'; Farley et al. (2018b). Initially, the authors sectioned otoliths from 1039 fish caught from 2013-16, in the age range 0.25-13.7 years, mainly from the equatorial regions, and for the 2018 update included a further 237 age estimates, including 188 from fish >130cm FL, to address concerns expressed at SC13 regarding the accuracy of the revised growth curve at larger sizes, as well as 11 for small fish (31-39cm).

This work has allowed a new growth curve for bigeye to be estimated, which had a significantly lower asymptotic length than the curve previously used in the stock assessment model (e.g. from 2014), which was more similar to the EPO growth curve (see McKechnie et al. (2017b); Figure 24). The new growth curve from Project 35 was used in the 2017 stock assessment (alongside the old one; see Sections 6.6.1 and 6.6.6) and considerably affected the conclusions of the assessment (see Section 6.6.3). The updated 2018 stock assessment incorporated the results of Project 81 as well, but this made very little difference to the 2017 growth curve (Figure 24).

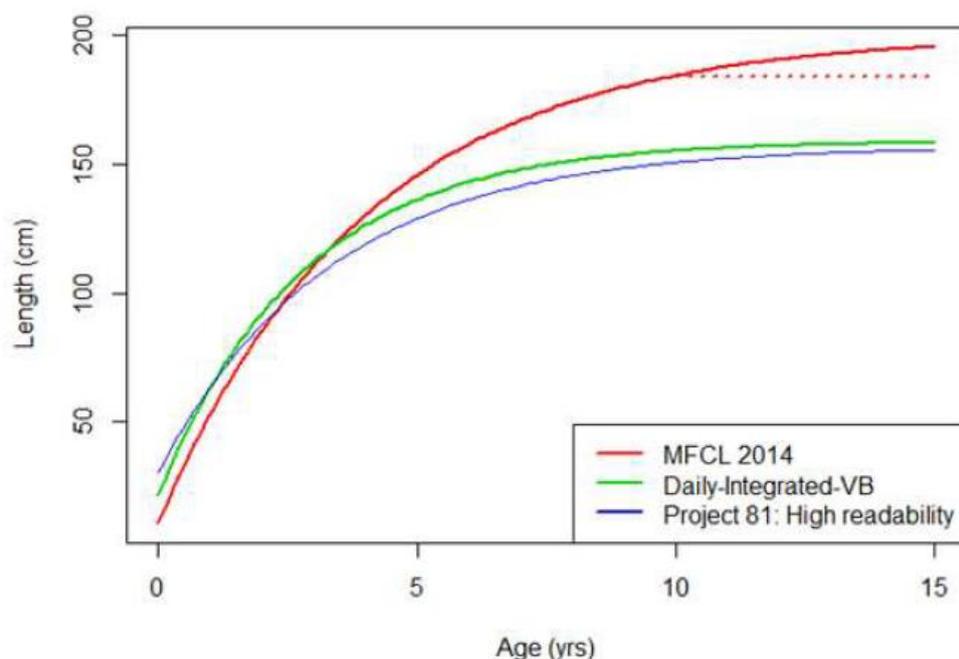


Figure 24. Bigeye growth curves used in the current and previous stock assessments: red – used in previous stock assessments up to 2014; green – used for 2017 assessment (McKechnie et al., 2017b) based on the work presented in Farley et al. (2017b); blue – as green, incorporating additional work as set out in Farley et al. (2018b), used in the 2018 update assessment.

Natural mortality: M is assumed to be high for the smallest size classes before declining to $\sim 0.5/\text{yr}$ for fish $> \sim 40\text{cm}$. Tagging data suggest that significant numbers of fish reach at least 8 years; the longest period at liberty for a recaptured bigeye in the WCPO was ~ 14 years, for a fish released aged 1-2 years. For females, M may increase after maturity because of the physiological stress of spawning; sex ratios of larger size classes tend to be male biased (McKechnie et al., 2017b). M curves in the stock assessment are sex-specific (see below).

6.6.3 Stock status

The most recent full stock assessment for WCPO bigeye was in 2017 (McKechnie et al., 2017b). The assessment incorporated a growth curve which has been updated by the results of ‘Project 35’ on age, growth and reproduction of bigeye, which has been going on since 2009 (Farley et al., 2017a) (see Section 6.6.2 above). The 2017 assessment also adjusted the regional structure; shifting the boundary between the northern temperate regions (regions 1 and 2) and tropical/equatorial regions (regions 3 and 4) from 20°N to 10°N (see Section 6.6.6 ‘stock assessment’ below for details). The new (2017) vs. old (2014) growth models and regional structures were used as sensitivities in the stock assessment mode, along with some others (discussed in Section 6.6.6). The 2017 assessment was updated in 2018 to incorporate the updated growth curve from ‘Project 81’ as described above, as well as to evaluate the impact of regional structure (Vincent et al., 2018). Both these changes, but particularly the new growth curve, resulted in the assessments from 2017 and 2018 being significantly more optimistic than the previous assessment in 2014.

SPC does not designate a ‘reference case model’ as the basis for management advice, but instead provides the range of model outputs over the whole sensitivity grid, including old vs. ‘updated new’ (i.e. 2018) growth curves and old vs. new regional structure. It was left to the Scientific Committee (SC14) to evaluate the various models and grids and decide how to provide management advice to the

Commission. SC14 concluded that the ‘updated new’ growth model reflected the best scientific information available, so did not incorporate the outputs with the old growth model into the data used to provide scientific advice to WCPFC. They did include both regional structures, as well as a range of other uncertainty axes having less overall impact on the assessment conclusions (described in Section 6.6.6 below). This resulted in a grid of 36 models. Table 20 gives the stock assessment output from the SC14 uncertainty grid (WCPFC, 2018a).

Table 20. Bigeye: Summary of reference points over the 36 models in the structural uncertainty grid. Note that $SB_{recent}/SB_{F=0}$ is calculated where SB_{recent} is the mean SB over 2012-2015 (WCPFC, 2018a).

Parameter	Min	10%	Median	90%	Max
F_{recent} / F_{MSY}	0.59	0.67	0.77	0.93	1.06
$SB_{latest} / SB_{F=0}$	0.30	0.35	0.42	0.48	0.53
SB_{latest} / SB_{MSY}	1.15	1.31	1.62	1.93	2.19
$SB_{recent} / SB_{F=0}$	0.25	0.30	0.36	0.41	0.45
SB_{recent} / SB_{MSY}	0.96	1.12	1.38	1.66	1.88
SB_{MSY} / SB_0	0.26	0.26	0.28	0.30	0.30

The basic conclusions of the stock assessment itself are summarised by the authors as follows (McKechnie et al., 2017b; Vincent et al., 2018):

- All models with the updated new growth function put the SB above the limit reference point;
- All models with the new growth function estimate that recent recruitment has increased spawning potential in the last few years; with the old growth model it was expected that this recruitment would increase SB in due course;
- Taking the four key sets of models (updated new/old growth, 2014/17 regions), only the old/2014 set of models put SB below the limit reference point for all models; this assessment was slightly more pessimistic than the 2014 analysis, but was considered by SC14 to be implausible;
- All models estimated a substantial decline in bigeye abundance over the time series;
- In terms of the probabilities of stock status relative to reference points, using the SC14 grid the SB is estimated to be above the limit reference point with high probability (36 out of 36 models), and F is estimated to be below F_{MSY} with 94% probability (34 out of 36 models) (WCPFC, 2018a).

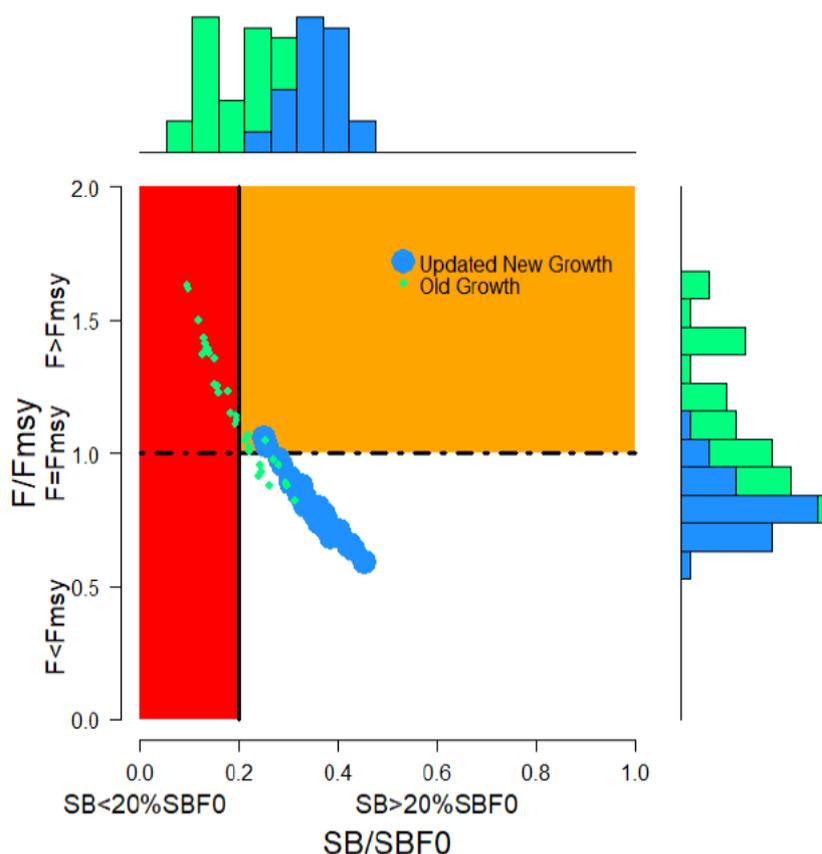


Figure 25. Bigeye: Majuro plot showing the outcome of each of the 72 models in the grid from the assessment update in 2018, with the updated new growth model in blue and the old growth model in green (these results discarded by the Scientific Committee). The red area shows SB below the LRP, while the orange area shows F higher than F_{MSY} (Figure 7 in Vincent et al. (2018)).

6.6.4 Stock projections

SC14 also present some stock projections under different scenarios of fishing pressure and recruitment (WCPFC, 2018a). The recruitment scenarios were based on either long-term average recruitment or recent levels of recruitment, as estimated from the 2018 updated stock assessment; recent recruitment levels being higher than the long-term average. Fishing scenarios were either ‘status quo’ (2013-15, reflecting ‘recent’ in the stock assessment), ‘optimistic’ (scalar multiples 1.11 for purse seine effort and 0.98 for longline effort) or ‘pessimistic’ (scalar multiples 1.12 for purse seine and 1.35 for longline). The results of the projections depend mainly on assumptions about recruitment. Based on recent (high) recruitment levels, the risk of SB declining to below the LRP by 2045 is minimal, although F is increasingly likely to exceed F_{MSY} as fishing effort increases. Conversely, assuming long-term recruitment levels, SB has a 17-32% chance of being below the LRP by 2045, while F is very likely to be above F_{MSY} under all fishing scenarios including the status quo (Table 21).

Table 21. Bigeye: Projections of future stock status from SC14, based on updated 2018 stock assessment; scenario definitions given in the text (WCPFC, 2018a).

Recruitment scenario	Fishing scenario	Risk $SB_{2045} < LRP$	Risk $F > F_{MSY}$
Recent (high)	Status quo	0	11
	Optimistic	0	13
	Pessimistic	0	30

Recruitment scenario	Fishing scenario	Risk $SB_{2045} < LRP$	Risk $F > F_{MSY}$
Long-term (lower)	Status quo	17	93
	Optimistic	18	94
	Pessimistic	32	98

6.6.5 Information

The 2017 stock assessment report (McKechnie et al., 2017b) provides a full description of the data sources used, from which the summary in this section is taken unless otherwise indicated.

Fisheries: The stock assessment defines 32 ‘fisheries’ according to fishing gear and method (longline, purse seine by set type², pole-and-line, various miscellaneous small-scale fisheries in Indonesia and the Philippines), as well as by region and for those with most (Japan, Australia, US) or least (Philippines, Indonesia) data, by vessel flag or fleet. (The previous assessment had 33 fisheries; the change was a consequence of the change in regional boundaries, noted above and described in Section 6.6.6)

The information provided from each fishery is summarised in the graphic below (Figure 26). With a few exceptions, recent and historical (back to ~1980 at least) catch data are available from all the fisheries. Standardised CPUE is only evaluated for longline fisheries because of problems in defining a suitable measure of effort for the other gear types (see under ‘effort’ below). Size data are available as weight for the longline fisheries and length (from port sampling) for the other gear types; it is concerning that longline size data collection (or provision) seems to have deteriorated in recent years.

² unassociated, or associated with FAD, natural log, dolphin, whale, whale shark or other, or unspecified

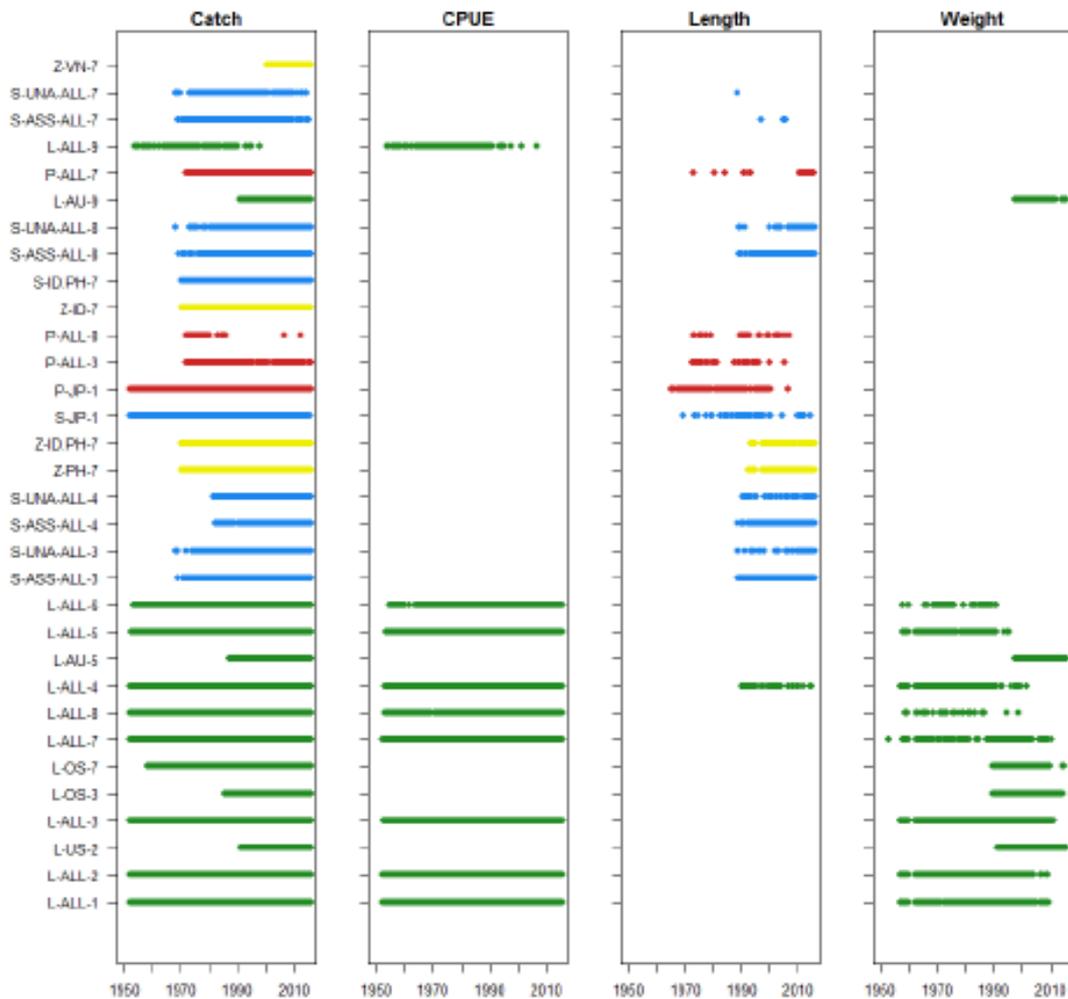


Figure 26. Bigeye: Graphic representing the input data to the stock assessment from each ‘fishery’ (as defined as described above). Left to right: catch, CPUE, catch length sampling and catch weight sampling; top to bottom: the 32 fisheries defined by the stock assessment; x-axis of each column 1950-2015 (Figure 5 in McKechnie et al. (2017b)).

Catch data: Catch is recorded by number for longline and by weight for other gears. Discards are considered minor and are not included in the stock assessment. For the purse seine catch, a method has been defined (‘Method 3’ – see Hampton and Williams (2017)) for dividing the catch by species (this after a process of analysis and review; see references in stock assessment report).

Effort: Effort is not included in the stock assessment for all fisheries; e.g. if the data are not considered robust or if the fishery aggregates several gear types (small-scale fisheries). Purse seine effort is defined as days fishing / searching and allocated to set type according to the proportion of each set type in the total sets for the trip (from the logbook). The authors of the stock assessment report note a concern that there has been a change in reporting practice such that days previously considered ‘searching’ days may now be reported as ‘transiting’ days, leading to effort creep (because the trip catch is allocated to a lower proportion of the trip days); this is dealt with in the model by allowing periodic changes in catchability.

CPUE: The key datasets for the assessment are standardised longline CPUE time series from a range of fisheries; the historical data are mainly Japanese but in more recent years’ data is available from all

the main distant-water fleets as well as from Pacific island domestic fleets. An improvement since the 2014 assessment is that SPC has managed to compile an extensive database of operational (as opposed to aggregated) catch and effort data from the main distant water fleets.

Other fisheries: There has been gradual improvement in the data from Indonesia and the Philippines over the last decade or so; since the last assessment, catch data from Vietnam have also been available. Effort for these fisheries is included as days fished where possible, but usually not included (five fisheries).

IUU: A stock assessment model run was done to evaluate the possible impact of systematic underreporting of bigeye (see Pacific (2016)); the outcome was slightly more positive as you might expect (i.e. same CPUE trends but a higher catch); but this was not included in the list of 'key' sensitivities (see below).

Length / weight frequency: These data come from observers, port sampling or on-board collection by the crew and are converted to live weight. For purse seine fisheries, observer samples are corrected for grab-sample bias, and the long time-series of port sampling from Pago Pago has been included since the 2014 assessment. If both length and weight are available, weight is used for preference. The data are weighted by catch size to avoid over-weighting small sample sizes in the model.

Tagging: In total 17,886 releases and 6,344 returns are incorporated into the stock assessment model. These data come from the Regional Tuna Tagging Project (1989–92), the Coral Sea Tagging Programme (1995, 1999-2001) and the Pacific Tuna Tagging Programme (2006-2014). Since 2014, new tagging data are available from the Japanese Tagging Programme (2000-2014), which were included as a sensitivity because their structure made them cumbersome for MFCL to process. Releases later than the 3rd quarter of 2014 are excluded because of delays in reporting of recaptures.

6.6.6 Stock assessment

The most recent full stock assessment for WCPO bigeye is described in McKechnie et al. (2017b). It was updated in 2018, primarily to include new growth data, as described above (Vincent et al., 2018). The summary here is taken from these two documents unless otherwise indicated. The 2017 assessment uses data from 1952 to 2015, in quarterly timesteps, and the 2018 assessment does not update that time series, except to use in re-evaluating the spatial structure. Data from 2016 were not used based on the advice of SC12 that these data are often still preliminary and subject to revision, even after the SC meeting – longline data which are the key dataset for the assessment.

As with the assessments for all the main WCPFC stocks, the assessment model is run in Multifan-CL (MFCL), which is described briefly above (Section 6.5.6). MFCL requires that 'fisheries' are defined with as near as possible constant selectivity and catchability. The details of how these fisheries are defined are given in McKechnie et al. (2017a). For each fishery, the assessment uses catch data, effort data (in the form of standardised CPUE time series; see McKechnie et al. (2017a) and Tremblay-Boyer et al. (2017a)). The model also uses tagging data. Age and growth parameters are estimated externally and used as fixed parameter (the new growth work is described in Section 6.6.2).

Age and spatial structure: The stock assessment model is divided into 40 quarterly age-classes and stratified by area (region), with 9 regions defined. The regions cover the WCPFC Convention area, but the assessment stops at 150°W and so excludes the IATTC overlap area. The 2017 model slightly adjusted the region boundaries from the 2014 assessment, putting the boundary between equatorial and tropical regions at 10°N and S rather than 20°. This was done because tagging data indicate limited movement between equatorial and more temperate regions, and because Regions 3 and 4 then better

reflect the distribution of purse seine fishing (mainly from 10°N to 10°S). This regional structure was re-evaluated in the 2018 update, which considered an intermediate boundary at 15° (output more similar to the 10° model than the 20° model) and concluded that the 10° model was the most appropriate. SC14, however, decided to rank the models with the two regional structures as equally likely, as previously did SC13. The 2017 regions are as follows (see also Figure 27):

- Regions 1 and 2 (west and east) north of 20°N;
- Regions 3-4 in the equatorial Pacific;
- Regions 5-6 south of 10°N;
- Region 7 in the equatorial archipelagic region (Philippines, E. Indonesia); this region was defined to reduce the uncertainty associated with the fisheries from the Philippines, Indonesia and Vietnam;
- Region 8 separates the part of region 3 in the archipelagic waters of PNG and the Solomon islands, where tagging data show high residence times;
- Region 9 separates the Coral Sea from the rest of Region 5, to accommodate tagging data.

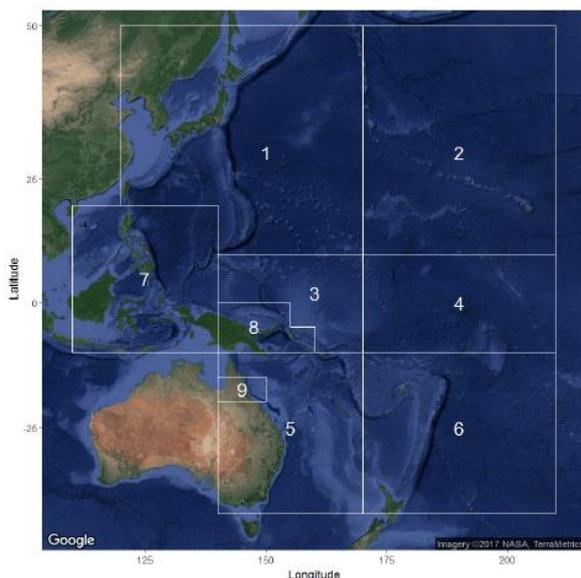


Figure 27. Bigeye: The regions used to stratify the stock assessment model, as adjusted in the 2017 assessment and reaffirmed in the 2018 update (McKechnie et al., 2017b).

Growth: The details of the new work on age and growth (Project 36 and Project 81) are given in Section 6.6.2 above. For the purposes of the assessment, two alternative approaches to modelling growth were considered (all assuming a von Bertalanffy (VB) curve):

- The same growth curve and methodology as in the 2014 assessment;
- the growth curve estimated externally to the model, as used in the 2017 assessment but updated based on new data from Project 81 (see Figure 24 above);

Steepness: The reference case model assumes $h=0.8$; 0.65 and 0.95 are tested as sensitivities (standard practice across all SPC tuna assessments).

Recruitment: The stock-recruit relationship is considered weak (i.e. weak penalty for deviating from it); the six terminal quarterly recruitments are set at the mean of assessment period; the distribution of recruitment is allowed to vary across regions.

Natural mortality: M assumed to vary between males and females (because there is a larger proportion of males in the largest size classes); M is calculated externally by length and then converted to M-at-age using the growth curve; this M vector is put into the model as fixed values.

Selectivity: Modelled using a variety of functions and methods (cubic spline smoothing, logistic function), depending on the fishery. Fisheries can ‘share’ selectivity if their characteristics are similar, to reduce the number of model parameters.

Catchability: Constant catchability is assumed for fisheries where there is standardised CPUE (i.e. the model assumes that standardised CPUE is an index of abundance); otherwise catchability is allowed to vary over time (every 2 years); this deals for example with any issue of purse seine effort creep.

Model runs: The model was run initially exactly as for 2014, and changes were made one at a time, so that the consequences of each change for the outcome of the assessment could be evaluated. The sequence went as follows: 2014 model → new Multifan-CL executable → 2014-15 data added → new approach to longline CPUE standardisation (Tremblay-Boyer et al., 2017a) → new regional structure → new growth and maturity schedule based on Farley et al. (2017b) → some modification to recruitment estimation → longline length-frequency data removed to avoid conflict with weight-frequency. This last provides the 2017 diagnostic model for the purposes of the analysis of fits etc.; but the authors note that the full range of the uncertainty grid should be considered as the basis for management advice; see Section 6.6.3 (stock status) above. The model was then updated in 2018 with the revised growth curve.

Sensitivities: Several hundred sensitivity runs were done but not all are presented in the report; they focus on those which are ‘*considered to represent the plausible bounds of model uncertainty*’. The sensitivities presented here are those retained by SC14 for their structural uncertainty grid of 36 models (Table 22).

Table 22. Bigeye: Key sensitivity runs selected by SC14 to represent the range of uncertainties in the stock assessment. McKechnie et al. (2017b); WCPFC (2018a).

Sensitivity	Description	Tested values (diagnostic model in bold)
Steepness (h)	Shape of stock-recruit curve (proportion of full recruitment at 20%SB ₀)	0.65, 0.8, 0.95
Tag overdispersion	Variance of tag-recapture probability distribution; to test the effect of downweighing the tagging data to account for various kinds of process error in tagging	default (1) or fixed (moderate)
Size-frequency weighting	Testing the impact of different assumptions about effective sample size for the size-frequency data	sample size divided by 10, 20, 50
Regional structure	See above	2017 vs. 2014 structure

6.6.7 P1 Performance Indicator scores and rationales

Scoring table 13. PI 1.1.1 – Stock status (Bigeye)

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guide post	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
	Met?	Yes	Yes	Yes

Rationale

The stock assessment does not provide a ‘reference case’ model. To evaluate stock status, the assessment team therefore based the scoring on the grid of 36 models constructed by the SC (SC14) as explained in Section 6.6.3; since this is what the SC considered most appropriate for providing management advice.

The PRI for this stock is not known. For the purposes of scoring, the team considered the PRI to correspond to the agreed LRP ($20\%SB_{F=0}$), although in practice this is likely to be a conservative estimate of the PRI, noting that it is ~70% of the median estimate of SB_{MSY} ($28\%SB_0$ in the SC grid).

Based on the SC14 grid (Table 20, WCPFC (2018a)) there is high probability that the SB is above the LRP (36 out of 36 models). SC14 characterise the probability of $SB < LRP$ as 0%, but in practice, there is some uncertainty around stock status which is not quantified in this grid. The key uncertainty has been the growth model, but the additional work carried out in 2018 (Project 81), added to the existing ‘new’ growth model for 2017 provides additional confidence, such that SC14 decided to exclude the ‘old’ growth model as a sensitivity in the model output grid. This gives higher confidence than previously that the stock is above the LRP level with high probability.

The stock-recruit relationship is plotted in Figure 28 below (stock-recruit pairs from 1964-2014 (Scott et al., 2017)), gives an opportunity to evaluate recruitment in relation to stock biomass directly. As can be seen from the figure, although biomass is reduced in the later part of the time series (crosses), recruitment does not appear to change.

On balance, taking the conclusions of the SC grid as well as the sensitivities, and reviewing the stock-recruit information directly, the team concluded that there is a high degree of certainty that the stock is above the PRI; SG100 is met.

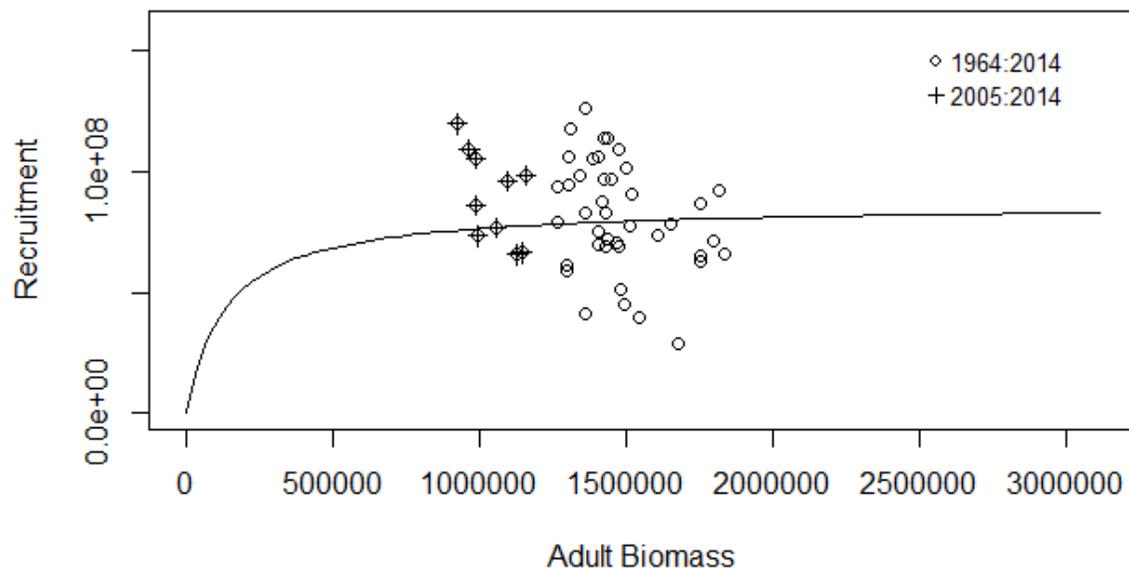


Figure 28. Stock-recruit pairs, 1964-2014 (circles), 2005 onwards marked with crosses (Scott et al., 2017)

b			
Stock status in relation to achievement of Maximum Sustainable Yield (MSY)			
Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
Met?		Yes	Yes

Rationale

SB_{MSY} is estimated (median estimate) at $28\%SB_0$. MSC provide a default value for B_{MSY} in terms of B_0 of 40%, but the guidance notes that this is only used if B_{MSY} is not analytically determined (GSA 2.2.3.1). Therefore, for the purposes of scoring the team have used the analytically-determined median value of SB_{MSY} (i.e. $28\%SB_0$).

According to the SC14 grid, $SB_{\text{recent}}/SB_{\text{MSY}}$ is estimated as follows: 1.38 (median), 1.12 (10% CI), 0.96 (Min i.e. one out of 36 – 2.8%) (Table 20). In other words, the stock is estimated to be at a level consistent with SB_{MSY} with between 90% and 97% probability (the probability has not been directly quantified in either of the reports).

To consider F_{MSY} : The SC14 grid estimates F/F_{MSY} at 0.77 (median), 0.93 (90% CI), 1.06 (Min) (Table 20). SC14 provide a probability estimate of 6% (presumably two models out of 36) of $F > F_{\text{MSY}}$ (WCPFC, 2018a). Trends in F from the 2017 diagnostic model (new/2017) are given in Figure 29 below; there is little evidence of a significant trend in recent years. Catch is \sim MSY or a little lower (median MSY estimate from SC14 grid 159 kt compared to 2015 catch of 152 kt).

In terms of biomass trajectory, as emphasised by both the stock assessment authors and the Scientific Committee (SC13 and SC14) the trajectory has been consistently downwards over the time series (see Figure 30 below). This means that over recent years, the stock has been in the current situation or better.

Scoring: The stock is at a level consistent with MSY (i.e. $SB > SB_{\text{MSY}}$, $F < F_{\text{MSY}}$, $C \sim$ MSY). SG80 is met. In relation to SG100, taking the structural uncertainty grid as defined by SC14, there is a probability of approximately 95% that $SB > SB_{\text{MSY}}$ and $F < F_{\text{MSY}}$, and the stock has been at or above this level over the entire time series. Therefore, SG100 is met.

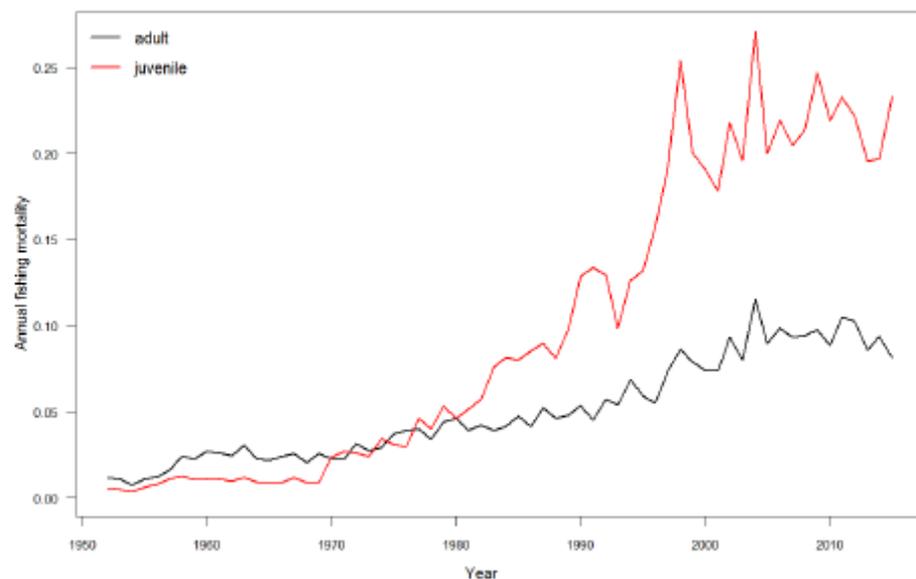


Figure 29. Time series of F (black: adult; red: juvenile) from the diagnostic case model (new/2017) (McKechnie et al., 2017b).

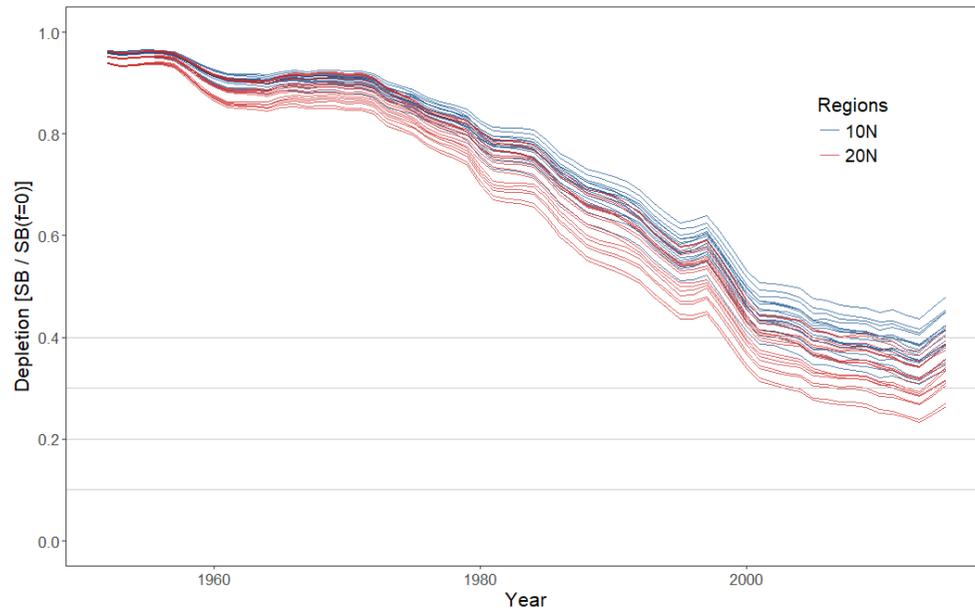


Figure 30. Trajectory of biomass depletion for the 36 models in the SC14 grid (blue: 2017 regional structure, red: 2014 regional structure)

References

Farley et al. (2017b), Vincent et al. (2018), Scott et al. (2017), WCPFC (2017a, 2017b), McKechnie et al. (2017b), Farley et al. (2018b)

Stock status relative to reference points

	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	Limit reference point	20%SB _{F=0}	SB _{recent} = 36%SB _{F=0} = 1.8LRP; SB _{latest} = 42%SB _{F=0} = 2.1LRP (median of SC uncertainty grid)
Reference point used in scoring stock relative to MSY (SIb)	MSY reference point	SB _{MSY}	SB _{recent} = 1.38SB _{MSY} ; SB _{latest} = 1.62 SB _{MSY} (median of SC uncertainty grid)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	100
Condition number (if relevant)	N/a

Scoring table 14. PI 1.1.2 – Stock rebuilding (Bigeye)

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the stock.
	Met?	N/a		N/a

Rationale

Rebuilding is not required – not applicable

b	Rebuilding evaluation			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	There is strong evidence that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.
	Met?	N/a	N/a	N/a

Rationale

Rebuilding is not required – not applicable

References

Rebuilding is not required – not applicable

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	N/a
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	N/a
Condition number (if relevant)	N/a

Scoring table 15. PI 1.2.1 – Harvest strategy (Bigeye)

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guide post	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	Yes	No	No

Rationale

MSC defines a harvest strategy as *'the combination of monitoring, stock assessment, harvest control rules and management actions, which may include an MP or an MP (implicit) and be tested by MSE'* (MSC – MSCI Vocabulary v1.1).

The stated objective of the WCPFC harvest strategy as defined in CMMs 2017-01 and 2018-01 is to maintain status quo biomass, pending agreement on a formal target reference point, previously due in 2019 but now pushed back to 2021 according to the latest version of the harvest strategy workplan (see Section 6.3.10).

CMM 2014-06 commits WCPFC to developing a formal harvest strategy ('management procedure') for bigeye and the other key stocks; none of the key milestones for bigeye have yet been met however; at WCPFC14 the workplan was refocused from rebuilding to agreeing a long-term HCR, based on the results of the 2017 stock assessment (see harvest strategy workplan; Attachment L in the summary report from WCPFC14; Attachment I in the summary report from WCPFC15; Attachment H in WCPFC (2019a)). For the moment, the elements of the WCPFC harvest strategy are the following:

- Data collection on the stock and fishery (considered in detail in PI 1.2.3 below);
- Stock assessment process (considered in detail in PI 1.2.4 below);
- Limit reference point (20%SB_{F=0}) and management target (SB₂₀₁₂₋₁₅; from CMM 2017-01) (see Section 6.3.7);
- 'Available' HCR (see 1.2.2), with some management tools set out in 2017-01 (described in Section 6.3.7);
- Monitoring of implementation of CMM 2018-01 via data gathering and Part 1 and 2 reports to the Commission.

This management strategy is reviewed annually during the Commission meeting.

PNA harvest strategy:

PNA operate a purse seine vessel day scheme (VDS) which limits effort by setting an overall 'TAE' (total allowable effort) which is divided up for each of the parties to the agreement. The TAE is set annually based on objectives of 'optimal exploitation' as well as WCPFC provisions (which presumably means MSY). The days are set based on the objective of limiting purse seine effort to 2010 levels (which was a requirement of the previous tropical tuna CMMs, although not since 2017-01). The purse seine VDS is relevant for bigeye because most of the F on juveniles comes from the purse seine fishery (see Figure 1 in 1.1.1b). A longline VDS has recently been established, but plays a limited role in management for the moment (see Section 6.3.9).

Cook Islands harvest strategy:

The Cook Islands apply a TAC (total catch limit) and TACC (commercial catch limit) to albacore and bigeye (see Section 6.3.4 and Table 11). Around 80% of the TACC is used each year, so this has not so far limited bigeye catch in the Cook Islands EEZ. The Cook Islands TACC for bigeye represents ~1.7% of the total catch on the stock (2018) so it is not likely to have any influence on the overall exploitation rate of WCPO bigeye.

Overall scoring:

The objective of the current harvest strategy is to maintain the status quo (WCPFC: average $SB/SB_{F=0}$ for 2012-2015; PNA: purse seine effort at a maximum of 2010 levels). The most recent stock assessment suggests that the status quo is an acceptable short-term biological target for bigeye (see 1.1.1 and projections in Table 21). The tropical tuna bridging measures (2017-01, 2018-01) have overall somewhat weakened management provisions in relation to bigeye compared to the previous measure (2016-01), which was aimed at rebuilding the stock. It does not on this basis comply with the advice of the SC13 prior to the WCPFC 2017 plenary (SC13 report para. 241): *SC13 recommends as a precautionary approach that the fishing mortality on bigeye tuna stock should not be increased from current level to maintain current or increased spawning biomass until the Commission can agree on an appropriate target reference point (TRP)*. SC14 reiterated the same advice (SC14 report para. 182) as did SC15 in the absence of a new stock assessment (SC15 report para. 146).

Status quo projections (Scott et al., 2017; WCPFC, 2018a) provide a basis on which to evaluate the extent to which the harvest strategy is expected to achieve stock management objectives. The projections are summarised in Table 21, which gives the estimated probability of SB falling below the LRP by 2045 in the range 0-18% based on status quo and 'optimistic' fishery scenarios, which is acceptable given that the harvest strategy is intended to be revised significantly prior to 2045.

Given the ongoing work to put in place an improved management target and harvest strategy (2014-06 and workplan; see above and Section 6.3.10), assuming this progresses, the impact on the stock status from changes in the transition from 2016-01 to 2017-01 and 2018-01 will probably not be significant; or at least will be lost in the much larger uncertainty about stock status derived from the choice of growth model and regional structure. Furthermore, the acceptance by SC14 of the 'updated new' growth model as the best scientific data on which to base stock assessments has considerably reduced the uncertainty around stock status. On this basis, SG60 can be considered to be met. SG80 is however not met.

b	Harvest strategy evaluation
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	Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	Yes	Yes	No

Rationale

As noted above, stock status projections suggest that current management is precautionary in the short term. The stock assessment model based on the updated new growth curve, even with other sources of uncertainty remaining, suggests that the biomass will remain above the LRP with high probability.

Management measures over the past few years (2013-01 – 2018-01) have been adjusted (strengthened from 2013-01 through 2016-01 and then weakened in 2017-01; 2018-01 is more or less identical to 2017-01 as concerns bigeye) but probably not in a way that has had a significant impact on the stock (although stock status is only estimated to 2015; i.e. in the terminal year of the assessment, 2014-01 was in force).

The team considered that the estimated low probability that $SB < LRP$ and $F > F_{MSY}$ constitutes ‘evidence’ that the harvest strategy is working. SG60 and SG80 are therefore met. The current harvest strategy is a stop-gap and has not been fully evaluated, although projections suggest that in the longer term, depending on recruitment, it risks increasing F to unsustainable levels (Table 21). SG100 is not met.

c	Harvest strategy monitoring			
	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Yes		

Rationale

Monitoring of the fishery for the purposes of stock assessment is considered in PI 1.2.3 below, and the analysis of data is considered under PI 1.2.4. Monitoring of the implementation of the harvest strategy (notably CMM 2018-01 and its predecessors) is carried out via self-assessment by CCMs, included in their Part 1 and 2 reports submitted to WCPFC annually. Met.

d	Harvest strategy review			
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	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Not evaluated

Rationale

Not needed to be evaluated (because SIa scored <80)

e	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	N/a	N/a	N/a

Rationale

The target species is not a shark; not relevant.

f	Review of alternative measures			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	N/a	N/a	N/a

Rationale

This fishery targets bigeye specifically, and there are no requirements such as minimum or maximum landing sizes or quotas which could lead to any of this catch being unwanted. Overall discarding rates for bigeye are minimal, according to the stock assessment report and as evidenced by the observer data which have reported discard rates of 2.53% for bigeye (Table 25). This is further supported by the observer data collected over the course of this fishery's certificate (between 2014 and 2017) which indicate a < 1% discard rate by number of fish, rather than weight (Sieben and Daxboeck, 2019). Hence there is no 'unwanted catch'* of bigeye in this fishery.

* SA3.1.6: The term 'unwanted catch' shall be interpreted by the team as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use.

References

McKechnie et al. (2017b), Scott et al. (2017), WCPFC (2017a, 2017b, 2018a, 2019a, 2019b), Vincent et al. (2018), Sieben and Daxboeck (2019)

CMMs 2018-01, 2017-01, 2014-06, 2013-01, 2014-01, 2015-01, 2016-01

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	70
Condition number (if relevant)	5

Scoring table 16. PI 1.2.2 – Harvest control rules and tools (Bigeye)

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	Yes	No	No

Rationale

MSC requirements:

- SA2.5.2 In scoring issue (a) at the SG60 level, teams shall accept ‘available’ HCRs (instead of HCRs that are ‘in place’) in cases where:
- Stock biomass has not previously been reduced below the MSY level or has been maintained at that level for a recent period of time that is at least longer than 2 generation times of the species, and is not predicted to be reduced below B_{MSY} within the next 5 years; or
 - In UoAs where B_{MSY} estimates are not available, the stock has been maintained to date by the measures in use at levels that have not declined significantly over time, nor shown any evidence of recruitment impairment.
- SA2.5.3 Teams shall recognise ‘available’ HCRs as ‘expected to reduce the exploitation rate as the point of recruitment impairment is approached’ only in cases where:
- HCRs are effectively used in some other UoAs, that are under the control of the same management body and of a similar size and scale as the UoA; or
 - An agreement or framework is in place that requires the management body to adopt HCRs before the stock declines below B_{MSY} .

In the 2017 stock assessment, only the model set with the old growth model (now removed from the grid) plus the 2014 regional structure puts the stock biomass below SB_{MSY} at any point. According to the 2018 update (SC14 grid), stock biomass has been above the estimated MSY level throughout the time series for all models; only one model out of 36 (recent) or zero (latest) put $SB < SB_{MSY}$ in the current time period. Based on the SC grid, the probability that $F > F_{MSY}$ is estimated to be ~6%. $p(SB < SB_{MSY})$ is not quoted in the

SC14 report, but from Table 20 can be seen to be <10% (see 1.1.1b); $p(SB < LRP)$ is estimated to be ~0%. The biomass trajectory is stable or (possibly) increasing in the terminal year and F is ~stable (see 1.1.1). On this basis, SA2.5.2a is met.

WCPFC have an agreed, legally-binding framework in place to establish formal harvest strategies and management procedures for their main stocks, including WCPO bigeye (see CMM 2014-06 and associated workplans; Section 6.3.7). SA2.5.3b is therefore met. On this basis, a HCR can be considered to be ‘available’ for this stock. SG60 is met. Since the harvest strategy is not ‘in place’, SG80 is not met.

b	HCRs robustness to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		No	No

Rationale

Since a HCR is ‘available’ rather than ‘in place’, it cannot be argued to be robust to the main uncertainties. Not met.

c	HCRs evaluation			
	Guide post	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Yes	No	No

Rationale

The tools in place for management of WCPO bigeye are i) at regional level, CMM 18-01 (and previous iterations), the provisions of which are described in detail in Section 6.3.7 ii) at sub-regional level the PNA VDS (Section 6.3.9; and iii) at Cook Islands level a TAC of 3000 t and a TACC of 2500 t (Section 6.3.4 and Table 11).

Under SA2.5.5, in order to conclude that ‘available’ HCRs are ‘effective’ (SG60), MSC requires evidence of i) the use of effective HCRs in other stocks or fisheries under the same management body; or ii) a formal agreement or framework with trigger levels which will require the development of a well-defined HCR. It also requires consideration of

current exploitation rates in relation to biological reference points and the agreed trigger level (guidance for SA2.5.6: ‘evidence that current F is equal to or less than F_{MSY} should usually be taken as evidence that the HCR is effective’).

A formal framework is in place for the development of a harvest strategy for the stock (CMM 2014-06 and workplans; see above). F is estimated by SC14 to be below F_{MSY} with ~94% probability. The criteria for ‘available’ tools at SG60 are therefore met. SG80 is not met because the HCR is not ‘in place’ but only ‘available’.

References

WCPFC (2017a, 2017b, 2018a), Vincent et al. (2018), McKechnie et al. (2017b)

CMM 2014-06

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	60
Condition number (if relevant)	6

Scoring table 17. PI 1.2.3 – Information and monitoring (Bigeye)

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Yes	Yes	Yes

Rationale

The following information is available, and is used as part of the harvest strategy – notably to inform the stock assessment model:

1. Fishery-dependent information

Catch, effort and CPUE: It is a requirement for all CCM fisheries to provide catch and effort data to WCPFC/SPC, and unlike in the past, most key fleets now provide operational (logbook) rather than just aggregate data (Williams, 2017). Catch and effort data go back to 1950, although as expected, historical data are sparser and generally less reliable than more recent data. The logsheet data are raised to best estimates of total catch by SPC-OFP, to account for missing data. Purse seine catch is allocated to species via an agreed methodology ('Method 3') (Hampton and Williams, 2017). Longline CPUE data are analysed and standardised as described in McKechnie et al. (2017a) and provide the key stock assessment input; purse seine CPUE is not used because of difficulty in measuring effort.

Length/weight-frequency data: Size-frequency data come from various port sampling programmes and some observer reports, and go back to the 1960s. These data are weighted in the stock assessment according to spatial representation, to account for differences in length-frequency by geographic region.

Fleet composition: Each CCM provides information to WCPFC annually on their active fleet, in their Part 1 reports.

2. Fishery-independent information

Size and age data: Age and growth has been a big issue for this assessment. The work done by CSIRO (Farley et al, 2017b; 2018b) is considered to be very detailed compared to what is available for most stocks, and SC14 agreed to accept their 'updated new' growth model as the best scientific data available for stock assessment. Concerns expressed at SC13 is that it did not include enough very large and very small fish are addressed by 'Project 81' and the 2018 update assessment

Natural mortality: Estimating natural mortality is always a big problem. For bigeye (and other WCPO stocks), the methodology set out in Hoyle and Nichol (2008) is used to estimate M-at-length by sex, based on the levels of M which give the observed divergence in sex ratio after maturity. This M-at-length vector is then used to calculate a M-at-age vector using the growth curve, which is the input to the stock assessment model. The new growth information has therefore resulted in a new M vector.

Environmental data: The Ocean Fisheries Programme of SPC undertaken environmental research as part of their ecosystem monitoring programme, focusing particularly on potential environmental drivers of tuna population dynamics.

3. Stock structure

The WCPO bigeye fishery is assessed and managed as a single stock in the WCPFC Convention Area, although there is strong evidence for mixing across the WCPFC/IATTC boundary (Section 6.6.1). Some work has been done to evaluate the usefulness of a combined management approach (McKechnie et al., 2015a), which concluded that the approach of separate assessments in the WCPO and the EPO was appropriate for now. SC14, however, suggested that stock assumptions could be re-evaluated (see Section 6.6.1).

4. Information inferred from the stock assessment

A significant range of information relating to stock status comes as the output of the stock assessment (McKechnie et al., 2017b; WCPFC 2017b) including estimates of spawner potential, recruitment, fishery impact etc.

5. Data gaps

Observer coverage (providing external verification of logbook data and information about discards) is low for the longline fishery. There is no external fishery-independent biomass indicator (such as a survey); which would be extremely difficult given the spatial scale of the stock and fishery. There remain significant data gaps for the large and diverse fisheries in Vietnam, Indonesia and the Philippines, although the data have improved in recent years.

Given the size and complexity of the fishery, the range and comprehensiveness of the data available is impressive and improving all the time. Data gaps that previously constrained stock assessments, notably age-and-growth data, have been filled. There remains bias and lack of precision in some of the datasets, particularly historical data; as well as uncertainty in others, but this is inevitable for any fishery.

Overall, the major work that has gone into developing a growth curve, which has been agreed by the WCPFC Scientific Committee to represent the best available scientific information and accepted as appropriate for the stock assessment and provision of scientific advice, has removed a major source of uncertainty that remains for other stocks (e.g. similar work ('Project 82') is currently ongoing for yellowfin and due to be presented to SC15 (Farley et al., 2018a). The key remaining source of uncertainty in the stock assessment relates not to any source of information but to the model structure, and is analysed in the 2018 stock assessment update (Vincent et al., 2018) based on detailed information about the spatial distribution of catch by gear. On this basis, the team concluded that SG100 is met.

b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Yes	Yes	No

Rationale

Fishery removals are monitored by individual CCMs via logsheets and port sampling, and are required to be submitted to the Commission annually, in the form of estimates of total catch plus catch and effort data broken down by gear and either aggregated (5° squares by month) or (preferably) at operational level (individual logsheet level). Despite some gaps in this dataset, coverage is good overall. This catch, effort and CPUE dataset is the key data set for the stock assessment. Other fisheries data which support management are size-frequency data (collected via port sampling and observer programmes) and tag returns. Biological data are also collected via research programmes (e.g. Farley et al. 2017b; 2018b).

Formal stock assessments have taken place every few years (2011, 2014, 2017 updated 2018). In between formal stock assessments, SPC provide some information on trends in fishery indicators (total catch, nominal CPUE, catch at length and at weight, status quo projections), to guide management (e.g. Piling et al. (2016); Brouwer et al. (2018a)).

On this basis, the team felt that SG60 and SG80 were met, because information is available to monitor stock abundance (CPUE abundance indices) and removals by fishery (operational or aggregated logbook data, port sampling data), at a level of consistency and accuracy which allows for good quality stock assessments (see 1.2.4 below). The stock assessment is able to provide a range of indicators (analysis of stock status in relation to different reference points).

SG100 is not met, for the following reasons (which are common to a greater or lesser degree in almost all tuna stock assessments):

- The characteristics of tuna longline CPUE are often poorly understood and it is unclear how successful most effort standardization analyses are or how to properly represent the uncertainties;
- Purse seine catch and length-frequency data can be biased by grab-sampling techniques used to estimate species composition (although there is an agreed methodology used to avoid bias as far as possible; see Hampton and Williams (2017));
- Some data gaps remain in fishery-dependent data (see Section 6.6.5);
- The requirement to ‘raise’ logsheet data by estimates of total catch (to account for missing logsheets) results in some loss of precision.

- Historical data are often lacking in precision;
- Although the frequency of stock assessments is reasonable, they are not carried out with ‘high frequency’ (i.e. not annually).

Although uncertainty in the most recent stock assessment (2018 update) has been much reduced, it is not completely clear how robust the management is to uncertainty – the management system is still a work in progress.

c	Comprehensiveness of information	
	Guide post	There is good information on all other fishery removals from the stock.
	Met?	Yes

Rationale

WCPFC and SPC work hard to quantify all sources of removals and include them in the stock assessment. Small-scale (but extensive) fisheries in Indonesia, the Philippines and Vietnam have in the past been a particular problem, and there has been ongoing work for quite a few years to quantify the catch (and where possible effort) from these fisheries (described in Tremblay-Boyer et al. (2017)). According to the 2017 stock assessment report, there has been gradual improvement in the data from Indonesia and the Philippines over the last decade or so; since the last assessment, catch data from Vietnam has also been available and is included in the 2017/2018 assessment.

At the 2017 pre-assessment workshop (PAW), it was noted that there is some potential for under-reporting of bigeye catch, and the workshop (Pilling and Brouwer, 2017) requested SPC to include a one-off sensitivity with this potential IUU fish added to the catch history (details of how this was done are given in McKechnie et al. (2017a)). It did not have a significant effect on the conclusions of the assessment, which were a little more positive (see McKechnie et al., 2017b - Appendix, Table 11). Met.

References

Brouwer et al. (2018a), Hoyle and Nichol (2008), McKechnie et al. (2015b, 2017a, 2017b), Farley et al. (2017b, 2018a, 2018b), Hampton and Williams (2017), Pilling and Brouwer (2017), Scott et al. (2017), WCPFC (2017a, 2018a), Vincent et al. (2018)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	90
Condition number (if relevant)	N/a

Scoring table 18. PI 1.2.4 – Assessment of stock status (Bigeye)

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		Yes	Yes

Rationale

The assessment is conducted using an integrated assessment model Multifan-CL (MFCL) that is able to combine a range of datasets and to model several components, including (i) the dynamics of the fish population (growth, natural mortality, maturity and fecundity, recruitment); (ii) the fishery dynamics; (iii) the dynamics of tagged fish; (iv) the observation models for the data. The model partitions the population into 9 spatial regions and 28 quarterly age-classes and defines fisheries to consist of relatively homogeneous fishing units that have selectivity and catchability characteristics that do not vary greatly over time and space, although in the case of catchability some allowance can be made for time series variation. SPC have considerable experience in the development and application of MFCL. SG100 is met.

b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	Yes	Yes	

Rationale

The stock assessment estimates stock status relative to a range of reference points, including SB and F reference points and depletion and MSY-based reference points; see Table 20 and PI 1.1.1. SG80 is met.

c	Uncertainty in the assessment			
	Guide post	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	Yes	Yes	Yes

Rationale

The assessment is a sophisticated statistical assessment which allows input parameters to vary stochastically within parameters defined by the assessors. The key means by which uncertainty in terms of the input values themselves is taken into account is via defining sensitivity runs (described in Section 6.6.6). SG80 is met.

The probability of the stock being above or below a given reference level, as quoted in PI 1.1.1, is evaluated based on a model grid which is defined across an agreed set of these sensitivities (e.g. as per Table 20). The probabilities quoted in 1.1.1 are based on the SC14 grid, as explained in the rationale for 1.1.1. In practice, the uncertainty around these estimates is greater than these probabilities suggest, because they do not incorporate the uncertainty about which grid to choose (which is basically unquantifiable) – this is emphasised in the 2017 stock assessment report. It should be noted that this is no different to any other stock assessment; it is just brought into relief here by the fact that two of the sensitivities in the 2017 assessment have a significant impact on the stock assessment conclusions. Probability is quantified to the extent possible; on this basis, SG100 is met.

d	Evaluation of assessment		
	Guide post		The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?		Yes

Rationale

Alternative hypotheses in terms of model input parameter values or estimation methods, or model structure, are explored based on sensitivities, as described above (see Table 22). The transition from the 2014 reference case to the 2017 diagnostic case model is explained in Section 6.6.6, and shows the new or changed inputs and how they have been carefully evaluated at each stage. Alternative hypotheses are also explored externally; for example, an alternative Pacific-wide stock structure is considered in

McKechnie et al. (2015b) (although based on the new growth model, SC14 recommend revisiting this hypothesis). Tremblay-Boyer et al. (2017a) considers the use of geo-statistics as an new method of standardising CPUE; opportunities for improving the input data (e.g. Peatman et al. (2017)) or developing new sources of input data (e.g. PNA (2017)) are considered by the SC each year. The conclusions of the 2017 stock assessment are not particularly robust in terms of providing a definitive conclusion about the stock status but this is not the fault of the assessment, and in fact the uncertainty associated with the assessment outcome is in some ways a consequence of the effectiveness of the assessment in considering all possible hypotheses. In any case, uncertainty in the 2018 updated assessment is reduced by the decision of the Scientific Committee to exclude the old growth model from the structural uncertainty grid (nicely illustrating the point made in the rationale for Sic). Met.

e	Peer review of assessment		
	Guide post	The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?	Yes	Yes

Rationale

The initial proposed approach from SPC is reviewed by external scientists in a pre-assessment workshop (Pilling and Brouwer, 2017). The final assessment is then evaluated by the Scientific Committee who make a decision on the composition of the uncertainty grid to be used for providing advice to the Commission. A previous bigeye assessment (2011) had a formal external review (Ianelli et al., 2012). SG100 is met.

References

McKechnie et al. (2015b, 2017a, 2017b), Farley et al. (2017b), Peatman et al. (2017), PNA (2017), WCPFC (2017a, 2018a), Vincent et al. (2018)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	100
Condition number (if relevant)	N/a

6.7 Principle 2

6.7.1 Designation of species under Principle 2

Primary species (MSC Component 2.1) are defined as follows:

- Species in the catch that are not covered under P1;
- Species that are within scope of the MSC program, i.e. no amphibians, reptiles, birds or mammals;
- Species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit (LRP) or target reference points (TRP). Primary species can therefore also be referred to as “managed species”.

Secondary species (MSC Component 2.2) are defined as follows:

- Species in the catch that are not covered under P1;
- Species that are not managed in accordance with limit or target reference points, i.e. do not meet the primary species criteria;
- Species that are out of scope of the programme, but where the definition of ETP species is not applicable (see below)

ETP (Endangered, Threatened or Protected) species (MSC Component 2.3) are assigned as follows:

- Species that are recognised by national ETP legislation
- Species listed in binding international agreements (e.g. CITES, Convention on Migratory Species (CMS), ACAP, etc.)
- Species classified as “out-of scope” (amphibians, reptiles, birds and mammals) that are listed in the IUCN Red List as vulnerable (VU), endangered (EN) or critically endangered (CE).

Both primary and secondary species are defined as ‘**main**’ if they meet the following criteria:

- The catch comprises 5% or more by weight of the total catch of all species by the UoC;
- The species is classified as “Less resilient’ and comprises 2% or more by weight of the total catch of all species by the UoC. Less resilient is defined here as having low to medium productivity, or species for which resilience has been lowered due to anthropogenic or natural changes to its life history
- The species is out of scope but is not considered an ETP species (secondary species only)
- Exceptions to the rule may apply in the case of exceptionally large catches of bycatch species

6.7.2 Catch profiles and data availability

The Principle 2 analysis is based on two key sources of information: logbook and observer programme datasets. For each licensed vessel, the paper logbooks are the standard form through which data are collected. The logbooks detail estimated volume (tonnes) and number of individuals of retained catch per species, as well as time and coordinates of the sets. Simultaneously with the implementation of

the Quota Management System (QMS – see Section 6.3.4), the Cook Islands Ministry of Marine Resources (MMR) has also enforced electronic reporting on all longline vessels operating in Cook Islands waters, requiring installation of equipment and software so albacore and bigeye catch data are transmitted daily to SPC.

The MMR systematically collects the electronic reporting and logbook data which are linked through to the SPC database TUFMAN 2, enabling SPC and MMR to carry out cross-checks between the catch data (logbooks), client unloading records and VMS data. The logbook data are therefore considered the most reliable source of data for non-discarded species. For this assessment, logbook data for 2015 to 2018 were provided by the MMR. The data are summarised in Table 24.

As a WCPFC CCM, Cook Islands participates in WCPFC’s Regional Observer Programme (ROP) through which trained observers verify the total catch, including bycatch and discards as well as retained catch, collect biological data such as size and sex, and monitor the use of mitigation measures and other data requirements highlighted in CMMs. CMM 2007-01 entered into force on 15 February 2008 and provides the basis of the rules and development of the WCPFC ROP and sets a minimum required observer coverage of longline fishing effort in EEZs of 5%. Due to a significant restructure of the Cook Islands National Observer Programme in 2016, at the beginning of 2018 only 3 active observers remained in the employ of the Cook Islands. This situation has improved considerably since, with the availability of an increased pool of WCPFC/FFA trained observers for the CI Observer Program from Fiji, Samoa, Tonga, Niue and Vanuatu to hire on an on-call basis. There has also been an increased focus on achieving 20% coverage on Cook Islands flagged vessels which may have come at the expense of observer coverage for foreign flagged vessels. According to the Cook Islands’ annual report to the WCPFC, a total of 348 sea days were observed on Cook Islands longline vessels in 2018 within the WPCF-Convention Area with an overall coverage of 10.7% (MMR, 2019). This figure, however, relates to non-UoA vessels as well. Because of the numerous changes in UoA fleet make-up over the last 4 years, it was difficult for MMR to derive an accurate estimate of observer coverage by number of trips for the UoA. Therefore, the team estimated observer coverage by comparing observed versus overall landed catch of the main target species, albacore: the UoA observer data for the period 2015 – 2018 are summarised in Table 25. These data were scaled up by the assessment team to fleet level based on the total landings of albacore (ALB) from the logbook data (Table 24) and the average percentage of ALB retained (i.e. retained as indicated in the observer data – this is 98.59%).

The scaling factor (SF) for each year was calculated separately as follows:

1. ALB landings raised to total catch (ALB_{total}):

$$ALB_{total} = \frac{\text{logbook data (ALB)}}{\% \text{ ALB retained}}$$

2. Scaling factor (SF):

$$SF = \frac{ALB_{total}}{\text{observed catch (ALB)}}$$

The observer data for each species were then raised as follows:

$$Species_{total} = SF \times (\text{average observed catch Species})$$

Thus, a linear relationship between the number of landed ALB catch to the number of catch of other species was assumed. The results of this analysis, as well as the estimated observer coverage, are shown in Table 25. UoA observer coverage was just over 5% in 2015, fell below this level in 2016/17 and increased again to 4% in 2018. It is important to note in this context that several vessels joined the UoA over the course of the certificate and may have had observer coverage that has not been included in this analysis (as they were not part of the UoA at the time). The MMR noted the decline in UoA observer coverage during the site visit and had already commenced procedures for deploying extra observers for 2019 (not included in this analysis). Finally, it is clear from Table 25 that this is not an accurate way to scale up the data (especially as observed samples appear very small for the number of observed trips – e.g. 2017) and scaled-up catches of some species including yellowfin and bigeye are significantly overestimated. The team instead used this dataset to confirm the overall bycatch profile of the fishery and estimate UoA-level impacts by order of magnitude.

Table 23. Number of observed trips for the UoA for the period 2015 – 2018 with estimated observer coverage (based on retained albacore catch according to method described above).

Year	2015	2016	2017	2018
# trips	2	3	4	7
Scaling factor	19.14	30.32	71.08	24.63
Observer coverage	5.22	3.30	1.41	4.06

Table 24. 2015 – 2018 UoA retained catch according to logbook data in tonnes and as % of total retained catch. Data compiled from validated UoA logbook data extracted from Tufman database by MMR. Designation of species under Principle 2 is also shown, in accordance with procedure outlined in Section 6.7.1. Main species are marked in bold.

Species		Total retained catch (tonnes)				Proportion as % total retained catch				P2 designation
		2015	2016	2017	2018	2015	2016	2017	2018	
Albacore	<i>Thunnus alalunga</i>	1,918.2	2,503.4	2,752.3	2,444.1	60.57	63.33	67.35	71.98	Primary
Yellowfin	<i>T. albacares</i>	695.5	665.8	726.0	506.9	21.96	16.84	17.77	14.93	Primary
Bigeye	<i>T. obesus</i>	226.7	338.9	182.6	151.6	7.16	8.57	4.47	4.46	Primary
Blue marlin	<i>Makaira nigricans</i>	155.5	207.1	81.7	101.0	4.91	5.24	2.00	2.97	Secondary
Wahoo	<i>Acanthocybium solandri</i>	58.8	72.3	78.1	58.1	1.86	1.83	1.91	1.71	Secondary ³
Skipjack	<i>Katsuwonus pelamis</i>	33.0	26.8	67.3	40.5	1.04	0.68	1.65	1.19	Primary
Swordfish	<i>Xiphias gladius</i>	24.0	43.6	38.3	25.6	0.76	1.10	0.94	0.75	Primary
Oilfish	<i>Ruvettus pretiosus</i>	22.5	35.9	29.3	22.7	0.71	0.91	0.72	0.67	Secondary
Indo-Pacific sailfish	<i>Istiophorus platypterus</i>	19.5	28.8	33.8	14.5	0.62	0.73	0.83	0.43	Secondary
Black marlin	<i>Istiompax indica</i>	0.0	0.4	38.0	11.3	0.00	0.01	0.93	0.33	Secondary
Other	N/a	1.4	2.0	8.6	7.6	0.04	0.05	0.21	0.22	N/a
Moonfish/Opah	<i>Lampris guttatus</i>	5.2	12.8	10.8	7.2	0.16	0.32	0.26	0.21	Secondary
Mahi mahi	<i>Coryphaena hippurus</i>	6.3	8.3	30.8	3.8	0.20	0.21	0.75	0.11	Secondary
Osteichthyes nei	N/a	0.0	0.3	0.2	0.8	0.00	0.01	0.00	0.02	N/a
Barracuda	<i>Sphyraena</i> spp.	0.0	0.0	0.4	0.0	0.00	0.00	0.01	0.00	Secondary
Striped marlin	<i>Kajikia audax</i>	0.1	3.9	3.8	0.0	0.00	0.10	0.09	0.00	Primary
Lancetfish	<i>Alepisaurus</i> spp.	0.0	0.0	0.2	0.0	0.00	0.00	0.01	0.00	Secondary

³ Wahoo is not considered a less resilient species (Productivity score of 1.57 - Not considered as low or medium productivity)

Marlins nei	N/a	0.0	0.0	0.1	0.0	0.00	0.00	0.00	0.00	N/a
Narrow-barred Spanish mackerel	<i>Scomberomorus commerson</i>	0.0	0.0	0.3	0.0	0.00	0.00	0.01	0.00	Secondary
Pacific bluefin tuna	<i>Thunnus orientalis</i>	0.3	2.6	0.0	0.0	0.01	0.07	0.00	0.00	Primary
Sailfin eel	<i>Letharchus velifer</i>	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	Secondary
Shortbill spearfish	<i>Tetrapturus angustirostris</i>	0.0	0.0	2.9	0.0	0.00	0.00	0.07	0.00	Secondary
Sunfish	<i>Mola mola</i>	0.0	0.4	1.0	0.0	0.00	0.01	0.02	0.00	Secondary
Total		3,166.9	3,953.2	4,086.6	3,395.8	100.00	100.00	100.00	100.00	

Table 25. Summary of 2015 – 2018 observer data for the UoA fleet, showing annual observed tonnage of catch (retained + discarded), annual scaled-up tonnage (according to method described above and applying scaling factors from Table 23), % species composition and average discard rate. Source data provided by MMR; analysis carried out by CU UK. Designation of species under Principle 2 is also shown, in accordance with procedure outlined in Section 6.7.1. Main species are marked in bold. ETP species are marked in blue.

Species	Observed tonnage				Scaled up tonnage				% composition				Average discard rate (%)	P2 designation
	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018		
ALBACORE (<i>T. alalunga</i>)	101.6	83.7	39.3	100.7	1,945.6	2,539.2	2,791.6	2,479.1	44.38	41.51	30.84	48.03	1.41	Primary
YELLOWFIN (<i>T. albacares</i>)	73.2	44.1	27.1	39.3	1,402.1	1,337.9	1,928.9	968.0	31.98	21.87	21.31	18.75	3.36	Primary
BIGEYE (<i>T. obesus</i>)	18.7	28.4	27.5	36.2	358.4	861.1	1,955.7	891.3	8.18	14.08	21.61	17.27	2.53	Primary
BLUE MARLIN (<i>Makaira nigricans</i>)	5.5	9.7	4.1	8.0	106.0	292.8	289.4	197.1	2.42	4.79	3.20	3.82	2.12	Secondary
BLUE SHARK (<i>Prionace glauca</i>)	3.3	3.8	4.7	3.8	62.4	115.9	335.3	94.3	1.42	1.89	3.70	1.83	99.80	ETP
STRIPED MARLIN (<i>Kajikia audax</i>)	3.3	7.5	2.5	3.0	63.1	227.2	177.7	74.5	1.44	3.71	1.96	1.44	2.68	Primary
SKIPJACK (<i>Katsuwonus pelamis</i>)	2.5	3.8	0.9	2.9	47.2	116.6	61.1	72.1	1.08	1.91	0.68	1.40	3.62	Primary
WORDFISH (<i>Xiphias gladius</i>)	2.6	5.4	1.5	2.7	49.1	164.8	109.5	65.7	1.12	2.69	1.21	1.27	14.44	Primary
WAHOO (<i>Acanthocybium solandri</i>)	5.3	3.9	1.9	2.4	101.0	117.2	132.8	59.2	2.30	1.92	1.47	1.15	2.61	Secondary
ESCOLAR (<i>Lepidocybium flavobrunneum</i>)	3.2	2.3	1.9	1.9	61.1	69.1	135.5	46.9	1.39	1.13	1.50	0.91	8.54	Secondary
OPAH / MOONFISH (<i>Lampris guttatus</i>)	0.2	1.1	1.7	1.2	4.7	33.6	121.1	29.2	0.11	0.55	1.34	0.57	16.38	Secondary
SAILFISH (INDO-PACIFIC) (<i>Istiophorus platypterus</i>)	1.1	1.1	0.9	1.0	20.1	32.6	64.2	25.8	0.46	0.53	0.71	0.50	2.44	Secondary
VARIOUS SHARKS NEI	0.0	0.0	0.4	1.0	0.0	0.0	28.6	24.8	0.00	0.00	0.32	0.48	100.00	ETP
SHORT-BILLED SPEARFISH (<i>Tetrapturus angustirostris</i>)	0.8	1.8	0.5	1.0	14.7	54.9	33.2	24.8	0.34	0.90	0.37	0.48	6.98	Secondary
SHORTFIN MAKO SHARK (<i>Isurus oxyrinchus</i>)	0.4	0.1	0.0	0.9	7.4	2.0	0.0	22.3	0.17	0.03	0.00	0.43	100.00	ETP
OLIVE RIDLEY TURTLE (<i>Lepidochelys olivacea</i>)	0.0	0.0	0.0	0.8	0.0	0.0	0.0	19.7	0.00	0.00	0.00	0.38	100.00	ETP
PELAGIC STINGRAY (<i>Pteroplatytrygon violacea</i>)	0.8	0.8	2.5	0.7	14.6	23.9	177.2	16.1	0.33	0.39	1.96	0.31	99.72	ETP
BIGEYE THRESHER SHARK (<i>Alopias superciliosus</i>)	0.6	0.6	2.6	0.5	11.8	18.1	181.6	13.3	0.27	0.30	2.01	0.26	99.59	ETP
LONGSNOUTED LANCETFISH (<i>Alepisaurus ferox</i>)	0.0	0.4	0.1	0.4	0.9	11.2	5.0	9.2	0.02	0.18	0.06	0.18	99.76	Secondary
SILKY SHARK (<i>Carcharhinus falciformis</i>)	0.7	0.4	1.1	0.2	14.1	11.0	78.8	5.7	0.32	0.18	0.87	0.11	99.62	ETP
MAHI MAHI (<i>Coryphaena hippurus</i>)	0.4	0.8	0.3	0.2	8.4	23.5	19.1	5.0	0.19	0.38	0.21	0.10	3.17	Secondary
OCEAN SUNFISH (<i>Mola mola</i>)	0.1	0.2	0.0	0.1	1.8	5.9	0.0	3.5	0.04	0.10	0.00	0.07	33.01	Secondary
LONGFIN MAKO SHARK (<i>Isurus paucus</i>)	2.1	0.2	0.2	0.1	40.9	6.8	15.2	3.3	0.93	0.11	0.17	0.06	100.00	ETP
SNAKE MACKEREL (<i>Gempylus serpens</i>)	0.2	0.2	1.7	0.1	4.2	6.4	119.3	2.4	0.10	0.10	1.32	0.05	87.44	Secondary
SLENDER SUNFISH (<i>Ranzania laevis</i>)	0.2	0.5	0.0	0.1	4.4	15.9	2.3	2.0	0.10	0.26	0.03	0.04	86.79	Secondary
OCEANIC WHITETIP SHARK (<i>Carcharhinus longimanus</i>)	0.3	0.2	0.0	0.1	4.9	4.7	2.4	1.7	0.11	0.08	0.03	0.03	100.00	ETP
UNSPECIFIED	0.0	0.0	0.0	0.0	0.3	0.0	0.0	1.0	0.01	0.00	0.00	0.02	100.00	Secondary
OILFISH (<i>Ruvettus pretiosus</i>)	0.0	0.1	0.3	0.0	0.9	2.9	21.5	0.9	0.02	0.05	0.24	0.02	39.44	Secondary
GREAT BARRACUDA (<i>Sphyraena barracuda</i>)	0.1	0.2	0.1	0.0	2.5	6.6	8.2	0.9	0.06	0.11	0.09	0.02	43.76	Secondary
SICKLE POMFRET (<i>Taractichthys steindachneri</i>)	0.0	0.1	0.1	0.0	0.9	1.9	9.4	0.8	0.02	0.03	0.10	0.02	75.58	Secondary
CROCODILE SHARK (<i>Pseudocarcharias kamoharai</i>)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.00	0.00	0.00	0.01	83.92	ETP
RAINBOW RUNNER (<i>Elagatis bipinnulata</i>)	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.3	0.00	0.00	0.00	0.01	0.00	Secondary
MARLIN SUCKER (<i>Remora osteochir</i>)	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.00	0.00	0.00	0.00	100.00	Secondary

SUCKERFISHES, REMORAS NEI	0.0	0.1	0.0	0.0	0.0	2.0	0.0	0.1	0.00	0.03	0.00	0.00	100.00	
ATLANTIC POMFRET (<i>Brama brama</i>)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.00	0.00	0.00	0.00	0.00	Secondary
SPINETAIL MOBULA (<i>Mobula japonica</i>)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.00	0.00	0.00	0.00	100.00	ETP
SARGENT MAJOR (<i>Abudefduf saxatilis</i>)	0.1	0.1	0.0	0.0	1.4	2.2	0.0	0.0	0.03	0.04	0.00	0.00	0.00	Secondary
STREAMER FISH (<i>Agrostichthys parkeri</i>)	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.00	0.00	0.00	0.00	0.00	Secondary
SHORTSNOUTED LANCETFISH (<i>Alepisaurus brevirostris</i>)	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.00	0.00	0.00	0.00	100.00	Secondary
THRESHER (<i>Alopias vulpinus</i>)	0.0	0.0	2.7	0.0	0.0	0.0	195.0	0.0	0.00	0.00	2.15	0.00	100.00	ETP
GREATER AMBERJACK (<i>Seriola dumerili</i>)	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.00	0.01	0.00	0.00	0.00	Secondary
BLACKFIN BARRACUDA (<i>Sphyraena qenie</i>)	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.00	0.00	0.01	0.00	0.00	Secondary
RED SEA CATFISH (<i>Bagre pinnimaculatus</i>)	0.1	0.0	0.1	0.0	1.1	0.0	4.1	0.0	0.02	0.00	0.04	0.00	0.00	Secondary
BLACK MARLIN (<i>Istiompax indica</i>)	0.2	0.1	0.0	0.0	4.4	3.1	0.0	0.0	0.10	0.05	0.00	0.00	0.00	Secondary
BLACKTIP REEF SHARK (<i>Carcharhinus melanopterus</i>)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.00	0.00	0.00	0.00	100.00	ETP
BATFISH (<i>Platax spp.</i>)	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.02	0.00	0.00	0.00	0.00	Secondary
Butterfly kingfish (<i>Gasterochisma melampus</i>)	0.0	0.0	0.1	0.0	0.0	0.0	6.9	0.0	0.00	0.00	0.08	0.00	0.00	Secondary
DRIFT FISH (<i>Nomeidae spp.</i>)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.00	0.00	0.00	0.00	100.00	Secondary
LEATHERBACK TURTLE (<i>Dermochelys coriacea</i>)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	100.00	ETP
BRILLIANT POMFRET (<i>Eumegistus illustris</i>)	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.00	0.02	0.00	0.00	100.00	Secondary
FALSE KILLER WHALE (<i>Pseudorca crassidens</i>)	0.0	0.1	0.0	0.0	0.0	3.0	0.0	0.0	0.00	0.05	0.00	0.00	100.00	ETP
SNAKE MACKERELS AND ESCOLARS (<i>Gempylidae spp.</i>)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	Secondary
UNICORNFISH (<i>Lophotus capellei</i>)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.00	0.00	0.00	0.00	100.00	Secondary
SHARPTAIL MOLA (<i>Masturus lanceolatus</i>)	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.00	0.00	0.00	0.00	50.00	Secondary
BLACK GEMFISH (<i>Nesiarchus nasutus</i>)	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.00	0.00	0.01	0.00	100.00	Secondary
OMOSUDID (<i>Omosudis lowii</i>)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.00	0.00	0.00	0.00	100.00	Secondary
PELAGIC THRESHER SHARK (<i>Alopias pelagicus</i>)	0.0	0.0	0.1	0.0	0.1	0.2	7.5	0.0	0.00	0.00	0.08	0.00	100.00	ETP
GIANT MANTA (<i>Manta birostris</i>)	1.1	0.0	0.0	0.0	21.8	0.0	0.0	0.0	0.50	0.00	0.00	0.00	100.00	ETP
MOBULA NEI (<i>Mobula spp.</i>)	0.0	0.0	0.2	0.0	0.0	0.0	15.2	0.0	0.00	0.00	0.17	0.00	100.00	ETP
KITEFIN SHARK (<i>Dalatias licha</i>)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.00	0.00	0.00	0.00	100.00	ETP
VELVET DOGFISH (<i>Scymnodon squamulosus</i>)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.00	0.00	0.00	0.00	100.00	ETP
STINGRAYS NEI (<i>Dasyatis spp.</i>)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.00	0.00	0.00	0.00	100.00	ETP
LONGFIN ESCOLAR (<i>Scombrolabrax heterolepis</i>)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.00	0.00	0.00	0.00	100.00	Secondary
POMFRET (<i>Taractes rubescens</i>)	0.0	0.0	0.0	0.0	0.0	0.1	1.3	0.0	0.00	0.00	0.01	0.00	100.00	Secondary
THRESHER SHARKS NEI (<i>Alopias spp.</i>)	0.0	0.0	0.1	0.0	0.0	0.0	7.4	0.0	0.00	0.00	0.08	0.00	100.00	ETP
RIBBONFISHES (<i>Trachipteridae</i>)	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.00	0.00	0.00	0.00	100.00	Secondary
LOGGERHEAD TURTLE (<i>Caretta caretta</i>)	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.00	0.00	0.00	0.00	100.00	ETP
GREAT WHITE SHARK (<i>Carcharodon carcharias</i>)	0.0	0.0	0.1	0.0	0.0	0.0	7.0	0.0	0.00	0.00	0.08	0.00	100.00	ETP
Total	229.0	201.7	127.3	209.6	4,383.8	6,117.6	9,051.0	5,161.8	100.00	100.00	100.00	100.00		

6.7.3 Bait use

For bait, the fishery continues to rely on sardines. These are mainly the Indian oil sardine (*Sardinella longiceps*), sourced from Oman, although from 2017, sardines caught in the China and Mexico EEZs were also used. The species names for the Mexican bait were not provided to the assessment team although this involves a relatively small amount. The sardines sourced from China are reportedly *Sardinops sagax*; however, it is more likely that the correct species name is *Sardinops melanostictus*, which is the lineage of the genus considered to occur in the Northwest Pacific (see Fishbase, Schwartzlose and Alheit (1999) and Whitehead (1988)).

The UoA's data on bait use from 2016 to 2018 are shown in Table 26.

Table 26. Bait use by the UoA between 2016 and 2018, showing species and source between brackets. The % shown is the proportion of bait as a % of the total retained catch according to logbook data (Table 24). Source: Client data. Main species are shown in bold. P2 designation is also shown.

Year	Total retained catch (tonnes)	<i>Sardinella longiceps</i> (Oman EEZ)		<i>Sardinops sagax/melanostictus</i> (China EEZ)		Sardine unknown spp. (Mexico EEZ)	
		Tonnes	%	Tonnes	%	Tonnes	%
2016	4574	1,437.50	31.43	0	0	0	0
2017	4243	940	22.16	1,196	28.19	30	0.71
2018	3,396	340	10.01	942	27.74	0	0
P2 designation		Secondary		Secondary		Secondary	

6.7.4 Primary and secondary species

Based on the data presented in Sections 6.7.2 and 6.7.3 above, the 'main' species listed in Table 27 were identified. An explanation as to their designation under Principle 2 is also provided.

Table 27. Reason for P2 designation 'main' primary and secondary species

Species/stock	UoA	Designation	Reason
South Pacific albacore	Yellowfin and bigeye	Main primary	Stock assessment with LRP and interim TRP identified; MSY-based management in CMM 2015-02
Western Central Pacific yellowfin	Albacore and bigeye	Main primary	Stock assessment with LRP identified; CMM 2018-01 aims to maintain spawning biomass depletion ratio (SB/SB _{F=0}) at or above the average SB/SB _{F=0} for 2012-2015.
Western Central Pacific bigeye	Albacore and yellowfin	Main primary	Stock assessment with LRP identified; CMM 2018-01 aims to maintain spawning biomass depletion ratio (SB/SB _{F=0}) at or above the average SB/SB _{F=0} for 2012-2015.
Pacific blue marlin	All	Main secondary	Stock Synthesis (SS3) stock assessment and MSY-based reference points, but no stock-specific management in place.
Indian oil sardine (<i>Sardinella longiceps</i>)	All	Main secondary	No reference points-based management in place.

Japanese pilchard (<i>Sardinops melanostictus</i>)	All	Main secondary	No reference points-based management in place.
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Each stock is discussed further in the Primary and Secondary Species performance indicator scoring tables (Section 6.7.9).

6.7.5 ETP species

The criteria for designating ETP species are set out in Section 6.7.1. At national level, sharks, rays and skates and chimaeras (hereafter elasmobranchs) are protected under the Marine Resources (Shark Conservation) Regulations 2012 which provide the regulatory framework for the Cook Islands Shark Sanctuary, in force since December 2012. All elasmobranchs are therefore considered as ETP in this assessment.

There are no separate national regulations for the protection of sea turtles and seabirds and these are instead covered by the relevant CMMs and associated National Plans of Action (NPOAs). For this assessment, the team considered species protected under the following national legislation and/or international treaties to be ETP:

- Marine Resources (Shark Conservation) Regulations 2012;
- CITES Appendix I;
- Convention on Highly Migratory Species (Appendix I)
- WCPFC Conservation and Management Measures (CMMs) that prohibit the retention of certain species of sharks, sea turtles and seabirds.

The assessment team identified ETP species on the basis of the available observer data. The number of ETP species encounters recorded in the observer data is provided in Table 28. These data have not been scaled up. For details on observer coverage and fleet-level estimates of catch by weight, see Section 6.7.2 Each ETP species group is discussed further in the ETP Species Performance Indicator scoring tables (Section 6.7.9).

Table 28. ETP species interacting with the UoA according to observer data (Table 25). No data = no interactions recorded. Source: MMR

Species	2015	2016	2017	2018
ELASMOBRANCHS				
PELAGIC STINGRAY (<i>Pteroplatytrygon violacea</i>)	117	125	385	106
BLUE SHARK (<i>Prionace glauca</i>)	123	145	178	143
SILKY SHARK (<i>Carcharhinus falciformis</i>)	53	29	77	15
THRESHER (<i>Alopias vulpinus</i>)			70	
THRESHER SHARKS NEI (<i>Alopias</i> spp.)			12	
BIGEYE THRESHER SHARK (<i>Alopias superciliosus</i>)	7	6	26	8
LONGFIN MAKO SHARK (<i>Isurus paucus</i>)	30	4	3	2
OCEANIC WHITETIP SHARK (<i>Carcharhinus longimanus</i>)	15	9	2	4
SHORTFIN MAKO SHARK (<i>Isurus oxyrinchus</i>)	6	1		14

Species	2015	2016	2017	2018
PELAGIC THRESHER SHARK (<i>Alopias pelagicus</i>)	1	2	17	
CROCODILE SHARK (<i>Pseudocarcharias kamoharai</i>)				6
GREAT WHITE SHARK (<i>Carcharodon carcharias</i>)			2	
VELVET DOGFISH (<i>Scymnodon squamulosus</i>)			2	
BLACKTIP REEF SHARK (<i>Carcharhinus melanopterus</i>)		1		
KITEFIN SHARK (<i>Dalatias licha</i>)			1	
VARIOUS SHARKS NEI			10	25
GIANT MANTA (<i>Manta birostris</i>)	4			
MOBULA NEI (<i>Mobula</i> spp.)			1	
SPINETAIL MOBULA (<i>Mobula japanica</i>)				1
STINGRAYS NEI (<i>Dasyatis</i> spp.)	1			
CETACEANS				
FALSE KILLER WHALE (<i>Pseudorca crassidens</i>)		1		
SEA TURTLES				
LEATHERBACK TURTLE (<i>Dermochelys coriacea</i>)	1			
LOGGERHEAD TURTLE (<i>Caretta caretta</i>)	1	1		
OLIVE RIDLEY TURTLE (<i>Lepidochelys olivacea</i>)				10

The team considered potential impacts of this fishery on vulnerable seabird species on a precautionary basis. Watling (2002), based on interviews with WCPO industry stakeholders and observer data, indicates that although seabird interactions with longline vessels operating in tropical and subtropical areas of the WCPO are very rare (except in the Hawaii-based longline fisheries) this does not preclude the possibility of highly threatened seabird populations being impacted. Gilman (2006) equally concluded that existing observer data are currently insufficient to support a conclusion with any high level of certainty that no pelagic longline fisheries operating in the tropical Pacific Islands region could be contributing to existing or cause future seabird population declines.

According to the risk assessment carried out by Filippi et al. (2010) (detailed in the initial Public Certification Report), the Cook Islands EEZ is located in a low-risk area for seabird interactions. The seabird mitigation measures set forth in CMM 2018-03 only apply to longline fisheries operating South of 30° South, between 25° South and 30° South, and North of 23° North; they do therefore not apply to the UoA. Longline fisheries operating in 'other areas' (between 25°S and 23°N), where necessary, are encouraged to employ one or more of the seabird mitigation measures listed in Table 1 of the CMM. The Cook Islands, however, are explicitly exempted from this requirement on the basis of the low risk level of interactions. For this reason, no seabird species were retained as scoring elements in this assessment; however, the non-comprehensive observer data are discussed under the ETP Species Information PI (2.3.3)

6.7.6 Habitats

This fishery is strictly a pelagic fishery and does not interact with benthic habitats. Further detail is provided in the Habitats Performance Indicator scoring tables (Section 0).

6.7.7 Ecosystem

The Cook Islands EEZ is situated in the South Pacific Subtropical Gyre Province (SPSG) (Figure 31) which is a key driver affecting nutrient availability in the water column. Net primary production is low, although local upwelling around islands can result in small areas of enriched surface productivity. It is generally considered, however, that the SPSG Province does not provide prime feeding areas for tuna (Bell et al., 2011). In the Cook Islands, however, it was found that surface waters in the north-eastern portion of the EEZ become relatively productive during the second and third quarters of some years. This is particularly true in years under the influence of La Niña, due to the extension of the nutrient-rich ‘cold tongue’ from the upwelling system in the equatorial eastern Pacific. These nutrient rich waters are thought to support the relatively high catch rates of albacore and other fish species in the northern EEZ. The influence of the cold-tongue on the productivity of these waters, however, is reduced during strong El Niño periods.

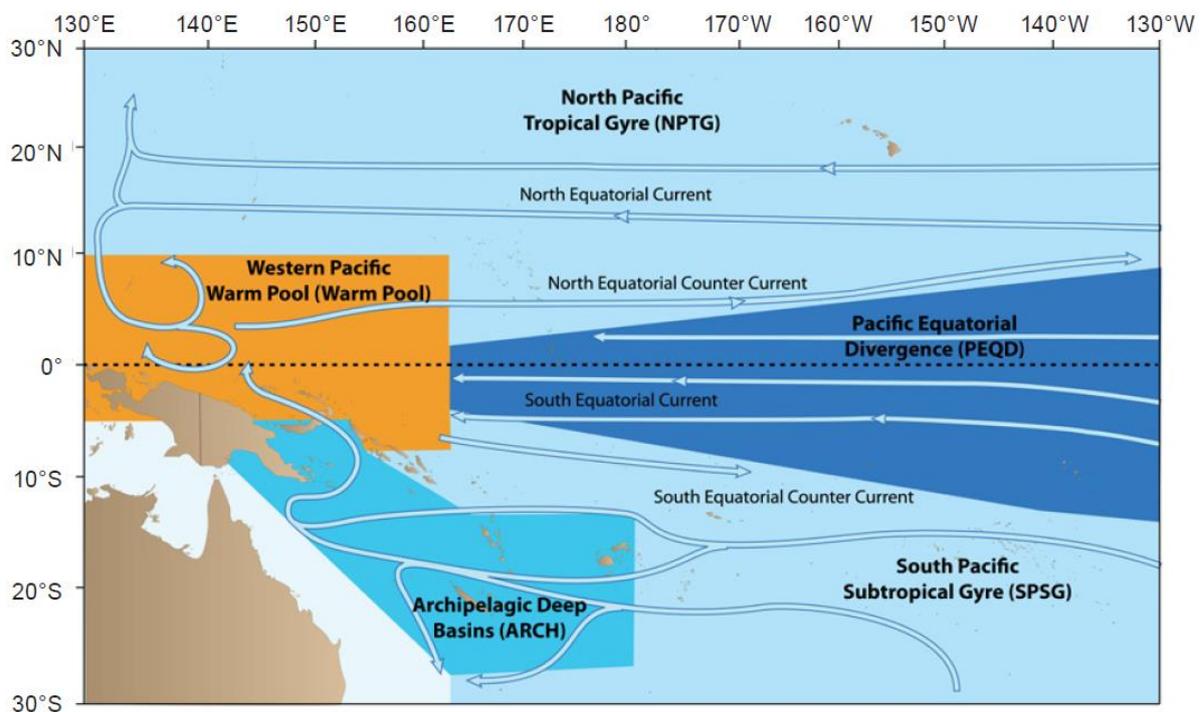


Figure 31. The five ecological provinces of the tropical Pacific Ocean. The South Pacific Subtropical Gyre is shown in the bottom right of the image. From Le Borgne et al. (2011).

Albacore, yellowfin and bigeye are high-trophic level species and considered second-tier apex predators below sharks, swordfish, marlin and billfish. Tunas are perceived as very effective generalists as they are opportunistic carnivores with high degrees of trophic interaction and diet overlap (Kitchell et al., 1999). There is, however, a growing body of evidence that exploitation by tuna fisheries creates substantial and sustained changes in both the target populations and a diversity of other species in the affected ecosystems (Botsford et al. 1997, Fogarty and Murawski 1998, Jennings et al. 1999, Stevens et al. 2000, Jackson et al. 2001 - all cited in Schindler et al. (2002)). Amongst these changes, trophic cascades are among the best-known examples, involving strong predator effects propagating downwards through food webs resulting in inverse patterns in abundance across two or more trophic links and potential simplification of oceanic systems through the removal of functional groups (Baum and Worm, 2009a). Empirical evidence for top-down control in oceanic ecosystems such as the WCPO has been sparse (Baum and Worm, 2009a) and research into the ecosystem-level impacts of Pacific tuna fisheries remains ongoing.

An analysis by Sibert et al. (2006) of Pacific fisheries data using integrated stock-assessment models to provide estimates of fishery impacts on population biomass, size structure, and trophic status of major top-level predator stocks showed that although the trophic level of the catch was found to have decreased slightly, there was no detectable decrease in the trophic level of the population. The authors concluded that while impacts of fisheries on top-level predators have been substantial, they have not been catastrophic and the overall impacts on the Pacific Ocean ecosystem were considered to be minor. It is important to note, though, that this study was entirely based on fisheries-dependent data which undoubtedly introduces some bias into the analysis.

Baum and Worm (2009a) focused on predator–prey relationships and top-down control of prey abundance or biomass by conducting a systematic literature review in ISI Web of Science for 1998 to 2008. Recent research where top-down control has been identified included three studies focusing on the Central North Pacific using Ecosym dynamic models (Kitchell et al., 2006) as well as comparative analyses of 1950s survey data and more recent catch data (Ward and Myers, 2005). All studies identified a decrease in predator abundance triggered by exploitation, resulting in an increase in medium-sized vertebrate predator populations following removal of their predators (mesopredator release). Food web responses to simulated removals of single apex predators depended on their overall predation rates and degree of dietary overlap with other predators - for example, the removal of blue shark was found to have minimal effect since reduced predation by this species could be compensated for by highly productive yellowfin tuna (Schindler et al., 2002). In addition, simultaneous exploitation of predator and prey species could override this mesopredator release (Shepherd & Myers 2005, cited in Baum and Worm (2009a)).

In the North Pacific, a more recent analysis of catch rates for the 13 most abundant species caught in the deep-set Hawaii-based longline fishery over the past decade (1996–2006) provided evidence of a top-down response (Polovina et al., 2009). Catch rates for apex predators such as blue shark, bigeye and albacore tunas, shortbill spearfish and striped marlin declined from 3 to 9% per year while catch rates for 4 mid-trophic species, mahi mahi, sickle pomfret, escolar, and snake mackerel increased by 6 to 18% per year (Polovina et al., 2009; Polovina and Woodworth-Jefcoats, 2013a). Polovina and Woodworth-Jefcoats (2013a) suggest that size-based predation is the dominant mechanism in structuring the subtropical pelagic ecosystem, or at least the upper trophic levels caught in the deep-set fishery. As such, a reduction of fishes above the size that is fully exploited by the fishery increases the abundance of organisms from about the size of full entry to the fishery down to about 2 orders of magnitude in size - it was found however that this cascading effect did not go beyond a certain size level and that smaller micronekton and plankton were not affected.

For the Warm Pool pelagic ecosystem (see Figure 31), Allain et al. (2012) constructed a trophic mass-balance ecosystem model using Ecopath with Ecosim software. The authors demonstrated that the ecosystem responds to both top-down and bottom-up processes and has the characteristics of a complex form of ‘wasp-waist’ structure where the majority of the system’s biomass is comprised of mid-trophic level groups. Significant complexity was further added through the effects of climate change, including increased sea surface temperature leading to changes in ocean stratification dynamics and changes in the depth of the thermocline. On their own and not taking into account fisheries pressure, these drivers have the ability to cause large and unpredictable changes to the biomasses of groups in both higher and lower trophic levels, and thus change the overall integrity of the ecosystem structure. It is reasonable to assume that these findings will apply to some extent to the South Pacific Subtropical Gyre Province (SPSG) as well.

6.7.8 Scoring elements

Table 29. Principle 2 scoring elements

Component	Scoring elements	Designation	Data-deficient
Primary	South Pacific albacore (UoA 2, 3)	Main	No
	Western Central Pacific yellowfin (UoA 1, 3)	Main	No
	Western Central Pacific bigeye (UoA 1, 2)	Main	No
	Southwest Pacific swordfish Southwest Pacific striped marlin WCPO skipjack Pacific bluefin	Minor	No
Secondary	Pacific blue marlin Indian oil sardine Japanese pilchard	Main	No
	Table 24, Table 25 and Table 26	Minor	Some, although no RBF applied
ETP	Pelagic stingray (<i>Pteroplatytrygon violacea</i>)	N/a	No, See Table 28 for further information
	Blue shark (<i>Prionace glauca</i>)		
	Silky shark (<i>Carcharhinus falciformis</i>)		
	Oceanic whitetip shark (<i>Carcharhinus longimanus</i>)		
	Thresher (<i>Alopias vulpinus</i>)		
	Pelagic thresher shark (<i>Alopias pelagicus</i>)		
	Thresher sharks nei (<i>Alopias</i> spp.)		
	Bigeye thresher shark (<i>Alopias superciliosus</i>)		
	Longfin mako shark (<i>Isurus paucus</i>)		
	Shortfin mako shark (<i>Isurus oxyrinchus</i>)		
	Crocodile shark (<i>Pseudocarcharias kamoharai</i>)		
	Great white shark (<i>Carcharodon carcharias</i>)		
	Velvet dogfish (<i>Scymnodon squamulosus</i>)		
	Blacktip reef shark (<i>Carcharhinus melanopterus</i>)		
	Kitefin shark (<i>Dalatias licha</i>)		
	Giant manta (<i>Manta birostris</i>)		
	Mobula nei (<i>Mobula</i> spp.)		
	Spinetail mobula (<i>Mobula japanica</i>)		
	Stingrays nei (<i>Dasyatis</i> spp.)		
	Hawksbill turtle		
Loggerhead turtle			
Leatherback turtle			
Olive ridley			

	Green turtle		
	False Killer Whale		
Habitats	Water column	Commonly encountered	No

6.7.9 P2 Performance Indicator scores and rationales

Scoring table 19. PI 2.1.1 – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue	SG 60	SG 80	SG 100	
a	Main primary species stock status			
	Guide post	<p>Main primary species are likely to be above the PRI.</p> <p>OR</p> <p>If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main primary species are highly likely to be above the PRI.</p> <p>OR</p> <p>If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.</p>	There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.
	Met?	Yes	Yes	Yes

Rationale

Main primary species/stocks are as follows (also see Section 6.7.2 and 6.7.4):

UoA 1 (ALB): Western Central Pacific yellowfin and bigeye

UoA 2 (YFT): South Pacific albacore and Western Central Pacific bigeye

UoA 3 (BET): South Pacific albacore and Western Central Pacific yellowfin

All the above stocks have been assessed in detail under Principle 1 and are therefore only briefly discussed here.

South Pacific albacore: The PRI for this stock is not known. WCPFC has adopted 20% $SB_{F=0}$ as a limit reference point (LRP) for the stock, where $SB_{F=0}$ is calculated as the average over the period 2006–2015. Majuro plots (Figure 12) summarise the results for each of the models in the structural uncertainty grid with respect to $SB_{\text{recent}}/SB_{F=0}$. None of the runs fall below 20% $SB_{F=0}$. Figure 12 shows that the reference points and the minimum value of $SB_{\text{recent}}/SB_{F=0}$ and $SB_{\text{latest}}/SB_{F=0}$ are all above 0.20. Therefore there is a high degree of certainty that the stock is above the PRI and SG60, SG80 and SG100 are met (Tremblay-Boyer et al., 2018) (also see Section 6.4.8).

Western Central Pacific yellowfin: The PRI for this stock is not known. WCPFC has adopted 20% of the unfished spawning potential (20% $SB_{F=0}$) as a LRP for yellowfin. SG80 and SG100 can be approximately evaluated by reference to Figure 18 (Figure A40 in the stock assessment report), taking the ‘steepness’ plot as an example (since all scenarios are included in each plot): For two of the three levels of steepness considered in the sensitivities ($h=0.8$, $h=0.95$), all the scenarios estimate that $SB>LRP$. For the third steepness scenario ($h=0.65$), the 25%ile is above the LRP, but the scenario with the minimum value is not. This means that a maximum of six scenarios fall below the LRP, (i.e. there are 24 above the LRP for each of $h=0.8$ and $h=0.95$, plus a minimum of 75% of the scenarios for $h=0.65$ – i.e. at least 18 scenarios; making a minimum of 66 in total which are above the LRP). The Majuro plots show that there are only two scenarios for ‘latest’ and three for ‘recent’ that fall below the LRP (Figure 17, top middle panel; Figure A41 in the stock assessment report). On this basis, SG60, SG80 and SG100 are met (Tremblay-Boyer et al., 2017b) (also see Section 6.5.7).

Western Central Pacific bigeye: To evaluate stock status, the assessment team based the scoring on the grid of 36 models constructed by the SC (SC14) as explained in Section 6.6.3. The PRI for this stock is not known. For the purposes of scoring, the team considered the PRI to correspond to the agreed LRP (20% $SB_{F=0}$). Based on the SC14 grid (Table 20, WCPFC (2018a)) there is high probability that the SB is above the LRP (36 out of 36 models). SC14 characterise the probability of $SB<LRP$ as 0%, but in practice, it is clear that there is some uncertainty around stock status which is not quantified in this grid. The key uncertainty has been the growth model, but the additional work carried out in 2018 (Project 81), added to the existing ‘new’ growth model for 2017 provides additional confidence, such that SC14 decided to exclude the ‘old’ growth model as a sensitivity in the model output grid. This gives higher confidence than previously that the stock is above the LRP level with high probability. On balance, taking the conclusions of the SC grid as well as the sensitivities, and reviewing the stock-recruit information directly, the team concluded that there is a high degree of certainty that the stock is above the PRI; SG60, SG80 and SG100 are met (McKechnie, Pilling, et al., 2017; Vincent et al., 2018) (also see Section 6.6.7).

In terms of unobserved mortality of primary species, the team considered a possible factor to be ghost fishing due to gear loss. 5 or 6 radio buoys are spaced at regular intervals along the main line for each set. Therefore, should the line break, both ends can be retrieved. It is reportedly very rare for a whole longline to be lost. In the event the line breaks, the vessel will also want to harvest the fish which provides another incentive for retrieval. Under the WCPFC Regional Observer Program, observers are required to report whether the vessel abandoned, lost or discarded any fishing gear, whether the vessel found abandoned gear from another vessel, and whether the vessel failed to report any lost or abandoned gear if required by the country in which waters the vessel was fishing (Gilman, 2015). Overall it is important to consider that lost pelagic longline gear is only likely to continue to fish as long as bait remains on the hooks. Bait tends to be stripped relatively quickly off the hooks and as such, the mortality rate associated to lost longlines is usually low (Macfadyen et al., 2009). The team considered that unobserved mortality through ghost fishing was unlikely to be a significant factor in the fishery’s interactions with primary species.

b	Minor primary species stock status	
	Guide	Minor primary species are highly likely to be above the PRI.

	post
	Met?

OR

If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.

Yes

Rationale

Minor primary species/stocks identified are Southwest Pacific swordfish, Southwest Pacific striped marlin, WCPO skipjack and Pacific bluefin tuna. The status for each stock is summarized in the table below. Striped marlin and bluefin are not highly likely to be above the PRI; however, in both cases, there is evidence that the UoA does not hinder the recovery and rebuilding of the stocks concerned. SG100 is met.

Stock	Highly likely to be above the PRI?	Evidence that the UoA does not hinder the recovery and rebuilding?	Reference
Southwest Pacific swordfish	Yes. Across the model grid, the terminal spawning potential depletion estimated for all runs, $SB_{latest}/SB_{F=0}$, was above $20\%SB_{F=0}$	N/a	Takeuchi et al. (2017)
Southwest Pacific striped marlin	No. 2012 stock assessment estimated total and spawning biomass to have declined to at least 50% of their initial levels by 1970, with more gradual declines since then in both total biomass ($B_{current}/B_0 = 36\%$) and spawning biomass ($SB_{current}/SB_0 = 29\%$). Current (2011) levels of catch were below MSY but were approaching MSY. Without a more up to date stock assessment, it is not clear that SG100 is met.	Maximum of ~4 t retained by UoA in 2016 (see Table 24) or ~0.15% of total WCPFC catch for the stock (SPC, 2018). Discarding is minimal (see Table 25). On this basis, UoA is unlikely to hinder recovery of this stock.	Davies et al. (2012)
WCPO skipjack	Yes. Recent levels of spawning biomass are well above the level that will support the MSY, and are well above the limit reference point, $20\%SB_{F=0}$.	N/a	McKechnie et al. (2016)
Pacific bluefin	No. The PBF stock is overfished relative to biomass-based limit reference points adopted for other species in WCPFC ($20\%SSB_{F=0}$)	Maximum of 2.6 t retained by UoA in 2016 (see Table 24) or ~0.03% of total catch for the stock (NC, 2019). Discarding is minimal (see Table 25). On this basis, UoA is unlikely to hinder recovery of this stock.	ISC (2018)

References

Davies et al. (2012), ISC (2018), Vincent et al. (2018), NC (2019), McKechnie et al. (2016), McKechnie, Tremblay-Boyer, et al. (2017), Tremblay-Boyer et al. (2017b), SPC (2018), Takeuchi et al. (2017) and Tremblay-Boyer et al. (2018)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	100
Condition number (if relevant)	N/a

Scoring table 20. PI 2.1.2 – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue	SG 60	SG 80	SG 100	
a	Management strategy in place			
	Guide post	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	Yes	Yes	No

Rationale

A “**strategy**” represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.

A “**partial strategy**” represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically.

Main primary species/stocks are as follows:

UoA 1 (ALB): Western Central Pacific yellowfin and bigeye

UoA 2 (YFT): South Pacific albacore and Western Central Pacific bigeye

UoA 3 (BET): South Pacific albacore and Western Central Pacific yellowfin

WCPO yellowfin and bigeye and SP albacore: CMM 2014-06 commits WCPFC to putting in place a formal harvest strategy for its key stocks (WCPO skipjack, yellowfin and bigeye, and South Pacific albacore), with an associated workplan, the latest version of which was drafted at WCPFC15 (December 2018). In the meantime, yellowfin and bigeye are managed through CMM 2018-01, the objectives of which are as follows for both stocks:

Pending agreement on a target reference point the spawning biomass depletion ratio ($SB/SB_{F=0}$) is to be maintained at or above the average $SB/SB_{F=0}$ for 2012-2015.

For albacore, management continues through CMM 2015-02 with the objective of not increasing the number of their fishing vessels actively fishing for South Pacific albacore in the Convention Area south of 20°S above 2005 levels or recent historical (2000-2004) levels.

The measures outlined in the CMMs are explained under Principle 1 (Sections 6.3.7 and 6.4.3) and are not repeated here. It is worth noting however that the Cook Islands are a SIDS (Small Island Developing State) and are therefore exempt from certain measures included in the CMM such as bigeye catch limits. At national level, a quota management system (QMS) is in place for albacore and bigeye (Section 6.3.4); however it is not clear at the moment that this is having any meaningful impact at stock-level. Therefore, in the absence of a formal harvest strategy at regional level, the team considered the measures in CMM 2018-01 and CMM 2015-02 to be part of a partial strategy rather than a full strategy. As such, SG60 and SG80 are met but not SG100. It can therefore not be concluded that there is an overall strategy in place for the UoA for managing main and minor primary species. SG100 overall is not met.

b				
Management strategy evaluation				
Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.	
Met?	Yes	Yes	No	

Rationale

Albacore: No projections have been undertaken for SP albacore based on the most recent stock assessment. SG100 is not met. Currently the stock is above PRI with a high degree of certainty and F is and has always been below F_{MSY} (see Section 6.4.8). Therefore, there is some objective basis for confidence that the partial strategy is working. SG60 and SG80 are met.

Yellowfin: There have been no status quo projections based on the new stock assessment (see Section 6.5.4), although in previous years it has been tested. For now, SG100 is not met. Taking into account the fact that WCPFC have committed to a workplan to put in place a formal harvest control rule for yellowfin by 2021, this provides some objective basis for confidence that the partial strategy will work. SG60 and SG80 are met.

Bigeye: SC14 present stock projections under different scenarios of fishing pressure and recruitment, as discussed in detail under Principle 1 (Section 6.6.4). Based on recent (high) recruitment levels, the risk of SB declining to below the LRP by 2045 is minimal, although F is increasingly likely to exceed F_{MSY} as fishing effort increases. Conversely, assuming long-term recruitment levels, SB has a 17-32% chance of being below the LRP by 2045, while F is very likely to be above F_{MSY} under all fishing scenarios including the status quo. On that basis, the team did not consider there was high confidence that the strategy would work (SG100 is not met); however, taking into account the fact that WCPFC have committed to a workplan to put in place a formal harvest control rule for bigeye by 2021, this provides some objective basis for confidence that the partial strategy will work. SG60 and SG80 are met.

Minor species: SG60 and SG80 are met by default. The partial strategy has not been tested for all minor species (e.g. striped marlin), SG100 is not met.

c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		Yes	No

Rationale

Evidence for implementation of the partial strategies for all species includes VMS and observer data, logbook data, unloadings data and the MCS system as described under Principle 3. In the absence of systematic non-compliance by the UoA the team considered that SG80 should be met. However, considering that observer coverage in this fishery is not comprehensive (Section 6.7.2), the team felt that clear evidence of successful implementation is lacking. SG100 is not met.

d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	N/a	N/a	N/a

Rationale

No primary species are sharks: sharks are all protected in the Cook Islands (Section 6.7.5) and are therefore considered under ETP species below. Not relevant.

e	Review of alternative measures			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	Yes	Yes	No

Rationale

The vast majority of the main primary species are retained for sale, as evidenced by the observer data which have reported discard rates of 1.41%, 3.36% and 2.53% for albacore, yellowfin and bigeye respectively (Table 25). This is further supported by the observer data collected over the course of this fishery's certificate (between 2014 and 2017) which indicate a < 1% discard rate by number of fish, rather than weight (Sieben and Daxboeck, 2019). MSC Guidance states the following (MSC Standard v2.01 GSA3.5.3): *Any non-negligible proportion of the catch that meets the unwanted definition (...) for a particular species should be assessed as unwanted catch.* In the absence of guidance on what constitutes 'negligible', the team concludes that the reported discard rates demonstrate there is no 'unwanted catch' of the main primary species. SG60 and SG80 are therefore met by default. As there is no biennial review of discarding practices for all primary species, SG100 is not met.

References

CMM 2014-06 ; CMM 2015-02; UoA observer data

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
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Condition number (if relevant)	N/a
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Scoring table 21. PI 2.1.3 – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue	SG 60	SG 80	SG 100	
a	Information adequacy for assessment of impact on main primary species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	Yes	Yes	Yes

Rationale

There is quantitative information on the catch of main and minor primary species (landings and discards) from logbooks and observers. Each of the main primary stocks has a stock assessment (see 2.1.1a), providing quantitative information on total landings and stock biomass. As the vast majority of main primary species are retained for sale, logbooks (which provide 100% coverage) enable the impact of the UoA on these stocks to be evaluated with a high degree of certainty (at 90% certainty) – SG60, SG80 and SG100 are met for the main species.

b	Information adequacy for assessment of impact on minor primary species		
	Guide post	Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.	

Met?

Yes

Rationale

See above - met

c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main primary species.	Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Yes	Yes	No

Rationale

A partial strategy is in place for main primary species where necessary (see PI 2.1.2) and the information required to support it (fishing effort via logbooks and VMS, landings, discards) is available as set out above. SG60 and SG80 are met. In the absence of a full strategy, SG100 is not met.

References

UoA logbook data (Table 24)

UoA observer data (Table 25)

See also PIs 2.1.1, 2.1.2 and references therein

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	95
Condition number (if relevant)	N/a

Scoring table 22. PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guide post	<p>Main secondary species are likely to be above biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main secondary species are highly likely to be above biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</p> <p>AND</p> <p>Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.</p>	There is a high degree of certainty that main secondary species are above biologically based limits.
	Met?	<p>Blue marlin – Yes</p> <p>Indian oil sardine – Yes</p> <p>Japanese pilchard - Yes</p>	<p>Blue marlin – Yes</p> <p>Indian oil sardine – Yes</p> <p>Japanese pilchard - Yes</p>	<p>Blue marlin – Yes</p> <p>Indian oil sardine – No</p> <p>Japanese pilchard - No</p>

Rationale

Based on the observer, logbook and bait data (Sections 6.7.2 and 6.7.3), the following stocks were identified as 'main' for all UoAs:

- Pacific blue marlin
- Indian oil sardine
- Japanese pilchard

Blue marlin: The most recent assessment for blue marlin, based on a single Pacific Ocean stock, was conducted by the ISC BILLWG in 2016 using a Stock Synthesis (SS3) model (ISC, 2016). The findings of the assessment can be summarised as follows:

- Estimates of total stock biomass show a long-term decline. Population biomass (age-1 and older) averaged roughly 130,965t in 1971-1975, the first 5 years of the assessment time frame, and has declined by approximately 40% to 78,082t in 2014;
- Female spawning biomass in 2014 was estimated to about 25% above SSB_{MSY} ;
- Fishing mortality on the stock averaged roughly $F = 0.28$ during 2012-2014, or about 12% below F_{MSY} ;
- No long-term trend in recruitment was apparent;
- The lack of sex-specific size data and the simplified treatment of the spatial structure of Pacific blue marlin population dynamics were important sources of uncertainty in the 2016 stock assessment update.
- The Kobe plot depicts the stock status relative to MSY-based reference points for the base case model (Figure 32) and shows that spawning stock biomass decreased to roughly the MSY level in the mid-2000's, and has increased slightly in recent years. Results from the base case assessment model indicate that the Pacific blue marlin stock is currently not overfished and is not experiencing overfishing relative to either MSY-based or $F_{20\%}$ -based biological reference points.

The stock assessment indicated that to avoid overfishing of this nearly fully exploited stock ($F/F_{MSY} = 0.88$) fishing mortality should not be increased from the current (2012-2014) level. The 95% confidence intervals shown on the Kobe plot (Figure 20) indicate there is a high degree of certainty that this stock is above the PRI and is fluctuating around a level consistent with MSY. Although the stock assessment is now quite old, 2016 and 2017 catches of blue marlin for all gear types combined in the WCPFC convention were respectively 6% and 20% below the 2012-2014 average (SPC, 2018). On that basis, there remains a high degree of certainty that this stock is above its biologically-based limits. SG60, SG80 and SG100 are met.

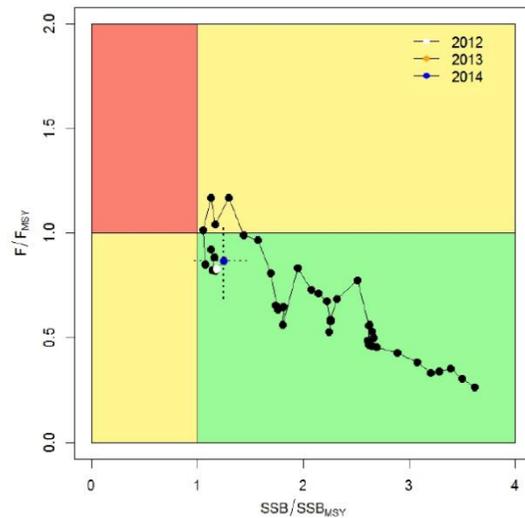


Figure 32. Kobe plot of the time series of estimates of relative fishing mortality (average of age 2+) and relative spawning stock biomass of Pacific blue marlin during 1971-2014. The dashed lines denote the 95% confidence intervals for the estimates in the year 2014 (ISC, 2016).

Indian oil sardine: The Indian oil sardine is a highly migratory small pelagic fish distributed along the coasts of the Arabian Sea. Review of the bait purchase information provided by the Client indicates that during 2019, 2,434 tonnes of *Sardinella longiceps* were supplied from Oman, and 26 tonnes of *Cololabis saira* were supplied from Taiwan. Based on these data, *S. longiceps* was considered as a main secondary species. According to Shaklee and Shaklee (1990), *S. longiceps* in Omani waters is represented by a unit stock. The species makes up one of the main domestic marine fisheries in Oman, representing ~32% of national catches according to reconstructed data for the period 1950 - 2010 (Khalfallah et al., 2016). A comprehensive study on the fishery, biology and stock assessment of the Indian oil sardine was undertaken from the Sea of Oman and Arabian Sea coasts of Oman during 2007-2009 under the ‘Small pelagic fisheries project’, which estimated the annual average landings of Indian oil sardine at 30,112t (Zaki et al., 2011). According to the assessment, the average annual yield, total and standing stocks and the corresponding MSY from various regions indicate that the yield from the entire coastal waters of Oman was estimated at 27,151t, lower than the estimated MSY of 34,048t (note that another MSY value was estimated using a Thompson and Bell analysis which was still higher at 46,144t). Although the species may be subject to large interannual fluctuations, which may be exacerbated by widespread upwelling in Omani waters during the southwest monsoon season, Zaki et al. (2011) concluded that ‘there is no management concern in any of the coast studied and in fact, there appears to be scope for additional catches of Indian oil sardine from the entire Omani coast’. Overall, the assessment team considered that this stock is likely to be above biologically based limits (SG60 is met); however, considering the stock assessment and estimate of total landings are now quite out of date, with increasing landings reported by FAO (see footnote 4) the team does not consider it highly likely that this is the case. The first part of SG80 is not met; the team therefore considered whether there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that also have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding. A review of tuna longline fisheries in the MSC programme indicates that the following fisheries all consider *S. longiceps* as a ‘main’ bait species:

- SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore, yellowfin and bigeye longline
- SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna
- MIFV RMI EEZ Longline Yellowfin and Bigeye Tuna
- American Samoa EEZ Albacore and Yellowfin Longline Fishery
- Fiji Albacore, Yellowfin and Bigeye Tuna longline

Collectively, bait use by these fisheries amounts to ~ 19% of the total estimated landings of this species. Taking into account FAO statistics, which report *S. longiceps* landings from Oman at 121,800 t for 2017⁴, this level of contribution is even lower. MSC Guidance GSA3.4.6 states that even if the total catch of a species is clearly hindering recover, UoA catches of less than 30% of the total catch of a species may not normally be influential in hindering a recovery in a marginal sense. Although *S. longiceps* is clearly a popular choice for bait in longline fisheries, the longline fisheries in the MSC programme combined that make use of this species are highly unlikely to exceed this 30% threshold. SG80 is met. SG100 is not met because of the uncertainties associated with the stock assessment and landings estimates.

Japanese pilchard: Review of the bait purchase information indicates the country of origin of this bait species is exclusively China, caught by Chinese vessels in the China EEZ. Although the *Sardinops melanostictus* fishery is predominantly a Japanese one, according to Yatsu (2019), the Pacific stock of Japanese pilchard is targeted by Chinese vessels just outside the Japanese EEZ, near Hokkaido Island. A Resource Recovery Plan is in place in the Japanese EEZ, with associated MSY-based harvest control rules; these measures, however, do not apply to the Chinese vessels targeting this species. The team therefore considered this species as secondary rather than primary. According to a stock assessment carried out by Furuichi et al. (2018) (cited in Yatsu (2019)), the current SSB is above B_{limit} (Figure 33) and the biomass is expected to increase under $F_{current}$. Figure 34 shows an upward trend in biomass, providing further confidence that the stock is highly likely above biologically based limits. In any case, catches of this species were estimated at just under 100,000 t in 2015 (derived from Figure 2 in Yatsu (2019)). The UoA used 1,196 tonnes of this species in 2017, or *ca.* 1.5% of the total catch, and is therefore highly unlikely to hinder recovery of this species. SG60 and SG80 are met. However, relatively little is known about the Chinese fishery that targets this stock, precluding SG100 from being met.

⁴ FAO Global Production Statistics 1950-2017 (online query):

http://www.fao.org/figis/servlet/SQServlet?file=/usr/local/tomcat/8.5.16/figis/webapps/figis/temp/hqp_3971073351824474648.xml&outtype=html

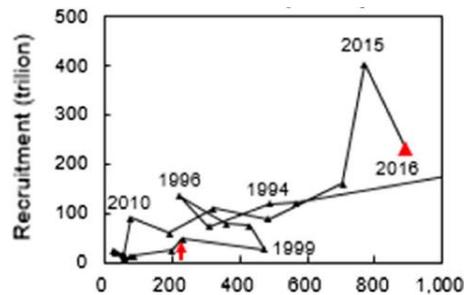


Figure 33. Relationship between spawning stock biomass and recruitment for *Sardinops melanostictus*. Arrow indicates B_{limit} . From Yatsu (2019).

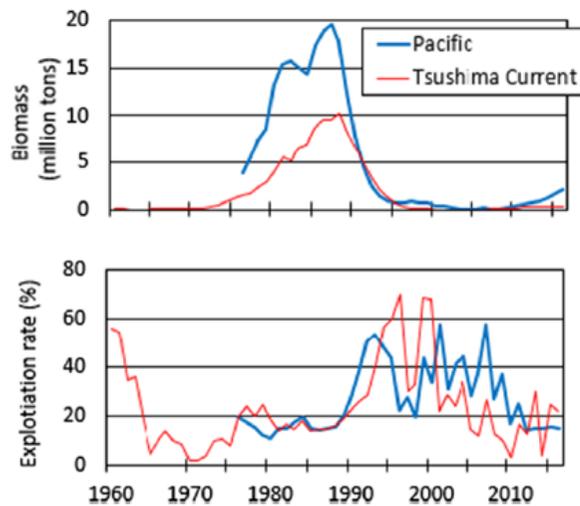


Figure 34. Trajectories of biomass (top) and exploitation rate (catch weight per biomass) of Japanese pilchard, showing both the Pacific and Tsushima current stocks (the former is relevant to the UoA). From Yatsu (2019).

In terms of unobserved mortality of secondary species, the team considered ghost fishing due to gear loss as a factor. 5 or 6 radio buoys are spaced at regular intervals along the main line for each set. Therefore, should the line break, both ends can be retrieved. It is reportedly very rare for a whole longline to be lost. In the event the line breaks, the vessel will also want to harvest the fish which provides another incentive for retrieval. Under the WCPFC Regional Observer Program, observers are required to report whether the vessel abandoned, lost or discarded any fishing gear, whether the vessel found abandoned gear from another vessel, and whether the vessel failed to report any lost or abandoned gear if required by the country in which waters the vessel was fishing (Gilman, 2015). Overall it is important to consider that lost pelagic longline gear

is only likely to continue to fish as long as bait remains on the hooks. Bait tends to be stripped relatively quickly off the hooks and as such, the mortality rate associated to lost longlines is usually low (Macfadyen et al., 2009). The team considered that unobserved mortality through ghost fishing was unlikely to be a significant factor in the fishery's interactions with secondary species.

b	Minor secondary species stock status	
	Guide post	Minor secondary species are highly likely to be above biologically based limits. OR If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?	No

Rationale

There is a long list of minor secondary species (see Table 24, Table 25 and Table 26) and they have not been evaluated individually. Using an all or nothing approach, this scoring issue is therefore not met.

References

Macfadyen et al. (2009), Gilman (2015), ISC (2015, 2016), Khalfallah et al. (2016), Schwartzlose and Alheit (1999), Shaklee and Shaklee (1990), Whitehead (1988), Yatsu (2019), Zaki et al. (2011)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	85
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Condition number (if relevant)	N/a
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Scoring table 23. PI 2.2.2 – Secondary species management strategy

PI 2.2.2	There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch			
Scoring Issue	SG 60	SG 80	SG 100	
a	Management strategy in place			
	Guide post	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	Blue marlin – Yes (default) Indian oil sardine – Yes Japanese pilchard - Yes	Blue marlin – Yes (default) Indian oil sardine – No Japanese pilchard - No	No

Rationale

MSC definition of a strategy (Table SA8):

A “**strategy**” represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.

A “**partial strategy**” represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically.

Blue marlin: this species received a score of 100 in PI 2.2.1(a) – as such, the term ‘if necessary’ applies here and management as described under SG60 and SG80 is not required. SG80 is therefore met by default for blue marlin. There is no specific strategy in place to manage bycatch of blue marlin in either this fishery or at regional WCPFC level; bycatch is instead covered under the more generic WCPFC Resolution 2005-03 on Non-Target Fish Species. On that basis, SG100 is not met.

Indian oil sardine and Japanese pilchard: The Ministry of Agriculture and Fisheries (MAFW) is the responsible management authority in the Sultanate of Oman. In order to ensure responsible fishing it employs precautionary management; conservation measures include control of fishing effort through limits on the number of licensed vessels and associated gear restrictions, with a discard ban reportedly in place. Fishing activities are monitored by inspecting all industrial and artisanal fishing operations as well as fish processing plants. The export of seafood is strictly and regularly inspected⁵. For *S. melanostictus*, the Pacific stock of Japanese pilchard is targeted by Chinese vessels just outside the Japanese EEZ, near Hokkaido Island. A Resource Recovery Plan is in place in the Japanese EEZ, with associated MSY-based harvest control rules; these measures, however, do not apply to the Chinese vessels targeting this species. According to a stock assessment carried out by Furuichi et al. (2018) (cited in Yatsu (2019)), the current SSB is above B_{limit} (Figure 33) and the biomass is expected to increase under $F_{current}$.

From the UoA's perspective, the quantities of bait used compared to the overall catches of these stocks are small: for *S. longiceps*, approximately 2,500 tonnes were used in 2019, corresponding to < 10% of the total catch (see 2.2.1a). For *S. melanostictus*, the UoA used 1,196 tonnes of this species in 2017, or ca. 1.5% of the total catch. MSC Guidance GSA3.4.6 states that even if the total catch of a species is clearly hindering recovery, UoA catches of less than 30% of the total catch of a species may not normally be influential in hindering a recovery in a marginal sense. Overall, the management in place at stock level combined with the low UoA-level catch, constitute measures that contribute to the UoA not having a significant impact on these stocks. SG60 is met. Nevertheless, it is not clear that the Client Group has in place a cohesive arrangement that ensures that bait is proactively purchased from sustainable fisheries. The team therefore concludes that a partial strategy is not in place for the UoA that is expected to maintain or not hinder rebuilding of bait species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery. SG80 is not met for the bait species.

Minor species were not evaluated in detail and were not considered to meet SG100.

b				
Management strategy evaluation				
Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.	
Met?	Yes	Yes	No	

Rationale

As far as the team are aware, the measures for blue marlin have not been tested. SG100 is not met. However, given that the stock is above the PRI with a high degree of certainty (2.2.1a), there is some objective basis for confidence that the management in place will work. SG60 and SG80 are met.

⁵ <http://www.fao.org/fishery/facp/OMN/en>

For bait, as previously stated, the UoA uses a relatively constant amount of generally the same species (mainly Indian oil sardine). As evidenced during the initial assessment and subsequent surveillances, this approach has so far proven effective in as far as that the UoA is highly unlikely to be hindering stock recovery of any the main bait species. SG60 and SG80 are met. In the absence of a partial strategy, SG100 is not met.

As minor species were not assessed, SG100 is not met.

c	Management strategy implementation		
	Guide post	There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?	Yes	No

Rationale

As for primary species, in the case of blue marlin, evidence for implementation of management includes VMS and observer data, unloading data, logbooks and the MCS system as described under Principle 3. In the absence of systematic non-compliance by the UoA the team considered that SG80 should be met. However, considering that observer coverage in this fishery is not comprehensive (Section 6.7.2), the team felt that clear evidence of successful implementation is lacking. SG100 is not met

The quantity of bait used is known, as are total (estimated) landings from the most likely source stocks for the main bait species. SG80 is met. In the absence of a partial strategy, SG100 is not met.

In the absence of at least a partial strategy for all minor secondary species, the team did not consider SG100 to be met.

d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	N/a	N/a	N/a

Rationale

No secondary species are sharks: sharks are all protected in the Cook Islands (Section 6.7.5) and are therefore considered under ETP species below. Not relevant.

e	Review of alternative measures to minimise mortality of unwanted catch			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	Yes	Yes	No

Rationale

Virtually all blue marlin are retained for sale, as evidenced by the observer data (Table 25). There is no unwanted catch of blue marlin. For the bait species, both the Indian oil sardine and Japanese pilchard are targeted with no unwanted catch. SG60 and 80 are met by default.

Not all minor secondary species are desirable, and as far as the team are aware there is no biennial review of alternative measures to minimise these catches. SG100 is not met.

References

WCPFC Resolution 2005-03 on Non-Target Fish Species; Yatsu (2019) and Zaki et al. (2011)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	75
Condition number (if relevant)	7

Scoring table 24. PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species		
Scoring Issue	SG 60	SG 80	SG 100	
a	Information adequacy for assessment of impacts on main secondary species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
	Met?	Blue marlin – Yes Indian oil sardine – Yes Japanese pilchard - Yes	Blue marlin – Yes Indian oil sardine – Yes Japanese pilchard - Yes	Blue marlin – Yes Indian oil sardine – No Japanese pilchard - No

Rationale

There is quantitative information on the catch of main and minor secondary species (landings and discards) from logbook and observer data, as well from client data on bait use. The impact of the UoA on main secondary species with respect to status can be assessed (see 2.2.1a) – SG80 is met for all species. As there is no unwanted catch of main secondary species (see Table 25), logbooks (which provide 100% coverage) enable the impact of the UoA on these stocks to be evaluated with respect to status, with a high degree of certainty in the case of blue marlin. SG100 is met for that species. For the bait species, as this information is ultimately based on self-reporting by the Client Group, it cannot be concluded that there is a high degree of certainty. SG100 is not met.

b	Information adequacy for assessment of impacts on minor secondary species		
	Guide post		Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?		No

Rationale

There is a long list of minor secondary species (see Table 24, Table 25 and Table 26). The impact of the UoA on these stocks in terms of catch (landings, discards, mortality to point of discard) can be evaluated via the observer reports, but in some cases little is known about the stock structure and status, so SG100 is not met in full.

c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main secondary species.	Information is adequate to support a partial strategy to manage main secondary species.	Information is adequate to support a strategy to manage all secondary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Yes	Yes	No

Rationale

For blue marlin, the information required to support a partial strategy (fishing effort via logbooks and VMS, landings, discards) is available as set out above. SG80 is met.

For the bait species, the information available (purchase data, landings data, stock assessment) is sufficient to support a partial strategy, even though one is currently not in place. This, however, does not preclude SG80 from being met.

In the absence of a formal strategy for all secondary species, including minor species, SG100 is not met.

References

Logbook data (Table 24), observer data (Table 25), bait use data (Table 26), ISC (2016), Khalfallah et al. (2016), Yatsu (2019) and Zaki et al. (2011)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	85
Condition number (if relevant)	N/a

Scoring table 25. PI 2.3.1 – ETP species outcome

PI 2.3.1	The UoA meets national and international requirements for the protection of ETP species		
	The UoA does not hinder recovery of ETP species		
Scoring Issue	SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable		
Guide post	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/ stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population /stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
Met?	N/a	N/a	N/a

Rationale

ETP species are discussed in Section 6.7.5 and include the following:

- Elasmobranchs (19 species)
- Sea turtles (5 species)
- Cetaceans (1 species)

Formal 'limits' (national or international) which trigger management action are not in place for any of these species. This scoring issue was therefore not scored.

b	Direct effects		
Guide post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
Met?	Elasmobranchs – Yes	Elasmobranchs – Yes	Elasmobranchs – No

	Sea turtles – Yes	Sea turtles – Yes	Sea turtles – No
	Cetaceans - Yes	Cetaceans - Yes	Cetaceans - No

Rationale

Elasmobranchs: According to the observer data (Table 25), elasmobranchs (including sharks and rays) are by far the most dominant group of ETP species interacting with this fishery. In total, seventeen species were recorded in the 2015/18 observer data, with interactions for some species relatively sporadic. For the purposes of scoring, the assessment team focused on the most frequently caught elasmobranchs according to the observer data – pelagic stingray and blue shark - and on those species considered most vulnerable by WCPFC for which species-specific CMMs are in place – silky shark and oceanic whitetip. In order to estimate the UoA impact on the aforementioned species, the number of encounters presented in Table 28 were scaled up to fleet level, applying the scaling factors calculated in Section 6.7.2. The results are shown in Table 30 below. As already discussed in Section 6.7.2, the team questioned the quality of some of the observer data, notably for 2017, when an abnormally small amount of albacore was observed in relation to the number of observed trips and the proportion of other species in the observed catch (see Table 25). As the observer data were scaled up on the basis of the landed (according to logbook data) and observed albacore catch, this is likely to have led to some overestimations of bycatch as is apparent in Table 30 below. For this reason, 2017 was omitted from the analysis of UoA impact on the species concerned. The quality of the data is, however, discussed further in PI 2.3.3.

Table 30. Observed encounters (# individuals) of representative elasmobranch species for the UoA, extrapolated to fleet level (applying scaling factors as per Table 23). 2017 was omitted from the outcome analysis as explained in the text above.

Species	2015	2016	2017	2018
PELAGIC STINGRAY (<i>Pteroplatytrygon violacea</i>)	2,239	3,791	27,364	2,610
BLUE SHARK (<i>Prionace glauca</i>)	2,354	4,397	12,652	3,521
SILKY SHARK (<i>Carcharhinus falciformis</i>)	1,014	879	5,473	369
OCEANIC WHITETIP SHARK (<i>Carcharhinus longimanus</i>)	287	273	142	99

For the vast majority of interactions, the observer data indicate that the individuals concerned were discarded (Table 25). For elasmobranchs, at-vessel and post-release survivability depends on a range of factors associated with capture including gear type, soak time and handling practices as well as biological attributes (species, size, sex and mode of gill ventilation) (Ellis et al., 2016). For longline fisheries in particular, post-release mortality depends on where the shark was hooked and whether the line was cut off or bitten off. The UoA exclusively uses circle hooks which, according to studies cited by Gilman et al. (2019), have been linked to significantly lower shark catch rates compared to when J-shaped hooks were used. Note that this trend was only observed where wire leaders, as opposed to monofilament leaders, were used: it is likely that the effect of hook shape is masked when monofilament leaders are used as sharks that are more deeply hooked (which is more frequent on J-shaped hooks) can bite through the line more easily than when hooked in the mouth or jaw (more likely on circle hooks). Overall, circle hooks reduce the proportion of the catch that is deeply hooked relative to J-shaped hooks and reduce at-vessel mortality (Gilman et al., 2019). Curran (2014) and references therein reported post-release mortality rates for blue shark ranging from 15 to 19%. More information on at-vessel mortality is available with blue sharks having the highest chance of survival (3 – 14% mortality) and thresher and silky

sharks the lowest (up to 56% mortality). Although it could therefore be argued that post-release mortality may be relatively high in some species (e.g. blue shark), in the absence of UoA-specific data, the team decided to assume 100% mortality for all interactions.

Pelagic stingray: The pelagic stingray is widespread, with an almost circumglobal distribution, throughout tropical and subtropical areas of the Pacific, Atlantic and Indian Oceans (Baum and Worm, 2009b). It is listed as of 'Least Concern' on the IUCN Red List. In the northeast and eastern central Pacific there appear to be two discrete populations: one migrating from eastern Pacific equatorial waters to off the California coast, and a second central Pacific population that migrates northwards, sometimes as far as Japanese and British Columbia waters (Ebert, 2003 in Baum and Worm (2009b)). This suggests that the species may have a fairly complicated population structure; however very little is currently known about either population structure or abundance and no stock assessment of Pacific Ocean pelagic stingrays has been conducted. Although Ward and Myers (2005) found that this species increased in the central Pacific longline catches between the 1950s and 1990s and attributed this change to a reduction in predation due to declining shark abundance, Polovina and Woodworth-Jefcoats (2013a) reported a 5.4% annual decline in CPUE for pelagic stingrays based on Hawaii-based longline fishery catch and effort data. More recently, Tremblay-Boyer and Brouwer (2016) examined CPUE data for *P. violacea* from both purse seine and longline gear over a 20-year period and found that in both the albacore target and the bigeye-yellowfin longline sets *P. violacea* CPUE has been variable. While trends in the unassociated purse seine sets were the most variable, CPUE declined in both gears and all set types from the mid-1990s to the mid-2000s and then seemed to increase again after 2010. As these trends are apparent in two different gear types and all set types they may be indicative of changes in the underlying biomass (Tremblay-Boyer and Brouwer, 2016). Overall, the authors did not consider this species of particular ecological concern, with Kirby and Hobday (2007a) considering this species as having a medium risk in their Ecological Risk Assessment. Tremblay-Boyer and Brouwer (2016) further did not recommend that this species be considered as a 'key shark species', which would require increased reporting and research activities. Although the *P. violacea* numbers encountered in the UoA observer data are non-negligible, the team considered that the direct effects of the UoA are highly likely to not hinder recovery of this species. SG60 and SG80 are met. SG100 is not met because of the lack of stock assessment and more comprehensive observer coverage.

Blue shark: This species is one of the most prolific shark species and was categorized as being at "medium" ecological risk for deep longline sets (Kirby and Hobday, 2007a) although Kirby (2006) concluded that the species is relatively low risk as it is one of the most fecund shark species. Blue sharks are widely distributed throughout temperate and tropical waters of the Pacific Ocean. The ISC SHARKWG recognizes two stocks in the North and South Pacific, respectively, based on biological and fishery evidence. Although a stock assessment for South Pacific blue shark was carried out in 2016 (Takeuchi et al., 2016), the authors recommended that the results should not be used as the basis for management advice, owing to issues with available data, generally poor fits to CPUE time series by the model, and uncertainty in the estimated stock recruitment relationship. An initial grid of 36 model runs across four different axes of structural uncertainty was examined. For all of the runs, spawning biomass depletion is estimated to be 0.08 to 0.10, inferring very strong impacts of fishing from unexploited conditions. While the stock of blue shark within the southern WCPFC-CA may be considered 'data rich' for a shark species, it is considered data poor in comparison to assessments performed for tuna and most billfish. The catch data are generally of poor quality and have to be reconstructed. This was attempted by Tremblay-Boyer et al. (2016) who applied two methods for estimating total blue shark catches in the South Pacific, using CPUE derived from onboard observer coverage and reported effort (scenario 1) and using the ratio of catches of blue shark to catches of all sharks (scenario 2). The team considered the most recent catch data in both scenarios (2014 year in Figure 4 - Takeuchi et al. (2016)) providing a range of ~25,000 to ~150,000 individuals caught per year, to which the UoA estimated catch contributes ca. 17.6% - 2.9% (taking into account Table 30 above). It is stressed that this is conservative estimate as both the stock assessment and this assessment assume 100% mortality of all sharks encountered in the datasets. On this basis, the team concludes that the direct effects of the UoA are highly likely to not hinder recovery of blue shark and SG60 and SG80 are met. Owing to the non-comprehensive level of observer coverage in the UoA and the uncertainties in the overall catch data reported by Takeuchi et al. (2016), SG100 is not met.

Silky shark: Silky shark are a circumtropical species found in tropical waters of the Pacific Ocean and were categorized as being at “medium” ecological risk for both deep and shallow longline sets (Kirby and Hobday, 2007a). The greatest impact on the stock is attributed to bycatch from the longline fishery, but there are also significant impacts from the associated purse seine fishery which catches predominantly juvenile individuals. Silky sharks that inhabit the coastal and oceanic waters of the WCPO are considered a single stock and have been assessed as such in the stock assessment by Rice and Harley (2013). The key conclusions are the following:

- The size composition data shows consistent declines over the period of the model (1995-2009) which is coupled with increasing fishing mortality, and a recently declining CPUE trend.
- This is a low productivity species, and this is reflected in the low estimated value for F_{MSY} (0.08) and high estimated value for SB_{MSY} / SB_0 (0.39). These directly impact on conclusions about overfishing and the overfished status of the stock.
- Based on the reference case the estimated spawning biomass, total biomass and recruitment all decline consistently throughout the period of the model.
- Estimated fishing mortality has increased to levels far in excess of F_{MSY} ($F_{CURRENT}/F_{MSY} = 4.48$) and across nearly all plausible model runs undertaken estimated F values were much higher than F_{MSY} . Based on these results the stock assessment concludes that overfishing is occurring.
- Estimated spawning biomass has declined to levels below SB_{MSY} ($SB_{CURRENT}/SB_{MSY} = 0.70$) and for the majority of the model runs undertaken, $SB_{CURRENT}$ is less than SB_{MSY} . Based on the distribution of these results it is highly likely that the stock is in an overfished state.

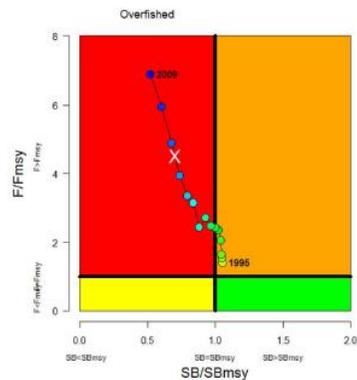


Figure 35. Kobe plot for reference case model for WCPO silky shark indicating annual stock status, relative to SB_{MSY} (x-axis) and F_{MSY} (y-axis) the period 1995–2009. From Rice and Harley (2013).

More recently, a Pacific-wide stock assessment was carried out as part of the ABNJ tuna project (Clarke et al., 2018), updating the time series of data included in the previous assessment with new data (i.e. from 2010-2016), whilst also incorporating a long catch rate time series and large size composition datasets from the Eastern Pacific Ocean (EPO). The study showed, however, that WCPO and EPO regional catch rate indices are in conflict and linking these indices in a Pacific-wide model is not able to resolve that conflict given the current level of understanding of regional stock structure and movement dynamics. These estimation issues undermine confidence in any conclusions

drawn from the currently available data and preclude definitive findings on the acceptability of current stock biomass levels and fishing mortality rates. Nevertheless, the two sets of regional CPUE indices reveal a general decline over the modelled time period as manifested in the estimates of stock depletion. While the model estimates of depletion are not considered reliable, they do indicate that Pacific Ocean silky shark populations are likely to have declined considerably over the last two decades in response to the increased levels of catch. Correspondingly, fishing mortality rates are likely to have increased considerably over the same period (Clarke et al., 2018). The most recent silky shark catch estimate (year 2016 in Figure 2 - Clarke et al. (2018)) is just over 700,000 sharks. The numbers taken by the UoA correspond to *ca.* 0.15% of this estimate. As such, the team is confident that the direct effects of the UoA are highly likely to not hinder recovery of silky shark and SG60 and SG80 are met. Again, owing to the non-comprehensive level of observer coverage in the UoA, SG100 is not met.

Oceanic whitetip: A stock assessment was carried out very recently for this species by Tremblay-Boyer et al. (2019). This is also the first stock assessment carried out since CMM 2011-04 became active in 2013, enacting a no-retention measure for this species for WCPFC CCMs. A new development in this assessment was the inclusion of three discard mortality (DM) scenarios in the historical catches to account for the potential impacts of the CMM. In addition, results from two new WCPO growth studies predicted a much less productive profile for the stock than what had been assumed previously. As was the case in the previous stock assessment by Rice and Harley (2012), the stock assessment estimates the stock to be overfished and undergoing overfishing based on SB/SB_{MSY} and F/F_{MSY} reference points. Most model runs predict SB/SB_0 to be below 0.05, and all model runs predict SB/SB_0 to be below 0.1. F-based reference points, however, improved in the period since CMM 2011-04 became active, which covers the last 4 years of the assessment's time-span (2013–2016). Notably, F/F_{MSY} is predicted to have declined by more than half from 6.12 to 2.67 (median) for the last year of the assessment when the impact of CMM2011-04 on survival is accounted for under the 25% and 43.75% discard mortality scenarios, although the median value of F/F_{crash} over all 648 grid runs for 2016 remains above 1 (Tremblay-Boyer et al., 2019). Applying the total catch for the longline and purse seine fleets combined, used for the diagnostic case by Tremblay-Boyer et al. (2019) (see Figure 19 in the report), 2015 catch levels were estimated at *ca.* 30,000 individuals to which the UoA would have contributed ~0.96 %. The direct effects of the UoA are therefore highly likely to not hinder recovery of oceanic whitetip shark and SG60 and SG80 are met. Because the observer coverage in the UoA is non comprehensive, SG100 is not met.

As the assessment team grouped elasmobranchs as a single scoring element, the SG80 score applies to the entire group.

Following peer review comments, the team also considered scoring for the remainder of elasmobranch species, all of which meet SG80 as shown in Table 31. SG100 is not met due to the low observer coverage.

Table 31. Observed encounters (tonnes) of elasmobranch species for the UoA not included in Table 30, extrapolated to fleet level (from Table 25). 2017 was omitted from the outcome analysis as explained in the text above.

Species	Average annual scaled up catch (tonnes)	Scoring conclusion
Thresher (<i>Alopias vulpinus</i>)	< 1	

Species	Average annual scaled up catch (tonnes)	Scoring conclusion
Pelagic thresher shark (<i>Alopias pelagicus</i>)	< 1	Thresher shark catch in WCPFC convention area for 2017 was 799 t (SPC, 2019a). Bigeye threshers make up the bulk of these catch estimates as they are the most vulnerable to capture in longline tuna fisheries. According to the bigeye thresher risk assessment carried out by ABNJ (2018a), the UoA overlaps with an area of low fishing mortality for this species. Direct effects of the UoA are highly likely to not hinder recovery of thresher shark species.
Thresher sharks nei (<i>Alopias</i> spp.)	< 1	
Bigeye thresher shark (<i>Alopias superciliosus</i>)	14.40	
Longfin mako shark (<i>Isurus paucus</i>)	17.0	Mako shark catch in WCPFC convention area for 2017 was 2,638 t (SPC, 2019a). Direct effects of the UoA are highly likely to not hinder recovery of mako shark species.
Shortfin mako shark (<i>Isurus oxyrinchus</i>)	10.57	
Crocodile shark (<i>Pseudocarcharias kamoharai</i>)	< 1	6 observed interactions in 2018. Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of crocodile shark.
Great white shark (<i>Carcharodon carcharias</i>)	< 1	2 observed interactions in 2017. Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of great white shark.
Velvet dogfish (<i>Scymnodon squamulosus</i>)	< 1	2 observed interactions in 2017. Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of velvet dogfish.
Blacktip reef shark (<i>Carcharhinus melanopterus</i>)	< 1	1 observed interaction in 2016. Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of blacktip reef shark.
Kitefin shark (<i>Dalatias licha</i>)	< 1	1 observed interaction in 2017. Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of kitefin shark.
Giant manta (<i>Manta birostris</i>)	7.27	Total observed catch was of 4 individuals in 2015. No observations of this species were made in any of the other years. On this basis, the direct effects of the UoA are highly likely to not hinder recovery of giant manta rays.
Mobula nei (<i>Mobula</i> spp.)	< 1	1 observed interaction of <i>Mobula</i> spp. in 2017 and 1 of <i>Mobula japonica</i> in 2018. Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of <i>Mobula</i> rays.
Spinetail mobula (<i>Mobula japonica</i>)	< 1	

Species	Average annual scaled up catch (tonnes)	Scoring conclusion
Stingrays nei (<i>Dasyatis</i> spp.)	< 1	1 observed interaction of <i>Dasyatis</i> spp. in 2015. Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of <i>Dasyatis</i> rays.

Sea turtles: three species of sea turtle were encountered in the observer reports (Table 28): olive ridley, loggerhead turtle and leatherback turtle. Observed catches averaged at one per annum for loggerhead and leatherback. For olive ridley, 10 encounters were recorded in 2018 only. Note that these values have not been scaled up. The fishery under assessment overlaps with the five RMUs listed in Table 32 (for the latest map, see this link: <http://seamap.env.duke.edu/swot>).

Table 32. Sea turtle Regional Management Units that overlap with the fishery under assessment (from Wallace et al. (2010)). RMU risk and threat level (from Wallace et al. (2011), longline bycatch impact (from Wallace et al. (2013) and IUCN status are also shown.

Species	Common name	RMU (and overlap with Cooks EEZ)	RMU risk and threat level (from Wallace et al., 2011)	IUCN status
<i>Caretta caretta</i>	Loggerhead	South Pacific (overlaps entirely)	High risk High threat High bycatch impact	Endangered
<i>Chelonia mydas</i>	Green turtle	Pacific south central (partial overlap)	Low risk Low threat Low bycatch impact	Endangered
<i>Dermochelys coriacea</i>	Leatherback	Western Pacific (partial overlap)	High risk Low threat Low bycatch impact	Critically endangered (West Pacific Ocean subpopulation)
<i>Eretmochelys imbricata</i>	Hawksbill	Pacific south central (overlaps entirely)	High risk High threat Low bycatch impact	Critically endangered
<i>Lepidochelys olivacea</i>	Olive Ridley	Western Pacific RMU (overlaps entirely)	Low risk High threat High bycatch impact	Vulnerable

Total sea turtle population estimates are problematic due to a lack of demographic information. Nesting females are the most accessible component of sea turtle populations and can be used as population indices. The following information was obtained from ABNJ (2017a) and references therein:

- Green turtle: In the Indo-Pacific, there may be approximately 200,000 females nesting annually at over 230 nesting locations (Seminoff et al. 2015). Satellite telemetry data for Pacific green turtles suggest that post-nesting females tend to migrate west from Oceania nesting beaches to foraging habitats of the western Pacific;
- Olive ridley: the western Pacific population nests primarily in India while an eastern Pacific population nests primarily in Mexico, Costa Rica and Nicaragua. The eastern Pacific population may consist of approximately 2.5 million nesting females and the western Pacific population may be comprised of approximately 300,000 females nesting annually with additional unquantified nesting activity in northern Australia (NMFS and USFWS 2014; Limpus 2009).
- Leatherback turtles in the Pacific are comprised two demographic populations identified through genetic studies (Dutton et al. 2007) occurring in the western and an eastern Pacific. The western Pacific meta-population nests in Indonesia, Papua New Guinea and Solomon Islands where approximately 500-600 females may nest annually (Tapilatu et al. 2013; Pilcher 2011). The eastern Pacific meta-population nests primarily in Mexico and Costa Rica where approximately 150-200 females may nest annually (IUCN Marine Turtle Specialist Group. 2013a).
- Loggerhead turtles in the Pacific Ocean are comprised of two distinct population segments, a North Pacific and a South Pacific population. Approximately 500 to 1,000 loggerheads may nest annually in Japan and roughly 2,000-5,000 loggerheads may nest annually in eastern Australia and New Caledonia (Y. Matsuzawa, Sea Turtle Association of Japan, pers. comm. unpublished; UNEP/CMS/COP11 2014). Both populations are currently stable or increasing.

From data provided during the initial assessment and at subsequent surveillances, it is clear that catches of sea turtles by the UoA remain sporadic. Based on the above information, interactions with nesting females would appear to be most likely for the green turtle, while the likelihood of such encounters with the other species seems lower. With approximately 200,000 female green turtles nesting annually in the Indo-Pacific and taking into account the observed low level of encounters in the Client fishery, the team considered that direct effects of the UoA are highly likely to not hinder recovery of ETP species. SG60 and SG80 are met. SG100 is not met because of the non-comprehensive observer coverage in this fishery. This same scoring applies to the other sea turtle species for which observed interactions have been sufficiently sporadic over the course of certification of this fishery (see Sieben and Daxboeck (2017, 2019), Sieben and Gascoigne (2016)) to indicate that the direct effects of the UoA are highly likely to not hinder recovery of the ETP species.

Cetaceans: There are two main types of interaction between cetaceans and longlines: depredation and capture via hooking and entanglement, the latter often following from the former (Gilman et al., 2007a; Anderson, 2014). Although relative to other fishing gear such as gillnets, longline fishing generally does not pose as much of a threat, many individuals suffer mortality and serious injury as a result of the interactions (Gilman et al., 2006; Garrison, 2007 cited in Werner et al. (2015)). At regional level, there is no CMM relating to cetacean bycatch in WCPO longline fisheries. The Cook Islands are however a signatory to the Memorandum of Understanding (MoU) for the Conservation of Cetaceans and their Habitats in the Pacific Island Region (15 September 2006) which is a Multilateral Environmental MoU concluded under the auspices of the Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention) and protects all populations of cetaceans (whales and dolphins) in the Pacific Island Region (area between the Tropic of Cancer and 60° South latitude and between 130° east longitude and 120° West longitude). According to the observer data, there was only one observed interaction with a cetacean in the 2014-18 period – a false killer whale that was released alive. On that basis, the team considered it highly likely

that the UoA is not hindering recovery of cetacean species and SG80 is met. However, without a more robust observer dataset, this cannot be said with a high degree of certainty and SG100 is not met.

In terms of unobserved mortality of ETP species, the team considered ghost fishing due to gear loss as a factor. 5 or 6 radio buoys are spaced at regular intervals for each set. Therefore, should the line break, both ends can be retrieved. It is reportedly very rare for a whole longline to be lost. In the event the line breaks, the vessel will also want to harvest the fish which provides another incentive for retrieval. Under the WCPFC Regional Observer Program, observers are required to report whether the vessel abandoned, lost or discarded any fishing gear, whether the vessel found abandoned gear from another vessel, and whether the vessel failed to report any lost or abandoned gear if required by the country in which waters the vessel was fishing (Gilman, 2015). Overall it is important to consider that lost pelagic longline gear is only likely to continue to fish as long as bait remains on the hooks. Bait tends to be stripped relatively quickly off the hooks and as such, the mortality rate associated to lost longlines is usually low (Macfadyen et al., 2009). The team considered that unobserved mortality through ghost fishing was unlikely to be a significant factor in the fishery’s interactions with ETP species.

c	Indirect effects		
	Guide post	Indirect effects have been considered for the UoA and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species.
	Met?	Yes	No

Rationale

Discard and post-release mortality is accounted for in the data cited above and is therefore not an indirect effect.

Potential indirect effects for the ETP species / scoring elements considered in Sla above may include reduced availability of prey items due to their removal by the UoA; disturbance of nesting / roosting behaviour.

Removal of prey:

Although sharks are apex predators, they are generally opportunistic feeders (see for example Motta and Wilga (2001)) with a diversity of prey items that makes it highly unlikely that the UoA fishery, through its exploitation of mainly albacore, yellowfin and bigeye, would lead to unacceptable impacts on the ETP shark species through competition. Furthermore, giant manta rays are planktivorous; *Mobula* rays feed on small fish and zooplankton; the diet of sea turtles is restricted to algae, grasses and seaweeds, invertebrates and small fish; although the false killer whale does feed on fish (as well as squid), it may also feed on other marine mammals opportunistically. Therefore, the indirect effects from the UoA through prey removal on all ETP species concerned is highly unlikely and SG80 is met.

Disturbance of nesting / roosting behaviour of sea turtles:

This type of disturbance by the UoA is highly unlikely, as vessels are not permitted to operate within 50nm from any landmass within the EEZ. As compliance with this measure is high according to the MMR (as discussed at the Year 3 surveillance audit), the team considered that SG80 should be met.

Overall, indirect effects have been considered and the UoA is considered highly likely to not create unacceptable impacts on the ETP species identified. SG80 is met. There has been no dedicated research exploring likely indirect effects by the UoA and as such, SG100 is not met.

References

ABNJ (2017a), Clarke et al. (2018), Kirby and Hobday (2007b), Polovina and Woodworth-Jefcoats (2013b), Rice and Harley (2012), Takeuchi et al. (2016), Tremblay-Boyer and Brouwer (2016), Tremblay-Boyer et al. (2019), Tremblay-Boyer et al. (2016), Gilman et al. (2007), Anderson (2014), Werner et al. (2015), Motta and Wilga (2001)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
Condition number (if relevant)	N/a

Scoring table 26. PI 2.3.2 – ETP species management strategy

PI 2.3.2	The UoA has in place precautionary management strategies designed to: meet national and international requirements; 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			
Scoring Issue	SG 60	SG 80	SG 100	
a	Management strategy in place (national and international requirements)			
	Guide post	There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	Elasmobranchs – Yes Sea turtles – Yes Cetaceans - Yes	Elasmobranchs – Yes Sea turtles – Yes Cetaceans - Yes	Elasmobranchs – No Sea turtles – No Cetaceans - No

Rationale

MSC definitions:

A “**strategy**” represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome, and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.

A “**comprehensive strategy**” (applicable only for ETP component) is a complete and tested strategy made up of linked monitoring, analyses, and management measures and responses.

All ETP species: The Cook Islands participates in the Regional Observer Programme (ROP) which at a regional level aims to collect verified catch data, other scientific data, and additional information related to the fishery, including on the implementation of CMMs. CMM 2007-01 entered into force on 15 February 2008, and provides the basis of the rules and development of the WCPFC ROP and sets a minimum required national observer coverage of 5% for longline fisheries.

Elasmobranchs (19 scoring elements - see PI 2.3.1 for complete list): There are various CMMs in place at regional level which relate to shark bycatch. CMM 2010-07 is the overarching measure on sharks which stipulates *inter alia* that fins on board vessels should total no more than 5% of the weight of sharks on board up to the first point of landing. Species-specific CMMs are further in place for silky sharks (CMM 2013-08) and oceanic whitetip sharks (CMM 2011-04), both of which prohibit CCMs from retaining on board, transshipping, storing on a fishing vessel, or landing any oceanic whitetip or silky shark, in whole or in part, in the fisheries covered by the Convention. CCMs are further required to release any individuals as soon as possible after being brought alongside the vessel, and to do so in a manner that results in as little harm to the shark as possible. Note there is also the Regional Plan of Action on Sharks which provides guidance for Pacific Island Countries and Territories on the conservation and management of sharks (<http://www.fao.org/3/a-br378e.pdf>).

At national level, in addition to having a National Plan of Action (NPOA) in place on sharks which addresses the requirements stipulated by the CMMs, all sharks are protected under the Marine Resources (Shark Conservation) Regulations 2012 which provide the regulatory framework for the Cook Islands Shark Sanctuary, in force since December 2012. The regulations prohibit the following:

- to capture, target or otherwise intentionally engage in fishing for any shark
- to remove the fins, or otherwise mutilate or injure, any shark
- to chum for, or otherwise, add substances to the water to attract any shark
- Any sharks must be immediately released in a way that affords the greatest chances of survival - no shark, or any part of shark may be retained on board
- any trade in shark products is forbidden.
- No vessels may use or possess on board wire leaders or trace wire.

At UoA level, all captains and crew of pelagic longline vessels must abide by the Client Group policy on sharks which states the following:

- No use of gear designs designed to catch sharks: (i) no attaching branchlines directly to floats; (ii) only monofilament used for leaders (no use of more durable material such as wire or multifilament nylon).
- No retention of any species of sharks or rays (including shark fins or other parts of sharks and rays), including no transshipping, landing or trading any sharks or rays.
- Record all required information in logbooks, including the number of each species of sharks and rays caught, and their haul back disposition (alive or dead upon retrieved to the vessel) for each haul, as accurately as possible and safely obtainable.

- When notified, participate in periodic training courses in shark species identification to improve logbook records, and training to employ best practice handling and release practices for sharks and rays to increase the probability of their post-release survival.

The team also considered the likelihood of shark finning occurring in the UoA, which is deemed to be low based on information presented during the initial assessment and at subsequent surveillances. MMR did report a case of illegal shark fin retentions during the Year 1 surveillance audit. These were in fact determined to be isolated incidents but still punishable under the Marine Resources (Shark Conservation) Regulations 2012. A formal decision-making process for infractions of this kind has now been documented and full details of the settlement policy and structure was sent to the FFA and the WCPFC to show transparency on how the Cook Islands prosecutes non-compliance of fisheries management regulations, especially concerning the issue of shark finning. No other incidents have been reported since. Overall, the team considered that it is highly likely that there is no shark finning in this fishery. However, the observer coverage was deemed too low for there to be a high degree of certainty.

The team considered that the above measures constitute a strategy, designed to minimise mortality on elasmobranchs and that SG60 and SG80 are met. Although the strategy goes above and beyond regional requirements, and observer coverage at Cook Islands level is in compliance with the 5% regional requirement (see MMR (2019)), the team did not consider this to be a comprehensive, tested, strategy made up of linked monitoring, analyses, and management measures and responses. SG100 is not met.

Sea turtles (5 scoring elements see PI 2.3.1 for complete list): At regional level, CMM-2018-04 on the conservation and management of sea turtles is in force, requiring the implementation of the FAO Guidelines to Reduce Sea Turtle Mortality in Fishing Operations, which include the use of wide circle hooks; using fish rather than squid for bait; and setting hooks deeper than turtle abundant depths (40–100 m). The CMM also details reporting requirements for CCMs and best practice guidelines to ensure the survival of captured sea turtles. For longline vessels, the CMM specifically requires that operators carry and use line cutters and de-hookers to handle and promptly release sea turtles caught or entangled and, where appropriate, carry and use dip-nets. The Cook Islands further have a NPOA in place, designed specifically to address these matters. The team considered that the above measures constitute a strategy, designed to minimise mortality on sea turtles specifically and that SG60 and SG80 are met. However, despite the likelihood that UoA impacts on sea turtles are minimal, it is clear that the observer coverage can be improved on. For this reason, the team decided that the strategy was not comprehensive and SG100 is not met.

Cetaceans (false killer whale): For cetaceans, interactions are often caused by depredation and are rare for the fishery under assessment. While cetaceans are not specifically addressed in any CMMs for WCPO longline fisheries, their protection is ensured through the Pacific Islands MoU which the Cook Islands is a signatory to. On the basis that cetaceans are unlikely to be a problem for the fishery under assessment, the team considered this requirement to constitute a strategy and sufficient for SG80 to be met. As for the other ETP groups, the low observer coverage precludes SG100 from being met.

As explained in 2.3.1b ghost fishing may be a factor in unobserved mortality of ETP species. In terms of management, the team concluded that this falls under the wider concept of waste management. The UoA has in place a Waste Management Plan, which includes provisions on the correct disposal of fishing gear. According to the Client Group, fishing gear is equipped with radio buoys that ensure retrieval is possible (see 2.3.1). Under the WCPFC Regional Observer Program, observers are required to report whether the vessel abandoned, lost or discarded any fishing gear, whether the vessel found abandoned gear from another vessel, and whether the vessel failed to report any lost or abandoned gear if required by the country in which waters the vessel was fishing (Gilman, 2015). Under CMM 2017-04, which entered into force from January 2019, CCMs shall also encourage their fishing vessels within the WCPFC Convention Area to retrieve abandoned, lost or discarded fishing gear and retain the material on board, separate from other waste for discharge to port reception facilities. Where retrieval is not possible or does not occur, CCMs shall encourage their fishing vessels to report the latitude, longitude, type, size and age of abandoned, lost or discarded fishing gear. The team was therefore satisfied that there is a management strategy in place

to address the issue of lost fishing gear and associated ghost fishing. SG60 and SG80 are met. In the absence of better, UoA specific monitoring of gear loss (rather than just hook loss), however, it cannot be said that there is a comprehensive strategy. SG100 is not met.

b	Management strategy in place (alternative)			
	Guide post	There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	N/a	N/a	N/a

Rationale

Only scored where there are no requirements for protection and rebuilding provided through national ETP legislation or international agreements.

c	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	Yes	Yes	No

Rationale

Elasmobranchs (19 scoring elements - see PI 2.3.1 for complete list): Since the shark regulations were adopted in the Cook Islands, MMR reports a good level of compliance by the UoA as demonstrated by the observer reports provided during the initial assessment and at subsequent surveillances. On this basis, there is an objective basis for confidence that the strategy will work for the elasmobranch species concerned and that SG60 and SG80 are met. The evidence base is not sufficiently comprehensive, however, to provide high confidence, especially in the absence of more detailed data on post-release survival. SG100 is not met.

In this context, the team made one recommendation: a large number of pelagic stingrays are caught in this fishery, and while highly unlikely to have population-level impacts, it is recommended that a review of on-board handling and release practices, and if possible, post-release survivability is carried out so that the effectiveness of the strategy can be determined with greater confidence.

Sea turtles (5 scoring elements - see PI 2.3.1 for complete list): Within the framework of the Common Oceans (ABNJ) Tuna Project, a series of workshops were held on sea turtle mitigation effectiveness (ABNJ, 2017b). The workshops found that options to mitigate threats from longline fisheries to sea turtles vary by species and life-stage but generally involve avoiding preferred habitat, altering the attraction to bait and gear, and reducing the sea turtles' propensity to ingest or entangle in gear. There have been many experiments investigating one or more of these aspects and results from different fisheries and conditions are sometimes contradictory. However, most of the evidence suggests that circle hooks, particularly those which have large minimum widths and are large relative to mouth size of susceptible sea turtles, can reduce hooking interactions or mortality or both. Use of finfish bait, rather than squid bait, is also a promising mitigation technique. (note that both mitigation techniques are in use by the UoA). Avoiding preferred habitat has potential as a mitigation option but in many cases what constitutes preferred habitat is difficult to understand or predict, especially when related to dynamic oceanographic variables. There is therefore an objective basis for confidence that the strategy will work for sea turtles and SG60 and SG80 are met. In the absence of a quantitative analysis for the UoA specifically, SG100 is not met.

Cetaceans (false killer whale): the fact that cetaceans are unlikely to be a problem for pelagic longline fisheries and the low level of reported interactions with this fishery provides an objective basis for confidence that the strategy will work. SG80 is therefore met. In the absence of more robust observer data, SG100 is not met.

d	Management strategy implementation		
	Guide post		There is some evidence that the measures/strategy is being implemented successfully.
	Met?		Yes
			There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
			No

Rationale

All ETP species: during the initial assessment and at subsequent surveillances, non-compliance by the UoA fleet was not a cause for concern in this fishery. The observer coverage, together with the Cook Islands' MCS system provides some evidence that the strategies are being implemented successfully. Furthermore, in its first year of certification, the UoA fishery commenced a training programme, the objectives of which were developed in collaboration with MMR staff during a workshop held in August 2014. The purpose of the workshop was to augment the capacity of Cook Islands government and longline fishing company staff to lead workshops for captains of longline vessels that fish in the Cook Islands EEZ. A refresher train-the-trainer workshop was again conducted in April 2016 in Zhoushan, China to train LTFV staff who train fishing base managers to instruct captains of pelagic longline tuna vessels that are based out of the Federated States of Micronesia, Republic of the Marshall Islands and Cook Islands. The aim of the workshops is to provide longline captains with an improved understanding of:

- Cook Islands rules for longline vessel operators
- how to properly complete government logbook forms
- how to use a guide to identify catch to the species level, to augment the rigor of logbook records
- prescribed methods to handle and release sea turtles, sharks, rays, cetaceans and seabirds to maximize the probability of their survival after release, and
- LTFV Venture company policy restricting gear and fishing methods and prohibiting the retention of sharks, including shark fins.

On a recurring basis, two kinds of training are now taking place: the Crew Capacity-Building Training and the NOAA Dolphin Safe Training Program Training. The training covers the following:

- Domestic longline regulations;
- Company policy banning the use of gear designs to target sharks and banning the retention of sharks and rays, including shark fins;
- Best practice methods to handle and release at-risk species, including sharks, rays, marine mammals, sea turtles and seabirds;
- Use of prescribed handling and release equipment to safely release at-risk species;
- Completing logsheets, including training in species identification to improve logsheet data quality;
- Implementation of garbage management plans; and
- NOAA Dolphin Safe Training.

SG60 and SG80 are met. However, as long as the observer coverage for this fishery cannot be considered comprehensive, SG100 is not met.

e	Review of alternative measures to minimize mortality of ETP species			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	Yes	Yes	No

Rationale

All ETP species: UoA vessels participate in research activities on bycatch mitigation, including on hook size selectivity and ecological risk assessments. A study that carried out aboard the UoA vessels (although in FSM waters) was Gilman, E., Chaloupka, M., Musyl, M. 2018. Effects of pelagic longline hook size on species- and size-selectivity and survival. *Reviews in Fish Biology and Fisheries* 28: 417-433. <https://doi.org/10.1007/s11160-017-9509-7>. And although in RMI waters, the following study was also carried out in cooperation with the client fleet: Gilman, E., Owens, M., Kraft, T. 2014. Ecological risk assessment of the Marshall Islands longline tuna fishery. *Marine Policy* 44: 239-255. The fishery in the Cook Islands EEZ benefits from these reviews as many of the bycatch issues are similar (e.g. Sieben et al. (2018b)).

At the annual meeting of the WCPFC Scientific Committee, the Ecosystem and Bycatch Mitigation Theme exists to do precisely this. Working and information papers presented to SC15 (2019) included the following:

EB-WP-01: Report of the Workshop on Joint Analysis of Shark Post-Release Mortality Tagging Results

EB-WP-02: Progress on the WCPFC stock assessments and shark research plan

EB-WP-03: Project 68: Estimation of seabird mortality across the WCPFC Convention Area

EB-WP-04: Quantifying post release mortality rates of sharks incidentally captured in Pacific tuna longline fisheries and identifying handling practices to improve survivorship

EB-WP-07: Report of the Final Global Seabird Bycatch Assessment Workshop

EB-WP-10: Safe handling and release guidelines for seabirds

EB-IP-01: An update on the Bycatch Management Information System (BMIS): developments in 2018-19 including the integration of data visualisation and mapping for bycatch data

EB-IP-02: Graphics for Best Handling Practices for the Safe Release of Sharks

EB-IP-03: ACAP advice for reducing the impact of pelagic longline fishing operations on seabirds

As a consequence of *inter alia* the above bycatch mitigation studies, WCPFC CMMs are regularly revised to include best practice. For example the Commission agreed to adopt CMM 2018-03 Conservation and Management Measure for Mitigating Impacts of Fishing on Seabirds, which replaced CMM 2017-06 and CMM 2015-03 before that. This revision was largely based on WCPFC14-2017-DP05 Proposed changes to CMM 2015-03 in regards the seabird mitigation requirements (Rev 1). CMM 2017-04 Conservation and Management Measure on Marine Pollution was also adopted following proposal WCPFC14- 2017-DP15 to limit marine pollution from fishing vessels, including abandoned, lost or otherwise discarded fishing gear. For sea turtles, CMM 2018-04 was adopted at WCPFC15 following the advancements in best practices and technologies to avoid interactions and/or reduce the severity of interactions with sea turtles, through scientific studies including WCPFC and Common Oceans (ABNJ) Tuna Project workshops (2016) on the Joint Analysis of Sea Turtle Mitigation Effectiveness (ABNJ, 2017b), which indicate that the use of large circle hooks and fish bait, independently and together, reduce the rate of interaction and significantly decreases sea turtle bycatch. Note that the work carried out by Client Representative Eric Gilman

(and for which the client fleet featured as study subject) directly fed into the ABNJ sea turtle bycatch mitigation workshop (ABNJ, 2017b) and the Workshop on WCPFC Bycatch Mitigation Problem-Solving (ABNJ, 2018b).

The client fleet has also implemented a rolling, yearly training program for their vessel crew on matters such as improving ETP species post-release survival and identification, based on best available advice, and on waste management.

The potential effectiveness and practicality of alternative measures to minimise UoA-related mortality on ETP species are reviewed on an annual basis through the various instruments cited above (either at regional level, through WCPFC or projects such as ABNJ, or at client level) and are implemented as appropriate, either at regional level through CMMs (which are then adopted by the Cook Islands and must be implemented by the UoA) or at UoA level through the annual training programme. SG60 and SG80 are met. SG100 is not met because it is not clear that there is a biennial review of all ETP species.

References

CMM 2007-01, CMM 2010-07, CMM 2013-08, CMM 2011-04, CMM-2018-04, CMM 2018-03, CMM 2017-04

Marine Resources (Shark Conservation) Regulations 2012

Client Group policy on shark finning, waste management plan

Cook Islands NPOAs sharks and turtles

ABNJ (2017b), Filippi et al. (2010) and Gilman (2015)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
Condition number (if relevant)	N/a

Scoring table 27. PI 2.3.3 – ETP species information

PI 2.3.3	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			
Scoring Issue	SG 60	SG 80	SG 100	
a	Information adequacy for assessment of impacts			
	Guide post	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.	Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	Yes	No	No

Rationale

All ETP scoring elements: Some quantitative information is available from observer reports and through self-reporting in logbooks (for sharks only, see Sieben and Daxboeck (2019)), enabling UoA related mortality and the impact on the ETP populations concerned to be estimated. SG60 is met. However, as already explained in Section 6.7.2 and PI 2.3.1, the team noted a likely decline in observer coverage over the course of the certificate, as well as potential issues with the quality of the observer data for some years. While it is clear that the Cook Islands have been taking a proactive approach towards achieving sufficient observer coverage aboard Cook Islands flagged vessels, it may be that this has come at the expense of foreign flagged vessels including those in the UoA where coverage appears to have declined. Therefore, the team concluded that the information available may not be sufficiently adequate both in terms of coverage and data quality, to meet SG80.

b	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage the impacts on ETP species.	Information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	Yes	Yes	No

Rationale

The observer data made available since the initial assessment, and the consistency in trends derived from those data (see Sieben and Daxboeck (2017, 2019), Sieben and Gascoigne (2016)), combined with information from studies on similar fisheries (e.g. Gilman et al. (2015)) or risk assessments (e.g. Filippi et al. (2010)) are adequate to measure trends and support a strategy to manage impacts on ETP species. SG60 and SG80 are met. The observer data cannot be considered comprehensive, however, and so SG100 is not met.

References

Observer data (Table 25), Filippi et al. (2010), Gilman et al. (2015), Sieben and Daxboeck (2017, 2019), Sieben and Gascoigne (2016)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	70
Condition number (if relevant)	8

Scoring table 28. PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scoring Issue	SG 60	SG 80	SG 100	
a	Commonly encountered habitat status			
	Guide post	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	Yes	Yes

Rationale

The longline fishery takes place in deep water and is highly unlikely to interact with benthic features. The gear impact on the water column (the commonly encountered habitat in this assessment) is considered negligible. Gear loss may consist of monofilament and/or hooks with lost gear only likely to continue to fish as long as bait remains on the hooks. Bait is stripped relatively quickly off the hooks and as such, the mortality rate associated to lost longlines is low (Macfadyen et al., 2009). SG60, SG80 and SG100 are therefore met.

b	VME habitat status			
	Guide post	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	N/a	N/a	N/a

Rationale

This fishery does not interact with VMEs. Not relevant.

c	Minor habitat status	
	Guide post	There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?	Yes

Rationale

As above. Met.

References

Macfadyen et al. (2009); Client interviews

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	100
Condition number (if relevant)	N/a

Scoring table 29. PI 2.4.2 – Habitats management strategy

PI 2.4.2		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		
Scoring Issue	SG 60	SG 80	SG 100	
a	Management strategy in place			
	Guide post	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Yes	Yes	No

Rationale

Considering that this fishery is extremely unlikely to impact benthic habitats, the term ‘if necessary’ applies here and management measures should not be required. SG60 and 80 are therefore met by default. Although gear loss is monitored to some degree (the number of hooks supplied per trip is known), this is not a strategy specifically aimed at to managing the impacts of the fishery on habitat types (either directly or through ghost fishing), as required by MSC for a score of 100. SG100 is therefore not met.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	Yes	Yes	Yes

Rationale

The ‘partial strategy’ is the nature of the fishery (pelagic only); there is therefore high confidence that it works, based on information directly about the gear type and deployment. SG60, SG80 and SG100 are met.

c	Management strategy implementation			
	Guide post		There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		Yes	Yes

Rationale

Quantitative evidence such as VMS tracks (viewed by the team during the site visit and at each surveillance audit) and compliance with the 50nm exclusion zones as evidenced by the MMR, demonstrate no impact on benthic habitats. SG80 and SG100 are met.

d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guide post	There is qualitative evidence that the UoA complies with its management requirements to protect VMEs.	There is some quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	N/a	N/a	N/a

Rationale

In the absence of interactions with VMEs (see PI 2.4.1), this issue is not relevant.

References

VMS data viewed at the MMR offices, site visit interviews carried out during the initial assessment and at subsequent surveillances.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	95
Condition number (if relevant)	N/a

Scoring table 30. PI 2.4.3 – Habitats information

PI 2.4.3		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		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	The types and distribution of the main habitats are broadly understood. OR If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. OR If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	Yes	Yes	No

Rationale

The commonly encountered habitat impacted by the fishery is the water column on which the effect of a pelagic longline is negligible. Knowledge of demersal habitats is not relevant to this fishery, so SG60 and SG80 are met by default. SG100 is not met because it does not include a statement about ‘relevant to the scale and intensity of the UoA’.

b	Information adequacy for assessment of impacts			
	Guide post	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	The physical impacts of the gear on all habitats have been quantified fully.

		OR If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	OR If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Yes	Yes	No

Rationale

Since the gear does not interact with habitats, the (lack of) physical impacts on the main habitats are clear. SG60 and SG80 are met. SG100 is not met because there is no study demonstrating that pelagic longlines do not affect the water column (comment added after peer review).

c	Monitoring			
	Guide post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.
	Met?		Yes	No

Rationale

The only commonly encountered habitat is the water column. VMS data and compliance with the 50nm exclusion zones enable any increase in risk to benthic features to be detected. SG80 is met. SG100 is not met because changes in all habitat distributions are not measured over time.

References

VMS data, site visit interviews carried out during the initial assessment and at subsequent surveillances.

[Draft scoring range and information gap indicator added at Announcement Comment Draft Report](#)

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
Condition number (if relevant)	N/a

Scoring table 31. PI 2.5.1 – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guide post	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Yes	Yes	No

Rationale

Section 6.7.7 provides an overview of the South Pacific Subtropical Gyre Province (SPSG) ecosystem where the UoA fishery takes place. Likely ecosystem effects of tuna fisheries and associated analyses (Kitchell et al., 1999, 2006; Schindler et al., 2002; Ward and Myers, 2005; Sibert et al., 2006; Baum and Worm, 2009a; Polovina et al., 2009; Allain et al., 2012; Polovina and Woodworth-Jefcoats, 2013a) are also discussed. The picture that emerges is complex and made even more complex through the ongoing effects of climate change which in itself can act as a driver in trophic control (Baum and Worm, 2009a). It is likely that the tuna longline fishery overall is having some degree of impact on ecosystem structure and functioning through the reduction of predator abundance and subsequent trophic cascade effects, with the trophic food web emerging as a key ecosystem element. It is therefore important to determine how much predator abundance can be altered before cascading effects occur, and whether there are clear thresholds for large-scale ecosystem transformation (Baum and Worm, 2009a). The size-based model developed by Polovina and Woodworth-Jefcoats (2013a) did not suggest any obvious threshold in changes to an ecosystem size structure that could serve as a management target. The team therefore considered biomass of the main target species (albacore, yellowing and bigeye) at the point of recruitment impairment (PRI) to be a suitable trigger, below which irreversible ecosystem impacts might be expected. As is clear from the analysis in Principle 1, none of these stocks are currently below the PRI. Furthermore, at the limited scale of the UoA (compared to the overall catches of the stocks – see Sections 6.4.4, 6.5.3 and 6.6.3 under Principle 1), combined with the low-level impacts on Principle 2 components (see preceding PIs) it is therefore highly unlikely that the fishery under assessment would lead to irreversible ecosystem impacts. On this basis, it is considered highly unlikely that the UoA fishery will disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. SG60 and SG80 are met. There is however limited formal evidence supporting this conclusion, in terms of direct information about the South Pacific Subtropical Gyre Province (SPSG) ecosystem and the impact of longlining upon it. SG100 is thus not met.

References

McKechnie, Pilling, et al. (2017), Vincent et al. (2018), Tremblay-Boyer et al. (2017b) and Tremblay-Boyer et al. (2018); Allain et al. (2012), Kitchell et al. (1999), Baum and Worm (2009a), Kitchell et al. (2006), Polovina et al. (2009), Schindler et al. (2002), Sibert et al. (2006) and Ward and Myers (2005)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
Condition number (if relevant)	N/a

Scoring table 32. PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary, which take into account the potential impacts of the UoA on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
	Met?	Yes	Yes	No

Rationale

The objective of the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean is to ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stocks in the western and central Pacific Ocean in accordance with the 1982 Convention and the Agreement. The Convention sets out to assess the impacts of fishing, other human activities and environmental factors on target stocks, non-target species, and species belonging to the same ecosystem or dependent upon or associated with the target stocks (Article 5), to encourage and promote cooperation in scientific research, (...), in order to improve information on highly migratory fish stocks, non-target species, and species belonging to the same ecosystem or associated with or dependent upon such stocks in the Convention Area (Article 12) and to conduct assessments of highly migratory fish stocks, non-target species, and species belonging to the same ecosystem or associated with or dependent upon such stocks, within the Convention Area (Article 13). Although tuna fisheries remain managed on a single-species basis, the Convention is explicit in all binding CMMs including on highly migratory fish species through CMM 2015-02 on South Pacific albacore, CMM-2018-01 and the updated workplan for the adoption of Harvest strategies under CMM 2014-06 on the management of bigeye, yellowfin and skipjack, as well as for the management of non-target species (see rationales presented in PIs 2.1.2, 2.2.2 and 2.3.2). The team considered that all the CMMs in conjunction with the national legislation at Cook Islands level (in particular in relation to sharks) and UoA-level management constituted at least a partial strategy and that SG60 and SG80 are therefore met. Management measures remain, however, species-specific with little consideration for an ecosystem-based approach that consists of a plan. SG100 is not met.

b	Management strategy evaluation			
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	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is some objective basis for confidence that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	Testing supports high confidence that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	Yes	Yes	No

Rationale

The WCPFC and national measures which form the partial strategy all take into account the available information with the expectation that impacts on the ecosystem are restrained; i.e. the low level of UoA catches of the main target species (albacore, yellowfin and bigeye) compared to the overall catches of these stocks, as well as the low impacts on Principle 2 components provide some objective basis for confidence that the partial strategy will work. SG60 and SG80 are therefore met. Testing at UoA level has not been carried out, however, so SG100 is not met.

c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Yes	No

Rationale

At regional level, the partial strategy has so far succeeded in maintaining target species above PRI level (see Sections 6.4.4, 6.5.3 and 6.6.3) and at UoA level, the fishery's impacts are considered highly unlikely to hinder recovery of any of the ecosystem components considered. There is therefore some evidence that the partial strategy is being implemented successfully. There is however insufficient evidence on key ecosystem indicators to inform on all measures with a high degree of certainty. SG80 is met but not SG100.

References

CMM-2018-01, CMM 2014-06, CMM 2007-01, CMM 2010-07, CMM 2013-08, CMM 2011-04, CMM-2018-04, CMM 2018-03, CMM 2017-04

McKechnie, Pilling, et al. (2017), Vincent et al. (2018), Tremblay-Boyer et al. (2017b), Tremblay-Boyer et al. (2018) and Allain et al. (2011)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
Condition number (if relevant)	N/a

Scoring table 33. PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Yes	Yes	

Rationale

The key elements of the ecosystem are broadly understood when the main features of the ecosystem and their major inter-relationships can be specified (MSC Standard v.201). There is ongoing work to collect detailed data on the structure of the Pacific Ocean pelagic ecosystem, e.g. through observer programs (e.g. bycatch composition and quantities), trophic analyses (e.g. stomach contents, stable isotopes), mid-trophic level sampling (e.g. acoustics and net sampling of micronekton and zooplankton), behavioural analyses (tagging of a range of species), tagging studies (e.g. through the ABNJ Tuna Project). This information is thought to be adequate to broadly understand the key elements of the ecosystem, with particular relevance to understanding the trophic linkages within the ecosystem. SG60 and SG80 are met.

b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail.
	Met?	Yes	Yes	No

Rationale

Trophic structure of pelagic ecosystems in the Pacific, including the WCPO, has been characterised using Ecopath and Ecosim models based on diet data. The dynamic system model SEAPODYM, is a model developed for investigating spatial tuna population dynamics, under the influence of both fishing (including UoA datasets) and environmental effects (Lehodey et al., 2013). The continued development and application of the SEAPODYM model to the work of the WCPFC Scientific Committee, is facilitated through Project 62 which affiliates the independently funded work on SEAPODYM into the SC’s work programme (Lehodey et al., 2013). Recent studies are summarised in Nicol and Smith (2016). Although specific modelling for the South Pacific Subtropical Gyre Province (SPSG) does not yet appear to have been carried out, main interactions between the UoA and key ecosystem elements (i.e. trophic cascades through predator reduction) can be inferred from existing information, and some have been investigated in detail through the SEAPODYM work. SG60 and SG80 are met. SG100 is not met because main interactions between the UoA and non-key ecosystem elements have not all been investigated in detail.

c	Understanding of component functions		
	Guide post	The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood.
	Met?	Yes	No

Rationale

Information on target and non-target species (bycatch and ETP species) is gathered by the SPC through logbook data and its regional observer programme. The available information is managed by the Bycatch mitigation information system (BMIS) which acts as a reference and educational tool that supports the WCPFC’s responsibilities with regard to the sustainable management of non-target, or bycatch, species in WCPO fisheries targeting highly migratory species, including tuna and billfish (Fitzsimmons, 2011). Furthermore, the Kobe By-catch Technical Working Group (KBTWG) was established in 2009 with the aim of supporting, streamlining, and seeking to harmonize the by-catch related activities of Ecosystems/By-catch working groups across RFMOs and feeding its findings through to those RFMOs (in this framework, a Joint t-RFMOs FADs Working Group took place in April 2017). Furthermore, the ABNJ Tuna Project aims to achieve responsible, efficient and sustainable tuna production and biodiversity conservation through: (i) supporting the use of sustainable and efficient fishing practices by the stakeholders of the tuna resources; (ii) reducing illegal, unreported and unregulated fishing; and (iii) mitigating adverse impacts of bycatch on biodiversity. The project is partly funded by the Global Environment Facility (GEF) and has a total budget of about US\$178 million. In the WCPFC work on this project has focused on *inter alia* collecting integrated bycatch data on sharks from the WCPFC and IATTC regions, carrying out a t-RFMO shark data inventory and data improvement field studies, including tagging; preparing an assessment methods catalogue for sharks for one ocean basin with results made available globally, four additional species assessments (including species risk assessments) and promoting the use of results for priority setting and development of robust pan-Pacific Conservation and Management Measures; and collating and disseminating new information on mitigation of impacts to bycatch species, thereby reducing technical uncertainties across a range of stakeholders allowing t-RFMO discussions to focus on management issues such as cost and feasibility.

The team considered that sufficient information is being gathered to understand the main functions of the ecosystem components. SG80 is therefore met. There remains, however, uncertainty as to the fishery's impacts on those components due to issues with observer coverage not being comprehensive. SG100 is thus not met.

d	Information relevance		
	Guide post	Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?	Yes	No

Rationale

For the same reasons given is SIc, SG80 is met but not SG100.

e	Monitoring		
	Guide post	Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?	Yes	No

Rationale

Logbook and observer data are sufficient to detect any changes which might have ecosystem impacts; e.g. changes in rates of bycatch. SG80 is met. Since there is not something that could be formally defined as an ecosystem management strategy (as yet), SG100 is not met.

References

Fitzsimmons (2011) and Lehodey et al. (2013); for the status of individual stocks see references in PI's 1.1.1, 2.1.1 and 2.3.1.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
Condition number (if relevant)	N/a

6.8 Principle 3

6.8.1 Jurisdictions

The fishery under assessment operates within the EEZ of the Cook Islands. The fishery targets albacore, yellowfin and bigeye, which are highly migratory fish stocks. The stocks fall under the jurisdiction of WCPFC (and to some extent IATTC in the case of albacore; see Section 6.4.1) while the development and management of the marine resources within the EEZ falls under the jurisdiction of the Cook Islands Ministry of Marine Resources (MMR). The key components of the fisheries management framework are as follows:

- At the regional level: the Western and Central Pacific Fisheries Commission (WCPFC) is the Regional Fishery Management Organisation (RFMO) within the Western and Central Pacific Ocean (WCPO) responsible for managing tuna and other highly migratory fish stocks and provides the overarching regional management framework of tuna longline fisheries in the WCPFC Convention Area.
- At the sub-regional level: the consolidation of, or subset of WCPFC member states comprising the Forum Fisheries Agency (FFA), which includes the Cook Islands; and
- At the national level: the management systems of the Cook Islands where the UoA operates.

The overarching management of the fisheries in the region is, however, still underpinned by the United Nations Convention on the Law of the Sea 1982 (UNCLOS - entry into force in 1994) and the UN Fish Stocks Agreement 1995 (UNFSA). Therefore, all States that are signatories in the area must also abide by these two international instruments.

6.8.2 Regional Governance Framework

6.8.2.1 Western and Central Pacific Fisheries Commission (WCPFC)

The WCPFC was established under the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western Central Pacific Ocean (2000) and entered into force on June 19, 2004. It is a multilateral agreement having the primary objective of providing for the long-term conservation and sustainable use of highly migratory fish stocks in the WCPO. The WCPFC is the most recently established and largest of the tuna RFMOs, with over half of the world's tuna catch taken within the Convention Area. These stocks include tunas, billfish and other species listed in Annex I of the 1982 UN Convention, but not sauries (Art. 3.3 of the Convention).

The WCPFC Convention follows closely the provisions of the UNFSA, including in particular:

- The objective of ensuring the long-term conservation and sustainable use of highly migratory fish stocks (Article 2);
- The general principles in Article 5 of the UNFSA including the application of the precautionary approach, incorporating the UNFSA Annex II Guidelines for The Application of Precautionary Reference Points (Article 5);
- The application of these principles by Parties in their cooperation under the Convention, including the application of these principles in areas under national jurisdiction (Article 7);

- Compatibility of measures established for the high seas and those adopted for areas under national jurisdiction (Article 8);
- Application of the dispute settlement provisions of the UN Fish Stocks Agreement to disputes between WCPFC Members (Article 31); and
- Recognition of the interests of small scale and artisanal fishers, and of communities and small island states dependent for their food and livelihoods on tuna resources. (Article 30).

The legal framework for fishery management in the WCPO has been analysed by Miller et al. (2014). The authors concluded that the legal framework provided the WCPFC with the tools to manage tuna and tuna-like species sustainably. The WCPFC has incorporated some of the most progressive provisions from other international treaties in its Convention, and it has adopted numerous CMMs based on the requirements of the Convention.

The Commission has 26 Members, of which most are small island developing states (SIDS). All major coastal and fishing states in the WCPO are Members, except for Vietnam. Current members are: Australia, Canada, People's Republic of China, Cook Islands, European Union, Federated States of Micronesia, Fiji, France, Indonesia, Japan, Kiribati, Republic of Korea, Republic of Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Chinese Taipei, Tonga, Tuvalu, United States of America and Vanuatu. Participating Territories are: American Samoa, Commonwealth of the Northern Mariana Islands, French Polynesia, Guam, New Caledonia, Tokelau and Wallis and Futuna. Several other states are granted cooperating non-member (CNM) status on an annual basis. As CNMs, they participate as observers and agree to comply with WCPFC measures in return for being authorised to allow their vessels to operate in the WCPO, within set limits. CNM status requests have been approved for Ecuador, El Salvador, Liberia, Panama, Thailand and Vietnam for 2019.

The Commission and its subsidiary bodies are regularly reviewed and the overall findings considered at Plenary meetings of the Commission (by WCPFC10, Performance review of the Commission WCPFC10-2013-14, 25 November 2013, 70 pp., by WCPFC11-2014-IP07, 5 November 2014, 86 pp.) using FAO criteria (see Szigeti and Lugten (2015)). These reviews resulted in significant numbers of recommendations, many of which have now been addressed. The executive director also reports annually to the Commission (WCPFC15-2018-04, 4 May 2019) on progress with addressing outstanding recommendations of the reviews, including the development of a Commission Strategic Plan (Draft dated 16 November 2016 but extended through 2018) and a Corporate Plan (still in Draft since 2016 (WCPFC15-2018-29) with extension to WCPFC16 2019). For the most recent report see WCPFC15-2018). An independent review of the Commission's science structure and functions was conducted in 2008 (MRAG, 2008), resulting in overhauling of the operation of the Scientific Committee, and adoption of a peer review process and other changes to the data and science functions. SC15 again endorsed a process for a multi-year schedule for independent review of stock assessments.

The subsidiary bodies of the Commission (Figure 36) provide extensive, detailed reports to the Commission (see for example WCPFC (2019b)), which include a range of specific advice and recommendations for full Commission consideration. Decision-making is open, with the process, outcomes and basis for decisions recorded in detail in minutes of Commission sessions and publicly available papers. Consensus is the general rule for decision-making by Commission Members during their annual meetings. If consensus cannot be reached, voting, grounds for appealing decisions,

conciliation and review are all part of the established decision-making process, as described in Article 20 of the Convention. If a vote is invoked by the Chair, Participating Territories cannot participate.

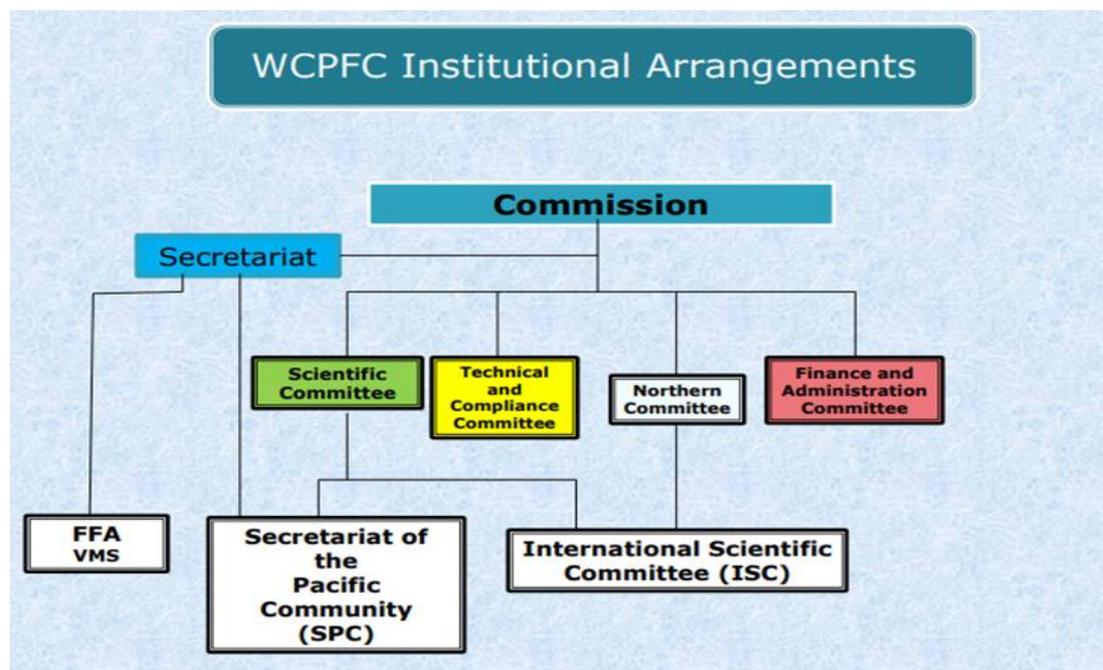


Figure 36. WCPFC Institutional Arrangements (Source: Presentation by Feleti P. Teo, WCPFC Executive Director, 15th INFOFISH World Tuna Conference: Sustainable Tuna Stocks in the western central Pacific Ocean. Bangkok 28 – 30 May 2018).

The roles and responsibilities of WCPFC members are clearly described in the Convention, especially Articles 23 and 24, the Commission Rules of Procedure, conservation and management measures (CMMs), and other Commission rules and decisions, including the Rules for Scientific Data to be Provided to the Commission, and the Rules and Procedures for Access to and Dissemination of Data Compiled by the Commission. In addition to Member participation, the WCPFC allows participation by non-members and territories (Article 44 and Annex 1), with opportunities for CNMs, and allows observers to participate in meetings of the Commission and its subsidiary bodies, including the Scientific Committee (SC), the Technical and Compliance Committee (TCC) and the Finance and Administration Committee. As part of the conditions for CNM status, applicants are required to annually provide “a commitment to cooperate fully in the implementation of conservation and management measures adopted by the Commission and to ensure that fishing vessels flying its flag and fishing in the Convention Area and, to the greatest extent possible, its nationals, comply with the provisions of the Convention and conservation and management measures adopted by the Commission.” (CMM-2009-11, para 2b.).

Records of Commission meetings show that the Commission takes a wide range of advice and inputs from its subsidiary bodies, members and observers before implementing decisions, including the adoption of CMMs. Scientific advice clearly identifies the extent to which different sources of information have been taken into account. Progressive records of the Scientific Committee and the Commission provide a comprehensive record of the degree to which scientific advice has been incorporated into management decisions.

6.8.2.2 Scientific Committee

The WCPFC Convention requires the Scientific Committee (SC) to “recommend to the Commission a research plan, including specific issues and items to be addressed by the scientific experts or by other organisations or individuals, as appropriate, and identify data needs and coordinate activities that meet those needs”. A WCPFC Strategic Research Plan (SRP) 2017–2019 was adopted by the SC at SC12 and approved by consensus at the WCPFC in 2016. The Plan is substantially directed towards providing information to enable the Commission to avoid overfishing or depletion of targeted stocks and the application of an ecosystem approach. However, the implementation process in the Plan is also designed to contribute to improving governance and policy, through the development of management information tools such as Management Strategy Evaluation (MSE) and the development of relevant scientific and technical capacities in developing country Commission members. MSE involves using simulation to compare the relative effectiveness of different combinations of data collection schemes, methods of analysis, and subsequent processes leading to management actions, for achieving management objectives. MSE can be used to identify a ‘best’ management strategy among a set of candidate strategies, or to determine how well an existing strategy performs. MSE is at the interface between science and policy.

6.8.2.3 Technical and Compliance Committee

The Compliance Monitoring Scheme (CMM 2017-07) entered into effect on 6 February 2018 and was to remain in effect until 10 February 2021, but was replaced by CMM 2018-07 by the Commission at WCPFC15, December 2018. The Technical and Compliance Committee (TCC) is the primary group responsible to the WCPFC for reporting and dealing with CCM compliance with the WCPFC CMMs and allied measures. The purpose of the WCPFC Compliance Monitoring Scheme as outlined in CMM 2018-07, is: “to ensure that Members, Cooperating Non-Members and Participating Territories (CCMs) implement and comply with obligations arising under the Convention and conservation and management measures (CMMs) adopted by the Commission.”

The Compliance Monitoring Scheme (CMS) is designed to:

- Assess CCMs’ compliance with their obligations;
- Identify areas in which technical assistance or capacity building may be needed to assist CCMs to attain compliance;
- Identify aspects of conservation and management measures which may require refinement or amendment for effective implementation;
- Respond to non-compliance through remedial options that include a range of possible responses that take account of the reason for and degree of non-compliance, and include cooperative capacity-building initiatives and, in case of serious non-compliance, such penalties and other actions as may be necessary and appropriate to promote compliance with CMMs and other Commission obligations; and
- Monitor and resolve outstanding instances of non-compliance.
- The TCC annual reports (e.g. WCPFC (2018b)) provide detailed breakdowns of the WCPFC compliance performance, referencing all pertinent CMMs and any other issues raised.

Thus, the WCPFC recognises and uses information from its subsidiary bodies, members and observers before implementing decisions, including the adoption of CMMs. Scientific advice clearly identifies the

extent to which different sources of information have been considered. These bodies also include the FFA and the SPC.

6.8.2.4 The Pacific Islands Forum Fisheries Agency (FFA)

Based in Honiara, Solomon Islands, the FFA is an expertise-based organisation providing advice, technical assistance and other support to its members who make sovereign decisions about their fisheries resources and participate in regional decision making on tuna management through organisations such as the WCPFC. The FFA was established under the South Pacific Forum Fisheries Agency Convention and the governing body is the Forum Fisheries Committee (FFC). The FFA has seventeen members: Australia, Federated States of Micronesia, Fiji, Kiribati, Cook Islands, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu. The FFA is responsible, through the FFC (French Polynesia is a member of the FFC but only observer to FFA), for updating and harmonising the Minimum Terms and Conditions (MTCs) for fisheries access throughout the Pacific region (FFA 2016). MTCs are given national effect through vessel licensing conditions or by incorporation into national law as appropriate.

Within the overall FFA programmes, the fisheries management programme is designed to assist FFA Members to refine and maintain effective policy and legal frameworks for the sustainable management of the shared tuna fisheries resources of the region by providing advice on:

- Appropriate legal frameworks for national tuna management, including members' obligations under various treaties and arrangements;
- Appropriate fisheries management frameworks including the incorporation of the principles of ecosystem based fisheries management;
- Effective fisheries administration, including access arrangements, licensing of foreign and domestic fishing vessels, economic implications of different management systems, and the use of new systems and technologies;
- Development and implementation of monitoring, control and surveillance systems and effective compliance regimes; and provides these services assisting members to keep abreast of best practice fisheries management models, and develop stronger and deeper regional cooperation in fisheries management;
- Providing effective oversight, and where appropriate management of a regional vessel register, vessel monitoring system, and observer program (including for US vessels; and
- Servicing regional fisheries treaties and arrangements; and improving capacity in fisheries management.

Two key instruments in the implementation of this programme are:

1. The Regional Tuna Management and Development Strategy, and
2. The Regional Monitoring Control and Surveillance Strategy (MCS).

FFA maintains databases on regional VMS, licensing, vessel register, violations and prosecutions. Over-flight surveillance is provided by France, US, Australia, and New Zealand (QUAD – Quadralateral Defence Coordinating Group). The FFA secretariat also supports the WCPFC regional Vessel Monitoring System (VMS), providing establishment, maintenance, diagnostic and support infrastructure and services, automatic location communicator (ALC) management services and communication gateways for the Commission VMS, along with training for Commission staff.

The FFA commissions independent external review of its performance (see Review Report May 2017) in addition, to “supplement the existing processes that the Forum Fisheries Committee (FFC) and its Audit Committee use to assess routine performance” and to provide “forward-looking... comment on future needs”. The FFC/FFA has also commissioned a Strategic Plan (2014 – 2020) to identify and structure the way forward to 2020 and beyond. A new Report is in preparation to chart the course for FFA to maintain sustainable tuna fisheries over the next ten years. It was to be presented at the FFC Ministerial meeting by the July 2019 due date. Consultants were to use SWOT Analysis (Strengths, Weaknesses, Opportunities and Threats).

The FFA members, noting that south Pacific countries had become frustrated by the lack of action at the WCPFC level on albacore, chose to develop their own national in-zone catch-based management scheme. The Tokelau Agreement for the Management of the South Pacific Albacore Fishery, with text agreed to at SC-SPTBF17, October 2014, and later signed by Ministers of countries concerned (Tokelau, Vanuatu, Australia, Cook Islands, New Zealand, Niue, Samoa, Tonga, Tuvalu, Fiji and Solomon Islands), abrogated the Te Vaka Moana Initiative for the management of the south Pacific albacore fishery.

6.8.2.5 The FFC Sub-Committee on South Pacific Tuna and Billfish (Southern Committee)

The Southern Committee makes recommendations on issues including the management of southern tunas (including albacore) and billfish to FFC for approval. Their work plan encompasses or has proposed projects that include third-party certification, MCS, management/policy, research & analytical work (e.g. characterisation of the longline fishery, bio-economic analyses).

Membership of the Southern Committee comprises: Australia, Cook Islands, Fiji, New Zealand, PNG, Samoa, Solomon Islands, Tonga, Tokelau, Tuvalu and Vanuatu. Kiribati, New Caledonia, French Polynesia, American Samoa and Western Pacific Regional Fishery Management Council are permanent observers and FFA members are observers.

A number of the FFA proposals on albacore, swordfish, striped marlin, sharks etc., relevant to the fishery under certification, originate from the Southern Committee (SC) including proposals for a revised south Pacific albacore CMM, shark CMM and ‘eastern pocket’ closure.

6.8.2.6 Parties to the Nauru Agreement (PNA)

The Nauru Agreement is a binding Treaty-level instrument considered to be a sub-regional or regional fisheries management arrangement, within FFA, for the purpose UNFSA 1995 and WCPFC. It is an agreement among eight Pacific Island countries to facilitate cooperation in the management of fisheries resources of common interest. The focus of PNA efforts to sustainably manage the purse seine fishery within PNA EEZs is the Vessel Day Scheme (VDS), which was introduced in 2005 to replace the former limit on the number of purse seine fishing licences, which was set at 205. PNA has also implemented a VDS for longline vessels (see reference above Section 6.3.9). The Cook Islands is not a member of the PNA, but has nonetheless instituted its own VDS under the Marine Resources (Purse Seine Fishery) Regulations 2013. In addition, the Cook Islands have operationalized a Quota Management System on January 1, 2017 for bigeye and yellowfin, instead of opting into a LL VDS.

6.8.2.7 The Pacific Community, formerly called Secretariat of the Pacific Community (SPC)

Based in Noumea, New Caledonia, the Pacific Community, which retained the acronym SPC, was founded in 1947 as the South Pacific Commission. It is an intergovernmental organisation that provides technical and policy advice to its members. SPC has 26 member countries and territories, including American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji, France, French

Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Pitcairn Islands, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, United States of America, Vanuatu and Wallis and Futuna.

The Oceanic Fisheries Programme (OFP) within the SPC Division of Fisheries, Aquaculture and Marine Ecosystems (FAME) provides Pacific Island members of SPC with scientific information and advice necessary to rationally manage fisheries exploiting the region's resources of tuna, billfish and related species. The OFP also is, under contract, the scientific service provider to the Commission, as allowed for under Article 13 of the Convention. The OFP has three sections:

1. **Statistics and Monitoring:** including compilation of catch and effort data, data processing and technical support for port sampling programmes and observer programmes in member countries and territories, training in fisheries statistics and database management, statistical analyses and the provision of statistical support to the WCPFC;
2. **Tuna Ecology and Biology:** including analysis of the biological parameters and environmental processes that influence the productivity of tuna and billfish populations, focusing on age and growth, movement and behaviour as observed from classical or electronic data archiving tags, and diet in a more general study devoted to the food web of the pelagic ecosystem; and development of mathematical models to understand environmental determinants of tuna fishery production, including impacts of climate fluctuation;
3. **Stock Assessment and Modelling:** including regional stock assessments for the WCPFC, development of tuna movement and simulation models, bioeconomic modelling, and scientific input to national tuna management plans and support for national EAFM analyses, tag-recapture database management. Confidential (to SPC and national governments) National Tuna Fisheries Status Reports are also produced.

6.8.2.8 The Pacific Islands Tuna Industry Association (PITIA)

The Pacific Islands Tuna Industry Association (PITIA) is an association of associations with membership consisting of the Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu.

With its membership covering 14 Pacific Island countries and several national industry associations, PITIA provides information and services to its members to encourage information and engagement of industry in key policy decisions affecting their businesses.

Specific objectives of PITIA, as laid out in the Founding Agreement of 2004, include:

- Providing a united voice for the Forum Island Countries' domestic tuna fishing and associated industries;
- Facilitating and encouraging the promotion of the economically and biologically sustainable use of tuna and tuna-related resources by Forum Island Countries' domestic tuna fishing and associated industries in the region; and
- Undertaking, coordinating and promoting liaison and negotiations with national, regional and international bodies and other entities having an interest in or an effect on the fishing or associated industries of the Forum Island Countries.

PITIA is very active in the regional tuna fishery and attends regional meetings (FFC, WCPFC, etc.) to represent the interests of its members.

6.8.3 National legal and customary framework

The primary purpose of the overarching Cook Islands Marae Moana Act (2017) is to protect and conserve the ecological, biodiversity and heritage values of the Cook Islands marine environment. The roles and actions of the Ministry of Marine Resources are an integral part of this, including fisheries activities.

High Seas fishing not being included in the Unit of Assessment, the Principle 3 assessment considers only the 'in-zone' element of the regional management framework, including WCPFC CMMs, regional cooperation via FFA and other organisations and the Cook Islands management system for their EEZ. High seas fisheries management is not considered.

The main fisheries law of the Cook Islands is the Marine Resources Act 2005 which comprised 10 Parts and 2 Schedules. After more than six years of reviews and consultation, a new Bill was to update and replace the current Marine Resources Act 2005. A preliminary first Draft was presented to Parliament in 2017. This Draft Bill was later retracted for further review and consultation. It is now scheduled to be re-tabled to Parliament for action during the first quarter of 2020. At the moment, the Draft Bill (2017) comprises thirteen Parts and 2 Schedules (see below).

- Part 1: Fisheries conservation and management
- Part 2: Specific prohibitions – new proposed Part in lieu of Fishing and related activities
- Part 3: Marine reserves and parks – new proposed Part in lieu of Conservation measures
- Part 4: Development and management of fisheries and aquaculture – newly proposed Part
- Part 5: Licensing – Part 4 jfor 2005 Act
- Part 6: Distant water fisheries – new proposed Part in lieu of Jurisdiction and evidence (moved to Part 11)
- Part 7: Port measures – new proposed Part in lieu of Sale, release and forfeiture of retained property (moved to Part 12)
- Part 8: Processing and export – new proposed Part in lieu of Miscellaneous
- Part 9: Monitoring, control and surveillance – new proposed Part in lieu of Regulations
- Part 10: Administrative penalties – new proposed Part in lieu of General (moved to Part 13)
- Part 11: Jurisdiction and evidence
- Part 12: Sale, release, and forfeiture of retained property
- Part 13: General

Some of the important and distinguishing features of the Draft Act include the following provisions:

The Ministry of Marine Resources (MMR) still has the principal function of, and authority for, the conservation, management, and development of the living and non-living resources in the fishery waters in accordance with this Act and the Ministry of Marine Resources Act 1984. Under part 4 of a Draft 2020 Marine Resources Act, the Executive Council can declare a fishery as a designated fishery where, having regard to scientific, social, economic, environmental and other relevant considerations, it is determined that such fishery: (a) is important to the national interest; and (b) requires management measures for ensuring sustainable use of the fishery resource. A fishery plan for the

management of each designated fishery in the fishery waters is to be prepared by the Secretary, and kept under review. Each fishery plan shall:

- Identify and address trends in the biological, economic, and social characteristics of the fishery;
- Address how the fishery or category of fishery is to be managed using precautionary and ecosystem approaches to fisheries;
- Identify the target and other fish stocks, fisheries management units, and management objectives for the fishery or category of fisheries;
- Address the proposed conservation, management, and development measures to be applied to the fishery or class of fisheries, having regard to the performance of historical measures;
- Describe the processes and indicators for management and measuring management performance, and;
- Make provision in relation to any other matter necessary for sustainable use of fishery resources.

The management measures in such plans have the full force and effect of regulations promulgated under the Act. However, the development of CMMs occurs at the Commission level, with implementation through national legislation.

Cook Islands has also taken a comprehensive approach in legislation to the protection of non-target species under the Marine Resources (Large Pelagic Longline Fishery and Quota Management) Regulations (2016). Cook Islands has promulgated National Plans of Action (NPOAs) to protect seabirds, sea turtles, sharks and recently for cetaceans. Regulations under these NPOAs must also be complied with at all times.

6.8.4 Stakeholders

6.8.4.1 The Cook Islands Government

Through a range of legislations/regulations, the Cook Islands Government manages the tuna fishery under the auspices of the MMR. The Government does not have a direct commercial interest in the fishery in a strict business/partnership sense, but it does collect revenues from access license fees and thus manages access to commercial operators using vessels over 10m via its licensing regime.

6.8.4.2 The commercial sector

The commercial sector comprises a few “domestic” vessels, but mostly foreign vessels, including the client fishing enterprise. Owing to a lack of infrastructure and logistics, there is no significant processing sector in the Cook Islands, other than one larger locally-based company (Blue Pacific), which processes product for sale in the local market and specifically to its associated restaurants in Rarotonga. The Government is still keen to grow the processing sector and the Act and Regulations would allow preferential access to the fishery for companies which land locally and can demonstrate investment in local processing infrastructure.

6.8.4.3 Non-government organisations (NGOs)

There is an active environmental NGO community with an interest in the Cook Islands and broader regional tuna fishery. Two locally based environmental NGOs (eNGOs) are particularly active in advocating for conservation and management issues in the fishery. These are the Pacific Islands Conservation Initiative Trust (PICI) and Te Ipukarea Society. Issues of particular interest to these groups are compliance with the shark sanctuary and transparency with respect to vessel licensing. Both groups continue to be identified as local stakeholders and have contributed comments during the initial assessment and surveillance audits for this fishery.

At the regional level, a number of international eNGOs are active advocates in issues associated with the fishery and include the following: World Wildlife Fund for Nature (WWF), Greenpeace Australia Pacific, the Pew Environmental Group, Shark Advocates International and Birdlife International. Several 'coalition' NGOs are identified stakeholders in the fishery. These are: i) The International Seafood Sustainability Foundation (ISSF), which has taken an active interest in initiatives for third party accreditation of tuna fisheries. The ISSF is a global partnership of scientists, tuna processors and environmental NGOs that works with RFMOs to undertake science-based initiatives for the long-term conservation and sustainable use of tuna stocks, reducing bycatch and promoting a healthy marine ecosystem, and ii) The Fishing and Living Initiative™ (see www.fishing-living.org), a collaboration between Anova Food (LLC), USAID, WWF and governments at all levels established to promote sustainable fishing and enhanced living conditions for communities engaged in the fishing industry. Fishing and Living promote the use of Fishery Improvement Programmes (FIPs) to address conditions that arise from MSC assessment.

6.8.4.4 The small-scale/artisanal sector

Artisanal and community fishers were formally represented by the Cook Islands Fishing Association (CIFA), an umbrella national association made up of member associations of individual islands and representing artisanal community fishers. The CIFA was directly concerned with the interaction between the UoA fishery and the artisanal sector. This association participated at a national policy level advocating for and representing the interests of small scale and artisanal fishers in Rarotonga and the outer islands (especially outer island member associations). Through assistance provided by FFA/SPC, the CIFA actively participated in regional forums on small-scale fisheries development discussion (e.g. the FAO Pacific Islands Regional Consultation on the Development of Guidelines for Securing Sustainable Small-Scale Fisheries (SSF). This Association remained much more active up until 2014, having even been supported financially in part by funding through MMR. In recent years this artisanal Association has become much less active, but not totally inactive (A. Jones 2019, pers. comm., D. Beer, President CIFA, pers. comm.). Many of these artisanal fishers are also members of several fishing clubs and they do have their own fishing competitions in addition to normal fishing activities. Since 2018, MMR has funded an annual fuel subsidy to partially offset the high cost of operations and encourage participation in artisanal fisheries' data submissions to MMR, via a small fisheries Grant scheme, with funding coming from a Fisheries Development fee charged to all longline vessels, as one condition of an EEZ access license.

6.8.5 P3 Performance Indicator scores and rationales

Scoring table 34. PI 3.1.1 – Legal and/or customary framework

PI 3.1.1	The management system exists within an appropriate 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			
Scoring Issue	SG 60	SG 80	SG 100	
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Yes	Yes	Yes

Rationale

Cook Islands

Cook Islands has a well-developed national legal system, which closely reflects that of New Zealand and most other English Common Law jurisdictions. A comprehensive national legal framework governing the work of MMR and regulating fisheries is provided through the 2005 Fisheries Act, replaced by the 2017/2019 Marine Resources Bill and numerous Acts and Regulations. The Cook Islands ratified UNCLOS II (1982) as of 15 February 1995 and the UN Fish Stocks Agreement on 1 April 1999, which also adopts the FAO Code of Conduct for Responsible Fisheries (1995), including the Compliance Agreement. These treaties/agreements are consistent with the current international fisheries laws and standards for the management of highly migratory species and ecosystems. As a member to the Honolulu Convention (creating WCPFC), Cook Islands have committed to adherence to WCPFC and have written codified processes for giving legal effect to CMMs developed at the Commission as outlined above in Section 6.8.2 despite still being categorized as a SIDS. This framework provides mechanisms for cooperation for Principle 1 and 2 (e.g. CMMs for other migratory fish species, sharks, turtles, etc.), as well as for research on issues concerning ecosystems (via SPC and the Scientific Committee (SC) of WCPFC). The Cook Islands has also developed a Tuna Fishery Management Plan which largely captures and recognises the ecosystem aspects of their fishery. On the basis of the above there is evidence that there is an effective

national legal system with organised and effective cooperation between parties on the principles associated with stock management and ecosystem-based management such that SG60 and SG80 are met. To meet SG100 there needs to be binding procedures governing cooperation with other parties. In their review of the PNA management system, Blyth-Skyrme et al. (2018) suggested that “bound” could be defined as “committed to”, such that Cook Islands committed to implementation of conservation and management measures of sub-regional and regional organisations and international treaties that are consistent with MSC P1 and P2. Therefore, SG100 is met.

Regional

Specific provisions for straddling stocks and highly migratory fish stock are spelled out in UNCLOS (1982) in Articles 63 and 64. These require that “states cooperate directly or through appropriate international organisations with a view to ensuring conservation and promoting the objective of optimal utilisation...” of these stocks. Through Articles 118 and 119, States are also required to cooperate in conservation and management of high seas stocks, through development of catch limits, using the best available scientific evidence. Also recognised is the need to rebuild stocks determined to be overfished and to manage fishing impacts on non-target stocks.

The UNSFA (1995 – entry into force 11 December 2001) is the implementing Agreement of UNCLOS and thus specifies roles, responsibilities and requirements with respect to managing straddling and highly migratory fish stocks. Article 8 again requires States to cooperate “to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks through effective implementation of the relevant provisions of the Convention” is achieved.

The WCPFC is the first RFMO established after the UNFSA entered into force. As such, it extensively incorporates all key provisions of the UNFSA while still reflecting WCPO environmental, political, socio-economic and geographical specificities. Functioning of the WCPF Convention is implemented through CMMs, and since all Commission CCMs are legally bound to implement all obligations under the Convention in their domestic law, management outcomes are consistent with MSC Principles 1 and 2. Within the Convention there are also mechanisms for cooperation specifically for Principle 2 species (e.g. CMMS for other tuna species, sharks, turtles etc.), as well as for research for issues such as ecosystems (via SPC and the Scientific Committee of WCPFC).

Effective regional cooperation occurs via SPC and directly via FFA (for PNA see below). Through the SPC, regionally (and sub-regionally) supported management initiatives are developed and promoted at the WCPFC level. Support for management outcomes is provided through:

- The collection and sharing of scientific data via an in-country logbook and observer programme;
- Regular stock assessments carried out by SPC;
- The development and consideration of scientific advice, primarily through the Scientific Committee of the WCPF Commission;
- Agreement on matters of common interest between states fishing for skipjack and yellowfin, initially at PNA level, the FFA/FFC and ultimately promoted via the full WCPF Commission; and
- Regional MCS initiatives, including the regional VMS, VDS and vessel register.

Further cooperation in the management of fisheries resources of common interest is afforded through the Nauru Agreement. This is another regional, treaty-level fisheries management structure, established in the 1980s, to manage tuna stocks within national waters of the Parties to the Nauru Agreement (PNA): Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu. The Agreement primarily focuses on:

- Developing strategic fisheries conservation and management initiatives to improve the sustainability of tuna stocks in their waters;

- Developing initiatives to maximise sustained direct and indirect economic benefits to the Parties; and
- Maximising profitability of the fishery and ancillary industries within the PNA member countries.

Each member state has an effective national legal system requiring implementation of management measures for tuna fisheries that are compatible with decisions on stock management and ecosystem-based management made at the PNA and WCPFC respectively. There is effective cooperation to deliver management outcomes consistent with MSC Principles 1 and 2 as further evidenced by language in the 3rd Implementing Arrangement of the Nauru Agreement. This 3rd Arrangement presents arguments for the effectiveness of the implemented measures in reducing fishing mortality on juvenile bigeye and yellowfin tuna. It also outlines the extent to which compatible measures are being applied on the high seas and in the waters of other WCPFC CCMs, who are not PNA members.

While providing for the development of cooperative and compatible regional fisheries management approaches, this framework of cooperation also effectively overcomes the capacity and resource constraints perhaps facing some PICTs' national fisheries management authorities. Cooperation through SPC and the WCPFC has allowed for the development and to some extent implementation of sustainable management arrangements for the tuna fishery as required under the obligations of UNCLOS Articles 63(1 & 2), 64 and UNFSA Article 8. The work of SPC as the science provider and the Commission as coordinating secretariat provides a strong framework for cooperation as required under UNFSA Article 10 (in reference to RFMOs). On the basis of the above, there is an effective local level system and effective binding procedures for regional cooperation, such that SG60, SG80 and SG100 are met.

b	Resolution of disputes			
	Guide post	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
	Met?	Yes	Yes	No

Rationale

Cook Islands

The Cook Islands has an institutional Arbitration Act (2009) which has the following purposes, to:

1. Encourage the use of arbitration as an agreed method of resolving commercial and other disputes;
2. Promote international consistency of arbitral regimes based on the Model Law on International Commercial Arbitration adopted by the United Nations Commission on International Trade Law on the 21st day of June 1985;

3. Promote consistency between the international and domestic arbitral regimes in the Cook Islands;
4. Re-define and clarify the limits of judicial review of the arbitral process and of arbitral awards;
5. Facilitate the recognition and enforcement of arbitration agreements and arbitral awards; and
6. Give effect to the obligations of the Government of the Cook Islands under the Convention on the Recognition and Enforcement of Foreign Arbitral Awards (1958).

These transparent mechanisms under the Arbitration Act for the resolution of legal disputes in the Cook Islands are considered effective in dealing with disputes such that SG60 and SG80 are met but there is no evidence they have been tested so the national system does not meet SG100.

WCPFC

There are three mechanisms for dealing with legal disputes at the regional/international level. First, disputes can be dealt with at WCPFC annual meetings through consultation and conciliation with the members. Second, disputes may be resolved through constituting an appropriately composed review panel. As set out in WCPFC Section 6, Article 20(4): “Where this Convention expressly provides that a decision on a proposal shall be taken by consensus and the Chairman determines that there would be an objection to such proposal, the Commission may appoint a conciliator for the purpose of reconciling the differences in order to achieve consensus on the matter”, and 20(6) where: “A member which has voted against a decision or which was absent during the meeting at which the decision was made may, within 30 days of the adoption of the decision by the Commission, seek a review of the decision by a review panel constituted in accordance with the procedures set out in Annex II to this Convention” on specified grounds. Third, disputes might also be resolved through either the International Court of Justice (ICJ) or the International Tribunal for the Law of the Sea. Within the WCPFC, but also for any other RFMO, the first two mechanisms should be preferentially used before invoking the third alternative. It should be noted that the WCPFC has not been subject to any court challenges as of 2017.

There are thus both the national flag state and the WCPFC management systems available for potential dispute resolution. The WCPFC system would be of most relevance in such situations since it develops and implements binding CMMs and these are required to be transcribed into domestic legislation. Most fisheries-related disputes would normally focus on individual vessels not abiding by national law and enforcement would become a domestic issue. Thus, it would probably be inappropriate that dispute resolution for international fisheries use national-level mechanisms. The WCPFC dispute resolution mechanism is set out in Article 31 of the Convention which, *grasso modo*, implements the dispute settlement arrangements in the Part VIII, Article 30 of the UNFSA and binds all WCPFC CCMs to those arrangements. These arrangements also replicate provisions of Part XV of UNCLOS. The UNFSA/UNCLOS dispute settlement mechanism also applies to the Nauru Agreement, the Palau Arrangements and the VDS in Article 8 for issues related to the purse seine fishery, since all Parties to these Agreements have ratified both UNCLOS and the UNFSA.

The WCPFC has a consensus-based decision-making process as its primary preferred modus operandi. A voting process, without voting rights for Participating Territories, requiring a 75% majority of both SIDS and DWFN members, is available if all efforts to reach a decision by consensus have been exhausted. This alternative decision-making process was recently invoked at WCPFC12 (2016) over implementation of a CMM, which was blocked by only one member country, thus provoking the call for a vote (the first time in Commission history). However, reason apparently prevailed and consensus was achieved at the 11th hour of the last day of the meeting.

The Commission is required to promote transparency in its decision-making processes and other activities under Article 21 of the Convention, such that independent observers, including IGOs and NGO can participate in committee and commission meetings and are able to observe discussions. Article 21 specifically states that: “Such intergovernmental organisations and non-governmental organisations shall be given timely access to pertinent information subject to the rules and procedures which the Commission may adopt”. Observers are also allowed to make presentations to members, subject to approval by the Chairperson. However, not all sessions of all meetings are open to observers.

The WCPFC does have well-defined arrangements for consideration of proposals prior to decisions being taken. Decisions can take the form of binding Conservation and Management Measures (CMMs) or non-binding Resolutions. Commission meetings are held annually and are supported by annual Scientific Committee and Technical and Compliance Committee meetings. Member and observers can attend these meetings but may not be able to participate in all sessions.

This suggests that the WCPFC dispute mechanism is transparent and is considered effective in dealing with most issues such that SG60 and SG80 are met. However, the effectiveness of the other informal WCPFC mechanisms is not evident and it could be that some disputes remain “in limbo” rather than being resolved. Thus, it is considered that dispute mechanisms have not really been tested, such that SG100 is not met.

c	Respect for rights			
	Guide post	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system 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.
	Met?	Yes	Yes	Yes

Rationale

Cook Islands

Within the Marine Resources Act (2005) as promulgated by the Parliament of the Cook Islands, there is a provision for “sustainable use” meaning conserving, using, enhancing and developing marine resources to enable people (“Cook Islander” means a person belonging to the part of the Polynesian race indigenous to the Cook Islands and is ordinarily resident in the Cook Islands and includes any permanent resident as defined in the Entry Residence and Departure Act 1971-72 who is ordinarily resident in the Cook Islands) to provide for their social, economic and cultural wellbeing, while:

1. Maintaining the potential of marine resources to meet the reasonably foreseeable needs of future generations; and
2. Avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment.

Within this Act is the provision of development of a “fishery plan” for the conservation, management and development of fisheries implemented pursuant to section 6 of this Act. In addition, the Marae Moana Act (2017) accentuates the notion of “respect for rights” in more general terms of application.

On this basis the core fisheries management system (and subsequent Acts and Bills) has mechanisms which give formal commitment to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood such that SG60, SG80 and SG100 are met.

WCPFC

At the regional level, the WCPFC Convention provides for the recognition of the interests of small-scale and artisanal fishers with the overall framework for sustainability in the WCPFC Convention. For example, under Article 5 the Convention states that “in order to conserve and manage highly migratory fish stocks in the Convention area.... the members of the Commission shall... (h) take into account the interests of artisanal and subsistence fishers”. Under Article 10, paragraph 3, the Convention States that “in developing criteria for allocation of the total allowable catch or total allowable effort the Commission shall take into account.... (d) the needs of small island developing States and territories and possessions, in the Convention area whose economies, food supplies and livelihoods are overwhelmingly, dependent on the exploitation of marine living resources and (g) the needs of coastal communities which are dependent on the fishing stock.” Furthermore, under Article 30, the Convention specifies that the Commission shall give all recognition to the special requirements of the developing State parties to this Convention, in particular small island developing States, territories and possessions, in particular (b) the need to avoid adverse impacts on and ensure access to fisheries by subsistence, small-scale and artisanal fishers and fish workers as well as indigenous people. On the basis of the above, the team concludes that the management system 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. SG60, SG80 and SG100 are met.

References

UNCLOS; UNFSA; WCPFC Convention; FFA Convention; Nauru Agreement; WCPF Convention Implementation Act; Cook Islands National plans of Action on IUU, Sharks, Sea turtles and Seabirds. and laws; WCPFC Meeting Reports; Cook Islands Arbitration Act 2009; Cook Islands Offshore Fisheries Policy 2013; Cook Islands Marine Resources Act 2005; Cook Islands Marae Moana Act 2017; Blyth-Skyrme et al. (2018) and Medley and Gascoigne (2017)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	95
Condition number (if relevant)	N/a

Scoring table 35. PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2	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			
Scoring Issue	SG 60	SG 80	SG 100	
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Yes	Yes	Yes

Rationale

Cook Islands

In the Cook Islands, organisations and individuals directly involved in the management process and their roles are identified in the 2005 Marine Resources Act. Other interested parties, including eNGOs, commercial entities, charter and recreational fishers have also been identified as demonstrated by engagement with MMR, on a range of management-related issues. There are also regular discussions with bilateral fishing partners licensed to fish in the Cook Islands EEZ. The level of communication suggests that roles and responsibilities are generally well understood. Under the Marine Resources Bill Act (2005) and the Marae Moana Act (2017) most areas of responsibility and interaction, as well as explicit definitions of the roles and responsibilities of CI Government with respect to consultation, including the sectors/stakeholders with whom consultation should occur and means whereby it would happen are now fully spelled out. In addition, regular and consistent attendance at WCPFC meetings (including SC and TCC) by Cook Islands delegations and through regional cooperation at FFC/FFA by the Cooks, has further served to expand understanding of the functions, roles and responsibilities of national jurisdictions and WCPF Commission and the components of the management structure. Therefore, at least SG60 and SG80 are considered to be met. Laws have only recently been promulgated, and more evidence over time would be needed to show that the mandatory committees have been formed and required meetings have been held but roles are still well articulated such that SG100 is considered to be met.

WCPFC

Functions, roles and responsibilities are explicitly defined within the WCPFC. Convention Articles 9 – 16, 23 – 24 and 44 provide information on the functions, roles and responsibilities of CCMs and the committees formed under Commission control (e.g. Scientific Committee and Technical Compliance Committee). The Commission and its associated committees have clear operating procedures and terms of reference and the roles and responsibilities of members and non-members are clearly defined in the Convention, Rules of Procedure and relevant CMMs. WCPFC also cooperates with all relevant sub-regional organisations, (for example: Forum Fishery Agency (FFA), International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC), Secretariat for the Pacific Regional Environment Programme (SPREP), Indian Ocean Tuna Commission (IOTC), Inter-American Tropical Tuna Commission (IATTC), Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), Commission for the Conservation of Southern Bluefin Tuna (CCSBT), Agreement for the Conservation of Albatross and Petrels (ACAP) and North Pacific Anadromous Fish Commission (NPAFC)), whose roles are also well-defined and understood. The Offshore Fisheries Programme (OFP) of the Secretariat of the Pacific Community (SPC) is the scientific service provider of the WCPFC and provides members with scientific support and advice on the status of tuna stocks and other related species. The FFA is an advisory body that provides expertise and technical assistance to member countries and facilitates effective regional cooperation and co-ordination on fisheries policy, management, legal frameworks and MCS and other operational activities. The roles and responsibilities of CCMs and the Commission Secretariat are explicitly defined within the WCPFC Convention and, through the effective administration and outputs of the various committees and other consultative arrangements administered by the Commission, there is clear evidence that roles and responsibilities are well understood such that SG60 and SG80 are met. Although Medley and Gascoigne (2017) deemed that WCPFC still had problems with some Flag States that have not been able to apply every appropriate control to all their vessels, part of the problem may simply be attributed to translation of Convention text (in English) into other languages. However, these problems are not in key areas and do not prevent WCPFC from completing its primary tasks. On the above evidence SG100 is considered to be met.

b	Consultation processes			
	Guide post	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
	Met?	Yes	Yes	No

Rationale

Cook Islands

The Cook Islands Marine Resources Bill (2005) is currently the legal national instrument in force for fishery resource management and the Marine Resources (Large Pelagic Longline Fishery and Quota Management System) Regulations were promulgated in 2016. A Draft Marine Resources Bill (version 2017) was to promulgated July 2018 and would have made provisions for a Fisheries Advisory Committee (FAC) (Section 10) to provide management advice to MMR. The Draft Bill did not stipulate who should be on the FAC, but it was proposed that it include stakeholders from industry and NGOs. The Draft Bill also required the preparation of a fishery plan for any ‘designated fishery’ and required a formal public consultation process in the preparation of a fishery plan. It also required a formal public consultation processes for a quota management system to be put in place and for designation of marine parks and protected areas. However, this Draft Bill was withdrawn from Parliament and will be re-tabled in 2020, after further consultations, review and revision. Nonetheless, the Marae Moana Act (2017) was promulgated and the Longline Quota Management Regulations (2016) are still in effect. Thus, provision for various formal mechanisms by which stakeholders are able to provide management advice to MMR in a transparent and legislated manner are being further codified. The MMR certainly does provide a range of opportunities for affected parties to have input into the management system and there is ample evidence that the Ministry is willing to engage on issues of concern to stakeholders, including bilateral partners and domestic stakeholders. On this basis SG60 is met. There is now some evidence that information obtained is used in formulation of potential management decisions, even in the short period that this law has been in force. For example, there is currently consideration of a request by local LL fishers to grant an exemption from the 50nm area closure around all islands (Marae Moana 2017), back to either 12 or 24nm as in previous regulations, over economic considerations. Meetings with stakeholders and the MMR management system is mostly on an “as needed” basis, but input is sought for matters that may need to be addressed by Cook Islands delegates to important annual meetings of FFA, TCC and WCPFC. Since these annual meetings are scheduled well in advance, there are at least 3 “regular” opportunities afforded yearly for the management system to seek and accept information. Other consultations are mostly ad hoc in nature. Therefore, SG80 is considered met. However, because details on how information is used or not used is not systematically provided and SG100 is therefore not met.

WCPFC

At the regional level, there are extensive formal and informal consultation processes at the WCPFC that regularly seek and accept information from members and cooperating non-members. The Commission is active in assisting and facilitating the regular and timely provision of fisheries data and information for assessment by the Commission secretariat and scientific providers, such as SPC. The Commission actively uses information from the fishery and its member states to inform fisheries management decisions and assist in the formulation of CMMs. This is demonstrated through reports and outcomes of WCPFC meetings, which detail the decision-making process and are readily accessible online. At a regional level, SG60, SG80 and SG100 are met.

c	Participation		
	Guide post	The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?	Yes	No

Rationale

Cook Islands

The Ministry of Marine Resources has increased its social media presence with an active Facebook Policy and presence. Radio Cook Islands News has a regular monthly “The Maroro Show” on Fridays which provides MMR a platform to discuss topics of public interest about the Ministry. In addition, the MMR continues to take out newspaper press releases and send articles to Radio NZ, Pacific Islands News Agency regularly, profiling activities of interest to the greater Pacific community. The Marine Resources Bill as of its 2017 iteration, makes provision for a Fisheries Advisory Committee (FAC) (Section 10) to provide management advice to MMR. The Bill does not stipulate who should be on the FAC, but it is proposed that it include stakeholders from industry and NGOs. The Bill also requires the preparation of a fishery plan for any ‘designated fishery’ and requires a formal public consultation process in the preparation of a fishery plan. It also requires a formal public consultation process before any quota system is put in place and regarding the designation of marine parks and protected areas. It is presumed that the above provisions will remain in whatever revised text is re-tabled to Parliament in 2020. Thus, provision for various formal mechanisms by which stakeholders are able to provide management advice to MMR in a transparent and legislated manner has been codified. Thus, there is implicit opportunity and encouragement for all affected parties to be involved in consultations through submissions to the MMR on various issues. There is also evidence that MMR does facilitate occasional meetings and other engagement with interested and affected parties on matters that play a role in achieving effective engagement. SG60 and SG80 are met, but because this is done on an ad hoc basis rather than systematically, SG100 is not met.

WCPFC

The WCPFC Secretariat facilitates effective engagement by stakeholders. Attendance at Commission and related meetings is comprehensive with logistic and limited financial support provided to Pacific Island Countries and Territories (PICTs) to ensure attendance, meaningful involvement and interaction in the cooperative management of fisheries in the WCPO. Formal arrangements are also in place to facilitate engagement and the opportunity to become a full Member or Co-operating Non-member and are open to all. Registered NGOs and eNGOs (within limits for numbers of delegates) are able to attend meetings as observers and may make verbal presentation and/or written statements, which are included in the official record. As a number of stocks and fisheries are shared with IATTC and the Indian Ocean Tuna Commission (IOTC), there are memoranda of understanding (MOU) in place that govern cooperation. The MOUs establish and maintain consultation, cooperation and collaboration in respect of matters of common interest, including the exchange of data and information, scientific research and conservation and management measures for stocks and species of mutual interest (Medley and Gascoigne, 2017). The respective Secretariats also encourage representatives at each other’s meetings where appropriate, as well as facilitating WCPFC-IATTC consultative meetings. Therefore, there is sufficient evidence that, at the international level, WCPFC meets at least SG60, SG80 and SG100.

References

WCPFC, SC and TCC meeting records; WCPFC Rules of Procedure; Cook Islands Marine Resources Act 2005; Cook Islands Marine Resources Act 2005; Draft Marine Resources Bill (2017); Blyth-Skyrme et al. (2018), Gascoigne et al. (2015) and Medley and Gascoigne (2017).

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	60 - 79
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	85
Condition number (if relevant)	N/a

Scoring table 36. PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are explicit within and required by management policy.
	Met?	Yes	Yes	No

Rationale

Cook Islands

The Cook Islands ratified UNCLOS II (1982) as of 15 February 1995 and the UN Fish Stocks Agreement on 1 April 1999, which also adopts the FAO Code of Conduct for Responsible Fisheries (1995), including the Compliance Agreement. These treaties/agreements are consistent with the current international fisheries laws and standards for the management of highly migratory species and ecosystems. As a member to the Honolulu Convention (creating WCPFC), Cook Islands has committed to adherence to WCPFC and have written codified processes for giving legal effect to CMMs developed at the Commission and as such there is already a requirement for the WCPFC to apply the precautionary principle during decision-making. Within the text of the Marae Moana Act (2017), which came into force by the promulgation of the Marine Resources Bill (2017) in July 2018, Part 5(c) states the “the precautionary principle of the Rio Declaration should be applied where there are threats of serious or irreversible damage, and that a lack of full scientific certainty should not be used as a reason for postponing cost effective measures to prevent environmental degradation in accordance with the Cook Islands’ capabilities in the implementation of the marae moana”. Additionally, 5(h) continues with “the principle of ecosystem-based management is that there should be an ecosystem-based approach to the management of natural resources that aims to sustain the health, resilience and diversity of ecosystem of species, while allowing for sustainable use by humans of the goods and services they provide”. Based on this evidence SG60 and SG80 are met as there are clear explicit objectives incorporating the precautionary approach and ecosystem-based management in various Bills and Acts. However, since there is not enough evidence to indicate specifically how the

precautionary and ecosystem approaches to fisheries are concretely used in decision-making as a requirement of management policy, SG100 is deemed not fully met in this instance.

WCPFC

The WCPFC is responsible for decision-making for key management measures, which affect target stocks, non-target species and their ecosystems. Long-term objectives are explicit within the WCPFC Convention. For example, Article 2 specifies that the Commission has the objective to “ensure through effective management, the long-term conservation and sustainable use of highly migratory fish stocks in the WCPO in accordance with the 1982 Convention and Agreement (UNCLOS and UNFSA respectively). Article 5 of the Convention then provides principles and measures for achieving this conservation and management objective. More specifically Article 5(c) requires the Commission to apply the precautionary approach in decision-making and Article 6 outlines the means by which this will be given effect, including through the application of the guidelines set out in Annex II of the UNFSA. Article 10 of the Convention is consistent with MSC P1 and P2 in specifying long term objectives of “maintaining or restoring populations...above levels at which their reproduction may become seriously threatened”. Evidence that these objectives are guiding, or are starting to guide decision-making is provided in various Commission reports and in CMMs. As the WCPFC provides explicit and clear long-term objectives that guide decision-making, including the precautionary approach, SG80 is met. While there is a requirement for the WCPFC to apply the precautionary principle during decision-making it has historically struggled to do so for some stocks, especially bigeye tuna. However, new stock assessments (McKechnie, Pilling, et al., 2017; Vincent et al., 2018) no longer put WCPO bigeye tuna in the overfished/overfishing zone, as previously determined from earlier stock status determinations. This could equally be a function of new information on age and growth, which changes the underlying model, as a real improvement in stock status derived from management action. There is some evidence that fishing mortality may have been reduced in most recent years because the biomass trajectory was downwards throughout the early time series, but most recently has begun to trend upward. And In terms of biomass trajectory, as emphasised in the most recent stock assessments and the Scientific Committee (SC13 and SC14) the trajectory has been consistently downwards over the time series, meaning that the stock has been in the current situation or better. That is to say that the stock is at a level consistent with MSY (i.e. $SB > SB_{MSY}$, $F < F_{MSY}$, $C \sim MSY$). Thus, SG60 and SG80 are met. In relation to SG100, taking the structural uncertainty grid as defined by SC14, there is a probability of approximately 95% that $SB > SB_{MSY}$ and $F < F_{MSY}$, and the stock has been at or above this level over the entire time series. Nonetheless, because it is not clear that the precautionary approach was applied in practice across all policy for all stocks, SG100 is not met.

An overall score of 80 is awarded.

References

UNCLOS; UNFSA; WCPFC Convention; Cook Islands Marine Resources Act 2005; Cook Islands Marine Resources Bill 2017; Cook Islands Marae Moana Act 2017

McKechnie, Pilling, et al. (2017) and Vincent et al. (2018)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
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Information gap indicator	Information sufficient to score PI
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Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
Condition number (if relevant)	N/a

Scoring table 37. PI 3.2.1 – Fishery-specific objectives

PI 3.2.1	The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC’s Principles 1 and 2			
Scoring Issue	SG 60	SG 80	SG 100	
a	Objectives			
	Guide post	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are implicit within the fishery-specific management system.	Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are explicit within the fishery-specific management system.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	Yes	Yes	Partial

Rationale

Cook Islands

The principal objective of the original Marine Resources 2005 Act was to provide for the sustainable use of the living marine resources for the benefit of the people of the Cook Islands. The key long-term objectives are both biological and economic in nature. These included: longer term sustainable use for the benefit of the people of Cook Islands; to develop and maintain economic viability; to develop a domestic fleet and onshore processing; to meet international obligations; and to protect traditional and small scale commercial inshore fishers. The Cook Islands has also explicitly adopted the measures in place for the conservation and management measures agreed at the WCPF Commission for target stocks (i.e. CMM 2018-01 in this case). The 2013 Offshore Fisheries Policy provided additional objectives including sustainable resource management through sound biological principles. There are also explicit long-term objectives in relation to fisheries in the Cook Islands’ EEZ in the Marae Moana Act (2017) and by extension in the Marine Resources Bill, which are consistent with the MSC Standard. Short-term objectives relating to MSC P1 and P2 outcomes can be found in the aforementioned scoring rationales for the WCPFC. Objectives relating to MSC P1 and P2 outcomes are set out in various WCPFC CMMs. As a member to the Honolulu Convention (creating WCPFC), Cook Islands has committed to adherence to WCPFC and have written codified processes for giving legal effect to CMMs as developed at the Commission. Since the Cook Islands has explicit long-term objectives in relevant legislation, and current WCPFC CMMs contain reasonably explicit objectives that allow for evaluation of performance, SG60 and SG80 are met. However, although some CMM objectives are measurable, they are not necessarily well-defined and operational at the WCPFC level, SG100 is met for Principle 1 but not Principle 2.

WCPFC

The management measures applied by the WCPFC are principally “to ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stocks in the western and central Pacific Ocean in accordance with the 1982 United Nations Convention on the Law of the Sea and the 1995 UN Fish Stocks Agreement.” Regional fishery-specific objectives are set out in CMMs, which are regularly reviewed, updated/revised and new ones added. Long-term objectives for WCPFC, covered in PI’s 3.1.1, 3.1.2 and 3.1.3, also require that the specific management system be consistent with fishery objectives (not the strategies) for this PI. Objectives relating to MSC P1 (target) and P2 (non-target) outcomes are endorsed by CCMs as enunciated in CMMs related to target fish stocks (CMM 2018-01; 2015-02; CMM 2015-06), sea turtles (CMM 2008-03), seabirds (CMM2017-06) and sharks (CMM 2014-05; CMM 2013-08; CMM 2011-4; CMM 2010-07). More specifically, CMM 2018-01 for bigeye, yellowfin and skipjack has the following explicit objectives: yellowfin: pending agreement on a target reference point the spawning biomass depletion ration ($SB/SB_{F=0}$) is to be maintained at or above the average for 2012-2015; skipjack: the spawning biomass of skipjack tuna is to be maintained on an average level consistent with the interim target reference point of 50% of the spawning biomass in the absence of fishing, adopted in accordance with CMM 2015-06. Similarly, provisions for swordfish (CMM-2009-03) and other species are designed to maintain current exploitation with the objective for sustainable use, but do not address fisheries development. For CMMs addressing bycatch such as turtles (CMM-2008-03), the objective is to minimise bycatch in the relevant fisheries and return bycatch alive if possible. Bycatch objectives would obviously need to be assessed through the regional observer programme. Juan-Jordá et al. (2018) have pointed out that, while there is a range of CMMs within the WCPFC to manage target species and mitigate the effects of fishing on bycatch species, these have not been linked to pre-agreed operational objectives, associated indicators or reference points, precluding them being activated when pre-defined reference points are exceeded. And, while the Convention emphasises a need to address broader impacts of fishing on species belonging to the same ecosystem affected by fishing, no actual measures have been adopted to minimise such impacts on the trophic relationships and food web structure of marine ecosystems. In summary, because current CMMs in force contain reasonably explicit and specific intentions and objectives and also allow for evaluation of the performance against these objectives, SG60 and SG80 are met. Some aspects of SG100 criteria may be met, with the explicit incorporation of F_{MSY} as a measurable default TRP for skipjack and yellowfin in recent CMMs. This is in the absence of control rules and harvest strategies. However, although broadly measurable, it cannot be concluded that well defined and measurable objectives are applied throughout the fishery-specific management system. Therefore, a partial score of 90 is deemed appropriate.

References

WCPF Convention 2000; WCPFC CMMs - Conservation and Management Measures (CMMs) and Resolutions of the Western Central Pacific Fisheries Commission (WCPFC) Compiled 18 Jan. 2018

Palau Arrangement for implementation of VDS; Cook Islands National FM Bills and Acts; National Plans of Action for the Conservation and Management of Sharks;

Juan-Jordá et al. (2018)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range

≥80

Information gap indicator	Information sufficient to score PI
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Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	90
Condition number (if relevant)	N/a

Scoring table 38. PI 3.2.2 – Decision-making processes

PI 3.2.2	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		
Scoring Issue	SG 60	SG 80	SG 100
a	Decision-making processes		
Guide post	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
Met?	Yes	Yes	

Rationale

Cook Islands

There are clear requirements on decision under the 2005 Marine Resources Act and 2017 Marae Moana Act, which place certain obligations on the Secretary or his delegate in relation to taking decisions on fisheries management measures. The WCPFC effectively sets the arrangements that result in measures and strategies being developed aimed at achieving fishery-specific objectives. These are well documented, and aspects of measures and strategies related to data collection and review, as well as the production and updating of stock assessments are established. Since the Cook Islands is a member to the Honolulu Convention (creating WCPFC), it has committed to adherence to WCPFC and has written codified processes for giving legal effect to Convention rules of procedure and CMMs developed at the Commission. As such there is already a requirement for the established WCPFC decision-making processes to be transparent, as clearly defined in Article 20. An effective sitting government has been in session since July 2018. The Draft Marine Resources Bill (2017), which after 6 years of consultations was to amend and replace the Marine Resources Act (2005), was withdrawn for further consultation and revision. It is scheduled for tabling before Parliament first quarter of 2020. Nonetheless, the Marae Moana Act (2017) was enacted, creating the 50 nm Marine Protected Area around all islands in the Cook Islands EEZ. Therefore, validation of the Rules of Procedure for a “Quota Management Advisory Committee” and the “Quota Management System Allocation Policy” has occurred, with Committee meetings convened. MMR has also held a stakeholder consultation on their Monitoring and Control and Surveillance Plan Gap analysis (October 2018), seeking level of compliance with CMM 2017-07. In contrast with the initial assessment, it appears that information is now more available to stakeholders, and decision-making is more transparent. Therefore, at the national level, there are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. SG60 and SG80 are met.

WCPFC

The WCPFC decision-making processes are transparent and clearly defined in Article 20 of the Convention and Rules of Procedure and allows consideration of serious and important issues through its committees (SC and TCC) as well as at the Commission Plenary itself. These decision-making processes use the precautionary approach and are based on the best available scientific information. The system allows Commission members to be fully informed of the issues under consideration and enables participation in informed decision-making. Information used in decision-making is published and decisions are made by consensus whenever possible. If consensus cannot be reached, then voting becomes necessary (by a 75% majority but without voting rights for Participation Parties and Territories). All CMMs are binding, but resolutions are non-binding on members. There is no opt out procedure, but members may request an independent review of a decision, to ensure it is consistent with the Convention and management objectives. All CMMs apply equally inside EEZs and on the high seas. Flag states enforce management measures on their own vessels and coastal States within their own EEZ. The decision-making processes have therefore resulted in a comprehensive set of CMMs and strategies to achieve the specific objectives for both the longline and purse seine fishery. These are well documented, and aspects of measures and strategies related to data collection and review, as well as the production and updating of stock assessments and relevant management measures and strategies to achieve fishery-specific objectives, are established. Therefore, SG60 and SG80 are met.

b	Responsiveness of decision-making processes			
	Guide post	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	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.	Decision-making processes respond to all 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.
	Met?	Yes	Yes	No

Rationale

Cook Islands

Serious issues in the fishery are generally identified by SPC stock assessment and other reports at the regional level, and addressed through decisions taken under national fisheries legislation. Initially, since only longline fishing was prosecuted in the EEZ, under the Marine Resources Act 2005, Marine Resources (Longline Fishery) Regulations 2008, which incorporates a Longline Fishery Plan, MMR set a vessel cap and a stringent catch monitoring requirement which did provide evidence that the issue of bigeye overfishing (for 2011-2017 as determined by stock assessments) was being addressed, before it was determined that they were not overfished nor was overfishing occurring. Cook Islands is also displaying a responsible level of development of their fisheries for south Pacific albacore as required CMM 2015-02 with annual review of the measure by the Scientific Committee on south Pacific albacore. For non-target species, the issue of shark mortality has resulted in the establishment of the Shark Sanctuary and the banning of wire traces (see Marine Resources (Shark Conservation) Regulations 2012), which has also resulted in good compliance from all fishing sectors. Subsequently,

MMR implemented the Large Pelagic Longline Fishery and Quota Management Regulations (2016) to further address bigeye and albacore tuna stock issues through establishing catch quotas based on historical catch data in the EEZ. Based on the above, SG60 and SG80 are deemed to be met. There is not enough evidence that all identified issues are responded to, which is the requirement for SG100.

WCPFC

WCPFC decision-making processes allow for appropriate consideration of serious and important issues through its committees (SC and TCC) and at the Commission itself. The WCPFC responds to these issues through CMMs and Resolutions and these provide transparent responses to scientific, technical, social, and cultural issues. Stock assessments and studies presented at the SC identify serious issues, such as overfishing of bigeye tuna from 2011 – 2017, at the regional level, using an older assessment model and life history parameters. However, since SC14 (2018), an updated assessment has determined this stock to no longer have an overfished status, nor is overfishing occurring. These determinations were reaffirmed at SC15 (2019). These issues are now being addressed through agreed CMM 2018-01 for example. The system allows Commission members to be fully informed of the issues under consideration and enables participation in informed decision-making. The Commission decision-making is transparent and transparency is a requirement of the Convention (Article 21). The appreciation of the “timeliness” of decision-making is more likely a result of the governance arrangements applying to cooperative regional fisheries management (consensus-based decision-making, annual meetings etc.). So, given the international context, response times are probably “best practice” (Medley and Gascoigne, 2017). The WCPFC responds in a “timely manner” to other important issues in its decision-making such as the adoption of a target reference point (TRP) for south Pacific albacore tuna, as well as continuing to work towards adopting a full Harvest Strategy under a formal Work Plan (CMM 2014-06 – revised at WCPFC16-2019). An updated 2018 assessment indicated the SP albacore stock not to be in an overfished state and overfishing was not taking place (Tremblay-Boyer et al., 2018), and nominal longline CPUE increased in 2017 (Brouwer et al., 2018b). On this basis SG60 and SG80 are met. However, SG100 is not met as it is not clear that all issues are dealt with in a timely manner.

c	Use of precautionary approach	
	Guide post	Decision-making processes use the precautionary approach and are based on best available information.
	Met?	Yes

Rationale

Cook Islands

As early as the Cook Islands Marine Resources Act of 2005 (recently replaced (July 2018)) by the coming into force of the Marine Resources Bill 2019, which carries over and updates provisions of the Marine Resources Act 2005 that are still relevant) specifically states, under Part 1 §4(a)(i) that “decisions should be based on the best scientific

evidence available and be designed to maintain or restore target stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors”; and in 4(a)(ii) that “the precautionary approach should be applied”. Therefore, SG80 is met.

WCPFC

Under provisions of Article 5(c) of the WCPFC Convention the Commission and members are directly or, through the Commission, required to apply the precautionary approach in decision-making. Article 6 further requires the application of the precautionary approach and use of a Scientific Committee to ensure that the Commission obtains the best scientific information available (see Res. 2012-01 - Resolution on the best available science) for its consideration and decision-making. The Convention, in compliance with Annex II of the UNFSA, requires that Commission be more cautious when information is uncertain, unreliable or inadequate and does not use the absence of adequate scientific information as a reason for postponing or failing to take conservation and management measures. In all cases, decisions are required to be based on the best scientific information available. Evidence that WCPFC is attempting to apply the precautionary approach is found in the limitations on the expansion of south Pacific albacore tuna fishery, pending further development of management plans, even where the stock is evaluated to be above the MSY level. There is sufficient information to conclude that decision-making processes are based on the best available information and the precautionary approach. There is however, sufficient information to conclude that decision-making processes for WCPFC are based on the best available information and the precautionary approach, meeting SG80.

d	Accountability and transparency of management system and decision-making process			
	Guide post	Some information on the fishery’s performance and management action is generally available on request to stakeholders.	Information on the fishery’s performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on the fishery’s performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Yes	Yes	No

Rationale

Cook Islands

Cook Islands MMR is responsive to requests for information on the fishery’s performance and management actions. With the operationalization of the Quota Management System, monitoring, evaluation and activity review has certainly improved. The Ministry of Marine Resources still produces Annual Reports which are readily available and downloadable from their site (<http://www.mmr.gov.ck/publications/annual-reports>) along with much more information. With the coming into force of the Marae Moana Act (2017), so too come the 50nm industrial-level fishing closures around all islands in the Cook Islands EEZ. This has led to some concentration of effort in open areas and in

an effort to address perceived adverse effects from fishing operators, MMR had engaged with SPC and FFA to produce scientific reports analysing the potential biological and economic impacts of the closed marine protected areas. Cook Islands in turn responds in a timely manner on performance aspects of the fishery to WCPFC every year. From the above, SG60 and SG80 are met but because formal reporting, linked to all available information, to all interested stakeholders is not evident, SG100 is not.

WCPFC

The WCPFC maintains a publicly accessible website where all meeting minutes, reports and scientific reports from the Commission and its subsidiary bodies are posted and available for download. However, TCC management and compliance issues in country reports (Part 2) remain confidential; only annual summary reports are available. The national and regional websites provide a high level of public access and transparency, showing how scientific information is used to inform management actions, which are then monitored for effectiveness and discussed at the Commission. This level of reporting represents good practice. However, while reports are available, some groups may believe that how all information is used in the decision-making is not reported, but it is difficult to see how the current system could be improved in this respect. Even where doubt is expressed as to how a decision is reached, all information available for the decision-making is published, allowing any stakeholder to draw their own conclusions, and there is frequent feedback from NGOs, scientists and other stakeholders. However, there is no formal, detailed explanation linking the information provided to the resulting decisions. However, to be pragmatic it may be difficult to give full explanations for all decisions in an international arena, since this might undermine co-operation (Medley and Gascoigne, 2017). Decisions are often negotiated outcomes, with the trade-offs not always apparent. With detailed formal public reporting of decisions and information on which those decisions are based, the WCPFC meets SG60 and SG80. However, this falls short of a formal reporting criterion that can be clearly linked to all information available, so SG100 is not met.

e	Approach to disputes			
	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Yes	Yes	No

Rationale

Cook Islands

As outlined in greater detail in 3.1.1 (b) there are mechanisms in place in the Cook Islands to resolve disputes. There is no evidence that the Cook Islands is disrespectful or in defiance of national laws or legally binding agreements at the national level. There are evidence MMR attempts to proactively avoid legal disputes, by inviting industry to work with the Ministry to deal with ongoing issues such suspicion of IUU from false vessel documentation. Although the Arbitration Act may not yet have been invoked, these

transparent mechanisms under this Act for legal disputes are considered effective in dealing with disputes such that SG60 and SG80 are met. But there is no evidence to date that they have been tested, so the national system does not meet SG100.

WCPFC

At the regional level, WCPFC decision-making is based on consensus and therefore to a degree is proactive in avoiding legal disputes. Through this process Cook Islands also has acted proactively at the regional level by incorporating WCPFC CMMs into national legislation. On the basis of the above at least SG60 and SG80 are met but no direct evidence is available to concretely demonstrate that the management system has in fact acted proactively to avoid legal disputes or rapidly implemented judicial decisions arising from legal challenges.

References

WCPFC Convention; WCPFC CMMs and Resolutions; WCPFC SC and TCC meeting records; Cook Islands management plans and NPOAs

Havice and Campling (2010) and Medley and Gascoigne (2017)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	60 - 79
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
Condition number (if relevant)	N/a

Scoring table 39. PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Yes	Yes	No

Rationale

Cook Islands

Cook Islands is required to report against CMMs under the WCPFC Compliance Monitoring Scheme to ensure that it implements and complies with obligations arising under the Convention, including those related to the MCS adopted by the Commission. Reporting occurs under the annual Compliance Monitoring Report. The 2019 Report covering 2018 activities, showed that Cook Islands was 'Compliant'. Cook Islands cooperates extensively with other FFA/FFC members through a comprehensive range of MCS activities, including surveillance overflights by FFA/FFC members Australia, New Zealand as well as France, a regional VMS, regional observer programme, harmonisation of Minimum Terms and Conditions of Access, a Regional Register of fishing vessels and the Agreed Minute of Cooperation (1994) in MCS between the US and FFA member states. The FFA has developed a regional monitoring, control and surveillance strategy, which includes regional cooperation to control fishing in the region. This cooperation ensures Cook Islands' MCS systems are fully integrated with those of other FFA members.

Regional cooperation is also given effect through Cook Islands' use of subsidiary agreements made under the Niue Treaty for Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region. This Treaty is a multilateral treaty of members of the Pacific Islands Forum Fisheries Agency to enhance their ability to effectively enforce their fisheries laws and deter breaches. Cooperation in the collection of fisheries data and analysis on catch, discard and other information important to the effective management of the resources and the fishery is undertaken through cooperation with SPC. Cook Islands also has an MOU arrangement with the NOAA Fisheries covering

compliance cooperation in Pago Pago, American Samoa. MMR has therefore established a Cook Islands Fisheries Field Office (CIFFO) in Pago Pago, which is permanently staffed by two persons to enable an expanded programme of port inspections and debriefing of observers. Charter-arrangement (for 2018 but only foreign-flagged but CI EEZ licenced and domestic fishing vessels are monitored in real-time by the Offshore Division at MMR, which has a state-of-the-art monitoring system generating real-time reporting on all vessels. This Division ensures proper functioning of VMS and operates the fisheries monitoring system (FMS), e-reporting system (daily basis for catch/bycatch and protected species interactions, although some incompatibilities between tablet apps used by Chinese vessels and those used by SPC – will be resolved) and the Cook Islands fisheries information management system (FIMS) on a 24/7 basis (data storage system). This allows detailed fishery and operational data to be sent to RFMOs and monitoring the fleet in real-time, to ensure it is complying with regulations, such as not fishing in protected areas. MMR staff had mentioned that some UoC vessels continue to have electrical/electronic issues with their Inmarsat C VMS units. These problems seem to have been resolved by changing out these units for CLS ARGOS units operating on a new Iridium system. Cook Islands also takes part in high seas boarding and inspection schemes using a modern fisheries patrol vessel. For additional information, on October 18, 2018 the MMR held a stakeholder consultation on the Monitoring and Control and Surveillance Plan Gap analysis. An ability to enforce relevant management measures, strategies and/or rules has been demonstrated. Cook Islands has been successful in pursuing cases of IUU (unlicensed longline and purse seine vessels) as well as shark finning. These cases have resulted in substantial penalties. Given the above information, SG60, SG80 and SG100 are met.

WCPFC

The WCPFC seeks to ensure compliance through mandatory VMS, an IUU vessel list, port state controls, observers (and e-monitoring), logbooks (plus e-reporting), a record of fishing vessels and transshipment monitoring. The WCPFC's Technical and Compliance Committee has codified Port State Measures (CMM 2017-02), chartering arrangements (CMM 2016-05), catch/statistical documentation, the control of nationals and compliance monitoring and reporting. The WCPFC relies heavily upon the IUU vessel listing process as an incentive for compliance. WCPFC has a well-established Compliance Monitoring Scheme (CMS, detailed in CMM 2018-07, which is largely dependent on the submission by members of information in annual (PART 2) country reports. The stated purpose of the CMS is to:

- Assess CCMs' compliance with their obligations;
- Identify areas in which technical assistance or capacity building may be needed to assist CCMs to attain compliance;
- Identify aspects of conservation and management measures which may require refinement or amendment for effective implementation;
- Respond to non-compliance through remedial options that include a range of possible responses that take account of the reason for and degree of non-compliance, and include cooperative capacity-building initiatives and, in case of serious non-compliance, such penalties and other actions as may be necessary and appropriate to promote compliance with CMMs and other Commission obligations; and
- Monitor and resolve outstanding instances of non-compliance.

The regional MCS continues to be supported by the QUAD Operational Working Group, comprising aerial and naval arms of Australia, France, New Zealand and the U.S. They provide aerial and surface assets to assist regional surveillance and participate in four annual coordinated sea surveillance actions. These special operations are strategically timed to focus on potentially high-risk periods such as the four-month purse seine FAD closure. FFA has the responsibility for facilitating the coordination of the surveillance

assets provided by the QUAD nations in support of national and multilateral fishing surveillance and response activities. At the national level, FFA provides policy and services to its members to build national capacity and regional solidarity to control fishing in the Pacific, including IUU activities. As well as VMS, this includes technical expertise, information sharing and projects around monitoring activities, regional surveillance operations, the FFA Observer Programme, FFA licence information and staff training and support. The aforementioned MCS systems include harmonised minimum terms and conditions of access, a regional VMS system, a regional register of foreign fishing vessels and a range of regional MCS cooperation programmes, including the Niue Treaty information system (NTIS), which became operational in May 2017. Regional coordination of MCS is undertaken by the FFA Surveillance Centre (RFSC) operating from Honiara.

Sanctions do exist for non-compliance. Fishers by-and-large comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery. A problem among many tuna fisheries management systems is monitoring transshipment to prevent illegal catch entering the legal market. To this end, at least high seas transshipment is prohibited unless specifically requested and thus notified (CMM 2009-06) and in-port transshipment should be monitored. WCPFC continues to refine its developing Catch Documentation Scheme, which should reduce the opportunities for IUU fishing and complement the vessel register. While at-sea observer (see CMM 2018-05) coverage for purse seine operations at 100% is respected, the requirements of a low 5% coverage for longline vessels under CMM 2007-01 (by June 2012), has historically been difficult to achieve for many States, and ultimately it is Flag State responsibility for any failure to ensure that WCPFC conservation and management measures are implemented. While the WCPFC MCS system has demonstrated to be effective meeting SG60 and SG80, it cannot be demonstrated to have the ability to consistently enforce relevant CMMs, therefore failing to meet SG100.

b	Sanctions			
	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	Yes	Yes	No

Rationale

Cook Islands

MMR staff are confident that the MCS system is robust, represents regional best practice and is providing effective deterrence. Observer reports, logbook data, landings data and VMS tracks, have been available and nothing was found that could signal suspicion of non-compliance with Cook Islands fisheries regulations. A range of sanctions to deal with non-compliance exists and there is evidence that continue to be applied (e.g. Shark Sanctuary regulations through port inspection reports, confidential reports on IUU out-of-court settlements) to unlicensed vessels, including purse seine vessels. There is no credible evidence of non-compliance or non-enforcement of regulations. A decision by the management authority not to issue any penalty for breach of regulation is a very common outcome in fisheries enforcement (e.g. a verbal or written warning

may be issued instead, for failure in the collection of evidence or interpretation/coverage of regulations) and does not automatically lead to the conclusion that the enforcement system is inadequate. While there has been feedback from stakeholders that there have been some irregularities in the application of sanctions, there is no documented evidence that there have been systematic differences in the levels of sanctions introduced for illegal fishing. Similarly, with the concept of consistency as it applies to the level of penalty; decisions on this issue lie within the rights of the management authority, unless prescribed penalties are available in legislation. Under the Draft Marine Resources Bill 2020, the Cook Islands has prescribed administrative penalties in Part 10 §112-115, but settlements can still be reached through negotiation with the offending party, as an alternative to court-based prosecution as in Part 11 §116-143 of this Bill, which is a feature of many MCS systems. Such provisions exist in the actual Marine Resources Act 2005. The Cook Islands, based on information provided during the recent Y4 surveillance audit, continues to successfully prosecute IUU (EEZ “breaches” to Minimum Terms and Conditions of fishing) in the sum of several 10’s of millions of \$NZD. Since sanctions to deal with non-compliance exist, are consistently applied and are thought, based on site visit interviews, to provide effective deterrence, SG60 and SG80 are met. In the absence of a more dedicated review, however, the question remains as to whether they demonstrably provide effective deterrence. Thus, SG100 is concluded to not have been met.

WCPFC

The WCPFC relies largely on the IUU vessel listing process (CMM 2010-06) as an incentive for compliance, along with port state controls, at-sea observers, logbooks, mandatory VMS and transshipment monitoring. Compliance failures by vessels are addressed by the application of the WCPFC IUU listing procedure. It is theoretically possible under the terms and conditions of the Commission language to impose trade sanctions for compliance failures by member States, rather than vessels; to date no such sanctions have been applied against any non-compliant member. The current IUU vessel listing highlights the success of this form of sanctioning in deterring non-compliance as only three fishing vessels remain on the 2015 vessel list and none have been added in the last year or more. At present (as of WCPFC15, December 2018) only three vessels remain on the IUU list (Neptune and Fu Lien No. 1 - Georgian registration and Yu Fong 168 – Chinese Taipei registration). This sanction appears to be consistently applied and provides effective deterrence in relation to proven IUU fishing. The lack of any significant breaches of regulation (as reported out at annual TCC meetings) provides a reasonable level of confidence that the operators are complying with the management system, SG60 and SG80 are met but in the absence of a more dedicated review, SG100 is not met.

c	Compliance			
	Guide post	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	Yes	Yes	No

Rationale

Cook Islands

Logbook data have been supplied according to licence requirements for both purse seine activities and the in-zone charter and domestic longline fleet. This is for both the e-reporting and the hard copy logsheet submissions. The client fleet has a good track record of compliance, with no serious breaches of regulations reported while accessing the CI EEZ. The MMR operate a state-of-the-art Fisheries Monitoring Center (FMC) with real-time VMS reporting on licensed vessels. Reports generated from participation in the Regional Observer Programme add additional confirmation of general compliance with the management system.

Further cooperation in the collection of fisheries data and analysis on catch, discard and other information important to the effective management of the resources and the fishery is undertaken through membership in SPC. Since the Cook Islands has an excellent logbook and VMS data, observer reports, port inspection reports and other information, this provides a suite of information enabling high-quality stock assessments to be undertaken by SPC to support the effective management of the fishery track record of submission of catch and other data to SPC for inclusion in regional stock assessments on which management decisions at national and regional levels are based. Such a degree of cooperation should be viewed as “best practice” for other tuna RFMOs in terms of the longevity and coverage of data and the degree to which this information is used for management purposes. A review of port inspection reports demonstrated a change in the behaviour of in-zone fishery activity in response to enforcement of legislation, especially in regard to the EEZ-wide shark sanctuary (in 2013). Sharks are no longer landed, with no recent reports of non-compliance. The current level of observer coverage (Section 6.7.2) and at-sea/port inspections, and the lack of any significant breaches of regulation provides a reasonable level of confidence that operators are complying with the management system. Therefore, SG60 and SG80 are met. Currently, however, the level of scrutiny is not sufficient to demonstrate that SG100 is met.

WCPFC

All WCPFC members must submit confidential reports to the TCC relating to compliance with all active CMMs. WCPFC TCC has a permanent MCS Working Group, with a role to review and monitor compliance with WCPFC management measures. The working group also recommends measures to promote compatibility among the national fisheries management measures, addressing matters related to compliance with management measures, analyse information on compliance and report the findings to the WCPFC, which will in turn inform the members and non-members. An annual report is produced as part of the compliance review. Identified infringements are reported, but not all fisheries comply and clearly there are some non-compliance issues with some vessels and Flag states, as reported by the TCC. These reports (see TCC13, TCC14 and TCC15 for example) provide tables of compliance/non-compliance of each CCM and PNM with CMMs of the WCPFC, but do not present compliance levels of fishers at a national level. Logbook data are also supplied as part of licence requirements. However, SPC suggests that there are still some inconsistencies in observer data, requiring ongoing checking and verification. VMS and observer reports provide additional evidence of general compliance with the management system. So, the WCPFC has a comprehensive MCS system in place.

Other regional MCS operations support the implementation of WCPFC management system. Such annual operations involve Pacific patrol boats from participating FFA member nations and 'QUAD' nations who offer their defence and military assets to support regional surveillance covering more than 14 million km² of the WCPO. These

operations use vessel detections via radar, and at-sea and in-port vessel boardings. Infringements were centred around non-reporting or misreporting of critical information, and unmarked gear. A very low 3.5% non-compliance rate detected in the 2017 operation provides some evidence that the vast majority of fishers comply with WCPFC management systems. Given the above, SG60 and G80 are deemed to be met, but there is some evidence that the timeliness and quality of data submitted could be improved. At the SG100 level it would be difficult to conclude that there is a high degree of confidence that fishers comply with all aspects of the management system.

d	Systematic non-compliance	
	Guide post	There is no evidence of systematic non-compliance.
	Met?	Yes

Rationale

Cook Islands

During the initial certification cycle and just recently at the Y4 surveillance audit, the team has had opportunities to review and discuss observer reports, logbook data, landings data and VMS tracks (hard copies and live in-house demonstration) with MMR staff. No evidence was found that would lead to a suspicion or conclusion of systematic non-compliance. The MMR has thus confirmed that there is no evidence of systematic non-compliance in the fishery. In addition, no stakeholders provided any evidence of systematic non-compliance that could be substantiated. This scoring issue is met.

WCPFC

Information presented in PI 3.2.3 above suggests that there is no strong evidence of systematic non-compliance. When non-compliance does occur, offences vary from minor (e.g. late submissions of reports) to more serious issues, such as not complying with the conditions of FAD closures or not fully complying with the regional observer programme (e.g. 100% Mandatory observer coverage for purse seine vessels). And despite the fact that not all CCMs can even achieve the “obligatory” 5% observer coverage for longline fishing, increased efforts in increasing %age, including use of EM plus electronic reporting are being made, and thus there is no evidence of systematic non-compliance with CMMs. SG80 is met.

References

CMM 2018-07; WCPFC IUU Vessel List (2018); ISSF (2016), MacKay et al. (2018), WCPFC (2017c, 2018c)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	80
Condition number (if relevant)	N/a

Scoring table 40. PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		There is a system of 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		
Scoring Issue	SG 60	SG 80	SG 100	
a	Evaluation coverage			
	Guide post	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system.	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
	Met?	Yes	Yes	Yes

Rationale

Cook Islands

In 2013, Cook Islands commissioned FFA to undertake a governance review of MMR, the results of which remain confidential to the Ministry. MMR was also reviewed in 2015 as part of the Cook Islands Strategy For The Development Of Statistics 2015 - 2025 through the Cook Islands Statistics Office Ministry of Finance and Economic Management (MFEM). Cook Islands Office of the Prime Minister also has a National Sustainable Development Plan 2016-2020, with Goal 12 stated as “Sustainable management of oceans, lagoons and marine resources.” Progress with implementation of CMMs is monitored through the reporting provisions within the CMMs themselves, specifically the Annual Reports (Part 1 and Part 2) by Cook Island representatives to the Commission. Commission meetings provide an overall review of processes and outcomes. SG60, SG80 and SG100 are met here, since there are mechanisms to evaluate all parts of the fishery-specific management system.

WCPFC

At the regional level, there is a regional annual report developed by the WCPFC Secretariat, which details compliance of members with the reporting provisions of the Commission. An internal review is also conducted by the WCPFC through assessing the implementation and performance of the CMMs through reports of member countries to the Commission and stock assessments. This allows Commission meetings to provide an overall review of key processes and outcomes. Stock assessments undertaken by SPC are also subject to peer-review and external review to ensure that the scientific processes remain robust. On the basis of the above, SG60, SG80 and SG100 are met.

b	Internal and/or external review			
	Guide post	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	Yes	Yes	No

Rationale

Cook Islands

In 2013, Cook Islands commissioned FFA to undertake a governance review of MMR, the results of which remain confidential to the Ministry. The MMR also has an annual performance rating report. Annual performance reviews are conducted by the Public Service Commissioner under Section 3, Article 3.2 (g) of the Public Service Act (2009). The Commissioner is appointed by the Queen’s Representative on the advice of the Prime Minister (Article 73, Cook Islands Constitution). Annual reports (Part 1 to SSC and Part 2 to TC) are provided to the Commission by the Secretariat on compliance of members with the reporting provisions of the Commission. Internal performance reviews are annual requirement and some aspects of the management system could be deemed as being externally reviewed through the Commission process. There has been “independent” external performance review of the MMR but it is not clear where there is any commitment to such reviews being regular. Therefore, SG60 and SG80 are met, but SG100 is not met.

WCPFC

Although the WCPFC does not have a regular programme of external reviews, independent performance reviews were undertaken in 2011 and in 2014, consistent with the Kobe Course of Actions. As a result, the Commission established several working groups to address the different recommendations of the reports, which can be found on the WCPFC website. Also, independent reviews (MRAG, 2008; MRAGAsiaPacific, 2016) have also been conducted of the Commission’s science and TCC structure and functions, resulting in overhauling of their operations and adoption of review processes and other changes to the data submissions and science functions. In 2017, there was an Independent Review of the Compliance Monitoring Scheme (MacKay et al., 2018) which assessed CCMs’ compliance with their obligations; identified areas that required capacity building and technical assistance; identified aspects of CMMs that need to be amended or refined and responded to non-compliance through remedial options. The WCPFC does have a regular programme of internal review. For example, CMMs are reviewed and updated as per a pre-determined review schedule (e.g. CMM 2018-07), which is not limited to specific parts but can include all aspects of the management system (e.g. compliance, science, management). Evidence presented to support this process include the submission of the WCPFC Secretariat reports on compliance (and IUU) of its members with the reporting provisions of the Commission (CMM 2018-07). All tuna RFMOs have also been subject to occasional external review with regard to assessing risk (stock assessments) as well as overall management performance (e.g. Medley and Gascoigne (2017), Medley et al. (2019) and Powers and Medley (2017)). There has been external performance review of the WCPFC but it is not clear that there is a commitment to such reviews being regular. Therefore, SG60 and SG80 are met, but SG100 is not met.

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Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (“WCPFC Convention”); Medley and Gascoigne (2017), Medley et al. (2019), Powers and Medley (2017), WCPFC (2018a, 2019b); Cook Islands Public Service Act 2009.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	90
Condition number (if relevant)	N/a

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8 Appendices

Appendix 1 Assessment information

Appendix 1.1 Previous assessments

The SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore longline fishery was certified on the 9th June 2015. The initial assessment team consisted of Dr Jo Gascoigne (Team Leader, Principle 1), Dale Kolody (Principle 1), Chrissie Sieben (Principle 2) and Ian Cartwright (Principle 3). The site visit for the assessment took place in Cairns, Australia in December 2013, simultaneously with WCPFC10, and in Rarotonga, Cook Islands in February 2014. The initial assessment was conducted in accordance with the MSC Certification Requirements v1.3.

Based on the number and nature of conditions to which the certification is subject, a surveillance level of 6 was awarded in accordance with the MSC FCR v2.0 (7.23.2). Level 6 is the maximum level of surveillance, requiring 4 annual on-site visits.

A scope extension for the addition of yellowfin and new client groups to the certificate was completed on the 27th February 2017. The scope extension was carried out following an expedited assessment undertaken at the same time as the Year 1 surveillance audit in Rarotonga. The assessment team consisted of Chrissie Sieben (Team Leader, Principle 2) and Dr Jo Gascoigne (Principle 1).

The year 2 and 3 surveillance audit team consisted of Chrissie Sieben (Team Leader) and Charles Daxboeck, with the on-site audit held at the MMR offices Rarotonga, Cook Islands from 12 to 13 September 2017, and 25 to 26 September 2018.

The year 4 surveillance audit team consisted of Chrissie Sieben (Team Leader), Charles Daxboeck and Jo Gascoigne. C. Sieben and C. Daxboeck attended the on-site visit while J. Gascoigne participated remotely. The audit took place at the MMR offices in Rarotonga, Cook Islands from 11 to 12 November 2019. An additional meeting was organised with Te Ipukarea Society staff at their offices, on the 12th November 2019. The audit was carried out in accordance with the MSC Fisheries Certification Procedure v2.1 for procedure and Annex CB of the MSC CR v1.3 for scoring. In addition to the Year 4 surveillance, the team carried out a rescoring of Principle 1 for both yellowfin and albacore against the MSC Standard v2.01. This is in accordance with a previously accepted CAB-wide Variation Request (VR). The VR and corresponding MSC response can be viewed here, under 'General Fishery Documents': <https://fisheries.msc.org/en/fisheries/szlc-csfc-fzlc-cook-islands-eez-south-pacific-albacore-yellowfin-longline/@@assessments>.

Table 33. Summary of previous assessment conditions. *Condition and milestones to be brought in line with other WCPFC fisheries. Please see Appendix 1.2 for further information.

Nb.	PI	Condition	Stock (P1)	Year closed	Justification
1	1.1.2	The management system should formally adopt a target reference point for the South Pacific albacore stock which is consistent with maintaining the stock at B_{MSY} or some other measure with similar intent or outcome. This target reference point should be used for management purposes.	Albacore	Year 4	Principle 1 was rescored against the MSC Standard v2.01 in which this performance indicator no longer exists. This condition was therefore removed.
2	1.2.1	<p>The fishery should put in place a regional harvest strategy, incorporating limit and target reference points (management objectives), a harvest control rule and management actions, such that the strategy is responsive to the status of the stock and the elements of the strategy work together to maintain the stock at or around the target level.</p> <p>The key missing elements of the harvest strategy at present are 1. a target reference point formally adopted by the regional management system, and 2. a well-defined harvest control rule with associated management actions. These issues are also addressed specifically in conditions 1 and 3.</p>	Albacore	Open	Condition and milestones harmonized with overlapping fisheries in the MSC programme as per CAB-wide variation request for Principle 1 (see Appendix 1.2)
3	1.2.2	The fishery must put in place a well-defined regional-level harvest control rule, and associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the limit reference point is approached. The selection of the harvest control rule should take into account the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important).	Albacore	Open	Condition and milestones harmonized with overlapping fisheries in the MSC programme as per CAB-wide variation request for Principle 1 (see Appendix 1.2)

Nb.	PI	Condition	Stock (P1)	Year closed	Justification
4	2.3.1, 2.3.3	The occurrence and outcome of all catches of ETP species by UoA vessels (sharks, sea turtles, seabirds and cetaceans) should be systematically and accurately reported on so that fishery-related mortality on ETP species can be quantitatively determined and the effectiveness of the management strategies can be determined. Where a need has been identified, the collected data should enable further development of management strategies to ensure that the fishery does not hinder recovery of ETP species.	All	Year 3	The training programmes described for the Year 1 and 2 surveillance audits continue. During Year 3, the Client Group demonstrated that significant improvements were made in the reporting of ETP and particularly shark interactions as shown in the following table. Note that this condition was raised during the initial assessment as recording of shark discards is a requirement under the Marine Resources (Shark Conservation) Regulations 2012. At the time of the initial assessment, there were significant discrepancies in the number of discards recorded in the logbook data vs observer data. These data were considerably improved by Year 3 (see Sieben and Daxboeck (2019)). Bearing in mind the difficulties with accurately recording shark interactions (most sharks are cut off the lines), the surveillance team considered that between the logbooks and the observer data, sufficient data are now available so that the effects of the fishery on ETP species, and particularly sharks, are known.
5	2.3.2	The client should provide evidence that all Cook Islands regulations on fishery interactions with sea turtles are consistently respected and adhered to by UoA crew so that it can be demonstrated that the fishery does not pose a risk of serious harm to sea turtles, mortality of sea turtles is minimized and the fishery does not hinder recovery of vulnerable sea turtle populations.	All	Year 3	As discussed under Condition 4, the reporting on interactions with ETP species has improved significantly and Condition 4 is now closed. Observer reports, as well interviews with MMR staff, indicate that the client fishery continues to abide by Cook Islands and by extension WCPFC regulations. Interactions with sea turtles have been at best sporadic over the last 4 years according to observer data. On this basis, the surveillance team was satisfied that Cook Islands regulations on fishery interactions with sea turtles are respected and adhered to by LTFV crew and that the fishery does not pose a risk of serious harm to sea turtles, mortality of sea turtles is minimized, and the fishery does not hinder recovery of vulnerable sea turtle populations. This condition can therefore be closed.
6	3.1.2	The client must provide evidence that processes at national level are put in place to i) regularly engage with key stakeholders to seek and accept relevant information, and ii) demonstrate that the information	All	Year 4	As a point of correction, in the Y3 surveillance audit report, it was reported that a Marine Resources Act (2017) was promulgated at the same time as the Marae Moana Act, while in fact the Draft Act was actually tabled, pending further revision. Public and Select Committee consultations have been held and continue as needed.

Nb.	PI	Condition	Stock (P1)	Year closed	Justification
		<p>obtained from such engagement has been duly considered.</p>			<p>Thus, the Cook Islands Marine Resources Act (2005) remains the legal national instrument in force for fishery resource management. Nonetheless, the Marae Moana Act is in force, as are the Longline QMS Regulations (2016).</p> <p>Validation of the Rules of Procedure for a “Quota Management Advisory Committee” and the “Quota Management System Allocation Policy” have progressed. As a consequence, a QMS Advisory Committee has been convened. But there is still some uncertainty surrounding legal definitions of “charter arrangements” and their implication re QMS. This will certainly be addressed with the completion of the review of all administrative procedures, including MMR Licensing Regulations (2012) and presentation of a new Draft Marine Resources Act (2020) for Parliament debate and approval.</p> <p>With respect to MMR staffing, new leadership has indicated they are at approximately 90% capacity, also using some consultants, with anticipated recruitment for an addition 7 personnel and a restructuring of existing Division personnel assets to better focus on emerging issues.</p> <p>The Ministry of Marine Resources does continue to produce Annual Reports which are readily available and also downloadable from their website site (http://www.mmr.gov.ck), as well as much more information. For social media presence, the Ministry of Marine Resources continues its active Facebook Policy and presence. Radio Cook Islands News continues its monthly “The Maroro Show” as a public information platform for MMR.</p> <p>Given the above information, and despite some delays in Committee Meetings, this condition can be closed at this surveillance audit.</p>

Nb.	PI	Condition	Stock (P1)	Year closed	Justification
7	3.1.4	<p>The client should demonstrate that the subsidies identified by FFA and acknowledged by the client do not lead to perverse incentives that are inconsistent with achieving the outcomes expressed by MSC principles 1 and 2;</p> <p>Or</p> <p>Implement a harvest strategy that includes strengthened harvest control rules that are more responsive to increasing effort in the albacore and yellowfin fishery, such that the impact of subsidies is restricted to lowering the operating costs of subsidized fleets, rather than acting as an incentive to increase effort.</p>	All	Year 4	<p>The Cook Islands MMR presented and put into force the LL QMS Regulations (2016) starting January 2017. Therefore, by MSC definition, this is certainly a robust sub-regional management system, within the overall regional (WCPFC CMM 2015-02) management regime in place. In the context of in-zone impacts of subsidies in lowering the operating costs of subsidized fleets, by acting as an incentive to increase effort, this is now moot because fishing is by quota only, without consideration of effort.</p> <p>Remember, however that as of WCPFC16 (2019), under CMM 2014-06, the Harvest Control Rule (HCR) is no longer used and has been re-baptised as a MANAGEMENT PROCEDURE (MP). And of course, the workplan for establishment of fixed TRPs and MPs with Management Strategy Evaluations (MSE) have again been extended further in time, such that the recent MSC variance declaration on harmonisation for all CABs on these conditions will necessarily need to be re-evaluated.</p> <p>Based upon the above, this condition can be considered closed at this surveillance audit. In addition, PI 3.1.4 is no longer considered under MSC V2.1.</p>
8	3.2.2	<p>By working with the relevant Cook Islands management agencies, the client should demonstrate</p> <p>i) that decision-making processes at national level 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 and ii) that information on fishery performance and management action at national level is available to stakeholders on request, and that explanations are provided for any actions or lack of</p>	All	Year 4	<p>As above for progress on condition 6, we wish to indicate that the Y3 surveillance audit reported that a Marine Resources Act (2017) was promulgated at the same time as the Marae Moana Act, while in fact the Draft Act was actually tabled, pending further revision. However, public and Select Committee consultations have been held and continue as needed on another Draft Act. Thus, the Cook Islands Marine Resources Act (2005) remains the legal national instrument in force for fishery resource management. Nonetheless, the Marae Moana Act is in force, as are the Longline QMS Regulations (2016).</p>

Nb.	PI	Condition	Stock (P1)	Year closed	Justification
		<p>action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.</p>			<p>Validation of the Rules of Procedure for a “Quota Management Advisory Committee” and the “Quota Management System Allocation Policy” have progressed. As a consequence, a QMS Advisory Committee has been convened. But there is still some uncertainty surrounding legal definitions of “charter arrangements” and their implication re QMS. This will certainly be addressed with the completion of the review of all administrative procedures, including MMR Licensing Regulations (2012) and presentation of a new Draft Marine Resources Act (2020) for Parliament debate and approval.</p> <p>With respect to MMR staffing, new leadership has indicated they are at approximately 90% capacity, also using some consultants, with anticipated recruitment for an addition 7 personnel and a restructuring of existing Division personnel assets to better focus on emerging issues.</p> <p>The Ministry of Marine Resources does continue to produce Annual Reports which are readily available and also downloadable from their website site (http://www.mmr.gov.ck), as well as much more information. For social media presence, the Ministry of Marine Resources continues its active Facebook Policy and presence. Radio Cook Islands News continues its monthly “The Maroro Show” as a public information platform for MMR.</p> <p>Finally, on October 18, 2018 the MMR held a stakeholder consultation on the Monitoring and Control and Surveillance (MCS) Plan Gap analysis. The consultants presented MMR the final Plan (MMR MCS Plan 2019-2021) end November 2018.</p> <p>Given the above information, and despite some delays in Committee Meetings, this condition can be closed at this surveillance audit.</p>

Nb.	PI	Condition	Stock (P1)	Year closed	Justification
9	1.2.1	<p>The fishery should put in place a regional harvest strategy, incorporating limit and target reference points (management objectives), a harvest control rule and management actions, such that the strategy is responsive to the status of the stock and the elements of the strategy work together to maintain the stock at or around the target level.</p> <p>The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated management actions. This issue is also addressed specifically in condition 10.</p>	Yellowfin	Open	Condition and milestones harmonized with overlapping fisheries in the MSC programme as per CAB-wide variation request for Principle 1 (see Appendix 1.2)
10	1.2.2	<p>The fishery must put in place a well-defined regional-level harvest control rule, and associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the limit reference point is approached. The selection of the harvest control rule should take into account the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important).</p>	Yellowfin	Open	Condition and milestones harmonized with overlapping fisheries in the MSC programme as per CAB-wide variation request for Principle 1 (see Appendix 1.2)

Three recommendations were raised for this fishery: one was raised during the initial assessment in relation to marine litter; the second was raised at the Year 1 surveillance in relation to a shark finning incident and was closed out during Year 2. A third was raised during the Year 3 Surveillance.

Nb.	Recommendation	Year closed	Justification
1	The audit team reviewed 2012 and 2013 observer reports and noted frequent infringements against MARPOL73/78 regulations due to the dumping at sea of plastics, metals, chemicals, and old fishing line. The exact frequency of	Open	The client fleet trash management plan remains in place. Two observer reports were viewed <i>in situ</i> during the Year 4 surveillance site visit. No incidences of dumping at sea of non-biodegradable

Nb.	Recommendation	Year closed	Justification
	<p>these types of incidents is unknown and therefore the impact cannot be estimated. While there is no provision in the MSC standard to assess this type of activity against the scoring guideposts, any fishery proclaiming to provide the best environmental choice in seafood (through the MSC logo) should be discouraged from any form of dumping at sea. The team acknowledges that this is a widespread problem across global fisheries; however, it is recommended that incidents of dumping at sea are demonstrably reduced.</p>		<p>waste were noted, indicating that it is likely that improvements have been made at UoA level, although 2 trips is of course a small sample. The team recommends that this recommendation is carried over into the fishery's second certification cycle (pending a successful reassessment).</p>
2	<p>The audit team noted some confusion within the MMR regarding the procedure to be followed in the case of contraventions against the Marine Resources (Shark Conservation) Regulations 2012 (i.e. for the Shark Sanctuary) and have made the following recommendation:</p> <p>The formal process for infractions of this kind should be documented and should be presented at the next (year 2) surveillance audit. The audit team will then also verify the outcome of the decision-making process regarding the shark finning incidents mentioned in the Year 1 surveillance report.</p>	Year 2	<p>The case of illegal shark fin retentions noted during the Year 1 surveillance audit were in fact determined to be isolated incidents but still punishable under current fishery laws. A formal decision-making process for infractions of this kind has now been documented. It was determined that the incidents represented contraventions of the Cook Islands Marine Resources (Shark Conservation) Regulations of 2012. During the Year 2 surveillance audit the team was able to verify the successful outcome of the decision-making process regarding these incidents. Full details of the settlement policy and structure was sent to the FFA and the WCPFC to show transparency on how the Cook Islands prosecutes non-compliance of fisheries management regulations, especially concerning the issue of shark finning.</p>
3	<p>The fishery uses Indian oil sardine (<i>Sardinella longiceps</i>), sourced from China. By far the largest fishery is in India, which is the most likely source of the bait for this fishery although this is an assumption made by the team. It is therefore recommended that the client company reviews its bait sourcing policy to ensure the necessary information is collected so that all bait can be traced to its source; be it at stock level, country of capture or ideally, in the case of the Indian oil sardine, at Indian state level.</p>	Open	<p>More detailed information was provided by the Client fishery, indicating that a mix of <i>Sardinella longiceps</i> and <i>Sardinops melanostictus</i> is likely used. As already mentioned, this fishery is currently undergoing reassessment which will include a detailed review of current and past bait use data. Any changes in scoring will therefore be considered during reassessment. For now, the team recommends that this recommendation is carried over into the fishery's second certification cycle (pending a successful reassessment).</p>

Nb.	Recommendation	Year closed	Justification
			Note that a condition was raised in relation to bait species in this report. This recommendation is therefore redundant at reassessment.

Appendix 1.2 CAB-wide variation request Principle 1

On 14 February 2019 MSC accepted a variation request submitted by all fisheries CABs for all RFMO-managed highly migratory stocks in the MSC programme, including tuna and swordfish.

The overarching logic of the CAB's joint proposal was as follows:

- All tuna and tuna-like fisheries certified against Certification Requirements v1.3 will be upgraded to v2.0 to foster harmonisation efforts. No suspension action will be undertaken for fisheries that are behind target on P1 conditions raised against v1.3
- Timelines for P1 conditions (limited to those with respect to harvest strategies and harvest control rules) will be aligned for all fisheries on the same stock
- These timelines will be based on the calendar year that RFMO workplans are due to be completed, for all stocks where relevant workplans exist
- Fisheries currently in assessment and new fisheries are not directly covered under this variation request, but CABs have committed to apply the same logic with respect to harmonising condition timelines aligned against RFMO work plans

For the Cook Islands fishery, which was assessed against v1.3 of the MSC Standard, the acceptance of this variation request means that 1) no suspension action will be undertaken should conditions be found to be behind target for two consecutive years and 2) Principle 1 will be rescored against version 2.01 of the MSC Standard at the next available opportunity. This was the Year 4 surveillance audit which took place simultaneously with the fishery's reassessment site visit.

Further detail on the variation request and the MSC's acceptance of it are provided below.

Marine Stewardship Council - Variation Request

Problem statement:

The MSC requires overlapping fisheries to harmonize assessment outcomes, but not conditions timelines. There are currently 54 HMS¹ fisheries (counting each stock per fishery in the case of multiple stocks in a single fishery, separately) in the MSC programme, 43 with outstanding conditions in relation to Reference Points, Harvest Control Rules and Harvest Strategies in Principle 1. While conditions have been harmonised (as per Annex PB of the FCRv2.0), the associated timelines have not. This lack of coherence amongst RFMO² HMS fisheries and CABs has resulted in inconsistencies between in-assessment and certified fisheries and undermines the influence the MSC programme may have on mobilizing RFMOs toward developing harvest strategies for HMS stocks. To address this problem, the variation request below proposes a "hard deadline" approach to Principle 1 conditions timelines for highly migratory species stocks subject to harmonisation in the MSC program:

1. The hard deadline approach would make it transparent to all parties, including clients, what the expectations are for fulfilling these conditions at the RFMO level, and thus removes the inconsistency issue of new entrants having longer timeframes than current fisheries in the program.
2. The hard deadline approach creates incentives for MSC client fisheries to work together, instead of at cross-purposes, to encourage RFMOs to keep to the timelines as established in workplans which reflect their stock management priorities.

Date submitted to MSC	11 December, 2018
Name of CAB	All CABs accredited to undertake MSC fishery assessments
Fishery Name/CoC Certificate Number	See Appendix 1
Lead Auditor/Programme Manager	Chrissie Sieben (CU Pesca), Amanda Stern-Pirlot (MRAG Americas), Sian Morgan (SCS), Geraldine Criquet (SAI Global), Polly Burns (Lloyds Register-Acourea), Anna Kiseleva/Sandhya Chaudhury (DNV), Macarena Garcia (BV), Louise Le Roux (TUN), Carolina Medina Foucher (OIA), Julia Nebolsina (Marine Certification)
Scheme requirement(s) for which variation requested	1. Fisheries scored against v1.3: <i>Implementation timeframes: Existing fisheries (in assessment or certified) shall apply the new standard requirements (...) at their first reassessment commencing after 1st October 2017. (FCR V2.0 p. 9)</i>

¹ HMS: highly migratory species. In the context of this variation request, we refer to the tuna and swordfish stocks listed in Appendix 2.

² RFMO: Regional Fisheries Management Organisation. In the context of this variation request, we refer to the organizations involvement in the management of HSM stocks in the MSC program: WCPFC, IATTC, ICCAT and IOTC.

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	<p>(Note: the 'new standard requirements' referred to in this clause are the FCRv2.0, though the Fisheries Certification Process v2.1 can also be used.)</p> <p>FCR V.2.0 7.23.13.1.b.i. <i>If the progress against the measurable outcomes, expected results or (interim) milestones specified when setting the condition is judged to be behind target, the CAB shall specify the remedial action, and any revised milestones, that are required to bring process back on track within 12 months to achieve the original condition by the original deadline.</i></p> <p>FCRv2.0 7.23.13.2: <i>In the event that the CAB determines that progress against a condition is not back 'on target' within 12 months of falling 'behind target', the CAB shall:</i></p> <p><i>a. Consider progress as inadequate.</i></p> <p><i>b. Apply the requirements of GCR 7.4 (suspension or withdrawal).</i></p> <p>2. All fisheries listed in Appendix 1:</p> <p>FCRv2.0 7.11.1.3 (and subclauses): <i>The CAB shall draft conditions to result in improved performance to at least the 80 level within a period set by the CAB but no longer than the term of the certification unless: a. There are exceptional circumstances, and the CAB determines that achieving a performance level of 80 may take longer than the period of certification. The CAB shall interpret exceptional circumstances in 7.11.1.3.a to refer to situations in which, even with perfect implementation, achieving the 80 level of performance may take longer than the certification period.</i></p> <p>FCRv2.0 7.24.2 (and subclauses): <i>When conducting a re-assessment of a certified fishery, the CAB shall (...) evaluate progress against certification conditions. Unless exceptional circumstances apply (7.11.1.3) or paragraph (b) applies, the fishery shall have met all conditions and milestones. (...) In the event that there are unmet conditions, the CAB shall apply 7.23.13.1 and 7.23.13.2 (except 7.23.13.2.b.) in determining the adequacy of progress against those conditions and milestones. If the CAB concludes that the client has made inadequate progress, it shall not grant a new fishery certificate.</i></p>
<p>Is this variation sought in order to fulfil IPI requirements (FCR 7.4.14)?</p>	<p>No.</p>

1. Proposed variation

In order to achieve the result needed as described in the problem statement above, this variation request has two parts:

1. For fisheries scored against v1.3:

Thirty-six of the 54 fisheries listed in Appendix 1 are currently scored against Annex CB of the MSC Certification Requirements v1.3 resulting in conditions against Principle 1 performance indicators (PIs) that are no longer applicable under the FCRv2.0 (e.g. PI 1.1.2 on Reference Points). To facilitate harmonisation between RFMO HMS fisheries, it is proposed the Principle 1 components of these fisheries are rescored at the next available opportunity (which may be ahead of reassessment) to bring them in line with other tuna fisheries assessed against the FCRv2.0. This variation would mean:

- No suspension action would be undertaken for fisheries that are behind target on conditions raised against CRv1.3 Principle 1 performance indicators.
- Any new conditions raised as a result of the Principle 1 rescoring would be harmonised with other RFMO HMS fisheries and be brought in line with the most recent RFMO workplan and associated hard deadline as per Appendix 2 where applicable (see below).
- Even Appendix 1 fisheries with no conditions in P1 that are currently scored against v1.3 would be rescored against 2.0 under this variation.
- Principle 1 rescoring as described would take place as part of normal surveillance activities; there is no expectation that a more elaborate process (such as an expedited assessment) would be needed.

2. For fisheries listed in Appendix 1 with conditions under Principle 1 subject to harmonization (indicated in Appendix 1 with green highlight):

For these fisheries, the specific proposed condition closure dates by stock and matched to current fisheries in the program are given in Appendix 2. These are not based on the “term of certification” as required by FCR 7.11.1.3. Rather they are based on the respective RFMO workplans for each stock with respect to development of harvest control rules and reference points. This variation will result in some fisheries entering reassessment with open Principle 1 conditions, albeit with an aligned deadline respective to the stock in question by which these conditions will be achieved. It will also result in some certified fisheries having condition closure deadlines ahead of their current certificate expiration dates.

Note, as the deadlines are given as a calendar year only, there may be cases where the respective annual surveillance audit would due before the RFMO meeting during which the relevant HCR is due to be adopted. In such cases, we expect the flexibility afforded by MSC regarding surveillance audit timing would be sufficient to enable CABs to delay these audits until after such RFMO

meetings/decisions. However, this may not always be possible, in which cases CABs may request variations on a case-by-case basis to enable the RFMO decision to take place before the respective MSC surveillance audit.

2. Rationale/Justification

There are currently 54 HMS fisheries (counting each stock per fishery in the case of multiple stocks in a single fishery, separately) in the MSC programme, 43 with outstanding conditions in relation to Reference Points, Harvest Control Rules and Harvest Strategies in Principle 1. While conditions have been harmonised (as per Annex PB of the FCRv2.0), the associated timelines have not. This lack of coherence amongst RFMO HMS fisheries and CABs has resulted in inconsistencies between in-assessment and certified fisheries and undermines the influence the MSC programme may have on mobilizing RFMOs toward developing harvest strategies for HMS stocks.

This problem has arisen in part because of shifting MSC requirements and standards for Principle 1 and for harmonization at the same time as many tuna fisheries have been entering the MSC program and becoming certified on staggered timelines. The proposed variations in Section 1 therefore all contribute to a one-off Principle 1 alignment between RFMO HMS fisheries, to which all CABs and all certified, in-assessment and applicant RFMO HMS fisheries will be subject for the stocks in Appendix 2:

- Fisheries currently scored against CRv1.3 will be rescored against FCRv2.0 for Principle 1 at the next available opportunity and resulting conditions will be harmonized with other relevant RFMO HMS fisheries. It is noted that this rescoring would have to take place at reassessment anyway.
- Principle 1 conditions that relate to HCRs and HSs and their associated timelines will be harmonized between all relevant RFMO HMS fisheries. A hard deadline for achievement of the conditions will be set in line with the most recent RFMO workplan as per Appendix 2. It is believed this approach will remove any ambiguity in the condition timelines and enable CABs to measure and assess progress in a meaningful manner.
- To facilitate harmonization efforts between CABs, surveillance schedules of the relevant RFMO HMS fisheries will be aligned (to the extent that is practical) so that annual progress can be assessed collectively by CABs.
- This variation request does not need to extend to stocks in the program not currently subject to harmonization (i.e. it does not have to be 'future proof') because:
 - a. the FCP v2.1 explicitly allows for 'exceptional circumstances' when establishing condition timelines at the point of certification that may be longer than one certification period to apply in these cases; and
 - b. new guidance in the FCP (GBP 1.3) clearly states a preference for harmonization of condition timelines.

Therefore this mechanism can be carried forward when new timeline harmonization needs arise without the need to vary from MSC requirements.

Regarding the sustainability status of the fisheries concerned, it is noted that clients will still be required to fulfill all actions required by client action plans and continue to actively work toward having RFMOs adopting appropriate reference points and associated harvest control rules for tuna stocks. This variation will only serve to improve the collective ability of MSC fisheries to work with RFMOs that have a clear commitment through their workplans to establish HCRs and reference points in a reasonable way. It will also create consistency and fairness in the application of the MSC requirements with respect to fulfilment of conditions and consequences for falling behind, thereby improving accountability of all concerned.

As per the overview in Appendix 1 none of the relevant RFMO HSM stocks are considered overfished or with overfishing occurring. The only stock currently in the MSC program with a condition on PI 1.1.1 regarding stock status is Atlantic yellowfin tuna, which has been steadily rebuilding and is at 95% of Bmsy as of the most recent stock assessment.

The hard deadline approach proposed in this variation request would make it transparent to all parties, including clients, what the expectations are for fulfilling these conditions at the RFMO level, and thus removes the inconsistency issue of new entrants having longer timeframes than current fisheries in the program.

3. Implications for assessment (required for fisheries assessment variations only)

Harmonisation is one of the MSC’s main priorities in ensuring the credibility of the standard. The approach to harmonisation in RFMO HMS fisheries up until now has not been efficient for any of the parties involved and has undermined MSC program requirements. This approach will remedy that, reducing the number of variations requested by CABs, whilst ensuring that all fisheries and clients are treated consistently and fairly.

The alignment with RFMO plans will encourage the MSC’s Theory of Change by influencing RFMO actions working together. Appendix 1 provides an overview of the stocks concerned and their current performance in relation to stock status. None of the currently certified stocks are overfished nor is overfishing occurring (noting Atlantic yellowfin at 95% of Bmsy). Overall, the acceptance of this variation request will have no negative impact on the sustainability of the fisheries and will instead ensure that conditions related to harvest control rules and harvest strategies are addressed in a uniform and timely manner, and that RFMO fishery clients have an incentive to work together toward achievement of conditions according to reasonable fixed deadlines.

4. Have the stakeholders of this fishery assessment been informed of this request? (required for fisheries assessment variations only)

Yes, some key stakeholders have been approached, including the MSC STAC, and representatives from Pew, WWF, and ISSF. The purpose of these interactions was to inform stakeholders of this initiative, the process and its implications, and to seek initial impressions. Stakeholders have been broadly supportive of this initiative, with some reflection on whether an impact assessment would be needed. It is anticipated that MSC will draw on stakeholder sentiment during the formal process of responding to this request.

Appendix 1 – Overview of RFMO HMS fisheries in the MSC programme with those subject to the proposed Appendix 2 deadlines highlighted in green.

Fishery name	RFMO	Relevant stocks	CAB	Certificate expiry dates	Rescoring against 2.0 needed?	overfishing?	overfished?	1.1.1 score
Pan Pacific yellowfin, bigeye and albacore longline fishery	IATTC	EPO-BET	CU Pesca	In assessment	No	In assessment	In assessment	In assessment
Northeastern Tropical Pacific Purse Seine SKJ and YFT	IATTC	EPO-SKJ	SCS	06-Sep-22	Yes	No	No	90
Panama tropical Pacific yellowfin and skipjack purse seine tuna fishery	IATTC	EPO-SKJ	Acoura/LR	In assessment	No	In assessment	In assessment	In assessment
Panama tropical Pacific yellowfin and skipjack purse seine tuna fishery	IATTC	EPO-YFT	Acoura/LR	In assessment	No	In assessment	In assessment	In assessment
French Polynesia albacore and yellowfin longline fishery	IATTC	EPO-YFT	CU Pesca	18-Jun-23	No	No	No	90
Pan Pacific yellowfin, bigeye and albacore longline fishery	IATTC	EPO-YFT	CU Pesca	In assessment	No	In assessment	In assessment	In assessment
Northeastern Tropical Pacific Purse Seine SKJ and YFT	IATTC	EPO-YFT	SCS	06-Sep-22	Yes	No	No	90
US North Atlantic swordfish, yellowfin and albacore	ICCAT	AO-ALB-N	MRAG	In assessment	Yes	No	No	100
North Atlantic albacore artisanal fishery	ICCAT	AO-ALB-N	BV	06-Jun-21	No	No	No	90
North West Atlantic Canada Harpoon swordfish	ICCAT	AO-SWO-N	Acoura/LR	11-Dec-22	Yes	No	No	90
North West Atlantic Canada Longline swordfish	ICCAT	AO-SWO-N	Acoura/LR	11-Dec-22	Yes	No	No	90
US North Atlantic swordfish, yellowfin and albacore	ICCAT	AO-SWO-N	MRAG	06-Mar-23	Yes	No	No	90
ACTEMSA-LEAL SANTOS pole and line West Atlantic skipjack fishery	ICCAT	AO-SKJ-W	BV	in assessment	No	No	No	100
Sant Yago TF Unassociated purse seine Atlantic yellowfin tuna fishery	ICCAT	AO-YFT	BV	in assessment	No	No	Yes (around 95% of Bmsy but clear evidence of rebuilding)	70
US North Atlantic swordfish, yellowfin and albacore	ICCAT	AO-YFT	MRAG	In assessment	Yes	No	Yes (around 95% of Bmsy but clear evidence of rebuilding)	70
Echabstar Indian Ocean Purse Seine Skipjack Tuna	IOTC	IO-SKJ	Acoura/LR	In assessment	No	No	No	In assessment
Maldives Pole and Line Tuna Skipjack	IOTC	IO-SKJ	DNV GL	28-Nov-22	No	No	No	100
American Samoa EEZ Albacore and Yellowfin Longline Fishery	WCPFC	PO-ALB-S	CU Pesca	23-Nov-22	No	No	No	100
AAFA and WFOA South Pacific albacore tuna	WCPFC/IATTC	PO-ALB-S	MRAG	In assessment	No	No	No	100
French Polynesia albacore and yellowfin longline fishery	WCPFC	PO-ALB-S	CU Pesca	18-Jun-23	No	No	No	100
Pan Pacific yellowfin, bigeye and albacore longline fishery	WCPFC	PO-ALB-S	CU Pesca	In assessment	No	No	No	In assessment

SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore & yellowfin longline	WCPFC	PO-ALB-S	CU Pesca	08-Jun-20	Yes	No	No	100
Walker Seafood Australian albacore, yellowfin tuna, and swordfish longline	WCPFC	PO-ALB-S	CU Pesca	26-Aug-20	Yes	No	No	100
PT Citraraja Ampat, Sorong pole and line Skipjack and Yellowfin Tuna	WCPFC	WPO-SKJ	DNV GL	In assessment	No	In assessment	In assessment	In assessment
Solomon Islands skipjack and yellowfin tuna	WCPFC	WPO-SKJ	MRAG	11-Jul-21	Yes	No	No	100
PT Citraraja Ampat, Sorong pole and line Skipjack and Yellowfin Tuna	WCPFC	WPO-YFT	DNV GL	In assessment	No	In assessment	In assessment	In assessment
Solomon Islands skipjack and yellowfin tuna	WCPFC	WPO-YFT	MRAG	11-Jul-21	Yes	No	No	90
Pan Pacific yellowfin, bigeye and albacore longline fishery	WCPFC	WPO-BET	CU Pesca	In assessment	No	In assessment	In assessment	In assessment
SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna	WCPFC	WPO-BET	CU Pesca	In assessment	No	In assessment	In assessment	In assessment
Japanese skipjack and albacore pole and line	WCPFC	WPO-SKJ	Acoura/LR	16-Oct-21	yes	No	No	100
New Zealand Talley's skipjack	WCPFC	WPO-SKJ	Acoura/LR	16-Aug-22	No	No	No	100
Ishihara Marine Products albacore and skipjack pole and line fishery	WCPFC	WPO-SKJ	CU Pesca	In assessment	No	In assessment	In assessment	In assessment
Tropical Pacific yellowfin and skipjack free-school purse seine fishery	WCPFC	WPO-SKJ	CU Pesca	In assessment	No	In assessment	In assessment	In assessment
TriMarine Western and Central Pacific Skipjack and Yellowfin Tuna	WCPFC	WPO-SKJ	SCS	02-Jun-21	Yes	No	No	100
WPSTA purse seine free school yellowfin and skipjack	WCPFC	WPO-SKJ	SCS	20-Jun-23	No	No	No	100
American Samoa EEZ Albacore and Yellowfin Longline Fishery	WCPFC	WPO-YFT	CU Pesca	23-Nov-22	No	No	No	90
French Polynesia albacore and yellowfin longline fishery	WCPFC	WPO-YFT	CU Pesca	18-Jun-23	No	No	No	90
Pan Pacific yellowfin, bigeye and albacore longline fishery	WCPFC	WPO-YFT	CU Pesca	In assessment	No	No	No	90
SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna	WCPFC	WPO-YFT	CU Pesca	In assessment	No	No	No	90
SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore & yellowfin longline	WCPFC	WPO-YFT	CU Pesca	08-Jun-20	Yes	No	No	90
Tropical Pacific yellowfin and skipjack free-school purse seine fishery	WCPFC	WPO-YFT	CU Pesca	In assessment	No	No	No	90
Walker Seafood Australian albacore, yellowfin tuna, and swordfish longline	WCPFC	WPO-YFT	CU Pesca	26-Aug-20	Yes	No	No	90
TriMarine Western and Central Pacific Skipjack and Yellowfin Tuna	WCPFC	WPO-YFT	SCS	02-Jun-21	Yes	No	No	90
WPSTA purse seine free school yellowfin and skipjack	WCPFC	WPO-YFT	SCS	20-Jun-23	No	No	No	90
Japanese skipjack and albacore pole and line	WCPFC	PO-ALB-N	Acoura/LR	16-Oct-21	yes	No	No	100

Fiji albacore and yellowfin longline	WCPFC	PO-ALB-S	Acoura/LR	22-Jan-23	No	No	No	100
New Zealand Albacore Troll Fishery	WCPFC	PO-ALB-S	Acoura/LR	12-Feb-22	No	No	No	100
PNA skipjack and yellowfin tuna	WCPFC	WPO-SKJ	Acoura/LR	21-Mar-23	No	No	No	100
Fiji albacore and yellowfin longline	WCPFC	WPO-YFT	Acoura/LR	22-Jan-23	No	No	No	90
PNA skipjack and yellowfin tuna	WCPFC	WPO-YFT	Acoura/LR	21-Mar-23	No	No	No	90
Ishihara Marine Products albacore and skipjack pole and line fishery	WCPFC/IATTC	PO-ALB-N	CU Pesca	In assessment	No	In assessment	In assessment	In assessment
Pan Pacific yellowfin, bigeye and albacore longline fishery	WCPFC/IATTC	PO-ALB-N	CU Pesca	In assessment	No	In assessment	In assessment	In assessment
AAFA and WFOA North Pacific albacore tuna	WCPFC/IATTC	PO-ALB-N	MRAG	20-Jul-23	No	No	No	100
CHMSF British Columbia albacore tuna North Pacific	WCPFC/IATTC	PO-ALB-N	SAIG	09-Jun-20	Yes	No	No	100

Appendix 2 – Overview of RFMO workplan deadlines for HMS stocks (note: for certified stocks only for which a RFMO workplan is in place to address RPs and HCRs)

RFMO	Stock	RFMO workplan completion date	Notes/current status of RFMO workplan (on target, behind target, etc)	proposed condition end date	Reference
ICCAT	AO-ALB-N	2018	On target. ICCAT Rec 17-04 in force since 11 June 2018 established RFP and HCR for this stock	2018 (already re-scored during the 2nd Surveillance audit. HCR adopted through Rec 17-04)	Rec 17-04 by ICCAT on a HCR for the North Atlantic Albacore Supplementing the Multiannual Conservation and Management Program, Rec 16-06 (https://www.iccat.int/en/RecRes.asp)
ICCAT	AO-SKJ-W	2020	The SCRS workplan establishes that MSE will be implemented by 2020. However, the multispecies nature of the tropical tunas fishery is posing a challenge. No interim or agreed RFP so far and next SKJ stock assessment will take place in 2019 (and YFT in 2020). It is very likely they do not meet their deadline	2022 (HCR adopted)	SCRS Science Strategic Plan for 2015-2020
ICCAT	AO-YFT	2020	The SCRS workplan establishes that MSE will be implemented by 2020. However, the multispecies nature of the tropical tunas fishery is posing a challenge. No interim or agreed RFP so far and next YFT stock assessment will take place in 2020. It is very likely they do not meet their deadline.	2022 (HCR adopted)	Rec 15-07 by ICCAT on the Development of HCRs and of MSE (https://www.iccat.int/en/RecRes.asp) Rec 16-01 by ICCAT on a Multiannual Conservation and Management Program for Tropical Tunas SCRS Science Strategic Plan for 2015-2020
IATTC/WCPFC	PO-ALB-N		On target. MSE Workshops and activities scheduled have been held and conducted. There is a clear commitment to adopt HCRs and target ref point. Although the workplan is on target, there is no set date for completion of the MSE work and adoption on HCR and ref point, likely due to the health of the stock relative to others in this RFMO and hence lower priority. ISC 2018 report of the ALWG states that the first round of the MSE results will be presented in 2019. A science workshop on the MSE research work progress is scheduled for Jan 2019 and will be followed by another MSE workshop for managers, scientists and stakeholders. The progress of and outputs from the MSE work will be presented at the ISC plenary meeting in July 2019, where it will be decided how to proceed, the workplan will likely be refined. CABs therefore propose 2023 as the condition deadline based on the most recently recertified fishery for this stock (AAFA/WFOA Albacore).	2023 (HCR adopted)	ISC 2018 report of the ALWG http://isc.fra.go.jp/reports/alb/alb_2018_1.html
WCPFC/IATTC	PO-ALB-S	2021	On target (agreed RFP by Dec 2018)	2021 (HCR adopted)	2017 workplan (https://www.wcpfc.int/doc/placeholder-harvest-strategy-key-documents)
WCPFC	WPO-SKJ	2021	On target (interim RFP was agreed in Dec 2015)	2021 (HS in place)	2017 workplan (https://www.wcpfc.int/doc/placeholder-harvest-strategy-key-documents)
WCPFC	WPO-YFT	2021	On target (agreed RFP by Dec 2019)	2021 (HCR adopted)	2017 workplan (https://www.wcpfc.int/doc/placeholder-harvest-strategy-key-documents)



Chrissie Sieben
Control Union Pesca Ltd
56 High Street
Lymington
United Kingdom
SO41 9AH

Sent by email

Date: 14/02/2019

Dear Chrissie Sieben,

I write with reference to your submission on 11/12/2018 of a request for variation to the MSC Certification Requirement (CR) to allow:

For fisheries scored against v1.3

- All tuna fisheries currently on v1.3 will be upgraded to v2.0 at the next surveillance audit
- CABs shall follow the process requirements in Appendix B that have been prepared specifically for P1 upgrades
- If the stock has already been fully assessed against FCR v2.0 at the time of rescoring, a reduced upgrade process applies that does not require peer review and additional reporting requirements; fisheries for which this is applicable are identified in Appendix A
- No suspension action will be undertaken for fisheries that are behind target on P1 conditions raised against v1.3
- Any new conditions raised as a result of the Principle 1 rescoring will be harmonised with other tuna fisheries and aligned with the stock-specific condition deadlines set out in Appendix A

For fisheries already scored against v2.0

- Principle 1 conditions and timelines will be harmonised for all tuna fisheries on the same stock
- A shared deadline for achievement of conditions, based on the most recent RFMO workplan, will be set as per the calendar years specified in Appendix A

For all fisheries

- To facilitate harmonisation efforts between CABs, surveillance schedules of the relevant tuna fisheries will be aligned (to the extent that is practical) so that annual progress can be assessed collectively by CABs

This may vary against one or more of the following requirements, depending on the fishery circumstances:

1. Fisheries scored against v1.3:

Implementation timeframes: Existing fisheries (in assessment or certified) shall apply the new standard requirements (...) at their first reassessment commencing after 1st October 2017. (FCR V2.0 p. 9)

FCR V.2.0 7.23.13.1.b.i. If the progress against the measurable outcomes, expected results or (interim) milestones specified when setting the condition is judged to be behind target, the CAB shall specify the remedial action, and any revised milestones, that are required to bring process back on track within 12 months to achieve the original condition by the original deadline.

FCRv2.0 7.23.13.2: In the event that the CAB determines that progress against a condition is not back 'on target' within 12 months of falling 'behind target', the CAB shall:
a. Consider progress as inadequate.

b. Apply the requirements of GCR 7.4 (suspension or withdrawal).

For fisheries with conditions under Principle 1 subject to harmonization:

FCRv2.0 7.11.1.3 (and subclauses): The CAB shall draft conditions to result in improved performance to at least the 80 level within a period set by the CAB but no longer than the term of the certification unless: a. There are exceptional circumstances, and the CAB determines that achieving a performance level of 80 may take longer than the period of certification. The CAB shall interpret exceptional circumstances in 7.11.1.3.a to refer to situations in which, even with perfect implementation, achieving the 80 level of performance may take longer than the certification period.

FCRv2.0 7.24.2 (and subclauses): When conducting a re-assessment of a certified fishery, the CAB shall (...) evaluate progress against certification conditions. Unless exceptional circumstances apply (7.11.1.3) or paragraph (b) applies, the fishery shall have met all conditions and milestones. (...) In the event that there are unmet conditions, the CAB shall apply 7.23.13.1 and 7.23.13.2 (except 7.23.13.2.b.) in determining the adequacy of progress against those conditions and milestones. If the CAB concludes that the client has made inadequate progress, it shall not grant a new fishery certificate.

These are integral to ensuring all MSC accredited Conformity Assessment Bodies operate in a consistent and transparent manner. The MSC intends that these requirements be met across all fisheries and CoC certificate holders, except in exceptional, well-justified circumstances, as part of the MSC programme.

MSC notes the factors presented supporting your request, including:

- This variation will contribute to an alignment of P1 condition timelines between certified HMS fisheries.
- This will in theory incentivise all parties fishing on a particular HMS stock to work towards a common deadline for meeting shared P1 conditions.
- Fisheries currently scored against v1.3 will be rescored against v2.0 for Principle 1 at the next available opportunity
- Conditions on PI 1.2.2 (HCRs) and PI 1.2.1 (harvest strategy), and their associated timelines, will be harmonized between all UoAs that share the same P1 stock
- Timelines for achieving the conditions will be set in line with RFMO workplans for developing HCRs and harvest strategies (ranging between 2021 and 2023)
- This variation request covers only certified and harmonised fisheries; for new or in assessment fisheries, CABs instead propose to use existing mechanisms to achieve harmonization

Given the rationale provided, the MSC is willing to grant a variation to the CR in this case subject to the following conditions:

- Where applicable, rescoring against v2.0 is to be undertaken at the next surveillance audit and shall follow the process requirements set out in Appendix B
- Relevant P1 conditions shall be closed by the proposed dates given in Appendix A as per FCP v2.1 7.28.16.1.b.i and 7.28.16.2 and GCR v2.2 7.4.2.b
- All new or in assessment fisheries for which harmonisation is required must be aligned with the applicable timelines given in Appendix A, as per the guidance in the FCP v2.1
- CABs shall make efforts to ensure the language of the conditions and milestones is consistent between harmonised fisheries
- CABs should make good faith efforts to coordinate surveillance with overlapping fisheries
- Reassessments shall be undertaken on usual timelines

If you have any questions regarding this response, please do not hesitate to contact the relevant Fisheries Assessment Manager for this fishery.

Marine Stewardship Council
cc: Accreditation Services International

Appendix 1.3 Small-scale fisheries

To help identify small-scale fisheries in the MSC program, the CAB should complete the table below for each Unit of Assessment (UoA). For situations where it is difficult to determine exact percentages, the CAB may use approximations e.g. to the nearest 10%.

Unit of Assessment (UoA)	Percentage of vessels with length <15m	Percentage of fishing activity completed within 12 nautical miles of shore
All	0	0

Appendix 2 Evaluation processes and techniques

Appendix 2.1 Site visits and stakeholder participation

The reassessment team consisted of Chrissie Sieben (Team Leader), Charles Daxboeck and Jo Gascoigne. C. Sieben and C. Daxboeck attended the on-site visit while J. Gascoigne participated remotely. The audit took place at the MMR offices in Rarotonga, Cook Islands from 11 to 12 November 2019. An additional meeting was organised with Te Ipukarea Society staff at their offices, on the 12th November 2019 (see Appendix 4). The site visit participants are listed in Table 10. The audit was carried out in accordance with the MSC Fisheries Certification Procedure v2.1 for procedure and the MSC Standard v2.01 for scoring.

The reassessment was announced on the MSC website on the 3rd October 2019 and stakeholders were contacted individually via email on the 5th October 2019. One formal submission was received in relation to this assessment, from ISSF. This is further detailed in Appendix 4.

Table 34. List of reassessment site visit participants

Name	Role / organisation
Pamela Maru	Cook Islands Ministry of Marine Resources, Secretary (remote participation)
Andrew Jones	Cook Islands Ministry of Marine Resources, Acting Director, Offshore Division
Marino Wichman	Cook Islands Ministry of Marine Resources, Data Manager
Ruiruia David	Cook Islands Ministry of Marine Resources, Fisheries Officer
Saiasi Sarau	Cook Islands Ministry of Marine Resources, Fisheries Officer
Joe Murphy	LTFV (remote participant)
Eric Gilman	LTFV
Sunny Xiao	Huanan Fishery (Cook Islands) Co.,Ltd.
Kelvin Passfield	Te Ipukarea Society, Technical Director
Kate McKessar	Te Ipukarea Society, Project Officer
Charles Daxboeck	CU Pesca (now Control Union UK)
Chrissie Sieben	CU Pesca (now Control Union UK)
Jo Gascoigne	CU Pesca (now Control Union UK) (remote)

Appendix 2.3 Evaluation techniques

No public announcements were made, other than through the MSC website and MSC update emails, as well as through CU UK’s announcement notification (published on the MSC website) and sent out individual stakeholders.

The assessment was based on a review of publicly available data and documentation, and data, information and documentation provided by stakeholders during and after the site visit. Where data analyses were carried out by the assessment team, this is indicated in the report. The main source for catch data were the MMR logbook data and observer reports which were analysed for the period 2015 – 2018.

Scoring was agreed by the team via email correspondence. Consensus was reached for all scores.

The scores were decided as follows:

How many scoring issues met?	SG60	SG80	SG100
All	60	80	100
Half	FAIL	70	90
Less than half	FAIL	65	85
More than half	FAIL	75	95

Note that where there is only one scoring issue in the SG, the issue can be partially scored – in this case the team used their judgement to determine what proportion of it was met, e.g. at the 100 level, a small part met = 85, about half met = 90, nearly all met = 95.

d) Decision rule for reaching the final recommendation: The decision rule for MSC certification is as follows:

- No PIs scores below 60;
- The aggregate score for each Principle, rounded to the nearest whole number, is 80 or above.

The aggregate score for each Principle is the sum of the weighted score of each Performance Indicator within that Principle.

Appendix 3 Peer review reports

Appendix 3.1 Peer reviewer 1

General comments

Question	Yes/No	Peer Reviewer Justification (as given at initial Peer Review stage). Peer Reviewers should provide brief explanations for their 'Yes' or 'No' answers in this table, summarising the detailed comments made in the PI and RBF tables.	CAB Response to Peer Reviewer's comments
Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	No	<p>The scoring of Principles 1 and 3 appears to be consistent with the MSC Standard and is based on evidence presented in the report.</p> <p>The scoring of Principle 2 appears to deviate from MSC Standard requirements in many respects, and is reliant in some areas on assertions that are not supported by evidence in the report. My comments on Principle 2 are therefore critical and extensive in nature.</p>	Please see our individual responses to your comments.
<p>Are the condition(s) raised appropriately written to achieve the SG80 outcome within the specified timeframe?</p> <p>[Reference: FCP v2.1, 7.18.1 and sub-clauses]</p>	No	<p>The conditions relating to MSC Principle 1 (1-6) are appropriately written and seem likely to achieve the SG80 requirements in the specified timeframe.</p> <p>Condition 7: this is appropriately written and seems likely to achieve the SG80 requirements in the specified timeframe.</p> <p>Condition 8: the condition is not likely to meet the SG80 requirements in the specified timeframe.</p> <p>It is reasonable to presume that the observer programme can be improved in a period of 2 years. However the SI requires more than this: it requires some determination whether the UoA may be a threat to the protection and recovery of the ETP species. This requires some understanding of the status of the ETP species impacts (over 20 are listed in Table 25 of the report).</p> <p>It would seem more appropriate to use the first two years of certification to improve observer coverage and then in the next one or two years to maintain the level of</p>	These comments were also raised in relation to PI 2.3.3. Please see our response there.

Question	Yes/No	Peer Reviewer Justification (as given at initial Peer Review stage). Peer Reviewers should provide brief explanations for their 'Yes' or 'No' answers in this table, summarising the detailed comments made in the PI and RBF tables.	CAB Response to Peer Reviewer's comments
		<p>coverage whilst the UoA evaluates the consequences of fishery impacts for the species concerned.</p> <p>Also, given the observation that observer coverage steadily declined during the previous period of certification, it would seem appropriate to extend the period for the milestones to ensure that any changes to observer coverage are long-term and not just temporary.</p>	
Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from enhancement activities?	N/a	Not applicable - not an enhanced fishery.	No comment required.
Optional: General Comments on the Peer Review Draft Report	N/a	<p>General comment: the draft scoring range from the ACDR has been retained in this iteration of the report. I think that it should be removed either at this stage or prior to publication of the PCDR.</p> <p>Section 3: Units of assessment and certification It would be very helpful if the UoA/UoC definition included a map showing the extent of the UoA and relevant management areas (such as national EEZs, the extent of the WCPFC area, and FAO areas). The map in Figure 3 of the report could usefully be moved to this location.</p> <p>Section 4.3 Summary of Conditions: It is noted that 5 of the 8 conditions of certification proposed in this report relate in some way to conditions from the earlier period of certification. An explanation for this is given for one of these conditions here, but not for the other 4 conditions. Some explanation could usefully be provided (i.e. a summary of the variation presented in Appendix 1.2).</p>	<p>We adhered to the MSC template which includes the draft scoring range.</p> <p>The unit of assessment section is purely procedural. We prefer to maintain the structure of the report and keep the figure in the Fishery overview section.</p> <p>The summary already states that "All Principle 1 conditions for SP ALB and WCPO YFT were carried over from the previous certification cycle, following MSC approval of the CAB-wide variation request, discussed in Appendix 1.2 (CAB-wide variation</p>

Question	Yes/No	Peer Reviewer Justification (as given at initial Peer Review stage). Peer Reviewers should provide brief explanations for their 'Yes' or 'No' answers in this table, summarising the detailed comments made in the PI and RBF tables.	CAB Response to Peer Reviewer's comments
			request Principle 1). ". We believe this suits the purposes of the summary and readers are referred to the appendix for more detail.

Performance Indicator Comments

Principle 1 - Albacore

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Albacore						
1.1.1	Yes	No (scoring implications unknown)	NA	<p>Sl_a: there is clearly a high degree of certainty that the stock is above PRI (if this is 20% SBF=0) and SG100 is justified for this SI since this Sbrecent/SBF=0 is 0.32.</p> <p>Please note the comments on Sl_b below - the reference points being used to evaluate scoring of Sl_a and Sl_b are not clearly aligned with the MSC Standard, which means that although scoring may not be affected, the underlying rationale for the scoring might be flawed.</p>	See response for 1.1.1b below	Accepted (no score change)
1.1.1	Yes	No (scoring implications unknown)	NA	<p>Sl_b: I suspect the scoring is correct, but the rationale isn't. This is clear from the statement of stock status relative to reference points at the end of the PI, which indicates that the stock meets Sl_a because it is above the PRI of 20% SBF=0, and that Sl_b is met because the minimum estimate Sbrecent / SBmsy is 1.58 (SBmsy being 15% SBF=0 for this stock (see Figure 8 data in the report). It doesn't make</p>	<p>The reviewer makes a good point; the reference points used in 1.1.1a and 1.1.1b are individually consistent with the standard, but not consistent with each other. As the reviewer notes, the choices are either a) decide to use Bmsy and fix the PRI from that or b) decide to use Blim a proxy for the PRI and fix 'a level consistent with MSY' from that, using the guidance in GSA2.2.3.1.</p> <p>The guidance in GSA2.2.3.1 states: In the case where either BMSY or the PRI are analytically determined, those values should be used as the reference points</p>	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Albacore						
				<p>any sense that PRI should be 20% of SBF=0 and MSY should be 15% of SBF=0.</p> <p>The Figure presented in the rationale doesn't show that SBcurrent is >SBmsy. All it seems to show is the total catch from the fishery. The summary table in the narrative text (labelled as Figure 8) provides a much clearer basis for the conclusions drawn here.</p> <p>The text describing stock status relative to reference points is in a muddle. Section 6.4.4 of the report states that SBmsy for this stock is estimated at ~15% SB0 which is acknowledged to be "much lower than the MSC default of 40% SB0".</p> <p>Having noted this, the team should have looked at GSA2.2.3.1 to determine appropriate values for Bmsy and PRI for this stock. This would provide a firmer foundation for the rationale.</p> <p>The options available to the team would seem to be either to use the analytically determined SBmsy of</p>	<p>for measuring stock status unless additional precaution is sought. ... In the case where BMSY is analytically determined to be lower than 40%B0 (as in some highly productive stocks), and there is no analytical determination of the PRI, the default PRI should be 20%B0 unless BMSY<27%B0, in which case the default PRI should be 75%BMSY.</p> <p>Logically, therefore, since Bmsy is analytically determined while the PRI is not, but Bmsy is <27%B0, then scoring of 1.1.1a should be based on 75% Bmsy (option a) above). The question remains, however as to whether 'additional precaution is sought' in this case. We can try to evaluate where the PRI might sit based on the likely SR relationship, but overall, there is little consistency in terms of view of SR relationships across tuna stocks and RFMOs. In tuna stock assessments h can range from 0.75 (or lower in sensitivities) to 0.9 to no relationship (cf IATTC). These different values of h obviously have implications for where the PRI would sit. This assessment uses 0.8 in the base case model, and under this assumption recruitment is reduced to 80% of R0 at 10%SB0. This implies that at Blim (20%SB0) R would be >90%R0 while at 12%SB0 (75%SBmsy) it would be in the range 80-90%R0 (note these are estimated by eye not calculated analytically). This seems like an appropriate level for the PRI.</p> <p>Sla has therefore been rescored based on</p>	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Albacore						
				<p>15% SBF=0 and calculate PRI from this; or to use the management LRP of 20% SBF=0 and double it to determine SBmsy (i.e. 40% SBF=0).</p> <p>Although these comments do not greatly affect the scoring at this point, it is important to ensure that this PI is evaluated correctly if the general downward trend for the stock is maintained. Using reference points that are too high could trigger unnecessary conditions or suspension of the certificate; and using values that are too low would be detrimental to the stock.</p>	<p>75%Bmsy=12%B0 rather than on Blim. As the reviewer rightly surmised, the scores did not change.</p> <p>The figure was removed, since the reviewer did not find it helpful.</p>	
1.1.2	Yes	Yes	NA	Stock is not depleted, so PI not scored.	No comment required.	
1.2.1	Yes	Yes	Yes	<p>Sl-a: the scoring is appropriate, and I agree that it triggers a condition.</p> <p>The condition raised is appropriately written and appears likely to attain the SG80 score in the specified timeframe.</p>	No comment required.	
1.2.1	Yes	Yes	NA	Sl-b-e: Scoring is appropriate.	No comment required.	
1.2.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	Sl-f: I have a query about the assertion that "Discarding rates for yellowfin are minimal, according to	The rationale has been revised, the scoring was not changed.	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Albacore						
				<p>the stock assessment report."</p> <p>This statement is at odds with the rationale for PI1.2.3 "information and monitoring" (see PI1.2.3, Sla, item 5, "Data Gaps", which states that "Observer coverage (providing external verification of logbook data and information about discards) is low for the longline fishery."</p> <p>Can the team provide some further background to justify the scoring approach for Sif.</p>		
1.2.2	Yes	Yes	Yes	<p>Sla: the scoring is appropriate, and I agree that a condition should be raised for this SI. However a significant omission from the rationale is any mention of the Cook Islands own legislation (the Marine Resources (Large Pelagic Longline Fishery and Quota Management System) Regulations 2016) an in particular Schedule 4 of these Regulations which sets out a Fishery Plan for the Albacore and Bigeye tuna fishery within the Cook Islands EEZ. This is the basis for the TAC set for the fishery (also omitted).</p>	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>The rationale is based on an analysis of whether MSC's criteria for allowing a HCR to be 'available' are met. Previously in constructing these rationales, the P1 assessor had included a summary of what measures are in fact in place, alongside this analysis - as the reviewer suggests here. However, MSC Technical Oversight had required this information to be removed so that the rationale would focus solely on the MSC requirements around an available HCR. We would therefore prefer to keep the rationale as is, as the reviewer's suggestion will not affect scoring.</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Albacore						
				The condition raised is appropriately written and appears likely to attain the SG80 score in the specified timeframe.		
1.2.2	No (score increase expected)	No (score increase expected)	NA	Slb: scoring of this SI is not conditional on the HCRs being "in place". Judging by the stock assessment there has been some consideration of uncertainties, and it would seem appropriate to consider whether SG80 might be met.	A HCR that is notional rather than actual cannot be considered robust to uncertainties. In any case, this is agreed harmonised scoring.	Not accepted (no score change)
1.2.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	<p>Slc: A couple of issues here:- First (related to comments for PI1.1.1 Slb above), please decide which reference points are being used, and for what. Saying that F_{recent} is below F_{msy} is all very well, but according to the stock assessment reference points (Figure 8), F_{msy} would result in a SB that is 15% of SBF=0, which is lower than the LRP set by the WCPFC (20% SBF=0). Fishing at F_{msy} would not, therefore "maintain the stock above the LRP" as stated in the rationale.</p> <p>Secondly - this SI evaluates whether the tools in use are appropriate or effective. Nowhere is it stated what tools are used to control</p>	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>It was meant that fishing the stock at the actual current level of F maintains it above the LRP - the rationale has been clarified.</p> <p>See comment above regarding Sla - the same thing happened here; i.e. according to MSC TO, the rationale should be confined to evaluating whether MSC requirements for this PI under an 'available' HCR are met.</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Albacore						
				exploitation of the stock. It is indicated elsewhere in the report (Table 11) that a TAC is set for albacore in the Cook Islands EEZ; and section 6.4.3 mentions that the WCPFC are using overall fleet effort as a management tool. Neither are mentioned here, and both should be evaluated.		
1.2.3	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SlA: the scoring comments and data presented in the report do not show how all of the SG80 requirements are met, particularly with regard to "fleet composition and other data".	A sentence has been added to cover each of the headings in SG80.	Accepted (no score change)
1.2.3	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SlB: the scoring rationale specifies with 6 bullet points why the SG100 requirements are not met; it would be more helpful if it could specify instead how the SG60 and 80 requirements are met with the same thoroughness. Several of the bullet points stating why SG100 is not met would suggest that SG80 is also not met, and it would be helpful if this was explicitly addressed in the scoring.	The rationale has been clarified.	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Albacore						
1.2.4	Yes	Yes	NA	The scoring is appropriate and supported by a strong rationale for all SIs.	No comment required.	

Principle 1 - Yellowfin

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Yellowfin						
1.1.1	Yes	Yes	NA	<p>The scoring is appropriate. Evidence is presented to show that there is a high degree of certainty that the stock is above PRI and that it has been above Bmsy over recent years.</p> <p>I note that Bmsy has been analytically determined but that PRI has not. The team's decision to use 20% B0 as a proxy for PRI is appropriate for a stock where Bmsy is determined to be more than 27% B0.</p>	No comment required.	
1.1.2	Yes	Yes	NA	Stock is not depleted, so PI not scored.	No comment required.	
1.2.1	Yes	Yes	Yes	Sla: the scoring is appropriate, and I agree that it triggers a condition.	No comment required.	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Yellowfin						
				The condition raised is appropriately written and appears likely to attain the SG80 score in the specified timeframe.		
1.2.1	Yes	Yes	NA	Slb-e: Scoring is appropriate.	No comment required.	
1.2.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	<p>Slf: I have a query about the assertion that "Discarding rates for yellowfin are minimal, according to the stock assessment report."</p> <p>This statement is at odds with the rationale for PI1.2.3 "information and monitoring" (see PI1.2.3, Sla, item 5, "Data Gaps", which states that "Observer coverage (providing external verification of logbook data and information about discards) is low for the longline fishery."</p> <p>Can the team provide some further background to justify the scoring approach for Slf.</p>	Clarification has been added.	Accepted (no score change)
1.2.2	Yes	Yes	Yes	<p>Sla: the scoring is appropriate, and I agree that a condition should be raised for this SI.</p> <p>The condition raised is appropriately written and appears likely to attain</p>	No comment required.	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Yellowfin						
				the SG80 score in the specified timeframe.		
1.2.2	No (score increase expected)	No (score increase expected)	Yes	Slb: scoring of this SI is not conditional on the HCRs being "in place". Judging by the stock assessment there has been some consideration of uncertainties, and it would seem appropriate to consider whether SG80 might be met.	A HCR that is notional rather than actual cannot be considered robust to uncertainties. In any case, this is agreed harmonised scoring.	Not accepted (no score change)
1.2.2	No (score increase expected)	No (score increase expected)	Yes	Slc: it is stated that "SG80 is not met because the HCR does not include well-defined target exploitation levels". I disagree. This SI does not require "well-defined exploitation levels" (sensu Sla); the "available" exploitation levels which were used to score PI1.1.1 could be evaluated here, and the scoring increased accordingly.	Apologies but we cannot find this statement. No changes were made.	Not accepted (no score change)
1.2.3	Yes	Yes	NA	Sla: the scoring comments and data presented very clearly show how all of the SG80 requirements are met, and this approach is commendable.	No comment required.	
1.2.3	No (scoring implications unknown)	No (scoring implications unknown)	NA	Slb: the scoring rationale specifies with 6 bullet points why the SG100 requirements are not met; it would be more helpful if it could specify instead how the SG60 and 80 requirements are met with the same	This has been addressed.	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Yellowfin						
				thoroughness. Several of the bullet points stating why SG100 is not met would rather suggest that SG80 might also not be met, and it would be helpful if this was explicitly addressed in the scoring.		
1.2.4	Yes	Yes	NA	The scoring is appropriate and supported by a strong rationale for all SIs.	No comment required.	

Principle 1 - Bigeye

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Bigeye						
1.1.1	Yes	Yes	NA	The scoring is appropriate. Evidence is presented to show that there is a high degree of certainty that the stock is above PRI and that it has been above Bmsy over recent years.	No comment required.	
1.1.2	Yes	Yes	NA	Stock is not depleted, so PI not scored.	No comment required.	
1.2.1	Yes	Yes	Yes	SIa: the scoring is appropriate, and I agree that a condition should be raised for this SI. However a significant omission from the rationale is any mention of the Cook	Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Bigeye						
				<p>Islands own legislation (the Marine Resources (Large Pelagic Longline Fishery and Quota Management System) Regulations 2016) an in particular Schedule 4 of these Regulations which sets out a Fishery Plan for the Albacore and Bigeye tuna fishery within the Cook Islands EEZ. This is the basis for the TAC set for the fishery (also omitted).</p> <p>The condition raised is appropriately written and appears likely to attain the SG80 score in the specified timeframe.</p>	As per our previous responses to this issue, according to MSC TO, the rationale should be confined to evaluating whether MSC requirements for this PI under an 'available' HCR are met.	
1.2.1	Yes	Yes	NA	Sib-e: Scoring is appropriate.	No comment required.	
1.2.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	<p>Sif: I have a query about the assertion that "Overall discarding rates for bigeye are minimal, according to the stock assessment report."</p> <p>This statement is at odds with the rationale for PI1.2.3 "information and monitoring" (see PI1.2.3, Sla, item 5, "Data Gaps", which states that "Observer coverage (providing external verification of logbook data and information about discards) is low for the longline fishery."</p>	The rationale has been revised.	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Bigeye						
				Can the team provide some further background to justify the scoring approach for S1f.		
1.2.2	Yes	Yes	Yes	<p>S1a: the scoring is appropriate, and I agree that a condition should be raised for this SI.</p> <p>The condition raised is appropriately written and appears likely to attain the SG80 score in the specified timeframe.</p>	No comment required.	
1.2.2	No (score increase expected)	No (score increase expected)	NA	S1b: scoring of this SI is not conditional on the HCRs being "in place". Judging by the stock assessment there has been some consideration of uncertainties, and it would seem appropriate to consider whether SG80 might be met.	A HCR that is notional rather than actual cannot be considered robust to uncertainties. In any case, this is agreed harmonised scoring.	Not accepted (no score change)
1.2.2	No (score increase expected)	No (score increase expected)	NA	S1c: it is stated that "SG80 is not met because the HCR does not include well-defined target exploitation levels". I disagree. This SI does not require "well-defined exploitation levels" (sensu S1a); the "available" exploitation levels which were used to score PI1.1.1 could be evaluated here, and the scoring increased accordingly.	Only SG60 can be met here if we are using the scoring of 'available' under S1a. The explanation as to why SG80 is not met has been clarified.	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Bigeye						
1.2.3	Yes	Yes	NA	SlA: the scoring comments and data presented very clearly show how all of the SG80 requirements are met, and this approach is commendable.	No comment required.	
1.2.3	No (scoring implications unknown)	No (scoring implications unknown)	NA	SlB: the scoring rationale specifies with 6 bullet points why the SG100 requirements are not met; it would be more helpful if it could specify instead how the SG60 and 80 requirements are met with the same thoroughness. Several of the bullet points stating why SG100 is not met would rather suggest that SG80 might also not be met, and it would be helpful if this was explicitly addressed in the scoring.	The rationale has been expanded.	Accepted (no score change)
1.2.4	Yes	Yes	NA	The scoring is appropriate and supported by a strong rationale for all SlS.	No comment required.	

Principle 2

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
2.1.1	Yes	Yes	NA	The scoring is appropriate.	No comment required.	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
2.1.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	SIa: it is difficult to reconcile the conclusion that SG80 is met (i.e. "There is a partial strategy in place for the UoA") for each of the species concerned (Albacore / Yellowfin / Bigeye tuna) with the conclusion in PI1.2.2 SIa for the corresponding species that HCRs cannot be considered to be "in place" for the same stock. It would seem to be more consistent with the scoring of PI1.2.1 SIa to score this SI at <80.	None of the primary species meet this SI at SG100, so only a partial strategy is considered to be in place. The definition for a partial strategy is not the same as for a HCR considered 'in place' in the context of Principle 1. In Principle 2, the bar is somewhat lower in that a partial strategy asks for a 'cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically.' The WCPFC process of monitoring, assessment and management review for each of the three stocks discussed clearly means that this definition is met. The scoring was not changed.	Not accepted (no score change)
2.1.2	Yes	Yes	NA	SIb-e are scored appropriately.	No comment required.	
2.1.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	SIf: The narrative text for P2 (section 6.7.2) and the scoring rationale for PI1.2.3 SIa highlights the limited observer data available for the fishery. A discard rate of over 1% of the catch is reported for the observer trips for each of the main primary species (Table 25), from observer trips amounting to an average of less than 5% of all trips (Table 26). The assertion that "All primary species are retained for sale" is thus clearly at odds with the	We have revised the rationale to state the following: The vast majority of the main primary species are retained for sale, as evidenced by the observer data which have reported discard rates of 1.41%, 3.36% and 2.53% for albacore, yellowfin and bigeye respectively (Table 25). This is further supported by the observer data collected over the course of this fishery's certificate (between 2014 and 2017) which indicate a < 1% discard rate by number of fish, rather than weight (Sieben and Daxboeck, 2019). MSC Guidance states the following (MSC Standard v2.01 GSA3.5.3): Any non-negligible proportion of the catch that meets the unwanted definition (...) for a	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				(limited) data available, and it would seem appropriate to review the approach to scoring this SI.	particular species should be assessed as unwanted catch. In the absence of guidance on what constitutes 'negligible', the team concludes that the reported discard rates demonstrate there is no 'unwanted catch' of the main primary species. SG60 and SG80 are therefore met by default. As there is no biennial review of discarding practices for all primary species, SG100 is not met. The overall PI score remains the same.	
2.1.3	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	<p>SIa: it is stated here that "There is quantitative information on the catch of main and minor primary species (landings and discards) from logbooks and observers." This is incorrect, as detailed in section 6.7.2 of the report: logbooks provide data on catches, which are reconciled with landings; observer trips are the only source of information on discarding from the fishery. Further to this, there is a very low level of observer coverage (Table 26). I would agree that the SG80 requirements are just about met, but not SG100 which requires a "high degree of certainty" which is plainly absent in this fishery because of the low observer coverage.</p>	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>The rationale states that 'There is quantitative information on the catch of main and minor primary species (landings and discards) from logbooks and observers.' Even at low coverage, it cannot be disputed that the observer data do not provide a quantitative estimate of discard rates in the fishery. As argued in 2.1.2 above, the level of discarding of the main primary species is negligible, meaning that the logbook data (at 100% coverage) can be considered the key source of catches of main primary species so that the impact of the UoA on the stocks concerned can be determined with a high degree of certainty. We add that high degree of certainty in the context of the primary species component is 90% (Table SA9 - MSC Standard v2.01). We have added some clarifications to the rationale but the scoring has not changed.</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				Either the provision of further information for each scoring element (Albacore / Yellowfin / Bigeye tuna) or a score reduction for this SI to 80 would seem appropriate.		
2.2.1	Yes	Yes	NA	<p>The scoring is appropriate and supported by a well-reasoned rationale for all of the secondary species.</p> <p>I note the comment made by the team about the age of the data available for Indian oil sardine. Given the short lifespan of this species, the value of stock assessments that were published 9 years ago is questionable. It would perhaps have been more appropriate to use the RBF to assess this species in the absence of more recent data, but given the geographical challenge that this would present (the Gulf of Oman being a long way from the West Pacific), the assessment team's approach appears pragmatic.</p>	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>No comment required. Please note that the rationale for <i>S. longiceps</i> was revised following rescoring of this PI at surveillance for the SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna and American Samoa EEZ Albacore and Yellowfin Longline fisheries</p>	
2.2.2	Yes	Yes	Yes	Sla - the scoring is appropriate and supported by an well-reasoned rationale for blue marlin and for the	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p>	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>bait species.</p> <p>It is appropriate to raise a condition here relating to the sustainable sourcing of bait. The condition raised is appropriately written and appears likely to attain the SG80 score in the specified timeframe.</p>	No comment required.	
2.2.2	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	<p>Slb - a number of comments here.</p> <p>i) Scoring elements - given that the different elements are subject to very different management regimes it is essential that each should be scored separately (as per Sla).</p> <p>ii) Blue marlin - it is clear that this species meets the SG80 requirements for this SI.</p> <p>iii) Bait species - by the team's own admission in Sla, there is a very limited understanding of both the management arrangements in place for either of the bait species ("As far as the team are aware there is no management in place to limit catches...."); and the client group's arrangements for purchasing bait ("...it is not clear that the client</p>	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>i) there is a separate score for blue marlin as indicated in the rationale, and the same rationale applies for both bait species, so we argue that the scoring element approach has been applied.</p> <p>ii) no comment required</p> <p>iii) regardless of the management in place at stock level for the bait species, the fact remains that the UoA makes a small contribution to the overall catches on these stocks. This in itself provides an objective basis for confidence that the level of bait use in the fishery 'will work', i.e. maintaining the scoring element at the SG80 performance level (see revised rationale for 2.2.1). Please also note that the rationale for 2.2.2a was revised (following rescoring of this PI at surveillance for the SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna and American</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>group has in place a cohesive arrangement that ensures that bait is proactively purchased from sustainable sources.").</p> <p>Given this low level of understanding or clarity, it is not at all clear how the SG80 requirement that "There is some objective basis for confidence that the measures / partial strategy will work...." is met for these two species. The scoring rationale presents a "plausible argument" that would meet SG60, but on the basis of the information presented in the report SG80 is plainly not met for either species.</p>	Samoa EEZ Albacore and Yellowfin Longline fisheries) and now includes reference to management measures in place at stock level as well. The scoring was not changed.	
2.2.2	No (no score change expected)	No (no score change expected)	NA	<p>SI4: it is stated that "...sharks are all protected in the Cook Islands (Section 6.7.5) and are therefore considered under ETP species below."</p> <p>This is only partially true. There are 14 shark species listed in Table 25 of the report. Only four of these are evaluated as ETP species. The rest are ignored (for reasons addressed in comments below).</p>	The fact remains that sharks are considered ETP under Cook Islands legislation. In line with SA3.1.2, the team can only consider sharks under one component - here, ETP species was the most appropriate. Shark finning has been considered explicitly under 2.3.2. The scoring has not been changed.	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				My concern is that there are at least 10 shark species that are recorded as catches in the fishery and which are not evaluated; and at the same time there is no evaluation of whether or not shark finning may be taking place. Noting the at the MSC would require at least 5% observer coverage to meet the SG60 requirements with regard to shark finning, the approach to classifying and assessing shark species has created a risk that this important issue is not adequately evaluated.		
2.2.3	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	<p>Sla - a number of comments here.</p> <p>i) Blue marlin - the information available would support scoring this species at SG100.</p> <p>ii) Indian oil sardine - the rationale for PI1.1.1 shows that there is no recent information available about the status of this stock. There is a paucity of information which contrasts with the other secondary elements.</p> <p>Given the short lifespan of this</p>	<p>i) no comment required</p> <p>ii) please note the rationale for 2.2.1 has changed and details have been added to 2.2.2. in relation to stock-level management for <i>S. longiceps</i>. Sla asks whether some quantitative information is available to determine the UoA impact on the stock. Given that we know how much bait is being used by the fishery, and we have an understanding of the magnitude of overall landings of the stock, the impact of the UoA on the stock with respect to status can be inferred and it can be determined whether the UoA is likely to be hindering recovery (see 2.2.1). This supports an SG80 score.</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>species (2-3 years), the fact that the most recent stock data were published 9 years ago clearly prevents any quantitative assessment of the impact of the UoA on this species with respect to status for the simple reason no information appears to be available about the current status of this stock (nor, as noted in comments on PI2.2.2 above is there any understanding of either the management arrangements in place for the stock or the purchasing strategy of the UoA). At best there is a qualitative basis for determining the impact of the UoA on this stock (i.e. based on the perception of stock status 9 years ago, the volume of bait used is unlikely to adversely affect stock status). SG60 is just about justified for this element, but no more.</p> <p>iii) Japanese pilchard - the information presented in PI1.1.1 for this species (such as Figures 33 and 34) shows that there is relatively recent quantitative information available, which along with the data on use of these species as bait by</p>	<p>iii) no comment required.</p>	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				the UoA supports scoring this element at SG80.		
2.2.3	Yes	Yes	NA	Slb - the scoring is appropriate.	No comment required.	
2.2.3	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	<p>Slc - a number of comments here.</p> <p>i) Scoring elements - the adequacy of information is very different for each of the main secondary species. Each should be evaluated separately against SG60 and 80. Minor species should be evaluated (as an overall category) at SG100.</p> <p>ii) Blue marlin - this scoring element would appear to meet the SG60, 80 and 100 requirements.</p> <p>iii) Indian oil sardines - noting the comments made for Sla above, this species seems unable to score more than SG60 for this SI unless additional information is provided.</p> <p>iv) Japanese pilchard - on the basis of the information presented in this report this element seems likely to meet both SG60 and SG80 requirements.</p>	<p>i) Blue marlin and bait species were assessed separately. Minor species overall were not considered to meet SG100 as made clear in the statement 'In the absence of a formal strategy for all secondary species, SG100 is not met'. We have made it more explicit that this includes minor species.</p> <p>ii) no comment required.</p> <p>iii) please see revised rationales for 2.2.1 and 2.2.2. Overall, although short-comings with bait sourcing at UoA level were identified, the information available is adequate to put in place a more coherent sourcing strategy. The score of 80 is maintained.</p> <p>iv) no comment required.</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
2.3.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	Overall: it is evident from the information presented in the report that the quality of the data relating to interactions with ETP species is very limited. It is also clear from this information and the wording of the scoring rationales that the impact of the UoA on the ETP species concerned cannot be analytically determined. Given that this is a re-assessment, the assessment team would have been aware of this prior to the site visit. The Risk Based Framework (RBF) should have been used to assess this component.	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>It is important to bear in mind that the fishery has experienced a temporary drop in observer coverage, as explained in this report, and observer data on ETP species encounters has been provided throughout the life of the certificate. However, even at low observer coverage, extrapolations can be made so that UoA impacts on ETP species can be estimated analytically. The RBF was therefore not required.</p>	Not accepted (no score change)
2.3.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	<p>SlA: the rationale is not consistent with either the MSC requirements or the information presented in this report.</p> <p>It is asserted that: "Without comprehensive information on the exact species involved, the team retained these three groupings[Elasmobranchs, Sea turtles and Seabirds] as scoring elements for the ETP species component.</p>	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>i) The point of the 1st statement mentioned by the peer reviewer is that in the absence of 100% observer coverage, an exhaustive list of all ETP species encountered by the UoA will never be available. Therefore, for pragmatic and precautionary reasons, the species were grouped into broader species categories. For example, no birds were present in the observer data so these were considered as a group nonetheless. As will be clear from the rationales presented in Slb, detailed analyses were carried out</p>	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>Formal 'limits' (national or international) which trigger management action are not in place for any of these species groups. This scoring issue was therefore not scored."</p> <p>There are a number of problems with this approach:-</p> <p>i) It is not true - evidence is presented in Table 25 of the report and in Slb which shows that there is information about the species of shark that are known to interact with the fishery; there is even some information available on interactions with turtles.</p> <p>ii) It is incomplete - one interaction with a cetacean is reported in Table 28.</p> <p>iii) It appears to be evasive - while it may be true that there are no limits in place for the species groups, that is not the same as saying that there are no limits in place for individual species within those groups.</p> <p>iv) The approach of assessing ETP</p>	<p>for i) the most frequently caught and vulnerable elasmobranch species with the overall score limited to the most precautionary score given, ii) all sea turtle species were considered in detail, iii) seabirds were considered as a group as no species has been identified. However, we note the peer reviewer's concerns about the lack of detail on the remaining elasmobranch species and have addressed this. The overall score for elasmobranch species does not change.</p> <p>ii) This was an oversight, apologies. Cetaceans have now been added. The overall scoring is not changed.</p> <p>iii) There are no limits in place for any of the species listed in the observer data. Note that scoring issue (a) in PI 2.3.1 is scored only when there are quantitative mortality limits for that species, which is not the case here. A ban on targeting or landing is not a limit in the MSC context. See https://mscportal.force.com/interpret/s/article/PBRs-limits-cumulative-impacts-V1-3-2-0-1527262009345 for an MSC interpretation on this.</p> <p>iv) As explained above, individual species were considered although not all elasmobranch species were assessed in detail - the scoring was instead limited to the most prevalent and vulnerable scoring elements. Noting the peer reviewer's concerns, we have addressed the lack of detail on the remaining</p>	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>species by taxonomic groups does not seem to be consistent with MSC requirements (see comments on Slb below on this issue). Each individual species should be considered as a separate element.</p> <p>The scoring rationale should be revised to correct these issues.</p>	<p>elasmobranch species and added cetaceans as a group.</p>	
2.3.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	<p>Slb: Again, there seem to be significant issues with the approach and scoring rationale here, summarised below.</p> <p>i) Assessing by taxonomic groups - I would be grateful if the team can identify the section of the MSC FCR, FCP, Guidance or interpretations that permits this approach. The only situation under which I thought this was permissible is when conducting a PSA, and even then this is constrained to PI2.1.1 and 2.2.1 (not 2.3.1). If I am right, the scoring needs to be repeated and each species scored as a separate element. If I am wrong, I apologise in advance.</p> <p>ii) Shark species (1) - Table 25 of the</p>	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>i) Please see above for our response on this. Admittedly, there was an element of pragmatism involved - as is clear from the revised rationales, the additional detail on infrequently caught elasmobranch species has not changed the overall score.</p> <p>ii) Please see our response above and the revised rationale in 2.3.1 which now includes detail on all elasmobranch species encountered.</p> <p>iii) All species have now been considered in detail. This does not affect the overall scoring. We have maintained the taxonomic grouping for practicality of reporting and ultimately, each species considered has received a separate score which is in keeping with the MSC procedures.</p>	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>report lists 18 individual species of elasmobranch and two non-specific categories. The assessment team has whittled this list down to four species by excluding species with which interactions are infrequent, and also species considered most vulnerable by WCPFC (evidenced by the existence of management measures that specifically address these species). It is not at all clear that this is an appropriate approach, for three reasons:-</p> <ol style="list-style-type: none"> 1. This SI makes no distinction between "main" or "minor" - species should not be left out of the assessment because interactions are infrequent; and 2. It would seem more appropriate to use an independent index of vulnerability (such as the IUCN red list, as for turtles) rather than limit consideration of vulnerability to the handful of species that the RFMO has identified warrant specific protection. 3. It is counter to the argument that the team has used to include 		

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>seabirds as ETP species (there are no data presented anywhere in the report to show seabird interactions, yet they are included as an ETP element).</p> <p>iii) Shark species (2) - the scoring and information presented for the limited number of species appears appropriate, and (unless the team can correct my own misunderstanding) these and the other ETP elasmobranchs should be scored as individual elements.</p>		
2.3.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	<p>Slb: (continued) Sea Turtles</p> <p>i) It is not at all clear to me why the team has elected not to raise the observer data to the fleet level. Interactions are reported to be sporadic, but it is clear from the text that the team has access to data from the initial assessment of the fishery in 2015 and subsequent surveillance audits, which would suggest that there is a time series from which inferences about the level of interaction can be made (and if not, this would again suggest that the RBF should have been</p>	<p>The observer data clearly indicate that interactions with sea turtles are sporadic (2 interactions in 2015, 1 interaction in 2016 and 10 interactions in 2018). The 10 interactions are atypical as throughout the course of the certificate, encounter rates have followed this sporadic pattern. Furthermore, statistically it makes little sense to scale up these types of rare interactions. Nevertheless, the team considered the available data on sea turtle populations for each species, combined with the available observer data, and concluded that the UoA is highly likely to not hinder recovery of the species involved. We have added some additional clarification but the overall scoring has not changed.</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				used). ii) As before, each species is a separate element and should be assessed accordingly.		
2.3.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	Sib (continued) Seabirds i) It is not at all clear why seabirds are even contemplated as a group of ETP species given that there are no observer records of interactions and that the only published study cited in the report states that interactions are very rare. This is a complete non-sequitur: the team has previously excluded certain shark species on the basis that recorded interactions are rare, but is now including seabirds for which there seem to be no evidence of interactions nor any indication of which species may or may not be impacted.	Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2. Please see above for our response regarding the scoring of elasmobranch species. Regarding seabirds, the team considered it precautionary to include this group in ETP scoring given the concerns about low observer coverage and the known risk of seabird interactions in pelagic longline fisheries.	Not accepted (no score change)
2.3.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	Slc - a number of issues here:- i) Scoring elements - as far as I can tell, each species should be a scoring element here; at the very least (and providing that the MSC Standard permits this) the	Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2. We included the removal of prey as an indirect effect into our rationale. All species groups are addressed in the rationale and the rationale applies to all species	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>groupings used in SIb should be used here for consistency.</p> <p>ii) Disturbance of seabirds and turtles - notwithstanding the fact that seabird interactions appear to be a red herring, the issue of disturbance is indeed an indirect effect.</p> <p>iii) Other indirect effects - the most notable indirect effect on ETP species is generally depletion of prey. Given that tuna are a high trophic level species, it would seem very unlikely that prey depletion would be an issue; more likely that the reduction in tuna biomass could reduce competition with some of the ETP species. It would seem appropriate for this issue to be considered here.</p>	within those groups. The overall scoring has not changed.	
2.3.2	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	<p>SIa: Following on from the comments on PI2.3.1 above:-</p> <p>i) Scoring elements - if the scoring elements are revised in accordance with my understanding of MSC requirements and all of the ETP species listed in Table 25 are</p>	i) we disagree. The combination of a shark sanctuary in Cook Islands waters that protects all elasmobranch species, combined with monitoring through observer coverage as well as the UoA policies, best handling and release practices and training programme all mean that the requirement of a strategy for all elasmobranch species are met. The scoring has not changed.	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>assessed as individual elements rather than being arbitrarily excluded, then it became clear that for many of these species (particularly the elasmobranchs) there is no strategy in place, and an overall score of less than 80 will result.</p> <p>ii) Seabirds - the scoring rationale presented here makes a nonsense of considering seabirds and runs counter to the rationales used elsewhere. Having established in PI2.3.1 that interactions with seabirds have not been recorded by observers, this SI makes it clear that WCPFC have no management measures in place for seabirds in the UoA (which you will recall were the arguments used to justify excluding certain elasmobranchs from consideration in PI2.3.1). Applying the team's own logic, there seems to be no reason whatsoever to include seabirds for consideration. They should be removed.</p>	<p>ii) we disagree with the peer reviewer, for the reasons explained above. We have included seabirds on a precautionary basis in this assessment. This element does not contribute to a higher score for this PI so there is no harm in including it here. We maintain that seabirds should be considered in the scoring. Please also note that the WCPFC does have management measures in place for the UoA, through a CMM which explicitly excludes the Cook Islands from its requirements. This contributes to the overall conclusion that there is a strategy in place for ETP species. The scoring has not changed.</p>	
2.3.2	Yes	Yes	NA	SIb: This is fine.	No comment required.	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
2.3.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	<p>Slc: Some recurring themes:-</p> <p>i) Elements - each element should be scored individually to be consistent with the other SIs (whether by species which I think is the correct approach, or by groups if there is something in the MSC Standard to allow this).</p> <p>ii) Seabirds - again, why are these even being considered?</p>	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>As made clear in the rationales, the rationales presented for ETP species groups applies to all species within those groups. We have previously responded as to why seabirds are included in the analysis. The rationale was not changed.</p>	Not accepted (no score change)
2.3.2	Yes	Yes	NA	<p>Slid: The scoring seems appropriate, thought it would be better to make it clear to what extent the implementation (monitoring and training) applies to each scoring element in a manner that is consistent with the MSC Standard (i.e. by each species or grouping).</p>	<p>As made clear in the rationale, the justification presented applies to all ETP species. No changes were made.</p>	Not accepted (no score change)
2.3.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	<p>Sle: Similar comments to before:-</p> <p>i) Scoring elements - each element (most likely species, but if I am wrong then groups) should be considered separately.</p> <p>ii) Elasmobranchs - unless I am mistaken, the current CMM in place is 2019-04. This comes into force</p>	<p>i) we have added that the rationale applies to all ETP species</p> <p>ii) this report was drafted before the new CMM on sharks was agreed. It is also not yet in force.</p> <p>lii) the report states: "For sea turtles, CMM 2018-04 was adopted at WCPFC15 following the advancements in best practices and technologies to avoid interactions and/or reduce the severity of</p>	Accepted (non-material score reduction)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>on November 1st 2020, and replaces other CMMs, the most recent of which was made in 2014. On this basis, SG80 is met for certain shark species (a review every 5 years is "regular").</p> <p>iii) Sea turtles - the text requires some clarification, as it is not at all clear from the way that information is presented how frequently any alternative measures for minimising UoA impacts on sea turtles are reviewed.</p> <p>iv) Seabirds - having previously stated under SIa that CMM 2018-03 does not apply in the UoA, it is not at all clear why this CMM and related instruments are mentioned here or taken into account in the scoring. Earlier comments about seabirds apply again - there seems to be no reason to take them into account given the apparent absence of any interactions. Their inclusion here has skewed the scoring upwards, and obscures a clear and realistic perception of the fishery's performance against this SI.</p>	<p>interactions with sea turtles, through scientific studies including WCPFC and Common Oceans (ABNJ) Tuna Project workshops (2016) on the Joint Analysis of Sea Turtle Mitigation Effectiveness (ABNJ, 2017b), which indicate that the use of large circle hooks and fish bait, independently and together, reduce the rate of interaction and significantly decreases sea turtle bycatch." This meets the requirements of a regular review.</p> <p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>iv) we disagree that by including seabirds we have skewed the scoring upwards. However, noting the peer reviewer's concerns about the level of detail presented for each species, we agree that the 100 score may have been too optimistic, although bycatch in longline fisheries is reviewed on an annual basis through the WCPFC scientific committee. Therefore, we have reduced the score to 80.</p> <p>v) the second part of the SG80 scoring guidepost states "(...) and they are implemented as appropriate.". The training programme ensures that any new measures are properly implemented at UoA level. We maintain that this is relevant.</p>	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				v) Training - is not the same thing as a review of alternative measures. It is training. It has no bearing on the scoring of this SI, and has already been considered under SI d.		
2.3.3	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	Overall: again, the approach to scoring by element needs attention. This should be consistent through the ETP PIs.	We have added that the rationale applies to all ETP species.	Not accepted (no score change)
2.3.3	Yes	Yes	No	<p>SIa: I agree that a score of 60 is appropriate for this SI and that a condition should be raised.</p> <p>However the condition raised does not seem likely to meet the SG80 requirements in the specified timeframe. The reasons for this are:-</p> <p>i) It is reasonable to presume that the observer programme can be improved in a period of 2 years. However the SI requires more than this: it requires some determination whether the UoA may be a threat to the protection and recovery of the ETP species. This requires some understanding of the status of the ETP species impacts (over 20 are</p>	During the site visit, MMR made clear that they were already looking to address the issue of observer coverage - in fact, they deployed additional observers onboard UoA vessels in the weeks following the site visit. This gave the team sufficient confidence that the condition can be met. As will be clear from the analysis presented in 2.3.1, the team has already determined that the UoA is meeting the SG80 outcome requirements based on the available data. This analysis will be revisited as and when better observer data become available which is feasible in the given timeframes. As part of the surveillance programme, observer coverage (according to the method given in the ACDR) and impacts on ETP species will be evaluated each year, even after this condition is lifted. This is standard practice.	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>listed in Table 25 of the report).</p> <p>ii) It would seem more appropriate to use the first two years of certification to improve observer coverage and then in the next one or two years to maintain the level of coverage whilst the UoA evaluates the consequences of fishery impacts for the species concerned.</p> <p>iii) Given the comments in the report stating that observer coverage steadily declined during the previous period of certification, it would seem appropriate to extend the period for the milestones to ensure that any changes to observer coverage are long-term and not just temporary.</p>		
2.3.3	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	S1b: Inadequate information is presented to justify an SG80 score. No evidence is presented in the report to show that trends can be determined for all ETP elements, or that information is adequate to support a strategy to manage impacts.	Trends can be derived from observer data made available since the initial assessment. Although shortcomings were identified in the observer coverage, the consistent trends in the data since the initial assessment support the conclusion that the data are adequate to measure trends and support a strategy. Although we have added some detail, the scoring has not changed.	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
2.4.1	Yes	Yes	NA	<p>The métier used in the fishery is indeed unlikely to adversely impact any habitats, the scoring is appropriate.</p> <p>Nevertheless, the fishery does not take place in a vacuum. It takes place in the sea. It would be appropriate to identify that the UoAs interact with the epipelagic habitat.</p>	Detail has been added.	Accepted (no score change)
2.4.2	Yes	Yes	NA	SlA: scoring is appropriate.	No comment required.	
2.4.2	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	SlB: where is the evidence of "testing" required at SG100?	The fishery does not interact with VME features, this scoring issue is therefore not relevant.	Not accepted (no score change)
2.4.2	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SlC: the rationale states that "Quantitative evidence such as VMS tracks will clearly demonstrate no impact on benthic habitats. SG80 and SG100 are met." This wording is identical to the wording of the ACDR. No evidence is presented in the report so show that the assessment team has seen such tracks at the site visit. This confounds the scoring of this SI.	Additional detail has been added: Quantitative evidence such as VMS tracks (viewed by the team during the site visit and at each surveillance audit) and compliance with the 50nm exclusion zones as evidenced by the MMR, demonstrate no impact on benthic habitats. SG80 and SG100 are met. The scoring is maintained.	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				I agree that VMS data would indeed support scoring this SI. In the absence of such information, SG80 is clearly not met.		
2.4.2	Yes	Yes	NA	SId: the scoring is appropriate.	No comment required.	
2.4.3	No (no score change expected)	No (no score change expected)	NA	SIa: the reference to demersal habitats is not explained. The PI is not specific to the seabed, and the team should have considered epipelagic habitats here.	Additional detail has been added: The commonly encountered habitat impacted by the fishery is the water column on which the effect of a pelagic longline is negligible. Knowledge of demersal habitats is not relevant to this fishery, so SG60 and SG80 are met by default. SG100 is not met because it does not include a statement about 'relevant to the scale and intensity of the UoA'. The scoring has not changed	Accepted (no score change)
2.4.3	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	SIb: following on from the comment above, the fishery takes place in the epipelagic habitat, and I am not aware of any studies of impacts of pelagic longlines on epipelagic habitats having been carried out. Unless evidence to the contrary is presented, it is clear that SG100 is not met.	Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2. We are not clear why anyone would fund a study on the impact of pelagic longlines on epipelagic habitats. There needs to be some common sense here in that pelagic longlines do not have an impact on the water column, supporting the 100 score. The rationale was not changed.	Not accepted (no score change)
2.4.3	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	SIc: it is asserted that "No information is required, so SG80 is met by default.". To my knowledge this is incorrect. I am not aware of any normative text, guidance or interpretation that says this is an	Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2. The rationale has been amended to: "The only commonly encountered habitat is the water column.	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>appropriate rationale. The SI does not, for instance, have the "if necessary" qualifier that is used when this approach is an option.</p> <p>Evidence should be presented to demonstrate how information from the fishery shows clearly that SG80 is met (for instance inspections of fishing gear and VMS monitoring of the fleet).</p>	VMS data and compliance with the 50nm exclusion zones enable any increase in risk to benthic features to be detected. SG80 is met. SG100 is not met because changes in all habitat distributions are not measured over time." The scoring has not changed.	
2.5.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	<p>Information should be presented in the report to identify ecosystem elements as per GSA 3.16.2.</p> <p>The scoring rationale identifies the risk of the fishery causing trophic cascade effects, but does not provide any information (such as showing outputs from the ecosystem modelling reported) to show to what extent this may or may not have occurred, and in what way it is relevant to the UoA. We have to wait for PI2.5.3 to discover that some ecosystem modelling has been carried out.</p> <p>The report cites a study of "ecosystem size structure" without</p>	Information on the key ecosystem element has been made more explicit. The rationale refers to the background section of the report which cites numerous studies that explore trophic cascades in the context of tuna fisheries. We refer the peer reviewer to the article by Polovina and Woodworth-Jefcoats (2013a) as cited: Fishery-Induced Changes in the Subtropical Pacific Pelagic Ecosystem Size Structure: Observations and Theory for further information on ecosystem size structure and associated indicators used in the study. The team has been transparent in its approach in that we considered the status of the main target species, combined with the scale of the UoA in scoring this PI. Additional clarification has, however, been added. The overall score has not changed.	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>explaining what this is (is it the average size of fish species in the ecosystem, or something else?).</p> <p>The report then goes on to assert, with no supporting evidence from studies of the UoA that "The team therefore considered biomass at the point of recruitment impairment (PRI) to be a suitable trigger, below which irreversible ecosystem impacts might be expected."</p> <p>Further evidence is required to justify scoring this PI.</p>		
2.5.2	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	<p>SlA: the scoring is predicated on the "FAO Code" (not cited, so it is hard to be sure which document is meant by this). By implication, a "code" is not a partial strategy or strategy, since it is non-binding. There is no mention of the word "ecosystem" nor any recognition of the role of the target species in any of the relevant and current CMMs for these species. I would, however, agree that if enough evidence was presented in PI2.5.1 to show that the single-species</p>	<p>Apologies, this should have been the 1995 FAO Code of Conduct for Responsible Fisheries. There is nothing in the MSC standard that states that partial strategies or strategies should be binding. Nevertheless, we have revised the rationale which hopefully addresses the concerns raised by the reviewed. The overall scoring has not changed.</p>	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				constraints are likely to restrain impacts on the ecosystem that SG80 should be met.		
2.5.2	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	Slb: as above, the scoring is dependent on the team's assertion under 2.5.1 that PRI represents trigger point that is relevant to the ecosystem. There is no evidence of an evaluation of the UoA (such as an ecosystem model) to demonstrate that this is the case. The rationale presented here is adequate to meet SG60 (the team has presented a "plausible argument"), but no better unless an "objective basis for confidence" can be provided in the form of evidence from the fishery under assessment.	The evidence is the low level of UoA catches of the main target species (albacore, yellowfin and bigeye) compared to the overall catches of these stocks, as well as the low impacts on Principle 2 components. All this provides some objective basis for confidence that the CMMS (and measures at Cook Islands level) will work. The rationale has been reworded to better reflect this; however, the scoring has not changed.	Accepted (no score change)
2.5.2	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	Slc: again, the SG80 scoring is predicated on the team's unsubstantiated assertion in PI2.5.1 that PRI is an appropriate trigger point beyond which ecosystem structure and function may be affected.	We have also reworded this rationale to better reflect our argument. The scoring has not changed.	Accepted (no score change)
2.5.3	No (material score reduction)	No (material score reduction)	NA	Sl a: if the key elements of the ecosystem have been identified (sensu GSA 3.16.2), and are broadly understood, then why is no list of	We have added detail to the rationale and on what we consider the key ecosystem element to be. The scoring has not changed.	Accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
	expected to <80)	expected to <80)		these elements and the understanding of them presented here or elsewhere in the report? Without some demonstration that this information exists, neither SG60 nor SG80 seem to be justified.		
2.5.3	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	<p>S1b: the fishery is reported (in section 6.7.7 and PI2.5.1) to take place in the South Pacific Subtropical Gyre Province. The scoring rationale here refers to modelling which has been carried out in the western Pacific, concluding with the statement that "Although specific modelling for the South Pacific Subtropical Gyre Province (SPSG) does not yet appear to have been carried out, main interactions between the UoA and key ecosystem elements (i.e. trophic cascades through predator reduction) can be inferred from existing information, and some have been investigated in detail (e.g. Allain et al. (2012)). SG60, SG80 and SG100 are met." [My emphasis].</p> <p>This is incorrect on two counts: i) Procedural: SG80 refers to "key</p>	The peer reviewer is right in that SG100 should not be met. This has been corrected. However, scoring at SG80 does not require specific modelling of the SPSG but for some of the main fishery impacts to have been investigated which is being done through the studies cited in the rationale. SG80 is met.	Accepted (non-material score reduction)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
				<p>elements"; SG100 requires more detail than this ("elements" rather than "key elements"). The scoring comment refers only to "key ecosystem elements", so a score of no more than SG80 is warranted on the basis of the statement the team has made; however</p> <p>ii) Factual: given that there have been no investigations in detail of the UoA interactions (since modelling of the SPSG has not been carried out), SG60 would seem more appropriate.</p>		
2.5.3	Yes	Yes	NA	SIc: the scoring and rationale are appropriate.	No comment required.	
2.5.3	Yes	Yes	NA	SIId: the scoring is appropriate.	No comment required.	
2.5.3	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SIe: given the comments the team has made elsewhere in the report about the limitations of data relating to sea turtle (and ironically seabird interactions), and the scoring of PI2.3.3 SIa it is not at all clear how the SG80 requirements for this SI are met.	The same response as that given in relation to 2.3.3 applies here. Trends can be derived from observer data made available since the initial assessment. Although short-comings were identified in the observer coverage, the consistent trends in the data since the initial assessment support the conclusion that the data are adequate to detect an increase in risk level with regard to the UoA's overall impact on the ecosystem. The scoring has not changed,	Not accepted (no score change)

Principle 3

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 3						
3.1.1	Yes	Yes	NA	The scoring rationale for each SI is well reasoned, supported by information presented in the text and is fully justified. I agree with the score awarded.	No comment required.	
3.1.2	Yes	Yes	NA	The scoring rationale for each SI is well reasoned, supported by information presented in the text and is fully justified. I agree with the score awarded. Slc: a minor comment, I think that the last sentence of the rationale for the Cook Islands should say "..SG100 is not met."	Corrected, thank you.	Accepted (no score change)
3.1.3	Yes	Yes	NA	The scoring rationale is well reasoned, supported by information presented in the text and is fully justified. I agree with the score awarded.	No comment required.	
3.2.1	Yes	Yes	NA	The scoring rationale is well reasoned, supported by information presented in the text and is fully justified. I agree with the score awarded.	No comment required.	
3.2.2	Yes	Yes	NA	The scoring rationale is well reasoned, supported by information presented in the text and is fully	No comment required.	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 3						
				justified. I agree with the score awarded.		
3.2.3	Yes	Yes	NA	The scoring rationale is well reasoned, supported by information presented in the text and is fully justified. I agree with the score awarded.	No comment required.	
3.2.4	Yes	Yes	NA	The scoring rationale is well reasoned, supported by information presented in the text and is fully justified. I agree with the score awarded.	No comment required.	

Appendix 3.2 Peer reviewer 2

General comments

Question	Yes/No	Peer Reviewer Justification (as given at initial Peer Review stage). Peer Reviewers should provide brief explanations for their 'Yes' or 'No' answers in this table, summarising the detailed comments made in the PI and RBF tables.	CAB Response to Peer Reviewer's comments
Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	The report is clear, most justifications appropriate and the overall scoring agreed. I had several questions about 1.2.1, 1.2.2 and 3.1.3 which all relate to how responsive the RFMO might be. But overall, the report is good.	Thank you.
Are the condition(s) raised appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCP v2.1, 7.18.1 and sub-clauses]	Yes	1.2.1 and 1.2.2 Conditions are common to WCPO ALB, Bet and YFT. ALB and YFT have been formally harmonized as to the scoring, and all 3 have been allowed a variance to establish a consistent schedule for meeting these Conditions. The schedule largely relies on the workplan established by the RFMO. But there has been some slippage for various reasons. The Conditions are appropriately written, but the ultimate success will depend on the RFMO. Also, see General Comments, below.	No comment required.
Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from enhancement activities?	N/a	This isn't an enhanced fishery so this question isn't really applicable.	No comment required.
Optional: General Comments on the	N/a	There have been many MSC P1 evaluations for West Pac YFT and there has been a harmonization process. This report mentions that process without going into detail. I	Tuna harmonisation in MSC fisheries is a very much ongoing process. That

Question	Yes/No	Peer Reviewer Justification (as given at initial Peer Review stage). Peer Reviewers should provide brief explanations for their 'Yes' or 'No' answers in this table, summarising the detailed comments made in the PI and RBF tables.	CAB Response to Peer Reviewer's comments
Peer Review Draft Report		<p>looked up some of the recent ones and this report is largely identical in scores, especially to the recent ones. This is a good thing. But I think the report would benefit from a discussion/table of the other fisheries. This would serve two purposes: 1) it would add strength to the consensus of opinion; and 2) since all of the fisheries are faced with Conditions relating to 1.2.1 and 1.2.2 (HS and HCR) and meeting these Conditions require interaction with the WCPFC to implement the HCR,; then having a list of other fisheries with the same problem would facilitate the formation of coalitions. This was intimated in the client's action plan "CABs of other MSC fisheries with the same conditions of certification to discuss how to align and coordinate our Client Action Plan activities to address these conditions. For this activity, the client will participate in the Western and Central Pacific Ocean (WCPO) Tuna Marine Stewardship Council (MSC) Alignment Group"</p> <p>In regards to Tables 48-49 on overlapping fisheries and scoring differences: these subjects were discussed in detail in other sections of the report, so I wonder why they couldn't be filled out at the PRDR level. Of especial interest would be the timing of the harmonizations which is an element of the table. Knowing timing , provides an easy reference to whether or not harmonization is out of date or not.</p>	<p>being said, and as explained in the report, the scores do not deviate from the initial scores agreed at the Hong Kong harmonisation meeting. All scores in the harmonisation table are now up to date and reflect the scores as they currently stand for the fisheries listed. Please note that the WPCO tuna MSC alignment group is already in existence and is in fact organised by the Client representative Eric Gilman.</p>

Performance Indicator Comments

Principle 1 - Albacore

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Albacore						
1.1.1	Yes	Yes	NA	Scoring agreed	No comment required.	
1.1.2	Yes	Yes	NA	Scoring agreed	No comment required.	
1.2.1	Yes	Yes	Yes	<p>1.2.1.a scoring agreed but... The Condition will address the deficiency in HS (see General Comments). However, it should be noted that the absence of agreed harvest control rules within WCPFC for any other tuna species, and the record of the Commission failing to reduce fishing mortality on bigeye tuna when it was thought to have been subject to overfishing, reduces the level of confidence that the harvest strategy would be responsive to the state of the stock or that the elements will work together when required to do so to achieve the management objectives.</p> <p>Also, I note that the score for this is consistent with the MSC harmonization process. But that process took place some years ago. What is the evidence that provides</p>	<p>We believe this issue is addressed in Section 6.3.6. Bear in mind that the end date of the stock status time series from the stock assessment is always in arrears of management action. For the most recent bigeye stock assessment (2017 updated in 2018), the end date was 2015, corresponding to CMM 2014-01 - Year 2 of a 4-year measure with successively stricter measures. In other words, we still do not know what has been the impact of the 4-year 2013-01 to 2016-01 measure on the bigeye stock, because the stock assessment process has still has not caught up to these years. The theory of assessment leading to management response leading to re-assessment leading to adjustment in management does apply here in our view, but the timescale of assessments (time between assessments and timelag of data going in to assessments) means that it can only be applied over quite a long time frame. We believe management responsiveness has to be seen in that light.</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Albacore						
				confidence that the RFMO will be responsive?		
1.2.2	Yes	No (scoring implications unknown)	No	<p>1.2.2.a "The deadline for adopting a management procedure was 2021 but at WCPFC16 (December 2019) this was pushed back to 2022 to avoid clashing with a planned stock assessment. The process is therefore underway although some delays have been and continue to be evident. A TRP was finally agreed at WCPFC15 (2018), putting the workplan back on track." It would seem that the Dec 2019 delay action means the workplan is not on track. I mention this because of the harmonized time line for the condition. That harmonization (April 2016) and the variance approval (Feb 2019) establishes new timelines based on the RFMO plans. That is the case here. But at some point a shifting timeline would mean that the "availability" clause would not be achieved. I would like to know the effect on the schedule for the Condition, that the change in the RFMO workplan caused. Also see 1.2.1a above.</p>	<p>Please note: This PR comment response has been updated as a result of Post- PCDR comments, see Appendix 4.2.</p> <p>The condition follows the 2017 timeline as agreed with MSC through the MegVar discussed in the report. Any changes to the condition timeline based on the new workplan would have to be harmonised with other MSC fisheries on this stock and, if not consistent with usual MSC practice subject to another VR. There are no plans for such a VR at present; however progress against the condition and any changes to the workplan will be discussed at surveillance audits. For now, the condition timeline is as agreed with the MSC through the MegVar and is being audited as such.</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Albacore						
1.2.2	Yes	No (scoring implications unknown)	No	1..2.2.c The PRDR cites guidance for SA2.5.6: 'evidence that current F is equal to or less than FMSY should usually be taken as evidence that the HCR is effective'. Clearly this is the case for S Pac ALB. But it is unclear that RFMO actions are related to current levels of F. Is there evidence that RFMO actions on other stocks would support the notion of "availability"?	In fact, WCPFC set the interim target reference point for SPA at a level of F well below Fmsy. At present F on all the key WCPFC stocks is estimated to be <Fmsy. In relation to WCPFC responding to information on stock status, see the reply above in relation to 1.2.1a.	Not accepted (no score change)
1.2.3	Yes	Yes	NA	Scoring agreed	No comment required.	
1.2.4	Yes	Yes	NA	Scoring agreed	No comment required.	

Principle 1 - Yellowfin

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Yellowfin						
1.1.1	Yes	Yes	NA	Scoring agreed	No comment required.	
1.1.2	Yes	Yes	NA	Scoring agreed	No comment required.	
1.2.1	Yes	Yes	Yes	1.2.1.a Scoring agreed but..... The Condition will address the deficiency in HS (see General Comments). However, it should be noted that the general stock decline	Please see response for SPA above.	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Yellowfin						
				<p>for yellowfin (albeit with a recent increase in stock size), the absence of agreed harvest control rules within WCPFC for any other tuna species, and the record of the Commission failing to reduce fishing mortality on bigeye tuna when it was thought to have been subject to overfishing, reduces the level of confidence that the harvest strategy would be responsive to the state of the stock or that the elements will work together when required to do so to achieve the management objectives.</p> <p>Also, I note that the score for this is consistent with the harmonization process. But that process took place some years ago. What is the evidence that provides confidence that the RFMO will be responsive?</p>		
1.2.2	Yes	Yes	Yes	Scoring agreed, but see comments on YFT 1.2.1 a	Please see response for SPA above.	Not accepted (no score change)
1.2.3	Yes	Yes	NA	Scoring agreed	No comment required.	
1.2.4	Yes	Yes	NA	Scoring agreed	No comment required.	

Principle 1 - Bigeye

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Bigeye						
1.1.1	Yes	Yes	NA	Scoring agreed	No comment required.	
1.1.2	Yes	Yes	NA	Scoring agreed	No comment required.	
1.2.1	Yes	No (scoring implications unknown)	Yes	<p>1.2.1.a The Condition will address the deficiency in HS (see General Comments). However, it should be noted that the record of the Commission failing to reduce fishing mortality on bigeye tuna when it was thought to have been subject to overfishing, and the absence of agreed harvest control rules within WCPFC for any other tuna species, reduces the level of confidence that the harvest strategy would be responsive to the state of the stock or that the elements will work together when required to do so to achieve the management objectives.</p> <p>Also, this stock was not part of the formal MSC harmonization process (although the scores were consistent with other scoring for this stock by overlapping fisheries). But given that there was no formal process, there should be additional justification that the RFMO will be responsive,</p>	<p>See response for SPA 1.2.1a above; we cannot yet evaluate the results of the 4-year tropical tuna bridging measure, which included successively stricter measures aimed at reducing F on bigeye.</p> <p>The logic that bigeye should be held to stricter criteria than other stocks because it was not involved in the MSC harmonisation process seems flawed. But in any case for most Pacific stocks, the situation in terms of either stock assessment and/or management has moved on since the harmonisation process.</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Bigeye						
				especially in the case of BET where the RFMO actions in the past were unimpressive when the stock status was believed to be less well off.		
1.2.2	Yes	No (scoring implications unknown)	No	<p>1.2.2.a</p> <p>"In scoring issue (a) at the SG60 level, teams shall accept 'available' HCRs (instead of HCRs that are 'in place') in cases where: a. Stock biomass has not previously been reduced below the MSY level or has been maintained at that level for a recent period of time that is at least longer than 2 generation times of the species..." Under the current assessment the SB trajectory shows a continual decline over the last decade or so except for the last year (for which there was limited data). While the SB status is above the target criteria, are sensitivities from the spatial structure that indicate the stock could be less well off. I mention this, not to question the stock assessment, but to indicate that the declines have been known for some time. This, in turn, suggests that the "availability" of an HCR could be questioned, due to lack of response to the decline.</p>	It could, and this is why it would be helpful for WCPFC to formally agree an appropriate management target and incorporate it into management (supposedly ongoing). However, this PI is not a general analysis of the management approach; the 'availability' of a HCR is defined by MSC based on a clear set of criteria, and all these are met in this case.	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 1 - Bigeye						
1.2.2	Yes	Yes	No	1.2.2.c Scoring agreed but..... "Under SA2.5.5, in order to conclude that 'available' HCRs are 'effective' (SG60), MSC requires evidence of i) the use of effective HCRs in other stocks or fisheries under the same management body; or ii) a formal agreement or framework with trigger levels which will require the development of a well-defined HCR. " I suppose the justification here is the latter clause (a formal agreement...). But the former clause (evidence of effective HCRs in the RFMO) does not appear to be fulfilled. Because there is an "or" statement I guess this criteria is fulfilled. But confidence in management body is limited (see BET 1.2.1)	No response required (but see under SPA 1.2.1a).	Not accepted (no score change)
1.2.3	Yes	Yes	NA	Scoring agreed	No comment required.	
1.2.4	Yes	Yes	NA	Scoring agreed	No comment required.	

Principle 2

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 2						
2.1.1	Yes	Yes	NA	Scoring agreed	No comment required.	
2.1.2	Yes	Yes	NA	Scoring agreed	No comment required.	
2.1.3	Yes	Yes	NA	Scoring agreed	No comment required.	
2.2.1	Yes	Yes	NA	Scoring agreed	No comment required.	
2.2.2	Yes	Yes	Yes	Scoring agreed	No comment required.	
2.2.3	Yes	Yes	NA	Scoring agreed	No comment required.	
2.3.1	Yes	Yes	NA	Scoring agreed	No comment required.	
2.3.2	Yes	Yes	NA	Scoring agreed	No comment required.	
2.3.3	Yes	Yes	Yes	Scoring agreed	No comment required.	
2.4.1	Yes	Yes	NA	Scoring agreed	No comment required.	
2.4.2	Yes	Yes	NA	Scoring agreed	No comment required.	
2.4.3	Yes	Yes	NA	Scoring agreed	No comment required.	
2.5.1	Yes	Yes	NA	Scoring agreed	No comment required.	
2.5.2	Yes	Yes	NA	Scoring agreed	No comment required.	
2.5.3	Yes	Yes	NA	Scoring agreed	No comment required.	

Principle 3

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 3						
3.1.1	Yes	Yes	NA	Scoring agreed	No comment required.	
3.1.2	Yes	Yes	NA	Scoring agreed	No comment required.	
3.1.3	Yes	No (scoring implications unknown)	NA	<p>3.1.3 a In regards to BET the PRDR notes improvement from the previous assessment: (In the WCPFC section) "This could equally be a function of new information on age and growth, which changes the underlying model, as a real improvement in stock status derived from management action. There is some evidence that fishing mortality may have been reduced in most recent years because the biomass trajectory was downwards throughout the early time series, but most recently has trended upward." However, the graph of the SB trajectories from the most recent assessment (shown under BET 1.1.1, Figure 30) indicates that the upward trend encompasses only the last year, which uses limited data according to the report. I don't believe that this is a valid justification.</p>	<p>While there has been a downward biomass trajectory, this has significantly slowed since 2000, and an upward trend is indeed only for the last year in the model, as referenced from Figure 30 under BET 1.1.1 above. However, as emphasised in the stock assessments and the Scientific Committee (SC13 and SC14 - see Farley et al. 2017b, Vincent et al 2018, Scott et al. 2017, WCPFC 2017a & 2017b., McKechnie et al. 2017b, Farley et al. 2018b), the trajectory has been consistently downwards over the time series, but this actually means that over recent years, the stock has been in the current situation or better. In other words, the stock is at a level consistent with MSY (i.e. $SB > SBMSY$, $F < FMSY$, $C \sim MSY$), and therefore at least SG80 is met. In relation to SG100, taking the structural uncertainty grid as defined by SC14, there is a probability of approximately 95% that $SB > SBMSY$ and $F < FMSY$, and the stock has been at or above this level over the entire time series. The contention "limited data" were used, this is not correct. Limited "new data" were added to the stock assessment between the initial and the current, which has the effect of reducing uncertainty somewhat. We therefore assert the justification is valid and have added test of clarification in the report.</p>	Not accepted (no score change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Principle 3						
3.2.1	Yes	Yes	NA	Scoring agreed	No comment required.	
3.2.2	Yes	Yes	NA	Scoring agreed	No comment required.	
3.2.3	Yes	Yes	NA	Scoring agreed	No comment required.	
3.2.4	Yes	Yes	NA	Scoring agreed	No comment required.	

Appendix 4 Stakeholder input

Appendix 4.1 Prior to PCDR publication

Prior to publication of the Public Comment Draft Report (PCDR), a formal submission was received from ISSF. The submission and team response are shown below. In addition, a meeting was organised during the site visit with representatives of the Te Ipukarea Society based in Rarotonga. A summary of the meeting is also given in this appendix.

Te Ipukarea Society

Meeting date: 12 November 2019 (see Table 34 for list of participants)

The meeting focused on availability of fishery information from the MMR which the participants agreed was still not ideal. Much of the information (e.g. on ETP interactions in the longline fishery) is available in the WCPFC Part 1 reports for the Cook Islands, however, as well as in the MSC certification and surveillance reports. The participants suggested this should be shared more widely by MMR in a form suitable for public consumption. There was also concern over the quality of the observer data, especially as coverage deemed to be low. The attendees stated that more efforts towards public relations could be made by the MMR; however, the level of trust in the organisation has increased somewhat over the past 12 months. Overall, no significant grievances were issued over either the year 4 surveillance or the reassessment of this fishery. The meeting then touched on other matters, such as impacts of FADs, including bycatch issues and their beaching onto Cook Islands reefs and coastlines. While this is an issue of significant concern, it is of no relevance to this reassessment (as FAD use relates to the purse seine fishery alone).

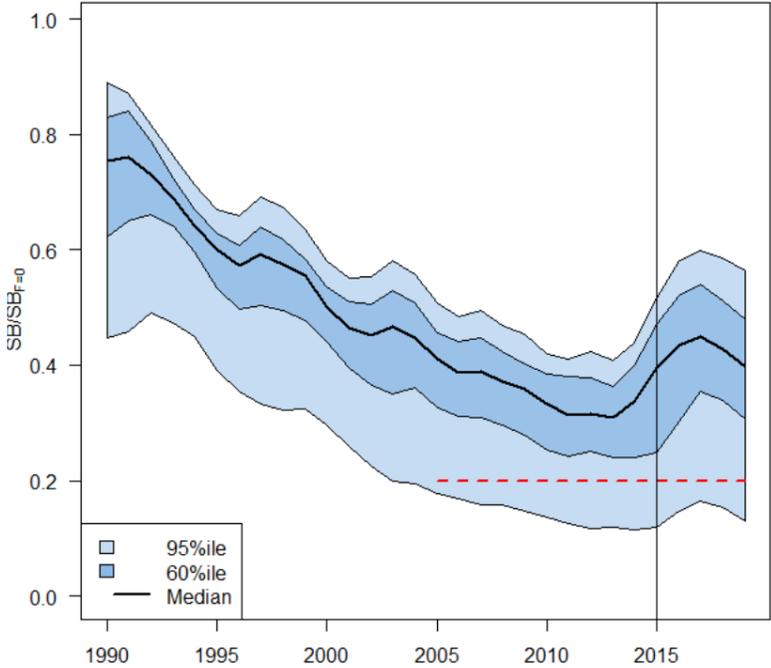
ISSF submission

The International Seafood Sustainability Foundation (ISSF) is a global partnership among the tuna industry, science and WWF, the global conservation organization. ISSF's mission is to undertake science-based initiatives for the long-term conservation and sustainable use of tuna stocks, reducing by-catch and promoting ecosystem health. The below comments were received on the 21st October 2019, following publication of the Announcement Comment Draft Report (ACDR).

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
1.2.2 (YFT)	The independent report by Medley et al. (2019) indicates that the fishery would not meet SG60 for SI 1.2.2.a and 1.2.2.c and that, as a result, the overall PI score would be less than 60 ("Fail").	<p>The independent report by Medley et al. (2019) indicates that the fishery would not meet SG60 for SI 1.2.2.a and 1.2.2.c and that, as a result, the overall PI score would be less than 60 ("Fail"):</p> <p>1.2.2.a: "At SG60, MSC allows a harvest control rule to be 'available' rather than 'in place' if the requirements summarised below are met (for full list see SA2.5.2, 2.5.3):</p> <ul style="list-style-type: none"> • Stock biomass has not previously been reduced below the MSY level, or has been maintained at that level for a recent period of time ... and is not predicted to be reduced below BMSY within the next 5 years; • HCRs are effectively used in other stocks by the same management body or an agreement or framework is in place requiring the management body to adopt HCRs before the stock declines below BMSY. <p>MSC's second requirement for an 'available' HCR is met for yellowfin by CMM 2014-06. In terms of the first, for WCPO yellowfin, stock biomass has not previously been reduced below the MSY level, according to the stock assessment. There are no short-term projections available at present based on the new assessment to evaluate likely stock trajectory over the next five years but as noted in 1.1.1 and 1.2.1, the probability of either SB or F being below the MSY level is quite small, and on that basis, it is not likely that the biomass will decline below the MSY level in the next five years. However, the biomass trajectory is consistently downwards throughout the time series, and there is no particular reason at present to suppose that it will stabilise above BMSY under the current management regime.</p> <p>However, the case of bigeye raises the question as to what actions WCPFC could be relied on to take, should the next stock assessment for yellowfin give a different perception of the stock status (as happened for bigeye in 2017). Despite bigeye being considered overfished from 2011-2017, the management actions put in place by WCPFC have shown no evidence so far of being able to reduce fishing mortality on bigeye, as shown by the most recent stock assessment. On this basis, there is no particular evidence that any 'available' HCR is able to reduce the exploitation rate as the PRI is approached. On this basis, SG60 is not met. For improvement in this scoring, some demonstrable progress is required towards a formal harvest strategy and HCR (as per CMM 2014-06) such that a more convincing argument can be made that effective action will be taken if required. There was no progress at WCPFC14 and it does not appear as if there was any at WCPFC15 either.</p> <p>The authors are aware that this scoring may not be consistent with the MSC certification of several fisheries targeting this stock. One reason for this difference is that this assessment is a pre-assessment, not a full assessment. A full assessment is based on a strict interpretation of the MSC requirements (scoring issues and guidance) at the time of scoring. A pre-assessment is more focused on risks to an MSC assessment failing and may be more useful to stakeholders to inform decisions about entering certification over a timeframe of a year or more, with the certification process taking a further year or so. A pre-assessment therefore needs to take into account what the situation with the stock is likely to be over this timeframe.</p> <p>We are concerned that although strictly the MSC requirements may be met at time of writing, there has been slow progress with the development of harvest strategies for WCPFC stocks since the commitment was made (CMM 2014-06 was agreed) and strict timelines are not being observed. The workplan for the implementation of CMM 2014-06 has been systematically revised, with CPCs seemingly unwilling to apply the timetable (e.g. see WCPFC14 report). Based on this situation, MSC-certified fisheries with condition milestones for the achievement of a formal harvest strategy for this stock should, based on MSC procedures, be first scored at audit as 'behind target' and subsequently (the following year) have their certificates suspended if progress has not been made. The authors are unclear as to why fisheries on these stocks have been able to retain their certificates in the absence of any substantive progress up till now. Based on our understanding of the MSC standard, unless granted a special case (a variation request), these fisheries would not meet MSC certification requirements at this point."</p> <p>(...)</p> <p>1.2.2.c: "Under SA2.5.5, in order to conclude that 'available' HCRs are 'effective' (SG60), MSC requires evidence of i) the use of effective HCRs in other stocks or fisheries under the same management body; or ii) a formal agreement or framework with trigger levels which will require the development of a well-defined HCR. It also requires consideration of current exploitation rates in relation to biological reference points and the agreed trigger level (guidance for SA2.5.6: 'evidence that current F is equal to or less than FMSY should usually be taken as evidence that the HCR is effective').</p> <p>The authors are aware that this is not the same as the scoring applied in various MSC certifications for fisheries targeting this stock. The reasons for this are set out in the rationale for 1.2.2a above, and are primarily due to the different purpose of a pre-assessment and timing for meeting the MSC requirements. In our opinion, in order to meet MSC requirements at this stage, some demonstrable progress is required towards an effective formal harvest strategy (as per CMM 2014-06) such that it is more clear that management tools are likely to be able to maintain stocks at agreed target levels.</p> <p>The tools by which CMM 2017-01 is implemented for yellowfin are as follows:</p> <ul style="list-style-type: none"> • temporal / spatial limits on purse seine setting on FADs • restrictions on purse seine effort (days) <p>There are no limits on longline fishing for yellowfin, although catch limits for bigeye may (may) limit effort for some CCMs. The catch time series in the 2017 stock assessment runs to 2015; the harvest strategy has only been in place since 2014, and is</p>	Medley et al. (2019)	<60	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		incremental, so it is hard to say what impact it has had up till now. Estimated juvenile F has stabilised and perhaps decreased, but the trajectory of adult F does not seem to have been altered. The trajectory of stock biomass is downwards throughout the time series. On this basis, there is no particular evidence that the various tools in place are effective in controlling fishing mortality, and no reason to suppose that the stock trajectory will not continue downwards. On this basis, SG60 is not met.”			
CAB response to stakeholder input		<p>We echo ISSF’s comments in the context of the purpose that the report serves, as put by ISSF in their submission: <i>‘this assessment is a pre-assessment, not a full assessment. A full assessment is based on a strict interpretation of the MSC requirements (scoring issues and guidance) at the time of scoring. A pre-assessment is more focused on risks to an MSC assessment failing and may be more useful to stakeholders to inform decisions about entering certification over a timeframe of a year or more, with the certification process taking a further year or so. A pre-assessment therefore needs to take into account what the situation with the stock is likely to be over this timeframe’</i></p> <p>There is also no formal obligation for the team to align themselves with the report or consider it, since it is in effect a pre-assessment.</p> <p>A pre-assessment should be more precautionary than a full assessment, regardless of its provenance and purpose. A full assessment takes all the information available from all sources to provide the best-balanced analysis possible, and the purpose is to decide, in a manner as fair and objective as possible, whether a fishery is worthy of MSC certification. A pre-assessment, conversely, takes a subset of the most easily-available information – hence conclusions are more uncertain, meaning wider confidence intervals and hence higher precaution. Furthermore, a pre-assessment may be used by fisheries to take a decision as to whether to enter MSC full assessment. As we all know, this is a costly and public process, and therefore publicly available pre-assessments have a responsibility not to suggest a fishery could pass if there is any doubt.</p> <p>Following the Fourteenth Regular Session of the Commission in December 2017, the workplan for the adoption of harvest strategies under CMM 2014-06 was extended out to 2021 to allow for ongoing work towards adoption of harvest strategies for the 4 key stocks, including WCPO yellowfin. A commitment towards a formal harvest strategy has therefore already been made. We draw your attention to the CAB-wide variation request that was granted by MSC in February 2019 which binds the WCPFC fisheries in the MSC programme to the deadline given in the workplan (see Section 4.1). This should respond to the concern raised in relation to the lack of progress made to date. The fact that the workplan was recently revised at WCPFC16 (Dec 2019) is not currently foreseen to affect this deadline.</p> <p>With regards to the HCRs on WCPO yellowfin, the team have to score based on the requirements set out in the MSC scoring guideposts and associated guidance (referred to in the submission), rather than based on speculation about what might happen to the stock in the longer term, or if the stock assessment parameters are changed (which could equally improve the perception of stock status – cf bigeye). As noted, the biomass has never been at or below B_{MSY}, and neither F nor B are at all likely to fall below this level in the next 5 years, therefore the MSC requirement is met.</p> <p>In relation to the analogy with bigeye, it is certainly true that WCPFC took a long time to respond to the bigeye issue, but realistically, decision-making in such an organisation is bound to be slow. There are now longline catch limits in place for bigeye, as well as spatial and temporal restrictions for the purse seine fishery (2016-01, 2017-01, 2018-01) and the reference case model in the most recent stock assessment (2017) shows some possibility of an upturn in biomass, and no evidence of recruitment impairment (although recruitment trends seem to be variable by region).</p> <p>In relation to SIc, the rationale should not, in fact, list the measures in place, because the argument that measures are ‘available’ does not require this. As long as the commitment is there to put measures in place should the stock require them (i.e. 2014-06 and associated workplans, as set out above), and as long as the stock status meets MSC requirements, as set out above, SG60 is met.</p>			
1.2.2 - Harvest control rules and tools (BET)	The independent report by Medley et al. (2019) indicates that the fishery would not meet SG60 for SI 1.2.2.a and 1.2.2.c and that, as a result, the overall PI score would be less than 60 (“Fail”).	<p>The independent report by Medley et al. (2019) indicates that the fishery would not meet SG60 for SI 1.2.2.a and 1.2.2.c and that, as a result, the overall PI score would be less than 60 (“Fail”):</p> <p>1.2.2.a: “At SG60, MSC allows a harvest control rule to be ‘available’ rather than ‘in place’ if the requirements summarised below are met (for full list see SA2.5.2, 2.5.3):</p> <ul style="list-style-type: none"> • Stock biomass has not previously been reduced below the MSY level, or has been maintained at that level for a recent period of time ... and is not predicted to be reduced below B_{MSY} within the next 5 years; • HCRs are effectively used in other stocks by the same management body or an agreement or framework is in place requiring the management body to adopt HCRs before the stock declines below B_{MSY}. <p>For WCPO bigeye, the second of MSC’s requirements to score a HCR as ‘available’ is met via CMM 2014-06. In terms of the first, the stock biomass has not previously been reduced below the MSY level, according to the 2017 and 2018 stock assessments. The updated 2018 stock assessment gives narrower confidence intervals for SB/SBMSY, suggesting that it is not likely that SB will decline below the MSY level in the short term. Projection results to 2045 show a high level of uncertainty with regard to whether management objectives (i.e. the LRP and the target in CMM 2017-01 and 2018-01) would be achieved. Based on long-term average recruitment, there is a high risk (18-32%) of breaching the LRP and ~zero probability of meeting the management target, while assuming higher recruitment (as per the more recent situation), both objectives are achieved with high probability. Overall, it is not likely that the biomass will decline below the MSY level in the next 5 years, so the requirements for a HCR to be ‘available’ at SG60 are met.</p> <p>The current harvest strategy (CMM 2017-01, 2018-01) does not have a well-defined HCR. It has a series of measures (restrictions on purse seine effort, FAD purse seine sets and longline catch limits) which are intended to restrain catches of bigeye such that the biomass is maintained at recent (2012-15) levels. Although the most recent stock assessment work (2017, updated 2018) puts the stock in the Kobe plot green zone, this is a function of a change in the growth model rather than the effect of management action, which has not had been able to reduce fishing mortality, either on adults or on juveniles, according to the 2017 stock assessment. On this basis, the HCR has not worked to address the perception of stock status, and there is no reason to suppose that it will work failing and may be more useful to stakeholders to inform decisions about entering certification over a timeframe of a year or more, with the certification process taking a further year or so. A pre-assessment therefore needs to take into account what the situation with the stock is likely to be over this timeframe.</p> <p>We are concerned that although strictly the MSC requirements may be met at time of writing, there has been slow progress with the development of harvest strategies for WCPFC stocks since the commitment was made (CMM 2014-06 was agreed) and strict</p>	Medley et al. (2019)	<60	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		<p>timelines are not being observed. The workplan for the implementation of CMM 2014-06 has been systematically revised, with CPCs seemingly unwilling to apply the timetable (e.g. see WCPFC14 report). Based on this situation, MSC-certified fisheries with condition milestones for the achievement of a formal harvest strategy for this stock should, based on MSC procedures, be first scored at audit as 'behind target' and subsequently (the following year) have their certificates suspended if progress has not been made. The authors are unclear as to why fisheries on these stocks have been able to retain their certificates in the absence of any substantive progress up till now. Based on our understanding of the MSC standard, unless granted a special case (a variation request), these fisheries would not meet MSC certification requirements at this point."</p> <p>(...)</p> <p>1.2.2.c: "Under SA2.5.5, in order to conclude that 'available' HCRs are 'effective' (SG60), MSC requires evidence of i) the use of effective HCRs in other stocks or fisheries under the same management body; or ii) a formal agreement or framework with trigger levels which will require the development of a well-defined HCR. It also requires consideration of current exploitation rates in relation to biological reference points and the agreed trigger level (guidance for SA2.5.6: 'evidence that current F is equal to or less than FMSY should usually be taken as evidence that the HCR is effective').</p> <p>The authors are aware that this is not the same as the scoring applied in various MSC certifications for fisheries targeting this stock. The reasons for this are set out in the rationale for 1.2.2a above, and are primarily due to the different purpose of a pre-assessment and timing for meeting the MSC requirements. In our opinion, in order to meet MSC requirements at this stage, some demonstrable progress is required towards an effective formal harvest strategy (as per CMM 2014-06) such that it is more clear that management tools are likely to be able to maintain stocks at agreed target levels.</p> <p>The tools by which CMM 2017-01 is implemented for bigeye are as follows:</p> <ul style="list-style-type: none"> • temporal / spatial limits on purse seine setting on FADs • restrictions on purse seine effort (days) • longline catch limits for bigeye <p>The catch time series in the 2017 stock assessment runs to 2015 (not updated for the 2018 update assessment); the harvest strategy has only been in place since 2014, and is incremental, so it is hard to say what impact it has had on either purse seine or longline catch up till now. Estimated juvenile and adult fishing mortality has stabilised but there is no evidence as yet that it is decreasing. The improved perception of stock status is a consequence of structural changes in the stock assessment model, not a consequence of management. On this basis, there is no particular evidence that the various tools in place are effective in controlling fishing mortality, and no reason to suppose that the stock trajectory will not continue downwards. On this basis, SG60 is not met."</p>			
<p>CAB response to stakeholder input</p>		<p>In addition to our response above, we agree that progress towards harvest strategies has been slow; however the deadlines for bigeye (and yellowfin) have been consistent over the last two iterations of the workplan, and the agreement on an interim TRP for South Pacific albacore at WCPFC15, as planned in the harvest strategy workplan, is encouraging. The team cannot speak for other tuna fisheries in the MSC programme; as previously explained, a CAB-wide variation request was approved by MSC in February 2019 which is the result of a CAB-wide drive towards alignment of Principle 1 condition milestones for MSC fisheries across the same stocks. The variation request details <i>inter alia</i> the alignment of condition milestones with the 2017 workplan and that these should be regarded as a hard deadline.</p> <p>We do not disagree that the improvement in the perception of bigeye stock status is not related to management. However, we would also note that total bigeye catch in 2017 was 126,929 t, which is a 17% decrease from 2016 and a 19% decrease from the average 2012-2016 (see SC14 report). This shouldn't be a function of declining biomass, since projections suggest that stock biomass should be fairly constant relative to 2012-16 mean level due to recent high recruitments (see stochastic projections; Brouwer et al., 2018; figure below). There is, therefore, starting to be some reason to suppose that management might be working.</p>			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		 <p>Figure: Stochastic projections of SB/SB_{F=0} for bigeye, 2015-2019, from Brouwer et al. 2018</p>			
1.2.4 - Assessment of stock status	<p>ISSF is concerned that information on stock status for South Pacific albacore is outdated in regards to the IATTC region. SPC-OFP, which carries out the assessments, last included fishery data from the IATTC region in the 2012 assessment (using data up to 2011). At its Ninth Scientific Advisory Committee meeting, the IATTC SAC Recommended to the IATTC Commission:</p> <p>"2. South Pacific albacore. Recent assessments of south Pacific albacore, which are conducted by SPC, have not considered the fisheries data in all of the EPO, and there are no plans to include these data in the upcoming 2018 assessment. Thus, the eastern part of the stock will remain effectively un- assessed. The SAC recommends that the IATTC staff work with SPC to ensure that the entire South Pacific be included in future assessments."</p> <p>ISSF believes that in order for the fishery to meet the MSC standard, particularly in reference to Performance Indicator 1.2.4, it is crucial that the Eastern component of the South Pacific albacore stock is included in the stock assessment. Given that the UoA covers the whole South Pacific albacore stock, ensuring the Eastern component of the stock is also assessed would be the only possible approach to avoid uncertainty about stock status. The stock assessment as is currently being conducted by SPC would not qualify as an 'adequate assessment of stock status'.</p> <p>ISSF understands that setting a score lower than 95 for this PI would be out of agreement with the outcomes of the 2016 MSC Harmonization meeting in Hong Kong, however, the CAB must bear in mind that participants in the 2016 harmonization exercise were probably not aware that EPO catches were not included in the latest (then 2015) assessment.</p>		<p>https://www.iatct.org/Meetings/Meetings2018/IATTC-93/PDFs/Docs/_English/IATTC-93-03_Recommendations-of-the-9th-meeting-of-the-Scientific-Advisory-Committee.pdf</p>	Not given	Accepted (non-material score reduction)
CAB response to stakeholder input		<p>IATTC (2018) estimate that in the period 2015-18 ~30% of the total catch of SPA (~81,000 t) was taken in the EPO (the IATTC area). However, the stock assessment includes the overlap area (to 130°W) and therefore already includes some of this 30%. Presently, according to data from SPC (2019b) the catch in the EPO outside the overlap area seems to be a bit over 20% of the total, although over the last few years it has been quite variable.</p> <p>CU UK followed up this issue with SPC (G. Pilling). Reportedly there were problems which precluded these data from being included in the most recent stock assessment, but they are now working with IATTC to establish a methodology for including it in the next assessment. Given the good stock status (particularly in relation to MSY reference points, as required by MSC) and the fact that the area of the stock assessment matches the area of application of the HCR, we concluded that SG80 is met, but we agree that this problem means that SG100 is not met. We have revised the scoring and rationale accordingly. Note that this scoring is now harmonised with Stern-Pirlot et al. (2018).</p>			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
3.1.3 - Long term objectives	According to the independent report, this PI would only meet SG80 at the regional level and, therefore, a partial score would not be justified.	<p>According to the independent report, this PI would only meet SG80 at the regional level.</p> <p>IATTC – “(...) Although the precautionary approach is in the Convention, it is less clear that it is applied in all policy. Reference points for bigeye do not appear to be particularly precautionary when taking into account significant uncertainties (although there may be evidence to support the values used), and precautionary action has not been taken to prevent the bigeye stock declining to current levels. In practice, there is no clear link between the convention and practical implementation of policy in all fisheries.</p> <p>Overall, clear explicit objectives incorporating the precautionary approach and ecosystem-based management in the policy meet the MSC Principles and Criteria, and therefore SG80. It is not clear that the precautionary approach is a requirement across all areas of policy, so SG100 is not met”.</p> <p>WCPFC – “(...) While it appears to be a requirement, in practice it is less clear that the precautionary approach is applied in practice across all policy. Stock assessments in 2010, 2011 and 2014 indicate that bigeye fishing mortality exceeded levels consistent with MSY. While precautionary reference points have been set, there has not been a corresponding precautionary action that has reduced exploitation levels.</p> <p>Overall, clear explicit objectives incorporating the precautionary approach and ecosystem-based management in the policy meet the MSC Principles and Criteria, and defined, meeting SG80. However, it is not yet clear that the precautionary approach is applied in practice across all policy for all stocks, so SG100 is not met”.</p>	Medley et al. (2019)	80	Accepted (no score change)
CAB response to stakeholder input		This PI currently only meets 80 overall.			
3.2.1 - Fishery-specific objectives	According to the independent report, this PI would only meet SG80 at the regional level and, therefore, a partial score would not be justified.	<p>According to the independent report, this PI would only meet SG80 at the regional level.</p> <p>IATTC – “(...) However, although broadly measurable, [conservation measures] are not necessarily well-defined, particularly in relation to achieving MSC P&C. Stock assessments are not available for all species (e.g. skipjack), and proxies for MSY have not been determined. Therefore, objectives may be somewhat vague with respect to determining precise status using reference points, for example. Certain resolutions and conservation measures might be presumed to achieve MSC objectives, but it is not certain. This would need to be evaluated for each specific fishery when undergoing MSC assessment.</p> <p>The scientific advice is based on MSC Principles 1 and 2, because these objectives are implicit in the management of each stock, meeting SG60. In addition, explicit objectives are provided through the resolutions and recommendations, which determine the aim and intention of the conservation measures. In most cases, this meets SG80. However, these objectives are not stock specific and often cannot be determined to be entirely consistent with the requirements of MSC Principles 1 and 2, since they are related to the conservation measure rather than the stocks or species. Therefore SG100 is not met”.</p> <p>WCPFC – “(...) Because the conservation measures contain reasonably explicit and specific intentions and objectives, and also allow for evaluation of the performance against these objectives, the fisheries meet SG80.</p> <p>However, although broadly measurable, they are not necessarily well-defined particularly in relation to achieving MSC P&C. For skipjack there is now an explicit target set out in 15-06. For bigeye and yellowfin it is also relatively clear, for albacore less so. But for most fisheries, 100 wouldn't be met because there is not a full suite of well-defined and measurable objectives for P2 (...). Objectives may be somewhat vague with respect to determining precise status using reference points, for example, and allowing for unspecified qualifications. Certain resolutions and conservation measures might be presumed to achieve MSC objectives, but it is not certain. A higher score might be possible should WCPFC develop reference points directly linked to proscribed management action, as would be applied through a harvest control rule, for example. This would need to be evaluated for each specific fishery when undergoing MSC assessment.</p> <p>The scientific advice is based on MSC Principles 1 and 2, because these objectives are implicit in the management of each stock, meeting SG60. In addition, effectively explicit objectives are provided through the conservation and management measures. In most cases, this should meet SG80. However, with the qualifications, it may not be possible to determine whether these are consistent with the requirements of MSC Principles 1 and 2, since they are related to the conservation measure itself rather than the stocks, species or ecosystem. Therefore, SG100 cannot be met.”</p>	Medley et al. (2019)	80	Not accepted (no score change)
CAB response to stakeholder input		A partial score was given to the regional management component: because current CMMs in force contain reasonably explicit and specific intentions and objectives and also allow for evaluation of the performance against these objectives, SG60 and SG80 are met. Some aspects of SG100 criteria may be met, with the explicit incorporation of FMSY as a measurable default TRP for skipjack and yellowfin in recent CMMs. This is in the absence of control rules and harvest strategies. However, although broadly measurable, it cannot be concluded that well defined and measurable objectives are applied throughout the fishery-specific management system. Therefore, a partial score of 90 is deemed appropriate.			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
3.2.2 - Decision-making processes	The independent report by Medley et al. (2019) indicates that, at the regional level, the overall PI score for this fishery would be less than 80.	<p>The independent report by Medley et al. (2019) indicates that, at the regional level (WCPFC), the overall PI score for this fishery would be less than 80. Main difference with preliminary scores in the ACDR lies under SI (b):</p> <p>3.2.2.b: “At the WCPFC the decision-making is transparent and transparency is a requirement of the Convention (Article 21). Decisions are transparent and published as a resolution from the annual meetings, and initial positions and the information used for the basis of the decision is available (as technical reports provided to the meeting or as proposals for resolutions from some Parties). The decision-making is adaptive in that the various specialist meetings evaluate decisions and feedback is provided to the Commission. The Commission can be shown to react appropriately. WCPFC decision-making processes allow consideration of serious and important issues through its committees (SC and TCC) and at the Commission itself. Stock assessments and studies presented at the SC (predominantly by SPC) identify serious issues, such as overfishing (e.g. Bigeye tuna) at the regional level. These issues are addressed through regionally agreed CMMs. A series of measures to control catch and effort within the WCPFC Convention area were taken in 2013. However, although overall the decision-making is adequate for most of the stocks being considered and serious issues have been responded to, some important issues have not. The declining SP albacore catch rates comes under 'other important issues' (not yet 'serious' because the stock is above MSY reference points). At a presentation by SPC at the Thirteenth Session of WCPFC in December 2016 concerning the status of the tuna stocks it was stated that the southern albacore stocks were not overfished but that due to the declining CPUE there were concerns over economic viability. WCPFC has not addressed this important issue. It can be shown that regional decision making processes deal with serious issues identified, in a transparent timely and adaptive manner but not some of the important issues. In particular one of the target species for this assessment, albacore, has shown a steady decline in economic viability over recent years, and WCPFC have not responded in a timely responsive way to halt this decline.</p> <p>Overall the decision-making is adequate for the stocks being considered. It can be shown that it deals with serious but not always important issues for example SP albacore in a transparent, timely and adaptive manner meeting SG60 but does not meet SG80 at this time.”</p>	Medley et al. (2019)	75	Not accepted (no score change)
CAB response to stakeholder input		<p>3.2.2b. The team awarded a score of SG80 as the decision-making processes have responded to serious and other important issues in a transparent, timely, and adaptive manner. This is evidenced by WCPFC responding to the results of stock assessments for the bigeye, yellowfin and skipjack and recommendations of the Scientific Committee to reduce fishing mortality of tuna resources with the adoption of CMMs 2017-01 and 2018-01 for bigeye, yellowfin and skipjack. Also, WCPFC responded to the decline in catch rates of South Pacific albacore (reported by SPC in 2017) by agreeing in December 2018 to: task the SPA-VIWG, chaired by New Zealand, to continue to develop the road map for effective conservation and management of South Pacific albacore; an interim target reference point (TRB) for South Pacific albacore at 56% of the spawning biomass in absence of fishing with the objective of achieving an 8% increase in CPUE for the southern tuna longline fishery as compared to the 2013 levels; and amending and developing appropriate CMMs to implement a harvest control rule, developed in accordance with CMM 2014-06 with the objective of maintaining the South Pacific albacore spawning stock biomass at the target level on average and according to the timeframe of achieving the interim TRP in no later than 20 years.</p>			

General comments	Input detail	Evidence or references	CAB response code
Letter of support	The ACDR states that the CAB will likely set conditions for Principle 1 stocks regarding PI 1.2.1 (Harvest strategy) and 1.2.2 (Harvest control rules & tools). Taking into account that the Cook Islands Ministry of Marine Resources (MMR) will probably have a relevant role in the action plan for these conditions, ISSF is concerned that, without a letter of support from MMR, there is no clear expectation that the Client Action Plan will achieve its objectives. ISSF notes that such a letter was received for the previous assessment of the fishery, and recommends that a letter from MMR confirming their continued engagement and support of the fishery's re-assessment is included in the PCDR.	N/a	Accepted (no score change)
Please see Appendix 10 for the letter of support.			
Conditions on HS and HCR	ISSF supports the CAB's intention to set conditions towards implementation by WCPFC and IATTC of robust Harvest Strategies and Harvest Control Rules for Principle 1 species. As regards the future Client Action Plan to meet these conditions, ISSF would like to suggest a series of specific actions for the Client to consider: <ul style="list-style-type: none"> 1) Sign onto future NGO Tuna Forum global RFMO appeals 2) Continue to advocate for accelerated progress on the adoption and implementation of Harvest Strategies and Harvest Control Rules through the WCPFC and IATTC, such as through continued direct engagement with national delegations to the Commissions, or through the newly reconstituted WCPO MSC alignment network which advocates for harvest strategies and other priorities; and 	N/a	Accepted (no score change)

General comments	Input detail	Evidence or references	CAB response code
	3) Publicly support ISSF Position Statements that contain detailed asks on Harvest Strategies and Harvest Control Rules to future WCPFC and IATTC Regular Sessions of the Commission and document that support (e.g. by submitting a letter or some other communication citing the Position Statement).		
<p>The client will advocate for WCPFC to implement the WCPFC Harvest Strategy Workplan and meet the workplan schedule for this stock, as modified by WCPFC in Dec. 2017. The client will implement harvest strategy advocacy activities by participating in WCPFC meetings as part of government delegations, where the client will communicate the desired milestones.</p> <p>The client will also continue to seek opportunities to co-sign joint letters to WCPFC parties that advocate for putting in place and implementing robust harvest strategy for principal market stocks, such as have been organized in the past by ISSF and the NGO Tuna Forum. The client will also distribute these letters, as well as position statements developed by some environmental NGOs such as by ISSF, to the heads of the Cook Islands and other government delegations to WCPFC and highlight to WCPFC government delegates that implementation of the WCPFC Harvest Strategy Workplan, with deadlines stated in the 2017 version of this workplan, is a condition of MSC certification of MSC certified tuna fisheries in the WCPO region.</p> <p>The client will also have conversations with MSC staff and with clients and CABs of other MSC fisheries with the same conditions of certification to discuss how we could align and coordinate our Client Action Plan activities to address these conditions, such as has been coordinated by the WCPO Tuna MSC Alignment Group.</p> <p>Furthermore, the client will conduct advocacy aimed at environmental NGOs and donors that fund these NGOs that are active in the sustainable tuna fisheries space, to identify specific actions that they can take towards achieving the 2017 WCPFC harvest strategy workplan deadlines (other than NGO letters and advocacy). The client will suggest to environmental NGOs and donors that, if SPC is largely dictating the harvest strategy development process and schedule, then the NGOs and donors should have a transparent public conversation with SPC on what it would require (politically as well as what institutional and financial resources SPC would require) to put interim single-stock harvest strategies in place (while SPC continues on with developing the multispecies/multi-fisheries harvest strategies).</p>			

Appendix 4.2 Post PCDR publication

Following publication of the PCDR, follow-up comments were received from one peer reviewer, MSC Technical Oversight and comments were submitted by ISSF and Pew, as shown below.

Follow-up Peer Review Comments

Question	Peer Reviewer comments at Public Comment Draft Report stage Insert additional rows for each clearly distinct issue raised.	CAB response to Peer Reviewer's Public Comment Draft Report stage comments (as included in Final Draft Report)
Principle 1	The team has addressed all of my comments. I have some minor misgivings about some of the responses, but most of these are matters of detail that would have no overall impact on the outcome of the assessment.	No comment required.
Principle 2	<p>It is interesting to note that I had identified 12 SIs where a material score change seemed to be appropriate. The team has provided additional information and revised rationales for most of these.</p> <p>Nevertheless, I still have major concerns in connection with the scoring of the ETP species PIs (2.3.1, 2.3.2 & 2.3.3) where there are several instances of deviations from process and a lack of justification for the scores awarded. In particular, the team has clung to the approach of assessing ETP species in taxonomic groups on the basis of "<i>pragmatism</i>", and has been unable to answer my specific request to justify this approach by reference to the MSC Standard.</p> <p>In order to ensure that this assessment is consistent with every other fishery in the MSC programme it is a matter of priority that this deviation from MSC processes is addressed, and ETP species are scored as individual elements.</p>	Please see our comments to the individual performance indicators.

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
1.1.1	Yes	The assessment team has responded appropriately to the comments on the draft report.	No comment required.	
1.1.2	Yes	No comment: PI not scored.	No comment required.	
1.2.1	Yes	The assessment team has responded appropriately to the comments on the draft report.	No comment required.	

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
1.2.2	No (no score change expected)	<p>Sla: I note that the team has not included the Cook Islands' own national legislation in the information considered here because MSC Technical Oversight comments had apparently previously indicated that these were "not available" (presumably as a comment on the ACDR for this assessment).</p> <p>This explanation does not hold water. Elsewhere in the report it is stated that a TAC is set under this legislation for Albacore. If this is so, then clearly the Cook Islands' legislation is "available", and the MSC are mistaken.</p> <p>Although this does not affect the scoring outcome of the report it does affect its rigour. It would seem more appropriate to point out to the MSC that they are mistaken than to assert that an HCR is "not available" when clearly it is used in some way in the management of the fishery and must, therefore be "available".</p>	<p>It remains our view that the Cook Islands TAC is not relevant to the scoring of this SI. Firstly, the SI must be scored at the level of the entire stock, and the contribution of the Cook Islands TAC to the total catch on the stock (12% in 2018) is not sufficiently large to have any impact on the overall exploitation rate of the stock. It is not, therefore, a HCR.</p> <p>Secondly, the SI is scored based on MSC's definition of an 'available' HCR under SA2.5.2 and 2.5.3. (We are not arguing that it is 'not available' as the PR says; and neither is MSC.) The scoring rationale therefore needs to be framed around these requirements. Any other information is not relevant by definition. A description of the Cook Islands management system within this rationale would therefore add nothing to the rigour of the argument in the rationale; it would just add irrelevant information. (We note that the Cook Islands management system is described elsewhere)</p>	Accepted (no score change)
1.2.2	Yes	<p>Slb: I note that this is harmonised scoring and the response is therefore acceptable.</p>	No comment required.	
1.2.2	No (scoring implications unknown)	<p>Slc: The key point has been missed here. To reiterate:-</p> <p>"This SI evaluates whether the tools in use are appropriate or effective. Nowhere is it stated what tools are used to control exploitation of the stock. It is indicated elsewhere in the report (Table 11) that a TAC is set for albacore in the Cook Islands EEZ; and section 6.4.3 mentions that the WCPFC are using overall fleet effort as a management tool. Neither are mentioned here, and both should be evaluated."</p>	<p>Indeed, as per our previous response, we used to do this, but we had MSC TO saying that we should not describe the various tools in place, but restrict our argument to the 'available' requirements as per Sla.</p> <p>However, since the PR insists, we have added a description of the tools used in management of the stock, both at regional and Cook Islands scales.</p>	Accepted (no score change)
1.2.3	Yes	<p>The assessment team has responded appropriately to the comments on the draft report.</p>	No comment required.	

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
1.2.4	Yes	No comment required.	No comment required.	
1.1.1	Yes	The assessment team has responded appropriately to the comments on the draft report.	No comment required.	
1.1.2	Yes	No comment required.	No comment required.	
1.2.1	Yes	The assessment team has responded appropriately to the comments on the draft report.	No comment required.	
1.2.2	Yes	Slb: The assessment team has responded appropriately to the comments on the draft report. Slc: I must apologise that I had mistakenly quoted some text from the Bigeye UoA in my comments.	No comment required.	
1.2.3	Yes	The assessment team has responded appropriately to the comments on the draft report.	No comment required.	
1.2.4	Yes	No comment required.	No comment required.	
1.1.1	Yes	No comment required.	No comment required.	
1.1.2	Yes	No comment required.	No comment required.	
1.2.1	No (no score change expected)	Slc: I note that the team has not included the Cook Islands' own national legislation in the information considered here because MSC Technical Oversight comments had apparently previously indicated that these were "not available" (presumably as a comment on the ACDR for this assessment). This explanation does not hold water. Elsewhere in the report it is stated that a TAC is set under this legislation for Bigeye. If this is so, then clearly the Cook Islands' legislation is "available", and the MSC are mistaken. Although this does not affect the scoring outcome of the	The explanation around MSC TO was for 1.2.2c - possibly it was transposed into the wrong box. The reason here for not including it in the rationale was more that it is insignificant at the level of the stock (the Cook Islands TACC was 1.7% of the total catch on the stock in 2018) - and this PI has to be scored at the level of the entire stock, and harmonised with other fisheries. Nevertheless, we have included a description in the text of the rationale.	Accepted (no score change)

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
		report it does affect its rigour. It would seem more appropriate to point out to the MSC that they are mistaken to assert that an HCR is "not available" when clearly it is used in some way in the management of the fishery and must, therefore be "available".		
1.2.1	Yes	Slb-f: the assessment team has responded appropriately to the comments on the draft report.	No comment required.	
1.2.2	Yes	Sla & b: The assessment team has responded appropriately to the comments on the draft report.	No comment required.	
1.2.2	No (score increase expected)	<p>Slc: The team has replaced one mistake with another.</p> <p>My initial comment was that SG80 for this SI does not require that HCRs are "well defined". That rationale has been replaced with a statement that SG80 is not met "...because the HCR is not 'in place' but only 'available'."</p> <p>Again, these words to not appear in Slc, but are in Sla. The scoring is not therefore justified.</p> <p>It is important here to be clear. This SI looks at the Harvest Control Tools. It also uses the word "available" in different contexts at SG60 and SG80.</p>	See response to this comment under albacore, 1.2.2a. As for albacore we have added in a brief description about the tools in place at Cook Islands level.	Accepted (no score change)
1.2.3	Yes	The assessment team has responded appropriately to the comments on the draft report.	No comment required.	
1.2.4	Yes	No comment required.	No comment required.	
2.1.1	Yes	No comment required.	No comment required.	
2.1.2	Yes	The responses to comments on Sla & SIf justify the score awarded.	No comment required.	

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
2.1.3	No (non-material score reduction expected)	<p>The response to the comments is muddled and worryingly shows a conflated understanding of the MSC Standard. The probabilistic evaluation of stock status under PI2.1.1 and the reference to Table SA9 has no link whatsoever with the level of coverage from logbook data.</p> <p>The comments have not been adequately addressed and a reduction of the score to 80 would still seem to better match the information presented in the report.</p> <p>The erroneous link to Table SA9 should be addressed. Table GSA5 is more relevant.</p>	<p>We respectfully disagree. First of all, the MSC requirement is as follows: SA3.2.3 - <u>The definitions of required probability in P2</u> shall be those in Table SA9. According to this table, High degree of certainty = > 90th %ile. Granted, the table explicitly refers to the outcome PIs, however we interpret that these probability levels are relevant to the information PI as well, particularly regarding whether the information is <u>adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status</u> and in this context we consider the quality of the stock assessment and the underlying UoA data (logbooks + observer data to be relevant) - i.e. it all contributes to required probability level. These PIs are clearly not independent from each other. Second, the scoring is based on the fact that 1) the vast majority of primary species are retained: The vast majority of the main primary species are retained for sale, as evidenced by the observer data which have reported discard rates of 1.41%, 3.36% and 2.53% for albacore, yellowfin and bigeye respectively; 2) the logbook data provide quantitative information on what is being retained and this at 100% coverage; 3) the observer data provide quantitative information on what is being retained and what is being discarded. The fact that observer coverage is low, does not affect the overall level of confidence as to the UoA impact on the species concerned, because this can be assessed on the basis of the logbook data, which represents more than 90% of the catch of the species concerned. Note that these discard rates are similar to those reported for similar longline fisheries prosecuted by the client fleet and have remained low throughout the certification cycle of this fishery. Given that a cross-validation of logbook data takes</p>	Not accepted (no score change)

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
			place (against inter alia offloading data), this gives the team the 'high degree of certainty' required for scoring at SG100. Table GSA5 has been considered throughout this assessment, including for primary species, and as explained above, the team concludes that the adequacy of logbooks + observer data, plus the quality of the stock assessments is enough to score primary species at SG100. The scoring has not changed.	
2.2.1	Yes	It is noted that at some point between the release of the Peer Review Draft Report and publication of the PCDR the team has made changes to the scoring rationale here, apparently as part of a process of harmonisation with other overlapping fisheries (this is not very clearly explained).	This PI was rescored during surveillance of the fisheries mentioned in our initial response. Changes to the rationale in those reports were also incorporated here. We are unclear as to what is unclear.	Not accepted (no score change)
2.2.2	Yes	SIa: I note from reading the report that quite considerable changes have been made to SIa since the CPRDR. These all seem to be appropriate.	No comment required.	
2.2.2	Yes	SIb: in response to the team's responses to my comments:- i) Blue marlin is still not scored as a separate element as per SIa above. Please revise the "Met?" row of the SI to show which SGs are met by which element as has been done in SIa. Please also note that separate elements should be scored for SIb,c,d and e as appropriate. ii) No comment required iii) It is clear that the comments on the CPRDR were apposite, since the text at SIa that I have referred to in raising concerns for SIb has now been changed.	It is very unclear what the problem is here. All secondary species are explicitly addressed in the scoring. If the 'met' row does not refer to separate scoring elements, it means that all scoring elements meet this scoring guidepost, as explained in the rationale. This appears to be a matter of presentation which we argue is at the team's and CU's discretion.	Not accepted (no score change)
2.2.2	Yes	SI d: The team has responded by evaluating all sharks as ETP species, which appears to be appropriate.	No comment required.	

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
2.2.3	Yes	To a large extent the comments on the CPRDR have been overtaken by changes that have been made to the report in the intervening period.	No comment required.	
2.3.1	No (scoring implications unknown)	<p>Overall: it is no excuse that "...the fishery has experienced a temporary drop in observer coverage..."; indeed this is something that the team should have already addressed earlier in its scoring.</p> <p>It is a grave concern that the team's response also includes the statement that:-</p> <p><i>"However, even at low observer coverage, extrapolations can be made so that UoA impacts on ETP species can be estimated analytically. The RBF was therefore not required."</i></p> <p>If this is the rationale for <u>not</u> using the RBF, then clearly the RBF <u>was</u> needed (see MSC FCP v2.1 Table 3). All that can be done using observer data is to determine the quantity of a species caught by a fishery. To understand the impact of the fishery on that species also requires an understanding of its status (since a small catch of an ETP species that is critically endangered may have a great impact, whilst a larger catch of a species that is of less concern may have little impact).</p> <p>The response here warrants further re-evaluation of the team's approach to assessing impacts on ETP species.</p>	We maintain our position that the availability of observer data means the RBF was not required for ETP species. The trigger for use of RBF in relation to ETP species is whether the impact of the fishery on ETP species can be analytically determined. We maintain that the answer to this is yes, owing to the availability of UoA observer data as well as VMS data showing spatial overlap. The RBF is therefore not required. The sole exception here is the seabird taxonomic group. We have revised the report so that this group is now removed as a scoring element as this was only ever included on a precautionary basis - this is now explained further in the background section of the report.	Not accepted (no score change)
2.3.1	Yes	SlA: the statement that there are no limits in place for any of the ETP species identified provides the correct basis for not scoring this Sl.	No comment required.	

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
2.3.1	No (material score reduction expected to <80)	<p>S1b: The approach to scoring this PI is still not compliant with the MSC standard. If all assessment teams exercised "<i>pragmatism</i>" as this team states that it has, the Standard would lose its coherence.</p> <p>I note that the team has not been able to answer my request to identify which part of the MSC Standard permits the approach that has been adopted, and this underlines the importance of this PI being re-evaluated.</p> <p>It is good that the team has now listed all of the elasmobranchs known to interact with the fishery. This information now exposes the limited understanding of impacts on these species and the need to apply the MSC's approach to scoring individual elements separately, rather than incorrectly putting them in to taxonomic groups.</p> <p>No information about the status of most of the elasmobranch species listed in Table 31 of the report is given (this contrasts with the marine turtles in Table 32 or the other elasmobranch species listed in Table 30). For most of the elasmobranch species listed in this Table 31, the report states that:-</p> <p><i>"Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of [species name]."</i> [My emphasis].</p> <p>This is clearly a level of understanding that is not consistent with the SG80 requirements for this PI for of these species. A low catch by itself does not imply that direct effects meet the SG80 requirements: it is only half of the equation. At best it meets that SG60 requirements.</p>	<p>This PI <u>was</u> re-evaluated in response to the peer reviewer's initial comments which should be taken as an admission that the assessment of this PI was not in keeping with procedure. Regarding the elasmobranchs, all species with scaled up annual interactions at over 1 tonne were compared against regional catch data, where it was determined that the UoA impacts are marginal and are therefore highly likely to not hinder recovery of the species concerned. For annual catches at under 1 tonne, we have added information on the actual number of interactions observed. These are all clearly highly sporadic interactions which are highly likely to not hinder recovery of the species concerned. The scoring was not changed.</p>	Accepted (no score change)

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
		<p>Finally, the team's assertion that the additional information that has been provided has not changed the score is a risible non-sequitur. The issues raised were not just about a lack of information, but were also about the incorrect assessment approach. If both are not addressed, the wrong conclusions will continue to be drawn.</p> <p>In summary, it is essential that this PI is re-scored correctly as follows:-</p> <p>i) Each ETP species must be scored as a separate element. ii) Adequate information must be presented for each element (i.e. on both the catch and the status of the species concerned) so that impact can be evaluated.</p>		
2.3.1	No (scoring implications unknown)	Slb: I hope it goes without saying that the comments on the need to score elasmobranch species as separate elements applies with equal measure to my earlier comments about seabirds, sea turtles and (for the avoidance of doubt) to any other groups of ETP species that the UoAs may encounter.	As mentioned above, seabirds were removed as ETP scoring element. All other species have now been considered in detail at the scoring element / species level. The overall scoring has not changed.	Accepted (no score change)
2.3.1	No (scoring implications unknown)	Slc: The team has not addressed my comments about the need to score each element for this SI as well. This is what the MSC Standard requires, and it must be done.	Rather than copy pasting the same rationale for every single scoring element, the rationale has been grouped for those scoring elements that it applies to. We see no merit in repeating these rationales especially as all scoring elements are addressed and it does not affect the scoring. No changes were made.	Not accepted (no score change)
2.3.2	No (scoring implications unknown)	Again, the team must score each element separately against each SI in order to meet MSC requirements. At the moment Sla is scored against taxonomic groups, and no taxonomic or specific distinctions are made in the scoring of the other SIs.	As mentioned above, seabirds were removed as ETP scoring element. Regarding the scoring element approach, we again repeat that the rationale has been grouped for those scoring elements that it applies to. Though the MSC requires each scoring element to be scores separately by SI	Not accepted (no score change)

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
		<p>The reader could be forgiven for failing to notice from this report that the Cook Islands Shark Sanctuary extends throughout the EEZ and is one of the largest in the world. It might be a good idea to give this a bit more prominence given the interactions with sharks.</p> <p>The decision to include seabirds arbitrarily in the assessment despite there being no evidence of any interaction remains a concern, though it is good to see that the scoring of S1e at 100 on the strength of a CMM that doesn't apply in the UoA and which seeks to protect the birds that the fishery doesn't interact with in the Cook Islands has now been revised downwards.</p>	<p>it does not require individual rationale by scoring element. Where the management measures applies to a group of ETP scoring elements equally (sharks) we have now identified that the rationale considers all of those scoring elements under that grouping. Repeating the same text 17 times for each shark scoring element would add nothing to the report except length and we see no merit in repeating these rationales especially as all scoring elements are addressed and it does not affect the scoring. The details of the Shark Sanctuary are given in the report and anyone who reads the report will know about its existence. We consider it is sufficiently prominent. No changes were made.</p>	
2.3.3	No (no score change expected)	<p>Again, the assessment must score each element separately. This is an MSC Requirement.</p>	<p>Again, please see the approach employed for 2.3.2 in the response above. Where the information base from the UoA is the same by scoring element we identify which scoring elements it considers rather than copy pasting the rationale for every single scoring element. We see no merit in repeating these rationales especially as all scoring elements are addressed and it does not affect the scoring. No changes were made.</p>	Not accepted (no score change)
2.4.1	Yes	No further comments.	No comment required.	Accepted (no score change)
2.4.2	Yes	No further comments.	No comment required.	Accepted (no score change)
2.4.3	No (non-material score reduction expected)	<p>The amendments to S1a and S1c are noted and are appropriate.</p> <p>S1b: the team's response that "<i>There needs to be some common sense here...</i>" does not support the score of SG100</p>	<p>If the peer reviewer believes that there needs to be quantitative evidence that a pelagic longline does not impact on the water column, we cannot argue with this (as</p>	Accepted (non-material)

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)	CAB Response Code
		<p>which requires that "<i>The impacts of the gear on all habitats have been quantified fully.</i>" Indeed, if this is the considered response, then plainly SG80 is a more appropriate score for this SI.</p> <p>Where the application of a bit of common sense is relevant to SIs in the MSC Standard, then the qualifier "<i>if necessary</i>" is often used (e.g. PI2.4.2 SIa). This qualifier is not used for PI2.4.3 SIb. If there is no evidence that impacts have been quantified fully (and the team's response indicates that there has not) then SG100 cannot be met, irrespective of any arguments about common sense.</p>	<p>there will be no study examining this for obvious reasons). We have reduced the scoring of this PI to 80.</p>	score reduction)
2.5.1	Yes	It is noted that the team has amended the scoring rationale in response to the comments.	No comment required.	Accepted (no score change)
2.5.2	Yes	It is noted that the team has amended the scoring rationale in response to the comments.	No comment required.	Accepted (no score change)
2.5.3	Yes	It is noted that the team has amended the scoring rationale in response to the comments.	No comment required.	Accepted (no score change)
3.1.1	Yes	No comment required.		
3.1.2	Yes	No comment required.		
3.1.3	Yes	No comment required.		
3.2.1	Yes	No comment required.		
3.2.2	Yes	No comment required.		
3.2.3	Yes	No comment required.		
3.2.4	Yes	No comment required.		

MSC Technical Oversight

CERTIFIED SUSTAINABLE SEAFOOD

Date: 6/5/2020

SUBJECT: MSC Technical Oversight for SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore, yellowfin and bigeye longline - Public Comment Draft Report

Please find below the results of our Technical Oversight review. This was completed by both the Fisheries Standards Team and Supply Chain Standards Team.

Ref	Type	Page	Requirement	Reference	Details	PI
30748	Minor	231	FCP-7.17.9.2 v.2.1	The rationale shall make direct reference to every scoring issue and whether or not it is fully met at each SG level.	PI 3.1.2 SI b. It is not clear from the rationale how regularly the management system consultation processes seek and accept information.	3.1.2,

Team response: We have amended the rationale to clarify that at least three meetings take place regularly each year, as well as on an ad hoc basis.

30749	Minor	P21	FCP-7.8.2 v.2.1	<p>If the eligibility date is set before the certification date, the CAB shall inform the fishery that any fish harvested after the eligibility date and sold or stored as under-assessment fish shall be handled in conformity with the following requirements:</p> <ul style="list-style-type: none"> a. All under-assessment products shall be clearly identified and segregated from certified and non-certified products. b. The client shall maintain full traceability records for all under-assessment product, demonstrating traceability back to the UoC and including the date of harvest. c. Under-assessment products shall not be sold as certified or labelled with the MSC ecolabel, logo, or trademarks until fishery certification and product eligibility are confirmed. 	<p>“For bigeye, the eligibility date is the date of publication of the PCDR”. Please clarify which party is eligible to handle Under assessment fish. Also please further describe more explicitly about how they identify and segregate the under-assessment big eye. And also Which party is able to confirm the trip and how the following supply chain proves the eligibility?</p>	
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Team response: The eligible party is the client group (as for the other species), i.e. vessels owned and/or managed by Liancheng Overseas Fishery (Shenzhen) Co. Ltd (SZLC); China Southern Fishery Shenzhen Co. Ltd (CSFC); and Liancheng Overseas Fishery (FSM) Co. Ltd (FZLC).

Bigeye is morphologically distinct from yellowfin and albacore, even when frozen and on-board separation is therefore not required. The bigeye are tagged with RFID tags which are attached to the fish when brought on board the vessel, which enable traceability to the point of catch and UoA area which enables the client group to confirm the trip and therefore eligibility of under assessment fish. After offloading the product is shipped directly to a CoC-certified buyer or stored in CoC-certified storage until a buyer can be determined, when ownership changes. It is in these storage facilities that any under-assessment bigeye will be stored. This has been clarified in the report.

30750	Minor	P26	FCP-7.9.1 v.2.1	The CAB shall determine whether the fishery client has sufficient systems of tracking and tracing to ensure all fish and fish products identified and sold as certified by the fishery client originate from an appropriate UoC.	section 5.3 Please describe under what kind of scenario does the CoC starts in either ways, please determine in detail in which scenario it is applied. And change of ownership does not appear to be referenced in the report.
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Team response: We have added more explicit reference to the change of ownership and elaborated on the different scenarios for when CoC starts.

30751	Minor	P25	FCP-7.9.1.4 v.2.1	For each risk factor identified in 7.9.1.3, the CAB shall describe the risk present and details of the mitigation or management of risk.	Table 6 "when the fishing vessels offload their catch into containers aboard a refrigerated cargo vessel (reefer). For the purpose of this assessment, this is considered the point of landing." Please clarify would the refrigerated cargo vessel (reefer) require CoC? And also please provide further detail on how they segregate the fishing outside of the UoC geographic area, eg within EEZ and outside EEZ.
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Team response: We made it very explicit that the fishery certificate (pending a successful outcome) only covers the fishery up to the point of offloading. Any subsequent transport activities are therefore not covered by the fishery certificate and would be subject to separate CoC as required under the MSC CoC Standard.

We believe the risk of substitution of in-zone and out of zone catches onboard the vessels is already clearly explained in this report. The team concluded therefore that either the vessels themselves will need CoC certification if they wish to combine in-zone and out-of-zone catches during the same trip. This is however, not needed, if it can be demonstrated that the entire trip was carried out inside the Cook Islands EEZ. This was the case during the initial assessment and has been verified annually by surveillance audit teams.

This report is provided for action by the CAB and ASI in order to improve consistency with the MSC scheme requirements; MSC does not review all work products submitted by Conformity Assessment Bodies and this review should not be considered a checking service. If any clarification is required, please contact the relevant FAM or SCS manager for more information.

Marine Stewardship Council
cc: Assurance Services International

ISSF Comments

General comments	Evidence or references	CAB response to stakeholder input	CAB Response Code
<p>Cumulative impacts</p> <p>ISSF is concerned the PCDR does not address cumulative impact on Principle 2 species.</p> <p>There are currently a number of Western and Central Pacific Ocean purse seine and longline tuna fisheries involved in Fishery Improvement Projects (FIPs), some of them with prospects to proceed to a full MSC assessment in the near future. Although the MSC standard only requires cumulative effects to be evaluated and managed for MSC-certified fisheries (including those in evaluation) under overlapping UoAs, we believe these should be carefully assessed (for ETP species) and managed for all these tuna fisheries with MSC aspirations.</p> <p>All currently-certified and prospective MSC tuna fisheries should conduct a joint assessment for cumulative impacts on ETP species in the WCPO and prepare a joint management strategy. SZLC, CSFC & FZLC could coordinate with already certified fisheries and also seek support on this task from other WCPO FIPs such as OPAGAC PS FIP, US Pacific Tuna group PS FIP, Thai Union PS and LL FIPs, Kiribati Fish Limited PS FIP, Indonesia Southeast Sulawesi PS FIP, etc.</p>	-	<p>We understand ISSF's concerns about cumulative impacts and propose that ISSF engage as a stakeholder with the MSC's ongoing standard review process. Currently, cumulative impacts (including for ETP species) are only taken into account in certain scenarios, none of which are applicable to this fishery. We note however, that for precautionary reasons, cumulative impacts were taken into account in relation to bait species (2.2.1). Any collaborations between the client group and other MSC certified or FIP fisheries are therefore outside the scope of this report. Nevertheless, the message has been communicated to the client group.</p>	Not accepted (no score change)
<p>Traceability</p> <p>ISSF is concerned about the potential risk of mixing between UoC catch and non-UoC catch given that part of the catch may come from non-eligible MSC sets (sets taking place outside Cook Islands' EEZ). The risk of mixing catches might jeopardize the final product's traceability so, in order for the fishery to achieve</p>	-	<p>We believe this risk has already been addressed in detail in the traceability section of this report. The team agrees that there is a risk of substituting in-zone and out of zone catches during the same trip. This is why there are two scenarios for when CoC</p>	Accepted (no score change)

certification, it must be verified that the Chain of Custody is strong and starts at sea

starts. 1) From the vessel, in the event trips include in- and out-of-zone catches and 2) From the point of landing, where it can be demonstrated that the trip took place exclusive inside the Cook Islands EEZ

Pew Comments

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response to stakeholder input	CAB response code
1.1.2 - Stock rebuilding	Albacore - stock is in a rebuilding phase	Albacore - the CAB have stated that the stock is not in a rebuilding phase and therefore 1.1.2 is not applicable. However, although not operationalised, there is an agreed interim TRP that is significantly above the current SB and therefore, stock rebuilding is required. It is only the path of rebuilding that is not yet agreed. This should be acknowledged and incorporated into the assessment. This could be undertaken via a condition similar to conditions 1-6 with a timeframe for operationalisation of the rebuilding pathway.	-		We understand Pew's comment, however MSC stipulates that where Bmsy is analytically determined, it should be used to score 1.1.1b - see SA2.2.3 and also GSA2.2.3: The wording of PI 1.1.1 requires scoring against the conceptual levels PRI and MSY. Such levels may or may not be used as explicit reference points in a fishery. There may be situations where well-managed stocks do not have target reference points or do not have limit reference points, or their values are not consistent with the conceptual levels of PRI or MSY. The stock will still need to be assessed in terms of the overall outcome objectives, i.e., for SG80 that the stock status is highly likely to be above the point at which there is an appreciable risk that recruitment is impaired, and will be at or around a level consistent with BMSY. However, we have mentioned the agreed interim LRP in the rationale and noted that the stock is below this level.	Accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response to stakeholder input	CAB response code
2.2.2 - Secondary species management	Insufficient justification for scoring	Section a and b (excluding bait): Because of low observer coverage (estimated at 2.9%) in the previous three years, and the use of "estimated observer coverage" based on albacore landings , the CAB should provide more information on its efforts to assess the validity of the data sources and provide further justification that the information provided is adequate to measure the true impact of the UoA on the species or develop conditions if necessary	-	-	This performance indicator addresses the management strategy in place. The impact of the UoA on secondary species and the information supporting this are addressed in the outcome and information PIs respectively (Pis 2.2.1 and 2.2.3). Without clear comments against specific scoring issues this comment is difficult to respond to. For PI 2.2.3, scoring issue a relates to 'main' species only, identified as blue marlin for this fishery. Discard rates for this species are low and therefore the validated SPC-held logbook data are considered an adequate source of information to determine the UoAs overall impact on that stock. Minor species only intervene at SG100 (scoring issue b) which is not met in either the outcome (2.2.1) or information (2.2.3) PIs because of the low observer coverage.	Not accepted (no score change)
2.2.3 - Secondary species information	Insufficient justification for scoring	Section a (excluding bait): Because of low observer coverage (estimated at 2.9%) in the previous three years, and the use of "estimated observer coverage" based on albacore landings (page 136), the CAB should provide more information on its	-	-	Please see response above. We have already explained in detail in the scoring how the available information is sufficient for the 'main' species (blue marlin) but	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response to stakeholder input	CAB response code
		efforts to assess the validity of the data sources and provide further justification that the information provided is adequate to measure the true impact of the UoA on the species or develop conditions if necessary			not for the 'minor' species (all other secondary species)	
2.3.1 - ETP species outcome	More information required	<p>Section b:</p> <p>Due to the imperiled stock status of Oceanic Whitetip and the limited confidence of the interactions data used by the CAB, the CAB should seek further information about the potential for UoA interactions (including non-recorded catch and release) with the species, including analyzing any potential overlap of areas of fishing effort and species range. The most recent stock assessment of OCS also noted that even under the current management regime, this stock is at risk of extinction with F still more than 250% of F_{msy} despite a region wide retention ban and that additional measures are required to reverse this trend. The statement by the CAB that "The direct effects of the UoA are therefore highly likely to not hinder recovery of oceanic whitetip shark" is therefore unjustified. Therefore, the CAB should be recommending practices beyond only adhering to current measures. One example could be ensuring the safe handling procedures adopted at WCPFC15 are mandatory for the UoA. Another could be that by 2022, a regional rebuilding plan for OCS is put in place.</p>	-	-	<p>Firstly, as per ISO 17067, the CAB is in no position to make recommendations about the adoption of best practices. The role of the CAB in relation to ETP species is instead to assess the impact of the UoA on the species concerned. While we do not dispute that this stock is overfished with overfishing occurring, the fact remains that the contribution of the UoA to overall catches on this species is marginal (~0.96% based on the data used in the base case model). Therefore, the UoA by itself is highly unlikely to hinder recovery of this species. In relation to the latest CMM on sharks (2019-04), we add that an NPOA sharks is in place, shark finning is strictly forbidden at Cook Islands and client fleet level, wire trace or shark lines are not used. The crew are further regularly trained on best practice handling and release techniques</p>	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response to stakeholder input	CAB response code
					as discussed in the report. The scoring was not changed.	
2.3.2 - ETP species management	Insufficient justification for scoring	Section c and d: Because of low observer coverage (estimated at 2.9%) in the previous three years, and based on previous reports of shark finning, the CAB failed to provide sufficient justification of why they are confident that shark finning or prohibited retention is not occurring, including on unobserved trips.	Please review scoring of recent "Pan Pacific yellowfin, bigeye and albacore tuna longline fishery" assessment which has similar levels of low observer coverage	<60	Shark finning is considered in the overall impact of the UoA on ETP species. Based on the observer data, the Cook Islands MCS and sanctioning system as it applies to shark finning (and as demonstrated during the year 1 surveillance audit) and the client's zero shark finning policy, the team considers it highly likely that direct effects by the UoA on the ETP species, including through shark finning, will not hinder recovery of the species concerned. However, because of the low observer coverage, a condition in relation to 2.3.3. was raised. The scoring in relation to 2.3.2 (which addresses the management strategy in place) has not changed.	Not accepted (no score change)
2.3.3 - ETP species information	Insufficient justification for scoring	Section b: Because of low observer coverage (2.9%) in the previous three years, and no evidence provided that the observer coverage, when present, was random and therefore unbiased, the CAB failed to provide justification that observer coverage data is adequate source of information when	Please review scoring of recent "Pan Pacific yellowfin, bigeye and albacore	<60	At SG60, this PI asks whether qualitative information is adequate to estimate the UoA related mortality on ETP species. The observer datasets, available since the initial assessment, clearly provide more than just qualitative	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response to stakeholder input	CAB response code
		measuring the trends of impact of the UoA on ETP species and when scoring this PI, especially taking into account that PI 2.3.3 (a) was scored as SG60 as "information available may not be sufficiently adequate both in terms of coverage and data quality, to meet SG80."	tuna longline fishery" which has similar levels of low observer coverage		information. Observers are deployed at random when there is overlap between observer and vessel availability, contributing to the coverage levels cited in the report. Overall, the team maintains that this is sufficient for an SG60 score, but not SG80 as explained in the rationale. The scoring was not changed.	
General	When determining the adequacy of information provided about interactions with primary, secondary and ETP species, the CAB should pay close attention to the best available science, which states that "if observer samples are an unbiased sample of the fishery, our literature review and simulation studies suggest that coverage levels of at least 20 percent for common species, and 50 percent for rare species, would give reasonably good estimates of total bycatch." (Babcock, 2011).		Babcock, Elizabeth & Pikitich, Ellen & Hudson, Charlotte. (2011). How much observer coverage is enough to adequately estimate bycatch.	N/a	The MSC requirements are not prescriptive about what constitutes adequate observer coverage in fisheries. Although some guidance is provided, this is generic and does not constitute 'critical guidance'. In fact, it is stated that the catch of a species may be estimated using a variety of methods and each can have certain advantages and/or disadvantages associated with them. It is up to the assessment team to use their expert judgement to assess the adequacy of the methods used, particularly with respect to the precision and bias (statistical and observational bias) of the method and its ability to provide externally verifiable	Not accepted (no scoring change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response to stakeholder input	CAB response code
					data. We are confident that we considered all available data for the assessment, that the ETP species identified are representative of the fishery and that a precautionary view was taken with regards to information adequacy. The Client Action Plan, when implemented in collaboration with the MMR will hopefully alleviate Pew's concerns on this matter.	
General	Section 6.4.5 states that no projections have been undertaken for south Pacific albacore. However, the report from SC15 states: para 236. SC15 noted projections from the 2018 assessment which apply to the WCPFC Convention Area. The historical status and projections have a greater uncertainty in spawning stock depletion than observed for bigeye and yellowfin tuna because South Pacific albacore has a different grid which incorporates natural mortality and growth and this gives a wider spread of uncertainty. SC15 noted that under recent fishery conditions of assuming that the 2018 catch remains constant, the albacore stock is initially projected to increase as recent estimated relatively high recruitments support adult stock biomass, then decline as future recruitment is sampled from the long-term historical estimates The projections indicate that median F2020/FMSY = 0.24; median SB2020/SBF=0 = 0.43; and median SB2020/SBMSY = 3.2. The risk that SB2020/SBF=0 < LRP = 0%, SB2020 < SBMSY = 0% and F2020 > FMSY = 0%.		WCPFC-2019-SC15-MI-WP-02 and WCPFC16-2019-SC15-Summary Report	N/a	This has been corrected in the report, thank you.	Accepted (no scoring change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response to stakeholder input	CAB response code
	237.	The stock biomass is expected to decline from the 2016 level of 0.52 to 0.39 by 2035. The risk of the stock biomass breaching the LRP in 2035 is expected to be 23%. The longline-vulnerable biomass (the longline CPUE proxy) is expected to decrease by 36% relative to 2013 levels.				

Appendix 5 Conditions and Client Action Plan

This fishery is proposed to be certified with eight conditions, as detailed in the tables below. The corresponding action plan has been added for each condition individually.

All Principle 1 conditions for SP ALB and WCPO YFT were carried over from the previous certification cycle, following MSC approval of the CAB-wide variation request, discussed in Appendix 1.2 (CAB-wide variation request Principle 1).

Table 35. Condition 1 - Harvest strategy albacore

Performance Indicator	1.2.1
Score	70
Justification	<p><u>Scoring issue a (SG80):</u> The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p>MSC defines a harvest strategy as ‘<i>the combination of monitoring, stock assessment, harvest control rules and management actions, which may include an MP or an MP (implicit) and be tested by MSE</i>’ (MSC – MSCI Vocabulary v1.1).</p> <p>Elements of a harvest strategy include the reference points used to set limits and targets, “current” and “available” HCRs (1.2.2), data collection procedures (P1 1.2.3), the stock assessment (P1 1.2.4), and the monitoring of implementation of management measures. Current management measures for south Pacific albacore are set out in CMM 2015-02 which requires that that CCMs do not increase the number of their vessels actively targeting South Pacific albacore in the Convention area south of 20°S over 2005 or 2002-4 levels, and includes data gathering and reporting requirements.</p> <p>CMM 2014-06 sets out the roadmap to establishing a harvest strategy for key stocks managed by WCPFC. Under CMM 2014-06 WCPFC have also agreed a workplan with indicative timeframes to adopt or refine harvest strategies for South Pacific albacore, which is reviewed annually. At WCPFC15 (December 2018), the Commission adopted an interim TRP for this stock with the objective of an 8% increase in longline CPUE (estimated by SPC to be achieved at 56% $SB_{F=0}$). This brings WCPFC up to date according to the Harvest Strategy Workplan. The next deadline is for agreement of a management procedure, which at WCPFC16 was pushed back from 2021 to 2022 to avoid a clash with a stock assessment in 2021. It is foreseen that any management gaps should be plugged by a bridging measure developed by the South Pacific Albacore Roadmap Working Group, although this group as yet does not have terms of reference or a workplan (WCPFC, 2019a).</p> <p>In relation to SG60, it is clear from the results of the stock assessment that the stock is well above MSY levels, and projections suggest that the current harvest strategy is likely to keep the stock above the LRP in the medium term (see 1.1.1). SG60 is met. In relation to SG80, the harvest strategy is required to be ‘responsive to the state of the stock’. While some progress has been made (e.g. agreement of an interim TRP), the existing harvest strategy currently in place (i.e. CMM 2015-02) simply requires that effort is not increased above recent historical levels and makes no reference to the agreed reference points nor to changes to be made according to the stock status. Furthermore, it has a range of problems (SIDS</p>

	<p>exemption, nothing north of 20°S, defining vessels ‘actively targeting’ South Pacific albacore) which makes its impact on the stock difficult to predict (although in practice it seems to be working). On this basis, only SG60 is met.</p> <p>Note: this condition was carried over from the previous certification cycle, following MSC approval of the CAB-wide variation request, discussed in Appendix 1.2 (CAB-wide variation request Principle 1).</p>
<p>Condition</p>	<p>The fishery should put in place a regional harvest strategy for South Pacific albacore, incorporating limit and target reference points (management objectives), a harvest control rule and management actions, such that the strategy is responsive to the status of the stock and the elements of the strategy work towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p>The key missing elements of the harvest strategy at present are a well-defined harvest control rule with associated management actions.</p>
<p>Milestones</p>	<p>Milestones are aligned with the 2017 iteration of the WCPFC harvest strategy workplan (Workplan for the adoption of Harvest Strategies under CMM 2014-06 - as refined and adopted by WCPFC14 https://www.wcpfc.int/doc/supplcmm-2014-06/workplan-adoption-harvest-strategies-under-cmm-2014-06-refined-and-adopted).</p> <p>2019 – 2021: The client will provide evidence that it is actively working to ensure that the harvest strategy for South Pacific albacore is responsive to the state of the stock and that the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80. This evidence will include a summary of the actions taken by the client and other relevant parties to achieve this outcome in alignment with the WCPFC agreed work plan. Score 70.</p> <p>2022: The client will provide evidence that the harvest strategy is responsive to the state of the stock and that the elements of the harvest strategy work together towards achieving management objectives reflected in PI 1.1.1 SG80. Score 80.</p>
<p>Client Action Plan</p>	<p>Client Actions:</p> <p>The client will advocate for WCPFC to implement the WCPFC Harvest Strategy Workplan and meet the workplan schedule for this stock, as modified by WCPFC in Dec. 2017. The client will implement harvest strategy advocacy activities by participating in WCPFC meetings as part of government delegations, where the client will communicate the desired milestones.</p> <p>The client will seek opportunities to co-sign joint letters to WCPFC that advocate for putting in place and implementing a robust harvest strategy for this stock, such as have been organized in the past by ISSF and the NGO Tuna Forum. The client will also distribute the ISSF annual WCPFC joint letter to the heads of the Cook Islands, China and other government delegations to WCPFC and highlight to these delegates that implementation of the WCPFC Harvest Strategy Workplan is a condition of MSC certification of MSC certified tuna fisheries in the WCPO region.</p> <p>The client will also meet during WCPFC annual sessions with MSC staff and with clients and CABs of other MSC fisheries with the same conditions of certification to discuss how we could align and coordinate our Client Action Plan activities to address these conditions, such as by the WCPO Tuna MSC Alignment Group which has organized these meetings in the past.</p> <p>Outcomes & Schedule:</p>

	<p>Outcome 1. At the MSC annual surveillance audits conducted in 2020 and 2021 documentation will be provided of client actions taken towards putting a robust harvest strategy in place for the stock by the deadlines, including any signed joint letters, minutes from meetings of the WCPO Tuna MSC Alignment Group, and meetings with members of delegations to WCPFC.</p> <p>Outcome 2. By December 2021 there is evidence that the harvest strategy for south Pacific albacore is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.</p>
Consultation on condition	MMR letter of support provided in Appendix 10.

Table 36. Condition 2 - Harvest control rules albacore

Performance Indicator	1.2.2
Score	60
Justification	<p><u>Scoring issue a (SG80):</u> Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.</p> <p>MSC requirements:</p> <p>SA2.5.2 In scoring issue (a) at the SG60 level, teams shall accept ‘available’ HCRs (instead of HCRs that are ‘in place’) in cases where:</p> <ol style="list-style-type: none"> Stock biomass has not previously been reduced below the MSY level or has been maintained at that level for a recent period of time that is at least longer than 2 generation times of the species, and is not predicted to be reduced below B_{MSY} within the next 5 years; or In UoAs where B_{MSY} estimates are not available, the stock has been maintained to date by the measures in use at levels that have not declined significantly over time, nor shown any evidence of recruitment impairment. <p>SA2.5.3 Teams shall recognise ‘available’ HCRs as ‘expected to reduce the exploitation rate as the point of recruitment impairment is approached’ only in cases where:</p> <ol style="list-style-type: none"> HCRs are effectively used in some other UoAs, that are under the control of the same management body and of a similar size and scale as the UoA; or An agreement or framework is in place that requires the management body to adopt HCRs before the stock declines below B_{MSY}. <p>A HCR may be considered to be ‘available’ and ‘expected to reduce the exploitation rate as the PRI is approached’ at SG60 if i) ‘stock biomass has not previously been reduced below B_{MSY} or has been maintained at that level for a recent period of time’ (SA2.5.2a) and ii) ‘there is an agreement or framework in place that requires the management body to adopt HCRs before the stock declines below B_{MSY}’ (SA2.5.3b). The stock is above B_{MSY} with high probability and under CMM 2014-06 there is an established workplan and agreed timetable for the adoption of well-defined harvest control rules (‘management procedure’ under new WCPFC terminology). The deadline for adopting a management procedure</p>

	<p>was 2021 but at WCPFC16 (December 2019) this was pushed back to 2022 to avoid clashing with a planned stock assessment. The process is therefore underway although some delays have been and continue to be evident. A TRP was finally agreed at WCPFC15 (2018), putting the workplan back on track.</p> <p>Overall, at present although a generally understood HCR is in place, no well-defined HCRs are in place and so only SG60 is met.</p> <p><u>Scoring issue b (SG80):</u> The HCRs are likely to be robust to the main uncertainties.</p> <p>Since a HCR is ‘available’ rather than ‘in place’, it cannot be argued to be robust to the main uncertainties. Not met.</p> <p><u>Scoring issue c (SG80):</u> Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.</p> <p>Under SA2.5.5, in order to conclude that available HCRs are ‘effective’, MSC requires evidence of i) the use of effective HCRs in other stocks or fisheries under the same management body; or ii) a formal agreement or framework with trigger levels which will require the development of a well-defined HCR. It also requires consideration of current exploitation rates in relation to biological reference points and the agreed trigger level (guidance for SA2.5.6: ‘evidence that current F is equal to or less than F_{MSY} should usually be taken as evidence that the HCR is effective’).</p> <p>Recent average fishing mortality is estimated to be well below F_{MSY} (median $F_{recent}/F_{MSY} = 0.20$, 80 percentile range 0.08-0.41). Current levels of F are likely to maintain the stock above the LRP. Pilling et al. (2016) shows that fishing the stock at MSY level would require a significant increase in effort from current levels.</p> <p>A well-defined HCR is being developed under CMM 2014-06. An interim limit and target reference point has been agreed, and management procedures will be evaluated for the main sources of uncertainty using Management Strategy Evaluation (MSE) (see WCPFC (2019a, 2019b).</p> <p>Overall, therefore, under the MSC requirements and guidance for ‘available’ HCRs, SG60 is met. SG80 is not met.</p> <p><u>Note:</u> this condition was carried over from the previous certification cycle, following MSC approval of the CAB-wide variation request, discussed in Appendix 1.2 (CAB-wide variation request Principle 1).</p>
<p>Condition</p>	<p>A well-defined regional-level harvest control rule should be put in place for SP ALB, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and is expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important).</p>
<p>Milestones</p>	<p>Milestones are aligned with the 2017 iteration of the WCPFC harvest strategy workplan (Workplan for the adoption of Harvest Strategies under CMM 2014-06 - as refined and adopted by WCPFC14 https://www.wcpfc.int/doc/supplcmm-2014-06/workplan-adoption-harvest-strategies-under-cmm-2014-06-refined-and-adopted).</p>

	<p>2019 – 2021: The client will provide evidence that it is actively working to ensure that a well-defined regional-level harvest control rule is put in place, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and is expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important). The evidence provided will include a summary of the actions taken by the client and other relevant parties to achieve this outcome in alignment with the WCPFC agreed work plan. Score 60.</p> <p>2022: The client will provide evidence that a well-defined regional-level harvest control rule is in place, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and is expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important). Score 80.</p>
Client Action Plan	<p>Client Actions:</p> <p>See the client action plan for condition 1, where advocacy relates to having a well-defined harvest control rule (HCR) for this stock developed and adopted that takes into account the main uncertainties for the stock that are consistent with the harvest strategy, ensures that the exploitation rate is reduced as a limit reference point is approached, and is expected to keep the stock near its TRP.</p> <p>Outcomes & Schedule:</p> <p>Outcome 1. At the MSC annual surveillance audits conducted in 2020 and 2021 documentation will be provided of client actions taken towards ensuring that a well-defined regional-level HCR is put in place by WCPFC, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and is expected to keep the stock fluctuating around a target level consistent with (or above) MSY. This includes any signed joint letters, minutes from meetings of the WCPO Tuna MSC Alignment Group, and meetings with members of delegations to WCPFC.</p> <p>Outcome 2. By December 2021 there is evidence that a well-defined regional-level HCR is in place, with associated management actions.</p>
Consultation on condition	<p>MMR letter of support provided in Appendix 10.</p>

Table 37. Condition 3 - Harvest strategy yellowfin

Performance Indicator	1.2.1
Score	70
Justification	<p><u>Scoring issue a (SG80)</u>: The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p>

	<p>MSC defines a harvest strategy as <i>'the combination of monitoring, stock assessment, harvest control rules and management actions, which may include an MP or an MP (implicit) and be tested by MSE'</i> (MSC – MSCI Vocabulary v1.1).</p> <p>The stated objective of the WCPFC harvest strategy as defined in CMMs 2017-01 and 2018-01 is to maintain status quo biomass, pending agreement on a formal target reference point, previously due in 2019 but pushed back to 2021 by WCPFC16 (see Section 6.3.10).</p> <p>CMM 2014-06 commits WCPFC to developing a formal harvest strategy ('management procedure') for yellowfin and the other key stocks; none of the key milestones for yellowfin have yet been met however (see harvest strategy workplan; Attachment H in WCPFC (2019a)). For the moment, the elements of the WCPFC harvest strategy are the following:</p> <ul style="list-style-type: none"> • Data collection on the stock and fishery (considered in detail in PI 1.2.3 below); • Stock assessment process (considered in detail in PI 1.2.4 below); • Limit reference point ($20\%SB_{F=0}$) and management target ($SB_{2012-15}$; from CMM 2018-01) (see Section 6.3.7); • 'Available' HCR (see 1.2.2), with management tools set out in 2018-01 (described in see Section 6.3.7); • Monitoring of implementation of CMM 2018-01 via data gathering and Part 1 and 2 reports to the Commission. <p>This management strategy is reviewed annually during the Commission meeting.</p> <p>PNA harvest strategy: The PNA VDS is described Section 6.3.9. The purse seine VDS is relevant for yellowfin because the majority of the reduction in spawning potential can be ascribed to the purse seine fishery (see Figure 44 in the stock assessment report). A longline VDS has recently been established, but plays a limited role in management for the moment (see Section 6.3.9).</p> <p>Overall scoring:</p> <p>The objective of the current harvest strategy is to maintain the status quo (WCPFC: average $SB/SB_{F=0}$ for 2012-2015; PNA: purse seine effort at a maximum of 2010 levels). The most recent stock assessment suggests that the status quo is an acceptable biological target for yellowfin (see PI 1.1.1). The most recent tropical tuna CMMs (2017-01 and 2018-01) perhaps slightly weakened management provisions for yellowfin compared to the previous measure (CMM 2016-01), although comparison is difficult and probably overall the outcome will not be a great deal of difference.</p> <p>Status quo projections to 2019, presented to SC14, predict that SB will increase somewhat relative to 2015 levels, and remain on the right side of MSY reference points with high probability (median $F_{2019}/F_{MSY}=0.63$; median $SB_{2019}/SB_{MSY}=1.51$), with a projected probability of breaching the LRP of 6% (although as noted in Section 6.5.4 these projections might be slightly optimistic). On this basis, the harvest strategy is achieving stock management objectives: SG60 is met. In relation to SG80, however, the team considered that the harvest strategy is not particularly responsive to the status of the stock. The team were not confident based on past or current form that, should yellowfin stock status be revealed at the next stock assessment to be approaching or below target levels, WCPFC</p>
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	<p>and/or PNA would be able to stabilize or decrease fishing mortality in a fully effective and timely way under the existing harvest strategy. SG80 is not met.</p> <p><u>Note:</u> this condition was carried over from the previous certification cycle, following MSC approval of the CAB-wide variation request, discussed in Appendix 1.2 (CAB-wide variation request Principle 1).</p>
<p>Condition</p>	<p>The fishery should put in place a regional harvest strategy for WCPO yellowfin, incorporating limit and target reference points (management objectives), a harvest control rule and management actions, such that the strategy is responsive to the status of the stock and the elements of the strategy work towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p>The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions.</p>
<p>Milestones</p>	<p>Milestones are aligned with the 2017 iteration of the WCPFC harvest strategy workplan (Workplan for the adoption of Harvest Strategies under CMM 2014-06 - as refined and adopted by WCPFC14 https://www.wcpfc.int/doc/supplcmm-2014-06/workplan-adoption-harvest-strategies-under-cmm-2014-06-refined-and-adopted).</p> <p>2019 – 2021: The client will provide evidence that it is actively working to ensure that the harvest strategy for Western Central Pacific yellowfin is responsive to the state of the stock and that the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80. This evidence will include a summary of the actions taken by the client and other relevant parties to achieve this outcome in alignment with the WCPFC agreed work plan. Score 70.</p> <p>2022: The client will provide evidence that the harvest strategy is responsive to the state of the stock and that the elements of the harvest strategy work together towards achieving management objectives reflected in PI 1.1.1 SG80. Score 80.</p>
<p>Client Action Plan</p>	<p>Client Actions:</p> <p>The client will advocate for WCPFC to implement the WCPFC Harvest Strategy Workplan and meet the workplan schedule for this stock, as modified by WCPFC in Dec. 2017. The client will implement harvest strategy advocacy activities by participating in WCPFC meetings as part of government delegations, where the client will communicate the desired milestones.</p> <p>The client will seek opportunities to co-sign joint letters to WCPFC that advocate for putting in place and implementing a robust harvest strategy for this stock, such as have been organized in the past by ISSF and the NGO Tuna Forum. The client will also distribute the ISSF annual WCPFC joint letter to the heads of the Cook Islands, China and other government delegations to WCPFC and highlight to these delegates that implementation of the WCPFC Harvest Strategy Workplan is a condition of MSC certification of MSC certified tuna fisheries in the WCPO region.</p> <p>The client will also meet during WCPFC annual sessions with MSC staff and with clients and CABs of other MSC fisheries with the same conditions of certification to discuss how we could align and coordinate our Client Action Plan activities to</p>

	<p>address these conditions, such as by the WCPO Tuna MSC Alignment Group which has organized these meetings in the past.</p> <p>Outcomes & Schedule:</p> <p>Outcome 1. At the MSC annual surveillance audits conducted in 2020 and 2021 documentation will be provided of client actions taken towards putting a robust harvest strategy in place for the stock by the deadlines, including any signed joint letters, minutes from meetings of the WCPO Tuna MSC Alignment Group, and meetings with members of delegations to WCPFC.</p> <p>Outcome 2. By December 2021 there is evidence that the harvest strategy for WCPO yellowfin is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.</p>
Consultation on condition	MMR letter of support provided in Appendix 10.

Table 38. Condition 4 - Harvest control rules and tools yellowfin

Performance Indicator	1.2.2
Score	60
Justification	<p><u>Scoring issue a (SG80):</u> Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.</p> <p>MSC requirements:</p> <p>SA2.5.2 In scoring issue (a) at the SG60 level, teams shall accept ‘available’ HCRs (instead of HCRs that are ‘in place’) in cases where:</p> <ol style="list-style-type: none"> a. Stock biomass has not previously been reduced below the MSY level or has been maintained at that level for a recent period of time that is at least longer than 2 generation times of the species, and is not predicted to be reduced below BMSY within the next 5 years; or b. In UoAs where B_{MSY} estimates are not available, the stock has been maintained to date by the measures in use at levels that have not declined significantly over time, nor shown any evidence of recruitment impairment. <p>SA2.5.3 Teams shall recognise ‘available’ HCRs as ‘expected to reduce the exploitation rate as the point of recruitment impairment is approached’ only in cases where:</p> <ol style="list-style-type: none"> a. HCRs are effectively used in some other UoAs, that are under the control of the same management body and of a similar size and scale as the UoA; or b. An agreement or framework is in place that requires the management body to adopt HCRs before the stock declines below B_{MSY}. <p>Stock biomass has been above the estimated MSY level throughout the time series, and since the probabilities that $SB < SB_{MSY}$ and $F > F_{MSY}$ are low (see 1.2.1a), it</p>

	<p>is not likely that the stock biomass will fall below this level in the next five years (see PI 1.1.1; Section 6.5.4; Table 18). WCPFC have an agreed, legally-binding framework in place to establish place formal harvest strategies and control rules for their main stocks, including WCPO yellowfin (see CMM 2014-06 and associated workplans; Section 6.3.10). The requirements of SA2.5.2-3 are therefore met for a HCR to be 'available'. SG60 is met. Since the harvest strategy is not 'in place', SG80 is not met.</p> <p><u>Scoring issue b (SG80):</u> The HCRs are likely to be robust to the main uncertainties.</p> <p>Since a HCR is 'available' rather than 'in place', it cannot be argued to be robust to the main uncertainties. Not met.</p> <p><u>Scoring issue c (SG80):</u> Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.</p> <p><u>Note:</u> this condition was carried over from the previous certification cycle, following MSC approval of the CAB-wide variation request, discussed in Appendix 1.2 (CAB-wide variation request Principle 1).</p>
<p>Condition</p>	<p>A well-defined regional-level harvest control rule should be put in place for WCPO YFT, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and that are expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important).</p>
<p>Milestones</p>	<p>Milestones are aligned with the 2017 iteration of the WCPFC harvest strategy workplan (Workplan for the adoption of Harvest Strategies under CMM 2014-06 - as refined and adopted by WCPFC14 https://www.wcpfc.int/doc/supplcmm-2014-06/workplan-adoption-harvest-strategies-under-cmm-2014-06-refined-and-adopted).</p> <p>2019 – 2021: The client will provide evidence that it is actively working to ensure that a well-defined regional-level harvest control rule is put in place, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and is expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important). The evidence provided will include a summary of the actions taken by the client and other relevant parties to achieve this outcome in alignment with the WCPFC agreed work plan. Score 60.</p> <p>2022: The client will provide evidence that a well-defined regional-level harvest control rule is in place, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and is expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main</p>

	uncertainties regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important). Score 80.
Client Action Plan	<p>Client Actions:</p> <p>See the client action plan for condition 9, where advocacy relates to having a well-defined harvest control rule (HCR) for this stock developed and adopted that takes into account the main uncertainties for the stock that are consistent with the harvest strategy, ensures that the exploitation rate is reduced as a limit reference point is approached, and is expected to keep the stock near its TRP..</p> <p>Outcomes & Schedule:</p> <p>Outcome 1. At the MSC annual surveillance audits conducted in 2020 and 2021 documentation will be provided of client actions taken towards ensuring that a well-defined regional-level HCR is put in place by WCPFC, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and is expected to keep the stock fluctuating around a target level consistent with (or above) MSY. This includes any signed joint letters, minutes from meetings of the WCPO Tuna MSC Alignment Group, and meetings with members of delegations to WCPFC.</p> <p>Outcome 2. By December 2021 there is evidence that a well-defined regional-level HCR is in place, with associated management actions.</p>
Consultation on condition	MMR letter of support provided in Appendix 10.

Table 39. Condition 5 - Harvest strategy bigeye

Performance Indicator	1.2.1
Score	70
Justification	<p><u>Scoring issue a (SG80):</u> The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p>MSC defines a harvest strategy as <i>‘the combination of monitoring, stock assessment, harvest control rules and management actions, which may include an MP or an MP (implicit) and be tested by MSE’</i> (MSC – MSCI Vocabulary v1.1).</p> <p>The stated objective of the WCPFC harvest strategy as defined in CMMs 2017-01 and 2018-01 is to maintain status quo biomass, pending agreement on a formal target reference point, previously due in 2019 but now pushed back to 2021 according to the latest version of the harvest strategy workplan (see Section 6.3.10).</p> <p>CMM 2014-06 commits WCPFC to developing a formal harvest strategy (‘management procedure’) for bigeye and the other key stocks; none of the key milestones for bigeye have yet been met however; at WCPFC14 the workplan was refocused from rebuilding to agreeing a long-term HCR, based on the results of the 2017 stock assessment (see harvest strategy workplan; Attachment L in the summary report from WCPFC14; Attachment I in the summary report from WCPFC15; Attachment H in WCPFC (2019a)). For the moment, the elements of the WCPFC harvest strategy are the following:</p>

- Data collection on the stock and fishery (considered in detail in PI 1.2.3 below)
- Stock assessment process (considered in detail in PI 1.2.4 below)
- Limit reference point ($20\%SB_{F=0}$) and management target ($SB_{2012-15}$; from CMM 2017-01) (see Section 6.3.7)
- 'Available' HCR (see 1.2.2), with some management tools set out in 2017-01 (described in Section 6.3.7);
- Monitoring of implementation of CMM 2018-01 via data gathering and Part 1 and 2 reports to the Commission.

This management strategy is reviewed annually during the Commission meeting. PNA harvest strategy:

PNA operate a purse seine vessel day scheme (VDS) which limits effort by setting an overall 'TAE' (total allowable effort) which is divided up for each of the parties to the agreement. The TAE is set annually based on objectives of 'optimal exploitation' as well as WCPFC provisions (which presumably means MSY). The days are set based on the objective of limiting purse seine effort to 2010 levels (which was a requirement of the previous tropical tuna CMMs, although not since 2017-01). The purse seine VDS is relevant for bigeye because most of the F on juveniles comes from the purse seine fishery (see Figure 1 in 1.1.1b). A longline VDS has recently been established, but plays a limited role in management for the moment (see Section 6.3.9).

Overall scoring:

The objective of the current harvest strategy is to maintain the status quo (WCPFC: average $SB/SB_{F=0}$ for 2012-2015; PNA: purse seine effort at a maximum of 2010 levels). The most recent stock assessment suggests that the status quo is an acceptable short-term biological target for bigeye (see 1.1.1 and projections in Table 21). The tropical tuna bridging measures (2017-01, 2018-01) have overall somewhat weakened management provisions in relation to bigeye compared to the previous measure (2016-01), which was aimed at rebuilding the stock. It does not on this basis comply with the advice of the SC13 prior to the WCPFC 2017 plenary (SC13 report para. 241): *SC13 recommends as a precautionary approach that the fishing mortality on bigeye tuna stock should not be increased from current level to maintain current or increased spawning biomass until the Commission can agree on an appropriate target reference point (TRP)*. SC14 reiterated the same advice (SC14 report para. 182) as did SC15 in the absence of a new stock assessment (SC15 report para. 146).

Status quo projections (Scott et al., 2017; WCPFC, 2018a) provide a basis on which to evaluate the extent to which the harvest strategy is expected to achieve stock management objectives. The projections are summarised in Table 21, which gives the estimated probability of SB falling below the LRP by 2045 in the range 0-18% based on status quo and 'optimistic' fishery scenarios, which is acceptable given that the harvest strategy is intended to be revised significantly prior to 2045.

Given the ongoing work to put in place an improved management target and harvest strategy (2014-06 and workplan; see above and Section 6.3.10), assuming this progresses, the impact on the stock status from changes in the transition from 2016-01 to 2017-01 and 2018-01 will probably not be significant; or at least will be lost in the much larger uncertainty about stock status derived from the choice of growth model and regional structure. Furthermore, the acceptance by SC14 of

	<p>the ‘updated new’ growth model as the best scientific data on which to base stock assessments has considerably reduced the uncertainty around stock status. On this basis, SG60 can be considered to be met. SG80 is however not met.</p>
<p>Condition</p>	<p>The fishery should put in place a regional harvest strategy for WCPO bigeye, incorporating limit and target reference points (management objectives), a harvest control rule and management actions, such that the strategy is responsive to the status of the stock and the elements of the strategy work towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p>The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions.</p>
<p>Milestones</p>	<p>Milestones are aligned with the 2017 iteration of the WCPFC harvest strategy workplan (Workplan for the adoption of Harvest Strategies under CMM 2014-06 - as refined and adopted by WCPFC14 https://www.wcpfc.int/doc/supplcmm-2014-06/workplan-adoption-harvest-strategies-under-cmm-2014-06-refined-and-adopted).</p> <p>Year 1 (2020) – Year 2 (2021): the client will provide evidence that it is actively working to ensure that the harvest strategy for WCPO bigeye tuna is responsive to the state of the stock and that the elements of the harvest strategy work together towards achieving the management objectives reflected in the target and limit reference points. This evidence will include a summary of the actions taken by the client and other relevant parties to achieve this outcome in alignment with the WCPFC 2017 agreed work plan. (Score: 70)</p> <p>Year 3 (2022): Harvest strategy is in place. (Score: 80)</p>
<p>Client Action Plan</p>	<p>The client will advocate for WCPFC to implement the WCPFC Harvest Strategy Workplan and meet the workplan schedule for this stock, as modified by WCPFC in Dec. 2017. The client will implement harvest strategy advocacy activities by participating in WCPFC meetings as part of government delegations, where the client will communicate the desired milestones.</p> <p>The client will also continue to seek opportunities to co-sign joint letters to WCPFC parties that advocate for putting in place and implementing robust harvest strategies for principal market stocks, such as have been organized in the past by ISSF and the NGO Tuna Forum. The client will also distribute these letters, as well as position statements developed by some environmental NGOs such as by ISSF, to the heads of the Cook Islands and other government delegations to WCPFC and highlight to WCPFC government delegates that implementation of the WCPFC Harvest Strategy Workplan, with deadlines stated in the 2017 version of this workplan, is a condition of MSC certification of MSC certified tuna fisheries in the WCPO region.</p> <p>The client will also have conversations with MSC staff and with clients and CABs of other MSC fisheries with the same conditions of certification to discuss how we could align and coordinate our Client Action Plan activities to address these conditions, such as has been coordinated by the WCPO Tuna MSC Alignment Group.</p> <p>Furthermore, the client will conduct advocacy aimed at environmental NGOs and donors that fund these NGOs that are active in the sustainable tuna fisheries space, to identify specific actions that they can take towards achieving the 2017 WCPFC harvest strategy workplan deadlines (other than advocacy activities). The</p>

	<p>client will suggest to environmental NGOs and donors that, if SPC is largely dictating the harvest strategy development process and schedule, then the NGOs and donors should have a transparent public conversation with SPC on what it would require - politically as well as what institutional and financial resources SPC would require - to put interim single-stock harvest strategies in place, while SPC simultaneously continues with WCPFC's plan of developing multispecies/multi-fisheries harvest strategies.</p> <p>Outcomes & Schedule:</p> <p>Year 1 (2020) and Year 2 (2021): the client will provide evidence of having actively worked to ensure that the harvest strategy for WCPO bigeye tuna is responsive to the state of the stock and that the elements of the harvest strategy work together towards achieving the management objectives reflected in target and limit reference points. The client will summarize actions taken to achieve this outcome in alignment with the WCPFC 2017 agreed work plan, including any signed joint letters, minutes from meetings of the WCPO Tuna MSC Alignment Group, and meetings with members of delegations to WCPFC.</p> <p>Year 3 (2022): A harvest strategy is in place. By December 2021 the client plans to have evidence that the harvest strategy for WCPO bigeye tuna is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.</p>
Consultation on condition	MMR letter of support provided in Appendix 10.

Table 40. Condition 6 - Harvest control rules bigeye

Performance Indicator	1.2.2
Score	60
Justification	<p><u>Scoring issue a (SG80):</u> Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.</p> <p>MSC requirements:</p> <p>SA2.5.2 In scoring issue (a) at the SG60 level, teams shall accept 'available' HCRs (instead of HCRs that are 'in place') in cases where:</p> <ol style="list-style-type: none"> a. Stock biomass has not previously been reduced below the MSY level or has been maintained at that level for a recent period of time that is at least longer than 2 generation times of the species, and is not predicted to be reduced below BMSY within the next 5 years; or b. In UoAs where B_{MSY} estimates are not available, the stock has been maintained to date by the measures in use at levels that have not declined significantly over time, nor shown any evidence of recruitment impairment. <p>SA2.5.3 Teams shall recognise 'available' HCRs as 'expected to reduce the exploitation rate as the point of recruitment impairment is approached' only in cases where:</p>

	<p>a. HCRs are effectively used in some other UoAs, that are under the control of the same management body and of a similar size and scale as the UoA; or</p> <p>b. An agreement or framework is in place that requires the management body to adopt HCRs before the stock declines below B_{MSY}.</p> <p>In the 2017 stock assessment, only the model set with the old growth model (now removed from the grid) plus the 2014 regional structure puts the stock biomass below SB_{MSY} at any point. According to the 2018 update (SC14 grid), stock biomass has been above the estimated MSY level throughout the time series for all models; only one model out of 36 (recent) or zero (latest) put $SB < SB_{MSY}$ in the current time period. Based on the SC grid, the probability that $F > F_{MSY}$ is estimated to be ~6%. $p(SB < SB_{MSY})$ is not quoted in the SC14 report, but from Table 20 can be seen to be <10% (see 1.1.1b); $p(SB < LRP)$ is estimated to be ~0%. The biomass trajectory is stable or (possibly) increasing in the terminal year and F is ~stable (see 1.1.1). On this basis, SA2.5.2a is met.</p> <p>WCPFC have an agreed, legally-binding framework in place to establish formal harvest strategies and management procedures for their main stocks, including WCPO bigeye (see CMM 2014-06 and associated workplans; Section 6.3.7). SA2.5.3b is therefore met. On this basis, a HCR can be considered to be ‘available’ for this stock. SG60 is met. Since the harvest strategy is not ‘in place’, SG80 is not met.</p> <p><u>Scoring issue b (SG80):</u> The HCRs are likely to be robust to the main uncertainties.</p> <p>Since a HCR is ‘available’ rather than ‘in place’, it cannot be argued to be robust to the main uncertainties. Not met.</p> <p><u>Scoring issue c (SG80):</u> Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.</p> <p>Under SA2.5.5, in order to conclude that ‘available’ HCRs are ‘effective’ (SG60), MSC requires evidence of i) the use of effective HCRs in other stocks or fisheries under the same management body; or ii) a formal agreement or framework with trigger levels which will require the development of a well-defined HCR. It also requires consideration of current exploitation rates in relation to biological reference points and the agreed trigger level (guidance for SA2.5.6: ‘evidence that current F is equal to or less than F_{MSY} should usually be taken as evidence that the HCR is effective’).</p> <p>A formal framework is in place for the development of a harvest strategy for the stock (CMM 2014-06 and workplans; see above). F is estimated by SC14 to be below F_{MSY} with ~94% probability. The criteria for ‘available’ tools at SG60 are therefore met. SG80 is not met because the HCR is not ‘in place’ but only ‘available’.</p>
Condition	<p>A well-defined regional-level harvest control rule should be put in place for WCPO BET, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and that are expected to keep the stock fluctuating around a target level consistent with (or above) MSY. The selection of the harvest control rule should consider the main uncertainties</p>

	regarding the status of the stock or the impact of the fishery (or other uncertainties if considered important)
Milestones	<p>Milestones are aligned with the 2017 iteration of the WCPFC harvest strategy workplan (Workplan for the adoption of Harvest Strategies under CMM 2014-06 - as refined and adopted by WCPFC14 https://www.wcpfc.int/doc/supplcmm-2014-06/workplan-adoption-harvest-strategies-under-cmm-2014-06-refined-and-adopted).</p> <p>Year 1 (2020) – Year 2 (2021): the client should provide evidence that it is actively working to ensure that well defined harvest control rules taking into account the main uncertainties are in place for WCPO bigeye and that these are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. This evidence will include a summary of the actions taken by the client and other relevant parties to achieve this outcome in alignment with the WCPFC agreed work plan. (Score 60).</p> <p>Year 3 (2022): HCR adopted. (Score: 80)</p>
Client Action Plan	<p>See the client action plan for condition 5, where advocacy relates to having a well-defined harvest control rule (HCR) for this stock developed and adopted that takes into account the main uncertainties for the stock that are consistent with the harvest strategy, ensures that the exploitation rate is reduced as a limit reference point is approached, and is expected to keep the stock near its TRP.</p> <p>Outcomes & Schedule:</p> <p>Year 1 (2020) – Year 2 (2021): At the MSC annual surveillance audits conducted in 2020 and 2021 documentation will be provided of client actions taken towards ensuring that a well-defined regional-level HCR is put in place by WCPFC, with associated management actions (in the form of a CMM or another form as appropriate) which together act effectively to reduce exploitation rates as the point of recruitment impairment is approached and is expected to keep the stock fluctuating around a target level consistent with (or above) MSY. This includes any signed joint letters, minutes from meetings of the WCPO Tuna MSC Alignment Group, and meetings with members of delegations to WCPFC.</p> <p>Year 3 (2022). By December 2021 WCPFC adopts an HCR for WCPO bigeye tuna, with evidence that a well-defined regional-level HCR is in place, with associated management actions.</p>
Consultation on condition	MMR letter of support provided in Appendix 10.

Table 41. Condition 7 – Secondary species management (bait)

Performance Indicator	2.2.2
Score	75
Justification	<p><u>Scoring issue a (SG80) – Indian oil sardine, Japanese pilchard</u>: There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.</p>

	<p>As far as the team are aware there is no management in place to limit catches of either <i>Sardinella longiceps</i> in Omani waters, or of <i>Sardinops melanostictus</i> in Chinese waters. From the UoA's perspective however, the quantities of bait used compared to the overall catches of these stocks are small: for <i>S. longiceps</i>, a maximum of 1,437 t were used in 2016, corresponding to < 5% of the total catch (see 2.2.1a). For <i>S. melanostictus</i>, this was ca. 1.5% (see 2.2.1a). MSC Guidance GSA3.4.6 states that even if the total catch of a species is clearly hindering recovery, UoA catches of less than 30% of the total catch of a species may not normally be influential in hindering a recovery in a marginal sense. Bearing in mind bait use is fairly constant, at least at an order of magnitude, and in part because the fishery sources from multiple sources of bait, the team considered this to constitute measures that contribute to the UoA not having a significant impact on these stocks. SG60 is met. Nevertheless, it is not clear that the Client Group has in place a cohesive arrangement that ensures that bait is proactively purchased from sustainable fisheries. The team therefore concludes that a partial strategy is not in place for the UoA that is expected to maintain or not hinder rebuilding of bait species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery. SG80 is not met for the bait species.</p>
Condition	<p>By the end of Year 3, the fishery should have in place a partial strategy that ensures that bait is being sourced from sustainable fisheries. The partial strategy should be expected to maintain or not hinder rebuilding of bait species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.</p>
Milestones	<p>Year 1: Explore UoA bait sourcing options that ensures that bait is being sourced from sustainable fisheries for which it can be demonstrated that the stocks concerned are highly likely to be above biologically based limits or that the UoA does not hinder their recovery. Score: 75.</p> <p>Year 2: Develop UoA bait sourcing strategy that ensures that bait is being sourced from sustainable fisheries for which it can be demonstrated that the stocks concerned are highly likely to be above biologically based limits or that the UoA does not hinder their recovery. Score: 75.</p> <p>Year 3: Implement UoA bait sourcing strategy that ensures that bait is being sourced from sustainable fisheries. A partial strategy is in place that is expected to maintain or not hinder rebuilding of bait species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery. Score: 80.</p>
Client Action Plan	<p>During 2020 the client will develop and implement a bait sourcing strategy to obtain more detailed information on the weight of each bait species used in the fishery, the bait supplier, and the source fisheries and stocks, and will maintain a database of this information. The client will estimate the percent of the total annual weight of the catch of each stock that was used for bait in the Cook Islands MSC fishery. Furthermore, the client will contact the domestic fisheries management authority of each country from which bait is sourced to request available information on the management system for each fishery that supplied bait, and the client will request information on the current stock assessment reports to determine if the stocks are within biologically-based limits, and if below limits, if there is evidence of recovery or a demonstrably-effective partial strategy in place such that the Cook Islands MSC fishery is not hindering recovery and rebuilding. Combined, the information planned to be compiled will enable a more robust assessment of whether the use of each stock of each species used as bait</p>

	<p>in the fishery is a threat to the sustainability or hinders the recovery and rebuilding of the stock.</p> <p>The client will implement this bait sourcing strategy starting in 2020 and in each subsequent year.</p>
Consultation on condition	The client will consult with bait suppliers and with the domestic fisheries management authorities of each fishery from which bait is sourced.

Table 42. Condition 8 – ETP species information

Performance Indicator	2.3.3
Score	70
Justification	<p><u>Scoring issue a (SG80)</u>: Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species.</p> <p>Some quantitative information is available from observer reports and through self-reporting in logbooks (for sharks only, see Sieben and Daxboeck (2019)), enabling UoA related mortality and the impact on the ETP populations concerned to be estimated. SG60 is met. However, as already explained in Section 6.7.2 and PI 2.3.1, the team noted a likely decline in observer coverage over the course of the certificate, as well as potential issues with the quality of the observer data for some years. While it is clear that the Cook Islands have been taking a proactive approach towards achieving sufficient observer coverage aboard Cook Islands flagged vessels, it may be that this has come at the expense of foreign flagged vessels including those in the UoA where coverage appears to have declined. Therefore, the team concluded that the information available may not be sufficiently adequate both in terms of coverage and data quality, to meet SG80.</p> <p>Note: During the initial assessment, the following condition was raised in relation to PI 2.3.3: The occurrence and outcome of all catches of ETP species (sharks, sea turtles, seabirds and cetaceans) by LTFV vessels should be systematically and accurately reported on so that fishery-related mortality on ETP species can be quantitatively determined and the effectiveness of the management strategies can be determined. Where a need has been identified, the collected data should enable further development of management strategies to ensure that the fishery does not hinder recovery of ETP species (Gascoigne et al., 2015). This condition was closed during the initial certification cycle as through observer data and self-reporting, it could be demonstrated that the fishery was not a threat to ETP species. At reassessment, however, there was 1) a lack of clarity on UoA observer coverage and 2) the quality of the more recent observer data was questioned. The conditions, therefore, do not address the same issues.</p>
Condition	By the end of Year 2, the fishery should demonstrate that the available quantitative information is adequate, both in terms of coverage and quality, to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species.
Milestones	Year 1: Develop with the relevant stakeholders a plan for increasing the coverage and quality of observer data for the UoA so that is the available quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. Start implementation of plan. Score: 70.

	<p>Year 2: Continue to implement the plan for increasing the coverage and quality of observer data for the UoA so that the available quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species</p> <p>Score: 80.</p>
<p>Client Action Plan</p>	<p>During 2020, the client will work with MMR to develop a fisheries observer plan including to estimate the minimum number of trips that will have an at-sea observer placement to achieve a minimum of 5% coverage during 2020 and 2021, and to ensure that observers record accurate information on all ETP fishery interactions as prescribed by the SPC/FFA regional observer programme.</p> <p>Starting in 2021 and annually thereafter, the client will consult with MMR to estimate whether there have been any meaningful temporal changes in the catch rates by the MSC fishery or raised levels by vessels in the UoC of ETP species, assess compliance with relevant WCPFC measures on ETP bycatch mitigation and handling and release protocols, and whether the minimum coverage rate of 5% of trips is adequate to assess risks to affected populations of ETP species, and adapt the observer coverage plan as necessary to address any identified deficits. Noting that WCPFC is expected to adopt electronic monitoring (EM) standards at their regular session in Dec. 2020, the client will also consult with MMR to discuss potential introduction of EM to complement conventional at-sea observer coverage.</p>
<p>Consultation on condition</p>	<p>The client will consult with MMR in implementing this activity. Please see Appendix 10 for the MMR letter of support.</p>

Appendix 6 Surveillance

Table 43. Fishery Surveillance Programme

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 3	Off site	On-site	Off-site	Off-site

Table 44. Surveillance level rationale

Year	Surveillance activity	Number of auditors	Rationale
1	Off site	2	All information pertaining to the Principle 1 and Principle 2 conditions can be provided remotely by the client and stakeholders; however, the team recommends one on-site visit during Year 2 to maintain relations and enable more detailed discussions with the MMR, the key stakeholder for this fishery.
2	On-site	2 The on-site audit may be undertaken by a minimum of 1 auditor who is supported by the rest of the team from 1 or more remote location(s).	
3	Off site	2	
4	Off site	2	

Table 45 Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
1	TBC	30 days prior anniversary date of certificate	N/a
2	TBC	30 days prior anniversary date of certificate	N/a
3	TBC	30 days prior anniversary date of certificate	N/a
4	TBC	30 days prior anniversary date of certificate	N/a

Appendix 8 Harmonised fishery assessments

For South Pacific albacore and WCPO yellowfin, Principle 1 has been harmonised with the fisheries listed in Table 46 and Table 47 following MSC's pilot harmonisation process held in April 2016. The harmonisation outcome report was peer-reviewed, the details of which can be provided upon request. Following this process, there have been some changes - Principle 1 rationales have therefore been updated in some places, but no scores have been changed for Principle 1. All scores have been harmonized with the exception of some minor differences in the SG80-100 bracket which do not affect the overall outcome of the Principle 1 assessment.

For WCPO bigeye, a similar comparison of scores was carried out as shown in Table 48. Note that bigeye was not discussed at the Hong Kong harmonization meeting.

For Principle 3, the assessment team harmonized the regional components of the management system with the above fisheries. Differences in scores between WCPFC tuna assessments are therefore related to the performance of the national management systems. Note that this fishery overlaps with the Cook Islands UoA of the Tropical Pacific yellowfin and skipjack free-school purse seine fishery. The same Principle 3 assessor conducted both assessments ensuring harmonisation of relevant scores. During this assessment, scoring of PI 3.2.2 was also harmonised with overlapping South Pacific albacore fisheries in the MSC programme; a consensus was reached that the previously existing condition on this PI can now be closed.

Table 46. Comparison of Principle 1 scores between this assessment and other South Pacific albacore fisheries. Note, all fisheries are now being assessed against the MSC Standard v2.0 or 2.01.

Fishery	1.1.1 (Stock status)	1.1.2 (Rebuilding)	1.2.1 (Harvest Strategy)	1.2.2 (Harvest Control Rules and Tools)	1.2.3 (Information/Monitoring)	1.2.4 (Stock assessment)
Pan Pacific yellowfin, bigeye and albacore longline fishery	TBC	TBC	TBC	TBC	TBC	TBC
Solomon Islands longline albacore and yellowfin tuna fishery	100	N/a	70	60	80	85
Fiji Albacore and Yellowfin Tuna longline	100	N/a	70	60	80	95
SZLC, CSFC & FZLC Cook Islands EEZ South Pacific Albacore and Yellowfin Longline Fishery	100	N/a	70	60	80	95
American Samoa EEZ Albacore and Yellowfin Longline Fishery	100	N/a	70	60	80	95
Australian Eastern Tuna and Billfish Fishery (albacore tuna, yellowfin tuna, bigeye tuna and swordfish)	TBC	TBC	TBC	TBC	TBC	TBC
Kiribati albacore, bigeye and yellowfin tuna longline fishery	TBC	TBC	TBC	TBC	TBC	TBC
New Zealand albacore tuna troll	100	N/a	70	60	80	95
AAFA and WFOA South Pacific albacore tuna	100	N/a	70	60	80	85
French Polynesia albacore and yellowfin longline fishery	100	N/a	70	60	80	95

Table 47. Comparison of Principle 1 scores between this assessment and other WCPO yellowfin fisheries. Note: pre-FCR v2.0 performance indicators are shown in yellow.

Fishery	Version (pre 2.0 / 2.0)	1.1.1 (Stock status)	1.1.2 (Reference points)	1.1.3 (Rebuilding)	1.2.1 (Harvest Strategy)	1.2.2 (Harvest Control Rules and Tools)	1.2.3 (Information/Monitoring)	1.2.4 (Stock assessment)
		1.1.1 (Stock status)	1.1.2 (Rebuilding)	-	1.2.1 (Harvest Strategy)	1.2.2 (Harvest Control Rules and Tools)	1.2.3 (Information/Monitoring)	1.2.4 (Stock assessment)
Pan Pacific yellowfin, bigeye and albacore longline fishery	2.0	TBC	TBC	-	TBC	TBC	TBC	TBC
Tropical Pacific yellowfin and skipjack free-school purse seine fishery	2.0	90	N/a	-	70	60	80	95
PT Citraraja Ampat, Sorong pole and line Skipjack and Yellowfin Tuna	2.0	90	N/a	-	70	60	90	95
SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna	2.0	90	N/a	-	70	60	80	95
Solomon Islands longline albacore and yellowfin tuna fishery	2.0	90	N/a	-	70	60	90	95
North Buru and Maluku Fair Trade Fishing Associations, Indonesian Handline Yellowfin Tuna	2.0	TBC	TBC	-	TBC	TBC	TBC	TBC
Fiji Albacore and Yellowfin Tuna longline	2.0	90	N/a	-	70	60	90	95
SZLC, CSFC & FZLC Cook Islands EEZ South Pacific Albacore and Yellowfin Longline Fishery	2.0	90	N/a	-	70	60	80	95
American Samoa EEZ Albacore and Yellowfin Longline Fishery	2.0	90	N/a	-	70	60	80	95
Tri Marine Western and Central Pacific Skipjack and Yellowfin Tuna	Pre-2.0	90	90	N/a	70	60	80	95
Solomon Islands skipjack and yellowfin tuna purse seine and pole and line	Pre-2.0	90	90	N/a	70	60	90	95
Australian Eastern Tuna and Billfish Fishery (albacore tuna, yellowfin tuna, bigeye tuna and swordfish)	2.0	TBC	TBC	-	TBC	TBC	TBC	TBC
PNA Western and Central Pacific skipjack and yellowfin, unassociated / non FAD set, tuna purse seine	2.0	90	N/a	-	70	60	90	95
MIFV RMI EEZ Longline Yellowfin and Bigeye Tuna	2.0	90	N/a	-	70	60	80	95
WPSTA Western and Central Pacific skipjack and yellowfin free school purse seine	2.0	90	N/a	-	70	60	80	95

PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery	2.0	TBC	TBC	-	TBC	TBC	TBC	TBC
Kiribati albacore, bigeye and yellowfin tuna longline fishery	2.0	TBC	TBC	-	TBC	TBC	TBC	TBC
French Polynesia albacore and yellowfin longline fishery	2.0	90	N/a	-	70	60	80	95

Table 48. Comparison of Principle 1 scores between this assessment and other WCPO bigeye fisheries. Note, all fisheries are now being assessed against the MSC Standard v2.0 or 2.01.

Fishery	1.1.1 (Stock status)	1.1.2 (Rebuilding)	1.2.1 (Harvest Strategy)	1.2.2 (Harvest Control Rules and Tools)	1.2.3 (Information/Monitoring)	1.2.4 (Stock assessment)
Pan Pacific yellowfin, bigeye and albacore longline fishery	100	N/a	70	60	90	100
SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna	100	N/a	70	60	90	100
MIFV RMI EEZ Longline Yellowfin and Bigeye Tuna	100	N/a	70	60	90	100
Kiribati albacore, bigeye and yellowfin tuna longline fishery	TBC	TBC	TBC	TBC	TBC	TBC
Fiji Albacore, Yellowfin and Bigeye Tuna longline	TBC	TBC	TBC	TBC	TBC	TBC
Australian Eastern Tuna and Billfish Fishery (albacore tuna, yellowfin tuna, bigeye tuna and swordfish)	TBC	TBC	TBC	TBC	TBC	TBC
SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore, yellowfin and bigeye longline	100	N/a	70	60	90	100

Appendix 9 Objection Procedure

To be added at Public Certification Report stage

The report shall include all written decisions arising from a 'Notice of Objection', if received and accepted by the Independent Adjudicator.

Reference(s): FCP v2.1 Annex PD

Appendix 10 MMR Letter of support



Ministry of Marine Resources
GOVERNMENT OF THE COOK ISLANDS

29th April 2020

File Reference: 20.04.048

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Dear Ms. Sieben,

The Cook Islands Ministry of Marine Resources (MMR) continues to fully support efforts by the client group (Liancheng Overseas Fishery Shenzhen Co. - SZLC, China Southern Fishery Shenzhen Co. - CSFC and Liancheng Overseas Fishery FSM Co. - FZLC) of the Marine Stewardship Council (MSC) – certified Cook Islands tuna longline fishery to obtain re-certification against the MSC fisheries standard.

MMR remains committed to work with the client group and other stakeholders to implement the client action plan to address conditions of certification.

With regards,



Pamela Maru
Secretary of Marine Resources